

# SAM-Q-SDI Audio Monitor Installation and Operation Manual Version 2.0



#### Version History

Issue	Date	Change Details
1	12/06/19	Initial Release
2	14/04/20	Updated to include new functions found in SAM-Q software version 2.0

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# Introduction

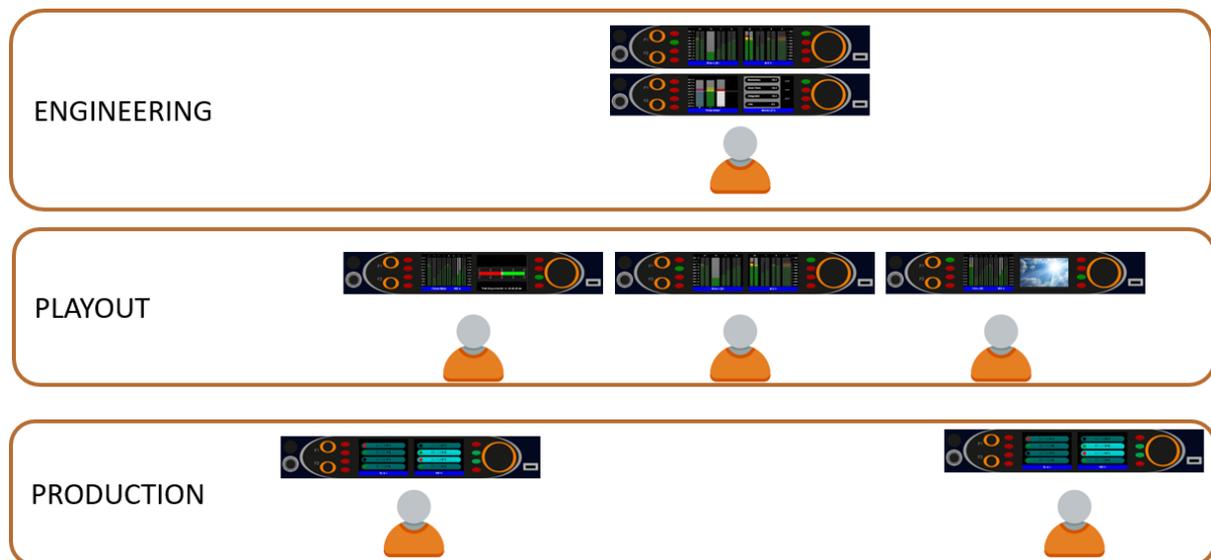
The SAM-Q-SDI Audio Monitor provides flexible, high quality audio monitoring in a compact 1RU design.

At just 100mm deep and less than 4kg, the SAM-Q-SDI is ideally suited for environments where space and weight is a premium, such as OB Trucks and Flyaways.

Designed for ease of use, the SAM-Q-SDI Audio Monitor can be configured to best suit your workflow, application, skillset or personal preference.

Up to 8 separate system configurations can be stored and recalled at any time, allowing the SAM-Q-SDI to quickly and easily adapt to different tasks, shows, locations or the preferences of different users.

With its multiple modes of operation, the SAM-Q-SDI provides a common platform that can be deployed throughout all parts of a facility and used by all members of staff.



With the addition of optional software licenses, SAM-Q-SDI functionality can be extended ‘in the field’ at any time.

### SAM-Q-SDI license options

Order Code	Description
SAM-Q-MADI	Monitoring for MADI audio sources
SAM-Q-LOUD-LIC	Loudness Monitoring of 8 independent programs

More information on license options can be found later in this manual.

## Deploying the SAM-Q-SDI

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The SAM-Q-SDI includes several features not normally associated with rackmount audio monitors, designed to help you achieve, maintain and protect your optimal system configuration.

### Mode Permissions

The SAM-Q-SDI provides 10 Operational Modes to choose from, each of which offer a unique interface with which to view, select, measure and monitor audio sources.

Each Operational Mode may be Enabled or Disabled within your system configuration, allowing the SAM-Q-SDI to be optimally configured for a specific task, application, location or user skillset.

*See pages 15 and 16 for an Overview of SAM-Q-SDI Operational Modes.*

### Mix Permissions

The SAM-Q-SDI is equipped with 8 independent Mix Groups, with each Mix Group comprising up to 16 audio channels of your choosing.

Each Mix Group can be Enabled or Disabled as required, providing users with quick access to much needed audio channels, whilst unused or unwanted audio channels can be hidden from view.

*See pages 43, 44, 45 and 46 for more information on Mix Permissions.*

### Front Panel Controls

The behaviour of SAM-Q-SDI front panel controls can be modified or disabled to help maximise speed of operation whilst also helping to avoid operational error.

### PIN Code Protection

Changes to the configuration of your SAM-Q-SDI require a PIN Code, helping to protect and secure your optimal system configuration from unwanted or unintentional changes.

*See page 76 for more information on the PIN Code*

To provide the best user experience and optimal workflow, TSL recommends that the following be considered before configuring your SAM-Q-SDI:

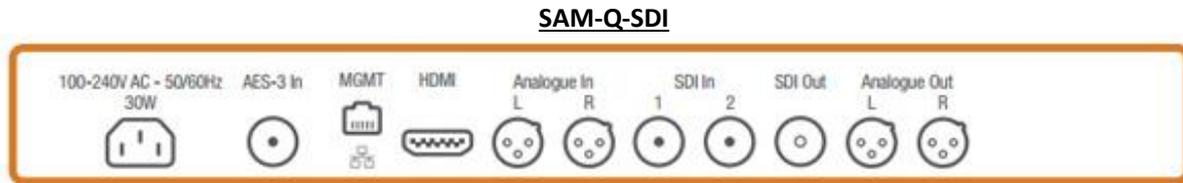
Who will be using the SAM-Q-SDI?  
What is the task or application?

Answers to these questions will help determine which Modes and Mixes should be Enabled/Disabled, along with the any necessary changes to the behaviour of the front panel controls.

# SAM-Q-SDI Installation

The SAM-Q range has been designed to be quick and easy to install, requiring minimal installation effort.

Input and output connectivity for the SAM-Q-SDI can be seen below:

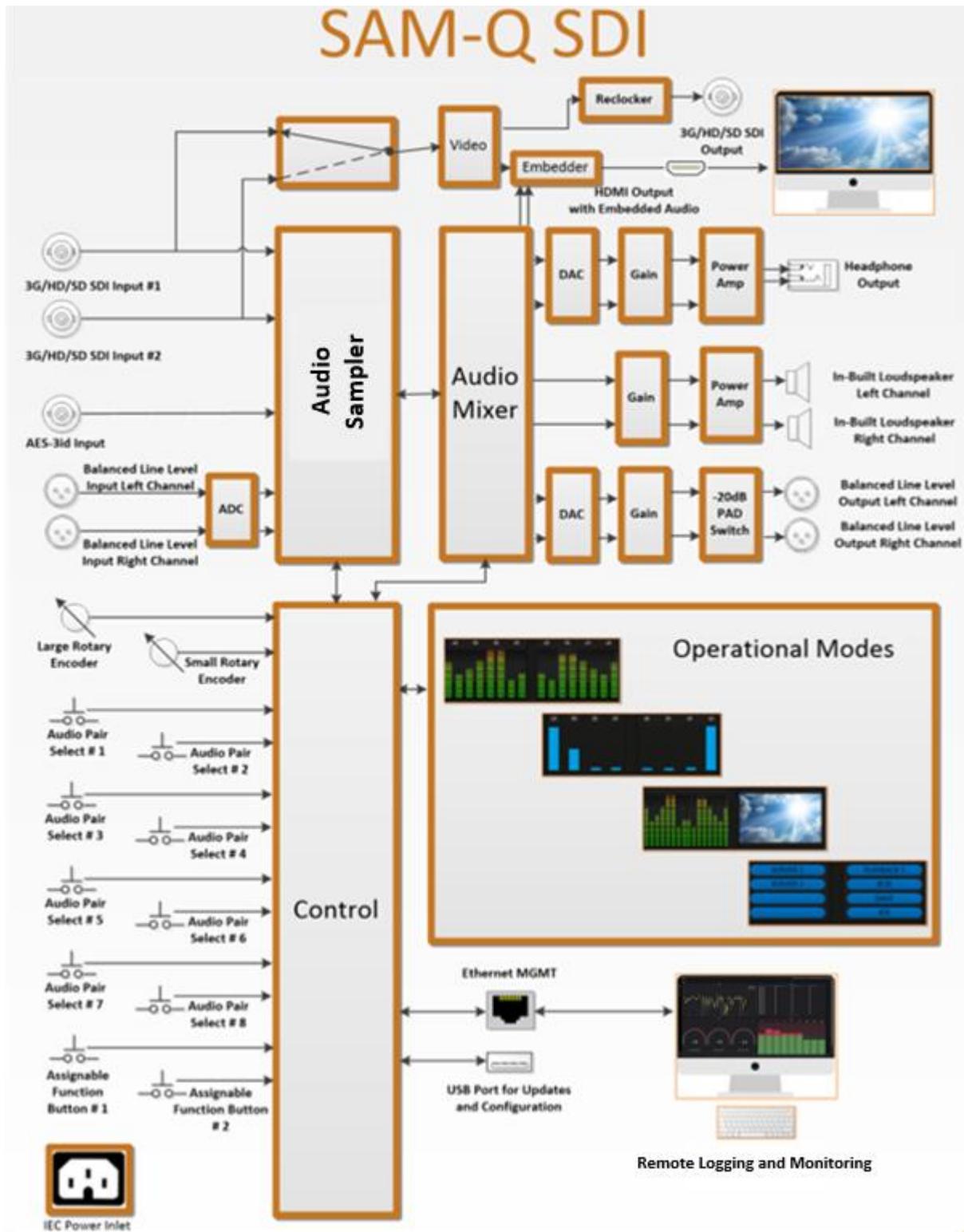


Product	Inputs	Outputs	Other
SAM-Q-SDI	2 x 3G/HD/SD-SDI* 1 x AES-3id (75 ohm) 2 x Analogue Inputs (Balanced)	1 x 3G/HD/SD-SDI (re-clocked) 2 x Analogue Outputs (Balanced) 1 x Headphone Output 1 x HDMI Monitoring Output	1 x 100 Mbps Ethernet Port (Management, Control and Loudness Data**) 1 x USB Port (Software Updates and Configuration) 1 x IEC Power Inlet

\* SDI Inputs can also be configured to receive MADI streams when the optional SAM-Q-MADI-LIC license is installed (see page 74 for more information)

\*\* Loudness data produced by the SAM-Q-SDI may be monitored over an Ethernet network when the optional SAM-Q-LOUD-LIC license is installed (see pages 79, 82, 83 and 84)

# SAM-Q-SDI Functional Schematic

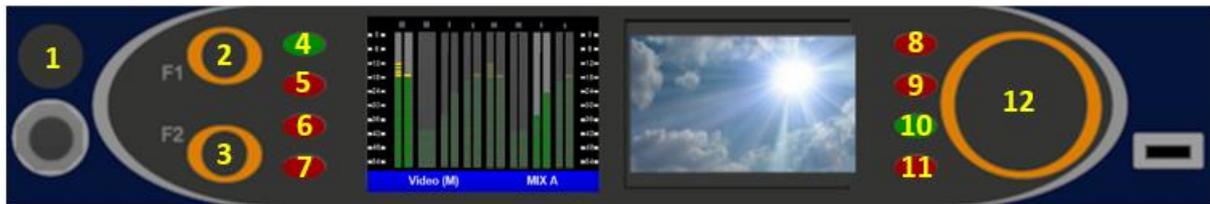


## SAM-Q-SDI General Operation

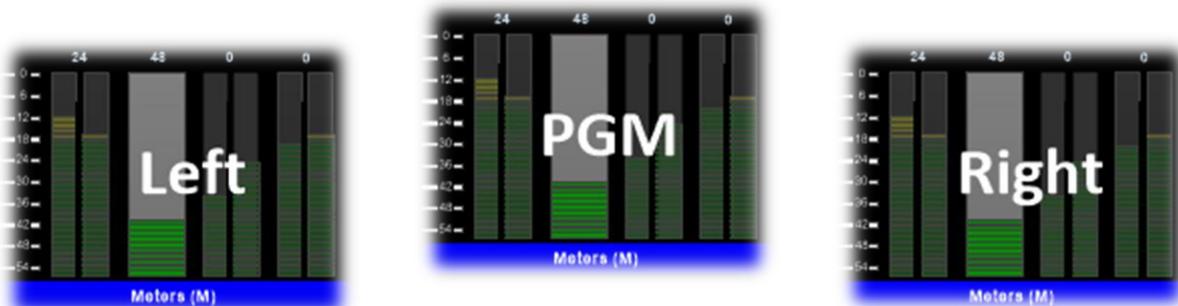
The SAM-Q-SDI has been designed to be both quick and easy to operate, regardless of which operational mode(s) you choose to work with.

The four most frequent functions are described below:

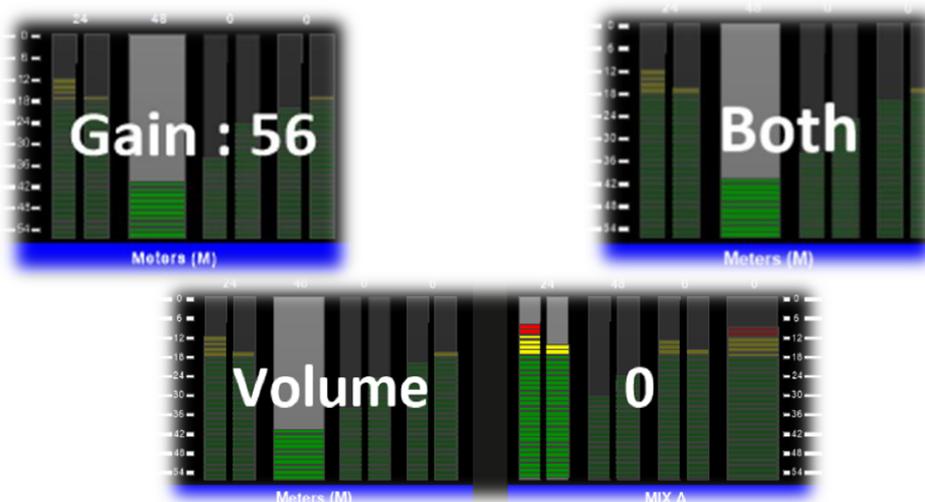
- Selecting an Audio Source (buttons 4 through to 11)
- Selecting an Audio Mix Group (small rotary encoder 1)
- Adjusting the Output Volume (large rotary encoder 12)
- Selecting a Different Operational Mode (Function button 1 (2) and Function button 2 (3))



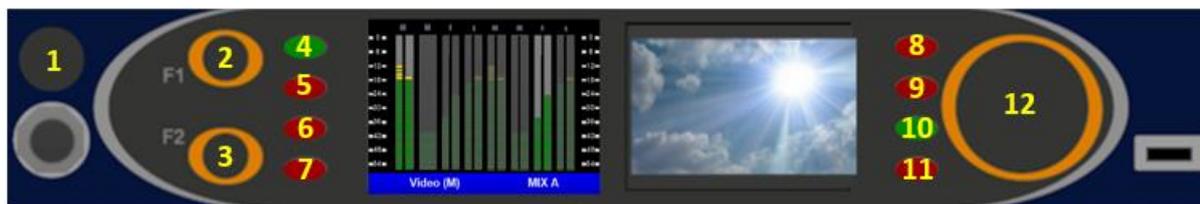
As you control the SAM-Q-SDI, pop-up messages on the front panel displays will confirm your choices and adjustments



*Examples of front panel messages*



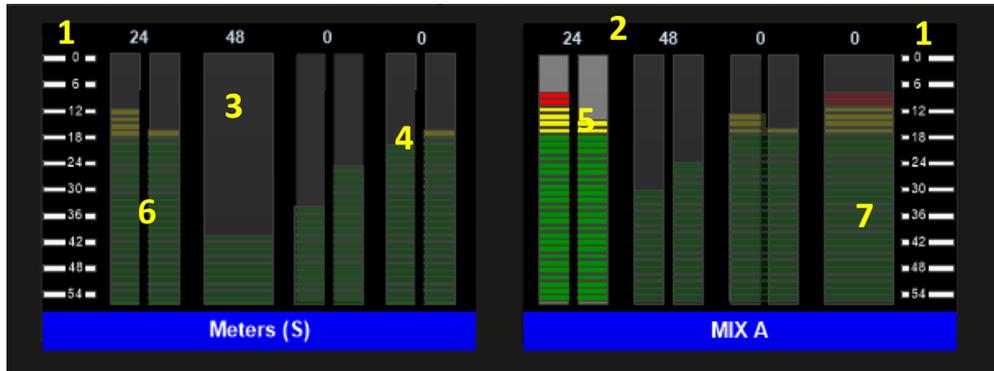
## SAM-Q-SDI Front Panel Controls



Item	Name	Normal Function	Extended Functions
1	Small rotary encoder	Mix Selection	Pan/Balance Control, Cursor selection in System Menus
2	Function 1 button	Switch to Previous Operational Mode	Press and Hold for 1 second to Enter and Exit Menus
3	Function 2 button	Switch to Next Operational Mode	Press to delete name entries in System Menu
4	Source select button # 1	Mute/Unmute Audio Source 1	Displays Engineering and Friendly Names of Audio Source # 1, enables Pan/Balance (when used in conjunction with the small rotary encoder) or adjusts Output level of Audio Source # 1 (when used in conjunction with Large rotary encoder).
5	Source select button # 2	Mute/Unmute Audio Source 2	Displays Engineering and Friendly Names of Audio Source # 2, enables Pan/Balance (when used in conjunction with the small rotary encoder) or adjusts Output level of Audio Source # 2 (when used in conjunction with Large rotary encoder).
6	Source select button # 3	Mute/Unmute Audio Source 3	Displays Engineering and Friendly Names of Audio Source # 3, enables Pan/Balance (when used in conjunction with small rotary encoder) or adjusts Output level of Audio Source # 3 (when used in conjunction with Large rotary encoder).
7	Source select button # 4	Mute/Unmute Audio Source 4	Displays Engineering and Friendly Names of Audio Source # 4, enables Pan/Balance (when used in conjunction with small rotary encoder) or adjusts Output level of Audio Source # 4 (when used in conjunction with Large rotary encoder).
8	Source select button # 5	Mute/Unmute Audio Source 5	Displays Engineering and Friendly Names of Audio Source # 5, enables Pan/Balance (when used in conjunction with small rotary encoder) or adjusts Output level of Audio Source # 5 (when used in conjunction with Large rotary encoder).
9	Source select button # 6	Mute/Unmute Audio Source 6	Displays Engineering and Friendly Names of Audio Source # 6, enables Pan/Balance (when used in conjunction with small rotary encoder) or adjusts Output level of Audio Source # 6 (when used in conjunction with Large rotary encoder).
10	Source select button # 7	Mute/Unmute Audio Source 7	Displays Engineering and Friendly Names of Audio Source # 7, enables Pan/Balance (when used in conjunction with small rotary encoder) or adjusts Output level of Audio Source # 7 (when used in conjunction with Large rotary encoder).
11	Source select button # 8	Mute/Unmute Audio Source 8	Displays Engineering and Friendly Names of Audio Source # 8, enables Pan/Balance (when used in conjunction with small rotary encoder) or adjusts Output level of Audio Source # 8 (when used in conjunction with Large rotary encoder).
12	Large rotary encoder	Adjust Output Volume	Adjust Output Volume of nominated Audio Source or Parameter value when in Menu.

## SAM-Q Front Panel Display Elements

The SAM-Q features two high quality front panel display screens to display multiple audio monitoring elements, video sources and menu selections.



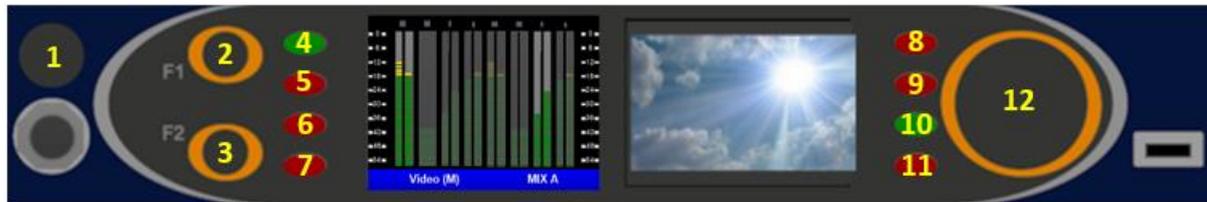
Item	Display Element	Description
1	Audio Meter Scale	Audio Meter scale (0 to -54 dBFS). Displayed on left-hand and right-hand side of audio level meters.
2	Output Level Ribbon Bar	Shows the output level of each audio source feeding the currently selected Mix (0-100)
3	Inactive Mono Audio Source	Single audio level meter for Mono audio sources
4	Inactive Stereo Audio Source	Dual audio level meter for Stereo audio sources
5	Active Audio Source	Audio source(s) currently selected for monitoring. See source selection buttons 1-8 on page 7 of this manual.
6	Left Hand Title Bar	Displays name of currently selected Operational Mode
7	Right Hand Title Bar	Displays name of currently selected Audio Mix

## Selecting SAM-Q-SDI Operational Modes

The SAM-Q-SDI provides multiple modes of operation, allowing you to choose the most suitable mode for your workflow, application or personal preference.

Each operational mode determines what is displayed on the front panel displays as well as the behaviour of the front panel controls

Switching between operational modes may be achieved using Function buttons 1 and 2 (see below)



Item	Name	Standard Function	Extended Function
2	Function 1 button	Switch to Previous Operational Mode	Press and Hold for 1 second to Enter and Exit Menus
3	Function 2 button	Switch to Next Operational Mode	Press to delete name entries in System Menu

*Only those Operational Modes that have been Enabled will be available for selection using Function buttons 1 and 2 (see The Mode Permissions Menu on Page 36 for further information)*

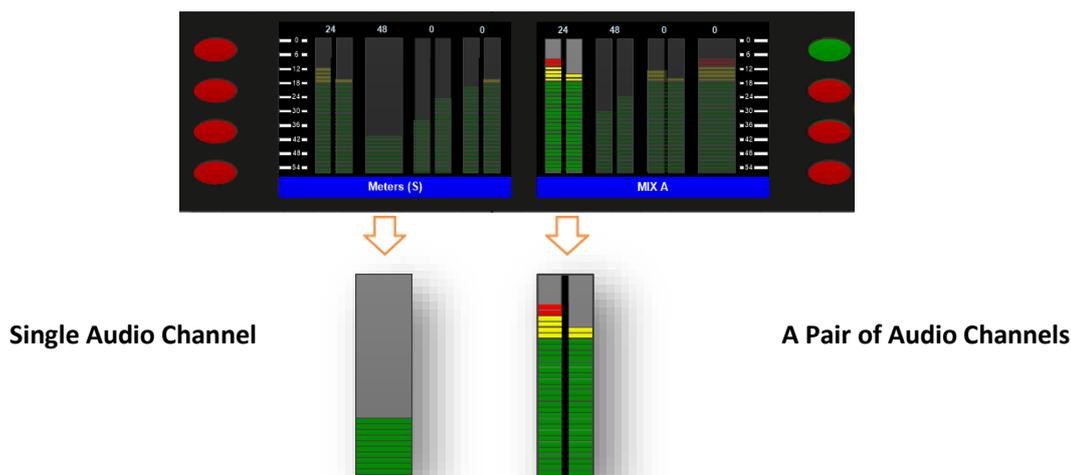
*Functions assigned to buttons F1 and F2 are configurable (see page 66 for further information). If configured to perform functions other than 'Switch to Previous Operational Mode' or 'Switch to Next Operational Mode', mode selection can be performed directly in the User Menu (see page 36 for further information).*

# Understanding SAM-Q-SDI Audio Sources

The SAM-Q-SDI defines an audio source as being either of the following:

A Single Audio Channel	A Pair of Audio Channels
------------------------	--------------------------

A SAM-Q-SDI Audio Source comprising a Single Audio Channel is presented using a single audio level meter, whilst an Audio Source comprising a Pair of Audio Channels is represented by two audio level meters.

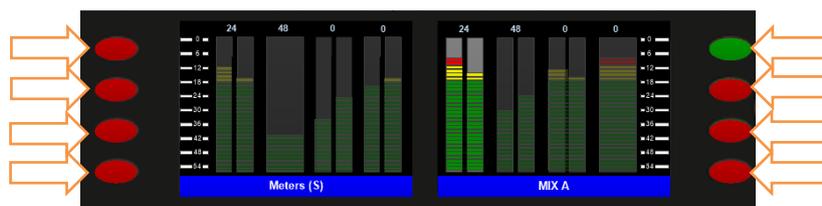


This allows the SAM-Q-SDI to display Mono and Stereo audio sources simultaneously.

An example showing how a 5.1 audio program could be represented is shown here.



The SAM-Q-SDI can display a maximum of 8 Audio Sources at any one time, with each Audio Source being assigned its own Source Select button, whether it be a single audio channel or pair of audio channels



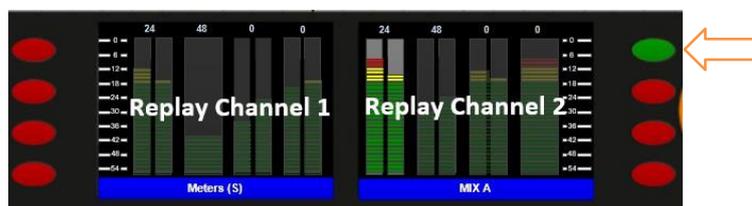
Every SAM-Q-SDI Audio Source is assigned two names.

The first Audio Source name, referred to as its Friendly Name can be freely changed in the system configuration.

Friendly Names allow users to identify SAM-Q-SDI Audio Channels and can be based on the source device, origin, content type or personal preference. Some typical examples are shown below:

SAM-Q-SDI Friendly Names	
Program Left	Replay Channel 1
Program Right	Replay Channel 2
English VO	Line 1
German VO	Line 2

The Friendly Name of any SAM-Q-SDI Audio Source can be revealed directly on the front panel of the SAM-Q-SDI simply by pushing and holding the corresponding Source Select button.

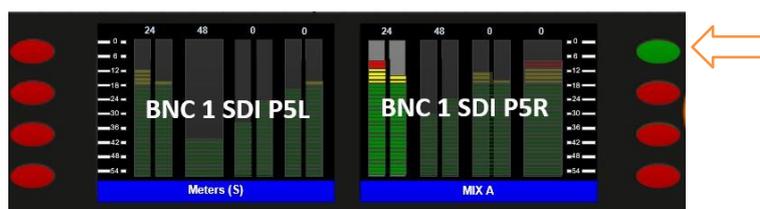


The second Audio Source name, also referred to as its Engineering Name, is pre-defined and cannot be changed.

Engineering Names enable SAM-Q-SDI Audio Sources to be identified based on their physical input, signal type and channel or pair identifier (examples below).

SAM-Q-SDI Engineering Name	Physical Input	Signal Type	Identifier
BNC 1 SDI P1R	BNC 1	SDI	Group 1 Pair 1 Right Channel
BNC 2 MADI 37	BNC 2	MADI	Channel 37
BNC 1 SDI P5L	BNC 1	SDI	Group 3 Pair 1 Left Channel
AES L	AES-3id	AES	Left Channel
Analogue R	XLR	Analogue	Right Channel

The Engineering Name of any SAM-Q-SDI Audio Source can be revealed directly on the front panel of the SAM-Q-SDI simply by pushing and holding the corresponding Source Select button until the Friendly Name disappears.



*Please note that any SAM-Q-SDI Friendly Names not set in the configuration display Engineering Names by default.*

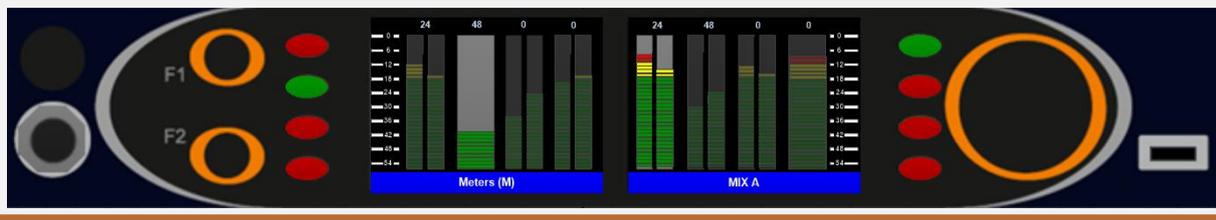
# Overview of SAM-Q-SDI Operational Modes

The SAM-Q-SDI comes complete with the following operational modes as standard.

Mode Name	Front Panel Display	Description
Meters (S)	16 Audio Level Meters	Allows one audio source to be selected and monitored at a time



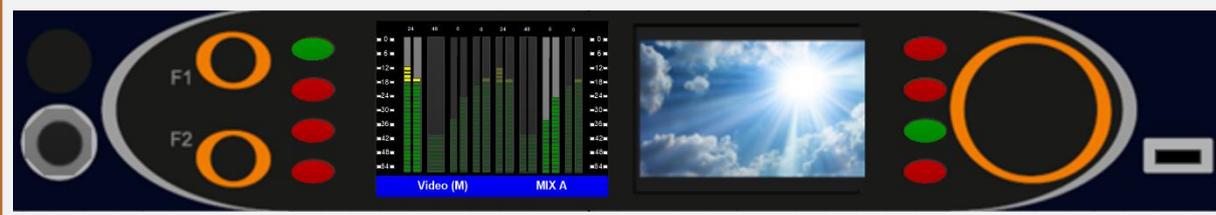
Mode Name	Front Panel Display	Description
Meters (M)	16 Audio Level Meters	Allows up to 8 audio sources to be selected and monitored simultaneously



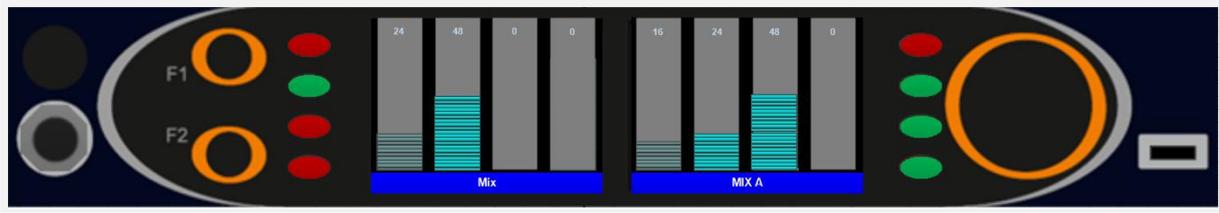
Mode Name	Front Panel Display	Description
Video (S)	16 Audio Level Meters	Allows one audio source to be selected and monitored at a time, complete with front panel video display



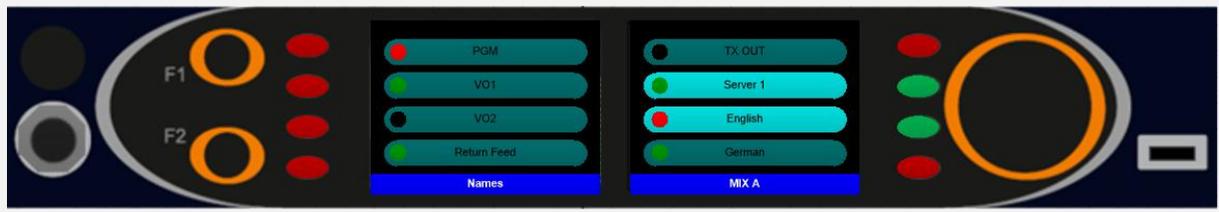
Mode Name	Front Panel Display	Description
Video (M)	16 Audio Level Meters	Allows up to 8 audio sources to be selected and monitored simultaneously, complete with front panel video display



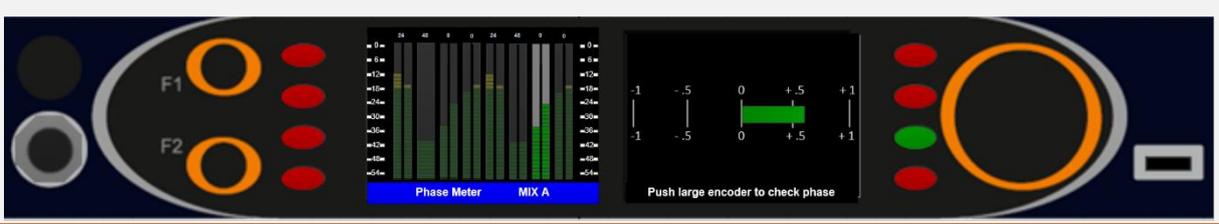
Mode Name	Front Panel Display	Description
Mix	8 Gain Bars	Allows up to 8 audio sources to be selected and monitored simultaneously, whilst displaying relative mix levels for each pair



Mode Name	Front Panel Display	Description
Names	8 Source Names	Allows up to 8 audio sources to be selected and monitored simultaneously, whilst displaying source names



Mode Name	Front Panel Display	Description
Phase Meter	16 Audio Level Meters + 1 Phase Meter	Allows one audio source to be selected, monitored and checked for audio phase.



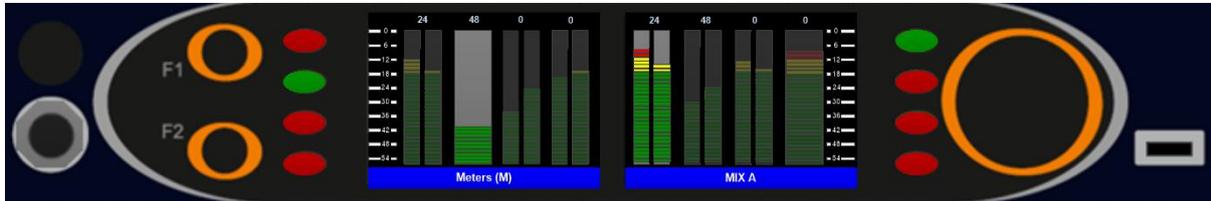
The following Operational Modes are activated and made available for use when the optional SAM-Q Loudness licenses has been installed:

Name of Operational Mode	Description
All Probes Summary Mode	Display showing Short-Term, Momentary and Integrated loudness meters for 8 independent programs.
Probe Detail Mode	Display showing Short Term, Momentary and Integrated loudness meters for any chosen program and Short-Term, Momentary, Integrated and LRA values as numeric values.
Probe Contributors Mode	Display showing audio level meters for each audio channel belonging to a given program (i.e 2.1, 5.1, 7.1, 5.1+4 etc.)

More information on these optional modes can be found on Pages 26, 27 and 28 of this manual

## Operational Mode - Meters (M)

Meters (M) mode displays a maximum of 8 audio sources across both displays, using a maximum of 16 audio level meters.



Meters (M) mode allows multiple audio sources to be selected and listened to simultaneously.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu (see page 47) for Information on how specific sources can be routed to specific audio Mix Groups.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding audio level meter will be highlighted. In the example above, audio sources # 2 and # 5 have been selected for monitoring and will be audible to the user.

Audio sources can be freely included or excluded simply by pressing their corresponding Source Select buttons.

Source select buttons that are lit red denote Audio sources that are not currently included and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

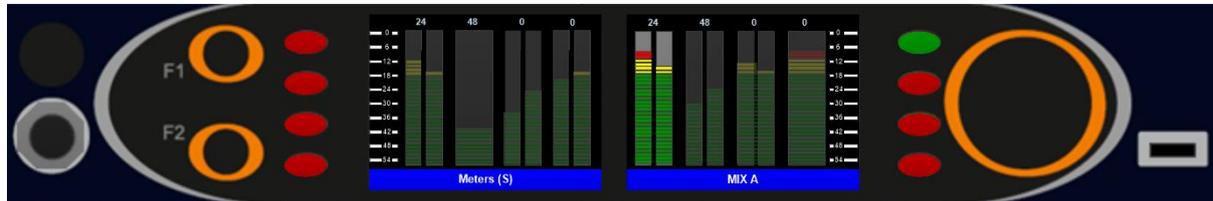
*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode - Meters (S)

Meters (S) mode displays a maximum of 8 audio sources across both displays, using a maximum of 16 audio level meters.



Meters (S) mode allows a single audio source to be selected for monitoring at a time.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu option (see page 47) for Information on how specific sources can be routed to specific audio mixes.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding audio level meter will be highlighted. In the example above, audio source # 5 has been selected for monitoring and will be audible to the user.

Selecting a different audio source for monitoring causes the previously selected audio source to be deselected automatically.

Source select buttons that are lit red denote Audio sources that are not currently selected and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

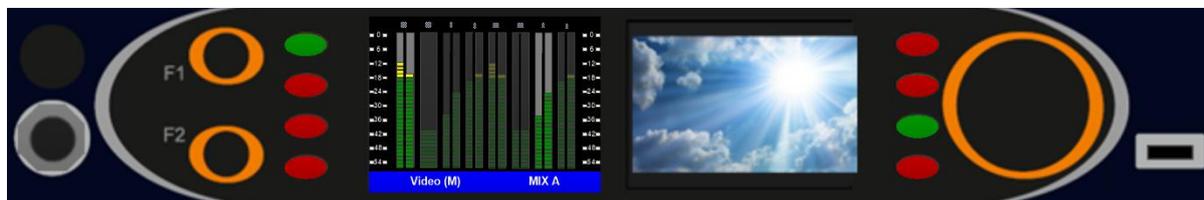
*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode - Video (M)

Video (M) mode displays a maximum of 8 audio sources on the left-hand display, using a maximum of 16 audio level meters, whilst also showing a video source derived from either of the SAM-Q-SDI inputs.



Video (M) mode allows multiple audio sources to be selected and listened to simultaneously.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu option (see page 47) for Information on how specific sources can be routed to specific audio Mix Groups.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding audio level meter will be highlighted. In the example above, audio sources # 2 and # 7 have been selected for monitoring and will be audible to the user.

Audio sources can be freely included or excluded simply by pressing their corresponding Source Select buttons.

Source select buttons that are lit red denote Audio sources that are not currently included and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

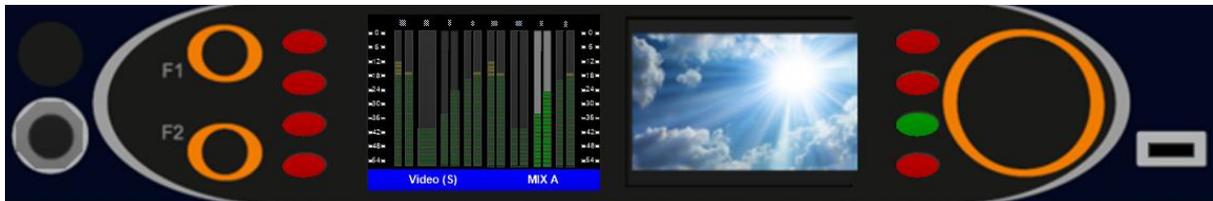
Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode - Video (S)

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Video (S) mode displays a maximum of 8 audio sources on the left-hand display, using a maximum of 16 audio level meters, whilst also showing a video source derived from either of the SAM-Q-SDI inputs.



Video (S) mode allows a single audio source to be selected for monitoring at a time.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu option (see page 47) for Information on how specific sources can be routed to specific audio mixes.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding audio level meter will be highlighted. In the example above, audio source # 7 has been selected for monitoring and will be audible to the user.

Selecting a different audio source for monitoring causes the previously selected audio source to be deselected automatically.

Source select buttons that are lit red denote Audio sources that are not currently selected and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

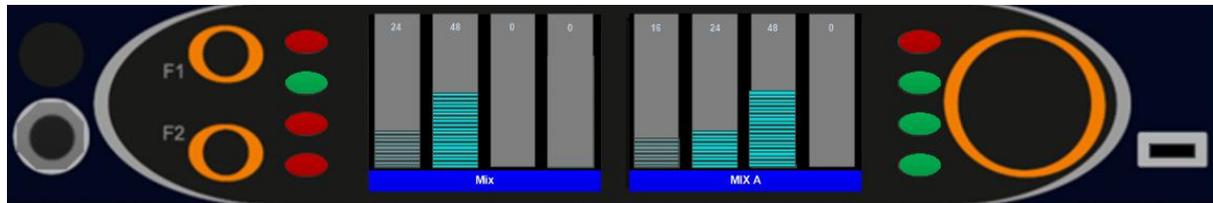
*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode - Mix

Mix mode displays a maximum of 8 audio sources, using 8 gain bars, akin to 8 fader positions on an audio console.



Mix mode allows multiple audio sources to be selected and listened to simultaneously.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu option (see page 47) for Information on how specific sources can be routed to specific audio Mix Groups.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding audio level meter will be highlighted. In the example above, audio sources # 2, # 6 and # 7 have been selected for monitoring and will be audible to the user.

Audio sources can be freely included or excluded simply by pressing their corresponding Source Select buttons.

Source select buttons that are lit red denote Audio sources that are not currently included and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

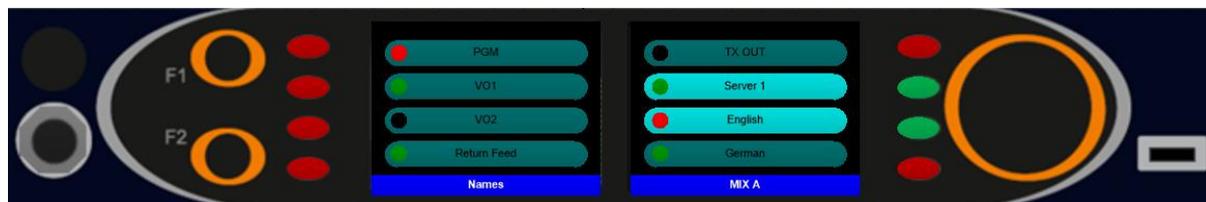
*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode - Names

Names mode displays a maximum of 8 audio sources, using 8 source name labels using SAM-Q-SDI 'Friendly Names' and audio presence indicators.



Names mode allows multiple audio sources to be selected and listened to simultaneously.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu option (see page 47) for Information on how specific sources can be routed to specific audio Mix Groups.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding Friendly Name will be highlighted. In the example above, audio sources # 6 and # 7 have been selected for monitoring and will be audible to the user.

Audio sources can be freely included or excluded simply by pressing their corresponding Source Select buttons.

Source select buttons that are lit red denote Audio sources that are not currently included and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

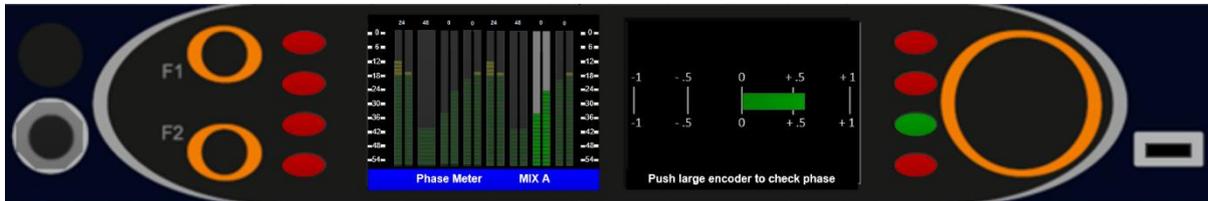
*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode – Phase Meter

Phase Meter mode displays a maximum of 8 audio sources on the left-hand display, using a maximum of 16 audio level meters, whilst also showing an audio phase meter on the right-hand display.



Phase Meter mode allows a single audio source to be selected for monitoring at a time.

The audio sources that are displayed and made available for selection are determined by the currently selected audio mix group (MIX A in the example above).

Switching between available audio mix groups is achieved using the small rotary encoder on the left-hand side of the two displays.

*Please note that the Mix Groups available for selection by rotating the small rotary encoder are determined in the Mix Permissions Menu (see page 43)*

*Please refer to the Mix Group Sources Menu option (see page 47) for Information on how sources can be routed to specific audio mixes.*

Selecting a desired audio source is achieved simply by pressing the corresponding Source Select button.

When an audio source is selected for monitoring, its Source Select button will turn Green and its corresponding audio level meter will be highlighted. In the example above, audio source # 7 has been selected for monitoring and will be audible to the user.

Pushing the large encoder inverts the phase of the right-hand channel of the currently selected Audio Source with respect to the left-hand channel, allowing a subjective audio phase check.

Selecting a different audio source for monitoring causes the previously selected audio source to be deselected automatically.

Source select buttons that are lit red denote Audio sources that are not currently selected and will therefore not be audible to the user.

The respective audio balance between two or more audio sources is displayed in the Output Level Ribbon Bar at the top of the display (see page 11 for further information).

The level of contribution to the output mix from any audio source can be changed by rotating the large rotary encoder whilst simultaneously pushing the corresponding pair select button.

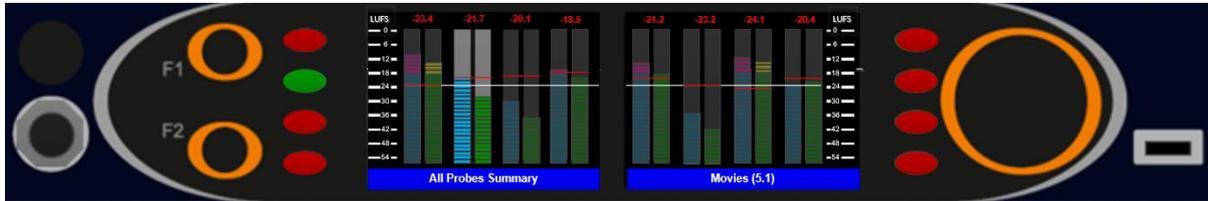
*Please note that the ability to change the level of contribution to the output mix can be disabled if required (see page 68).*

Audio sources comprising a single audio channel may be panned so that they can be monitored in the Left, Right or Both SAM-Q-SDI outputs, whilst Audio Sources comprising two audio channels may have their Left, Right or Both channels selected and monitored in their respective outputs.

*Please note that the ability to select Left, Right and Both Outputs can be disabled if required (see page 67).*

## Operational Mode – Loudness Summary

Loudness Summary mode displays Momentary and Short-Term loudness meters as well as Integrated loudness values belonging to the 8 SAM-Q loudness probes in a single view.



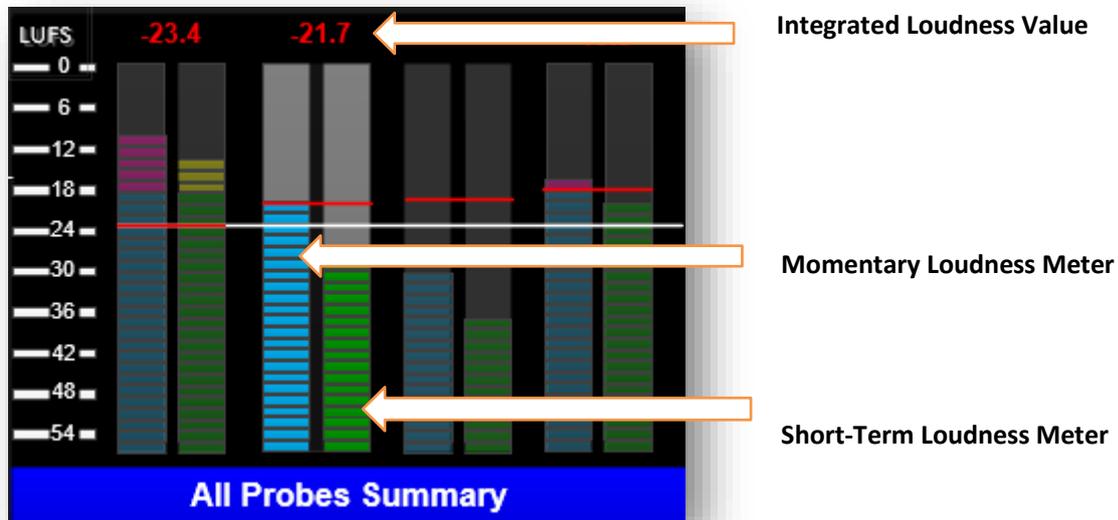
Loudness Summary mode allows a single loudness probe to be selected for monitoring at a time.

Selecting the desired loudness probe is achieved simply by pressing the corresponding Source Select button.

When a loudness probe is selected for monitoring, its Source Select button will turn Green and its corresponding loudness level meters will be highlighted.

In the example above, loudness probe # 2 has been selected for monitoring and a downmix will be presented to all SAM-Q-SDI audio outputs.

In the example below, a Loudness Target of -23 LUFS has been set and is shown by a horizontal white line, whilst the current Integrated Loudness values of each Loudness Probe is indicated by a horizontal red line and numeric value.

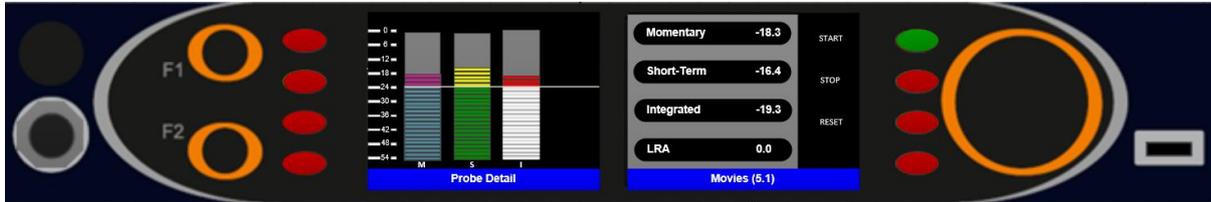


Selecting a different loudness probe for monitoring causes the previously selected loudness mode to be deselected automatically.

*Please refer to the Loudness Setup Menu option later in this document for Information on how sources can be routed to specific audio loudness probes.*

## Operational Mode – Probe Detail

Probe Detail mode displays Momentary, Short-Term and Integrated loudness meters belonging to a single loudness probe, alongside a numerical display showing Momentary, Short-Term, Integrated and LRA values.

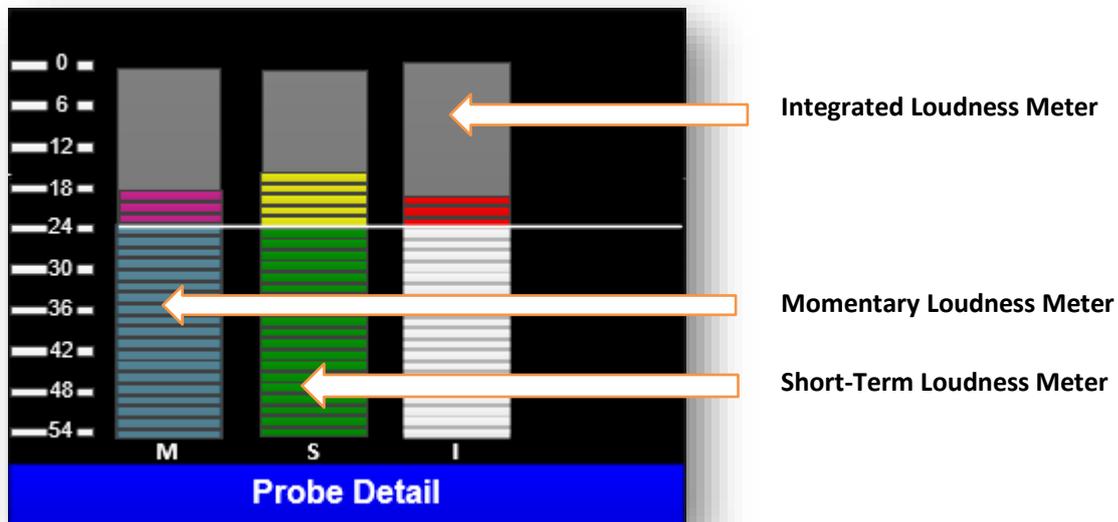


Loudness Detail mode provides a loudness metering of any selected loudness probe whilst also providing Start, Stop and Reset buttons for Integrated and LRA measurement.

Any one of the 8 available loudness probes can be selected as required, simply by rotating the small encoder on the left-hand side of the front-panel.

When a loudness probe is selected for monitoring, a downmix will be presented to all SAM-Q-SDI audio outputs.

Only Audio Select buttons 5, 6 and 7 are active in this Operational Mode, allowing Loudness Measurement to be Started, Stopped or Reset for the currently selected Loudness Probe.

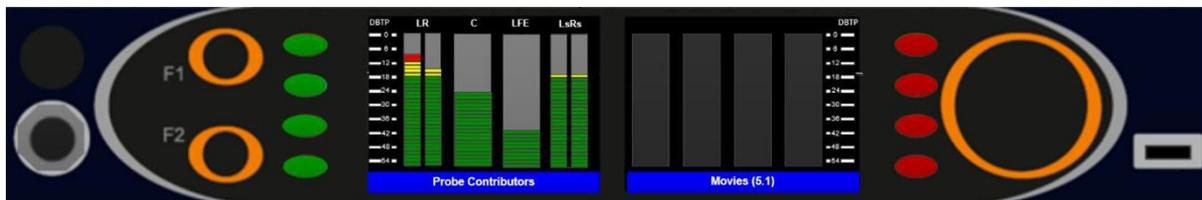


*Please note that Loudness Start, Stop and Reset functions can be Disabled if required (See page 69).*

*Please refer to the Loudness Setup Menu option later in this document for Information on how sources can be routed to specific audio loudness probes.*

## Operational Mode – Probe Contributors

Probe Contributors mode displays audio level meters for each audio source channel contributing to the currently selected loudness probe.

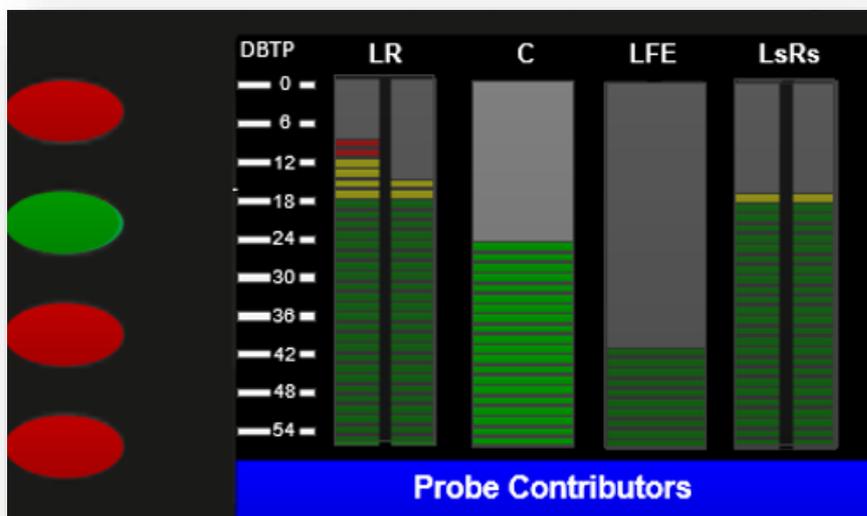


Any one of the 8 available loudness probes can be selected as required, simply by rotating the small encoder on the left-hand side of the front-panel.

When selecting a loudness probe, a downmix of all contributing channels will be presented to all SAM-Q-SDI audio outputs, with the Source select buttons for all contributing channels lit Green.

Pushing and holding a Source Select button allows its corresponding audio channel to be isolated for monitoring, with all other contributing audio channels being muted automatically

In the example below the user has chosen to listen only to audio source #2, the Centre Channel.



Any combination of contributing channels may be selected for monitoring as required.

*Please refer to the [Loudness Setup Menu](#) option later in this document for Information on how sources can be routed to specific audio loudness probes.*

## Configuring the SAM-Q-SDI

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The following pages include information on how to configure the SAM-Q-SDI using its front panel controls and internal configuration menus.

*Please note that some configuration menus and their associated parameters may only be accessed or modified if the relevant license option has been installed.*

Information on how to check the current license status of your SAM-Q-SDI and for instructions on how to install optional licenses please refer to the Licenses Menu on page 70

### Recommendations for Configuring your SAM-Q-SDI

The following recommendations are by no means exhaustive but are intended to act as a quick step by step guide to getting your SAM-Q-SDI up and running a.s.a.p.

1. In the **Network Setting Menu**, enter a unique name for your SAM-Q-SDI. This could be based on its location or position within a facility (i.e. EDIT 1, MCR 2), or its owner (DAVE, FRED, BOB). Applying a unique name to your SAM-Q-SDI will help identify the unit to a) the user, b) over an Ethernet network (i.e. when using SAM-Q-ADMIN or when accessing Loudness Data), c) when using SAM- Q-EDIT and d) when contacting TSL Support.
2. Check the **License Menu** to ensure that the SAM-Q-SDI has the License options you require. If not, please contact TSL Support so that these can be installed.
3. In the **Inputs Menu**, make sure that the BNC Inputs are set as required.
4. In the **Mode Permission Menu**, Disable any Operational Modes that will not be required to meet the requirements of the application, task or user.
5. In the **Mix Permissions Menu**, disable those MIX Groups not required to meet the requirements of the application, task or user.

*For further information on SAM-Q-ADMIN and SAM-Q-EDIT, please contact TSL Support.*

## Configuring the SAM-Q-SDI

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The SAM-Q-SDI Configuration Menus have been split into 3 sections:

### [The User Menu \(pages 36 and 37\)](#)

This top-level menu is available to all users of the SAM-Q-SDI.

The User Menu allows non-critical changes to be made to the system configuration such as the brightness of the front panel displays and the ability to select Operational Modes that have been Enabled (see page 39).

The User Menu also provides information about the SAM-Q-SDI itself, including its serial number, MAC address and software version, which you may need to provide should you need to contact TSL Support.

The User Menu also includes System Status Information including SDI, MADI and AES signal statuses.

### [The System Setup Menu \(pages 38 to 64\)](#)

The System Setup Menu is only accessible to those users who have knowledge of the SAM-Q-SDI PIN Code.

TSL recommends that the PIN Code is only shared with those responsible for the maintaining operations (typically System Administrators, Engineering and Support staff).

The System Setup Menu provides access to those settings and parameters that may need to be changed occasionally, such as Operator Permissions or the assignment of audio channels to Mix Groups and Loudness Probes.

### [The Advanced Setup Menu \(pages 65 to 81\)](#)

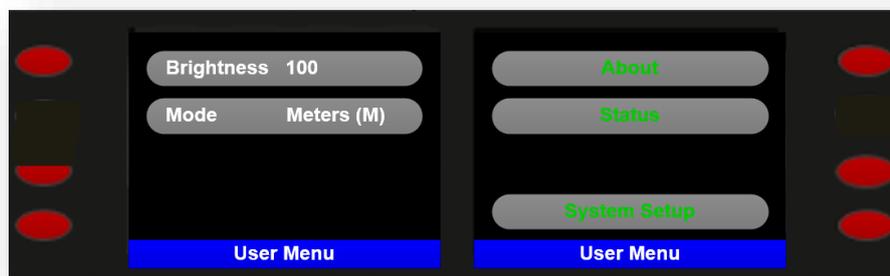
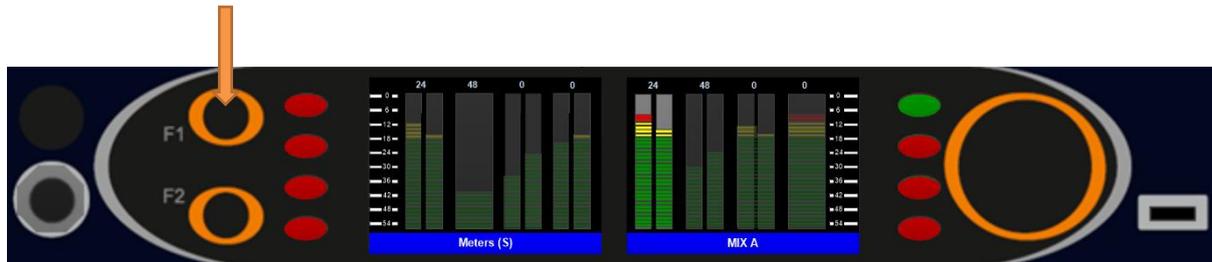
The Advanced Setup Menu is only accessible to those users who have knowledge of the SAM-Q-SDI PIN Code.

The Advanced Setup Menu provides access to those settings and parameters that may be needed very rarely, such as Network Settings, the adding of optional licenses or the setting of the unit PIN code.

## The User Menu

The User Menu can be freely accessed from any Operational Mode simply by pushing and holding the F1 Function button for 1 second.

Access to the User Menu is available to everyone and is not PIN protected.



To change a setting, simply press the corresponding Source Select button, enter the new value by rotating the large encoder and then apply the change either by pressing the source select button or by pushing the large encoder to finish.

The User Menu also provides access to three sub-menus (*About, Status and System Setup*). To enter any of these sub-menus simply press the corresponding Source Select button the chosen sub-menu.

Source Select Button	Menu Item	Description
1	Brightness	Allows the Brightness of the front panel displays to be adjusted.
2	Mode	Allows the current Operation Mode to be changed*
5	About	Enters About sub-menu
6	Status	Enters System Status sub-menu
8	System Setup	Enters System Setup sub-menu*

To return to the previous Menu, simply press the F1 Function button.

To exit all Menus and return to normal operation push and hold the F1 Function button for 1 second.

\* Access to the System Setup Menu is restricted by a PIN Code (see page 38 of this Manual)

The About sub-menu provides information about your SAM-Q-SDI, including:

- Unit Name
- IP address
- Serial Number
- MAC Address
- Software Version.

The Support Information sub-menu provides extra information about your SAM-Q-SDI, all of which can prove useful should you need to contact TSL for product support, including:

- Boot Information
- HW Version
- Firmware 1 Version
- Firmware 2 Version
- TSL Website Info

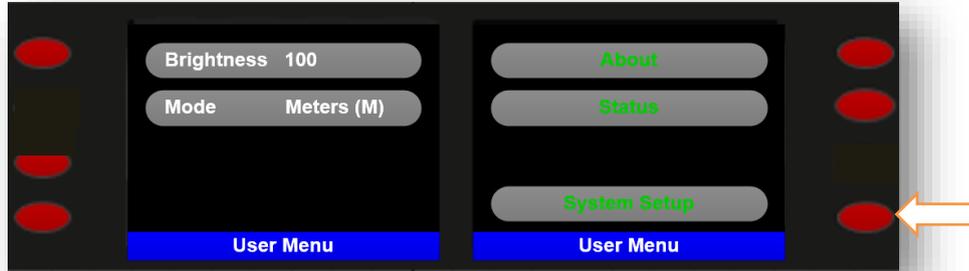
The Status sub-menu provides live Status Monitoring of your SAM-Q-SDI, including:

- The currently selected mode for BNC Inputs 1 and 2 (i.e. SDI or MADi)
- The video format currently being monitored (when either BNC input is set to SDI)
- The number of MADi channels being received (when either BNC Input is set to MADi)
- The status of the AES Input
- The status of the Ethernet port

Please note that MADi functionality on the SAM-Q-SDI requires an optional license, details on licensing status as well as instructions on how to apply licenses can be found later in this manual.

## The System Setup Menu

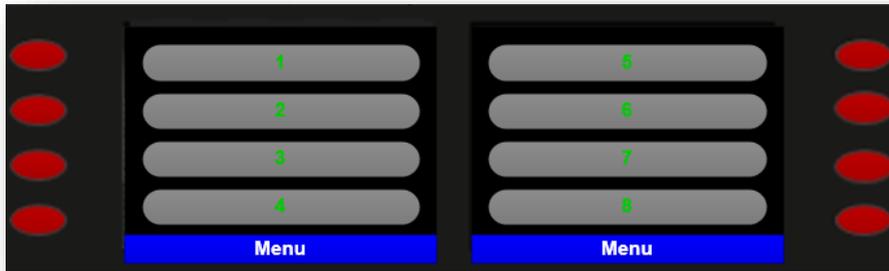
The System Setup Menu provides access to all settings and parameters required to configure the SAM-Q-SDI for a specific user, application or environment.



Accessing the System Setup Menu requires a 4-digit PIN code.

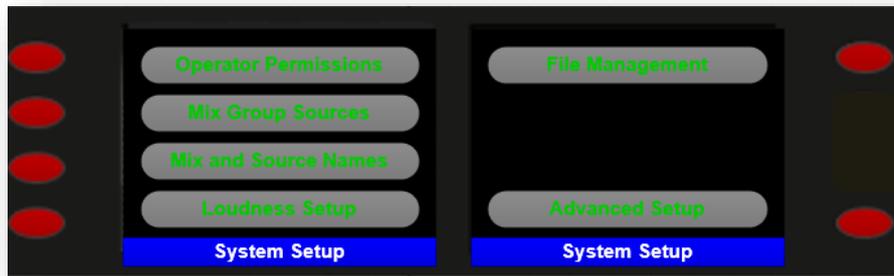
The default PIN code set at factory is 1 2 3 4

TSL recommends that you protect your SAM-Q-SDI configurations by setting your own PIN code (see page 76) and sharing it only with those responsible for managing and maintaining the SAM-Q-SDI.



Upon successful entry of the SAM-Q-SDI PIN Code, access to the System Setup Menus will be granted.

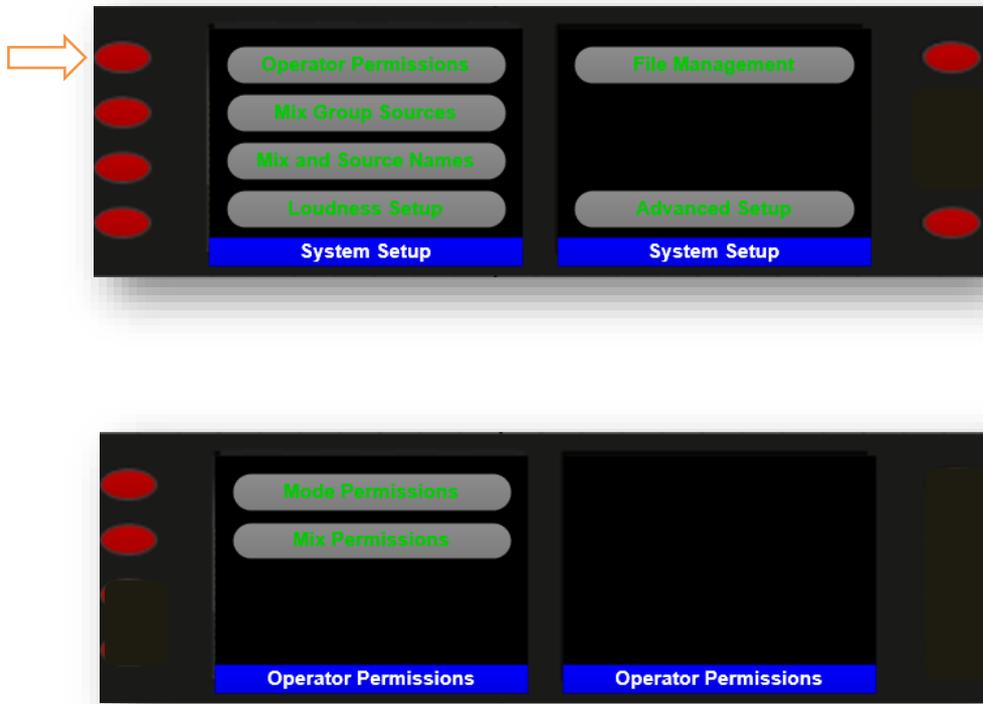
Upon successful entry of the SAM-Q-SDI PIN Code, access to the System Setup Menu is granted, allowing full access to all possible SAM-Q-SDI settings and parameters.



Source Select Button	Menu Item	Description
1	Operator Permissions	Accesses the Mode Permissions and Mix Permissions Sub-Menus
2	Mix Group Sources	Provides access to all 8 Mix Groups, allowing source assignment
3	Mix and Source Names	Accesses the Mix Names and Source Names Sub Menus
4	Loudness Setup	Provides access to all 8 Loudness Probes, allowing Probe configuration
5	File Management	Provides access to the Load Config and Save Config Sub-Menus
8	Advanced Setup	Provides access to further System Setup Sub-Menus

## The Operator Permissions Menu

The Operator Permissions Menu provides access to the Mode Permissions and Mix Permissions sub-menus.

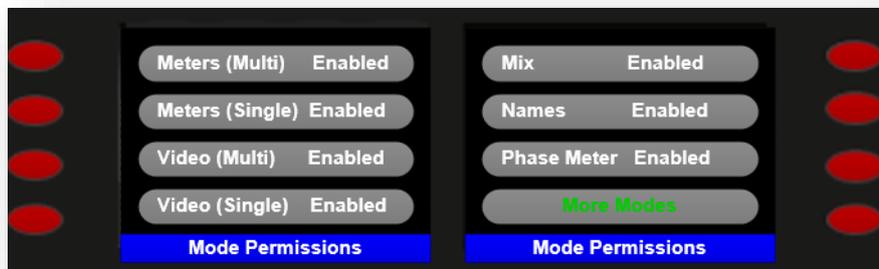


Source Select Button	Menu Item	Description
1	Mode Permissions	Accesses the Mode Permissions Sub-Menus
2	Mix Permissions	Accesses the Mix Permissions Sub-Menus

## The Mode Permissions Menu



By default, all Operational Modes are enabled at factory except for the optional licensed modes listed on Page 9 of this manual.



Source Select Button	Menu Item	Description
1	Meters (Multi)	Determines if Meters (M) Mode (see page 17) is available to the User
2	Meters (Single)	Determines if Meters (S) Mode (see page 19) is available to the User
3	Video (Multi)	Determines if Video (M) Mode (see page 21) is available to the User
4	Video (Single)	Determines if Video (S) Mode (see page 23) is available to the User
5	Mix	Determines if Mix Mode (see page 25) is available to the User
6	Names	Determines if Names Mode (see page 27) is available to the User
7	Phase Meter	Determines if Phase Meter Mode (see page 29) is available to the User
8	More Modes	Provides access to further Modes

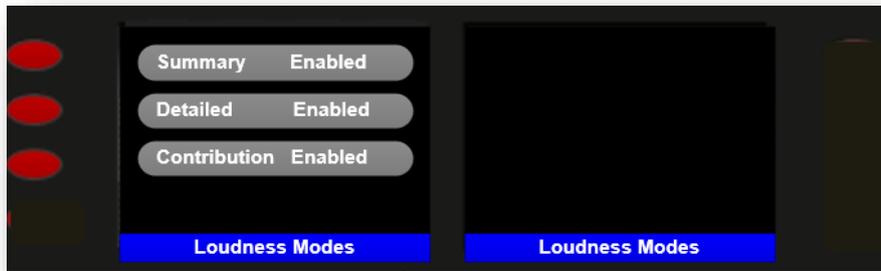
TSL recommends that the following be considered before deciding upon which Operational Modes should be Enabled or Disabled for the user:

What is the application?
Where will the unit be located?
Who is/are the user(s)?

In most instances, you may find that only 1 or 2 Operational Modes are required for your users

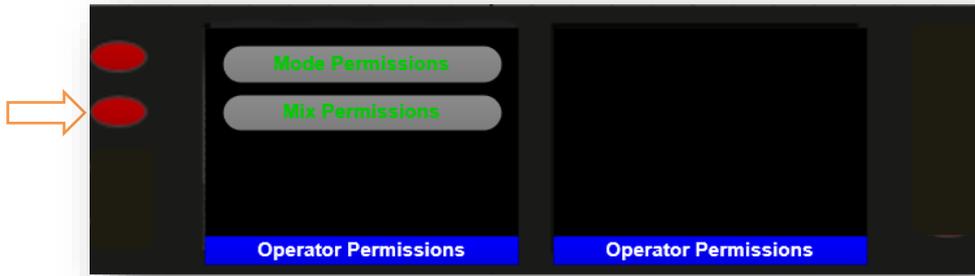


Source Select Button	Menu Item	Description
1	Loudness	Accesses the Permissions Menu for the optional Loudness Modes



Source Select Button	Menu Item	Description
1	Summary	Determines if Loudness Summary Mode (see page 31) is available to the User
2	Detailed	Determines if Probe Detail Mode (see page 32) is available to the User
3	Contribution	Determines if Probe Contributors Mode (see page 33) is available to the User

## The Mix Permissions Menu



The SAM-Q-SDI contains a total of 8 Mix Groups, each of which can be Disabled, or Enabled in the Mix Permissions menu as required.

By default, all 8 Mix Groups are enabled at factory and have been given the following default names:

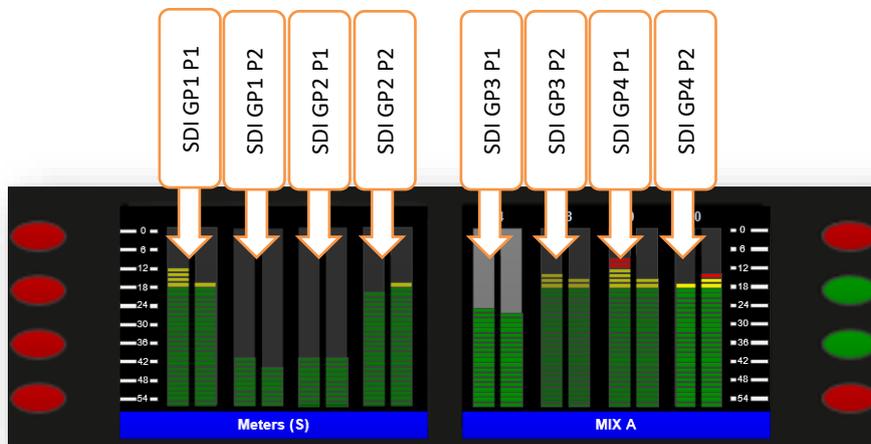
MIX A, MIX B, MIX C, MIX D, MIX E, MIX F, MIX G and MIX H.



For information on how to rename Mix Groups please refer to page 53.

Users of the SAM-Q-SDI can select any Enabled Mix Group by rotating the small encoder above the headphone output (see page 10), whilst Disabled Mix Groups will remain inaccessible to the User.

The example below shows the factory default audio source assignments for MIX A:



The table below provides a quick reference to those Mix Groups you may wish to Enable/Disable based on the input signal types presented to the SAM-Q-SDI when using the factory default source assignments.

Signal Types in Use	A	B	C	D	E	F	G	H
<b>BNC 1 SDI ONLY</b>	ENABLED	DISABLED						
<b>BNC 1 MADI ONLY</b>	ENABLED	ENABLED	ENABLED	ENABLED	DISABLED	DISABLED	DISABLED	DISABLED
<b>BNC 2 SDI ONLY</b>	DISABLED	DISABLED	DISABLED	DISABLED	ENABLED	DISABLED	DISABLED	DISABLED
<b>BNC 2 MADI ONLY</b>	DISABLED	DISABLED	DISABLED	DISABLED	ENABLED	ENABLED	ENABLED	ENABLED
<b>BNC 1 SDI + BNC 2 MADI</b>	ENABLED	DISABLED	DISABLED	DISABLED	ENABLED	ENABLED	ENABLED	ENABLED
<b>BNC 1 MADI + BNC 2 SDI</b>	ENABLED	ENABLED	ENABLED	ENABLED	ENABLED	DISABLED	DISABLED	DISABLED
<b>BNC 1 MADI + BNC 2 MADI</b>	ENABLED							

TSL recommends that any unused Mix Groups be set to Disabled to help provide the best possible user experience and ease of use.

Below are the factory default audio source assignments for each of the Mix Groups.

Mix A	Source Select Button	Audio Pair when BNC 1 is set to SDI	Channel # when BNC1 is set to MADI
	1	SDI Group 1 Pair 1	MADI Channels 1 and 2
	2	SDI Group 1 Pair 2	MADI Channels 3 and 4
	3	SDI Group 2 Pair 1	MADI Channels 5 and 6
	4	SDI Group 2 Pair 2	MADI Channels 7 and 8
	5	SDI Group 3 Pair 1	MADI Channels 9 and 10
	6	SDI Group 3 Pair 2	MADI Channels 11 and 12
	7	SDI Group 4 Pair 1	MADI Channels 13 and 14
	8	SDI Group 4 Pair 2	MADI Channels 15 and 16

Mix B	Source Select Button	Audio Pair when BNC 1 is set to SDI	Channel # when BNC1 is set to MADI
	1	Unassigned	MADI Channels 17 and 18
	2	Unassigned	MADI Channels 19 and 20
	3	Unassigned	MADI Channels 21 and 22
	4	Unassigned	MADI Channels 23 and 24
	5	Unassigned	MADI Channels 25 and 26
	6	Unassigned	MADI Channels 27 and 28
	7	Unassigned	MADI Channels 29 and 30
	8	Unassigned	MADI Channels 31 and 32

Mix C	Source Select Button	Audio Pair when BNC 1 is set to SDI	Channel # when BNC1 is set to MADI
	1	Unassigned	MADI Channels 33 and 34
	2	Unassigned	MADI Channels 35 and 36
	3	Unassigned	MADI Channels 37 and 38
	4	Unassigned	MADI Channels 39 and 40
	5	Unassigned	MADI Channels 41 and 42
	6	Unassigned	MADI Channels 43 and 44
	7	Unassigned	MADI Channels 45 and 46
	8	Unassigned	MADI Channels 47 and 48

Mix D	Source Select Button	Audio Pair when BNC 1 is set to SDI	Channel # when BNC1 is set to MADI
	1	Unassigned	MADI Channels 49 and 50
	2	Unassigned	MADI Channels 51 and 52
	3	Unassigned	MADI Channels 53 and 54
	4	Unassigned	MADI Channels 55 and 56
	5	Unassigned	MADI Channels 57 and 58
	6	Unassigned	MADI Channels 59 and 60
	7	Unassigned	MADI Channels 61 and 62
	8	Unassigned	MADI Channels 63 and 64

Mix E	Source Select Button	Audio Pair when BNC 2 is set to SDI	Channel # when BNC2 is set to MADI
	1	SDI Group 1 Pair 1	MADI Channels 1 and 2
	2	SDI Group 1 Pair 2	MADI Channels 3 and 4
	3	SDI Group 2 Pair 1	MADI Channels 5 and 6
	4	SDI Group 2 Pair 2	MADI Channels 7 and 8
	5	SDI Group 3 Pair 1	MADI Channels 9 and 10
	6	SDI Group 3 Pair 2	MADI Channels 11 and 12
	7	SDI Group 4 Pair 1	MADI Channels 13 and 14
	8	SDI Group 4 Pair 2	MADI Channels 15 and 16

Mix F	Source Select Button	Audio Pair when BNC 2 is set to SDI	Channel # when BNC1 is set to MADI
	1	Unassigned	MADI Channels 17 and 18
	2	Unassigned	MADI Channels 19 and 20
	3	Unassigned	MADI Channels 21 and 22
	4	Unassigned	MADI Channels 23 and 24
	5	Unassigned	MADI Channels 25 and 26
	6	Unassigned	MADI Channels 27 and 28
	7	Unassigned	MADI Channels 29 and 30
	8	Unassigned	MADI Channels 31 and 32

Mix G	Source Select Button	Audio Pair when BNC 2 is set to SDI	Channel # when BNC1 is set to MADI
	1	Unassigned	MADI Channels 33 and 34
	2	Unassigned	MADI Channels 35 and 36
	3	Unassigned	MADI Channels 37 and 38
	4	Unassigned	MADI Channels 39 and 40
	5	Unassigned	MADI Channels 41 and 42
	6	Unassigned	MADI Channels 43 and 44
	7	Unassigned	MADI Channels 45 and 46
	8	Unassigned	MADI Channels 47 and 48

Mix H	Source Select Button	Audio Pair when BNC 2 is set to SDI	Channel # when BNC1 is set to MADI
	1	Unassigned	MADI Channels 49 and 50
	2	Unassigned	MADI Channels 51 and 52
	3	Unassigned	MADI Channels 53 and 54
	4	Unassigned	MADI Channels 55 and 56
	5	Unassigned	MADI Channels 57 and 58
	6	Unassigned	MADI Channels 59 and 60
	7	Unassigned	MADI Channels 61 and 62
	8	Unassigned	MADI Channels 63 and 64

For information on how to change the default audio sources assigned to a particular Mix Group, please refer to the Mix Group Sources Menu on page 47.

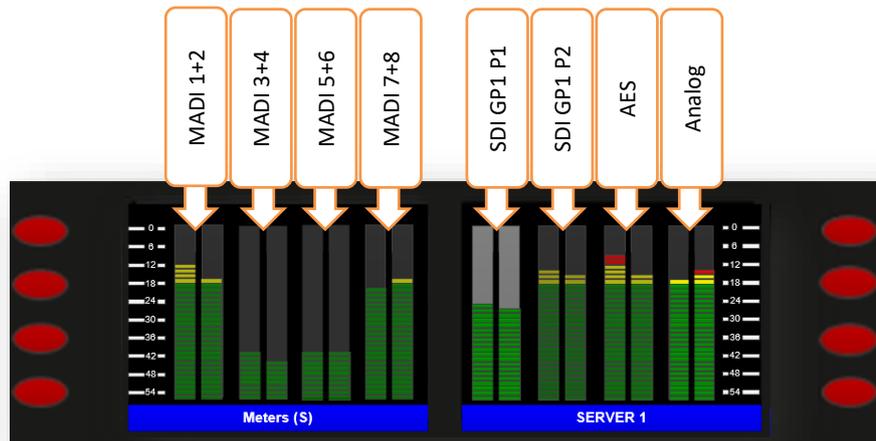
*Please note that signals applied to either the AES-3id or Analogue do not appear in any of the factory default Mix Groups. If you wish to monitor audio applied to either of these inputs, please add them to a Mix Group of your choice (see Mix Group Sources on page 47)*

## The Mix Group Sources Menu

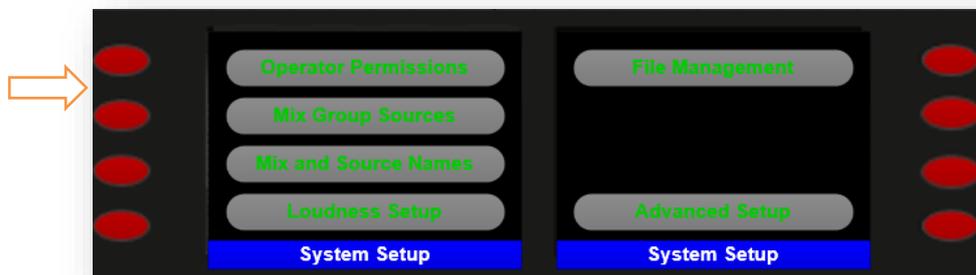
The Mix Group Sources menu allows any Mix Group to be selected for editing.

Having selected a Mix Group for editing, any audio source can then be mapped to your preferred Source Select button.

In the example below MADI, SDI, AES and Analog audio sources have been mapped to a single Mix Group.



Select the Mix Group Sources Menu to reveal the 8 Mix Groups.



Select the Mix Group you wish to edit. (Please note that factory default mix names are shown in this example)

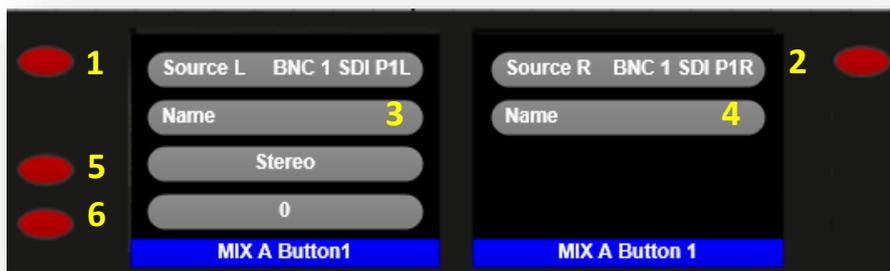


The sources currently belonging to the chosen Mix Group are now shown, alongside the Source Select buttons to which they are currently assigned. (Please note that factory default source names are shown in this example)

Select the Source Select button for which you wish to assign a new source.



The audio source currently assigned to the Source Select button chosen above is now shown, along with other properties (see below)

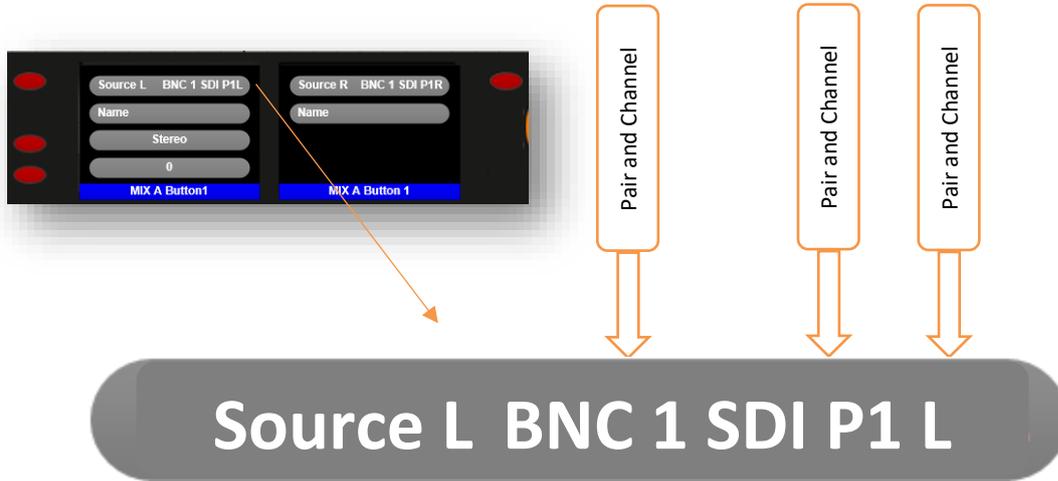


Item	Menu Item	Description
1	Source L	Allows the Left Channel of the audio source to be changed using the large rotary encoder. The Source name shown here represents the physical input/signal type and channels within (see below)
2	Source R	Allows the Right Channel of the audio source to be changed using the large rotary encoder. The Source name shown here represents the physical input/signal type and channels within (see below)
3		Shows the friendly name of the currently selected Left Channel. Source name shown here is user configurable (see below)
4		Shows the friendly name of the currently selected Right Channel. Source name shown here is user configurable (see below)
5	Stereo/Mono switch	Determines if the audio source mapped to the currently selected Source Select button is Mono or Stereo (see below)
6	Trim setting	Allows a trim level of -20dB, -10dB, +10dB or +20dB to be applied to the audio source(s) assigned to the currently selected Source Select button.

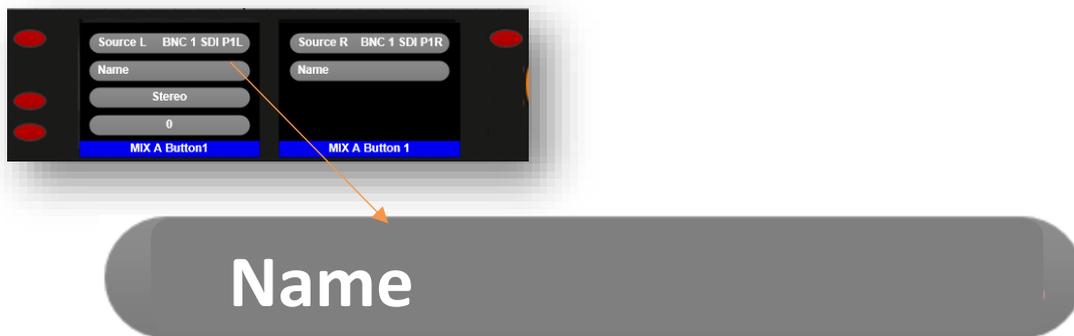
For every audio source, the SAM-Q-SDI assigns a fixed Engineering name (see Items 1 and 2 above) which cannot be edited by the user.

Each fixed name contains information about the physical input (i.e. BNC1, BNC 2, AES or Analog), the signal type (i.e. SDI or MADI) and the unique channel identifier belonging to the source.

Example:



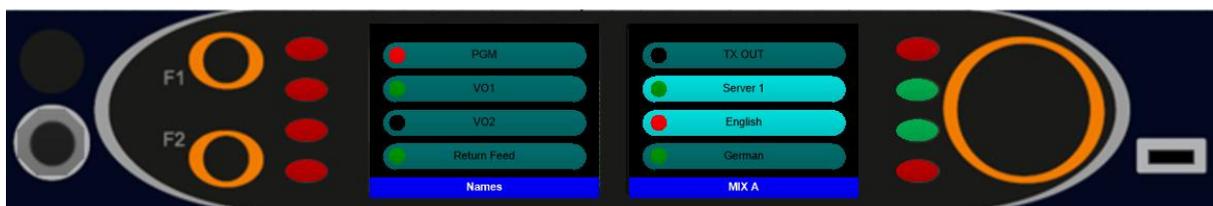
Immediately underneath this, any corresponding Friendly names are displayed.



For information on how to create and edit the friendly names of audio sources, please see page 54.

TSL recommends that you take time to create friendly names for each audio source as doing so can make the assignments of audio sources to Source Select buttons both quicker and easier.

Similarly, the addition of friendly names helps all users of the SAM-Q-SDI when using Operational Modes, most notably the Names mode (see below)

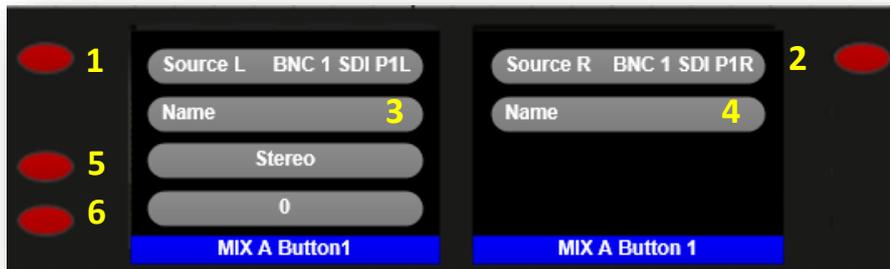


To change the audio source assigned to the left-hand channel of an audio source, push button 1 (see below) and use the large encoder to scroll through a list of the available audio sources.

Similarly, to change the audio source assigned to the right-hand channel of an audio source, push button 2 (see below) and use the large encoder to scroll through a list of the available audio sources.

Each of the 8 audio sources within an audio mix can comprise a single audio pair (typically used for Stereo sources) or a single audio channel (typically used for Mono sources).

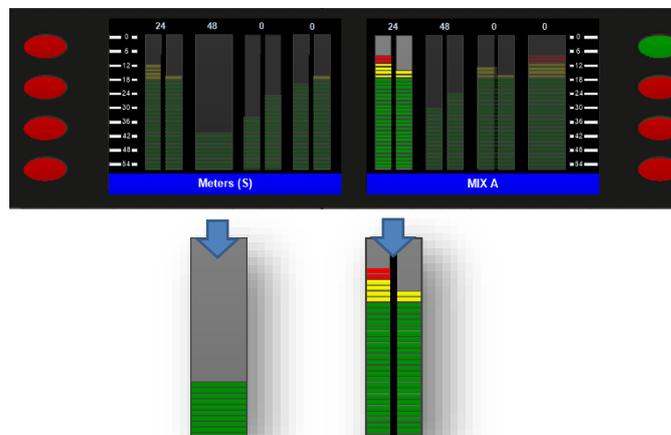
To change the currently selected audio source between Stereo and Mono modes, push button 5 (shown below) and use the large encoder to change the value as appropriate.



Selecting Stereo mode (Item 5) will cause a dual audio level meter to be displayed for the respective source in the chosen Mix Group. Both Left and Right sources (Items 1 and 2 above) will be audible when selected by the User (see below).

Selecting Mono mode (Item 5) will cause a single audio level meter to be displayed, with the source assigned to the Right-Hand channel being ignored. Only the Left-Hand channel will be audible when selected by the User (see below).

Both Stereo and Mono sources can be accommodated within the same Mix and can be easily recognised by the nature of their respective audio level meters (see below)



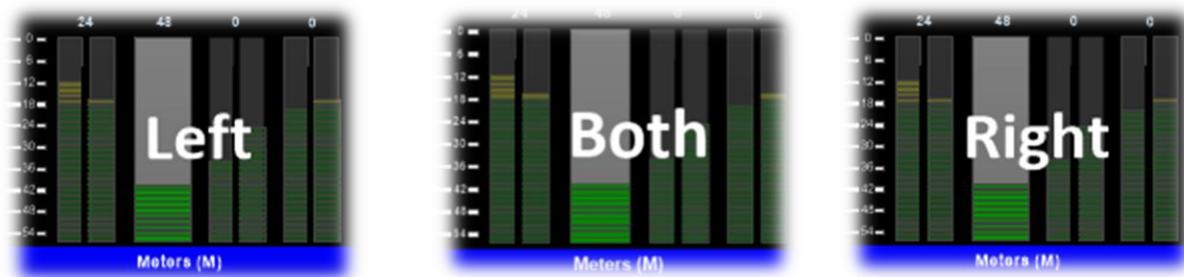
A trim adjustment is also available (Item 6) which is then applied to the audio sources shown in Items 1 and 2. Available trim values are -20dB, -10dB, 0dB, +10dB and +20dB.

When in Operation, Stereo audio sources are routed to the Left and Right loudspeakers, Headphones and Balanced Analogue Outputs.

However, rotating the small encoder whilst simultaneously holding the corresponding pair select button allows either the Left or Right hand audio channel of a Stereo pair to be isolated and sent to its respective loudspeaker, Headphone channel and Balanced Analogue Output.

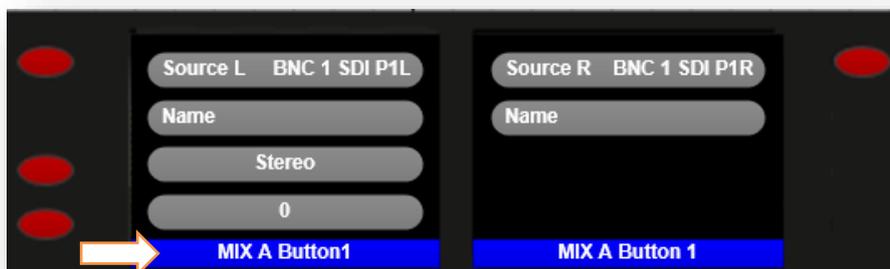
By default, Mono sources are also routed to both the Left and Right loudspeakers, Headphones and Balanced Analogue Outputs. However, rotating the small encoder whilst simultaneously holding the corresponding pair select button allows the Mono audio channel to be sent to the respective loudspeaker, Headphone channel and Balanced Analogue Output of your choice.

The SAM-Q-SDI confirms the user selection using on screen prompts as shown below:



*Please note that the ability to route audio channels to a specific Loudspeaker Output, Headphone channel and Balanced Analogue Output is not available if the Mix L/R setting in the Front Panel Controls Menu is set to 'Disabled' (see page 67 for further info)*

Please note that using the small rotary encoder, it is possible to select any Source Select button belonging to any Mix Group.



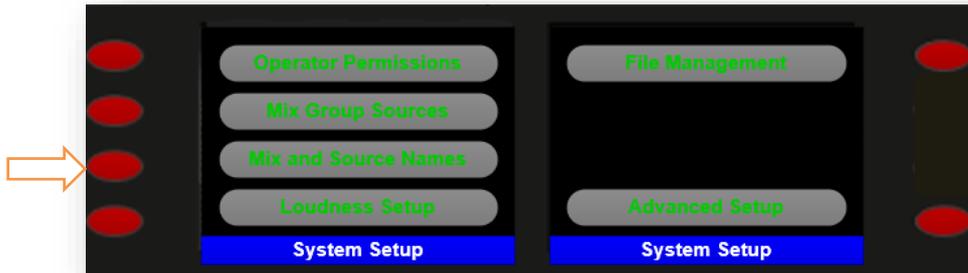
A total of 64 Source Select buttons are available for your chosen audio sources to be mapped to:

	Source Select Button							
<b>Mix Group</b>								
<b>MIX A</b>	1	2	3	4	5	6	7	8
<b>MIX B</b>	1	2	3	4	5	6	7	8
<b>MIX C</b>	1	2	3	4	5	6	7	8
<b>MIX D</b>	1	2	3	4	5	6	7	8
<b>MIX E</b>	1	2	3	4	5	6	7	8
<b>MIX F</b>	1	2	3	4	5	6	7	8
<b>MIX G</b>	1	2	3	4	5	6	7	8
<b>MIX H</b>	1	2	3	4	5	6	7	8

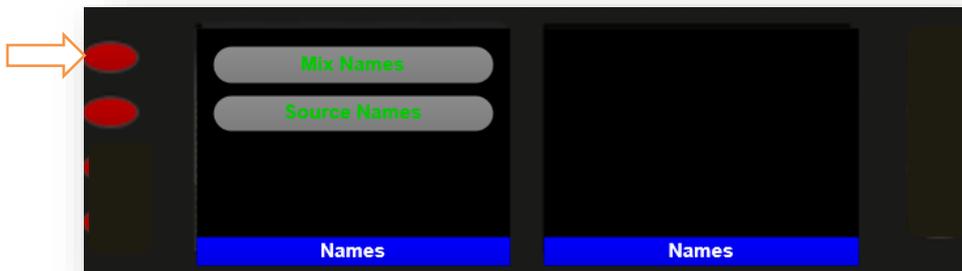
## The Mix and Source Names Menu

The Mix and Source Names menu allows you to:

- Rename any MIX Group
- Create a friendly name for any audio source



To change the name of a Mix Group, select Mix Names

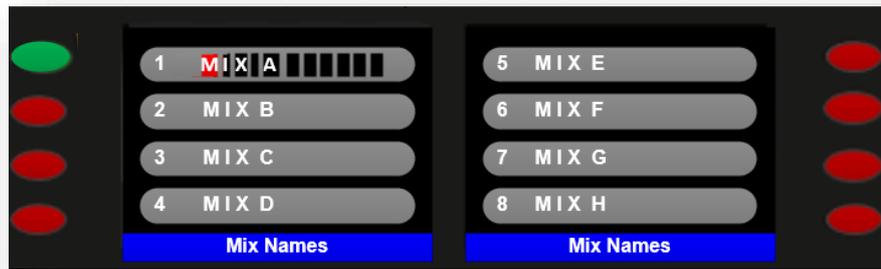


The current names of all 8 Mix Groups are then shown:

Select the Mix Group you wish to rename



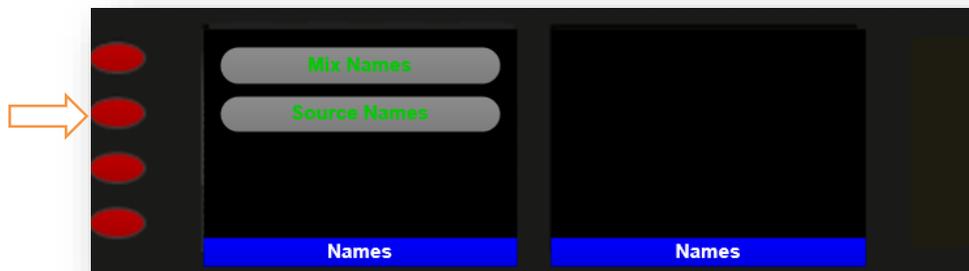
Your chosen Mix Group Name is then ready for editing.



You can now edit the existing Mix Group Name as follows:

Control	Function
Small rotary encoder	Moves the red cursor left and right
Large rotary encoder	Edits the character currently highlighted by red cursor
Small rotary encoder (push)	Toggles currently highlighted character between uppercase and lower case
Source Select button (Green)	Exits and commits the name change
Function 1 button	Exits name change entry and reverts to previous source name
Function 2 button	Deletes the character currently highlighted by the red cursor

To change the name of an audio source, select Source Names.

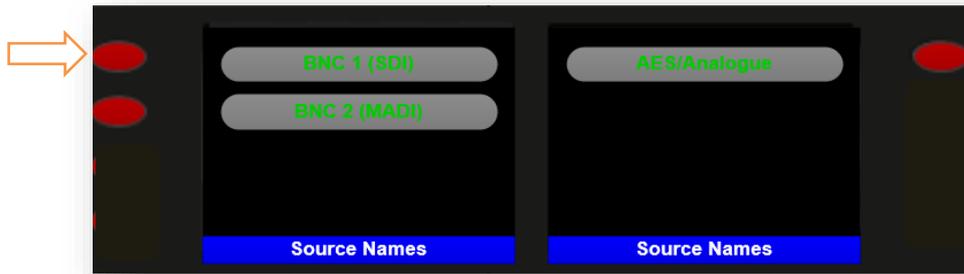


Please note that contents of the Source Names sub-menu shown below are dependent upon the current BNC Input settings (see page 70)

The example below shows a SAM-Q-SDI whose BNC Inputs have been set as follows:

BNC Input	Setting
1	SDI
2	MADI

Select a BNC Input containing the Sources you wish to change the Friendly Names of



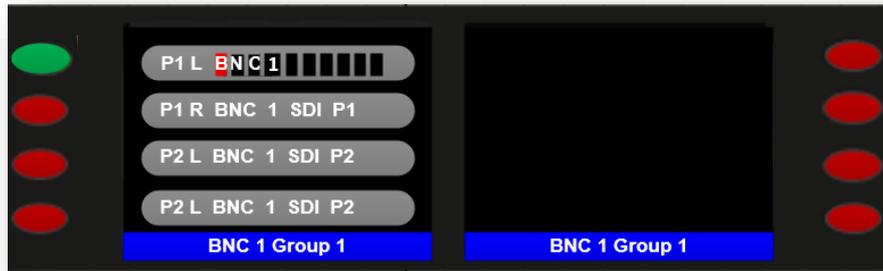
Select the SDI Group whose Source Friendly Names you wish to change:



Select the Source you wish to rename. Please note that the default Friendly Names shown are derived from the Engineering names (see page 14 for more information).



You can now edit the existing Source Name as follows:



Control	Function
Small rotary encoder	Moves the red cursor left and right
Large rotary encoder	Edits the character currently highlighted by red cursor
Small rotary encoder (push)	Toggles currently highlighted character between uppercase and lower case
Source Select button (Green)	Exits and commits the name change
Function 1 button	Exits name change entry and reverts to previous source name
Function 2 button	Deletes the character currently highlighted by the red cursor

## The Loudness Setup Menu

Please note that Loudness monitoring on the SAM-Q-SDI is a license option. The following instructions assume that the Loudness license is present in your SAM-Q-SDI.

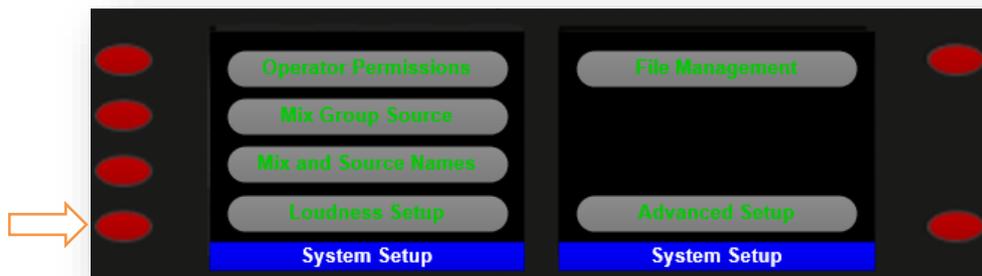
To check if your SAM-Q-SDI already has the Loudness license installed, please refer to page 74 of this manual.

For information on how to add SAM-Q-LOUD-LIC Loudness license to your SAM-Q-SDI, please refer to page 74 of this manual.

The optional SAM-Q-LOUD-LIC Loudness provides the following functionality:

- 8 x Independent Loudness Probes
- Real-Time Loudness Data (accessible over Ethernet)

To begin setup, select the Loudness Menu



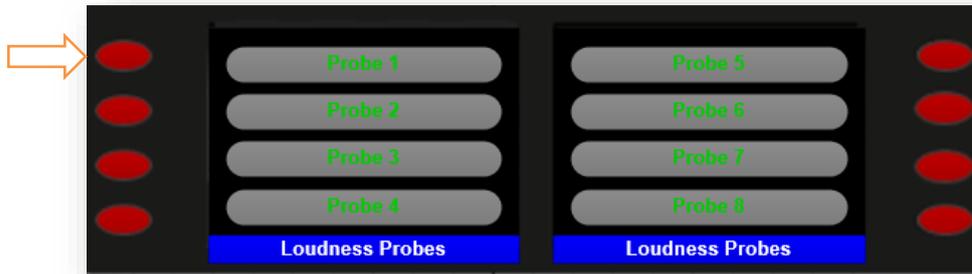
You will now be presented with the following:



Source Select buttons 5 and 6 shown above allow the Loudness Scale (either Lu or Lk) and the Loudness Target to be set (-23 in this example). These global settings apply to all eight loudness probes.

To configure a Probe, use Source Select button 1 to enter the Probes Menu

Select the Probe you wish to configure.



Select button 1 to select the Probe Type and rotate the Large Encoder to select the program configuration you would like the Probe to measure.

Below is a list of the available program configurations:

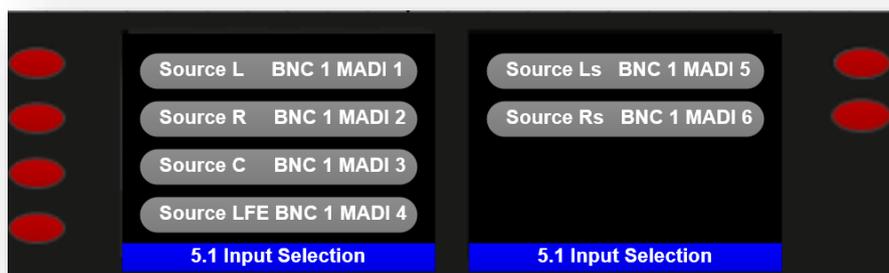
<b>1.0</b>	<b>5.1</b>	<b>7.1</b>	
<b>2.0</b>	<b>5.1 + 2</b>	<b>7.1 + 2</b>	<b>9.1 + 2</b>
<b>2.1</b>	<b>5.1 + 4</b>	<b>7.1 + 4</b>	<b>9.1 + 4</b>



Select button 2 to enter a name for your Probe (i.e. Movies 1 or News 24)

With the correct program configuration selected, press Source Select button 3 to select your chosen audio sources.

The example below shows the contents of the Inputs Menu when a 5.1 program configuration has been selected.



Select the audio channel you wish to assign an audio source to and rotate the Large Encoder to select the Audio Source you wish to assign to the chosen channel.

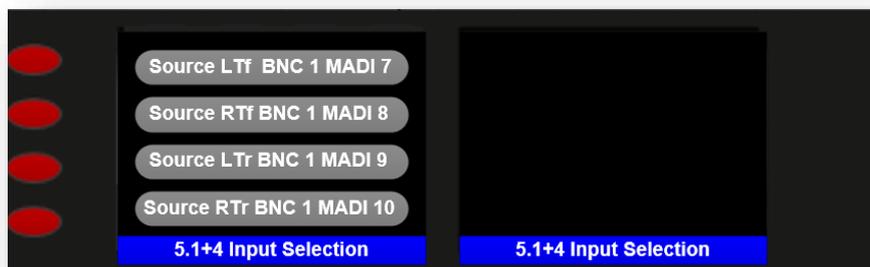
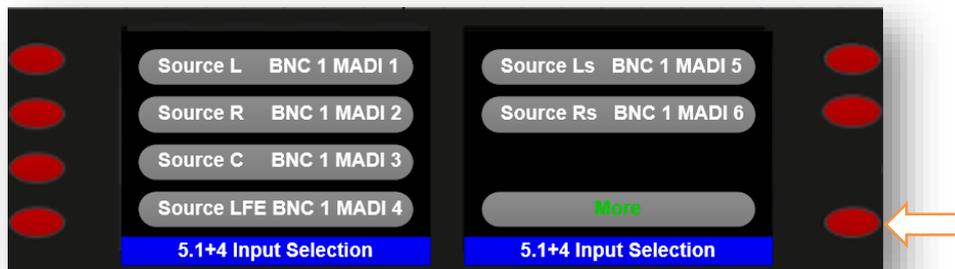


Please note that in this example, Friendly Names have not yet been assigned to the SAM-Q-SDI Audio Sources shown.

TSL recommends assigning Friendly Names to SAM-Q-SDI Audio Sources. For information on how to assign Friendly Names please refer to page 45.

The example below shows the contents of the Inputs Menu when a 5.1+4 program configuration has been selected.

Select the More Menu using Pair Select Button 8 to access the +4 Height Channels



Repeat these steps by configuring a Probe for each of the Programs you wish to measure for Loudness

Below is a table showing the Audio Channels for each of the possible Audio Programs:

<b>1.0</b>	<b>5.1</b>	<b>7.1</b>	
<b>2.0</b>	<b>5.1 + 2</b>	<b>7.1 + 2</b>	<b>9.1 + 2</b>
<b>2.1</b>	<b>5.1 + 4</b>	<b>7.1 + 4</b>	<b>9.1 + 4</b>

	1.0	2.0	2.1	5.1	7.1	5.1+2	5.1+4	7.1+2	7.1+4	9.1+2	9.1+4
<b>Program Input</b>											
<b>Left</b>											
<b>Right</b>											
<b>Centre</b>											
<b>LFE</b>											
<b>Left Surround</b>											
<b>Right Surround</b>											
<b>Left Rear Surround</b>											
<b>Right Rear Surround</b>											
<b>Left Wide</b>											
<b>Right Wide</b>											
<b>Left Top Front</b>											
<b>Right Top Front</b>											
<b>Left Top Middle</b>											
<b>Right Top Middle</b>											
<b>Left Top Rear</b>											
<b>Right Top Rear</b>											

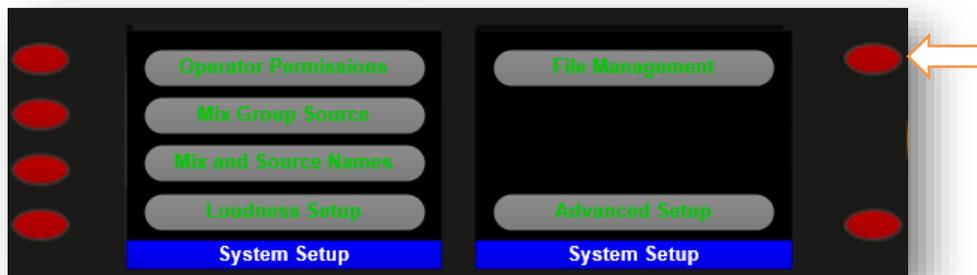
## The File Management Menu

SAM-Q-SDI system configurations can be saved both internally and externally. Up to 8 internal configurations can be stored and recalled using the internal store, whilst an unlimited number of SAM-Q-SDI system configurations can be saved to a USB thumb drive and then subsequently loaded into any one of the 8 internal stores.

The File Management Menu is also used to load and save system configurations to and from the SAM-Q-EDIT application.

*Please note that when loading configuration files from a USB thumb drive, filenames must not exceed 30 characters in length.*

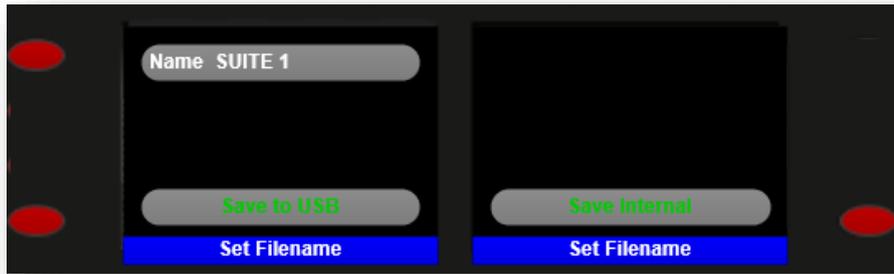
To access the File Management Menu, select File Management using Source Select button 5 from the System Menu.



Select Save Config to save the current state of the SAM-Q-SDI



The unit name of the SAM-Q-SDI appears by default



Push the Source Select button to enter a name of your configuration.



Control	Function
Small rotary encoder	Moves the red cursor left and right
Large rotary encoder	Edits the character currently highlighted by red cursor
Small rotary encoder (push)	Toggles currently highlighted character between uppercase and lower case
Source Select button (Green)	Exits and commits the name change
Function 1 button	Exits name change entry and reverts to previous source name
Function 2 button	Deletes the character currently highlighted by the red cursor

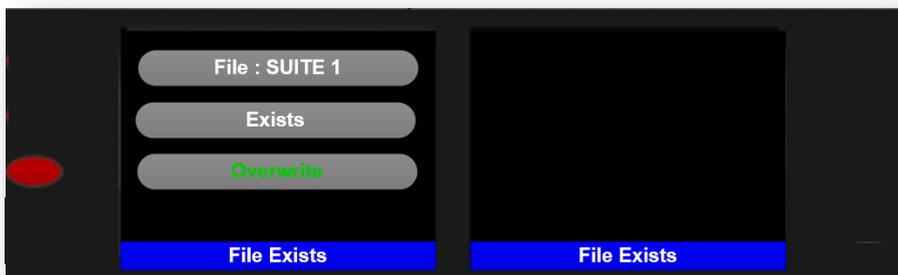
With the filename entered, use Source Select button 4 to Save the current SAM-Q-SDI configuration to a USB thumb drive.



If for any reason the SAM-Q-SDI is unable to Save the existing configuration to the USB thumb drive, the following message will appear.



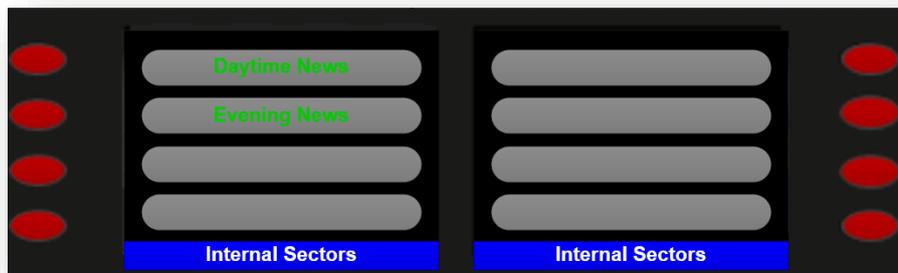
If you happen to enter a filename that already exists on the USB thumb drive, you will see the following message with the option to Overwrite the existing file.



To save the current configuration to an Internal Memory Store, use Source Select button 8



The 8 Internal Memory Stores are then shown

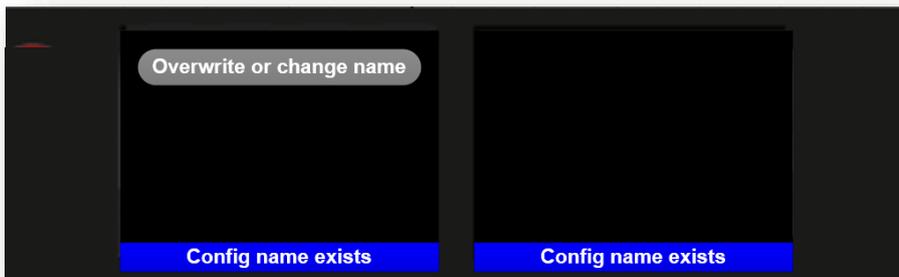


The example above shows two existing configuration files and 6 empty Memory Stores.

Selecting an empty Memory Store will save your new configuration into that Memory Store, whilst Selecting an occupied Memory Store will overwrite its existing contents with your new configuration.



Please note that the SAM-Q-SDI requires that all configuration names be unique. If you attempt to save a configuration using an existing filename, you will be prompted to overwrite or change the filename.



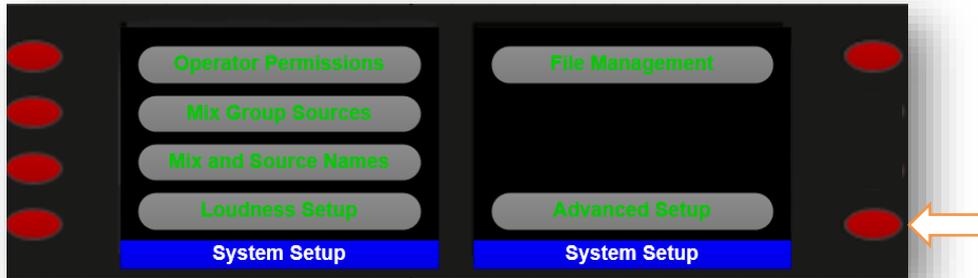
To overwrite, simply select the Memory Store containing the configuration file with the same filename. If you wish to save your configuration into any other Memory Store, you will be required to rename your file and give it a unique name.

## The Advanced Setup Menu

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The Advanced Setup Menu provides access to further settings and parameters required to configure the SAM-Q-SDI for a specific user, application or environment.

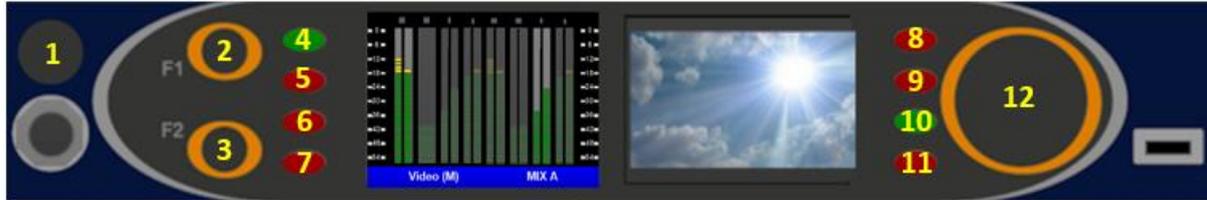
Access to the Advanced Setup Menu is provided within the System Setup Menu



The Advanced Setup Menu provides access to further settings and parameters, as shown on the following pages.

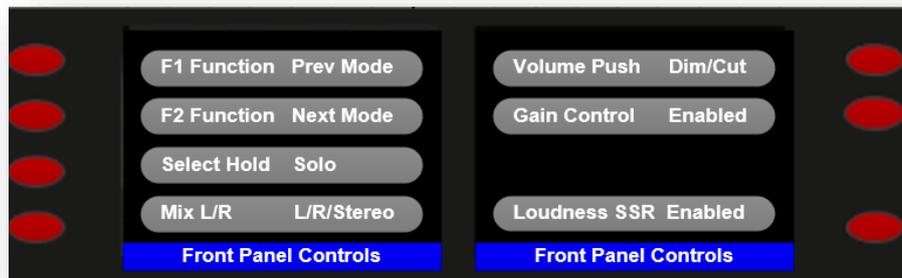
## The Front Panel Controls Menu

The Front Panel Controls Menu allows the default operations behaviour of all buttons and rotary encoders of the SAM-Q-SDI to be changed for a specific user, application or environment.



Please note that any changes made here affect operational modes only, the behaviours of the front panel controls remain unaffected when accessing the SAM-Q-SDI Menus.

The default operational behaviours can be seen on page 10.



To modify any of the default functions, simply select the control you wish to modify and use the large rotary encoder to select your preferred function.

### F1 Function

The default function assigned to the F1 function button is 'Previous Mode'.

When the SAM-Q-SDI has been configured to provide more than one Operational Mode (see Operator Permissions page 40), the Previous Mode function allows Users of the SAM-Q-SDI to switch to the previously selected Operational Mode using the F1 button.

### Alternative Functions that may be assigned to the F1 button

Function Name	Function Description
Next Mode	Selects the next available Operational Mode
Dim	Dims all audio outputs of the SAM-Q-SDI by -20dB
Cut	Mutes all audio outputs of the SAM-Q-SDI
Disabled	Disables the F1 button

F2 Function

The default function assigned to the F2 function button is 'Next Mode'.

When the SAM-Q-SDI has been configured to provide more than one Operational Mode (see Operator Permissions page 40), the Next Mode function allows Users of the SAM-Q-SDI to switch to the Next available Operational Mode using the F2 button.

Alternative Functions that may be assigned to the F2 button

Function Name	Function Description
Prev Mode	Selects the Previous Operational Mode
Dim	Dims all audio outputs of the SAM-Q-SDI by -20dB
Cut	Mutes all audio outputs of the SAM-Q-SDI
Disabled	Disables the F1 button

Select Hold Function

The Select Hold function is activated when any of the Source Select buttons are pressed and held.

When the SAM-Q-SDI has been configured to allow any of the following Operational Modes to be selected by the user (see Operator Permissions page 40), the Solo function allows Users of the SAM-Q-SDI to Solo any audio source whilst the corresponding Audio Select button is pushed and held.

Operational Modes supporting Solo function.

Meters (S)	Video (S)	Mix	Phase Meter
Meters (M)	Video (M)	Names	

Alternative Functions that may be assigned to when the Source Select buttons are pushed and held

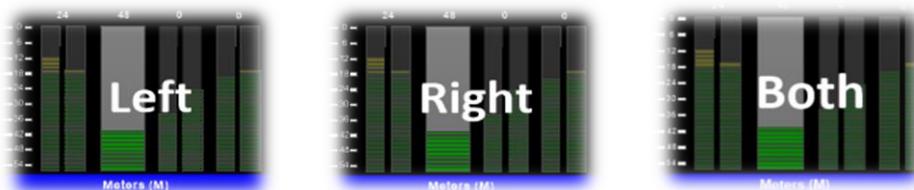
Function Name	Function Description
Disabled	Disables the Solo function

Mix L/R/Stereo Function

The Mix L/R function is activated when any of the Source Select buttons are pressed and held and the small rotary encoder is rotated

The Mix L/R function allows the following:

Any selected audio source comprising a single audio channel can be panned so that it is heard in the Left-Hand audio outputs of the SAM-Q-SDI, the Right-Hand audio outputs of the SAM-Q-SDI or both outputs simultaneously.



Similarly, any selected audio source comprising two audio channels can be isolated such that only the Left, Right or both channels are heard.



Operational Modes supporting the L/R/Stereo function.

Meters (S)	Video (S)	Mix	Phase Meter
Meters (M)	Video (M)	Names	

Alternative Functions that may be assigned when the Source Select buttons are pushed and held and the small encoder is rotated.

Function Name	Function Description
Disabled	Disables the L/R Stereo function.

#### Volume Push Function

The default function assigned when pushing the large rotary encoder is Dim/Cut.

Pushing the large rotary encoder in any operational mode Dims all audio outputs on the SAM-Q-SDI. With the Dim applied, pushing the large rotary encoder will then cause all audio outputs to be cut (muted). Pushing the large rotary encoder whilst cut is applied causes all audio outputs to return to normal.

Alternative Functions that may be assigned to Volume Push Function

Function Name	Function Description
Dim	Dims all audio outputs of the SAM-Q-SDI by -20dB
Cut	Mutes all audio outputs of the SAM-Q-SDI
Disabled	Disables the Volume Push Function

#### Gain Control Function

The default function assigned to the Gain Control function button 'Enabled'.

The Gain Control function is activated when any of the Source Select buttons are pressed and held and the large rotary encoder is rotated.

Operational Modes supporting the Gain Control function.

Meters (S)	Video (S)	Mix	Phase Meter
Meters (M)	Video (M)	Names	

Alternative Functions that may be assigned to the Gain Control function

Function Name	Function Description
Disabled	Disables the Gain Control function from all modes except Mix Mode

Loudness SSR Function

The Loudness SSR function is activated when any the following Source Select buttons are pressed when using the Loudness Detail Mode as follows:

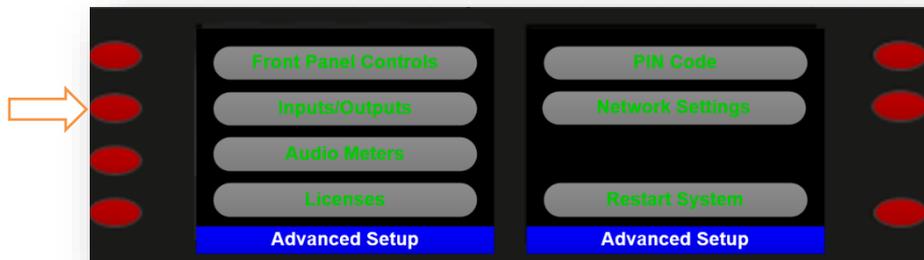
Source Select Button 5	Starts Loudness Measurement
Source Select Button 6	Stops Loudness Measurement
Source Select Button 7	Resets Loudness Measurement

Alternative Functions that may be assigned to the Gain Control function

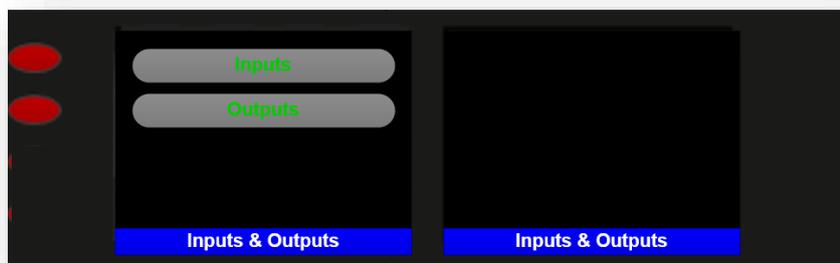
Function Name	Function Description
Disabled	Disables the Loudness Start, Stop and Reset functions.

## The Inputs/Outputs Menu

The Inputs/Outputs Menu allows the properties of the physical Inputs and Outputs of the SAM-Q-SDI to be configured as required.



### The Inputs and Outputs Sub-Menus



Selecting the Inputs Sub-Menu allows physical inputs BNC 1 and BNC 2 to be configured to work with either SDI or MADI Sources as required.

In the example below, BNC Input 1 has been configured to work with SDI sources, whilst BNC Input 2 has been configured to accept MADI sources.



To switch either BNC Input between SDI and MADI, select the Audio Select button for the corresponding BNC Input and rotate the large encoder.

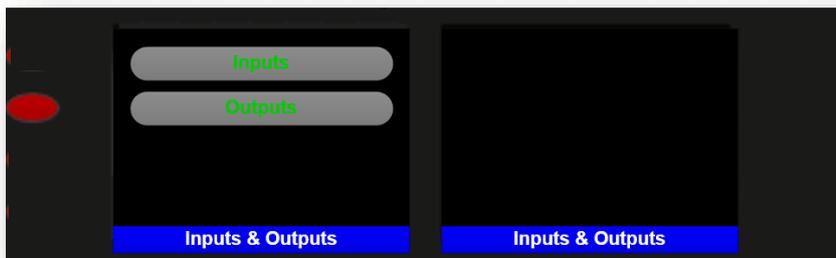
To apply the change, either push the large encoder or press the corresponding Audio Select button.

Please note that the ability to support MADi audio sources requires the optional SAM-Q-MADI-LIC license.

To determine if your SAM-Q-SDI already has this license installed, please refer to page 74.

To install SAM-Q-SDI licenses, please refer to page 74.

Selecting the Outputs Sub-Menu allows the physical outputs configured.



Output settings include those that affect the SAM-Q-SDI’s internal loudspeakers, the XLR Outputs and the SDI and HDMI Outputs.

To make a change, simply select the Audio Select button and rotate the large encoder to select the new value. The apply the new value, simply push the large encoder or press the Audio Select button.



### Internal Speakers

Function Name	Function Description
Mute on H'Phone	Mutes the Internal Loudspeakers only when Headphones are inserted.
Off	Sets the Internal Loudspeakers to Off at all times.
On	Sets the Internal Loudspeakers to On at all times.

### XLR Outputs

Function Name	Function Description
Mute on H'Phone	Mutes the XLR Outputs only when Headphones are inserted.
Off	Sets the XLR Outputs to Off at all times.
On	Sets the XLR Outputs to On at all times.

Function Name	Function Description
Reference	Sets the XLR Outputs to Reference level
Attenuated	Attenuates the XLR Outputs by 20dB

Function Name	Function Description
Fixed	Sets the XLR Outputs to fixed level (setting of large rotary encoder is ignored)
Variable	Sets the XLR Outputs to variable (setting of large rotary encoder is followed)

Selecting the Video Output Sub-Menu, determines which video signal appears on both the BNC Output and HDMI Outputs of the SAM-Q-SDI.

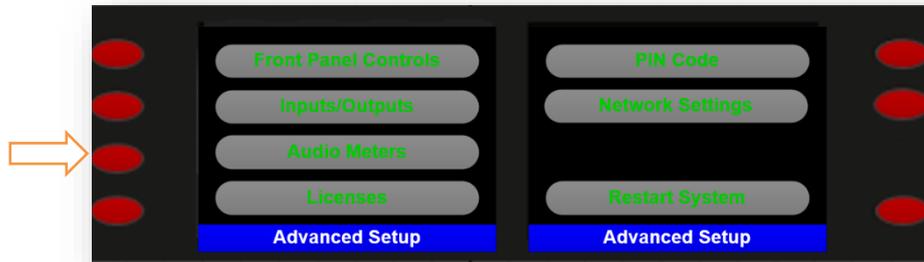


Each Mix Group can be set to route any SDI video signal present at either BNC Input 1 or BNC Input 2 to the BNC SDI Output whenever the user selects that Mix Group.

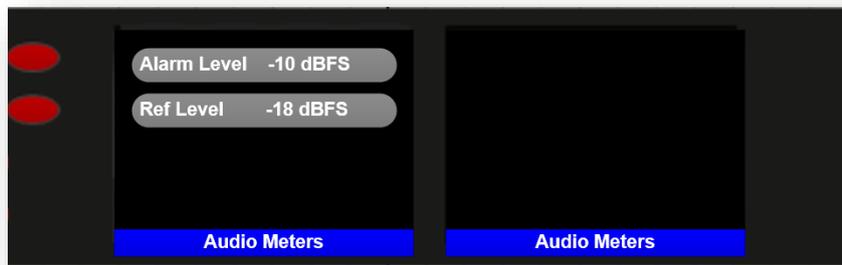


## The Audio Meters Menu

The Audio Meters Menu allows the Alarm and Reference levels to be set on the SAM-Q-SDI.

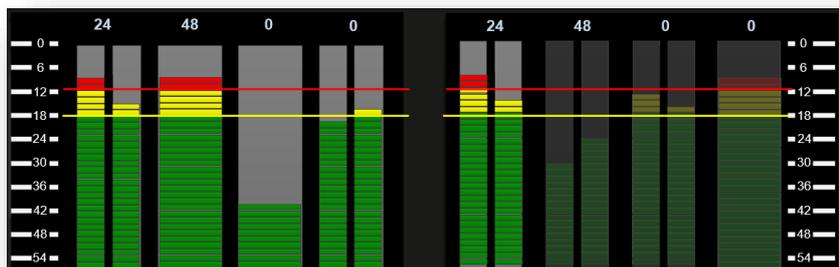


The default values are -10dBFS for Alarm and -18dBFS for Reference.



To adjust either setting, simply push the corresponding Source Select button and use the large rotary encoder to enter the required value. To apply the new setting simply push the large encoder or the corresponding Source Select button once more.

The Alarm and Reference levels are represented by horizontal markers in all Operational Modes containing audio level meters.



Operational Modes containing audio level meters can be seen in the table below:

Meters (M)	Video (M)	Phase Meter
Meters (S)	Video (S)	Probe Contributors

## The Licenses Menu

The Licenses Menu can be used to check the current license status of your SAM-Q-SDI and to load any optional licenses purchased from TSL.

When requesting a license option from TSL, you will be asked for the Device ID so that the license may be generated. The Device ID is unique to your SAM-Q-SDI and is based on its MAC address.

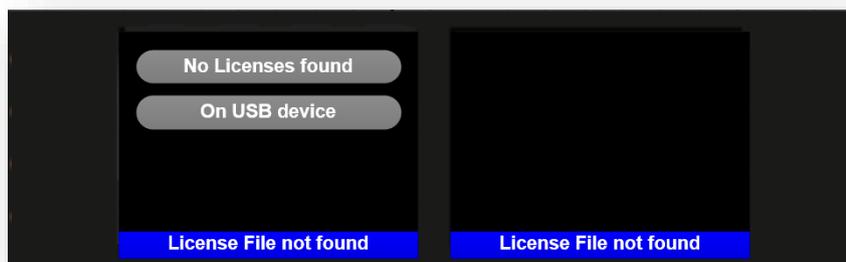
The example below shows a SAM-Q-SDI with a Device ID of 5410EC0B6A75.



To load a license, simply copy the file supplied by TSL into the root directory of a USB thumb drive, insert it into the front panel of the SAM-Q-SDI and select 'Add License from USB' using Source Select button 1.

The license will then be loaded, and the corresponding function (MADI or LOUDNESS) will be reported as being Licensed.

If the SAM-Q-SDI fails to detect a valid license file, the following error message will be displayed.



If the SAM-Q-SDI fails to detect your USB thumb drive, the following error message will be displayed.



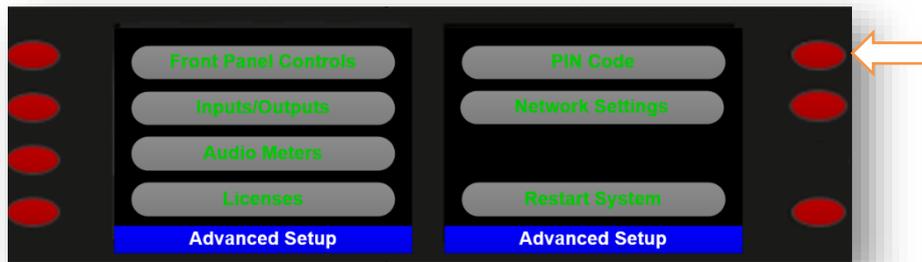
*Please note that all SAM-Q-SDI license options are unique to the SAM-Q-SDI for which they have been generated. It is also not possible to remove or transfer licenses.*

## The PIN Code Menu

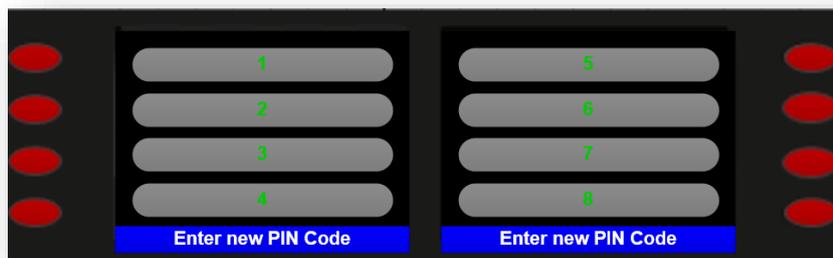
The PIN Code Menu is used to change the current PIN code of your SAM-Q-SDI.

The factory default PIN Code of all SAM-Q-SDI is 1 2 3 4 and TSL recommends that you change this to protect your SAM-Q-SDI configurations.

To change the PIN Code, push Source Select button 5

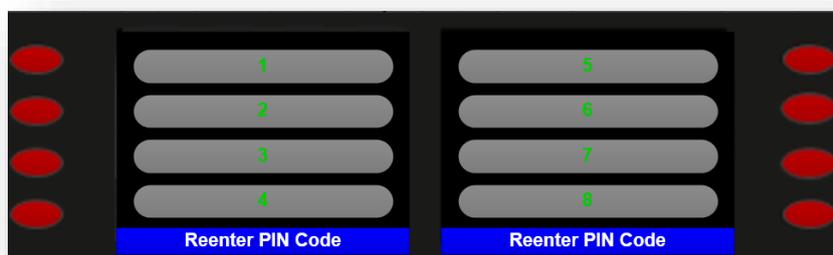


You will then be presented with the following screen:

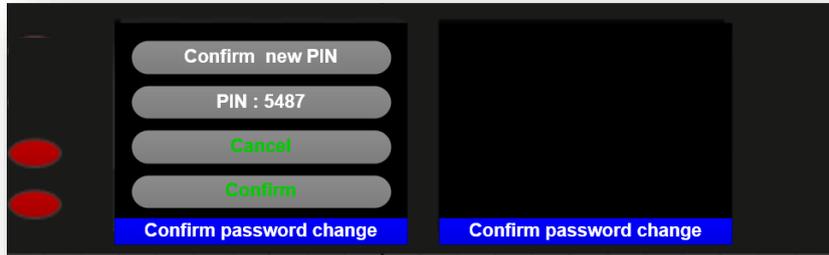


Enter your new 4-digit PIN Code.

You will then be asked to Re-Enter your 4-digit PIN Code.

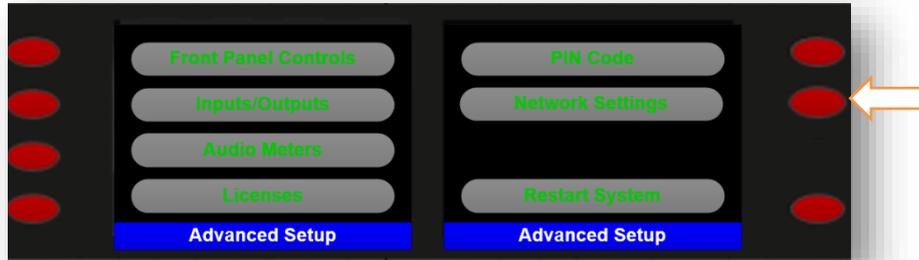


Your new PIN Code will then be displayed, and you will be asked to Confirm or Cancel.

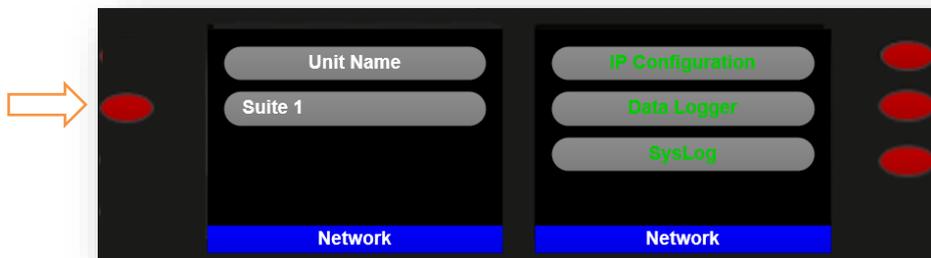


## The Network Settings Menu

To access Network Settings, push Source Select button 6.

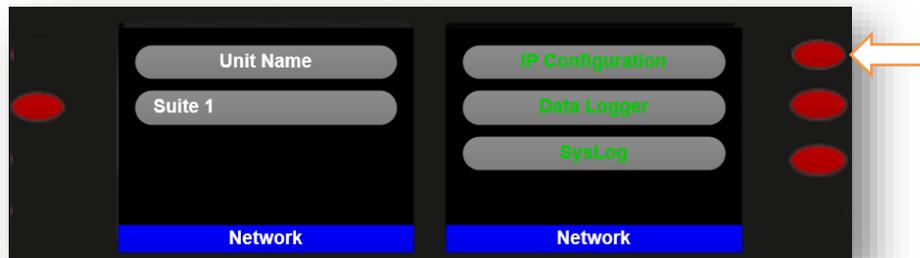


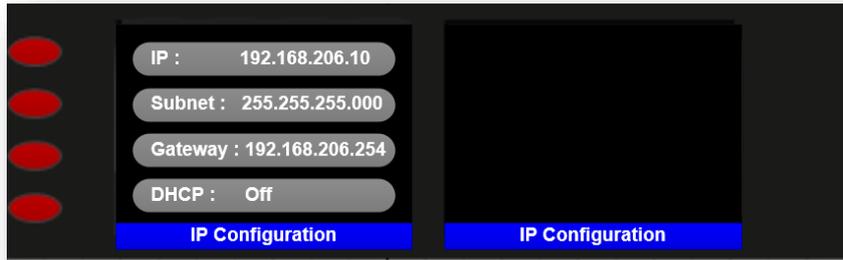
Push Source Select button 2 to enter a friendly name for your SAM-Q-SDI



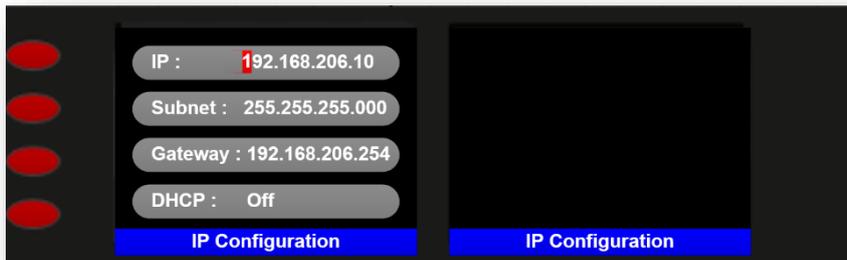
TSL recommends that you enter a friendly name for your SAM-Q-SDI to help identify it over a network.

Push Source Select button 5 to enter an IP address for your SAM-Q-SDI





Use Source select buttons 1 through to 3 select and enter the required IP address, Subnet and Gateway respectively.

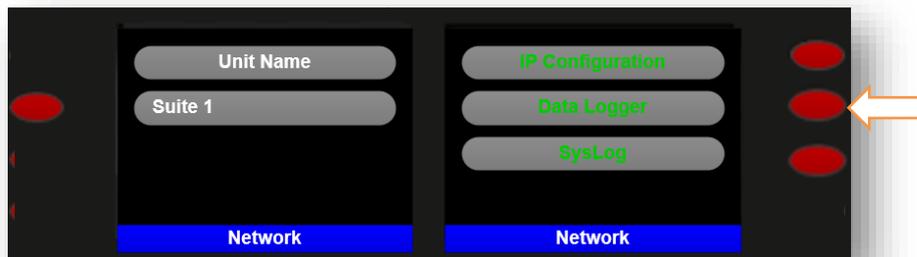


When selected, the first digit of the address will be highlighted ready for editing.

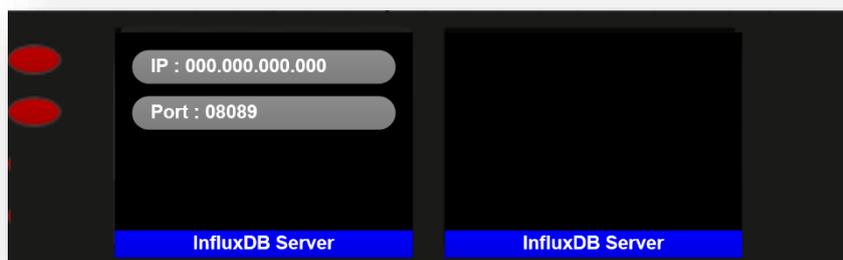
Use the large rotary encoder to adjust values and the small rotary encoder to move left and right throughout the address.

To apply the new IP address simply push the large encoder or the corresponding Source Select button.

If your SAM-Q-SDI is equipped with the optional SAM-Q-LOUD-LIC Loudness license, you can enter the IP address and Port number of an InfluxDB server on your network.

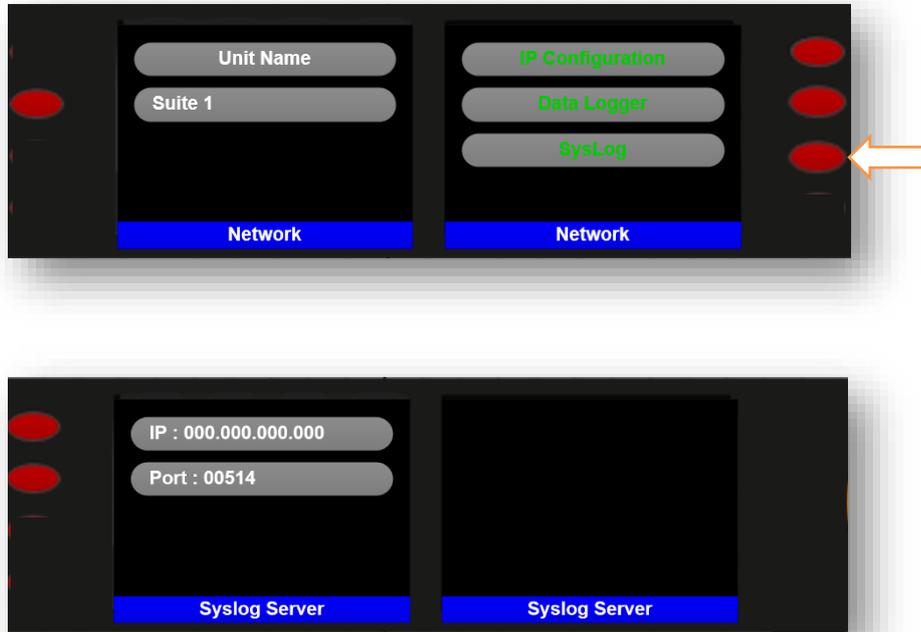


Loudness Data generated by all 8 Loudness Probes will be sent over the network to be logged by InfluxDB (see pages 82, 83 and 84) for further details.



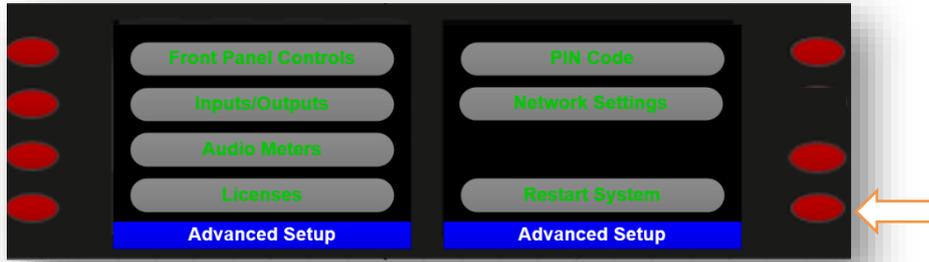
Entering a Syslog server address is purely for system diagnostic purposes only and should only be entered upon clear instruction from TSL.

Syslog data can help identify system issues.



## System Restart

The SAM-Q-SDI can be restarted directly from the front panel when required.



Pushing Source Select button 8 to Restart the System results in the following message:



Push Source Select button 7 to Reboot the SAM-Q-SDI

## Using the SAM-Q-SDI with InfluxDB and Grafana

Any SAM-Q-SDI equipped with the optional SAM-Q-LOUD LIC Loudness license can be configured to send Momentary, Short-Term and Integrated loudness data over an Ethernet network see page 79

The SAM-Q-SDI issues loudness data as UDP packets which can then be logged using an instance of InfluxDB.

To set up InfluxDB:

1. Visit <https://www.influxdata.com/> and install InfluxDB making sure to follow the installation instructions provided.
2. Make sure that UDP input is enabled in the influxdb.conf file. For further information on how to do this, search *influxdata.com udp protocol support*
3. The bind address value in influxdb.conf must match the Port setting as set on the SAM-Q-SDI (see below)

```
[[udp]]
enabled = true
bind-address = ":8089"
database = "tsl"
```

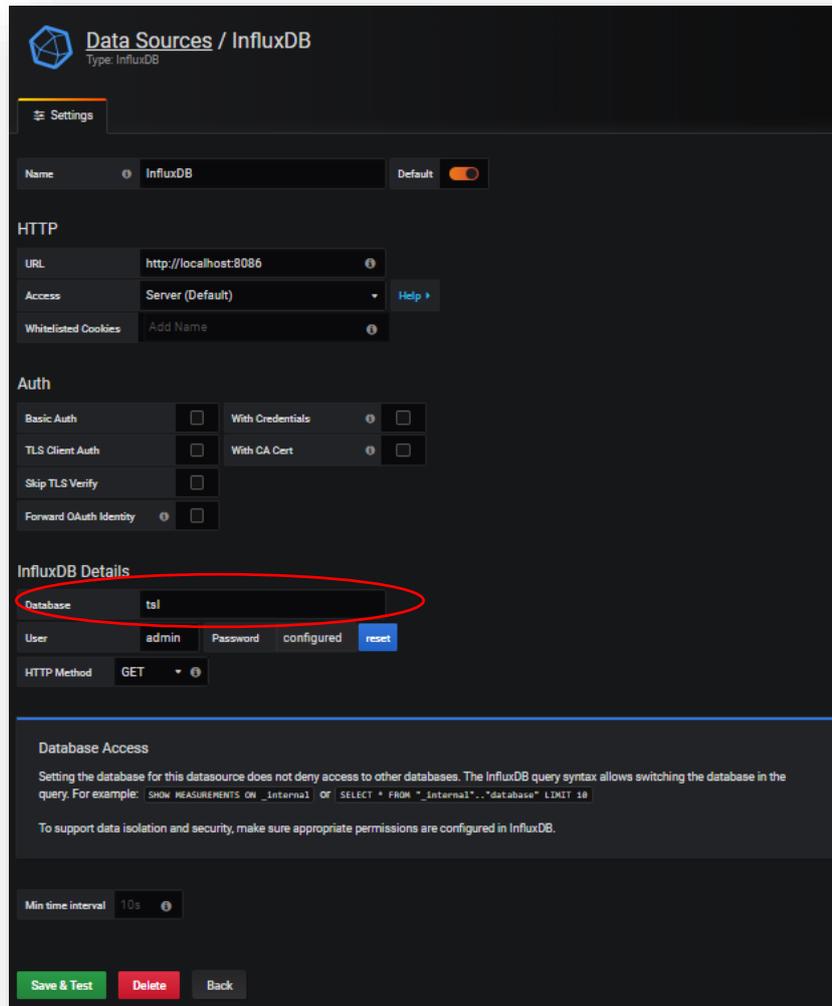
*Please note that the default Port setting for InfluxDB on the SAM-Q-SDI is 8089 (see page 79)*

4. Note that in the example above, all SAM-Q-SDI Loudness values will be written to a Database named *tsl*.
5. To display the Loudness data stored by InfluxDB, you can create your own custom dashboards using Grafana. For information on how to install Grafana, please see page 79



To set-up Grafana:

1. Visit <https://grafana.com/docs/grafana/latest/installation/> and install InfluxDB making sure to follow the installation instructions provided.
2. Visit <https://grafana.com/docs/grafana/latest/features/datasources/influxdb/> for instructions on how to set up Grafana with InfluxDB
3. To use the Loudness data generated by the SAM-Q-SDI, Grafana must Query the InfluxDB database. To query the InfluxDB example shown above: (database = "tsl") see below:



4. To display the Loudness data in Grafana, make sure to select Loudness measurement and then select the field or fields you wish to view.
5. Available Loudness fields are as follows:

Field Name	Description
integratedN	Integrated Loudness values where N = the number of the SAM-Q Loudness Probe
IraN	LRA Values where N = the number of the SAM-Q Loudness Probe
momentaryN	Momentary Loudness values where N = the number of the SAM-Q Loudness Probe
short-termN	Short-Term Loudness values where N = the number of the SAM-Q Loudness Probe

Query InfluxDB

**A**

FROM	default	loudness	WHERE	+
SELECT	field (integrated0)	mean ()		+
GROUP BY	time (\$_interval)	tag (program)		+
FORMAT AS	Time series			
ALIAS BY	\$tag_program integrated0			

**B**

FROM	default	loudness	WHERE	+
SELECT	field (lra0)	mean ()		+
GROUP BY	time (\$_interval)	tag (program)		+
FORMAT AS	Time series			
ALIAS BY	\$tag_program momentary0			

**C**

FROM	default	loudness	WHERE	+
SELECT	field (momentary0)	mean ()		+
GROUP BY	time (\$_interval)	tag (program)		+
FORMAT AS	Time series			
ALIAS BY	\$tag_program short-term0			

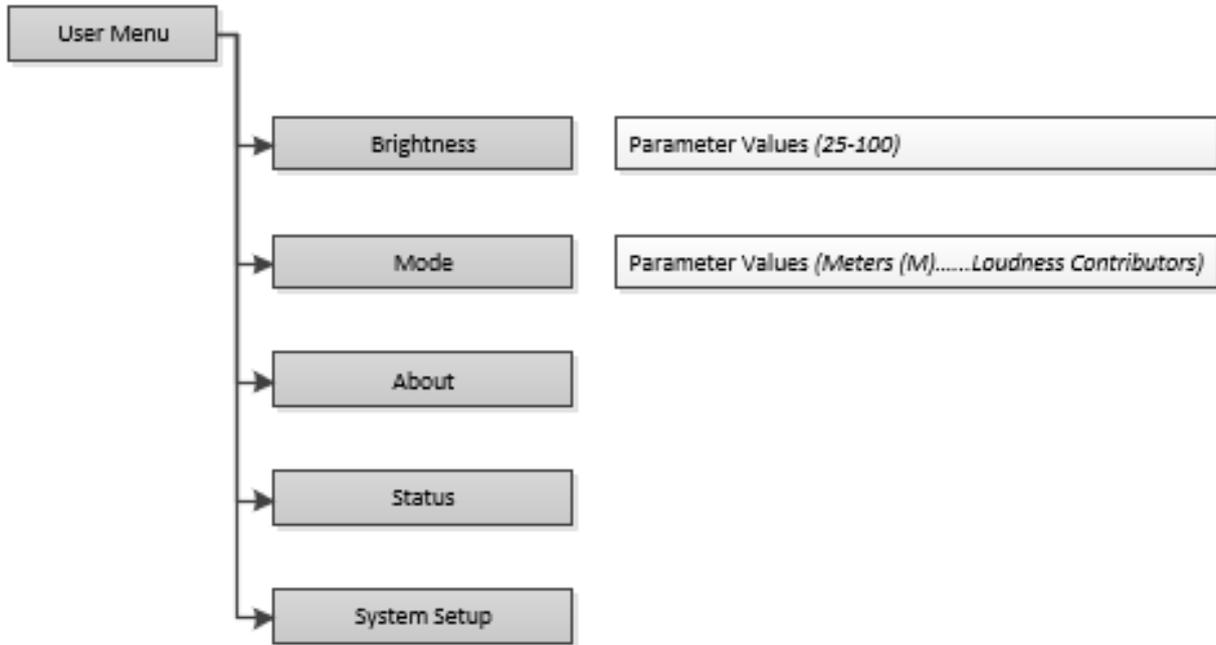
**D**

FROM	default	loudness	WHERE	+
SELECT	field (short-term0)	mean ()		+
GROUP BY	time (\$_interval)	tag (program)		+
FORMAT AS	Time series			
ALIAS BY	\$tag_program short-term0			

Please note that Loudness data can be filtered using the unit\_name tag where unit\_name = the friendly name of the SAM-Q-SDI providing the Loudness data (see page 78 on how to set the friendly name).

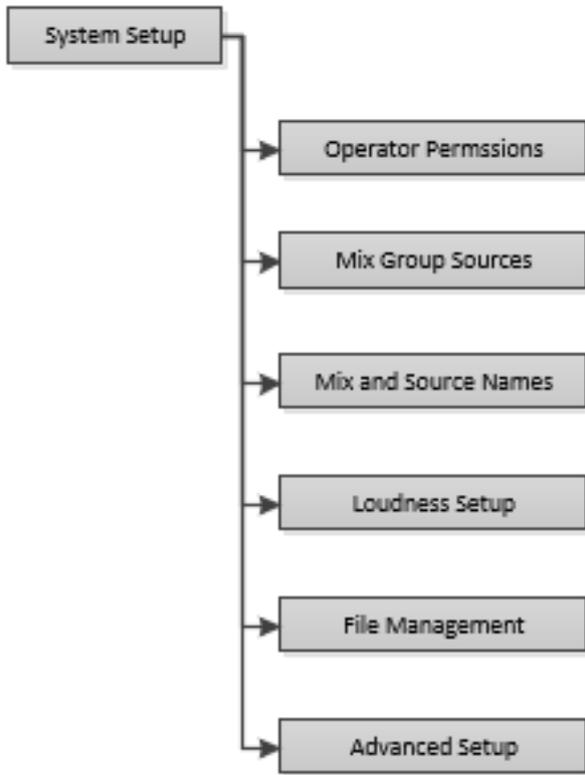
## The SAM-Q-SDI Menu Trees

### User Menu



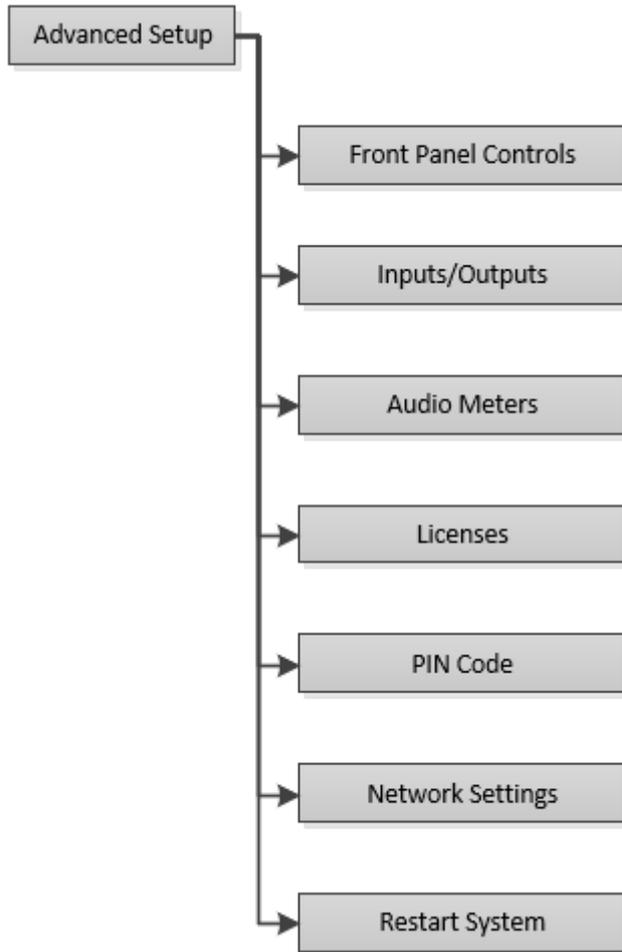
	<b>User Menu</b>
<b>Brightness</b>	Adjusts the brightness of the front panel displays
<b>Mode</b>	Allows all available operational modes to be selected
<b>About</b>	Displays System Information including IP Address, Software and Hardware Version numbers
<b>Status</b>	Displays System Status Information
<b>System Setup</b>	Enters the System Setup Menu (requires valid PIN code)

*System Setup Menu Tree*



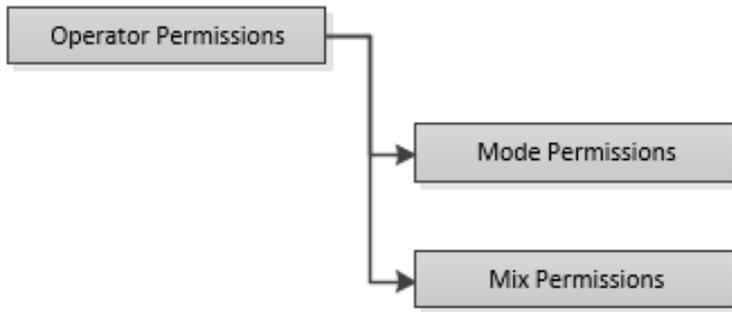
	<b>System Setup Menu</b>
<b>Operator Permissions</b>	Enters the Operator Permissions Menu
<b>Mix Group Sources</b>	Enters the Mix Group Sources Menu
<b>Mix and Source Names</b>	Enters the Mix and Source Names Menu
<b>Loudness Setup</b>	Enters the Loudness Setup Menu
<b>File Management</b>	Enters the File Management Menu
<b>Advanced Setup</b>	Enters the Advanced Setup Menu

*Advanced Setup Menu Tree*



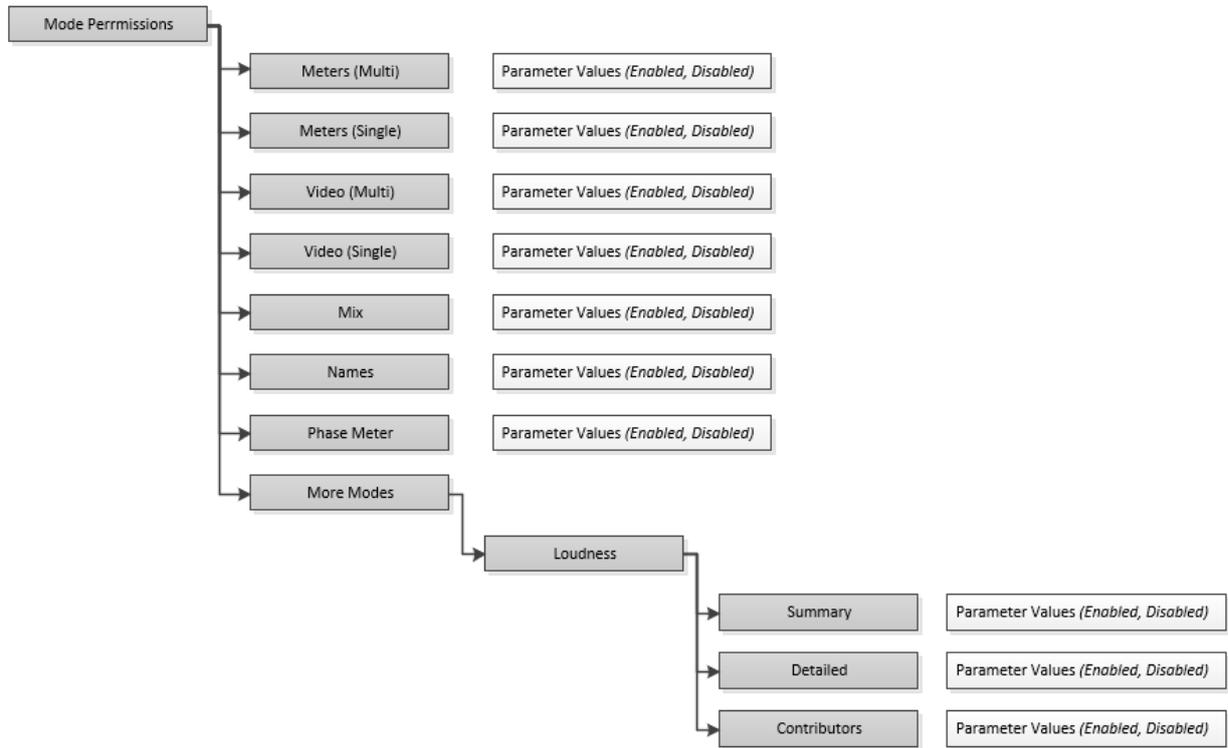
	<b>Advanced Setup</b>
<b>Front Panel Controls</b>	Enters the Front Panel Controls Menu
<b>Input/Outputs</b>	Enters the Inputs/Outputs Menu
<b>Audio Meters</b>	Enters the Audio Meters Menu
<b>Licenses</b>	Enters the Licenses Menu
<b>PIN Code</b>	Enters the PIN Code Menu
<b>Network Settings</b>	Enters the Network Settings Menu
<b>Restart System</b>	Restarts the System

*Operator Permissions Menu Tree*



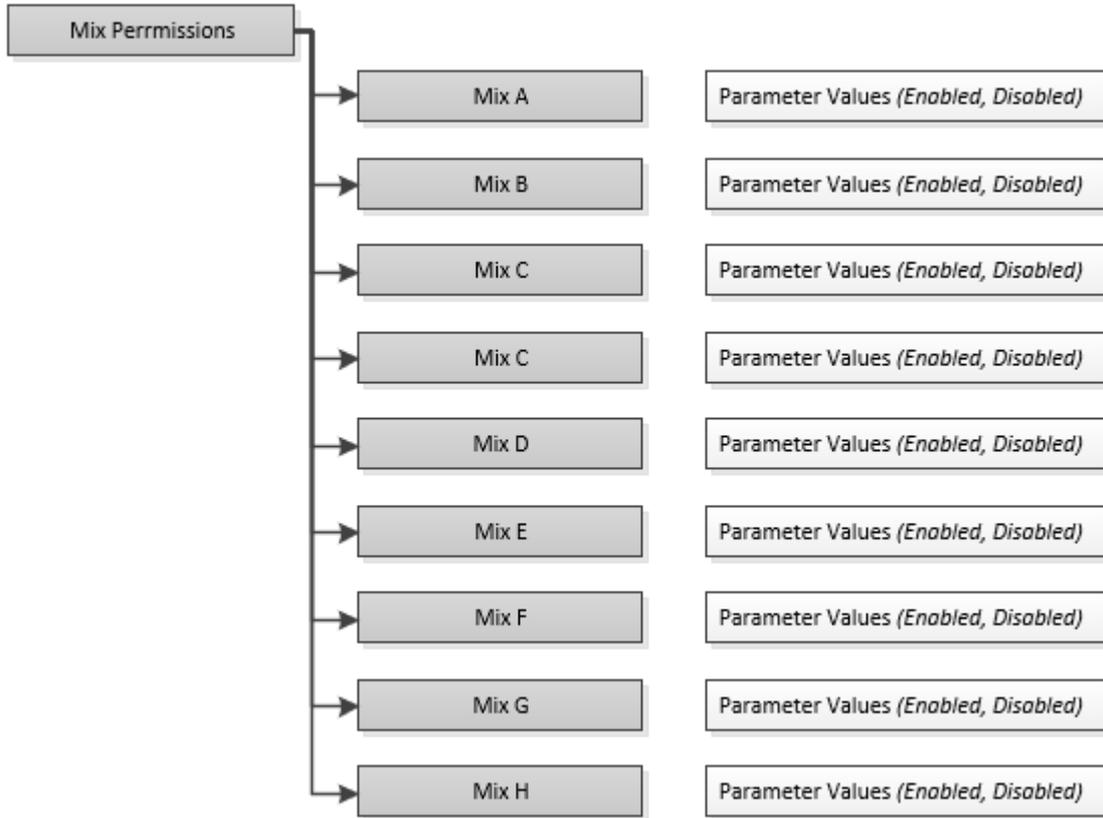
	<b>Operator Permissions Menu</b>
<b>Mode Permissions</b>	Enters the Mode Permissions Menu
<b>Mix Permissions</b>	Enters the Mix Permissions Menu

## Mode Permissions Menu Tree



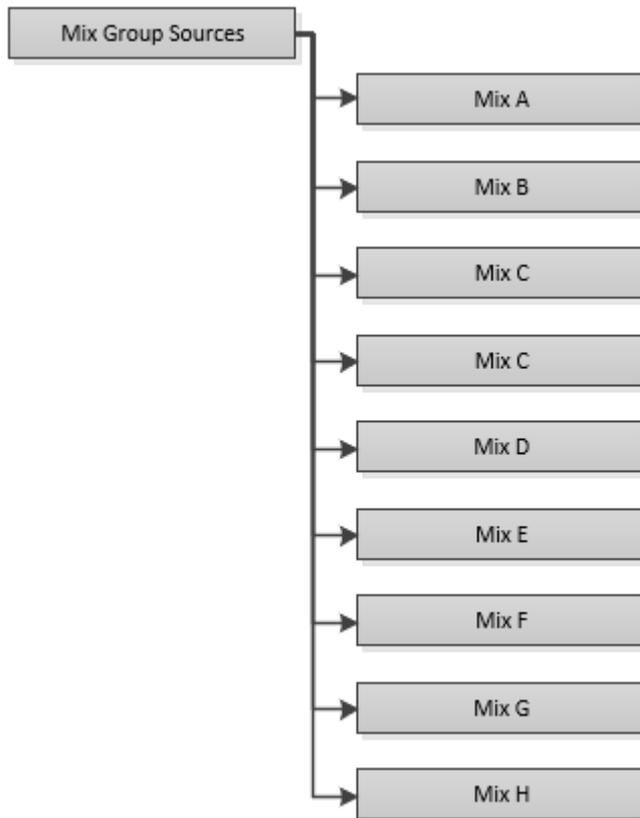
	Mode Permissions Menu
<b>Meters (Multi)</b>	Allows the Meters (Multi) Mode to be Enabled/Disabled
<b>Meters (Single)</b>	Allows the Meters (Single) Mode to be Enabled/Disabled
<b>Video (Multi)</b>	Allows the Video (Multi) Mode to be Enabled/Disabled
<b>Video (Single)</b>	Allows the Video (Single) Mode to be Enabled/Disabled
<b>Mix</b>	Allows the Mix Mode to be Enabled/Disabled
<b>Names</b>	Allows the Names Mode to be Enabled/Disabled
<b>Phase Meter</b>	Allows the Phase Meter Mode to be Enabled/Disabled
<b>More Modes</b>	Enters the More Modes Menu
<b>Loudness</b>	Enters the Loudness Menu
<b>Summary</b>	Allows the Loudness Summary Mode to be Enabled/Disabled
<b>Detailed</b>	Allows the Probe Detail Mode to be Enabled/Disabled
<b>Contributors</b>	Allows the Probe Contributors Mode to be Enabled/Disabled

### Mix Permissions Menu Tree



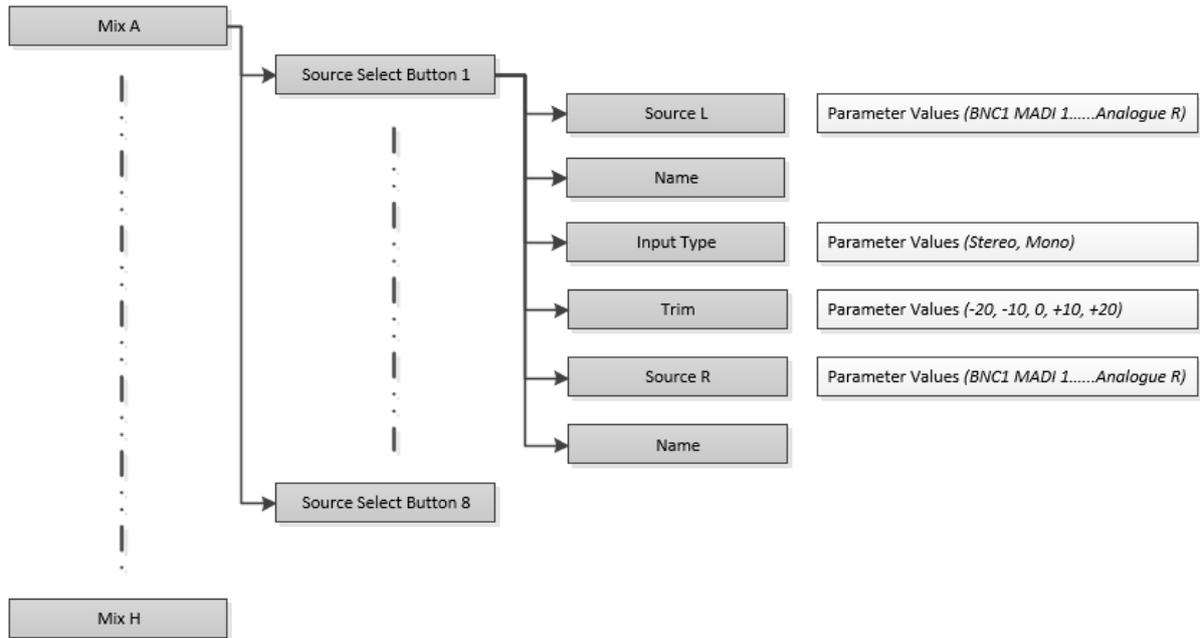
	Mix Permissions Menu
<b>Mix A</b>	Allows Mix A to be Enabled/Disabled
<b>Mix B</b>	Allows Mix A to be Enabled/Disabled
<b>Mix C</b>	Allows Mix A to be Enabled/Disabled
<b>Mix D</b>	Allows Mix A to be Enabled/Disabled
<b>Mix E</b>	Allows Mix A to be Enabled/Disabled
<b>Mix F</b>	Allows Mix A to be Enabled/Disabled
<b>Mix G</b>	Allows Mix A to be Enabled/Disabled
<b>Mix H</b>	Allows Mix A to be Enabled/Disabled

Mix Group Sources Menu Tree



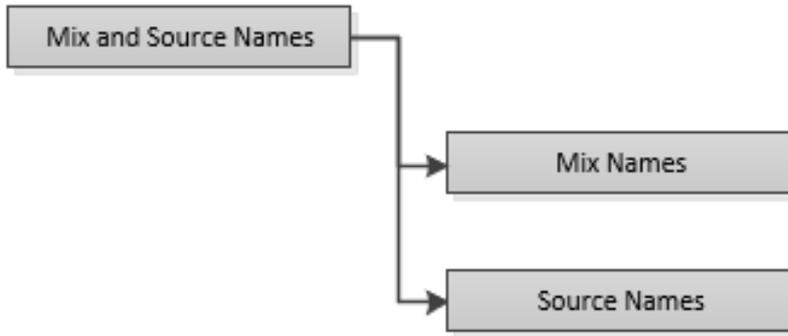
	<b>Mix Group Sources Menu</b>
<b>Mix A</b>	Enters the Mix Group A Menu
<b>Mix B</b>	Enters the Mix Group B Menu
<b>Mix C</b>	Enters the Mix Group C Menu
<b>Mix D</b>	Enters the Mix Group D Menu
<b>Mix E</b>	Enters the Mix Group E Menu
<b>Mix F</b>	Enters the Mix Group F Menu
<b>Mix G</b>	Enters the Mix Group G Menu
<b>Mix H</b>	Enters the Mix Group H Menu

Mix Group Sources contd. (Mix Group A shown as an Example)



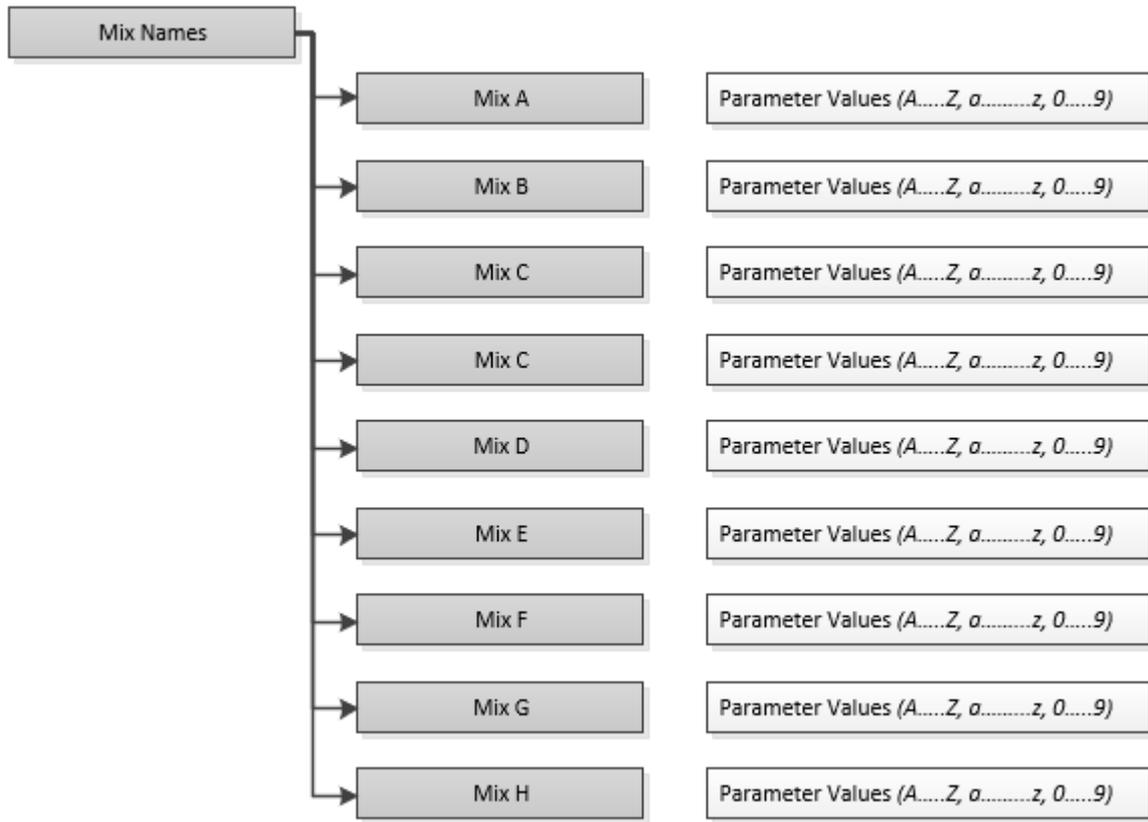
	Mix Group Sources contd. (Mix A shown)
<b>Source Select Button 1 - 8</b>	Enters the Source Assignment View
<b>Source L</b>	Assigns any available audio channel to the selected Source Select Button
<b>Name</b>	Displays the Friendly Name of the currently selected audio channel
<b>Input Type</b>	Determines whether chosen Source Select Button is for a single audio channel or pair of audio channels (see page 13)
<b>Trim</b>	Allows a Trim setting to be applied to the audio channels mapped to the source Select Button
<b>Source R</b>	Assigns any available audio channel to the selected Source Select Button
<b>Name</b>	Displays the Friendly Name of the currently selected audio channel

*Mix and Source Names Menu Tree*



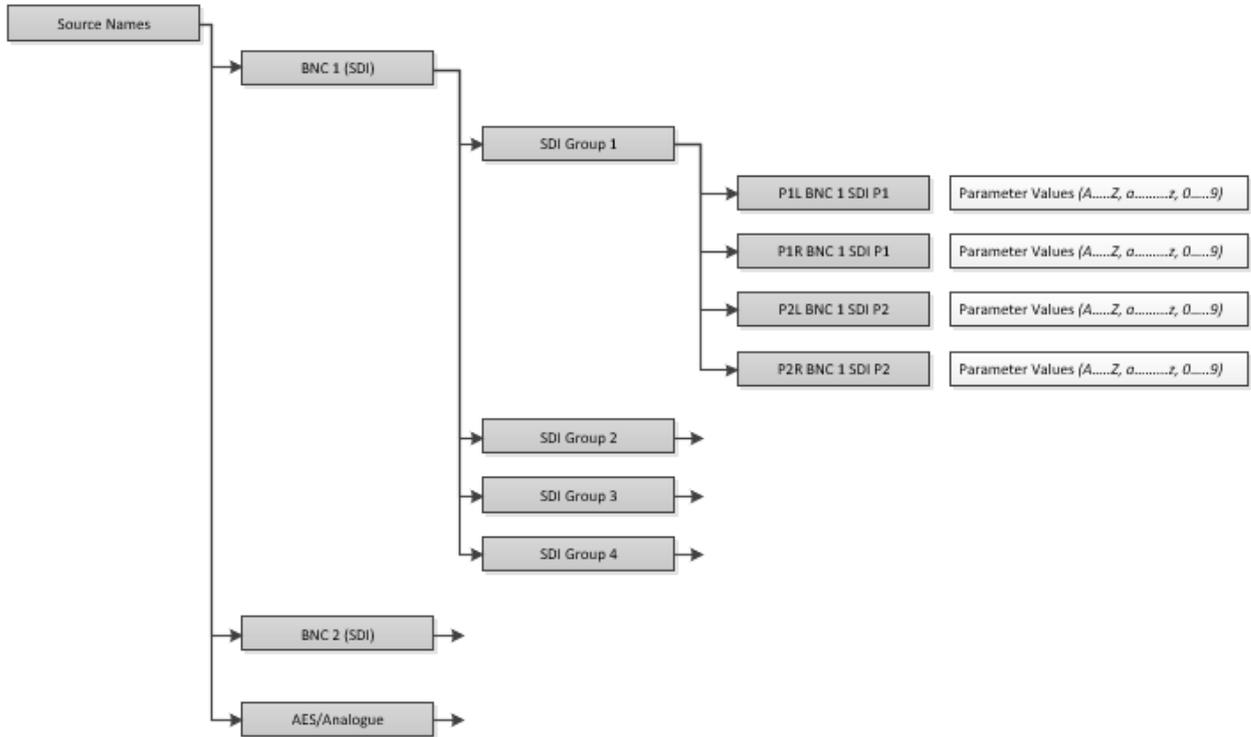
	<b>Mix and Source Names Menu</b>
<b>Mix Names</b>	Enters the Mix Names Menu
<b>Source Names</b>	Enters the Source Names Menu

Mix Names Menu Tree



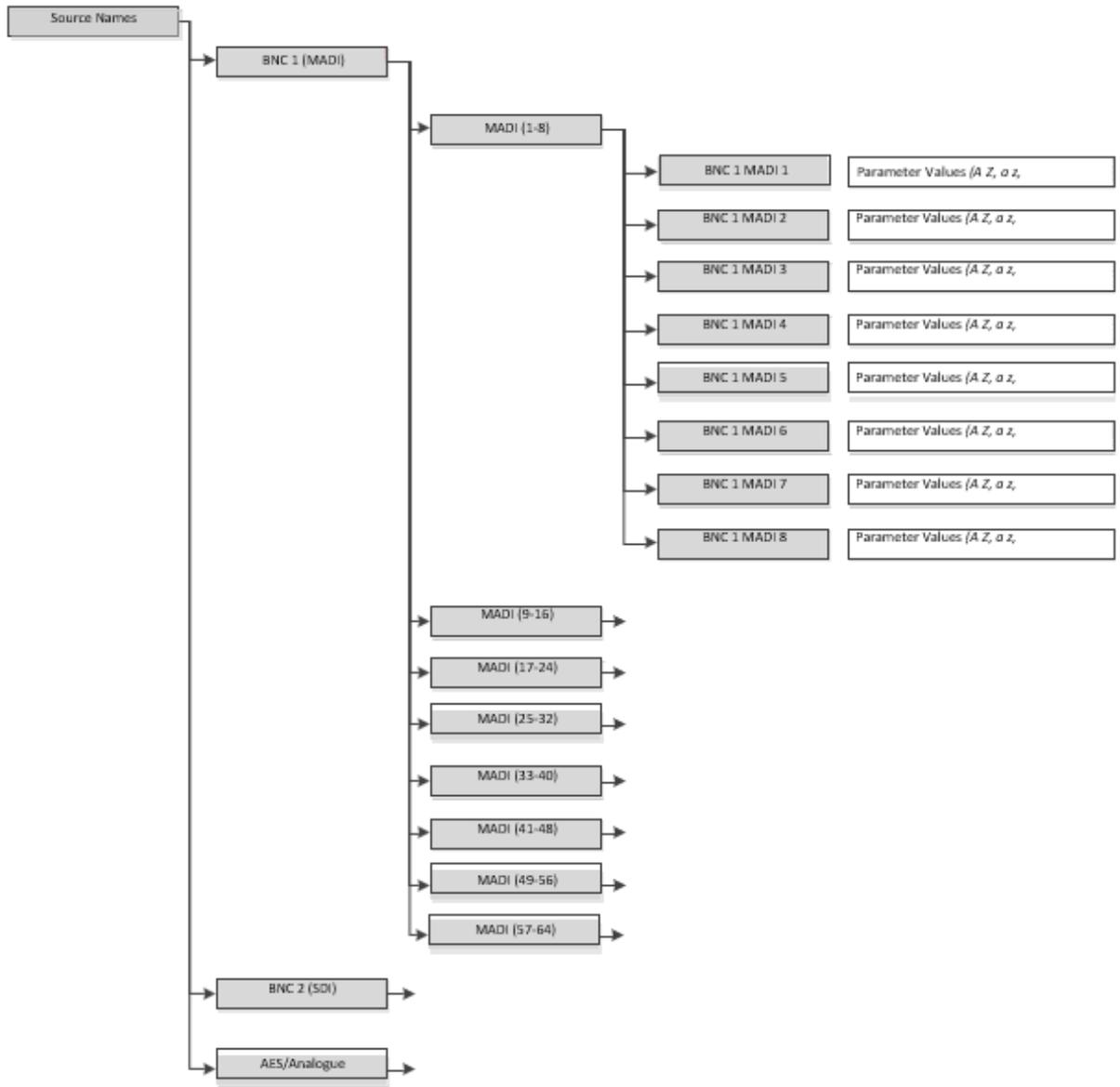
	Mix Names Menu
<b>Mix A</b>	Allows the name of Mix Group A to be edited
<b>Mix B</b>	Allows the name of Mix Group B to be edited
<b>Mix C</b>	Allows the name of Mix Group C to be edited
<b>Mix D</b>	Allows the name of Mix Group D to be edited
<b>Mix E</b>	Allows the name of Mix Group E to be edited
<b>Mix F</b>	Allows the name of Mix Group F to be edited
<b>Mix G</b>	Allows the name of Mix Group G to be edited
<b>Mix H</b>	Allows the name of Mix Group H to be edited

## Source Names Menu Tree

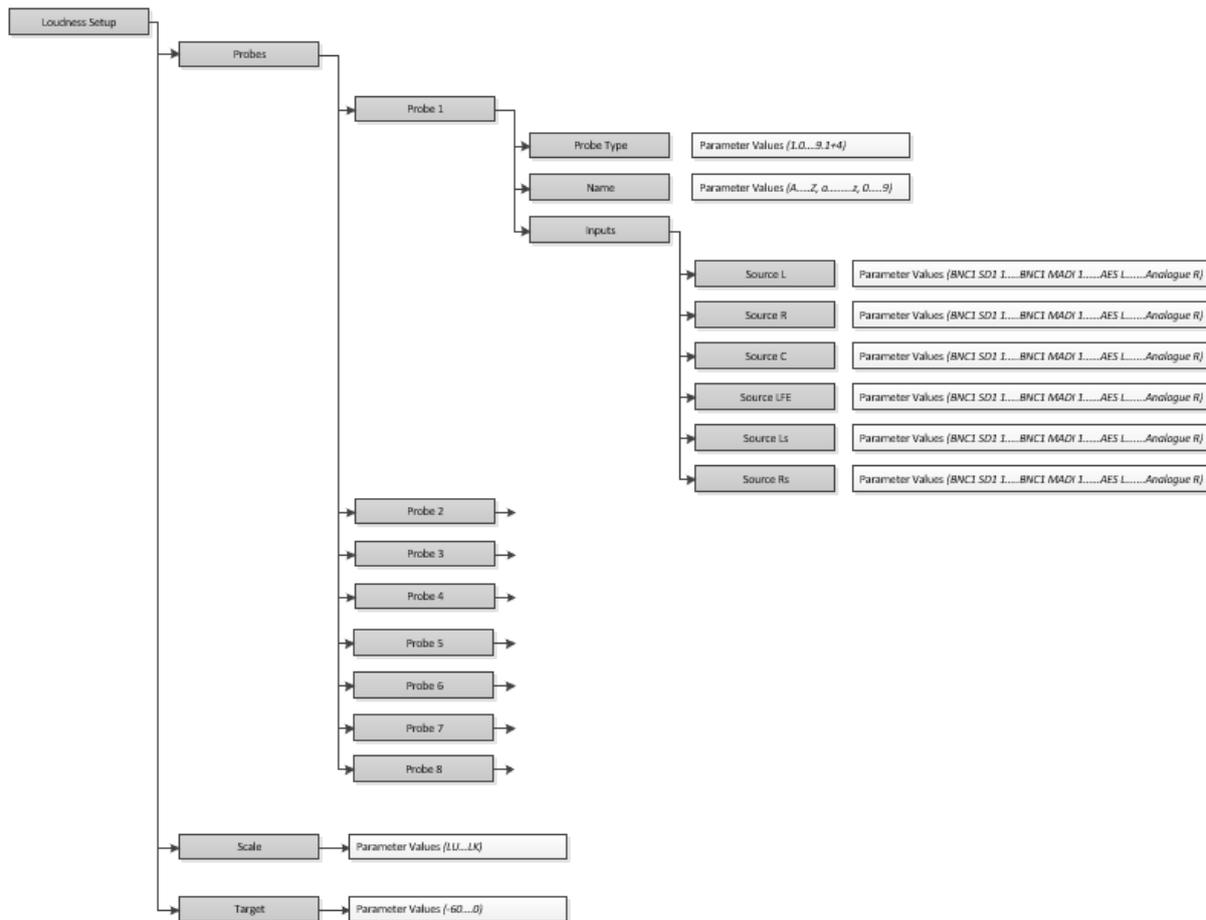


	Source Names Menu
<b>BNC1 (SDI)</b>	Reveals SDI Group 1-4 Sub-Menus
<b>SDI Group 1</b>	Allows SDI Group 1 Source Names to be edited
<b>SDI Group 2</b>	Allows SDI Group 2 Source Names to be edited
<b>SDI Group 3</b>	Allows SDI Group 3 Source Names to be edited
<b>SDI Group 4</b>	Allows SDI Group 4 Source Names to be edited
<b>BNC2 (SDI)</b>	Reveals SDI Group 1-4 Sub Menus
<b>AES/Analogue</b>	Allows AES and Analogue Source names to be edited

Please note that when either BNC 1 or BNC 2 are set to MAD1, the menu structure above changes to reflect this (see next page)



## Loudness Setup Menu Tree

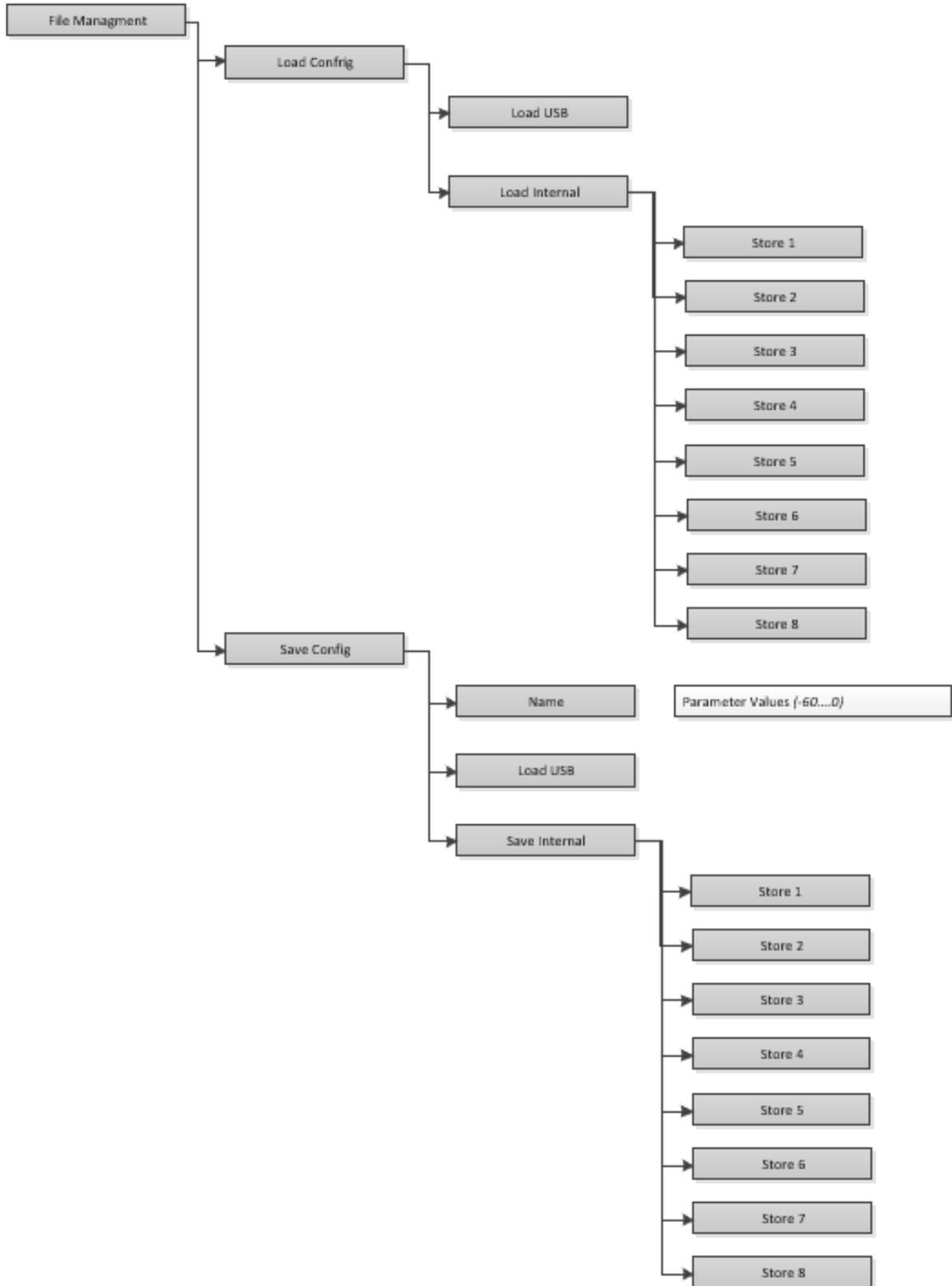


Loudness Setup Menu	
<b>Probes</b>	Enters Sub-Menu for Loudness Probes 1-8
<b>Probe 1</b>	Enters Sub-Menu for Loudness Probe 1
<b>Probe 2</b>	Enters Sub-Menu for Loudness Probe 2
<b>Probe 3</b>	Enters Sub-Menu for Loudness Probe 3
<b>Probe 4</b>	Enters Sub-Menu for Loudness Probe 4
<b>Probe 5</b>	Enters Sub-Menu for Loudness Probe 5
<b>Probe 6</b>	Enters Sub-Menu for Loudness Probe 6
<b>Probe 7</b>	Enters Sub-Menu for Loudness Probe 7
<b>Probe 8</b>	Enters Sub-Menu for Loudness Probe 8
<b>Probe Type</b>	Allows selection of Program Type (see below for list of available programs)
<b>Name</b>	Allows entry of Probe Name
<b>Inputs</b>	Allows audio channels to be assigned to Probe inputs.
<b>Scale</b>	Allows Loudness Scale to be set (LK or LU)
<b>Target</b>	Allows Loudness Target to be set (default is -23)

Loudness Programs available for selection are:

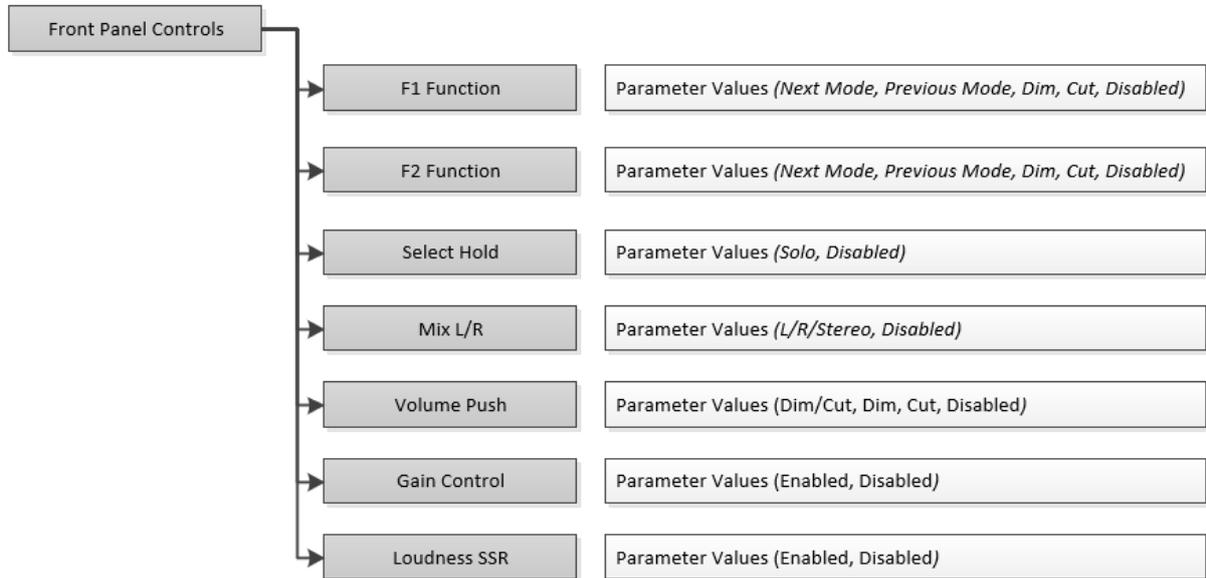
<b>1.0</b>	<b>5.1</b>	<b>7.1</b>	
<b>2.0</b>	<b>5.1 + 2</b>	<b>7.1 + 2</b>	<b>9.1 + 2</b>
<b>2.1</b>	<b>5.1 + 4</b>	<b>7.1 + 4</b>	<b>9.1 + 4</b>

File Management Menu Tree



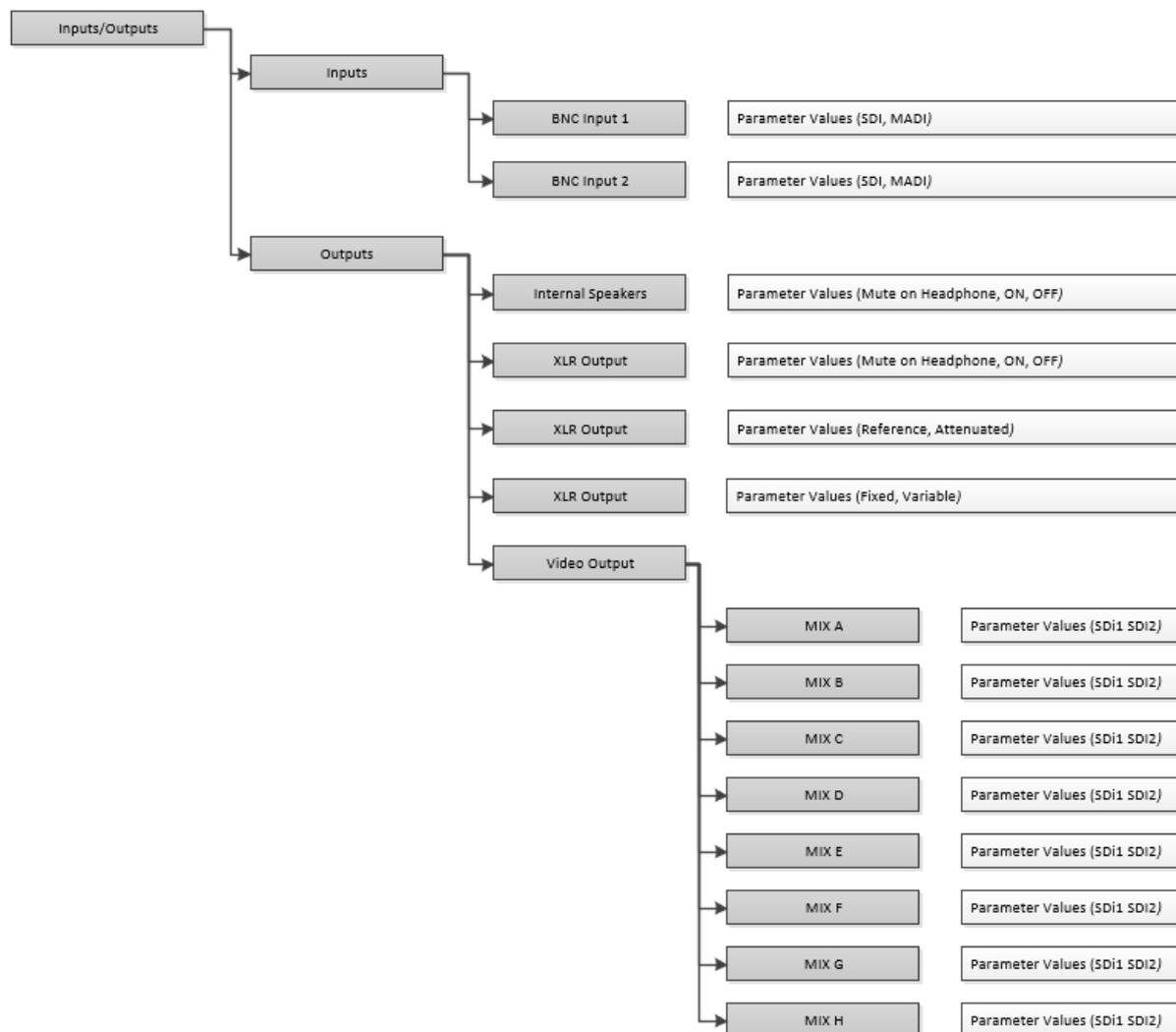
	<b>File Management Menu</b>
<b>Load Config</b>	Reveals the Load from USB and Load Internal Menus
<b>Load USB</b>	Loads configuration file form USB
<b>Load Internal</b>	Loads configuration file from selected store
<b>Save Config</b>	Reveals the Save to USB and Save Internal Menus
<b>Name</b>	Allows a filename for the configuration file to be entered
<b>Save USB</b>	Saves current system configuration to USB
<b>Save Internal</b>	Saves current system configuration to selected store

## The Front Panel Controls Menu Tree



	Front Panel Controls Menu
<b>F1 Function</b>	Allows preferred function to be mapped to the F1 button
<b>F2 Function</b>	Allows preferred function to be mapped to the F2 button
<b>Select Hold</b>	Enables or Disables the SOLO function from the Source Select buttons
<b>Mix L/R</b>	Enables or Disables the PAN/BALANCE function from the front panel
<b>Volume Push</b>	Allows preferred behaviour to be assigned to Volume Push.
<b>Gain Control</b>	Enables or Disables the ability to adjust relative Mix levels.
<b>Loudness SSR</b>	Enables or Disables the Start. Stop and Rest functions from Probe Detail mode.

## The Inputs/Outputs Menu Tree



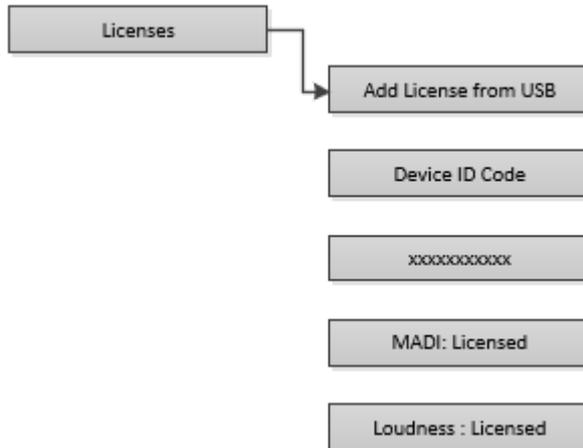
	Inputs/Outputs Menu
<b>Inputs</b>	Reveals the BNC Input 1 and BNC Input 2 sub-menus.
<b>BNC Input 1</b>	Allows BNC Input 1 to be configured for SDI or MADI
<b>BNC Input 2</b>	Allows BNC Input 2 to be configured for SDI or MADI
<b>Outputs</b>	Reveals the Outputs sub-menus.
<b>Internal Speakers</b>	Allows Internal Speakers to be set to ON, OFF or MUTE on insertion of H'Phones
<b>XLR Output</b>	Allows XLR Outputs to be set to ON, OFF or MUTE on insertion of H'Phones
<b>XLR Output</b>	Allows XLR Outputs to be set to Reference or Attenuated
<b>XLR Output</b>	Allows XLR Outputs to be set to Fixed Level or Variable Level
<b>Video Output</b>	Reveals Video Output settings for MIX A to MIX H
<b>MIX A</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX B</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX C</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX D</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX E</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX F</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX G</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).
<b>MIX H</b>	Determines if SDI and HDMI Outputs are a copy of BNC1 (SDI) or (BNC2 (SDI).

*The Audio Meters Tree*



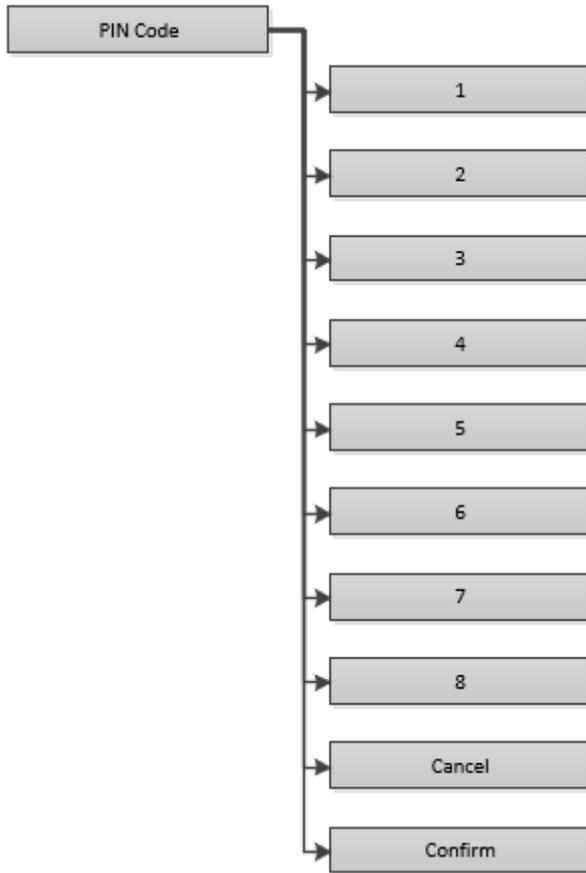
	<b>Audio Meters Menu</b>
<b>Alarm Level</b>	Allows the Audio Meters Alarm Level to be set between -60dBFS and 0dBFS
<b>Reference Level</b>	Allows the Audio Meters Reference Level to be set between -60dBFS and 0dBFS

*The Licenses Menu Tree*



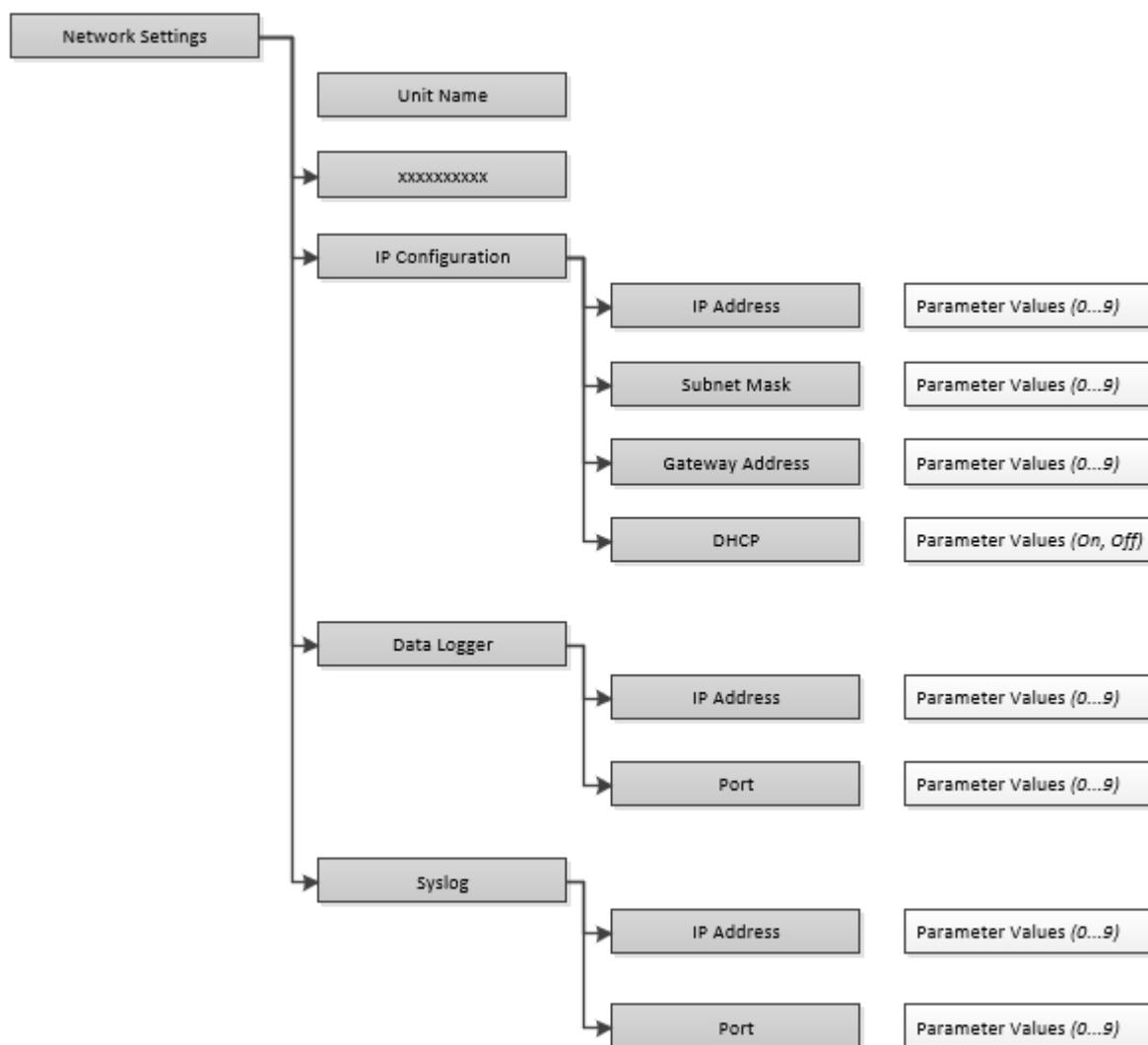
	<b>Licenses Menu</b>
<b>Add License from USB</b>	Adds License from USB thumb drive
<b>Device ID Code</b>	No function (label for below)
<b>xxxxxxxxxxxx</b>	Displays the Device ID of the SAM-Q-SDI
<b>MADI</b>	Displays the current MADI License Status
<b>LOUDNESS</b>	Displays the current LOUDNESS license Status

*The PIN Code Menu Tree*



	<b>PIN Code Menu</b>
<b>1</b>	Enters 1 into 4 Digit PIN Code
<b>2</b>	Enters 2 into 4 Digit PIN Code
<b>3</b>	Enters 3 into 4 Digit PIN Code
<b>4</b>	Enters 4 into 4 Digit PIN Code
<b>5</b>	Enters 5 into 4 Digit PIN Code
<b>6</b>	Enters 6 into 4 Digit PIN Code
<b>7</b>	Enters 7 into 4 Digit PIN Code
<b>8</b>	Enters 8 into 4 Digit PIN Code
<b>Cancel</b>	Cancel PIN Code Entry
<b>Confirm</b>	Confirms new PIN Code

## The Network Settings Menu Tree



	Network Settings Menu
<b>Unit Name</b>	No function (label for below)
<b>xxxxxxxxxxxxxxxx</b>	Friendly Name of SAM-Q-SDI
<b>IP Configuration</b>	Enters the IP Configuration sub-menus
<b>IP Address</b>	Displays and allows IP address to be edited
<b>Subnet</b>	Displays and allows Subnet Mask to be edited
<b>Gateway</b>	Displays and allows Gateway address to be edited
<b>DHCP</b>	Allows DHCP to switched On or Off
<b>Data Logger</b>	Enters the Data Logger sub-menus
<b>IP Address</b>	Displays and allows the IP address of the Data Logger 'Target' to be edited
<b>Port</b>	Displays and allows the Port number of the Data Logger 'Target' to be edited
<b>Syslog</b>	Enter the Syslog sub-menus
<b>IP Address</b>	Displays and allows the IP address of the Syslog 'Target' to be edited
<b>Port</b>	Displays and allows the Port number of the Syslog 'Target' to be edited

## Updating the SAM-Q-SDI Software

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TSL Products recommends you keep your SAM-Q-SDI up to date by installing the latest SAM-Q-SDI software release.

Through its program of free and regular software updates, TSL is committed to providing its customers with continual product improvements and this includes the SAM-Q-SDI.

The latest SAM-Q-SDI software update can be downloaded directly from the TSL products website using the following link:

<https://www.tslproducts.com/product-support/audio-products-support/>

Up to date manuals and release notes for the SAM-Q-SDI can also be found using the above link.

### *Upgrading from SAM-Q-SDI v1.0x to 2.0x or later*

Place the SAM-Q-SDI software into the root of a USB thumb drive.

If you are upgrading from v1.0x to v 2.0x or later, please follow these steps.

TSL recommends that you take a note of your system configuration before updating from 1.0x to 2.0x or later as your configuration will be lost in Step 2 below.

1. Power up the SAM-Q-SDI whilst holding in the F1 button until you see the following display.



2. Select Erase System
3. Insert the USB thumb drive into the front panel of the SAM-Q-SDI
4. Select the 'Update from USB' option.
5. Wait until the software update has completed.
6. When complete, the SAM-Q will return to normal operation.
7. Remove the USB thumb drive.

### *Upgrading from SAM-Q-SDI v2.0x*

1. Push and Hold the F1 Function button for 1 second.
2. Navigate to User Menu/System Setup/Advanced Setup/Restart System and select 'Restart the box'
3. Push and Hold the F1 button whilst the SAM-Q-SDI restarts until you see the following display.



4. Insert the USB thumb drive into the front panel of the SAM-Q
5. If the Bootloader Version shown is 2.05 or later, proceed directly to step 7 below.
6. If the Bootloader version is earlier than 2.05, Select 'Erase System' before proceeding to Step 7.
7. Select the 'Update from USB' option.
8. Wait until the software update has completed.
9. When complete, the SAM-Q will return to normal operation.
10. Remove the USB thumb drive.

# SAM-Q-SDI Technical Specifications

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## Description

1RU Agile Audio Monitoring System with:

- *10 x Operational Modes*
- *8 x Independent Mix Groups*
- *Configurable front panel controls*
- *PIN secured system configuration*
- *Store and Recall of separate system configurations.*
- *Supports 132 x Audio Channels (with MADI license)*
- *2 x High Resolution Displays*
- *16 Audio Level Meters (54 segments)*
- *Audio Phase Meter with Audio Phase Reverse check*
- *Short-Term, Momentary and Integrated Loudness Meters (with Loudness License)*
- *8 x Independent Loudness Probes, each offering Loudness Measurement of program configurations of 1.0 to 9.1+4 (requires optional SAM-Q-LOUD-LIC license)*
- *128 Channels of MADI Monitoring (requires optional SAM-Q-MADI-LIC license)*
- *User actions and status reporting to remote server.*
- *Internal Power Supply*

## Connectivity

- *2 x 75 Ohm BNC Inputs*
  - *SMPTE ST 259-C (270 Mb/s) - 300m (984 ft.) Belden 1694A at 270 Mb/s*
  - *SMPTE ST 292 (1.485, 1.485/1.001 Gb/s) - 150m (492 ft.) Belden 1694A at 1.485 Gb/s*
  - *SMPTE ST 424 (2.970, 2.970/1.001 Gb/s) - 120m (393 ft.) Belden 1694A at 2.970 Gb/s*
  - *AES 10 (125 Mbit/s)– 50m (164ft) – Belden 1694A*
- *1 x 75 Ohm BNC Output*
  - *Reclocked SDI output*

- *1 x 75 Ohm Input*
  - *AES3-id*
  
- *2 x Balanced Analogue Inputs*
  - *+4dBu*
  
- *2 x Balanced Analogue Outputs*
  - *+4dBu fixed or variable level*
  
- *1 x 50 Ohm 1/4" Headphone Output*
  - *Can be configured to Mute Internal Loudspeakers and/or Balanced Line Level Output if required.*
  
- *1 x HDMI Output with embedded audio*
  
- *1 x Ethernet Port (10/100Mbps)*
  - *Provides Short-Term, Momentary, LRA and Integrated Loudness values of all 8 Internal Loudness Probes for use with InfluxDB and Grafana over Ethernet.*
  - *Provides system logging data over Ethernet.*
  
- *1 x USB Port*
  - *Allows system configurations to be stored off-line.*
  - *Allows system configurations to be loaded from USB.*
  - *Allows license upgrades to be applied 'in the field'.*
  - *Allows software upgrades.*
  
- *1 x IEC Power Inlet (85 – 264V, 50/60Hz, 0.75A – 0.5A Max 30W)*

### Audio Specifications

- *Sampling Frequency 48kHz*
- *Bit Depth 24 Bits*
- *220Hz – 20kHz*
- *80 dB SPL at 1 foot*

### Weight and Dimensions

- *Height: 1RU*
- *Width: 19"*
- *Depth: 100mm*
- *Weight: 4.3 lbs (1.95 kg)*