

# Version 1.1.33

## Axia iQs AES67 Mixing Console



With the introduction in 2019 of the Axia iQx, we combined the mix engine and control surface into one unit, providing a simple, easy-to-install console capable of accessing any audio source on the network anywhere in the world.

iQs takes things one step further and eliminates the physical console altogether, replacing it with an HTML-5-based on-screen interface.

In its base configuration, iQs provides 4 faders/input channels and a monitor control section. Configured with four stereo inputs, two external (monitor) inputs, one external preview, and one VMixer, twelve input streams are available.

Additional faders/channels can be added in groups of four via licensing, up to a maximum of 24.

24 user-configurable output streams are included.

Basic call control functionality is provided via Livewire+ using GPIO. An optional VX license supports fixed line control ("Euro mode") or multi-line control and provides a telephone interface on-screen.

Up to 30 customized user buttons can be added in groups of five via license.

## Quick Start Guide

Congratulations on choosing the Axia iQs AES67 Mixing Console. We know that you're anxious to get things set up, so this section will get you up and running as quickly as possible.

We've made a few basic assumptions:

- That you have some knowledge of network basics and network terminology
- That you have some experience or familiarity with Axia Livewire products
- That you have a suitable and correctly-configured network switch

Please refer to the Quick Start Guide that matches the platform on which you are planning to run iQs, either [AE-1000 hardware](#) or [Docker container](#), then move on to the full User Manual for detailed operating instructions.

## AE-1000 Hardware

### Installation

The AE-1000 is a 1RU product intended to be permanently installed in a standard 19½” equipment rack and secured with four standard rack screws. It is a fanless, passively cooled design and whenever possible, it is recommended to leave 1RU of empty space above and below the unit.

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### Power

Connect the included 12VDC power supply to the power connection on the rear of the unit. There is no power switch; power is applied as soon as the unit is plugged into a mains source.

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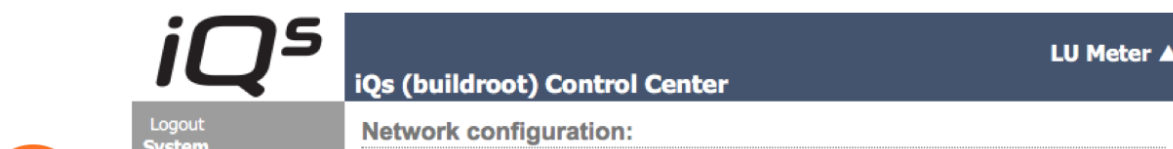
### Network Connection

Connect the Primary Ethernet port on the rear of the AE1000 to a 1GB port on your PC. Set the PC’s Ethernet port to 192.168.2.10.

The default IP address of the AE-1000 is 192.168.2.29.

Using your preferred web browser, enter the AE-1000’s IP address into the URL field. When prompted for authentication, enter the user name “user” and leave the password field blank. The iQs Status screen will be displayed.

Click on the **System > Setup link** (A) in the left-hand menu and enter the **Hostname, IP address, Netmask,** and **Gateway** (B) as appropriate for your application, then click the **Save button** (C).



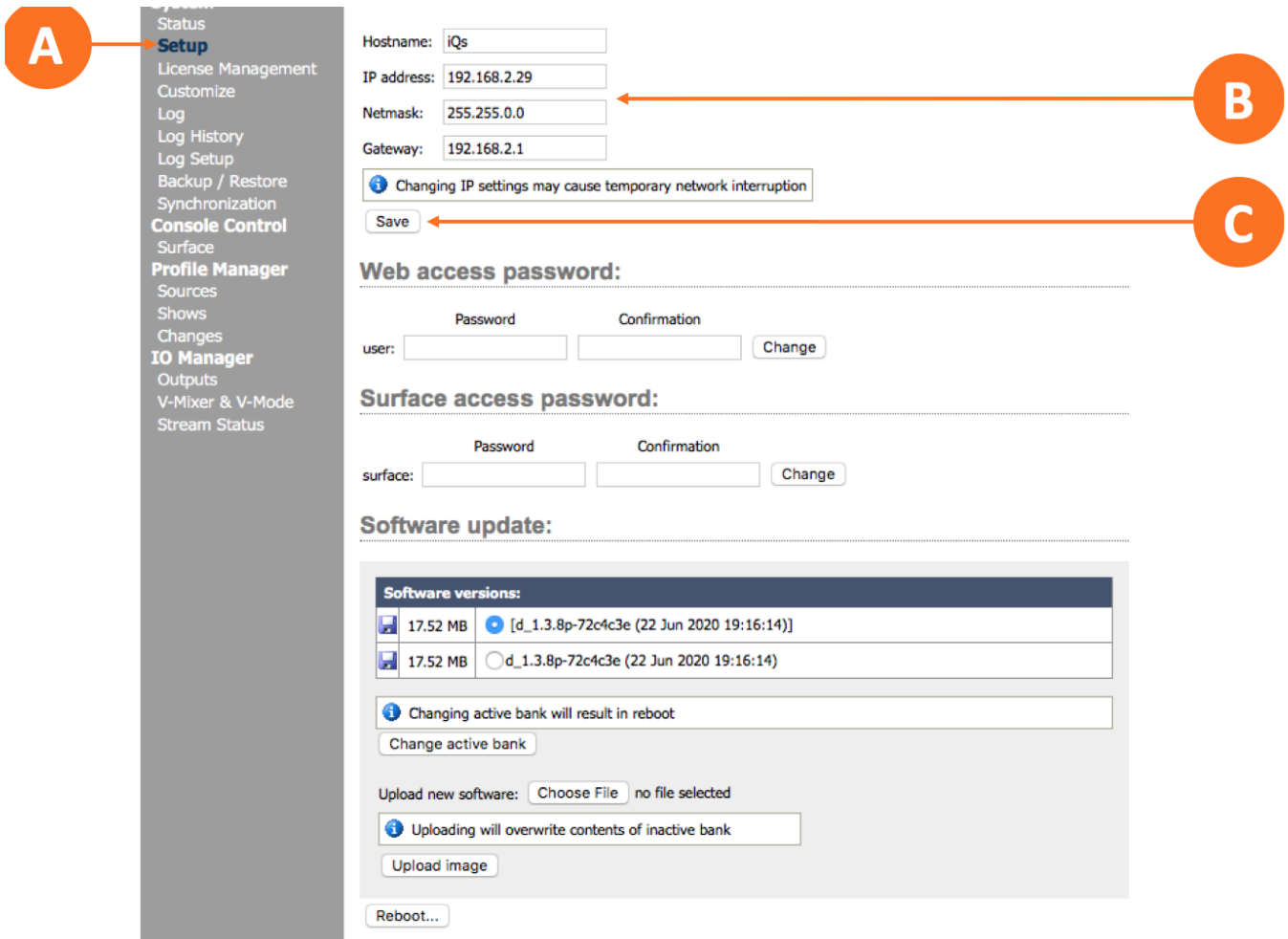


Figure 1 - System setup screen

Disconnect the network connection to the PC and connect the AE-1000 to your network. We recommend writing the IP address on the back panel label for easy reference.

You may return your PC to its normal network settings.

## Docker Container

Docker is a highly flexible platform that allows it to easily meet the needs of unique workflows. This documentation will cover our common workflows, but the container can be deployed with other tools as well.

## System Requirements

The Docker host can be run on either a physical machine or a virtual machine (VM). The requirements for

each environment are slightly different, so before starting the setup script, please ensure the intended platform meets the requirements outlined below

Required	Item	Description
✓	CPU Type	x86
✓	CPU Class	Server-class (Tested on Intel Xeon)
✓	CPU Core Count	<a href="#">See here</a>
✓	RAM	<a href="#">See here</a>
✓	OCI Runtime	<a href="#">Container runtime</a>
✓	Internet	Need to pull the container
✓	Quay Account	Need to access iQs container

## Bare Metal Machine

A physical machine should meet the following *minimum* requirements:

- **CPU:** Server-class multi-core CPU(s), 2.0Ghz base clock speed
- **RAM:** 1GB of RAM per each iQs instance

The number of CPUs required depends upon the number of iQs instances you are planning to deploy. At a minimum, one core must be reserved for the OS. This will be referred to as the "system core" going forward.

Another variable is the number of faders each iQs instance will run. One iQs instance with 12 or fewer faders only needs half of one CPU; fader counts between 12 and 24 require an entire CPU core. See the table below for sample configurations. All test were conducted using an Intel Xeon.

Server Cores	System Cores	Up to 12 fader iQs	Up to 24 fader iQs
4	1	6 instances	3 instances
8	2	12 instances	6 instances
16	3	26 instances	13 instances
32	4	56 instances	28 instances

## Virtual Machine

When running a container inside a VM additional conditions must be met by the hypervisor for iQs to perform properly. The exact terminology for the controls that must be adjusted varies depending on the hypervisor is being used, so this document speaks in general terms.

Required	Item	Description
✓	Type 1 Hypervisor	Also, known as a native hypervisor. Examples include VMware ESXi, and Microsoft Hyper-V
✓	Exclusive CPU allocation	The iQs VM cannot share CPU resources with other VM's on the hypervisor. This is sometimes referred to as "pinning" or "task affinity"
✓	Prioritize AoIP traffic	Generally speaking, assigning CPU resources to the switch should prevent a bottleneck for AoIP traffic. However, this is subject to what else has been configured on the hypervisor.

## Installation

Telos offers a guided script that is recommended for new Docker users or machines which will be dedicated to running Telos Alliance products. Depending on how iQs is deployed the setup varies. Please select the appropriate guide from the options below.

- [One iQs and single network interface](#)
- [Multiple iQs instances and a single network interface](#)

## One iQs Instance

Prerequisites:

- A compliant computer platform; more information can be found [here](#)
- Familiarity working in command line
- Administrative access to the system that is being configured

Installation

- The host system must be configured prior to deploying the container which is covered in a separate document [linked here](#). At the end of the system setup document, a link to return to this document is

provided.

- Once the Docker environment has been set up, a template menu will appear. Select `[iqs]` from the list by using the index number list to the left of the product name in brackets. Type the number and press `enter`.

```
INFO Select a Telos product to install (or press 'Ctrl' + 'C' to exit)
0) Precision Time Protocol Daemon for Linux [ptp4l]
1) iQs console [iqs]
2) VXs [vxs]
index of product template: 1
```

- Next, a directory (folder) is created to store the files associated with the iQs. Type the name for the new directory. We recommend naming this directory to reference where the console will be used. For example
- After creating the directory, you will be prompted to set the path to the `TAG`. Unless otherwise directed by Telos support, this field should also be left blank. Press `enter` to advance.
- Finally, set the `STUDIO` name. This name will appear in the iQs web UI, which end users will see. We recommend repeating the same as the name used for the directory for ease of use. Press `enter` to advance.

```
Choose a name for the install directory. Files will be installed to /opt/telos/$NAME: studio
Set a value for 'TAG' (Version of software. Leave blank to use default):
Set a value for 'STUDIO' (Name of Studio): studio1
```

In the shell, you will now see the process of creating an iQs instance. A message stating `Creating iqs-[STUDIO name] ... done` will appear when the iQs has successfully started. To exit the script press `'ctrl' + 'c'`. Type the IP address of the iQs Docker host into a web browser, then proceed to [licensing this install](#).

**Note** - In the event an error is displayed while starting the container, please copy/paste or screenshot the error and [contact](#) our customer support team.

**Warning** - If you reconfigure the network interface on the Docker host machine, you must stop and restart the iQs product Docker containers. Rebooting the host machine system is a quick and easy method since the product Docker containers will automatically start after boot up.

## Multiple iQs Instances and a Single Network Connection on the Host System

- A compliant computer platform; more information can be found [here](#)
- Familiarity with working in command line
- Administrative access to the system that is being configured
- The host system's network interface **must be connected to an AoIP network with internet access**

Installation:

**Warning** - Before starting, verify the IP settings are correct for the AoIP network to which the system will be connected. This can be done with the command `ip addr`. The IP address cannot be changed once the system is configured.

- The host system must be configured prior to deploying the container, which is covered in a separate document. The last prompt in this setup will ask if multiple contains should be deployed. Use `y` as this option is required to run multiple iQs instances. The separate document covering system setup is [linked here](#). At the end of the system setup document, a link to return to this document is provided.
- Once the Docker environment has been set up, a template section menu will appear. Select `[iqs-macvlan]` from the list.

```
NFO Select a Telos product to install (or press 'Ctrl' + 'C' to exit)
0) Precision Time Protocol Daemon for Linux [ptp4l]
1) Precision Time Protocol Daemon for Linux [ptp4l-macvlan]
2) iQs console [iqs-macvlan]
3) VXs [vxs]
Index of product template: 2
```

- Next, a directory (folder) is created to store the files associated with the iQs. Type the name for the new directory. We recommend naming this directory to reference where the console will be used. For example
- After creating the directory, you will be prompted to set the path to the `TAG`. Unless otherwise directed by Telos support, this field should also be left blank. Press `enter` to advance.
- Set the IP address for the container.
- Finally, set the `STUDIO` name. This name will appear in the iQs web UI, which end users will see.

We recommend setting this the same as the directory name.

```
Choose a name for the install directory. Files will be installed to /opt/telos/$NAME: studio1
Set a value for 'TAG' (Version of software. Leave blank to use default):
Set a value for 'IPV4_ADDRESS' (IPv4 Address): 172.16.4.20
Set a value for 'STUDIO' (Name of Studio): studio1
```

In the shell, you will now see the process of creating an iQs instance. A message stating `Creating iqs-[container name] ... done` will appear when the iQs has successfully started. The prompt

asking if container should be deployed will appear. If another iQs instance be deployed repeat the above process until the total number of instances have been deployed. In the event this was the last instance of iQs being configured type 'ctrl' + 'c' to exit the script. Type the IP address of the iQs set in step 7 into a web browser, and proceed to [licensing this install](#).

**Note** - In the event an error is displayed while starting the container, please copy/paste or screenshot the error and [contact](#) our customer support team.

## Licensing

After starting the container, you will have access to the configuration pages through the IP address of the container. Click on the *License Setup* link.



The screenshot shows the Axia iQs Control Center interface. The left sidebar contains a menu with the following items: System Status, License Setup (highlighted with a red arrow), Customize, Log, Log History, Log Setup, Backup / Restore, Synchronization, Console Control Surface, Profile Manager Sources, Shows, Changes, and IQ Manager. The main content area displays the following information:

**iQs (your\_host\_name) Control Center**

Welcome!

Version information:

Version: iQs r\_1.1.19

System:

Licensed Status: **UNLICENSED (Demo mode)**

Kernel: Linux 4.15.0-118-generic x86\_64

Uptime: 0 days 01:50


CPU usage: 0.3%, Host cpu mask= 0x00000007

DSP: x86

Figure 1 - License setup

An authentication popup will appear. The default login is **user** with no password.

You will need to define the IP address of the license server. This could be another machine on the network or the same machine depending on how it was installed. If it was installed on the same machine as the iQs container, use the local loopback address as shown below. For more information about setting up a license server, see the [Licensing section](#).



The screenshot shows the Axia iQs Control Center interface with the License Setup menu item highlighted. The main content area displays the following information:

**Axia iQs**

**iQs (your\_host\_name) Control Center**

License Use:

License Server IP addr:  (A red arrow points to this field)

License type	Server Total	In Use	Available
iQs Base	0	0	0



Synchronization Console Control	Additional Faders	0	0	0
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Figure 2 - IP address of license server

Begin by generating a Base license in the **License type dropdown**, then click the **Generate button**.

**License Use:**

License Server IP addr:

License type	Server Total	In Use	Available
iQs Base	0	0	0
Additional Faders	0	0	0

Faders configured:

Faders active: 4

**Generate New License Requests:**

Type of License Request to generate:

Figure 3 - New license request

If iQs is pointed to a working license server, it will return a response to download a request code.

**Generate New License Requests:**

Type of License Request to generate:

[Download](#) License request code for Base license, SW lock  
(Too large to cut/paste. Please download.)

Figure 4 - License request code

If not, the following error response will be returned. See the [Troubleshooting](#) section for help.

License request code for Base license, SW lock

```

FAILED!: Generate License Request for productID 5001119 from
LicenseServerAddress 192.168.101.12 failed.

```

Figure 5 - License error response

After successfully downloading the request code for the base license, repeat the steps for each additional 4 fader license. Once all request codes have been downloaded, send them via e-mail along with your purchase order number to **activations@telosalliance.com**.

Once your request has been verified, your license key(s) will be sent back to you. Return to the License page and select each file using the **Choose File button** followed by the **Install button**.

**New License Installation to server:**

No file chosen

Figure 6- Installing licenses

Once all licenses are installed, the license table will populate and you will be able to define the size of the iQs surface using the **Configure Faders dropdown**.

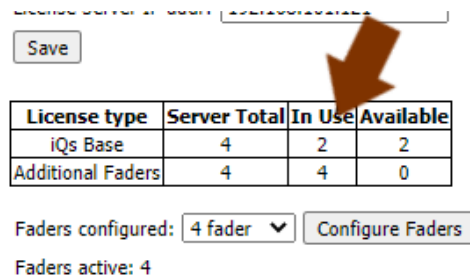
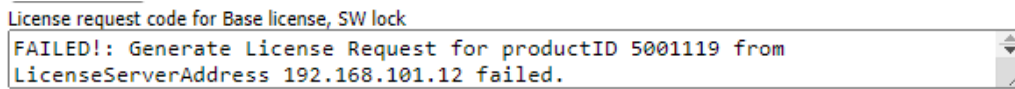


Figure 7 - Configuring faders

## Troubleshooting

### Unable to Get a License Request Code



This indicates one of the following issues with the iQs container:

- It is not configured to connect to the license server
- There is no license server installed
- The docker container is not communicating to the license server

#### Not Configured to Connect to the License Server

Please follow the instructions on how to [license the iQs Surface](#)

#### There is No License Server Installed

Please follow the [instructions](#) on installing the license server. There are two options, one for Windows and one for Linux.

#### Docker Container Is Not Communicating to the Server

Know the IP address of the license server and verify if the container has basic connectivity to the IP. From the command prompt of the Linux machine, type the below string while replacing the "your\_studio\_name" and "IP\_address" with appropriate names.

```
docker exec "your_studio_name" ping "IP_address"
```

This could look something like the following: `docker exec studio1 ping 192.168.101.12`

Press CTRL-C to exit the command.

A failure to ping indicates the container does not have access to that IP address. A successful ping to the address but failure to generate a license request suggests the license server is not running.

#### Ping Failure - Routing Problem with Address

Make sure the IP address is within the same subnet (192.168.2.x). If it is not within the same subnet, make sure there is a router in place that is set up to route between subnets.

If the docker container is deployed with the use of macvlan, make sure the Linux box has a route defined for routing between the macvlan and the subnet.

#### Ping Success - Problem with the License Server

Check that the services are running. From the command line, issue a `systemctl` and look for codemeter services and license server service.

## User Manual

### Surface Operation

Using a computer connected to your studio network, launch your preferred web browser, then enter the IP address of the iQs in the address bar. An authentication window will appear.

For users who only need access to the console surface itself but who should not have access to the iQs Control Center (typically on-air personnel), enter the name “surface” with a blank password field.

For users who need access to the surface as well as the iQs Control Center (typically engineering staff), enter the name “user” with a blank password field.

Passwords can be set in the Setup section of the System menu of the iQs Control Center.

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### Surface Overview

For the most part, the on-screen controls look and operate just like the physical surface of an iQx console, with a few modifications since there are no actual buttons to push or dials to turn.

On/off switches and other toggle type buttons are operated by clicking on them. Rotary controls such as Monitor and Headphone volume pots are adjusted by first clicking on them, then dragging left or down (to decrease volume) or dragging up or right (to increase volume).

The user interface is “responsive” and resizes and reconfigures itself to best fit within the size of the browser window. If the window isn’t wide enough to display everything at once, it will hide some of the faders. If you seem to be missing faders, look for the **blue vertical bars** (2-1A) on either the left or right side of the fader section. Clicking on these will slide the faders back and forth.

**Note:** To escape from the surface and return to the iQs Control Center, use the “back” browser button.

The surface is divided into the following sections:

- Channel Strips (2-1B)
- Program Meters (2-1C)
- Clock and Timer (2-1D)
- Show Profile (2-1E)
- Studio Controls (2-1F)
- Talkback Controls (2-1G)
- Monitor Controls (2-1H)

Detailed information about the controls in each section follows.

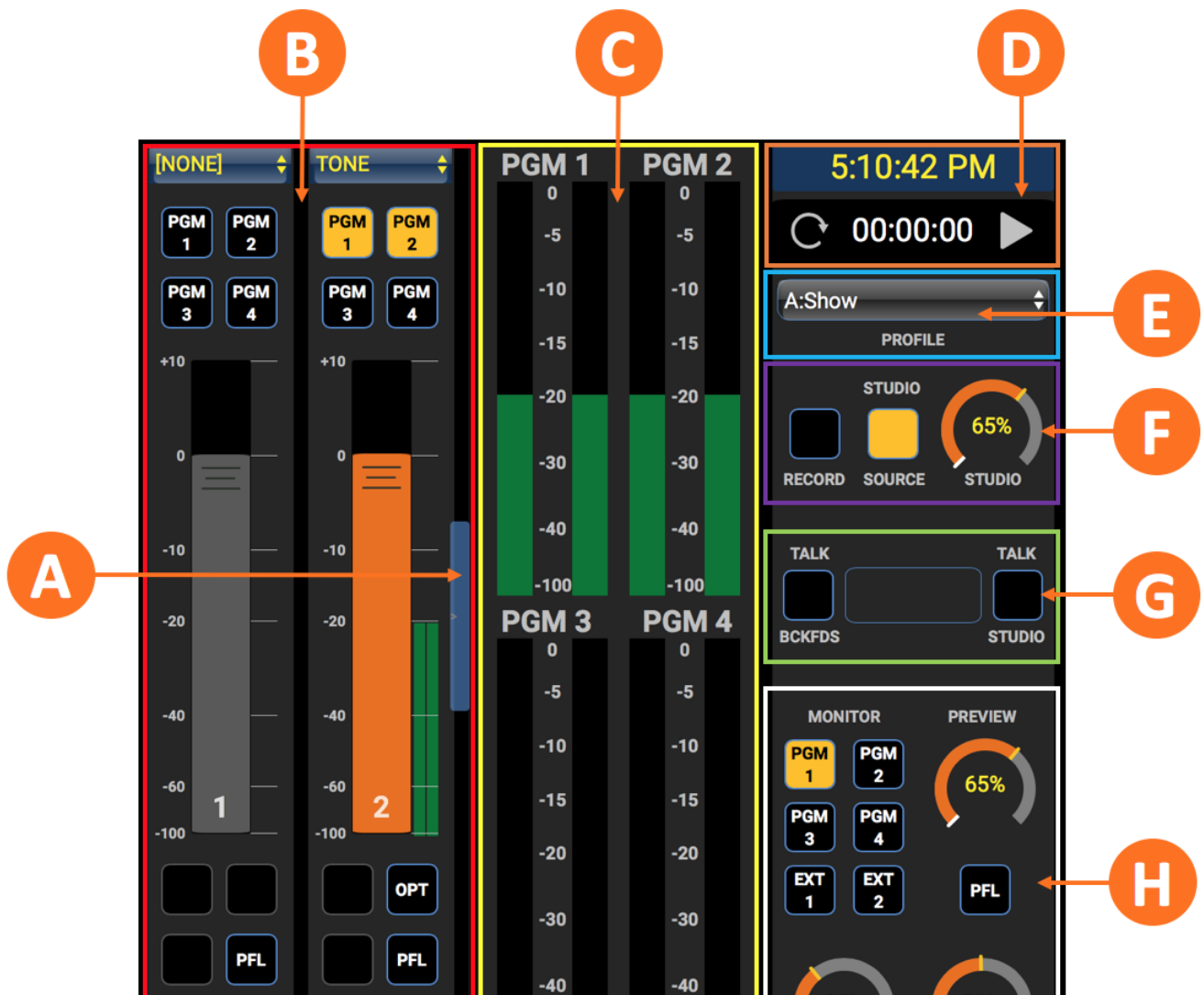




Figure 2-1 - Surface overview

## Channel Strips

Channel strips (faders) are licensed in groups of four, and each is functionally identical.

### Choosing a Source

The **Source dropdown** (2-2A) at the top of the strip is used to select the input source for the channel.

Note that the only sources that will appear in the dropdown are those which have been added via the source profile manager (as described in the Source Profiles section), and which have been assigned to an output device such as a Telos Alliance xNode.

### Mix Assignment

The **Mix Assignment buttons** (2-2B) are used to route the channel's audio to a particular mix bus, labeled Program 1 through Program 4. These are post-fader, post on/off switch assignments. Click to turn them on/off.

### Fader

The **Fader** (2-2C) controls the audio level feeding the mixes to which the channel is assigned. To adjust the fader, click and drag it to the desired level. When the channel is turned off, the fader will be gray. When the channel is turned on, the fader will change to orange. Each channel has its own set of **VU meters** (2-2D) situated to the right of the fader.

### Soft Buttons

Functions are assigned to **soft buttons** (2-2E) depending upon the selected Source Profile for a particular strip. Some are universal, for example, "PFL" (commonly referred to as "Cue" or "Preview") so that the source can be previewed by the operator. Others are context-specific, such as "Next" (NXT) in the Automation profile to trigger the next event on the log, or "Talkback" (TB) in the Telephone or Hybrid profiles to open a backfeed channel to the person at the other end of the connection.

### On/Off Button

The **On/Off buttons** (2-2F) do exactly that – turn each channel on or off. When switched on, audio from the channel will be fed to the selected mix bus and the button will turn red. Click to turn them on/off.

If the button is "On" and flashing, it indicates that there is a change pending to that particular strip resulting from some configuration change (such as loading a new Show Profile) but which will not take place until the

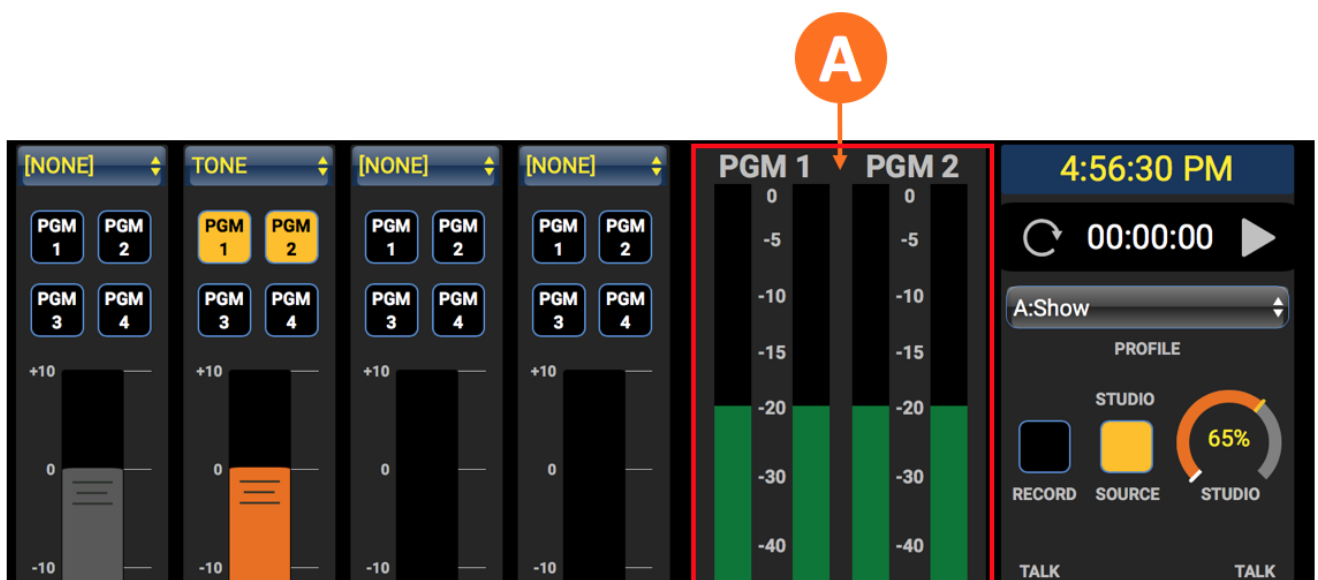
“On” button is pushed. This avoids the potentially perilous situation of a “hot switch” taking place to an on-air



Figure 2-2 - Channel strip

## Meters

Meters (2-3A) are provided for each of the four Program busses using PPM-style ballistics.



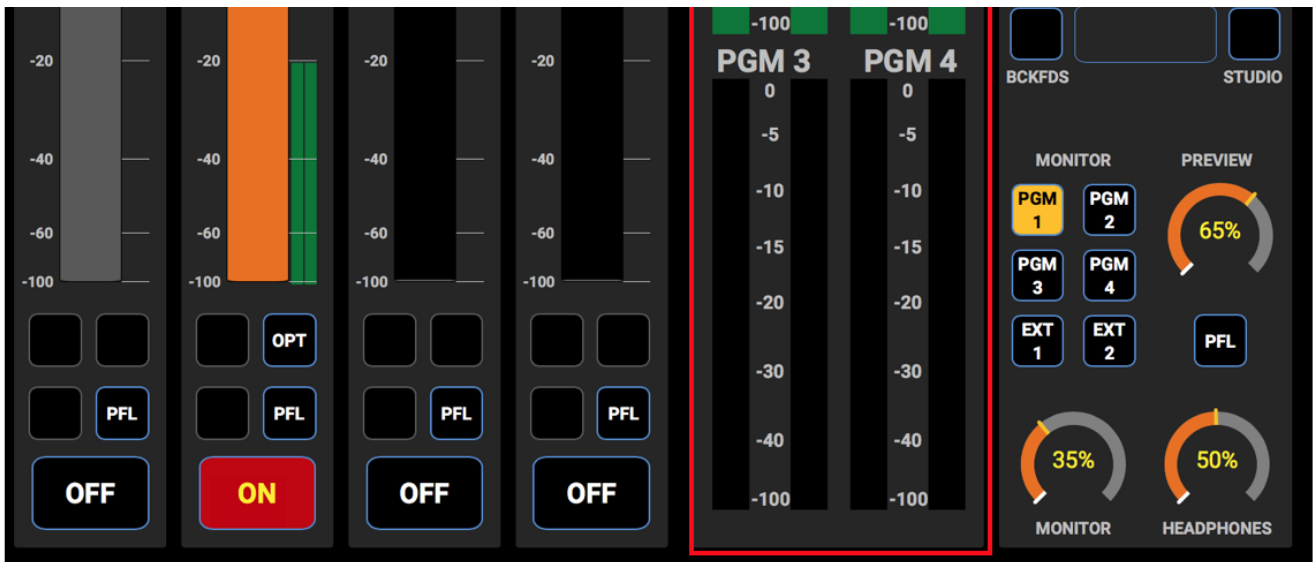


Figure 2-3 - Meters

## Clock and Timer

The current time is displayed in the **clock module** (2-4A) in the upper right corner of the surface. The clock is derived from the system clock of the computer running the remote connection.

The **event timer** (2-4C) is a count-up timer that can be used in a number of ways. It can be manually stopped and started with the **Start/Stop button** (2-4B) to the right of the display and reset with the **Reset button** (2-4D) to the left.

It can also reset based upon an event, such as manually pushing an “On” button on the fader strip or automatically, such as when an automation system starts its next event. Its behavior can be set and saved as part of a Source Profile.



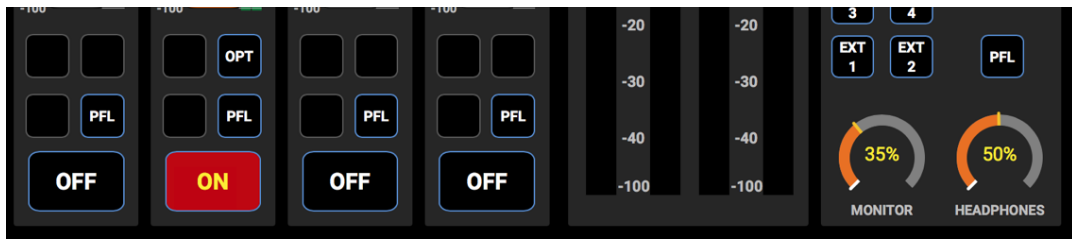


Figure 2-4 - Clock and timer

## Show Profiles

Up to four unique surface configurations can be saved and recalled using the **Show Profile dropdown** (2-5A). Selecting “None” recalls a configuration with no saved values. See the Show Profiles Section for information on creating and editing Show Profiles.



Figure 2-5 - Show profiles

## Studio Controls

The **Studio knob** (2-6C) controls the volume of the studio monitor feed. Clicking on the control and dragging left or down decreases the volume; clicking and dragging right or up increases it.



Clicking the **Source button** (2-6B) opens a menu where the source for the studio monitors is selected.

Clicking the **Record button** (2-6A) triggers a GPIO command to record whatever source is currently routed to the studio monitors. Configuration details are part of the Source Profile (see the Source Profile section).

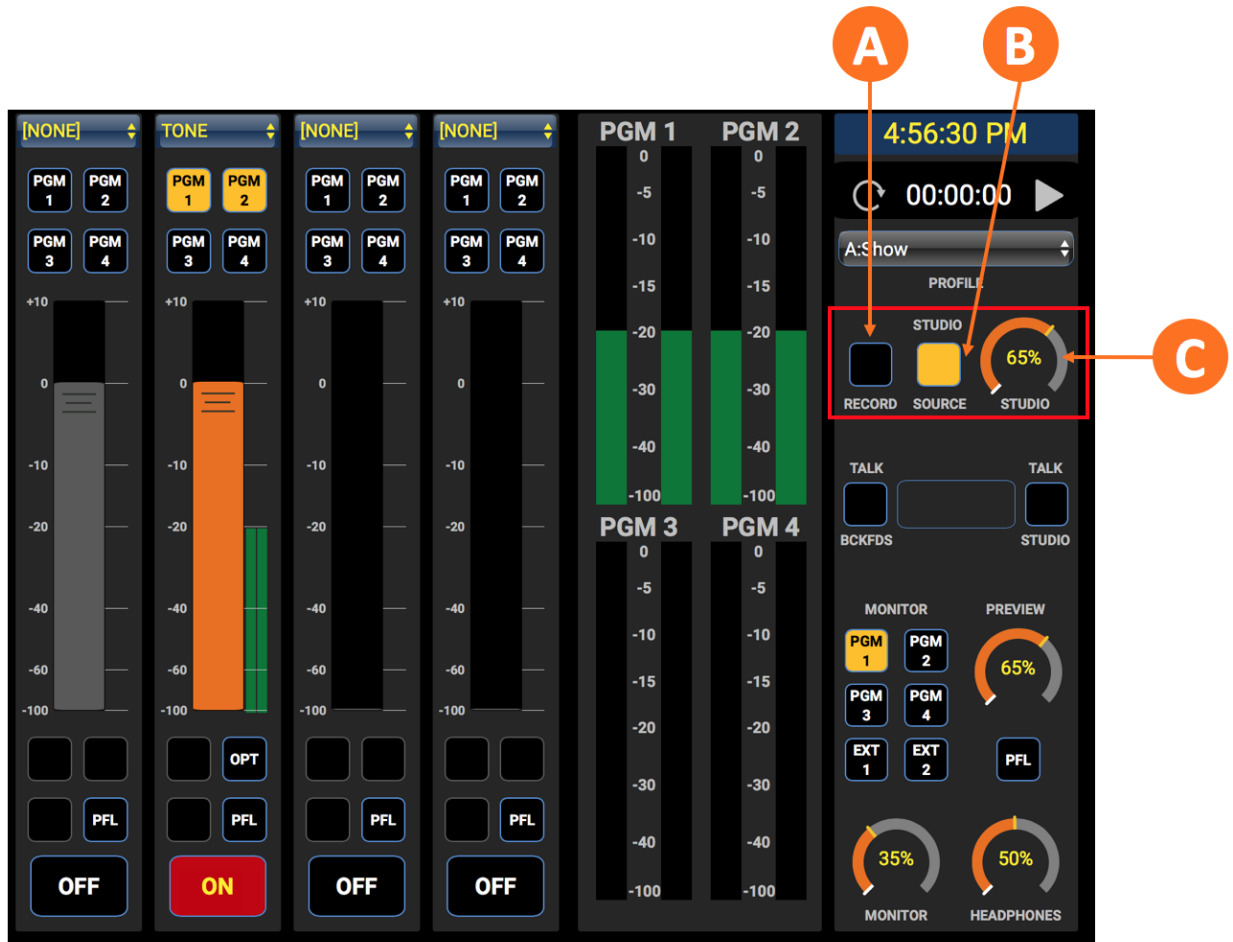


Figure 2-6 - Studio controls

## Talkback Controls

Clicking and holding down the **Talk to Backfeeds button** (2-7A) feeds the operator microphone audio to all backfeeds. The control room audio will be dimmed as long as the button is held down and indicated as such in the **Dimmed window** (2-7B).

Clicking and holding down the **Talk to Studio button** (2-7C) feeds the operator microphone audio to the Studio Monitor feed. By default, the source defined as the Operator needs to be assigned to a fader; however, it can be defined as an “External Source” in the show profile to avoid having to tie up a fader for this purpose. Both the Control Room and Studio audio will be dimmed for as long as the button is held down and indicated as such in the **Dimmed window** (2-7B).

Either Talkback button can be latched on by clicking and holding it down, then dragging the pointer away from the button. Clicking the button will unlatch it.

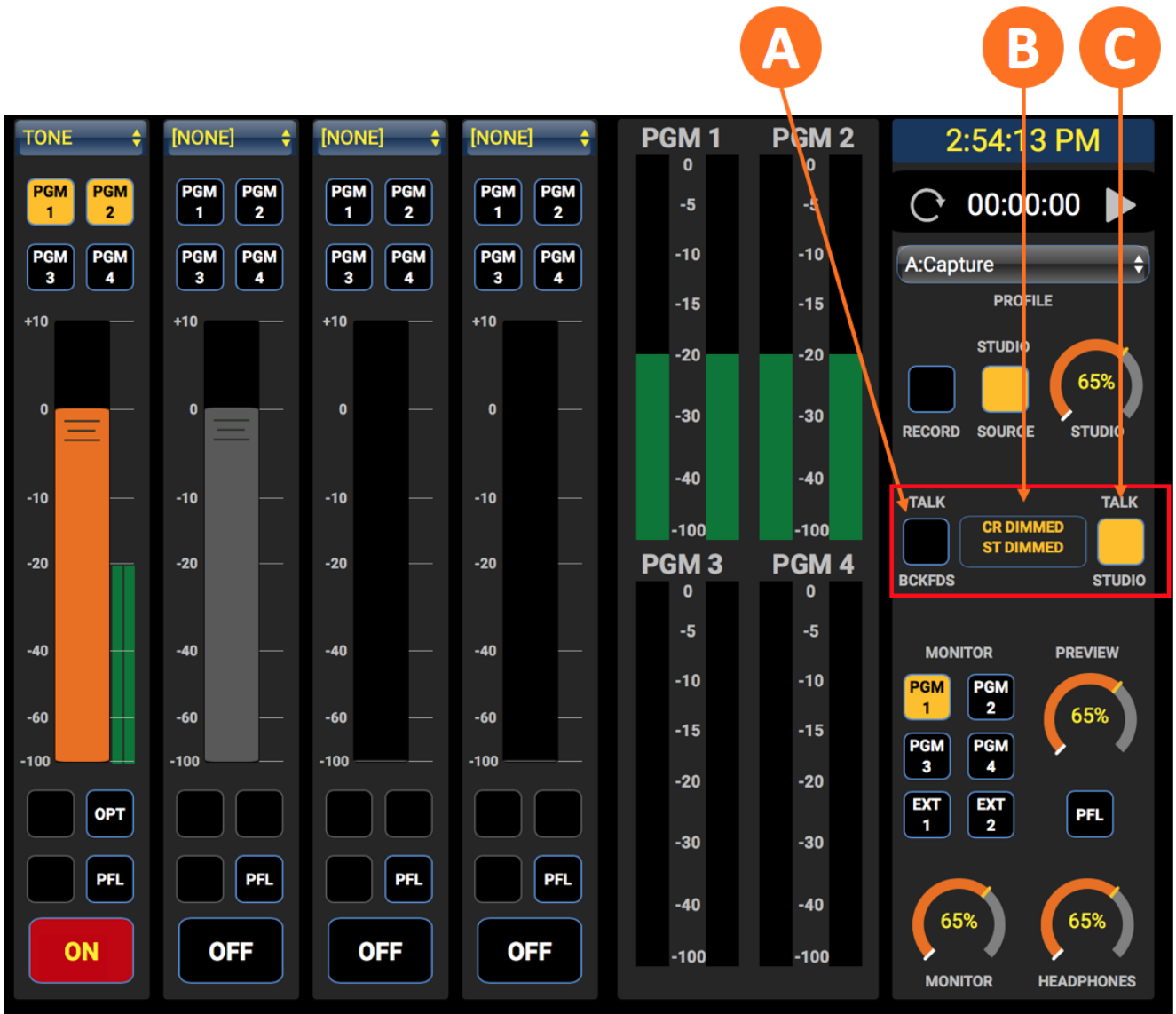


Figure 2-7 - Talkback controls

Figure 2-7 – Talkback controls

## Control Room Monitor Controls

The **Monitor Select buttons** (2-8A) determine the audio source heard through the control room monitors and headphones. These include the four Program mixes and two External sources which can be assigned to any available source in the Show Profile.

The **Control Room Monitor knob** (2-8D) sets the volume of the control room monitors.

The **Headphones knob** (2-8E) sets the volume of the operator's headphones.

The **Preview knob** (2-8B) adjusts the volume of the Preview mix. The control room monitors will dim when any channel is set to preview to assist the operator in hearing the preview audio.

The **Headphone PFL button** (2-8C) determines what is heard in the operator's headphones. When the Headphone PFL button is engaged, the operator will hear both the audio from the selected program mix

feeding the headphones and the audio from any channel strip when it's individual PFL button is pressed. When the Headphone PFL button is turned off, preview audio is not routed to the headphones. This feature can be enabled and customized in the Show Profile



Figure 2-8 - Monitor Controls

Figure 2-8 – Monitor controls

## Profiles

As with other Axia consoles, the iQs uses “profiles” to categorize audio that is present on the network and to define the behavior of the console. Profile types include:

- **Source Profiles** – Defines the audio inputs
- **Show Profiles** – Determines the layout of the console
- **Audio Outputs** – Defines the audio outputs

Profiles are set up through the iQs Control Center, accessible by launching your preferred web browser on a computer connected to your studio network and entering the IP address of the iQs in the address bar. When prompted for authentication, enter the user name “user”. The password field is left blank.

## Source Profiles

As with other Axia consoles, the iQs uses “profiles” to categorize audio that is present on the network and to define the behavior of the console. Profile types include:

- **Source Profiles** – Defines the audio inputs
- **Show Profiles** – Determines the layout of the console
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Profiles are set up through the iQs Control Center, accessible by launching your preferred web browser on a computer connected to your studio network and entering the IP address of the iQs in the address bar. When prompted for authentication, enter the user name “user”. The password field is left blank.

---

## Source Profiles

To create a Source Profile, first click on **Sources** (3-1A) in the Profile Manager section of the iQs Control Center menu.

Next, click on the **Input Source dropdown** (3-1C). Available options include:

- **Line Input** – Used for any general audio source. A GPIO logic port can be used to provide machine start/stop pulses if desired.
- **Computer Player** – Similar to Line Input, but with a different logic control commonly found with PC-based automation systems. Pressing the “On” button while the source is already in the “on” state triggers the next event in the automation.
- **Phone** – Defines the source as a hybrid or broadcast phone system input. A summed mono mix-minus is automatically created for the source, and controls for Telos products will be available.
- **Codec** – Generates a dual mono mix-minus for the source consisting of one PA feed (right channel) and one talent feed with talkback (left channel).
- **Operator Microphone** – This is the board op’s mic and the source for iQs “talk to” functions. Its logic mutes CR (control room) monitors and Preview audio when on.
- **CR Producer Microphone** – This is for an in-studio producer’s mic. It has associated GPIO logic to operate “talk to” functions from a remote producer’s panel and mutes CR monitors and Preview audio when on.
- **CR Guest Microphone** – Used for any other mic in the control room. Its associated logic automatically mutes the CR monitors and Preview audio when on.
- **Studio Guest Microphone** - Used for any mic in a separate studio. Its logic mutes the Studio monitors when on.
- **External Microphone** – Used for any mic located outside of the CR or studio. It functions like a Guest microphone, but without any muting logic.
- **Studio Feed** – Defines a source that receives a backfeed and generates an IFB backfeed in return. This

is intended for an external studio source for which you wish to create a talkback channel.

Clicking on the **Create button** (3-1B) changes the display to show all options associated with the selected source type. Some options are common to all source types, while others are unique to a particular source.

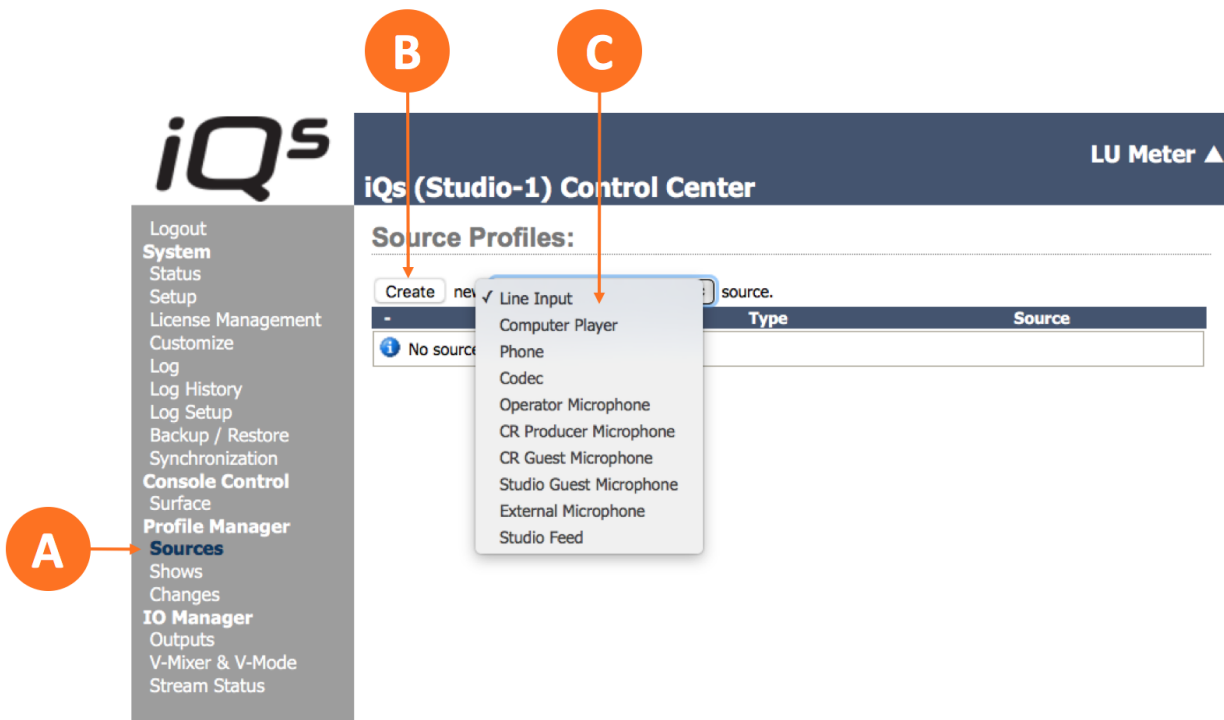


Figure 3-1 - Source profile inputs

**Note:** Detailed information on the GPIO logic functions for each Source Profile as well as detailed pin-out information per profile are provided in the section on GPIO

## Source Profile Options

Some of the Source Profile options below apply to all Input Source types while others will appear only for certain sources. For example, dynamics processing (noise gate, compressor, de-esser) is included for the various microphone inputs, but not for a Computer Player or Codec.

As a result, what is shown on your screen may differ somewhat from the image shown in Figure 3-2.

### Source Name

Each source needs a unique name so that it can be displayed on the console's channel display. Up to 10 characters (which may include spaces or underscore characters) can be entered in the **Source name field** (3-2A).

### Source Input

The AoIP or internal DSP source is set by the **Source input dropdown** (3-2B). The options available in the Primary Source dropdown are dependent upon this selection. Options include:

- **Livewire** – Livewire AoIP audio.
- **Livewire Backfeed** – The backfeed streams created by consoles on the network.
- **Livewire Surround** – The last two channels of the original Livewire Surround stream are a stereo downmix of the 5.1-channel content which can be made available here as an input.
- **AES67 SIP** – Provides a unicast option within the AES67 standard.
- **AES67 Multicast** – The most typical AES67 stream type.
- **AES67 Multicast 16-bit** – 16-bit streams are supported but not automatically detected; use this option to manually identify a 16-bit stream.
- **Sine 1kHz -20dBFS** – An internally-generated tone for analog setup and testing.
- **V-Mixer** – An internally-created mixer for special use cases.

### Primary Source

The specific AoIP source is entered in the **Primary Source field** (3-2C).

- **Livewire** – A Livewire channel number (1-32767) is expected; the Browse button will show any sources found through the Livewire discovery channel.
- **Livewire Backfeed** - A Livewire channel number (1-32767) is expected; the Browse button will show any backfeed streams found through the Livewire discovery channel.
- **Livewire Surround** - A Livewire channel number (1-32767) is expected; the Browse button will show any surround streams found through the Livewire discovery channel.
- **AES67 SIP** – A SIP URI scheme is expected (sip:user@host); the Browse button will show any discovered sources.
- **AES67 Multicast** – A multicast address is expected.
- **AES67 Multicast 16-bit** – A multicast address is expected.

### Signal Mode

The **Signal Mode dropdown** (3-2D) determines whether the source will be treated as mono or stereo.

- **Stereo** – Feeds an incoming L/R to the left and right channels of assigned mixes.
- **Left** – Feeds an incoming left channel to both left and right channels of assigned mixes.
- **Right** – Feeds an incoming right channel to both left and right channels of assigned mixes.
- **Sum L+R** – Creates a mono mix of an incoming stereo source and feeds it to both the left and right channels of assigned mixes.

### Signal Phase

The **Signal Phase dropdown** (3-2E) determines whether the source will maintain normal phase or be

inverted.

## Signal Mode for Record Bus

The Record Bus is a special variation of the Program 4 mix that by default is post-fader but pre-ON/OFF. The **Signal Mode for Record Bus dropdown** (3-2F) determines how the source will feed this mix.

- **Stereo** – Source is delivered to the Record mix in stereo.
- **Sum to Left** – Creates an L+R sum of the source and delivers the summed signal to the Left channel of the Record mix.
- **Sum to Right** – Creates a L+R sum of the source and delivers the summed signal to the Right channel of the Record mix.

The Sum to Left and Sum to Right options create the ability to provide a split Record, a common setup for phone recorders. The Operator mic can be recorded to one side of a stereo channel while all other sources are recorded on the other channel.

## Record Insert Mode

By default, the Record mix is a post-fader feed. It can be switched to a pre-fader feed with the **Record Insert mode dropdown** (3-2G).

## Input Trim Gain

The **Input Trim Gain field** (3-2H) allows you to specify a gain adjustment of between -25dB and +25dB to the signal path just ahead of the fader.

## Panorama Position

The **Panorama Position field** (3-2I) is a pan (left/right balance) control. "0" is the center position. -24 is a hard pan left, while +24 is a hard pan right. This setting can be adjusted on the fly by the operator if permitted in the Show Profile settings.

## Audio Delay

Adjusting the **Audio Delay** (3-2J) allows audio to be delayed by a specific amount in milliseconds. This is useful for syncing to video or when setting an AES67 link offset.

## Synchronous Mode

Enabling **Synchronous Mode** (3-2K) strictly uses the incoming AES67 timestamp plus any specified link offset value to compensate for any network delay (which can add many milliseconds over a typical WAN) when receiving audio. Using Synchronous Mode provides the lowest possible latency - typically one packet (1ms) less than if it was disabled – which is especially critical for the mic-to-headphone monitor loop.

When Synchronous Mode is disabled, iQs plays the incoming stream with packet buffering plus any additional link offset. It automatically works for WAN and legacy Livewire streams where the timestamps are

not DTP accurate, but the exact alignment of the incoming stream is unknown and there is no consideration

## Microphone Processing

Dynamics processing, including a Noise Gate, Compressor, and De-esser, is available for Microphone source types in the **Microphone processing menu** (3-2L). The checkbox to the left of each section enables that particular component.

### Noise Gate

The Noise Gate automatically reduces the gain of the microphone when input levels decrease to prevent background noise from being heard or increased either by the compressor in the channel strip or in the station's main audio processor.

- **Threshold** – When the input signal falls below this level, the Noise Gate activates. Higher values (toward 0dB) will cause the gate to activate sooner, while lower values (toward -50dB) will allow input audio to fall to a lower level before it activates.
- **Depth** - Determines how much attenuation is applied to the input signal once it crosses the specified Threshold.

### Compressor

The Compressor reduces the dynamic range and peaks of the incoming audio to help smooth out audio levels at the output.

- **Threshold** – The Compressor begins working once the input audio exceeds the value of the Threshold; audio below the Threshold is not compressed.
- **Ratio** - The Ratio control sets the amount of processing that takes place and controls how “aggressive” the processing sounds. The Ratio is the amount of change to the input level in dB that is required to change the output level by 1dB. For instance, a “loose” ratio of 2:1 would require a 2dB change at the input to yield a 1dB change at the output, allowing more dynamics from the mic. A “tight” ratio 16:1 ratio would require a 16dB change at the input to yield a 1dB change at the output and result in a more dense, consistent sound.
- **Freeze Mode** – When audio falls below a pre-determined threshold, the action of the compressor will freeze to prevent background noise from being increased.

### De-Esser

The De-Esser reduces sibilance caused by “s” sounds that can often cause distortion in the signal.

- **Threshold** – The De-Esser begins working once the input audio exceeds the value of the Threshold.
- **Ratio** – Works exactly as the Ratio control in the Compressor (see above) but with a maximum ratio of 8:1.

### Equalizer

A **Three Band Equalizer** (3-2M) allows the overall tonal shape of the audio to be customized on each



channel strip.

- **Frequency** – Sets the center frequency of the Low band (20-320 Hz), Mid band (125-2000 Hz), and High band (1250 – 20000 Hz).
- **Gain** – Determines the amount of boost or cut applied to each band (-25dB to +15dB).
- **Mode** – Sets the High band to be either a Peak or Shelf EQ; the Low band will automatically switch between Peak and Shelf depending upon the setting of its Gain control.

### Source Availability

The **Source Availability checkboxes** (3-2N) determine which faders (or other inputs) sources can be assigned to. For example, if you want the Control Room Mic to appear only on the left-most fader, you would check only the “Channel 1” box.

For sources that are monitor-only, uncheck all Channels to prevent the source from being fed into the final mix and creating an audio feedback loop. Use the “All Channel” checkbox for a quick toggle option to select “All” or “None”.

### Fader Mode

The **Fader Mode dropdown** (3-2O) defines fader start actions and start logic.

- **Normal** – The On/Off button is exactly that, and on/off toggle when the button is clicked by the operator.
- **Fader Start** – Turns the channel on and activates any associated machine logic when the fader is raised from the  $-\infty$  position.

Regardless of which Fader Mode is selected, clicking the “Off” button at any time will turn the channel off.

### Preview Mode

The **Preview Mode dropdown** (3-2P) determines whether Preview audio is pre-fader, which acts like a traditional “Cue” circuit, or post-fader, which behaves like a “Solo” feed.

### Preview Switching

The **Preview Switching check boxes** (3-2Q) controls the behavior of the channel strip with Preview is engaged. Either option can be turned off, used alone, or used together.

- **Channel ON turns Preview OFF** – If the Channel is turned OFF and Preview audio is turned ON, the Preview audio turns off when the Channel is turned on.
- **Preview ON turns Channel OFF** – If the Channel is turned ON and Preview audio is turned OFF, the Channel turns off.

### Auto-start Timer

When the **Auto-start Timer** (3-2R) is enabled, the count-up timer will start when a Channel is turned ON and the counter is set to “Auto” in the Show Profile setting.

## Logic Port

When the **Logic Port control** (3-2S) enables or disables GPIO machine logic and, when enabled, selects its mode of operation.

- **Disabled** – Turns off GPIO control for this source.
- **Exclusive Mode** – Permits GPIO control and associates it with a single fader.
- **Shared Mode** – Allows more than one user to send ON/OFF/START controls via GPIO to the source.

Some profile types also offer a “GPIO Ready” mode in a separate checkbox. This allows devices such as CD players or tape machines to signal their “ready” state to the operator through the OFF button.

When “GPIO Ready” is enabled, the device must be cued and ready in order for the OFF button to illuminate; if the device is cueing, the OFF button will remain dark.

## Live Controls

The group of radio buttons in the **Live Controls section** (3-2T) determines which options the operator sees and can adjust on the fly when the “OPT” button is clicked on a particular Channel strip. Note that because there are no physical rotary encoders on iQs, the “Primary” checkboxes are not used.

Controls include Source, Gain, Panorama, Dynamics, Equalizer, and Automix.

## Page Buttons

There are four **Page Buttons** (3-2U) at the bottom of the Source Profile page.

- **Save as Copy** – Duplicates the current configuration and creates a copy on the main Source Profiles page. This is a handy shortcut for creating sources that are identical except for one or two fields – typically the name and Livewire channel number – such as multiple CD players.
- **Apply** – Immediately applies any changes made.
- **OK** – Immediately applies any changes made then closes the page and returns you to the main Source Profiles page.
- **Cancel** – Discards any changes made since it was last opened and returns you to the main Source Profiles page.

The screenshot shows the iQs (Studio-1) Control Center interface. The top bar includes the iQs logo, the title "iQs (Studio-1) Control Center", and a "LU Meter ▲" indicator. A sidebar on the left contains navigation options: Logout, System, System Status, Setup, License Management, Customize, Log, Log History, Log Setup, Rackin / Restore, Synchronization, Console Control, Surface, Profile Manager, and Sources. The main content area is titled "Source Profile:" and contains the following fields: Source type, Source name, Source input, Primary source, Signal mode, Signal phase, Signal mode for Record bus, Record Insert mode, Input trim gain [-25 .. 25 dB], and Panorama position [-24 .. 24]. The right side of the interface shows the "Operator Microphone" section with controls for Board Mic, a dropdown menu set to "Sine 1kHz -20dBFS", a volume slider at 0, a "Left" dropdown, a "Normal" dropdown, a "Stereo" dropdown, a "Post-Fader" dropdown, and a gain control set to "+0.0 dB" with a "0" value below it. Orange callout letters A through I are placed around the interface with arrows pointing to specific elements: A points to the "Sources" menu item, B points to the "Sine 1kHz -20dBFS" dropdown, C points to the "Log" menu item, D points to the "Left" dropdown, E points to the "Log Setup" menu item, F points to the "Stereo" dropdown, G points to the "Profile Manager" menu item, H points to the "+0.0 dB" gain control, and I points to the "Sources" menu item.

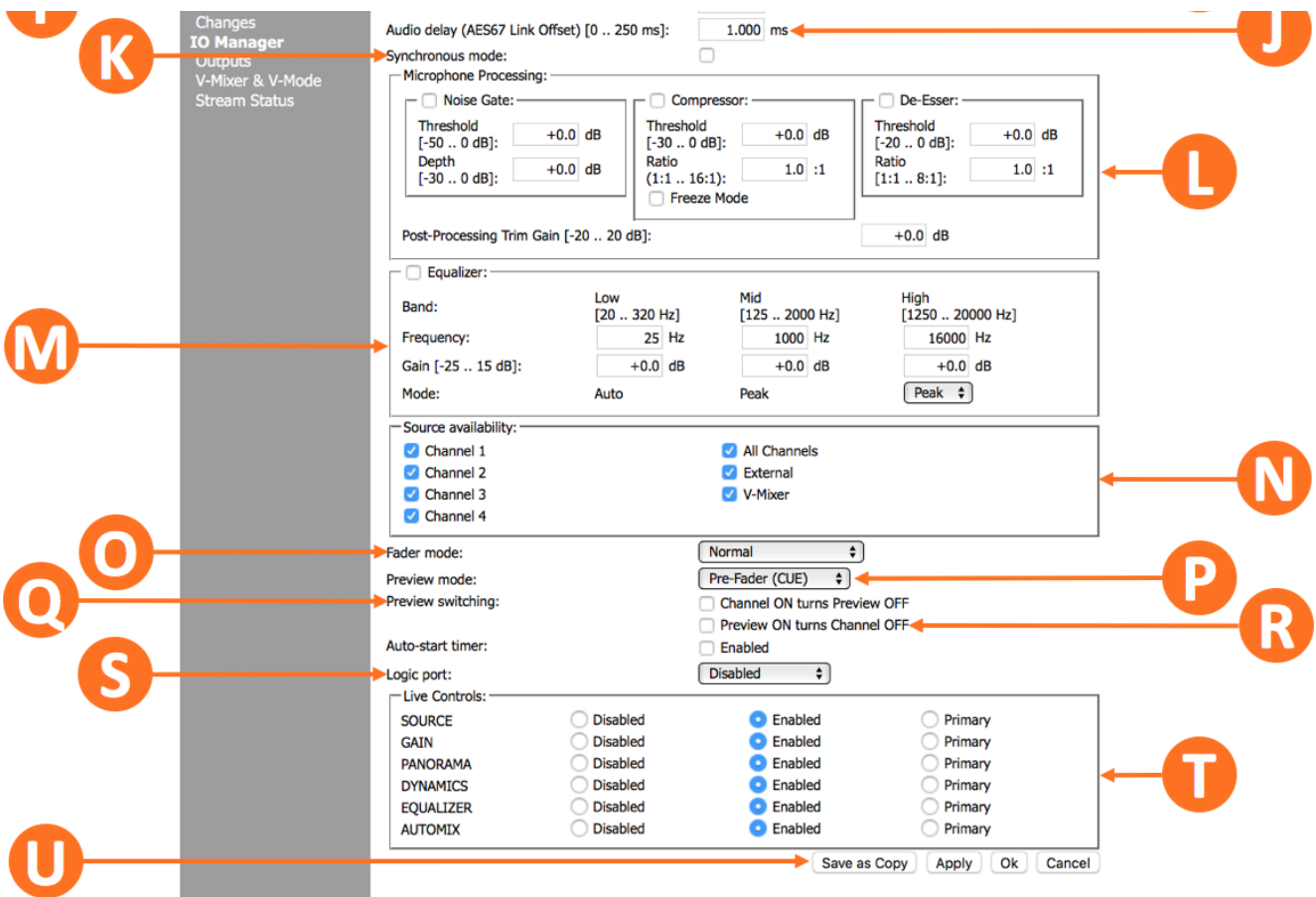


Figure 3-2 - Source profile options

## Show Profiles

Like Source Profiles, Show Profiles are set up through the iQs Control Center which is accessible by launching your preferred web browser on a computer connected to your studio network and entering the IP address of the iQs in the address bar. When prompted for authentication, enter the user name “user”. The password field is left blank.

## Show Profiles Menu

Show Profiles define how the surface is laid out channel-by-channel and determine some console behaviors. They are so named because they provide a convenient method of recalling a particular way of organizing the controls for different dayparts or program types, such as a morning show, a live sports broadcast, or a local newscast.

The **Shows menu** (4-1A) in the Profile Manager section of the iQs Control Center menu contains the various options related to recalling, saving, editing, and resetting Show Profiles.

Show Profiles can be changed via GPIO by entering the appropriate GPIO channel of a Telos Alliance xNode in the **Logic Port for Show Switching field** (4-1D). In addition to allowing GPI triggers to change the profile, it can also create a GPO contact to identify which show is active.

Enabling the **Hide (NONE) in show list control** (4-1C) hides the option to select “None” – the equivalent of an entirely blank Show Profile – from the surface, preventing operators from ending up with a completely un-configured console.

Clicking on either the **Edit button** (4-1E) or the **Show Profile letter or name** (4-1B) will open a new page where individual show-specific parameters can be changed.

The **Capture button** (4-1F) saves the current console layout to the selected Show Profile.

The **Reset button** (4-1G) sets all Show Profile values back to factory defaults.

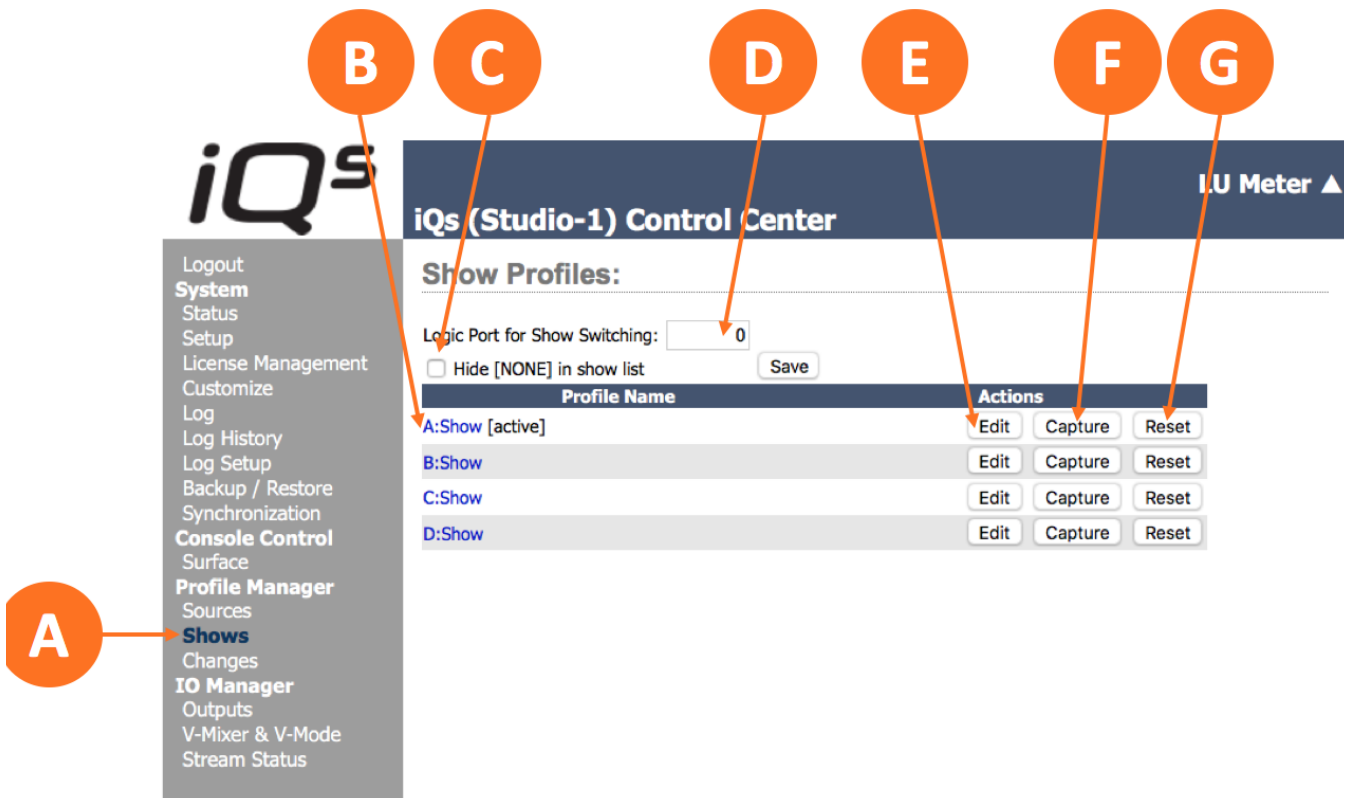


Figure 4-1 - Show profiles

## Editing Show Profiles

Four Show Profiles are supported. To create a Show Profile, begin by clicking either on the **Edit button** (4-1E) or the **Show Profile letter or name** (4-1B) which will open a new page with all settable parameters.

You may notice that many of these parameters are mirrored on the surface itself, and any current values for buttons, faders, volume controls, etc. are represented here though typically in numerical rather than graphical form. Additional controls that allow or prohibit the operator from making changes to certain settings are found only here in the Control Center.

### Fader Channels

A friendly seven-character name can be entered into the **Show name field** (4-2A) so that operators can easily identify and recall a specific profile.

The **Source dropdown** (4-2B) is used to select the input source for the channel. Note that the only sources that will appear in the dropdown are those which have been added via the Source Profile manager and assigned to an output device (such as a Telos Alliance xNode).

The **On checkbox** (4-2C) determines whether the channel will be switched on when the profile loads. If the checkbox underneath with the padlock icon is also checked, the operator will be unable to change the channel On/Off status from the surface.

The **PGMx checkboxes** (4-2D) set the PGM mix destinations (Program 1 – Program 4) when the profile loads. If the checkbox underneath with the padlock icon is checked for a particular mix bus, the operator will be unable to change its status from the surface.

The **Group Start dropdown** (4-2E) links channel On states. Any On state changes made to a channel designated as a Master channel will affect all other channels designated as either Master or Slave. When set to Independent, the fader channel is unaffected by any group start signals.

The **Automix dropdown** (4-2F) sets the importance or “weight” of each fader channel when Automix is enabled in the adjacent checkbox. Weight 1 is the highest priority, with subsequent numbers having less priority. See the “Automix” section below for more information.

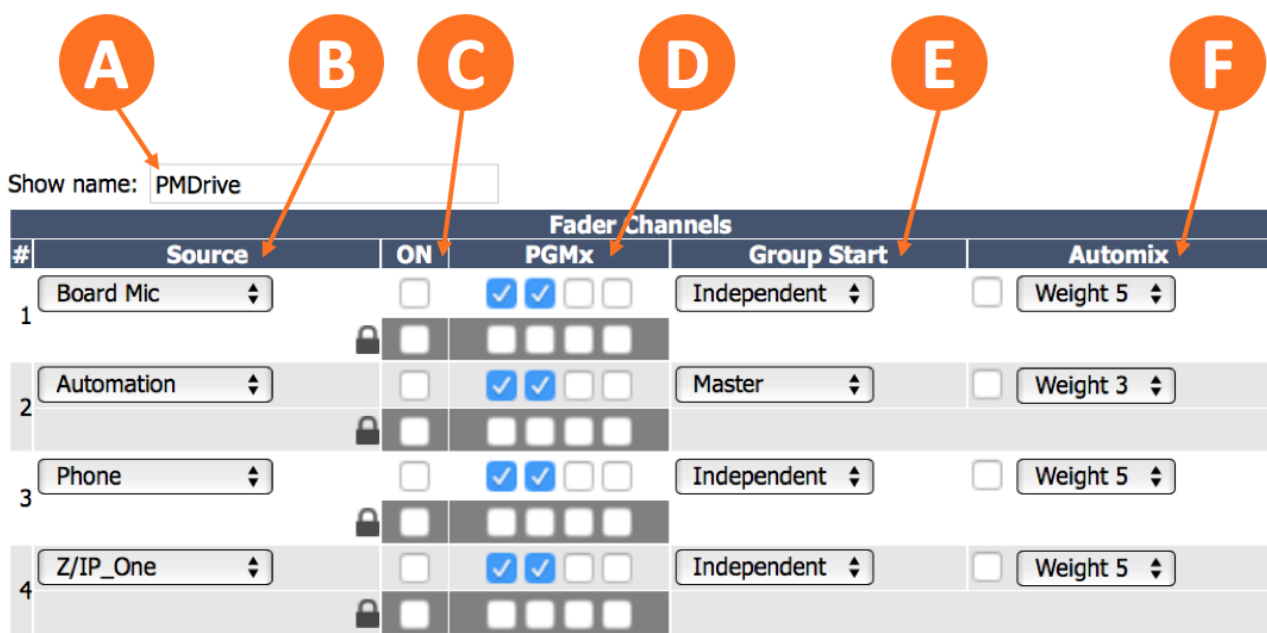


Figure 4-2 - Fader channels

## Phone Connection

Interfacing with a Telos VX phone system is set up in the Phone Connection section.

Enter the IP address of the appropriate Telos VX product in the **Phone Server IP field** (4-3A) or use the browse button to view and select from all available addresses.

Do the same for the **Studio name field** (4-3B), which is a Studio Configuration as defined in the VX system.

The **Show Name field** (4-3C) is optional, but if declared, the selected VX Show will become active. Leaving the field empty allows a VX Show to be “pushed” externally to the iQs. The Phone Connection settings must

be in place in order to use Fixed or Selectable Phone types

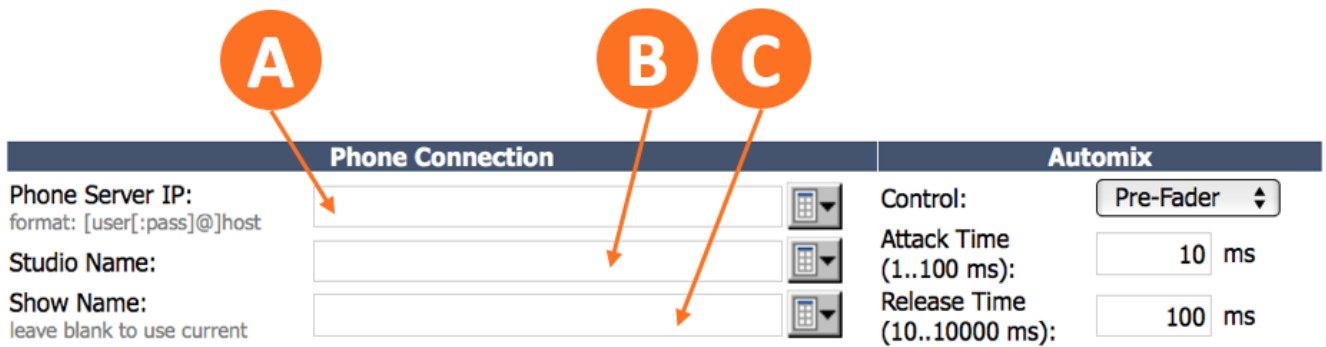


Figure 4-3 - Phone connection

### Automix

The Automix feature automatically sets the balance between various active sources and ensures the combined output of all sources doesn't exceed the level of the source with the most gain. This is useful for keeping multiple mics under control, ensuring that the host mic is always dominant in the mix, or to help with the balance between voice and music during talk-overs.

The **Control dropdown** (4-4A) determines the patch point from which Automix is fed. When set to "Post-Fader", the operator can control the input gain to the Automix algorithm. Selecting "Pre-Fader", the input gain to Automix is fixed.

The **Attack Time field** (4-4B) sets how quickly Automix will reach to reduce gain in as its input levels increase. The **Release Time field** (4-4C) determines how quickly Automix will increase gain when input levels decrease.

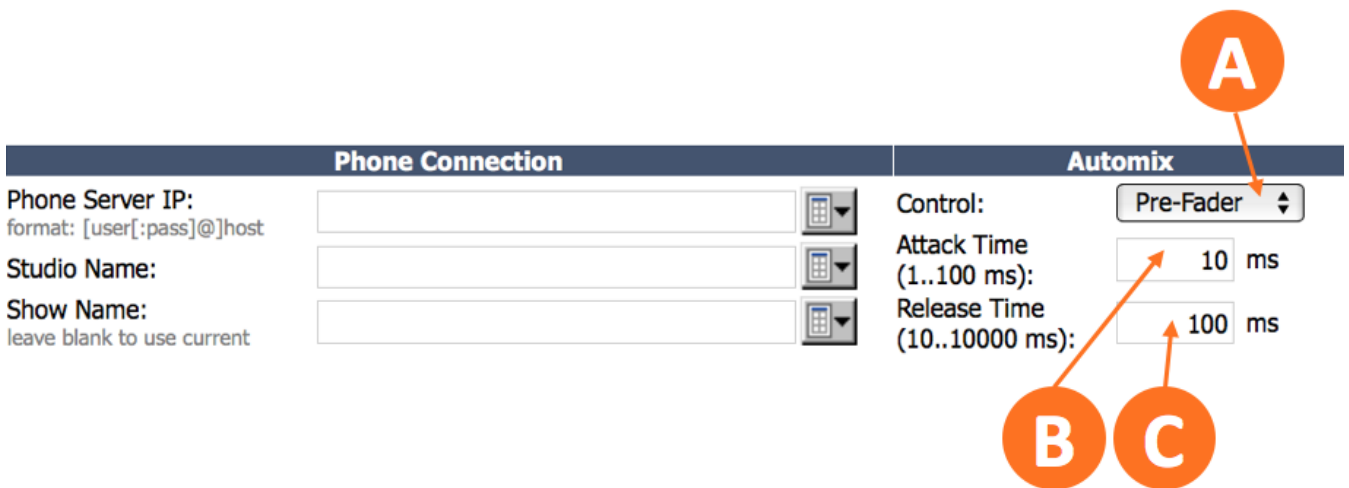


Figure 4-4 - Automix

### Monitor Section

The Monitor Section includes four monitoring points:

- **CR Monitor** – The control room monitors (operator position)

- **CR Headphones** – The control room (operator) headphone
- **Preview** – The Preview (or “cue” output)
- **Studio Monitor** – The studio monitors (typically a host studio position)

Various parameters can be set for each monitor type, but note that not all settings are applicable to all monitor types while others are exclusive to only one type of monitor.

The **Volume Level field** (4-5C) sets the defined volume level when the Show Profile is loaded and the **Volume Set checkbox** (4-5B) is checked. If left unchecked, the existing volume level is retained when the Show Profile is loaded.

The **Volume Adjust Allowed checkbox** (4-5A) allows the operator to adjust the volume when checked. Left unchecked, the Volume cannot be controlled by the operator.

The **Dim Gain field** (4-5D) defines the amount of attenuation during a Dim event. A setting of “-Inf” mutes the main content while “0” applies no attenuation to the main content.

The **Gain in Muted State field** (4-5E) defeats the usual mute state in favor of a “dim” state, allowing monitors to pass audio but with a much lower gain value. In most radio applications, the goal is to completely mute monitors in the same room as any open mics to avoid feedback. In some television applications, however, the studio mics may need to stay open for internal communication or IFB purposes, but the talent may still need to hear program audio through monitors.

The **Source dropdown** (4-5F) defines the audio source for the monitor when the Show Profile loads. Whether the operator can change the source on the surface is determined by the **Source selection allowed checkbox** (4-5G).

Enabling the **Preview in checkbox** (4-5H) allows the Preview mix to be added into the CR Monitor and/or Headphone Monitor outputs. When enabled for the Headphone Monitor, the **Preview mode dropdown** (4-5I) determines whether the Preview audio is mixed into both left and right channels (“Normal”) or into only the left or right channel (“Split”).

The **Logic Port field** (4-5J) accepts a Livewire channel number for the monitor logic, the value of which would be applied to a GPIO port. This is commonly used to trigger ON AIR or mic tally lights.

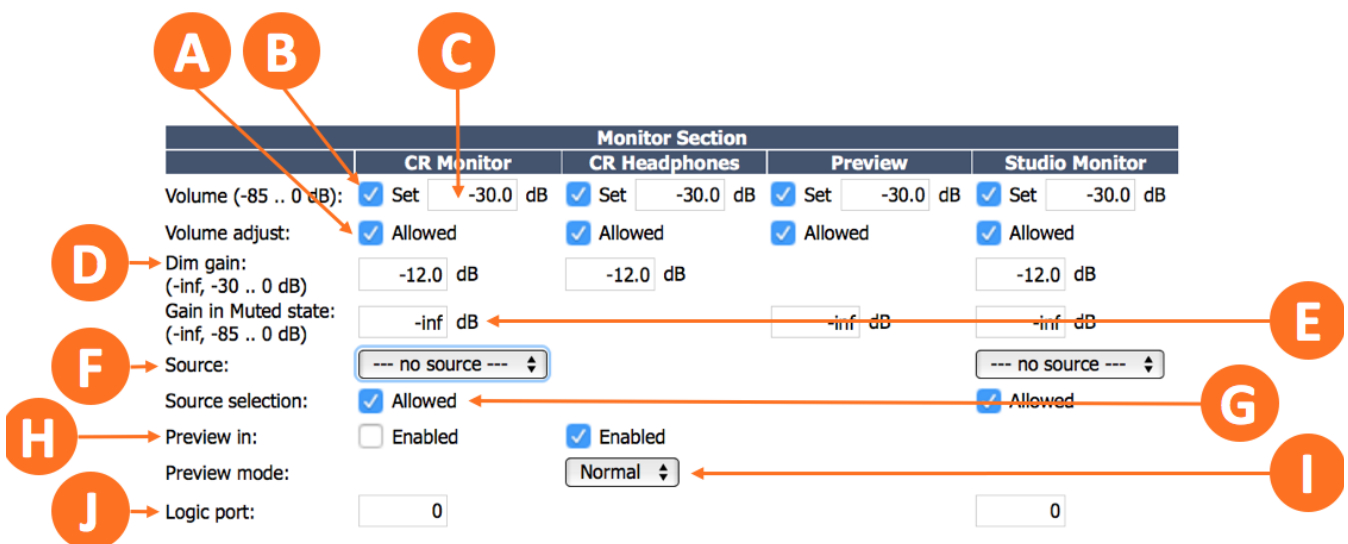


Figure 4-5 - Monitor section

Figure 4-5 – Monitor section

## External Inputs

While most of the Monitor section is centered around local DSP-produced sources, it is sometimes necessary to utilize a source on the AoIP network. Note that only sources set up in Source Profiles will appear in the **External source dropdowns** (4-6A) for each input, and settings in the Source Availability menu will determine whether a particular source is available for monitoring.

Source choices include:

- **External 1 (and External 2)** – The monitor section has two EXT buttons used to route an external source to the monitors. The source feeding those EXT buttons for this Show Profile is defined here. An off-air tuner is a typical source, allowing the operator to listen to the actual transmitted signal.
- **External Talk** – This is used to defeat the default configuration in which Talkback audio from the operator mic is routed through a channel on the surface. In many applications, the operator doesn't contribute audio to the on-air mix and so tying up a strip for the operator mic is costly. This option allows the operator microphone (or any other available source) to be the audio source when a "Talkback" function is called.
- **External Preview** – This defines the source applied to the Preview mix when an "Ext Preview" logic state is engaged via GPIO. For example, this can be used to route Intercom audio into the monitor section of the surface.

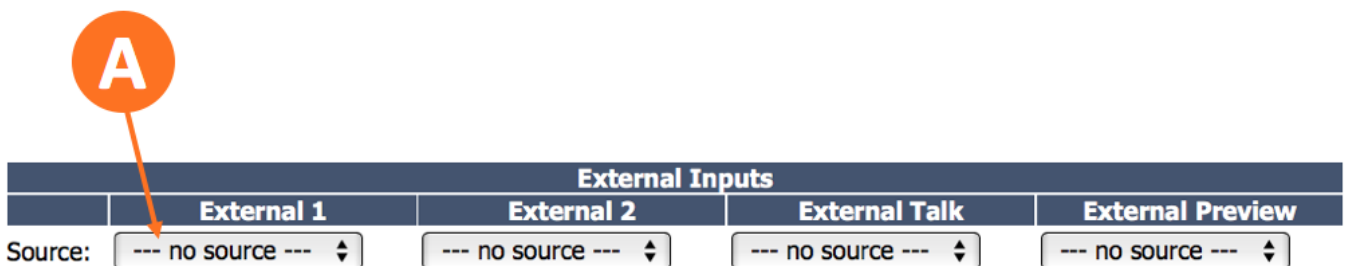


Figure 4-6 - External inputs

## Record Mode

Clicking the "Record" button on the surface triggers a GPIO command to record whatever source is currently routed to the studio monitors. Its specific behavior can be defined by choosing options from the **Record mode dropdown** (4-7A). Choices include:

- **Disabled** – Effectively turns off Record mode, and clicking on the Record button does nothing.
- **Enabled** – Toggles the "historical" Axia record mode that most users who are familiar with this feature expect. When the Record button is clicked, the monitor section will change to a specialized Record mix which triggers a specified GPIO and mutes the CR monitors.
- **CR Ready** – Used to indicate a ready condition through a GPIO. GPO Pin 5 will latch in this mode when the Record button is clicked.



- **CR Ready with Auto-Reset** – Works just like CR Ready, but the latch will reset the moment a mute state is triggered
- **GPIO Button** – Treats the Record button as a GPIO button. GPO Pin 1 of the specified port will follow the button press, and GPI Pin 11 will trigger the illumination of the Record button.

Selecting CR Ready, CR Ready with Auto-Reset or GPIO Button requires that a value between 1 and 32767 be entered in the **Logic port field** (4-6B).

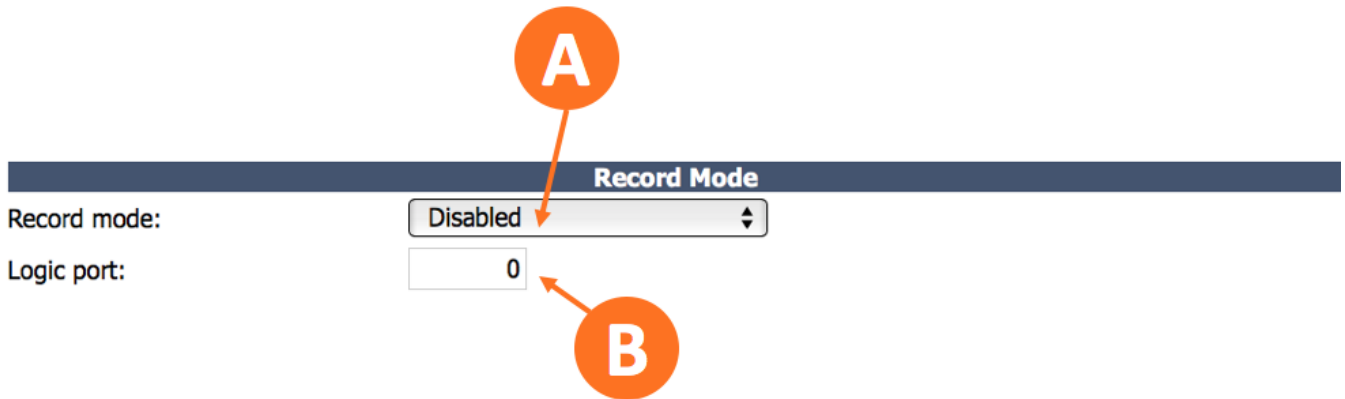


Figure 4-7 - Record mode

### User Interface

The User Interface section allows for the customization of certain aspects of the surface.

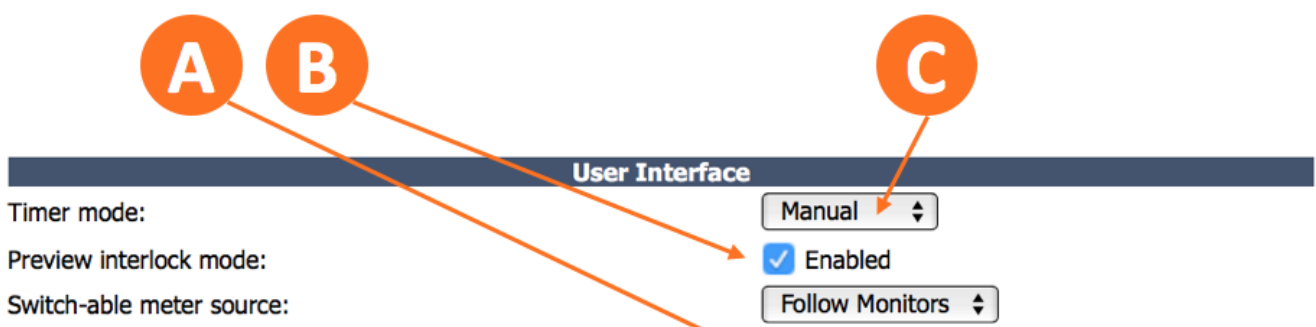
The **Timer mode dropdown** (4-8C) determines whether the count-up timer is triggered manually on the surface or by source profiles that have their time controls enabled.

If the **Preview interlock mode** (4-8B) is enabled, pressing a second PFL (“preview” or “cue”) button releases the PFL button previously pressed and routes the audio associated with the second button to the associated monitor source. When disabled, each PFL button must be pressed again to remove the channel from preview.

The timer can be manually controlled through GPIO by entering the appropriate channel in the **Logic Port for Timer field** (4-8A).

The **Talk to CR Level** (4-8E) sets the gain (either attenuated or amplified) of the “Talk to Control Room” audio.

The **Control lock map** (4-8D) allows any item that is NOT checked to become non-functional to the operator; checked items are available to the operator.



Logic port for timer:

Talk to CR level (-30 .. 10 dB):

Control lock map (selected actions are allowed):

- Meter source
- Timer mode
- Timer controls
- Record

- Talk to backfeeds
- Talk to studio
- Preview in HP

0  
-12.0 dB

D

E

Figure 4-8 - User interface

## Comparing and Saving Profile Changes

The **Changes menu** (4-9A) in the Profile Manager section of the iQs Control Center menu displays any differences in both Source and Show Profile settings between the Profile Manager and the currently active settings on the console surface.

Changes can be selected and de-selected via **individual checkboxes** (4-9B) and then saved to the profiles by clicking on the **Save Selected Changes button** (4-9C).

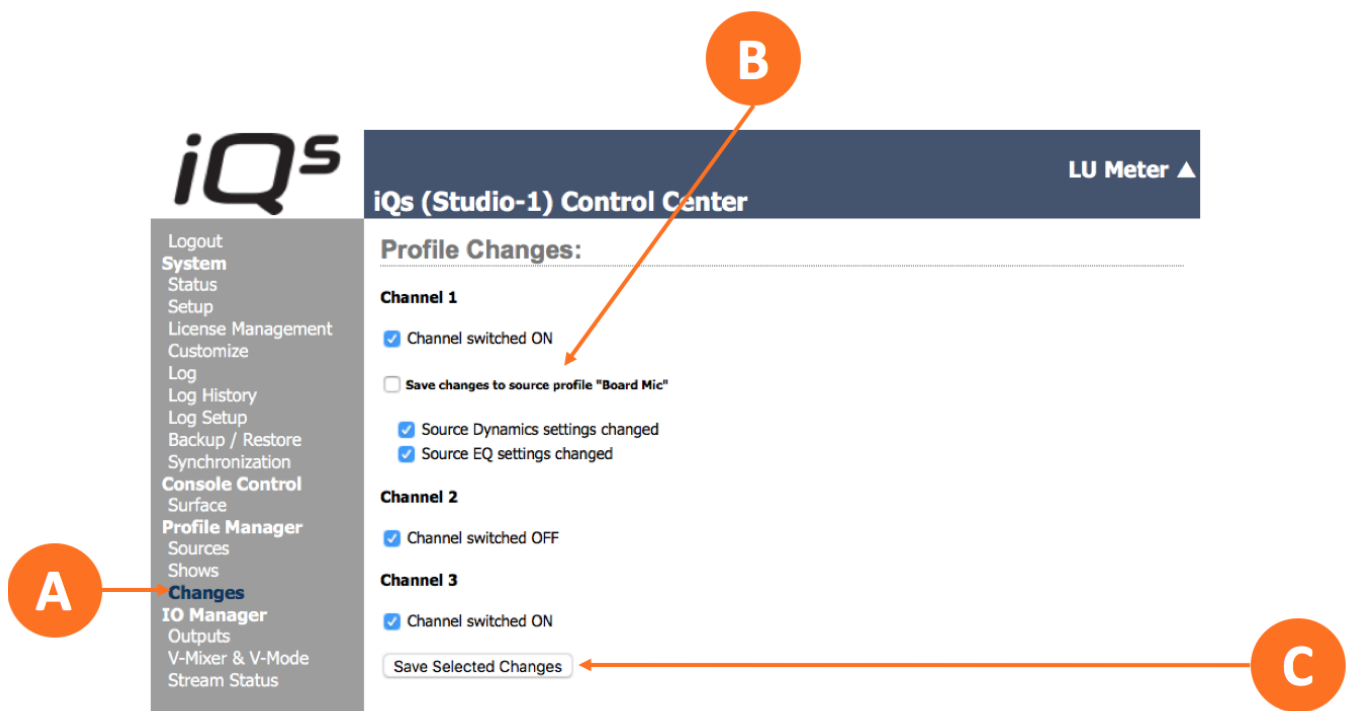


Figure 4-9 - Profile changes

## Audio Outputs

Configuring audio outputs is done via the iQs Control Center which is accessible by launching your preferred web browser on a computer connected to your studio network and entering the IP address of the iQs in the address bar. When prompted for authentication, enter the user name “user”. The password field is left blank.

---

## Outputs Menu

To begin setting up Audio Outputs, click **Outputs** (5-1A) in the I/O Manager portion of the iQs Control Center. Up to 24 outputs can be configured.

The **Output dropdown** (5-1B) for each output offers the following options:

- **Program 1 – Program 4** – The four standard output mixes.
- **Record** – A special mix generated from the Program 4 output mix. This is a Pre-ON and Post-Fader mix so that the operator can control the output level.
- **Phone** – Another special mix generated by the Program 4 output mix. This is a Pre-ON and Pre-Fader mix, useful where no operator level control is needed.
- **CR Monitor** – The control room monitor driven by the CR Monitor section of the surface.
- **CR Monitor Direct** – The control room monitor, but a pre-volume knob source which is not impacted by mute states.
- **CR Headphone** – The operator headphone feed driven by the Headphone section of the surface
- **Preview** – The preview (“cue”) mix driven by the PFL state of any fader channel
- **Talk to CR** – The audio of any profile that initiates a talkback to the Control Room. This is mixed in with the Preview mix, but if there is an application for only the talkback audio to be sent, this is the source to utilize.
- **Talk to External** – Audio content from the designated Talk source when the CR Monitor logic “Talk to External” is triggered. As mentioned in the Show Profiles section, the designated Talk source is either the Operator Microphone assigned to a fader channel or the Show Profile’s “Ext Talk” designation.
- **Studio Guest HP** – This feed follows the Studio Monitor assignment but is not muted, and is used to feed headphones other than the operator’s.
- **Studio Talent HP** – Similar to the Studio Guest HP, but received talkback audio when the “Talk to Studio” button is pressed.
- **V-Mix** – The output of the V-Mixer
- **V-Mode** – The output of the V-Mode stage
- **Sine 1kHz -20dBfs** – A DSP-generated 1kHz tone at a level of -20dBfs.
- **Auto Backfeed** – This is the default setting for unused outputs. When a source is loaded that calls for a backfeed, one of the outputs from the pool of available Auto Backfeeds will be assigned and configured. If no outputs from the pool is available, the channel with the calling profile will show an error condition. To reclaim an assigned Auto Backfeed output, the profile would need to be unloaded.

The **Name Overwrite field** (5-1C) is a useful option if you have multiple consoles in the same facility that

use a common default name, such as “Program 1.” Entering a more specific name (such as “Studio A Prog 1” for example) makes it easier to select the correct source from all available network sources.

The **AoIP Type dropdown** (5-1D) selects between the multicast or unicast format for AES67 transmission.

When using Multicast (the default selection) a multicast address must be entered into the **Channel/IP field** (5-1E). A Livewire channel number (1 – 32767) may also be entered. When using a Livewire channel number, the device is advertised through the Livewire advertisement protocol; multicast addresses are not.

When Unicast is selected, a SIP URI will be generated which will carry through to the other end of the link. The intended configuration for unicast dictates that the receiving end will issue a SIP request from the transmitting device.

The **Payload Type dropdown** (5-1F) defines the AES67 packet type, which more specifically defines the packet time or “ptime”, which is the value that determines the amount of audio contained within the packet. AES67 Standard packets are 1ms. Standard Stereo packets are 5ms, represent a more efficient option, and may be required when interfacing with legacy Livewire equipment.

Clicking on the **SDP link** (5-1G) downloads the SDP file, a method of exchanging AES67 stream information between devices, which may be required when interfacing with other AoIP products. Clicking on the Up Arrow next to it will open a pop-up window to view the file copy/paste it into other products.

The **Backfeed Mode dropdown** (5-1G) defines the payload type for backfeeds. The options are the same as those in the Payload Type, AES67 Standard (1ms) and Standard Stereo (5ms). Some equipment, such as particular versions of a Telos VX system for example, should be configured to Standard Stereo (5ms) for compatibility.

Clicking the **Apply button** (5-1H) applies any changes you have made to the configuration.

**iQs (iQs-AE-1000-) Control Center** LU Meter ▲

**Network AoIP Outputs:**

#	Output	Name Override	AoIP Type	Channel / IP	Payload Type	SDP
1	Program 1		Multicast	6501	Standard Stereo (5ms)	SDP ▲
2	Program 2		Multicast	0	Disabled	-
3	Program 3		Multicast	0	Disabled	-
4	Program 4		Multicast	0	Disabled	-
5	Record		Multicast	0	Disabled	-
6	Phone		Multicast	0	Disabled	-
7	CR Monitor		Multicast	0	Disabled	-
8	CR Monitor Direct		Multicast	0	Disabled	-
9	CR Headphones		Multicast	0	Disabled	-
10	Preview		Multicast	0	Disabled	-
11	Talk to CR		Multicast	0	Disabled	-
12	Talk to External		Multicast	0	Disabled	-
13	Studio Guest HP		Multicast	0	Disabled	-
14	Studio Monitor		Multicast	0	Disabled	-
15	Studio Talent HP		Multicast	0	Disabled	-
16	V-Mix		Multicast	0	Disabled	-
17	V-Mode		Multicast	0	Disabled	-
18	Sine 1kHz -20dBFS		Multicast	0	Disabled	-
19	Auto Backfeed		Multicast	0	Disabled	-
20	Auto Backfeed		Multicast	0	Disabled	-
21	Auto Backfeed		Multicast	0	Disabled	-
22	Auto Backfeed		Multicast	0	Disabled	-
23	Auto Backfeed		Multicast	0	Disabled	-
24	Auto Backfeed		Multicast	0	Disabled	-



Figure 5-1 - Audio outputs

## V-Mixer and V-Mode

V-Mixer and V-Mode are small routing utilities that are useful for handling some of those unusual situations every studio runs into now and then. They are accessible through the **V-Mixer & V-Mode** (5-2A) section of the I/O Manager in the iQs Control Center.

### V-Mixer

The V-Mixer is a 5-input utility mixer. Available input sources are defined through Source Profiles are selected in the **Source dropdown** (5-2B).

Each input also has a **Status indicator** (5-2H), **On checkbox** (5-2G), and individual **Gain setting** (5-2F). The master output of the V-Mixer is set in the **Gain field** (5-2E).

The “On” state of each input can be controlled through GPIO by entering the appropriate Livewire number in the **Logic Port field** (5-2D).

The **Control Type dropdown** (5-2C) includes four different modes:

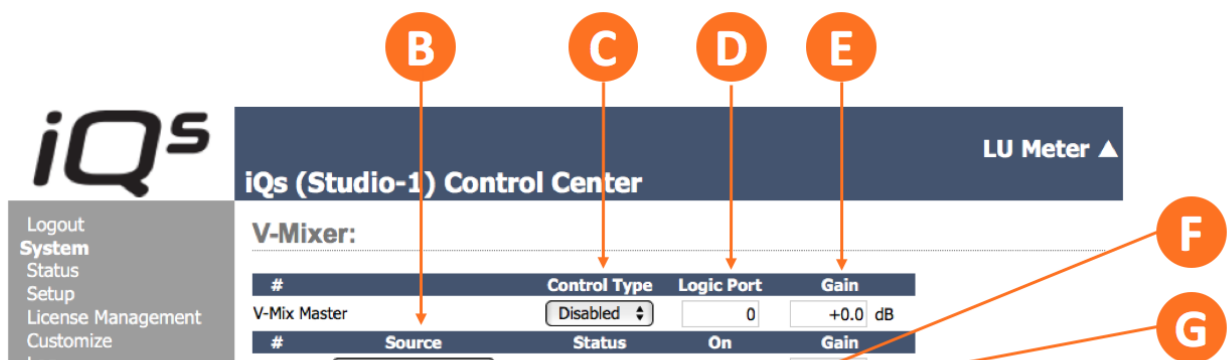
- **Disabled** – Disables the V-Mixer feature
- **Normal** – An active GPI triggers an “On” state
- **Toggle** – A momentary GPI will toggle “On” and “Off” states
- **Radio** – The most recent GPI will be the active “On” channel

Clicking on the **V-Mixer Apply button** (5-2I) saves and applies any changes.

### V-Mode

V-Mode accepts one of the main mixes (Programs 1-4 or the V-Mixer) through the **Input dropdown** (5-2J) and produces an output as defined in the **Mode dropdown** (5-2K).

Clicking the **V-Mode Apply button** (5-2L) saves and applies any changes.



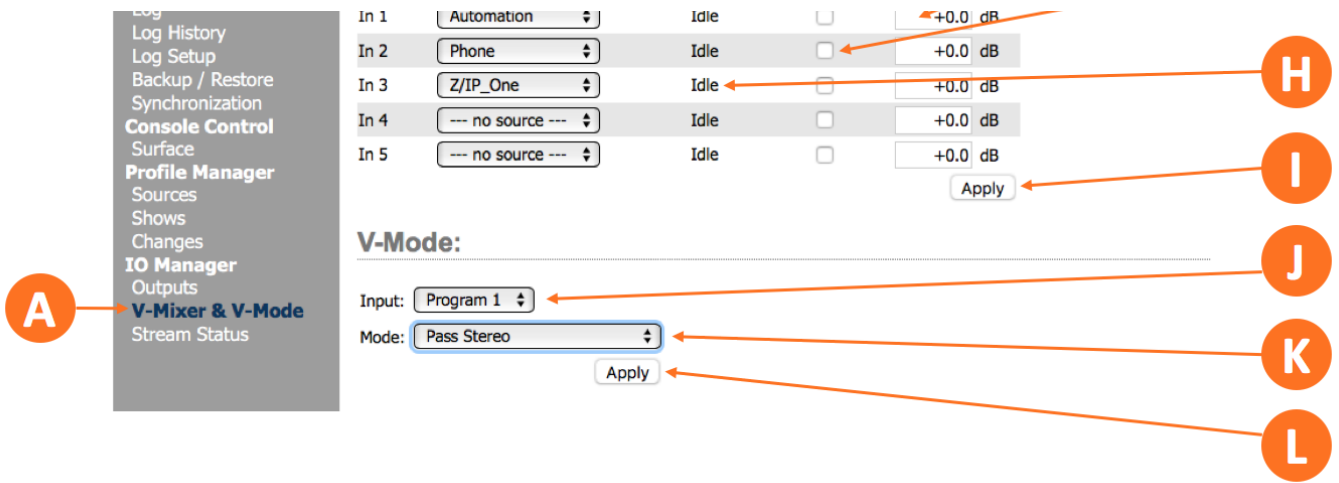


Figure 5-2 - V-Mixer and V-Mode

## Stream Status

Click on **Stream Status** (5-3A) to view the status of current network streams.

The **Minimum buffer** (5-3D) is shown along with the **RTP timestamp position** (5-3C). The location of the stream on the surface is shown in the **Where Used** field (5-3B).

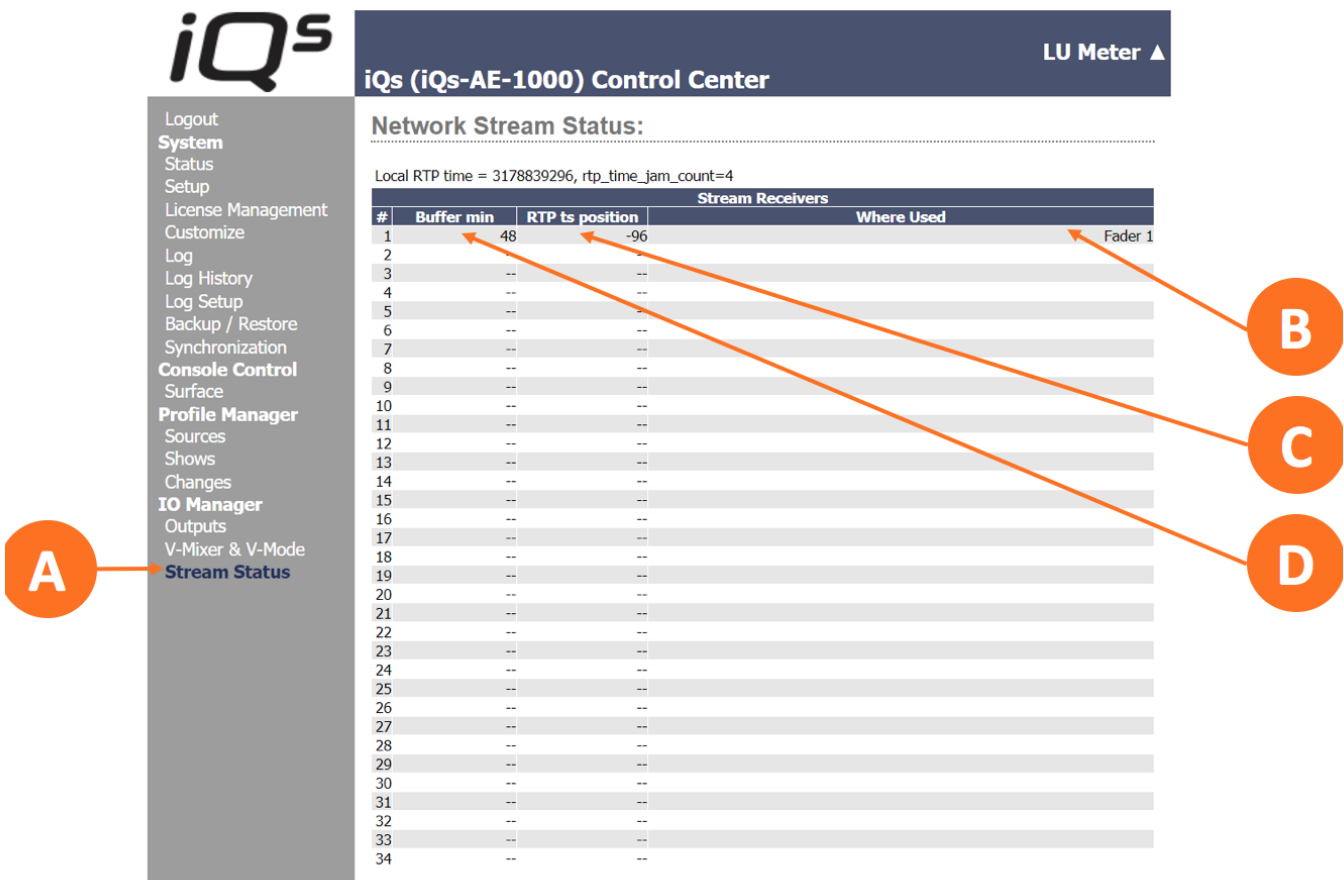


Figure 5-3 - Stream status

Figure 5-3 – Stream status

# System Configuration

The System portion of the iQs Control Center contains a variety of global status and configuration pages, each described below. The System menu is found via the iQs Control Center which is accessible by launching your preferred web browser on a computer connected to your studio network and entering the IP address of the iQs in the address bar.

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## Status

Clicking on the **Status menu** in the System section of the iQs Control Center displays the current Version as well as various software and hardware information.

---

## Setup

The **Setup menu** (6-1A) contains fields for network configuration, setting passwords, and selecting and updating software.

### Network Configuration

Enter a friendly Hostname along with the IP address, Netmask, and Gateway information in the **Network Configuration** section (6-1B). Click the **Save button** (6-1C) to save the settings.

### Passwords

The **Web access password section** (6-1D) allows you to set a password associated with the “user” log-in. This access level allows not only access to the console surface itself but to the iQs control center. This is typically reserved for the engineering staff. Type the password in the “Password” field, re-type it in the “Confirmation” field, then press the “Change” button to save.

The **Surface access password section** (6-1E) allows you to set a password associated with the “surface” log-in. This access level only allows access to the console surface itself. This is typically the log-in for operators. Type the password in the “Password” field, re-type it in the “Confirmation” field, then press the “Change” button to save.

### Software Updates

There are two **software banks** (6-1F). The active bank is indicated by a highlighted radio button next to the version number. To switch banks first click the button of the inactive bank and then click the **Change active bank button** (6-1G).

To upload a new software version that you have either downloaded from the website or which has been sent to you by Telos support, click on the **Choose File button** (6-1H). A dialogue box will open allowing you to

navigate to the proper file on your computer. Once you have selected the file, click on the **Upload image button** (6-1I) to upload the file to the inactive software bank. Follow the instructions above to change the active bank.

Clicking on the **Reboot button** (6-1J) – unsurprisingly – reboots the iQs hardware.

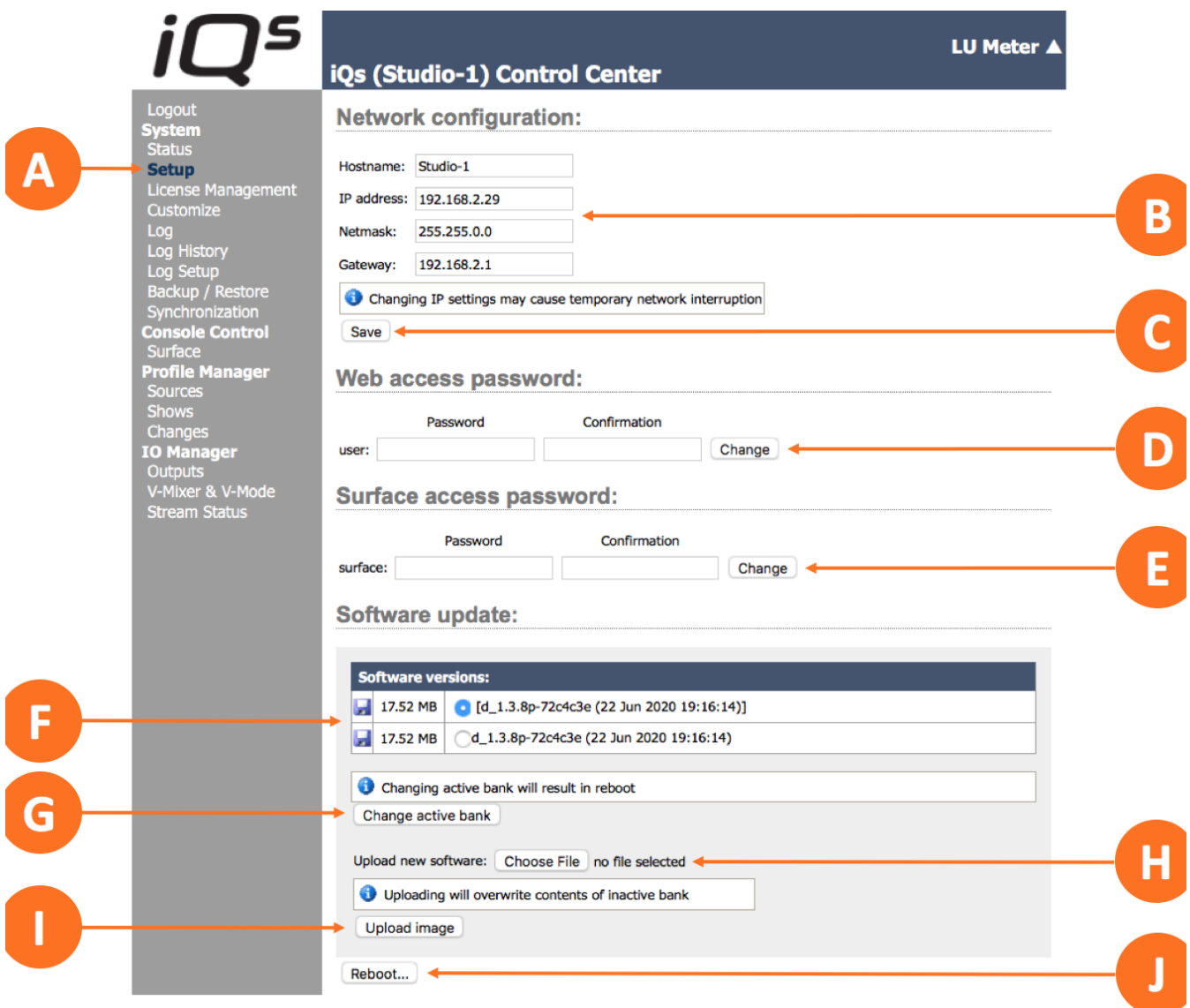


Figure 6-1 - Setup

## License Management

iQs comes equipped with four fader strips. Additional groups of four faders – up to 24 in total – can be added by way of a license key.

Click on **License Management** (6-2A). The **License Activation field** (6-2B) shows the current license key numbers (if any) and the total number of activated faders.

Paste the new license number in the **Paste License Key here field** (6-2D), then click the **Add License button** (6-2C) to enable the additional faders.



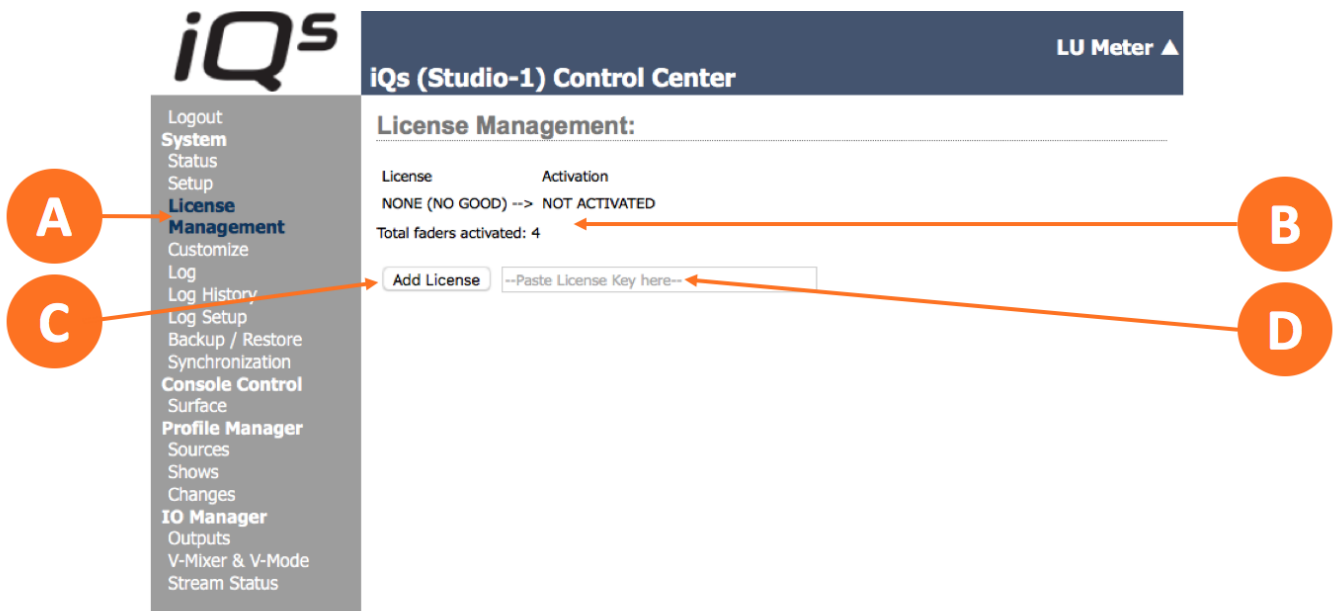


Figure 6-2 - License management

## Customize

The system clock is set and adjusted by clicking on **Customize** (6-3A).

**Note:** This clock acts as the time source for system logs. It does not affect the time shown on the console Surface in the web UI.

To set the system clock from the local PC time, click on the **Set time from PC button** (6-3B). Each time the button is clicked, the time on this page will update.

The **Timezone offset field** (6-3C) allows a manual offset from UTP time with the option to manually advance the clock by one hour for Daylight Savings Time by checking the **DST in effect checkbox** (6-3D).

The **DST Auto Adjust dropdown** (6-3E) offers several options for dealing with Daylight Savings Time:

- **Do not adjust automatically** – The clock will never adjust for Daylight Savings Time
- **Adjust using manual settings below** – Switching to DST is determined by the values set in the **DST Starts at** and **DTS Ends fields** (6-3G)
- **Adjust according to European Summer Time** – Follows the current European Summertime DST schedule
- **Adjust according to US rules** – Follows the current DST rules in the United States

If you prefer to use an NTP server rather than the PC clock, click the **Sync to NTP checkbox** (6-3F) and enter the IP address of the server. The status of the NTP connection is also indicated.

Click the **Apply button** (6-3H) to apply and save changes.

Figure 6-3 - Customize clock

## System Log

A log of the last 100 system events is available by clicking on **Log** (6-4A) in the System menu.

Last 100 system log entries		
	Sun, 02 Jan 2000 02:06:11	License Key " " is not valid for this product.
	Sun, 02 Jan 2000 02:06:08	License Key " " is not valid for this product.
	Sat, 01 Jan 2000 00:00:28	Avahi: ALL_FOR_NOW
	Sat, 01 Jan 2000 00:00:28	acl1: done loading show 1 [2 ms]
	Sat, 01 Jan 2000 00:00:28	acl1: loading show 1 'PMDrive'
	Sat, 01 Jan 2000 00:00:28	Changing number of licensed faders to 4
	Sat, 01 Jan 2000 00:00:28	Avahi: NEW: service 'sip:8@192.168.2.102 SRC 8@Node-102-0' of type '_sipuri._udp' in domain 'local'
	Sat, 01 Jan 2000 00:00:28	Avahi: NEW: service 'sip:7@192.168.2.102 SRC 7@Node-102-0' of type '_sipuri._udp' in domain 'local'
	Sat, 01 Jan 2000 00:00:28	Avahi: NEW: service 'sip:6@192.168.2.102 SRC 6@Node-102-0' of type '_sipuri._udp' in domain 'local'
	Sat, 01 Jan 2000 00:00:28	Avahi: NEW: service 'sip:5@192.168.2.102 SRC 5@Node-102-0' of type '_sipuri._udp' in domain 'local'

Figure 6-4 - System log

## Log History

A complete history of the system log is available by clicking **Log History** (6-5A).

Clicking an **individual log file** (6-5C) opens the file in the browser window. Clicking on the **download icon** (6-5B) downloads the log file to your computer's default download folder. By default, Windows PCs use Notepad to open .log files while Macs use Console.

To delete log files, select the files to be deleted then click the **Delete Selected Files button** (6-5D).

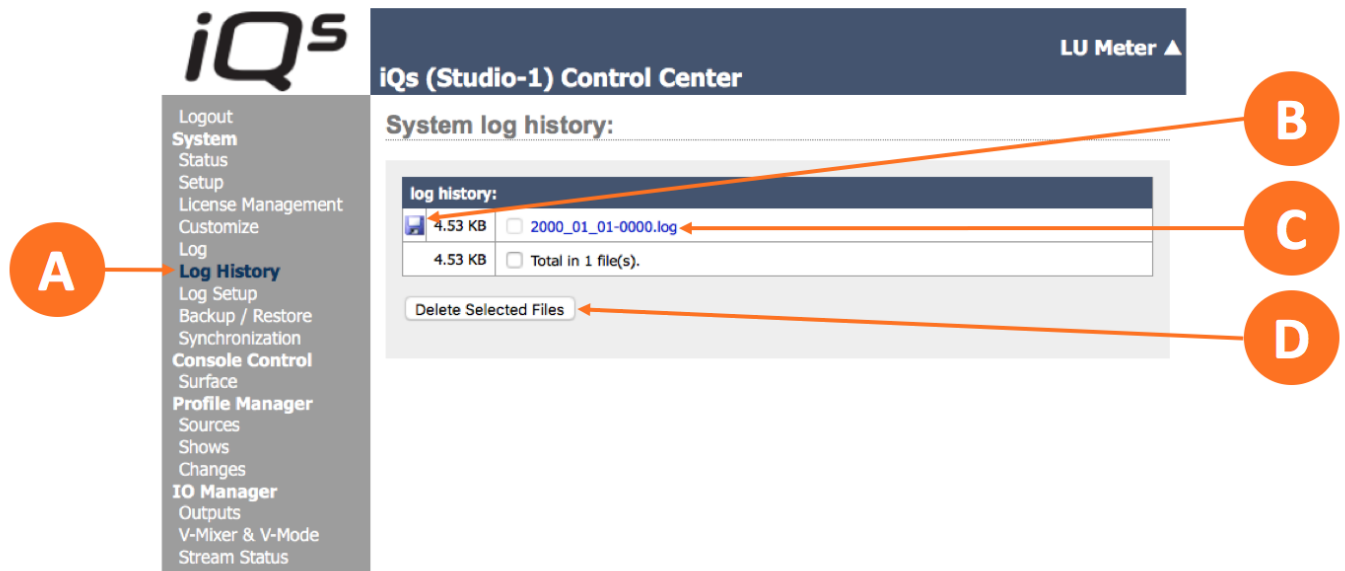


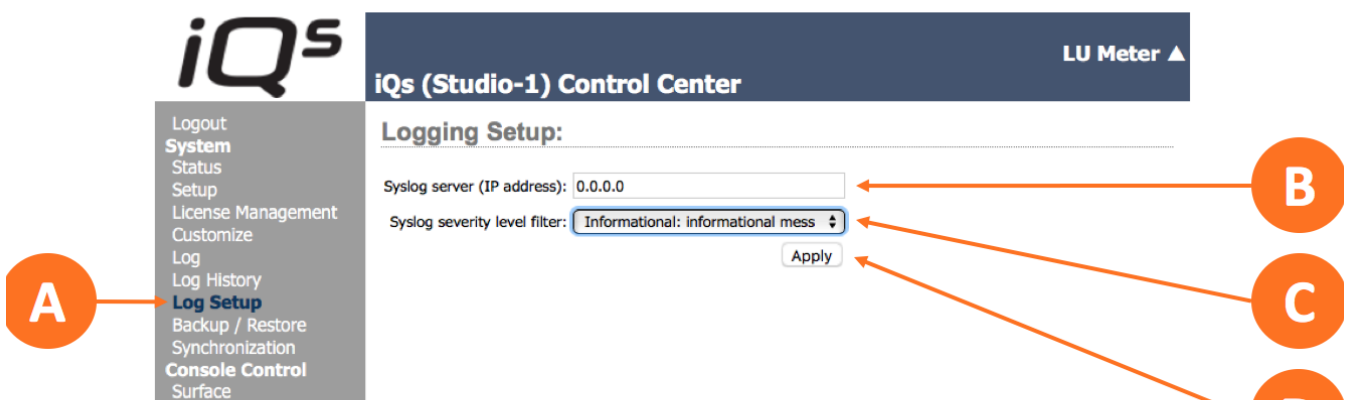
Figure 6-5 - Log history

## Log Setup

System logs can automatically be sent to a Syslog server. Click on **Log Setup** (6-6A) and enter IP address of the server in the **Syslog server field** (6-6B).

The **Syslog severity level filter dropdown** (6-6C) determines which events are pushed to the server. The default setting of "Informational" is recommended for most applications.

Click the **Apply button** (6-6D) to apply and save any changes.



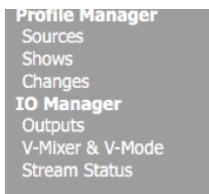


Figure 6-6 - Log setup

## Backup and Restore

Click on **Backup/Restore** (6-7A) to save, restore, or reset iQs settings.

Items that are saved and restored include:

- Current gain setting of each fader
- Configuration of all 24 outputs
- Configuration of all four Show profiles
- Which of the four Show profiles loads at startup
- All Source profile destinations
- Clock sync source, either Livewire or PTP, and its configuration
- Vmixer configuration and any current states
- Vmode configuration
- Log settings and syslog configuration

Items that are NOT saved and restored include:

- Network configuration, including Host name and IP address settings
- User names and passwords
- Licenses, including Base license and additional fader licenses
- Clock settings
- Log history

Clicking on the **Backup settings button** (6-7B) downloads a backup file to your computer. This can be used to restore a configuration should it inadvertently get changed.

To restore settings from a saved file, first click on the **Choose File button** (6-7C) and navigate to the location of the file, then click on the **Restore settings button** (6-7D).

A complete factory reset can be performed by clicking on the **Factory Reset button** (6-7E).

**i Important!** Performing a factory reset will erase call configurations, both user and system. The IP address and passwords will be reset to their default values. Note that the process can take several

minutes, and the unit will restart upon completion of the reset

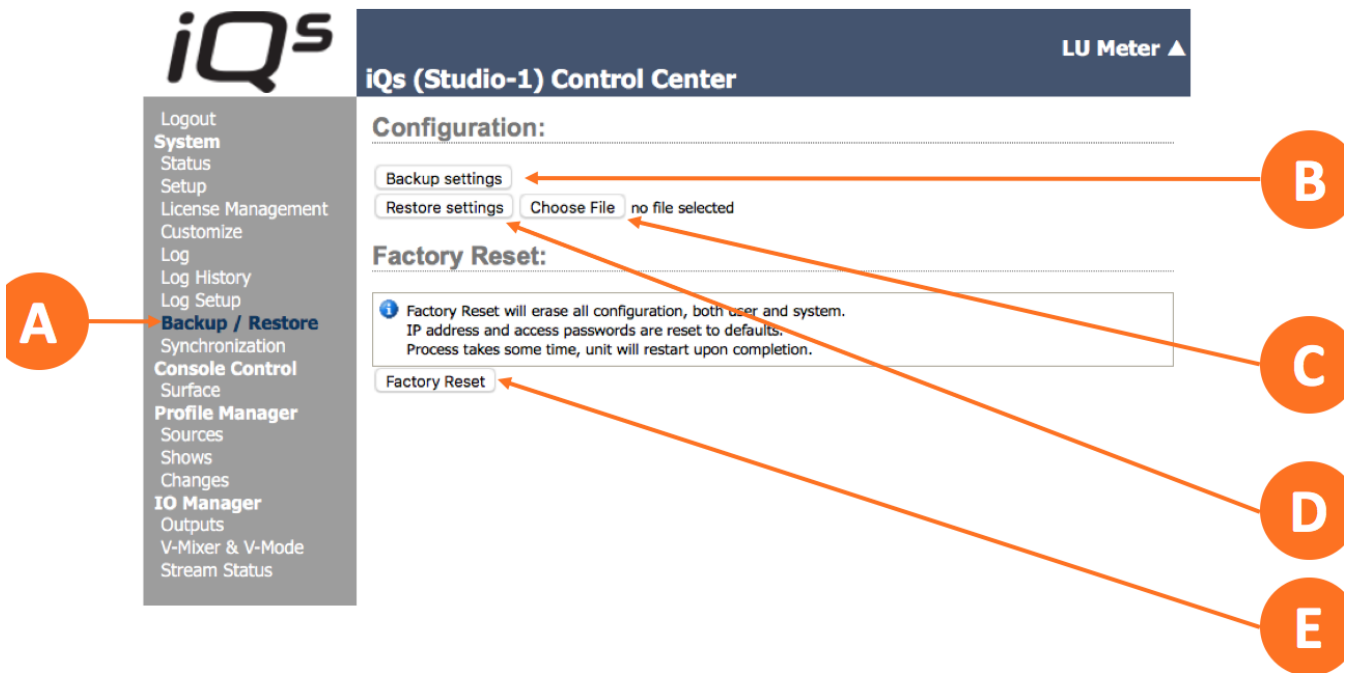


Figure 6-7 - Backup and restore

## Synchronization

As an AES67 surface, iQs must be connected to a system clock for timing and sync. The use of a PTP Grandmaster clock is recommended. Note, when using an iQs (docker) container, PTP is the only option for sync. When integrated in a Livewire system, the Livewire clock can also be used as the master.

Click on **Synchronization** (6-8A) to view the options and status page.

Choose between PTPv2 (IEEE1588-2008) and Livewire clock with the **Sync source dropdown** (6-8B). If using PTPv2, enter the domain number in the **PTP domain number field** (6-8D).

Click the **Apply button** (6-8C) to apply and save your settings.

The **Sync status display** (6-8E) will show a red “NO SYNC” if no clock is present, and a green “SYNC” when locked to the specified clock.

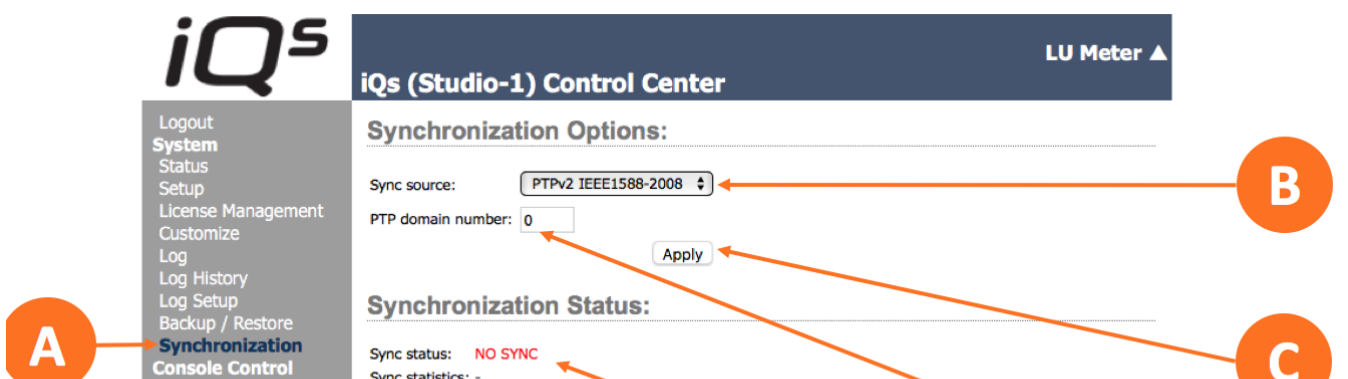




Figure 6-8 - Synchronization

## GPIO

General Purpose Input Output (GPIO) has been a common function in radio studios for many years. Though AoIP has changed the way in which components interface with one another, logic states between gear remains widely depending on this legacy method of wiring.

From the beginning, Axia has endeavored to make the process of configuring GPIO as plug-and-play as possible, and the strategy used to achieve this has been to define behavior through the use of profiles. Each Source Profile (as outlined in Chapter 3) defines how the 5 GPI, 5 GPO, and 15 pin GPIO ports behave based upon how each is expected to be employed in a typical studio. Information about each Source Profile plus tables for GPIO ID and pin-outs are provided below.

---

## Source Profiles

Source profiles include:

- **Line Input** – Used for any general audio source.
- **Computer Player** – Similar to Line Input, but with a different logic control commonly found with PC-based automation systems. For example, pressing the “On” button while the source is already in the “on” state triggers the next event in the automation.
- **Phone** – Defines the source as a hybrid or broadcast phone system input. Single line phone hybrids commonly want the line to be seized when a state is changed on the console, such as when the channel is turned on or set to a preview state. A summed mono mix-minus is automatically created for the source, and controls for Telos products will be available.
- **Codec** – Links to remote codecs often require a GPIO to trigger IFB communication and a dual mono mix-minus for the source consisting of one PA feed (right channel) and one talent feed with talkback (left channel).
- **Operator Microphone** – This is the board op’s mic which often requires different GPIO functions than other studio microphones.
- **CR Producer Microphone** – The in-studio producer’s mic may not have access to the console but often requires the same controls as the operator.
-

- **CR Guest Microphone** – Used for any other mic in the control room.
- **Studio Guest Microphone** – Similar to the CR Guest Microphone, but with different monitor muting requirements.
- **External Microphone** – Used for any mic located outside of the CR or studio, this functions like a Guest microphone but without any muting logic.
- **Studio Feed** – Typically a source that receives a backfeed and generates an IFB backfeed in return. This is intended for an external studio source for which you wish to create a talkback channel.
- **Record Mode** – Provides GPIO control of the various Record button functions
- **External Timer Control** – Provides GPIO control of the count-up timer.
- **V-Mixer** – Controls the Vmixer “On” states.
- **Show Profile** – Allows GPIO control and status of Show Profiles.

## Input, Output, and Pin Numbers

The following tables show pin numbers as they would appear on a Telos Alliance xNode with 15-pin GPIO ports. Common pins that are not profile-specific are as follows and are not listed in the individual tables:

- **Pin 7** – GPO Common pin, typically tied to GND by application
- **Pin 8** – GPIO port GND
- **Pin 9** – 5vDC supply
- **Pin 10** – GPI common pin, typically tied to 5vDC by application

### Line Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel and triggers START pulse
GPI 2	OFF Command	12	Momentary turns OFF console channel and triggers STOP pulse
GPI 3	PREVIEW Command	13	Active = PREVIEW C Not Active = PREVIEW OFF
GPI 4	RESET Command	14	Momentary turns OFF channel w/o

			generating a GPO
GPI 5	READY Command	15	Latch to indicated READY (OFF button illuminated) for profile defined with the READY enable

### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state
GPO 2	OFF lamp	2	Latching during OFF state and READY command if enabled
GPO 3	PREVIEW lamp	3	Latching during PREVIEW state
GPO 4	START pulse	4	Momentary at transition to ON
GPO 5	STOP pulse	5	Momentary at transition to OFF

### Computer Player Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel and triggers START pulse
GPI 2	OFF Command	12	Momentary turns OFF console channel and triggers STOP pulse
GPI 3	PREVIEW Command	13	Active = PREVIEW ON Not Active = PREVIEW OFF
GPI 4	Not used	14	
			Latch to indicated READY (OFF button illuminated) for profile defined with the READY enable



GPI 5	READY Command	15	illuminated) for profile defined with the READY enable
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### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	NEXT pulse	1	Momentary when ON button pressed and already in the ON state
GPO 2	OFF lamp	2	Latching during OFF state and READY command if enabled
GPO 3	PREVIEW lamp	3	Latching during PREVIEW state
GPO 4	START pulse	4	Momentary at transition to ON
GPO 5	STOP pulse	5	Momentary at transition to OFF

### Phone Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel and triggers START pulse ON is configured to answer hybrid
GPI 2	OFF Command	12	Momentary turns OFF console channel and triggers STOP pulse i ON is configured to answer hybrid
GPI 3	PREVIEW Command	13	Active = PREVIEW ON Not Active = PREVIEW OFF
GPI 4	Not used	14	
			Latch to indicated

GPI 5	READY Command	15	READY (OFF button illuminated) for profile defined with the READY enable. Can be used to provide rir indication.
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### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state
GPO 2	OFF lamp	2	Latching during OFF state and READY command if enabled
GPO 3	PREVIEW lamp	3	Latching during PREVIEW state
GPO 4	START pulse	4	Momentary to seize line based on hybrid control configuration
GPO 5	STOP pulse	5	Momentary to release line based on hybrid control configuration

### Codec Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel
GPI 2	OFF Command	12	Momentary turns OFF console channel
GPI 3	PREVIEW Command	13	Active = Routes channel audio to Preview and mutes channel
GPI 4	Not used	14	Mutes console chann
			Active = Initiates Talkback to Source

GPI 5	READY Command	15	from Operator Mic or Ext Talk
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### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state
GPO 2	OFF lamp	2	Latching during OFF state and READY command if enabled
GPO 3	TALK TO CR lamp	3	Latching during active TALK TO CR state
GPO 4	MUTE lamp	4	Latching during active MUTE state
GPO 5	TALKBACK lamp	5	Latching during an active TALKBACK

### Operator Microphone Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel
GPI 2	OFF Command	12	Momentary turns OFF console
GPI 3	TALK TO STUDIO Command	13	Active = TALK TO STUDIO and will MUTE channel
GPI 4	MUTE command	14	Mutes channel console
GPI 5	TALK to source in Preview Command	15	Active = Initiates Talkback to channels that are in PREVIEW from Operator Mic and will MUTE channel

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state unless TALK or MUTE are active
GPO 2	OFF lamp	2	Latching during OFF state
GPO 3	TALK TO STUDIO lamp	3	Latching during active TALK TO STUDIO state
GPO 4	MUTE lamp	4	Latching during active MUTE state
GPO 5	TALK to source in Preview lamp	5	Latching during an active TALK

### CR Producer Microphone Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel
GPI 2	OFF Command	12	Momentary turns OFF console
GPI 3	TALK TO STUDIO Command	13	Active = TALK TO STUDIO and will MUTE channel
GPI 4	MUTE command	14	Mutes channel conso
GPI 5	TALK to source in Preview Command	15	Active = Initiates Talkback to channels that are in PREVIEW from Producer Mic an will MUTE channel

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state unless TALK or MUTE are active

GPO 2	OFF lamp	2	Latching during OFF state
GPO 3	TALK TO STUDIO lamp	3	Latching during active TALK TO STUDIO state
GPO 4	MUTE lamp	4	Latching during active MUTE state
GPO 5	TALK to source in Preview lamp	5	Latching during an active TALK

### CR Guest Microphone Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel
GPI 2	OFF Command	12	Momentary turns OFF console
GPI 3	TALK TO CR Command	13	Active = TALK TO CF (Preview channel) and will MUTE channel
GPI 4	MUTE command	14	Mutes channel console
GPI 5	Not used	15	

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state unless TALK or MUTE are active
GPO 2	OFF lamp	2	Latching during OFF state
GPO 3	TALK TO CR lamp	3	Latching during active TALK TO CR state
GPO 4	MUTE lamp	4	Latching during active MUTE state

GPO 5	Not used	5	
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### Studio Guest Microphone Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel
GPI 2	OFF Command	12	Momentary turns OFF console
GPI 3	TALK TO CR Command	13	Active = TALK TO CF (Preview channel) and will MUTE channel
GPI 4	MUTE command	14	Mutes channel console
GPI 5	Not used	15	

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state unless TALK or MUTE are active
GPO 2	OFF lamp	2	Latching during OFF state
GPO 3	TALK TO CR lamp	3	Latching during active TALK TO CR state
GPO 4	MUTE lamp	4	Latching during active MUTE state
GPO 5	Not used	5	

### External Microphone Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel
GPI 2	OFF Command	12	Momentary turns OFF console
GPI 3	TALK TO CR Command	13	Active = TALK TO CF (Preview channel) and will MUTE channel
GPI 4	MUTE command	14	Mutes channel console
GPI 5	Not used	15	

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state unless TALK or MUTE are active
GPO 2	OFF lamp	2	Latching during OFF state
GPO 3	TALK TO CR lamp	3	Latching during active TALK TO CR state
GPO 4	MUTE lamp	4	Latching during active MUTE state
GPO 5	Not used	5	

#### Studio Feed Profile GPIO Table

##### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	ON Command	11	Momentary turns ON console channel

GPI 2	OFF Command	12	Momentary turns OFF console
GPI 3	TALK TO CR Command	13	Active = TALK TO CF (Preview channel) and will MUTE channel
GPI 4	MUTE command	14	Mutes channel console
GPI 5	Not used	15	

### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	ON lamp	1	Latching during ON state unless TALK or MUTE are active
GPO 2	OFF lamp	2	Latching during OFF state
GPO 3	TALK TO CR lamp	3	Latching during active TALK TO CR state
GPO 4	MUTE lamp	4	Latching during active MUTE state
GPO 5	Not used	5	

### Control Room Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	MUTE CR Command	11	Mutes Preview and Monitors when active
GPI 2	DIM Command	12	Dims Monitors when active
GPI 3	EXT Preview Command	13	Routes External Preview defined in Show Profile to Preview



GPI 4	TALK TO EXT Command	14	Route Operator Mic o Ext Talk source as defined in Show Profi to Talk to External output
GPI 5	Not used	15	

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	MUTE lamp, ON AIR lamp	1	Latching during Studi MUTE state
GPO 2	DIM lamp	2	Latching during DIM state
GPO 3	START/RESET lamp	3	Momentary indication of Timer change state
GPO 4	Not used	4	
GPO 5	TALK TO STUDIO lamp	5	Latching during an active TALK TO STUDIO

#### Record (Enable) Mode Profile GPIO Table

##### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	Not used	11	
GPI 2	Not used	12	
GPI 3	Not used	13	
GPI 4	Not used	14	
GPI 5	Not used	15	

##### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	RECORD ACTIVE lamp	1	Latching while in Record mode

GPO 2	RECORD NOT ACTIVE	2	Latching while Record mode is off
GPO 3	Not used	3	
GPO 4	RECORD pulse	4	Momentary when entering Record mode
GPO 5	STOP pulse	5	Momentary when exiting Record mode

### External Timer Control Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	START command	11	Momentary starts timer
GPI 2	STOP command	12	Momentary stops timer
GPI 3	RESET command	13	Momentary resets timer
GPI 4	FREEZE command	14	Latching freezes timer view
GPI 5	Not used	15	

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	START lamp	1	Momentary at timer start
GPO 2	STOP lamp	2	Momentary at timer stop
GPO 3	RESET lamp	3	Momentary at timer reset
GPO 4	FREEZE lamp	4	Active during freeze state
GPO 5	Not used	5	

### V-Mixer Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	In 1 ON command	11	Normal: Latch to turn ON Toggle: Momentary fo ON/OFF Radio: Last momenta is ON, all others OFF
GPI 2	In 2 ON command	12	
GPI 3	In 3 ON command	13	
GPI 4	In 4 ON command	14	
GPI 5	In 5 ON command	15	

### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	In 1 ON lamp	1	Active when ON
GPO 2	In 2 ON lamp	2	Active when ON
GPO 3	In 3 ON lamp	3	Active when ON
GPO 4	In 4 ON lamp	4	Active when ON
GPO 5	In 5 ON lamp	5	Active when ON

### Show Profile GPIO Table

#### Inputs (GPI)

ID	Name	Pin	Notes
GPI 1	None command	11	Changes to blank profile
GPI 2	Profile A command	12	Changes to A profile
GPI 3	Profile B command	13	Changes to B profile
GPI 4	Profile C command	14	Changes to C profile
GPI 5	Profile D command	15	Changes to D profile

#### Outputs (GPO)

ID	Name	Pin	Notes
GPO 1	Profile None lamp	1	Active when NONE
GPO 2	Profile A lamp	2	Active when Profile A
GPO 3	Profile B lamp	3	Active when Profile B
GPO 4	Profile C lamp	4	Active when Profile C
GPO 5	Profile D lamp	5	Active when Profile D

## Additional container information

This space is place Holder and will be revised.

### Manually Adding the Container to an Existing System

When adding iQs to a larger container deployment, the best practice is to utilize the existing tools that are administering the system. This document assumes the reader has experience using containers, and only covers the unique variables needed to make an iQs run.

### Network Considerations

Livewire+ AES67 defaults to using multicast traffic. In order for a container to be able to subscribe to audio streams, it must have a MAC address assigned to it and have direct access to the AoIP network. The two network types provided in Docker Engine that meet the requirements are `macvlan` and `host`. More information about these network types can be found [here](#).

### Deploying iQs

iQs can be deployed using any solution that can control Docker containers. This document contains examples of Docker Compose. Example 1 shows how to use multiple iQs instances on a single host, while Example 2 demonstrates how to use a single instance. Both examples will require some variables to be adjusted before using them.

#### Example 1: Multiple instances

```
1 version: '2.4'
2 services:
3   iqs:
4     restart: unless-stopped
5     image: quay.io/telosalliance/iqs
6     hostname: iqs:"your_host_name"
7     networks:
8       telosmacvlan:
9         ipv4_address: ${IPV4_ADDRESS}
10    volumes:
```

```
11     - ./config:/config
12     cap_add:
13     - SYS_NICE
14 networks:
15     telosmacvlan:
16     external:
17     name: telosmacvlan
```

## Example 2: Single instance


```
1 version: '2.4'
2 services:
3     iqs:
4         restart: unless-stopped
5         image: quay.io/telosalliance/iqs
6         hostname: "your_host_name"
7
8         network_mode: host
9         volumes:
10            - ./config:/config
11            cap_add:
12                - SYS_NICE
```

## Release Notes

Click on the subsection for the appropriate major/minor version to view release notes.

### 1.1.33

- Add information to the license page (days left), and check for valid licensing
- Firefox fix (v1.1.23)
- Fix for overloaded saturation (clipped audio)
- Forced Fader Count URL support (v1.1.29)

 Note: To access this feature you need to append the end of the surface link with the following `&fadercount={number of faders to be shown}`

- Ability to save fader position into show profile from the CAPTURE function (v1.1.30)
- Set affinity commented out. Just uses RT scheduling (v1.1.33)