

## Using “Virtual GPIO” in Axia iQ and Radius consoles

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### Introduction

Axia iQ and Radius consoles possess a “Virtual GPIO” function that provides an ability to define up to five GPO pins that can be “virtually wired” to a single GPI pin. Typically, this is used in cases where you want a GPO function to trigger a different GPI function; Virtual GPIO ports allow you to avoid having to physically wire a GPO pin to a GPI pin to achieve the desired function.

An example of this sort of “virtual GPIO” operation might be triggering the TALK TO EXT command and EXT PREVIEW command of the CR Monitor logic.

In this document, we will describe how to set up a TALK function between studios equipped with iQ consoles, using the Virtual GPIO function.

*Note: this document assumes that you are familiar with Axia concepts such as Channel Numbers, VMix and VMode. Please consult the appropriate sections of your console manual if you are not familiar with these things.*

### Example Walk-Through

In this example, we have three studios equipped with iQ consoles, and will create an ability to TALK between studios. We’ll use the User Keys which are available in the iQ 6 Fader+User Keys expansion module.

To begin, connect to Studio A iQ’s QOR.32 console engine using a browser on a PC that’s part of your Livewire network, or connected to the QOR.32’s Ethernet switch. Navigate to the QOR Control Center’s Console Configuration page, and assign a unique Livewire channel number to the user key you wish to use, making sure that its Role is defined as “GPIO snake”.

#### User buttons:

ID	Role	GPIO Channel
2. Left	Inactive	0
2. Right	GPIO snake	212

Apply

In this example, channel #212 is used. Pressing the top button will send a GPO pulse to any physical port assigned to the same channel (“snake mode”). Referring to the GPIO table for CR Monitor (found in Chapter 5 of the

iQ User Manual), you’ll see that the fourth GPI (Pin 14) is assigned the function of “TALK TO EXT Command”. So, tying a GPO pin to the GPI pin of the CR monitor logic will trigger the TALK TO EXT command.

Instead of a physical connection, we’ll accomplish this using Virtual GPIO by designating the Livewire Channel for the local CR Monitor and Pin 14, and then the Livewire channel assigned to the user button and the pin for the button.

Assign Livewire channel 1280 to the CR Monitor Logic Channel of Studio A. Now, Pin 14 of Livewire channel 1280 and Pin 1 of Livewire channel 212 are assigned to a Virtual GPIO port, and when your User Key is pressed, the TALK TO EXT command is enabled.

The next step is to engage the External Preview in Studio B, the one you want to TALK to. The CR Monitor table (shown in Chapter 5 of the iQ User Manual) shows that Pin 13 (GPI-3) is the function “Enable EXT PREVIEW command”.

Using a Virtual GPIO port, assign Livewire channel #212 to the Studio B’s CR Monitor, pin 13 and pin 1. Now, by pressing the User Key you’ve designated, GPI-4 of the Studio A will be triggered, along with GPI-3 of Studio B, enabling two functions in the two studios, TALK TO EXT (Studio A) and EXT PREVIEW (Studio B).

The logic is now in place to trigger TALK from one location to the other; now we’ll set up the audio. When the TALK TO EXT function is called, the iQ will, by default, take the Operator source loaded to a fader as the audio source and internally route it to the “Talk to External” output. If you have this output designated as a Livewire Output, this can be sent to Studio B’s iQ. In the **Livewire Outputs** section of the QOR Control Center, assign “Talk to External” a Livewire channel number 31002, as illustrated below.

**LiveWire Outputs:**

#	Output	Name Override	Channel	Mode
1	Program 1		31001	Live Stereo
2	Talk to External		31002	Live Stereo
3	Channel 13 Backfeed	To: Hybrid2	10602	Live Stereo
4	Channel 12 Backfeed	To: Hybrid1	10601	Live Stereo

With the Studio A TALK audio now available in the network, Studio B must be configured to take this audio from the network and use it as the External Preview source (the other function that is called when pressing the User Key). Since there are a total of three studios in this example, we’ll use VMix to sum the two other studios into one stream that will be defined as the External Preview.

So to follow the work flow, now that Studio A’s “Talk to External” is on the network, a source profile will be created in Studio B for this network source, configured so that the source is only available to the VMixer.

Edit the VMixer configuration to include this source as an input, and make sure to check the ON state.

The next step is to configure the show profile with an External Preview. To do this you must define a source profile of the VMix source. Configure the profile so that the source is available only to “External,” as shown below.

**Source Profile:**

Source type: Line Input  
 Source name: iFB  
 Source input: V-Mixer

Source availability:

<input type="checkbox"/> Channel 1	<input type="checkbox"/> Channel 8	<input type="checkbox"/> Channel 15	<input type="checkbox"/> Channel 22
<input type="checkbox"/> Channel 2	<input type="checkbox"/> Channel 9	<input type="checkbox"/> Channel 16	<input type="checkbox"/> Channel 23
<input type="checkbox"/> Channel 3	<input type="checkbox"/> Channel 10	<input type="checkbox"/> Channel 17	<input type="checkbox"/> Channel 24
<input type="checkbox"/> Channel 4	<input type="checkbox"/> Channel 11	<input type="checkbox"/> Channel 18	<input checked="" type="checkbox"/> External
<input type="checkbox"/> Channel 5	<input type="checkbox"/> Channel 12	<input type="checkbox"/> Channel 19	<input type="checkbox"/> V-Mixer
<input type="checkbox"/> Channel 6	<input type="checkbox"/> Channel 13	<input type="checkbox"/> Channel 20	
<input type="checkbox"/> Channel 7	<input type="checkbox"/> Channel 14	<input type="checkbox"/> Channel 21	

Once the source profile has been created, you can edit the show profile to include this new source as the External Preview, like so:

External Inputs			
	External 1	External 2	External Preview
Source:	--- no source ---	--- no source ---	iFB

With these settings in place, pressing your User Key in Studio A will trigger two functions:

1. TALK TO EXTERNAL in Studio A, and
2. EXTERNAL PREVIEW in Studio B.

The audio of the operator mic in Studio A will be present in the Preview mix of Studio B.

## ***Procedure Review***

So, to recap what we've just done:

- User Keys in Studio A configured as GPIO snake with LW Channel 212.
- Virtual GPIO port in Studio A configured with Pin-14 of the CR Monitor Logic channel (1280) and Pin-1 of LW Channel 212.
- Virtual GPIO port in Studio B configured with Pin-13 of the CR Monitor Logic channel (890) and Pin-1 of LW Channel 212.
- Studio A's Talk-to-External source enabled as a network source.
- Source profile in Studio B created for Talk-to-External and enabled for VMix only.
- Source profile in Studio B created for VMixer and enabled to External only.
- Studio B's show profile configured with the VMixer source profile defined as External Preview.

With these settings in place, Studio A's User Key can be pressed to establish a one way talk to Studio B. When configuring Studio C to talk to Studio B, you can use the same Virtual GPIO port that triggers PIN-13 (EXTERNAL PREVIEW command) for the user button of Studio C, which is:

- Pin-13 of Livewire channel 890 configured to Pin-1 Livewire channel 212 and Pin-2 of Livewire channel 214

The same command is needed when either button is pressed, so use the same Virtual GPIO port. You have up to 5 pins that can be configured.

Likewise, when configuring Studio A to talk to Studio C, use the previous port:

- Pin-14 of Livewire channel 1280 configured to Pin-1 Livewire channel 212 and Pin-2 of Livewire channel 212

...which means that either button 1 or button 2 of the user buttons will trigger the TALK TO EXTERNAL command.

## ***Extra Credit!***

If you are in Studio B and someone in Studio A or Studio C talks to you, how do you know which studio to respond to? Why not add annunciator lamps to the system?



You've already got two User Keys in Studio B assigned to generate TALK to Studio A and Studio C, and we can use some of the same logic described above to light the lamps in those keys when TALK is engaged.

Studio B's user buttons were configured the same way we did for Studio A, but with a different Livewire channel number; set as GPIO Snake with a Channel number of 213. So, in the Virtual GPIO configuration, link PIN-11 of Livewire channel 213 to Pin-1 of Livewire channel 212. This will illuminate the first button in Studio B when the first button in Studio A is pressed, allowing the jock in Studio B to know who called.

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