IC-2 Hidden Features
Williams Sound Interpreter Console

WHITE PAPER

The IC-2 has several unadvertised features. There is a "back door" sequence in the IC-2 code for those features that can be set so that they're available if needed. This document introduces these features and explains how to set them.

Upon plugging in the unit, there are three combinations of depressed keys that will enter the IC-2 into a non-standard boot mode.

1: **Reset all settings** to their factory defaults.

2: (a) **Display the revision of code**, and enter setup mode for (b) **headphone compression** and (c) **headphone gain**.

3: **Microphone Modes** - Interlocked, Override, and Free-for-All.

There are also two automatic features that the user has no control over.

4: **Thermal Shutdown**

5: **Self-test**

1. Reset to Factory Defaults

Because the unit saves the gain and compression settings, the IC-2 has an initialization sequence that will reset all features to factory defaults (gain = +6dB, compression = 1:1). This can aid in troubleshooting.

To reset the unit to factory defaults:

1. Power OFF the IC-2.

2. Press and hold down all three microphone buttons left Mic On (🎤), Mute (🎤), and right Mic On (🎤).

3. While holding the buttons down, power ON the IC-2.

4. Observe that the "relay out in use" LED is flashing quickly (indicating that the unit has been reset).

2a. Code Revision

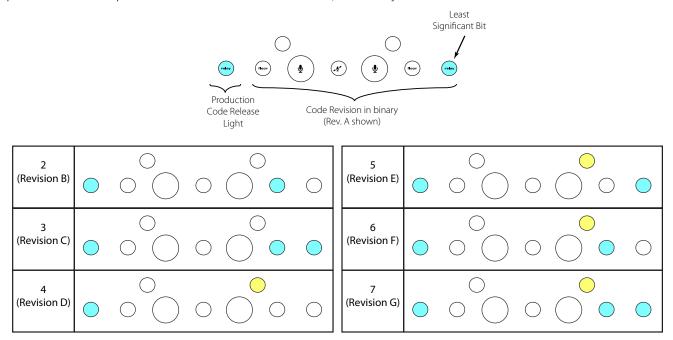The firmware version of the IC-2 can be checked with this simple procedure.

To check the code revision of the unit:

1. Power OFF the IC-2.

2. Press and hold down the Mute (🎤) button.

3. While holding the mute button down, power ON the IC-2.

4. Observe which lights are on.

The code for the revision of software code is indicated by which lights are turned on while holding down the Mute button. The code is represented in binary.

The left-most light has two states: On = Production Code Release, Off = Prototype Preliminary Code (users in the field should never see this light off).

The other lights indicate the binary number for the revision of code, with the least significant bit on the right. The picture below shows production release Revision A of the code, followed by a chart that shows additional revisions.

The above chart shows up to revision 7 for illustration purposes. A greater (more recent) revision level would be represented in a greater binary number, continuing on with this sequence.

If there are problems with software functionality, the code revision should be checked to make sure the IC-2 is operating on the most current code revision. Code updates need to be done at Williams Sound.
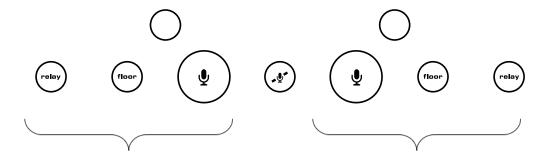
Headphone Compression and Gain

The Amplifier for the headphones has two settings that can be useful: compression and gain.

Headphone compression reduces the dynamic range of the audio so that loud noises get quieter and soft noises get louder. The higher the ratio, the more the audio is compressed, and the greater the perceived loudness of the audio. This feature can help improve intelligibility, but makes the audio sound "flat" and loses some of the expressiveness of speech.

Headphone gain changes how loud the headphones are. The settings are measured in dB; the higher the number, the louder the headphones.

Please note that both of these headphone settings affect all headphone outputs on both sides of the console. Users will have to use their best judgment with these features to provide the best audio for both interpreters. Both gain and compression settings are saved when the unit is powered off and restored the next time the unit is powered on.

The following diagram shows which set of lights to observe when setting headphone gain or compression.
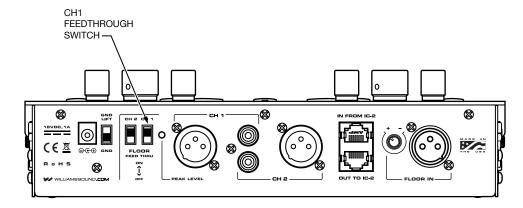

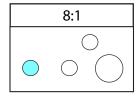Headphone Compression   Headphone Gain

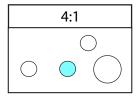## 2b. Headphone Compression

To set the headphone compression:

1. Power OFF the IC-2.

2. Press and hold down the Mute (   ) button.

3. Power ON the IC-2.

4. Verify that the current revision of code lights come on.

5. While continuing to hold the Mute button, toggle the Ch. 1 Feed Thru switch from OFF to ON to bring up the button lights indicating the current setting.
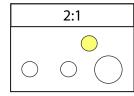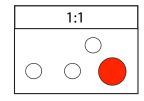
CH1
FEEDTHROUGH
SWITCH

The default gain setting is 1:1 (no compression), but it can be increased to 2:1, 4:1 or 8:1. The audio becomes *more compressed* with each step.

As the Ch. 1 Feed Thru switch is repeatedly toggled, the gain setting light moves to the left as it increments, then starts over at its default (compression = 1:1) at the right.
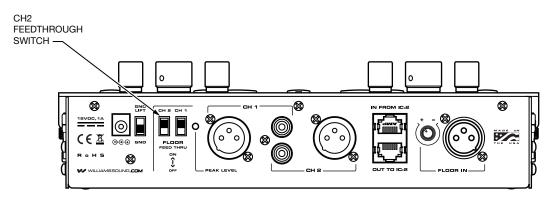
2b.

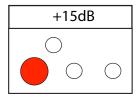## 2c. Headphone Gain

To change the setting of the headphone gain:

1. Power OFF the IC-2.

2. Press and hold down the Mute (🎤) button.

2. While holding down the Mute button, power ON the IC-2.

3. Verify that the current revision of code lights come on.

4. While continuing to hold the Mute button, toggle the Ch. 2 Feed Thru switch from OFF to ON to bring up the button lights indicating the current setting.
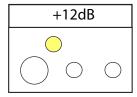

5. Each toggle of the Ch. 2 Feed Thru switch will change the Headphone Gain, as indicated by the lights.

6. When the desired gain level is reached, release the mute button.
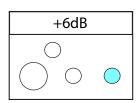
The default gain setting is +6dB, but it can be increased by 3dB increments to 9dB, 12dB or 15dB. The headphones' volume level gets *louder* with each step.

As the Ch. 2 Feedthrough switch is repeatedly toggled from OFF to ON, the gain setting light moves to the left as it increments, then starts over at its default (+6dB) at the right.

3. Microphone Modes

This feature allows the two microphone buttons (🎤) to interact in different ways based on how the two interpreters prefer to trade off their turn to speak.
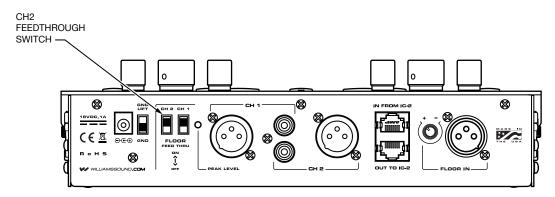
Interlocked - Only one microphone can be active at a time. The active microphone has to be shut off before the other microphone can be turned on. A typical application for this feature is when the first speaker wants to have the ability to release control to the second speaker.

Override - Only one microphone can be active at a time, but the non-active microphone can override the active microphone by pushing the non-active mic button. A typical application is when the interpreters want to be able to steal the mic quickly from each other without having to remember to disengage the active mic first.
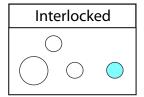
Free for All - Either microphone or both can be active at the same time. Pushing either mic button makes that mic active, and pushing it again deactivates it. In this mode, when both mics are active, they are internally mixed into a single output - however, since the output is interlocked, changing the output from Ch. 1 to Ch. 2 by pushing either output button changes both. A typical application is rapid negotiation. Both speakers know they are live all the time and will speak when necessary without the need to switch mics on the IC-2.
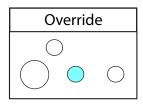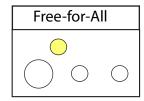
To access the microphone modes:

1. Power OFF the IC-2.

2. Press and hold down the left Mic button (🎤).

3. Continue to hold down the left Mic button and power ON the IC-2.

4. While continuing to hold down the left Mic button, toggle the Ch. 2 Floor Feed Through switch (located on the rear of the unit - see below) up and down. Every time the switch is toggled, the mode light will change to indicate "Interlocked" - "Override" - or "Free-for-All" modes as indicated by the lights.

CH2
FEEDTHROUGH
SWITCH

5. When the desired mode light is on, release the left Mic button. The unit will go through it's normal procedure and power-up in the chosen mode. The default setting is Interlocked. After the steps above, the lights will look like one of the following:

| Interlocked | Override | Free-for-All |

Automatic features (no user control)

In addition to the above unadvertised features, the IC-2 also has two features that provide benefit to the user, but the user has no control over them.

4. Thermal Shutdown

The IC-2 has a protection circuit built in that will shut down the headphone circuitry if a bad headset is plugged in (one that would damage circuitry). If a customer has intermittent audio on one or both sides of their console, or both headphones turn off, it's probably the thermal shutdown feature working. If the problem is on one side of the console only, the headphone on that side is the likely culprit. Try these suggestions:

1. Replace the suspect headset with a known good headset.

2. Unplug the IC-2's power and plug it back in (this will reset the unit and turn it back on after the shutdown).

3. Check to see if the problem has gone away. If not, repeat with the other headset.

5. Self Test

The IC-2 also has a built in self test that occurs at every power-ON to verify that the data bus communication inside the IC-2 console (between chips IC14 and IC22) is working properly. If the IC-2 powers up and both mic buttons are flashing red, then the self test has failed and the IC-2 will not operate correctly. Any IC-2 with this symptom has been damaged, and must be returned to Williams Sound for repair. If the IC-2 powers up normally (the lights come on steady), then the self test has passed.