

# Linear Acoustic Application Note

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## **Local Emergency Audio replacement of SAP audio in AERO.100/1000/2000**

Date: 3/2/15

### **Background**

New rules for TV broadcasters concerning the broadcast of local emergency information are coming in May of 2015. When text or crawls containing emergency information are presented, but not within in a news broadcast, the audio equivalent of these messages must be carried on the program's SAP channel. Whether this is accomplished using text to speech conversion or some other means the broadcaster needs a way to insert this audio information in place of SAP programming. If the broadcaster does not currently broadcast a SAP channel a SAP channel must be added. A SAP channel must be added even if it will only carry EAS and the audio version of local emergency information presented as text and/or crawls. These new rules apply to both broadcast and cable operators. The rules can be found in document FCC 13-45 and the effective date is May 24, 2015.

### **Solution**

A new software release for the Linear Acoustic AERO.100/1000/2000 loudness controllers provides our users with several new options to insert this local emergency audio content into the SAP audio channel. The new software/firmware release adds SAP handling features to the DRC Pgm 2 input. These features were previously available only on the DRC Local input. Local override is also updated to allow override of Pgm 1 or Pgm 2 or both. Control of override is available via audio presence, GPI, or network commands. Also added is the ability to have a downmix on both the Pgm 2 and Local outputs. For stations currently inserting EAS audio into their AERO the AERO.100/1000/2000 can be configured to handle both EAS and local emergency audio.

Software version 3.14.24 and Firmware ...039 must be installed to take advantage of the new configurations. Users may contact their factory representative, or Linear Acoustic dealer, for more information about this free update.

Please read this Technical Note carefully to evaluate the suitability of these solutions to your specific needs. You are welcome to call your Linear Acoustic representative or dealer if you have questions or would like assistance configuring your AERO loudness control to meet your particular needs.

### Case 1: Automatic replacement of SAP with local emergency audio

The first case allows the presence of emergency information audio to automatically cause the override of the current SAP audio. The audio replacement will work when SAP audio is present or when a downmix of main audio is replacing a silent SAP source.

In this example we are using Instance 1; the main audio program source is SDI pairs 1/2, 3/4, 5/6; SAP is on the left channel of SDI pair 7/8; local emergency audio is connected to AES input 1/2. (Emergency audio can be connected to any AES input or it can be on any embedded SDI pair.) The configuration is:

SAP audio source routed to Pgm 2 DRC (Input 7/8):

Instance 1 > Input > Input 7/8: SDI 7/8

Route emergency audio source to Local DRC (Input 9/10):

Instance 1 > Input > Input 9/10: AES 1/2

Configure Pgm 2 DRC Output:

Instance 1 > Output > Output 7/8

The configuration for the Pgm 2 DRC (Output 7/8), is shown in screen capture 1.

Capture 1



The Auto Dmx (downmix) Holdoff is set to 4 sec in the example. This is done to prevent the main channel audio from replacing SAP when SAP is actually still present. The main channel audio will not appear in the SAP channel until a pause of 4 seconds occurs in SAP audio. The user can decide what hold off time is appropriate.

The next step is to configure DRC Local (input 9/10) for automatic override of SAP on Pgm 2. The configuration can be seen in screen capture 2, below. Please note that the 9/10 Input mode is set to Local, the Local Audio Override is set to Vox, and the Destination is set to Program 2.

Capture 2



### Full Time Downmix

A downmix of the main channel audio can appear full-time on the Local DRC output (Output 9/10) when the Local DRC is in Local mode and used for Override of Pgm 1 or Pgm 2. The control for sending a downmix to the Local DRC Output (9/10 output) is found here:

Instance 1 > Output > Output 9/10 > Downmix -> 9/10: On

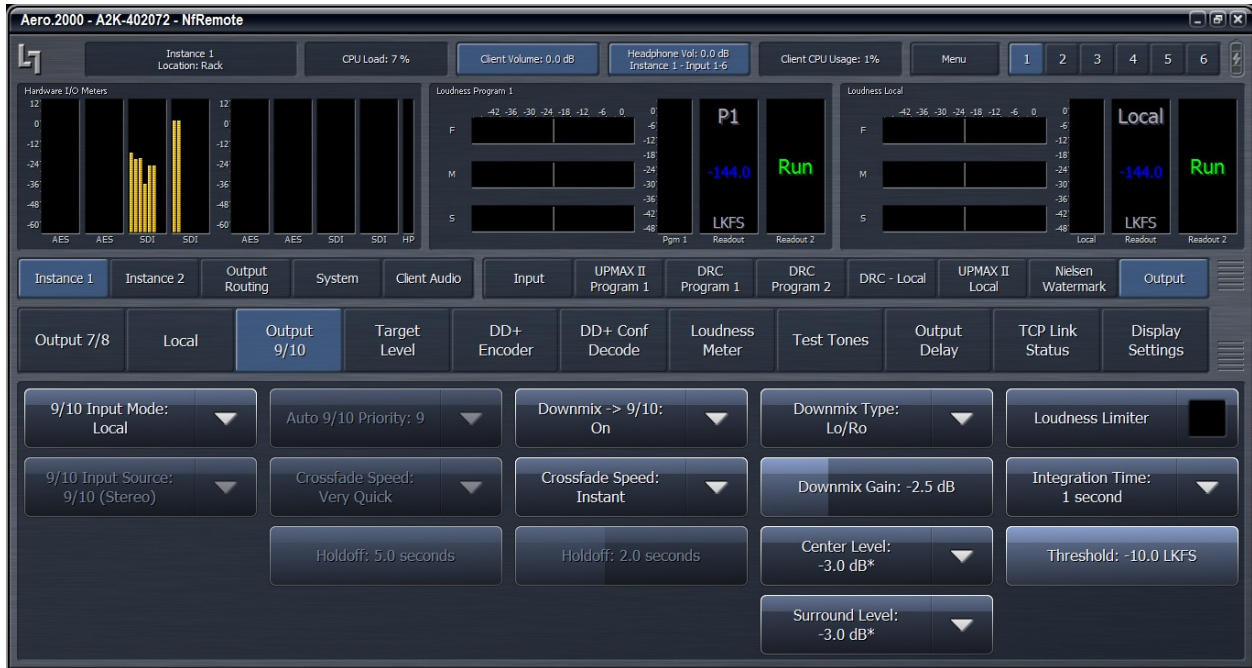
The Crossfade Speed does not matter since the donwmix is always on.

Under normal circumstances the Loudness Limiter is not used.

The Downmix Gain is set to -2.5 and this setting depends on the target LKFS level and level of the downmix.

The screen is shown in screen capture 3, below with Downmix -> 9/10 set to On.

Capture 3



**Operation :**

Pgm 2 DRC (Input 7/8) will take channel 7 only from the SAP audio source on SDI 7/8. A dual mono pair will be created. The SAP pair will be loudness controlled by Pgm 2 DRC and output on Pgm 2 DRC, Output 7/8.

If the SAP source audio (SDI 7/8) is silent then a downmix of the main channel will replace the SAP audio on Program 2 DRC, Output 7/8.

If audio appears on the emergency audio input, Local DRC (Input 9/10) it will automatically replace the Pgm 2 audio regardless of whether the Pgm 2 output is currently a SAP source or a downmix.

To prevent unwanted switching between SAP audio and emergency audio ensure that the AES 1/2 input is silent (< -60dBFS) unless emergency information is playing.

A full-time downmix appears on the DRC-Local (9/10) output.

## Case 2: Remote controlled replacement of SAP with local emergency audio

A few changes in the configuration for automatic override can put the audio replacement of SAP under GPI control. In addition, commands sent over the network can also be used to trigger the local emergency audio override of SAP.

### Control by GPI

The first step is to configure the Local Audio Override to Off instead of VOX. The Vox setting can be seen in Capture 2. The control is found here:

Instance 1 > Output > Local > Local Audio Override: Off

The next step is to configure the GPI control. Note that when using GPI a closure to ground needs to be held as long as the local emergency audio must replace SAP. When the closure to ground is opened the SAP audio (or downmix) is restored. Here is the GPI configuration:

System > GPI > GPI Function A-D > GPI Function A

Any of the 8 GPIs can be used.

Capture 4



In this example GPI A is set to control Local replacement. In the normal (high) state of the GPI the Local Override is Off. When pulled to ground the Override is active. The program that is replaced by the Local input is configured on the Local configuration page. See Capture 2 on page 2 where you can see:

Instance 1 > Output > Local > Local Destination = Program 2.

### Control using http commands

A network command to switch Local Audio Override: On can be sent to the AERO. A second command is sent to switch the Local Audio Override of SAP Off.

To use network commands the Local Audio Override setting should be set to Off . This is the same value that is used for GPI control as shown above. The setting is found here:

Instance 1 > Output > Local > Local Audio Override = Off

The setting can be seen in Capture 2. (In Capture 2 the value is set to Vox for auto override. Clicking on the button reveals a drop-down where Off can be chosen.

The command to force Local Audio Override On is:

**[http://192.168.1.10:7380/parameter/inst\\_1/out/local\\_state=3](http://192.168.1.10:7380/parameter/inst_1/out/local_state=3)**

The command to turn Local Override Off is:

**[http://192.168.1.10:7380/parameter/inst\\_1/out/local\\_state=0](http://192.168.1.10:7380/parameter/inst_1/out/local_state=0)**

Note:

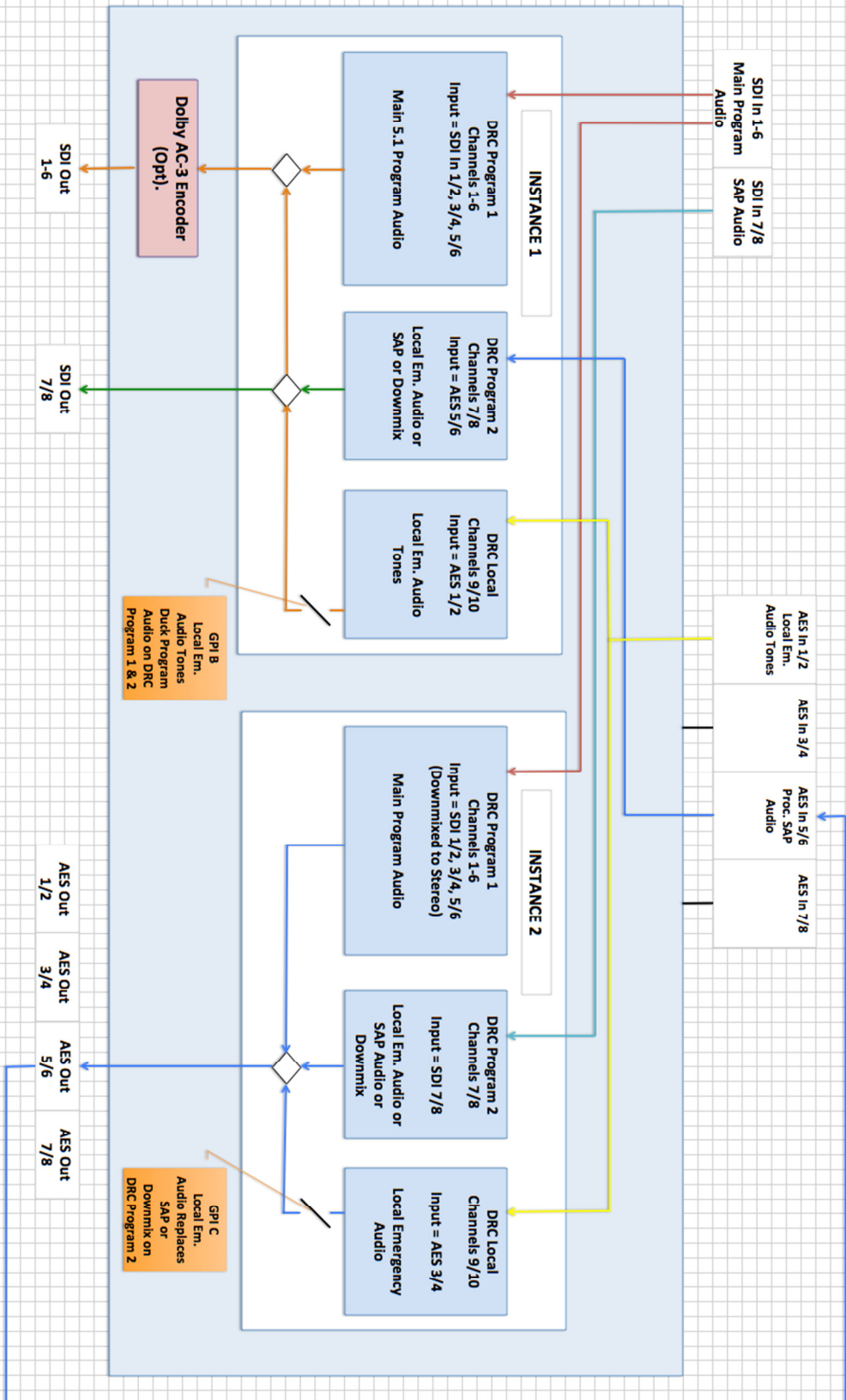
The IP address has to be the IP of the AERO that you want to control. The port, 7380, must always be included as shown in the examples.

All of the http commands can be found using the links on the AERO's http landing page. This is accessed at the IP address and port 7380. For example: 192.168.1.10:7380.

In order to access the AERO http server your PC's IP address must be in the AERO white list. Using Nf Remote go to: System > Network Access > HTTP Access and enter the IP addresses of the PC(s) that have permission to access the AERO.



AERO.100/AERO.2000 - LOCAL EMERGENCY AUDIO INSERTION



Instance 1 is responsible for the main channel audio - either 2-channel or 5.1. It is also responsible for inserting and routing emergency audio tones to both the main and SAP channels, and for inserting the output of Instance 2 (be that local emergency audio, SAP audio, or a downmix of the main channel audio) and placing it on the SAP audio channel.

Instance 2 is responsible for taking in SAP audio (from SDI 7/8), local emergency audio (from AES 3/4), for creating a downmix of the main channel audio (from SDI 1/2, 3/4, 5/6), it also prioritizes these three inputs (local emergency audio gets top priority, SAP gets second priority, and a downmix gets lowest priority) and sending that switched/prioritized audio out on AES Out 5/6, which in turn feeds the input of Instance 1 DRC Program 2 on AES In 5/6.