

## Technical Note #2

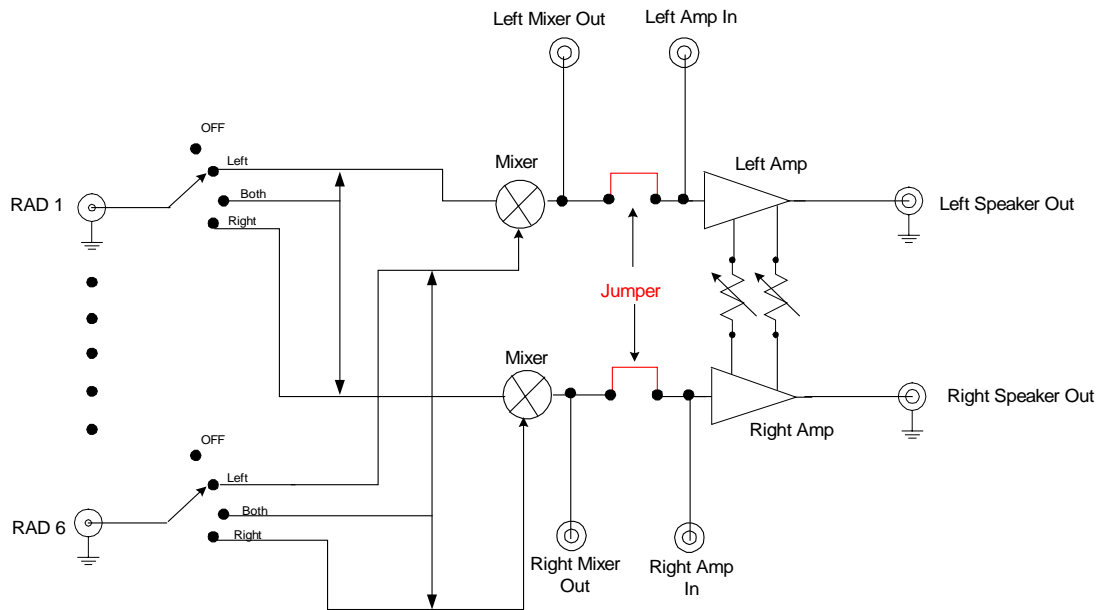
### Title: NCS-3230 External Audio Processing

#### General Description

The MIXER OUT and AMP IN jacks on the rear panel of the NCS-3230 Multi-Rx are intended for connecting external audio processing equipment such as equalizers, filters or external amplifiers. The MIXER OUT signal is the output of the internal mixers for the left and right audio channels and consists of audio mixed as selected from the front panel switches of the Multi-Rx. The AMP IN jacks are used for the audio return from the external processing equipment. Both the MIXER OUT and AMP IN signals should be at “line” level – nominally 100-300 mV.

To connect external audio processing equipment, two jumpers (JP5 & JP6) must be removed (one for each audio channel) inside the Multi-Switcher. Refer to the Multi-Rx Instruction Manual for the location of these jumpers.

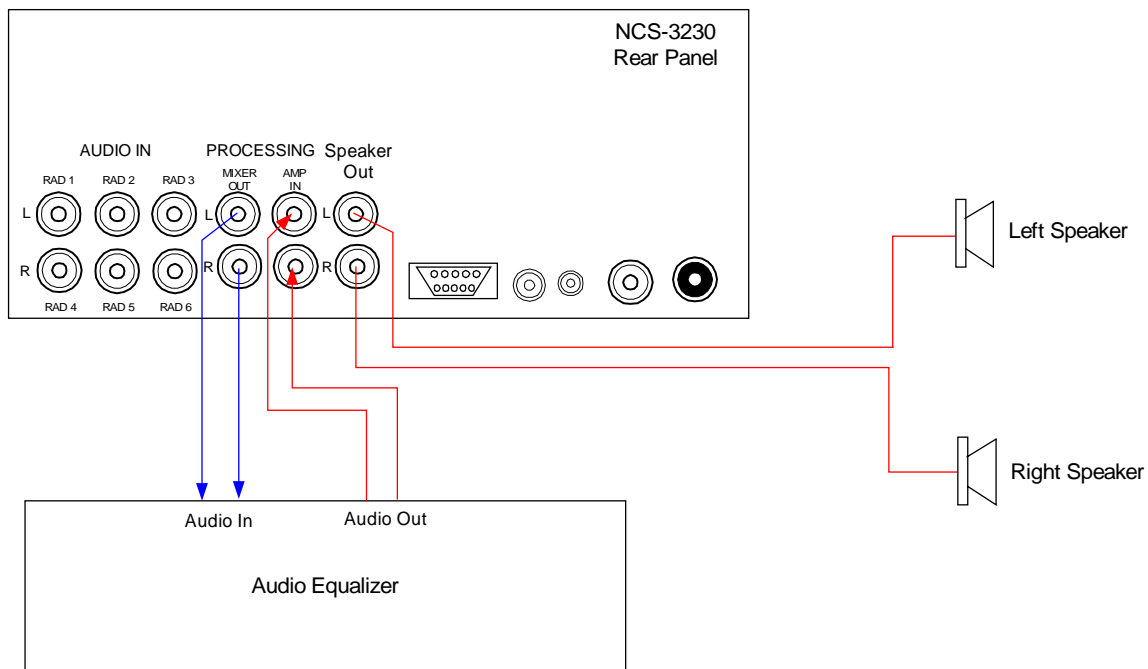
The following partial block diagram of the Multi-Rx circuit shows the circuit location of the internal jumpers and outputs/inputs for the MIXER OUT and AMP IN signals.



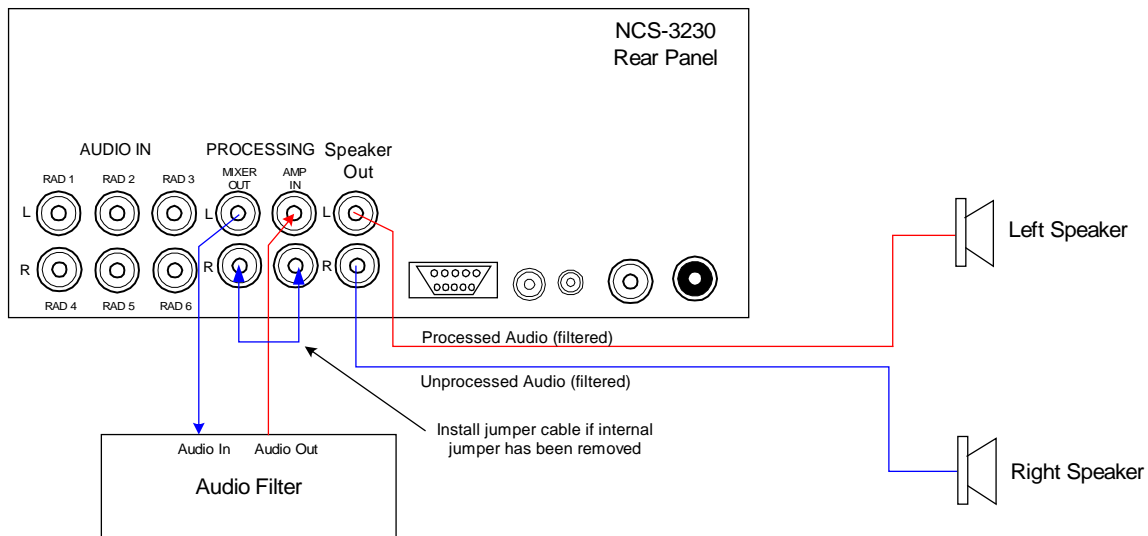


## Typical Applications

*Audio Equalization* – If desired, a commercial stereo audio equalizer can be inserted into this circuit so that the audio frequency response of the received signals fed to the Multi-Rx can be altered for optimum intelligibility or fidelity. The diagram below illustrates the equipment configuration.

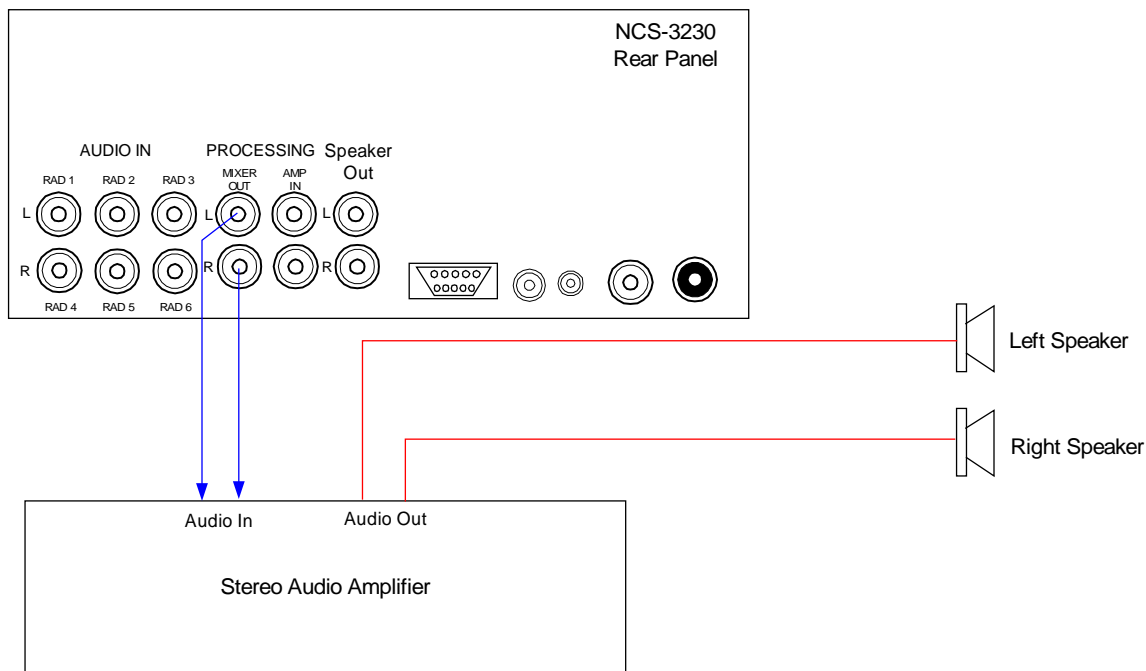


**Audio Filter** – The MIXER OUT and AMP IN signals can be used to filter either or both audio channels of the Multi-Rx. If both channels are to be filtered then two filters are required. The signals routed through the filter(s) can be selected from the front panel push button switches. The diagram below shows a single filter used to process all audio directed to the left channel of the Multi-Rx. For example, a CW signal can be routed through the filter by selecting the appropriate radio for the audio channel with the installed filter processing. A second filter can be added to the right channel if desired. With a second filter different filtering characteristics can be independently applied to the two audio channels.





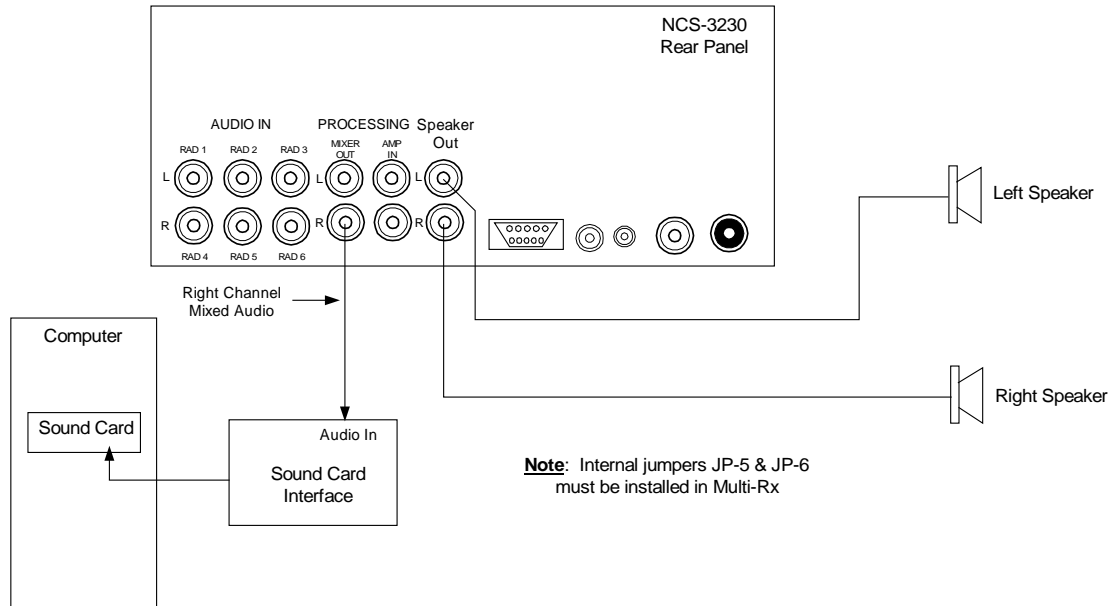
**External Audio Amplifier** – The audio from the MIXER OUT jacks can be used to connect the Multi-Rx Audio to an external audio amplifier (or any other equipment that has its own amplifier) rather than use the internal amplifiers of the Multi-Rx. In this configuration there will be NO audio present at the Multi-Rx speaker outputs.



### **Other Possible Configurations**

With the Multi-Switcher's internal jumpers (JP5 & JP6) installed, the MIXER OUT or AMP IN jacks can be used to connect the mixed audio output from the right and/or left channels to other devices such as a sound card interface or multi-mode controller or any other audio device provided that the device accepts line level audio and does not "load" the MIXER OUT/AMP IN signal. This configuration allows the Multi-Rx to supply the left and right channel mixed audio to external devices while continuing to monitor the audio through the connected speakers.

The following diagram is an example of this configuration. The Multi-Rx supplies line level audio to a sound card interface via the MIXER OUT/AMP IN jacks (either jack can be used when the Multi-Rx jumpers are installed). In this example the right audio channel is used, but either channel can be used. The audio delivered to the sound card interface is determined by the radio(s) selected for the right channel (via the RIGHT CHANNEL radio select pushbuttons on the front panel of the Multi-Rx).



While the above configuration only uses the right audio channel, both audio channels can be used to supply audio to independent devices.