

## Audio Consoles – using a Matrix section

These days, any self-respecting console designed for serious live use has an integral matrix section, but what exactly is it, why do you want one and how do you use it?

The Matrix Section will most likely be found near the Master section of the desk.



Matrix section from the Soundcraft GB8 console

It is essentially a small mixer built into the console, and usually has the group and stereo mix outputs as its input feeds and has a number of independent outputs with their own level control.

### Why Groups and Stereo mix feeds to its inputs?

Groups are used on the console to 'group' particular sets of vocals or instruments together.

Examples of this might be a group of backing vocalists, a drum or percussion kit, orchestra left and right, etc – anything where you might want to control all the sources with one fader.

Now imagine needing to route these groups to several loudspeaker locations with a different balance in each loudspeaker – this is where the matrix comes in. By mixing the groups in this small sub-mixer, you can send different mixes to different loudspeaker locations.

You might, for example want a nursery or crèche feed or a foyer feed which has less of the musical element in it, or a backstage feed. Vocal clusters would probably need no musical element.

Loudspeakers might also be strategically placed in Theatre to provide sound effects at their appropriate locations.

This means a console will require many outputs. Groups are not suitable for this as any signal routed to several groups will be at the same level in every group.

A matrix allows you to adjust the levels of every feed to any of the matrix outputs, without affecting the group outputs at all.

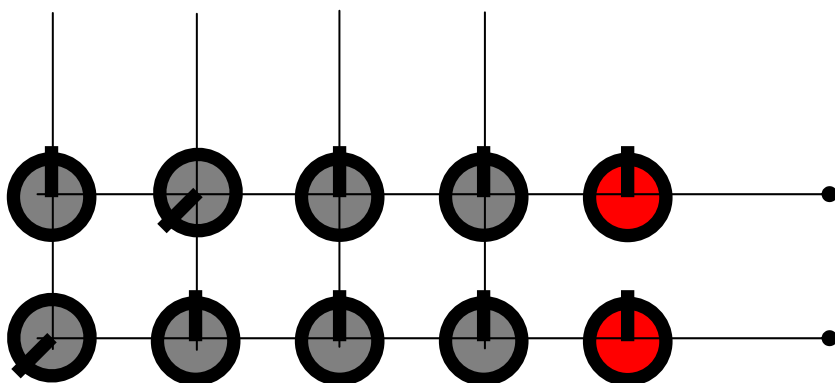
There are several uses for a matrix, not all of them related to multiple loudspeaker systems:

- **Recording**

Because the mix sent to the PA has to provide a mix to the audience to compensate for stage amplification etc, that main mix is generally not suitable for recording. Using a matrix allows you to create a better mix for recording.

**How?** Blend the groups, along with the base stereo mix, together in two matrix busses, bringing up the level of the instrument backline feeds (which would be lower in the main mix).

Mix L (PA)   Mix R (PA)   Drums   Guitars   Masters   Matrix Outputs to recorder



In applications using an additional mono send for clusters, you can use the matrix to create a stereo mix for recording including that mono element, which you cannot do from the normal stereo mix output.

- **Making a mono sum of the stereo mix**

If your console does not have an independent mono version of the stereo mix output available, you can easily create one for use with, say, induction loop systems, by feeding the L and R feeds to a single matrix bus and output.

**How?** Mix the Stereo L and R sends to one matrix bus and output.

Mix L (PA)   Mix R (PA)   Master   Matrix Outputs of mono sum



- **Creating a mono cluster mix output**

Centre-clusters are typically mono, and consist only on the main vocal channels. If the mixer has no easy way to route to a mono or centre bus, group the mics together, and mix other signals as desired to a single matrix output.

- **In-ear monitoring feeds**

The nature of in-ear monitoring mostly requires that the performer hears a stereo mix, which would use up 2 normal mono aux buses. The matrix allows you to create a personal mix, comprising some of the full stereo mix, a large proportion of the performers own signal, and maybe even a group feed which is a mix of 'ambience' mics in the auditorium to give the performer feedback from the audience which he or she would not otherwise hear.

- **Delay feeds**

It can be useful to aid intelligibility to place loudspeakers at strategic places in an auditorium to locally reinforce the audio when listeners are distant from the main PA. The matrix can be used to create a mix feed for these loudspeakers, which because of their distance from the PA will need the signal delaying so that the sound arrives from them at the same time as that from the main PA.

As each matrix output is separate, you can always turn them down or off if no-one is in a particular zone.

- **Press/Video/Broadcast feeds**

To provide video recording, broadcasters or even press reporters with an audio feed, use the matrix to give them exactly the mix they need to independent outputs. One idea may be to feed a reporters digital recorder at a press event, or to send a feed to a broadcast OB van.

Another broadcast example may be the whole mix without the commentator so that a different commentator can add his own voice to the event.

## **Summary**

These are just a few uses of the matrix. You'll find more through your own experimentation.

Soundcraft consoles that include a matrix section include the GB2, GB4, GB8, MH2, MH3, MH4 and Series FIVE.