

Dolby Atmos on mc² Consoles

Hands-On Guide



Total Immersion
from the
Sweet Spot

Authoring Dolby Atmos on mc² Consoles

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1. Introduction

Advances in technology have enabled audiences to enjoy their media entertainment with ever increasing detail and a picture quality that easily creates the impression of having the best seat at the venue.

While surround sound managed to “move” listeners closer to the heat of the action, immersive audio based on technology provided by Dolby Atmos complements the visual dimension with an equally life-like aural impression, which, in turn, further enhances the thrill.

After all, the added height dimension creates a natural sense of envelopment. Additionally, Dolby Atmos’ personalization capabilities allow sound supervisors to tailor their audio content to specific audiences and applications.

In most instances, there is no need to dramatically change our workflow in order to produce immersive content: stunning results can be achieved with readily available tools like any Lawo mc² console model.



2. Mixing Principles

In general, there are two ways to produce Dolby Atmos: Object-Based Immersive (OBI) and Channel-Based Immersive (CBI). Both use one or more so-called “beds” to create a three-dimensional soundscape within which individual sound objects can be placed. OBI is used for post-produced audio content and usually based on files. This provides almost unlimited creative freedom using objects that can be moved around dynamically. Plus, operators have more time to try out different approaches. The exported mix data is then used by the decoder to render—i.e. recreate—the mix to the available number of loudspeakers at the listening location.

In this guide, we will focus on Channel-Based Immersive (CBI), which is chiefly used in live production. In this scenario, the mix is created in real-time and (almost) entirely on the mixing console that outputs the various mixes, or beds. A limited number of objects can be added for personalized outputs, such as multi-language commentary.

Live events can be highly unpredictable and sound supervisors typically only have one shot to get it right. Careful planning is therefore required. A certain amount of safety needs to be built into the workflow to allow for a mix that is both consistent and convincing. For this reason, CBI tends to be more static than OBI, especially for live sports coverage: A1s generally try to recreate the sound one would perceive at a specific seat at the venue, typically somewhere in the stands.

Certain live entertainment productions might allow for a more dynamic approach, especially for events that are rehearsed and thus more predictable. Here, we could have elements “fly overhead” where it makes artistic sense (and is practically feasible).

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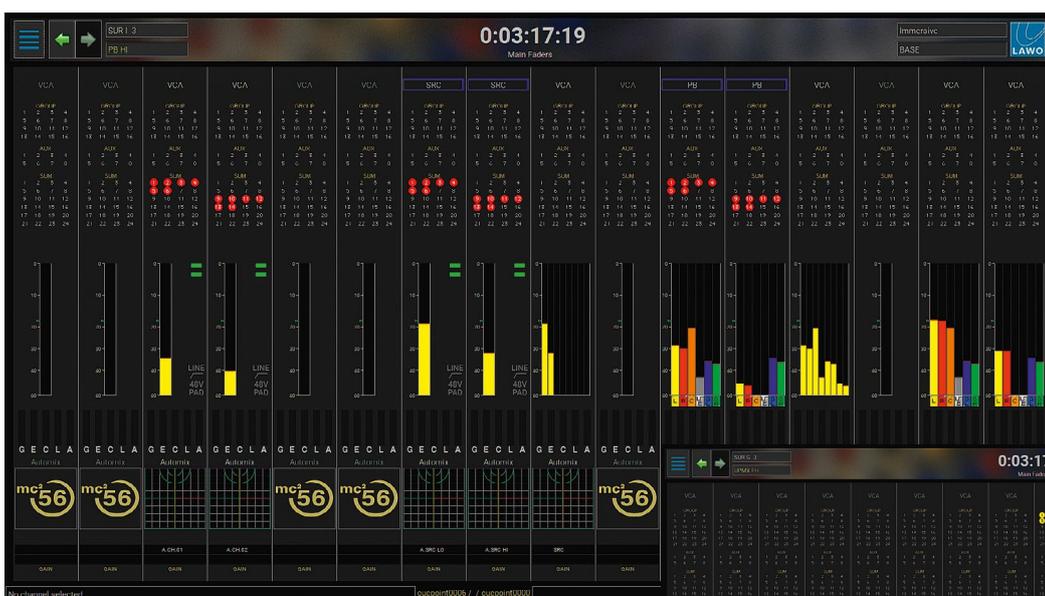
3. Mixer Set-up

Dolby Atmos can be authored using mixing consoles that do not necessarily support the format natively. With a clever bus structure, producing compelling immersive content on [any mc² console](#) is surprisingly straightforward. An mc² offers the added benefit that most of your [regular workflow](#) remains the same and that immersive elements can be added effortlessly.

A Dolby Atmos 5.1.4 mix can be created using [two 5.1 busses](#): one for the lower 5.1 bed and one for the upper channels (the center and LFE channels of the “upper” bus are ignored). Channels can be routed to the lower and/or upper layer directly, depending on their desired height position. While their [vertical position](#) is fixed in this case, they can be panned on the horizontal plane using regular 5.1 panning.

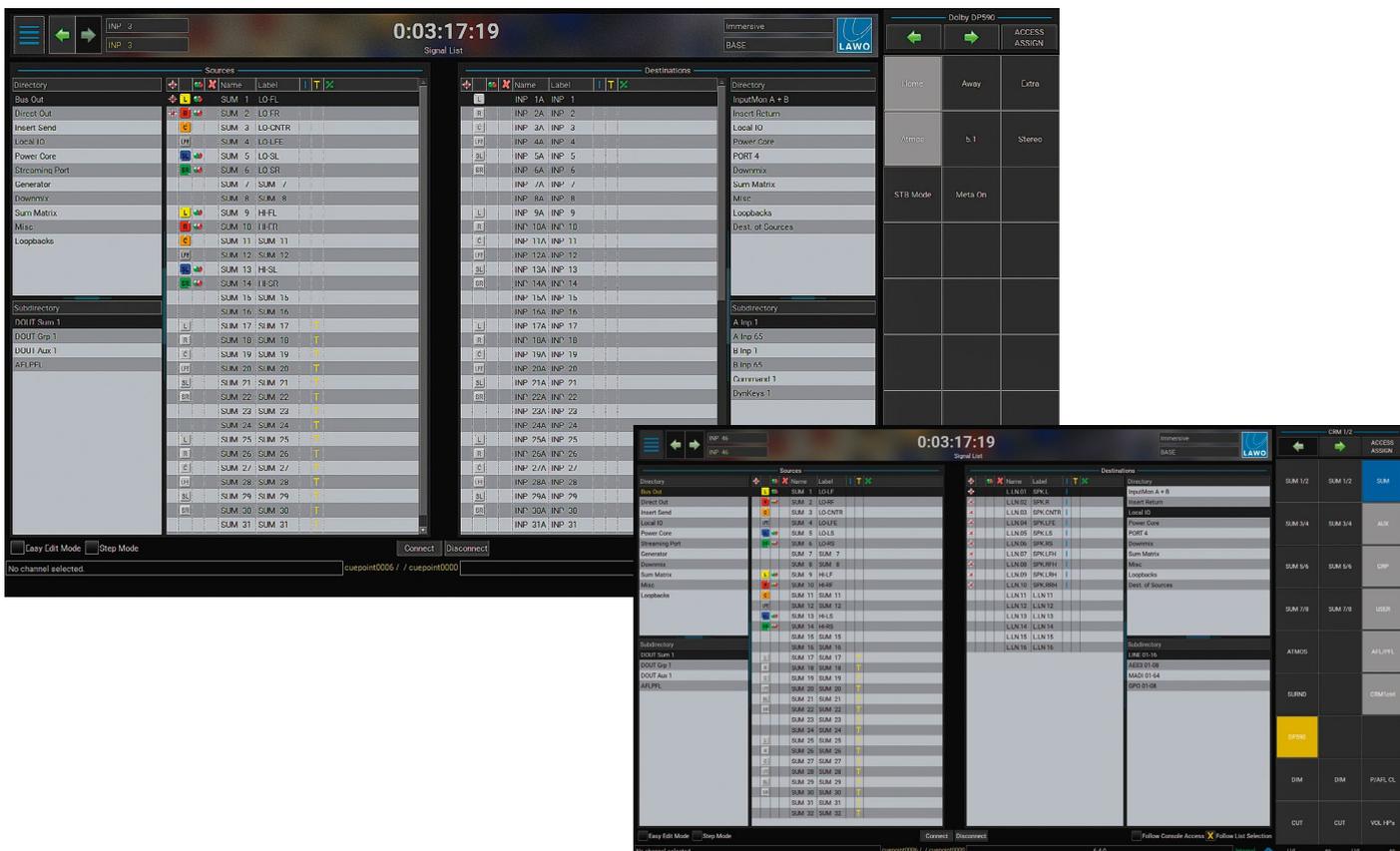
For sources that need to be positioned or panned [between the lower and upper planes](#), two VCA-controlled channels can be used: they both carry the same signal, yet one is routed to the “lower” bus, and the other to the “upper”. The [height level](#) of such a source can be adjusted using the individual channel faders, while the VCA can be used for global adjustments, including panning (which then affects both the upper and lower planes simultaneously).

Remember to set the [Slope](#) parameter to -20 for channels in the “upper” bus to avoid feeding the upper center channel, which needs to be replaced by a phantom center. [5.1.4 sources](#), e.g. playbacks, can be routed directly to the corresponding busses using 5.1 input channels and linked to a VCA to be able to control them from a single fader. Using an mc² console's existing bus



structure means that we can still use Ambit to upmix any stereo source to 5.1. This can be done independently for the lower and upper planes. Just be sure to switch the **upper plane's Auto-Center** functionality **off**: its center channel must not be used.

Ambitious operators could **upmix to 5.1.4** using two additional Ambit instances: one uses the lower front left/right channels to create the upper front channels. The upper rears can be created from either the upper front channels or lower rears.



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4. Monitoring

Obviously, a suitable control room monitoring set-up is required to check the different mixes. Fortunately, mc² consoles provide [full immersive control-room monitoring](#) via the standard monitoring panel. Any existing monitor set-up can be adapted to meet your requirements.

Once set up, it allows [direct monitoring](#) of any output, including the 5.1.4 busses, while retaining full PFL/AFL functionality, source selection, volume control as well as DIM and CUT.

5. DP590

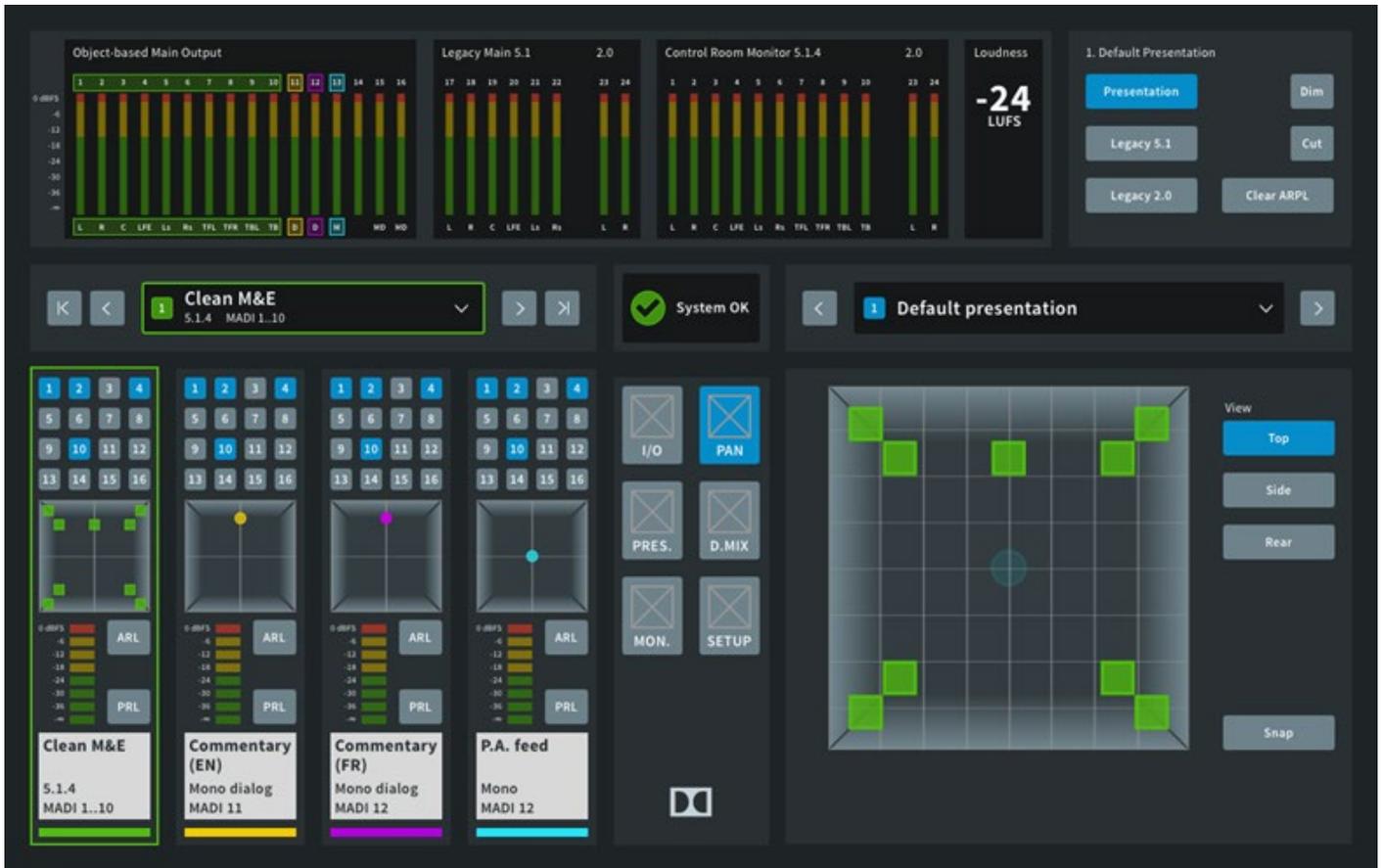
The Dolby DP590 is used for metadata creation as well as monitoring 5.1.4 outputs and downmixes. To create a seamless workflow, the device can be fully integrated with your mc² console. It is connected via [MADI](#) for audio, and Ember+ (Ethernet) for control.

The MADI connection is used to send the console's audio busses to the device, which creates the so-called "presentations" and sends them back to the console for monitoring. [Remote control](#) from the desk is performed via its Ember+ interface. This allows operators to switch among the different presentations and formats using buttons on the monitoring panel.

The DP590's graphical user interface can also be accessed from any console displays using [Remote Desktop](#).

This proposed set-up allows for seamless monitoring of any mix—whether originating from the desk or the DP590—[right at the sweet spot](#), and without the need for alternate monitoring systems.

| CRM 1/2 | | |
|---------|---------|---------------|
| ← | → | ACCESS ASSIGN |
| SUM 1/2 | SUM 1/2 | SUM |
| SUM 3/4 | SUM 3/4 | AUX |
| SUM 5/6 | SUM 5/6 | GRP |
| SUM 7/8 | SUM 7/8 | USER |
| ATMOS | | AFL/PFL |
| SURND | | CRM1ctrl |
| DP590 | | |
| DIM | DIM | P/AFL CL |
| CUT | CUT | VOL HP's |
| LVL | 40 | LVL 40 |



6. Practical Mixing Approach

Producing a convincing immersive mix can be surprisingly straightforward. For live sporting events, simply [pick the spot](#) where you want your audience to “sit” and try to recreate what they would hear if they were indeed at the event.

The [lower plane](#) can be created in the same way as a 5.1 production. Try to set a tasteful overall balance of the rears to ensure that the sound remains “[glued](#)” to the screen.

The [upper plane](#) can be created using a few mics (or an array) pointing upwards. Like with the lower rears, do not overemphasize the height channels to keep the sound “[grounded](#)”. This will be easier in an open venue, as you have more natural “air” and less sound buildup. In a (semi-)closed venue, however, the height channels may need to be slightly attenuated as they tend to dominate quite easily when the PA gets loud.

Although PA is typically avoided as much as possible in traditional productions, Dolby Atmos offers [more space](#) in situations where the PA signals coming from above might be an essential part of the mix. As always, adding a [direct feed from the PA](#) for definition is recommended, especially when the event includes anthems and/or announcers.

[Graphics and Wipe Effects](#) can be used to add some dramatic and surprising elements to the mix by having them fly overhead. This can easily be achieved with any (stereo) effect. Adding it to the [upper rears with a slight delay](#) creates the illusion that it moves from the lower fronts to the upper rears. Using opposite directions allows you to create “inbound” and “outbound” [whoosh effects](#).

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