DALI - Converting to and from DMX

With increasing crossover between the entertainment, architectural and commercial lighting sectors, environments that require integration between DMX and DALI equipment are becoming more common.

Careful planning is required as a number of issues must be considered to ensure a successful system. These include the speed differences between the two protocols, the type of control, dimming curves and the commissioning of fixtures.

DMX-to-DALI conversion

There are situations in which one would like to control DALI ballasts with a DMX controller that is simultaneously being used to control DMX fixtures. An example would be a lighting desk in a theatre that is also used to dim the house lights.

Rail-DMX-DALI

In such scenarios, a conversion product such as Rail-DMX-DALI from Artistic Licence provides a convenient solution.

Rail-DMX-DALI converts packets from a DMX controller to DALI commands, enabling control of up to four circuits of 64 DALI ballasts each.

The product supports DALI discovery to identify devices on the network, and enables ballasts to be controlled with the usual Broadcast, Channel, Group and Scene commands.

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Given the speed differences between DMX and DALI, best results tend to be achieved by sending the lowest number of commands - the Scene command is particularly efficient in this regard, as it enables all the ballasts on a circuit to change using only one command.

DALI-to-DMX conversion

Conversely, there are also situations in which it is useful to convert DALI into DMX. Consider the following scenario:

A cinema foyer contains an existing DALI controller which is being used to control white fluorescent overhead lighting. The customer wishes to use it to control some new DMX colour-changing lights that are being installed in the foyer. Additionally, there is a media wall on the outside of the building, which is being run by a dedicated DMX controller. The customer would like to be able to trigger shows on the media wall from the DALI controller located in the foyer.

Rail-DALI-DMX

All the above-mentioned functionality can be achieved using the Artistic Licence product, Rail-DALI-DMX, in conjunction with the existing controllers.

The product has two modes of operation, Ballast or Trigger, as shown in the figure on the previous page. Ballast mode is used to control the DMX colour-changing lights, while Trigger mode is used for the media wall.

In Ballast Mode, Rail-DALI-DMX simulates virtual ballasts, each of which has control over a single DMX channel. The usual Broadcast, Channel, Group and Scene commands are supported, and the product offers a choice of 1, 4, 16 or 64 virtual ballasts.

In Trigger mode, the DALI commands serve as data streams that enable sophisticated triggering options. In the example shown in the figure, the DMX controller is Multi-Play, a lighting show recorder and playback product.

Data flow for Rail-DALI-DMX in Ballast and Trigger Modes
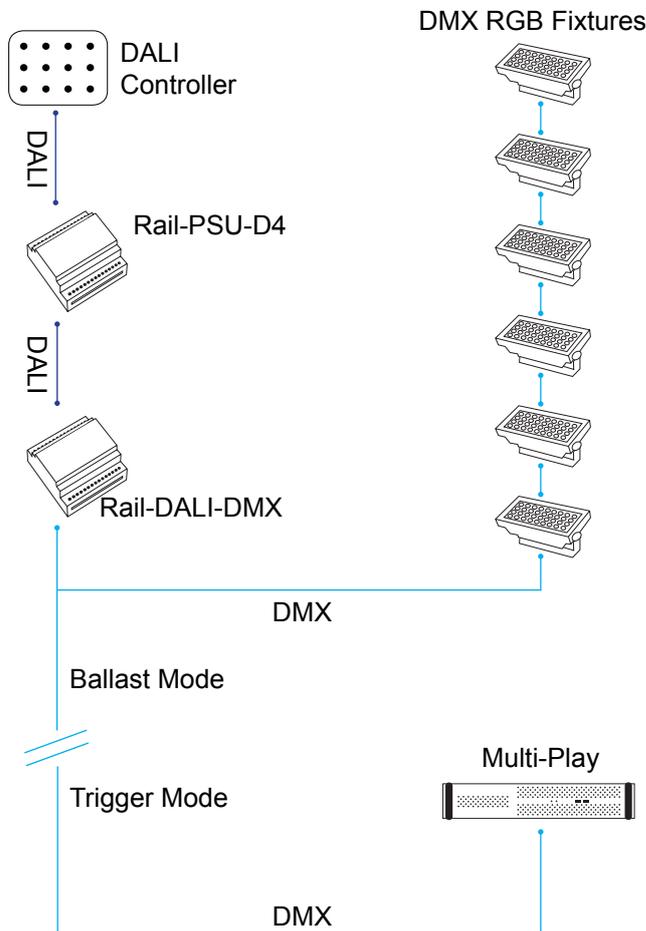
Dimming curves

The majority of DMX devices operate using a linear dimming curve with the level selected by a decimal value between 0 and 255.

DALI works with a non-linear (exponential) curve. As the graph shows, each method produces a different output.

Both Artistic Licence conversion products, Rail-DMX-DALI and Rail-DALI-DMX, offer the ability to translate between the two curves.

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