



# Rail-DMX-DALI

## Quick Start Guide

The full User Guide can be downloaded via the following link:



## Summary

Rail-DMX-DALI converts DMX values into DALI commands to allow integration between a DMX controller and DALI ballasts.

Up to four DALI circuits of 64 ballasts each can be controlled via DMX, allowing up to 256 ballasts to be connected. All DALI intensity control commands are supported (individual channel, group, scene and broadcast).

## DALI Essentials

- Max 64 ballasts per bus (= one circuit)
- DALI BUS PSU required to provide voltage on line (in addition to regular PSU)
- Ballasts used for the first time must be commissioned (using e.g. Dali-Scope)
- DALI offers 4 types of control over ballast intensity: individual channel, group, scene and broadcast

## Operation

Because DMX runs at a much higher speed than DALI, the best results are achieved by sending the lowest number of commands. Individual channel control is the most bandwidth-hungry, followed by group, scene then broadcast.

Mode	DIP Switch 3	DIP Switch 4
A	OFF	OFF
B	OFF	ON
C	ON	OFF
D	ON	ON

Table 1

Mode	Broadcast	Channel	Group	Scene	DMX Footprint
A	W (4)	-	N (16)	W/N (5)	25
B	W (4)	-	W (64)	W/N (5)	73
C	-	W (256)	N (16)	W/N (5)	277
D	-	W (256)	W (64)	W/N (5)	325

Table 2

Broadcast		Channel		Group		Scene	
Modes	Slots	Modes	Slots	Modes	Slots	Modes	Slots
-	1	-	64	A,C	16	A,B,C,D	1

Table 3

Broadcast		Channel		Group		Scene	
Modes	Slots	Modes	Slots	Modes	Slots	Modes	Slots
A,B	4	C,D	256	B,D	64	A,B,C,D	4

Table 4

## DALI Routing Method

Rail-DMX-DALI routes the DALI control signals via its 4 output circuits in two different ways:

- **Wide:** Each DALI circuit is controlled by a separate DMX channel (this leads to the largest DMX footprint).
- **Narrow:** Equivalent entities (e.g. Group 3) on each circuit are controlled by a single DMX channel (this leads to the smallest DMX footprint).

## Mapping Modes

Rail-DMX-DALI offers four pre-programmed control modes (termed A, B, C and D), which encompass commonly encountered control scenarios. The control modes are selected using DIP switches 3 and 4 on the product, as shown in Table 1 below.

Tables 2, 3 and 4 collectively explain the relationships between the product control modes A-D, the type of DALI ballast addressing (Broadcast, Channel, Group or Scene), the implemented DALI routing method (**Narrow** or **Wide**), the slot count (in brackets) and the overall DMX footprint.

It should be noted that the DMX footprint varies between the different Modes. This is an important practical consideration as the user may need to find an acceptable compromise between control level and bandwidth.

## Conventions

We number DALI ballasts 1-64, and Groups and Scenes 1-16. On the wire, these actually appear as 0-63 and 0-15 respectively. Most DALI commissioning tools use the latter numbering system.

**Detailed Mapping Tables for all Modes and Scene selection values can be found in the User Guide Appendix.**

## Dimming Curves

The majority of DMX devices operate using a linear dimming curve, while DALI works with a non-linear (exponential) curve. By default, Rail-DMX-DALI produces the exponential curve, but can also produce a linear dimming curve by setting DIP switch 5 to be 'ON'. In this mode the DMX value corresponds to the percentage power level of the fixture. Therefore, any command value above 100 will simply result in 100% power level. See the User Guide Appendix for more details.

## Remote Device Management (RDM)

The functionality of Rail-DMX-DALI can be enhanced using RDM (Remote Device Management).

In Rail-DMX-DALI there are two main uses for RDM:

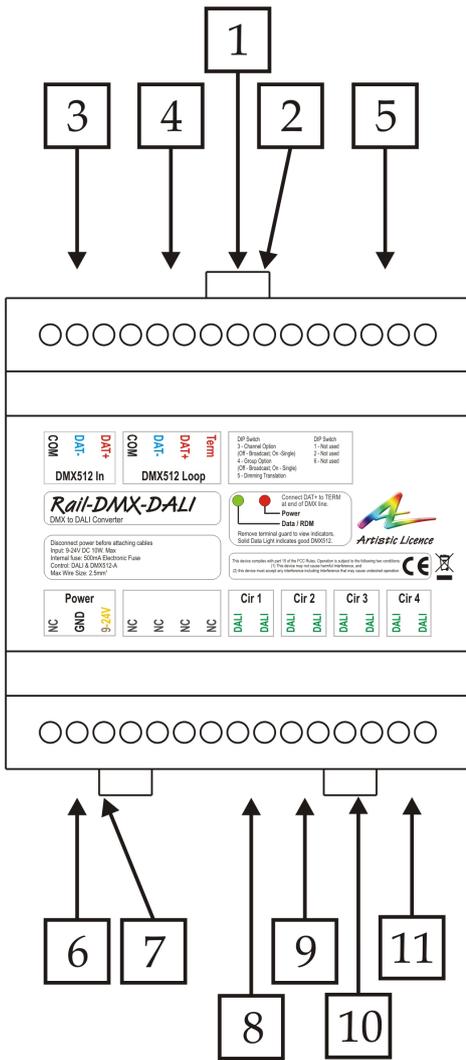
- Remote Start Address Programming
- RDM Locate Function

Each conversion channel is assigned an RDM sub-device. This allows the DMX-DALI patching to be changed. It also allows conversion options to be disabled to reduce the number of DMX channels. See the User Guide for more information.

## Troubleshooting

No power light	<ol style="list-style-type: none"><li>1. Check that the DC power wires are connected to the correct terminals and correct polarity.</li><li>2. Check power is switched on.</li><li>3. Disconnect all non power cables. Switch off product and leave for 20 minutes (this allows the thermal fuse to reset). Switch on. If power light illuminates, it is likely that an external fault or wiring error is causing the problem.</li></ol>
No DALI ballasts respond to any commands	<ol style="list-style-type: none"><li>1. Ballasts not powered on.</li><li>2. No DALI bus PSU present.</li><li>3. Conversion can be disabled by setting the relevant start address to 512. Check that none of the sub-device start addresses are set to 512.</li></ol>
DALI ballasts respond to Broadcast and Group commands only	<ol style="list-style-type: none"><li>1. The DALI ballasts have not been commissioned. Use a DALI tool such as DALI-Scope to commission the ballasts.</li></ol>
DALI ballasts do not respond to Group commands	<ol style="list-style-type: none"><li>1. Check that the ballasts have been assigned to groups.</li></ol>
DALI ballasts do not respond to Scene commands	<ol style="list-style-type: none"><li>1. Check that the ballasts have been programmed with scenes.</li></ol>
All four DALI circuits respond to same DMX channels	<ol style="list-style-type: none"><li>1. Product set to Narrow mode. Review Tables 1-4.</li><li>2. Advanced start address configuration has been implemented using RDM. To reset to factory defaults (sequential addressing) use RDM to set the start address of the root device. (See 'Start Address Programming' point 1 in the User Guide).</li></ol>
DALI ballasts are missing steps	<ol style="list-style-type: none"><li>1. This is generally caused by over use of DALI channel addressing. Change to Group or Scene addressing.</li></ol>
I send a new value to the ballast but it fades to the new level	<ol style="list-style-type: none"><li>1. Most DALI ballasts have a fade time function that determines how quickly a ballast can change level. Try changing this value.</li></ol>
DALI ballasts behaving erratically	<ol style="list-style-type: none"><li>1. This is most often caused when the DMX is unintentionally transmitting Channel, Group or Scene commands at the same time. Review your DMX map.</li><li>2. Can be caused by having a ballast assigned to multiple groups and then DMX transmitting differing values to those addresses.</li></ol>

# Connections



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Reference	Type	Description
1	LED	DMX received
2	LED	Power
3	Connection	DMX Input
4	Connection	DMX Loop & Termination**
5	DIP Switch	See table below
6	Power Input	GND Connection
7	Power Input	9-24 VDC
8	Connection	DALI O/P 1
9	Connection	DALI O/P 2
10	Connection	DALI O/P 3
11	Connection	DALI O/P 4

\*\* A passive loop-through connection allows onward connection to other DMX512 devices. If this feature is not required then the signal must be terminated. The product contains an internal termination resistor. This is enabled by fitting a wire link between **Term** and **DAT+**.

Dip Switch	Function
1	Not used
2	Not used
3	Mapping mode -See Table 1
4	Mapping Mode - See Table 1
5	Dimming curve
6	Not used

Customer support and knowledge base:  
[www.ArtisticLicence.com/support.html](http://www.ArtisticLicence.com/support.html)

**CE Compliance**

Rail-DMX-DALI is CE compliant when installed in a shielded and earthed metal case

Due to our policy of continuing product improvement specifications are subject to change without notice

