Application Note

BRTSYS_AN_068

PanL Mood Lighting (ML)DALI/DMX 512 Controller

Version 1.0

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1 Introduction

The PanL ML Controller leverages DALI and DMX protocols to bring digital intelligence to your lighting system. By assigning a unique address to each light, you can independently control dimming, RGB color, and on/off functions without the hassle of rewiring.

When combined with the PanL Hub, this controller empowers you to create smart lighting solutions for both new and existing installations.

Furthermore, the ML Controller seamlessly integrates with DALI switches, allowing for convenient control of your lighting setup directly from the switch panel.

2 Application Overview

When connected to the PanL Hub, the ML Controller offers various lighting control features depending on the interface used:

2.1 DALI

Lighting Control: Supports on/off, dimming, and gradual fade transitions (fade-in/fade-out).

Switch Integration: Detects DALI switches on the bus, recognizing both short and long press actions.

Note: A total of 64 devices (lights and switches combined) can be connected to the DALI interface.

2.2 DMX

Enhanced Lighting Control: Offers on/off, dimming, and RGB color control for precise lighting adjustments.

Smooth Transitions: Enables gradual fade transitions for a seamless visual experience.

Scalability: Supports up to 128 color-controllable lights (assuming 4 channels per light for RGBW), totalling 512 channels.

3 Hardware Connection Diagram

3.1 System Interface

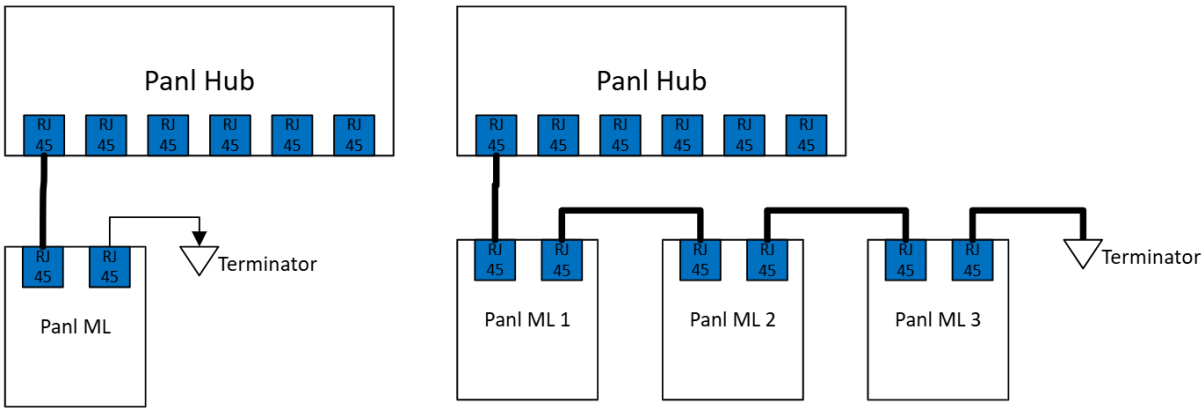


Figure 1 - PanL ML Connection Diagram with PanL Hub

P1/P2 (RJ45) ports are used either as an input or output terminal that is connected to the Hub, other PanL Devices or another PanL ML Controller device as illustrated below. When a single PanL ML Controller is connected to a PanL Hub port, the maximum length of the RJ45 8P8C cable shall not exceed 100 meters.

For multiple PanL ML Controllers connected to a single PanL Hub port, the first connection to PanL Hub and the subsequent connections in between the PanL ML Controller devices must not exceed 50 meters in cable length each.

A single PanL Hub port can support up to three PanL ML Controllers. The total combined cable lengths must not exceed 100 meters. Connect the PanL terminator provided in PanL Hub box to the last unconnected PanL ML Controller P1 or P2 port.

Figure 2 - Location of P1/P2 RJ45

3.2 DALI Interface

Connect the DALI bus wires to the two DA terminals on PanL ML Controller and tighten the screws for a secured connection. The DALI bus is polarity free and so the two wires may be connected to either port. The recommended maximum length of the bus is 300 meters when 16AWG wire is used. PanL ML Controller supports up to 64 DALI drivers with the use of an external DALI bus power supply (The selection of the external power supply should be based on the specifications of the DALI driver and the load requirements within the system). Refer to Figure 3 and Figure 4.

Figure 3 - Location of DA Connection

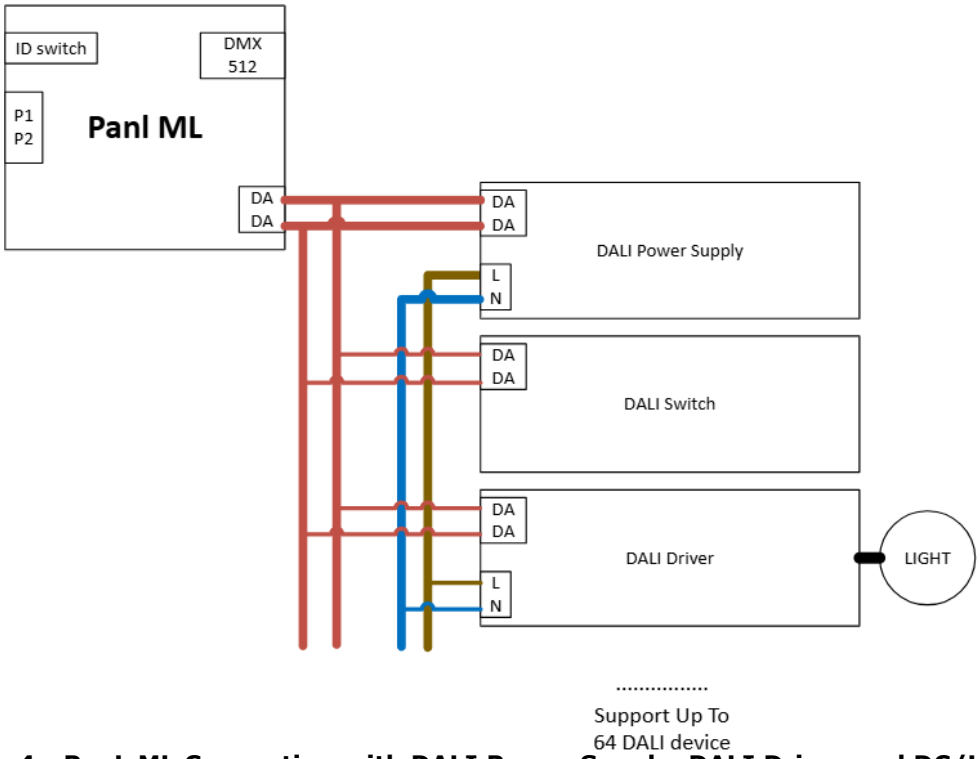


Figure 4 - PanL ML Connection with DALI Power Supply, DALI Driver and DC/Light Switch

3.3 DMX Interface

Connect a RJ45 cable from the PanL ML Controller port labelled DMX 512 to the first DMX decoder and connect a DMX terminator to the last unused decoder port as illustrated below. The PanL ML Controller supports up to 512 DMX channels. Depending on the number of channel(s) per decoder used, the cumulative channels must not exceed 512 for all connected decoders. Please refer to the decoder's datasheet for any cable length specifications.

Figure 5 - Location of DMX512 RJ45

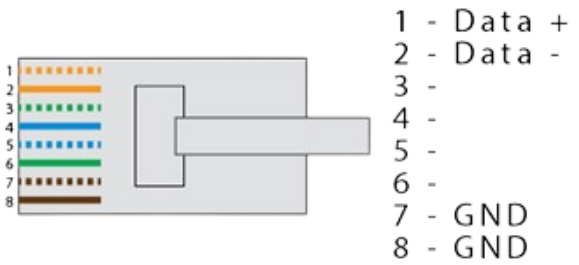


Figure 6 - DMX512 RJ45 Pin Configuration

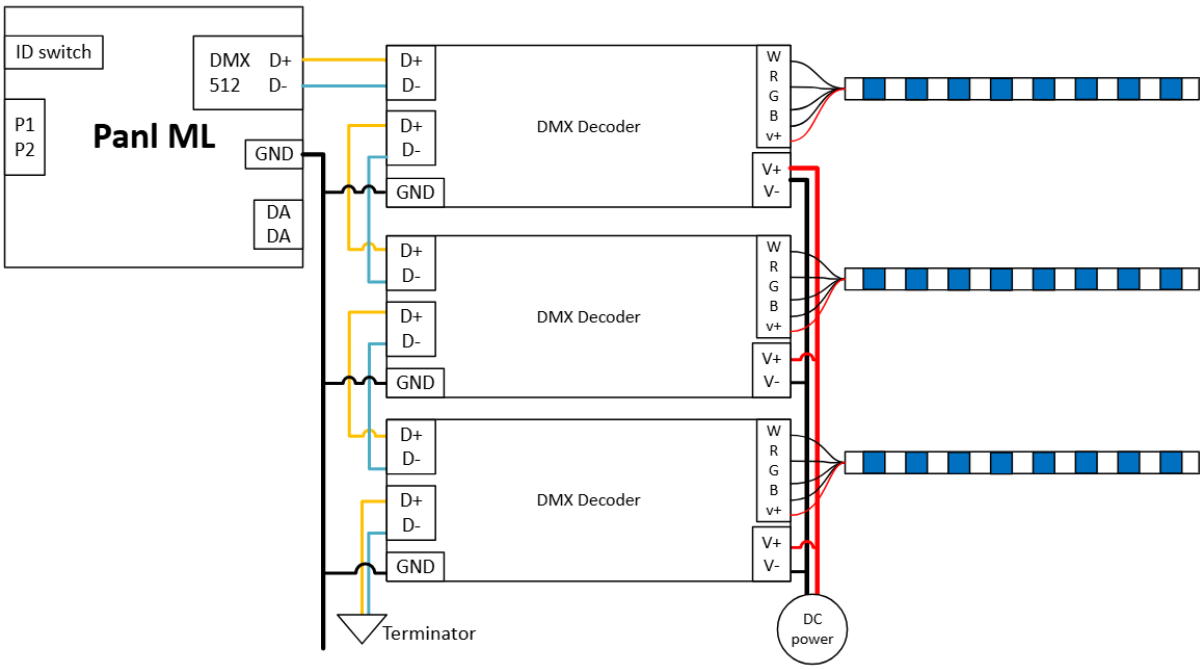


Figure 7 - PanL ML connection diagram with DMX decoder and WRGB strip

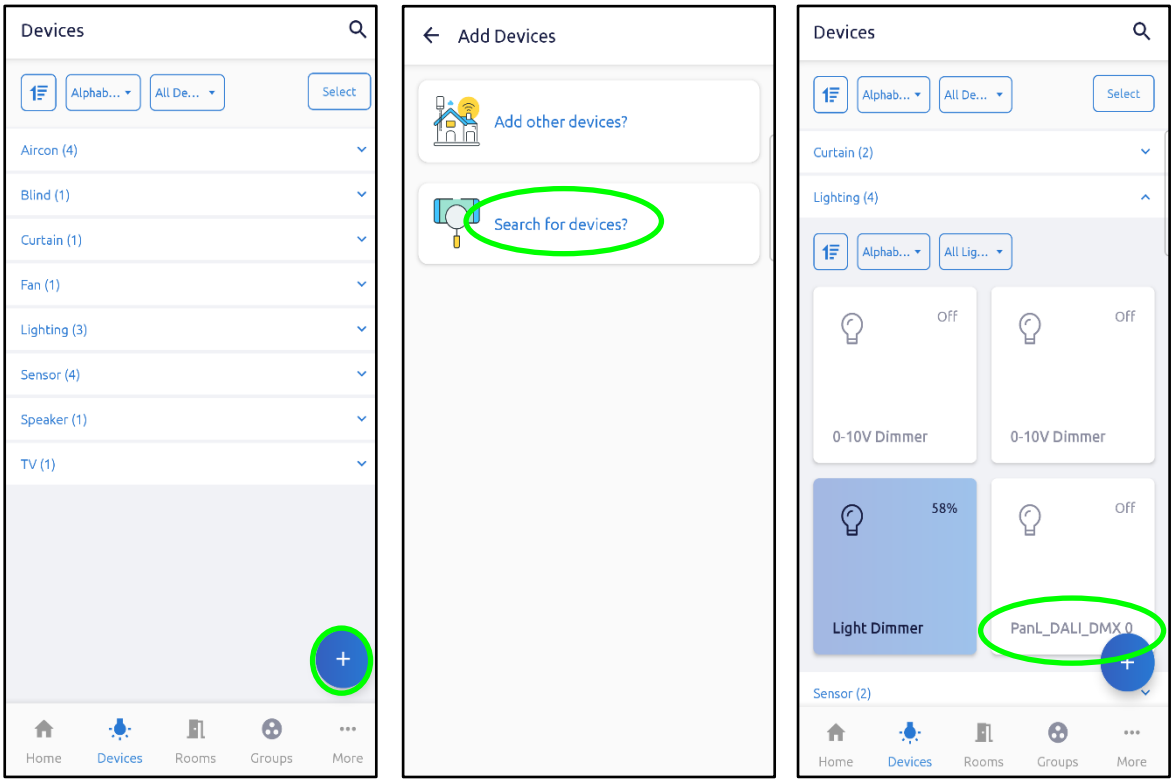
Note: DMX decoder channels can vary within a system as they need not be the same.

4 Host Configuration

4.1 DALI

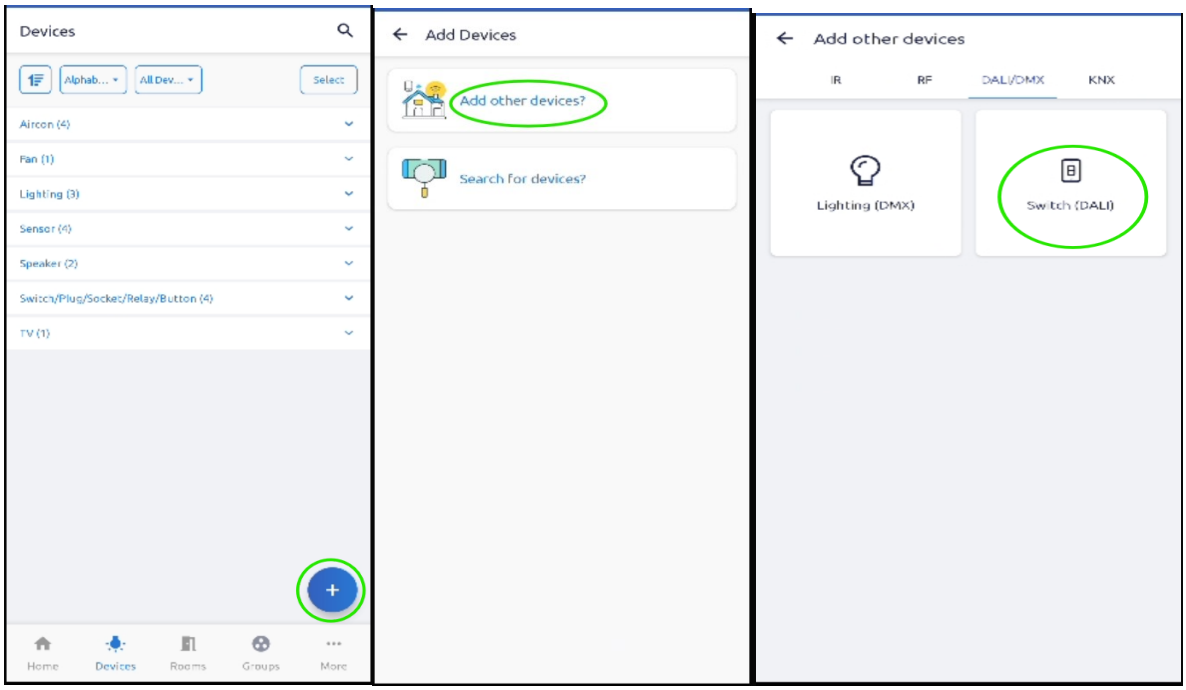
4.1.1 Lighting

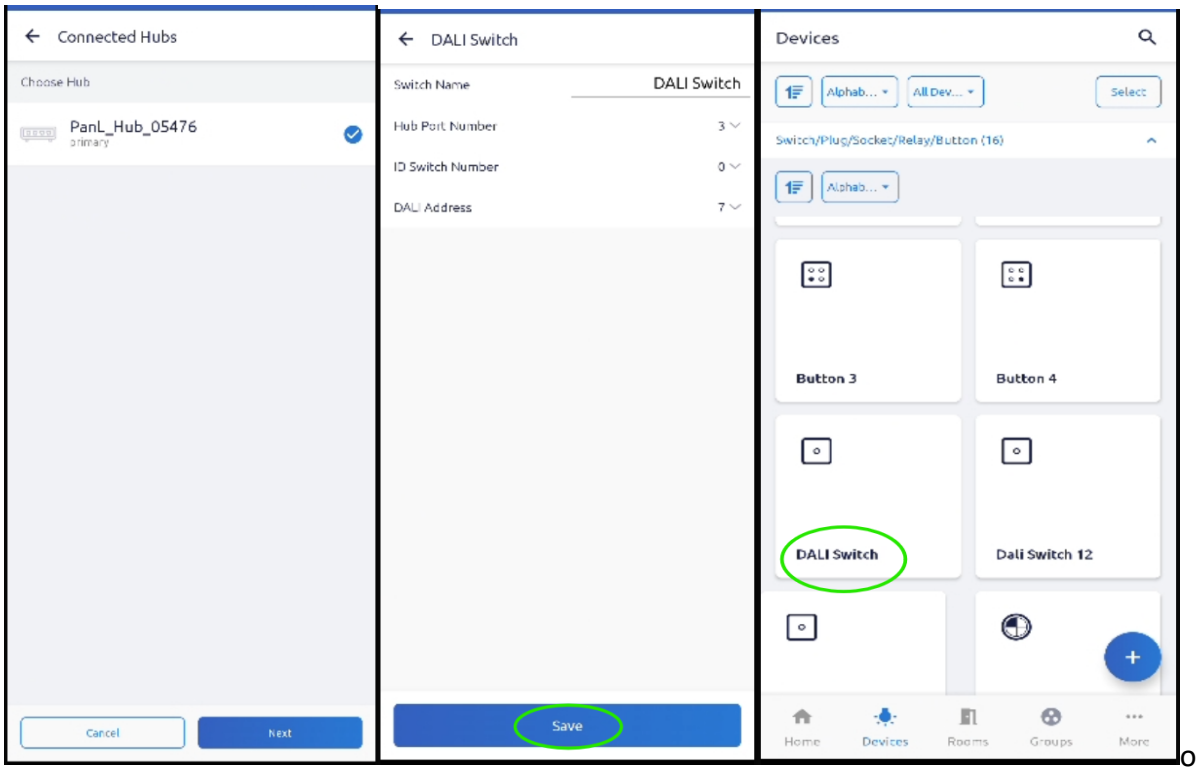
To integrate DALI lights into PSL system, no extra setup is required. Simply follow the instructions on how to connect your PanL Hub, PanL Mood Lighting Controller, and DALI lights. Once connected, open the PSL mobile app, perform a smart scan, and DALI lights should appear automatically on the Device page.



4.1.2 Switches

DALI Switches are not automatically discovered by the PSL system unlike DALI Lights, and it needs an additional configuration of selecting the Switch Address (can be configured using the rotary switch underneath the DALI Switch – please check the DALI switch for more info) before starting to use the switches in the System.

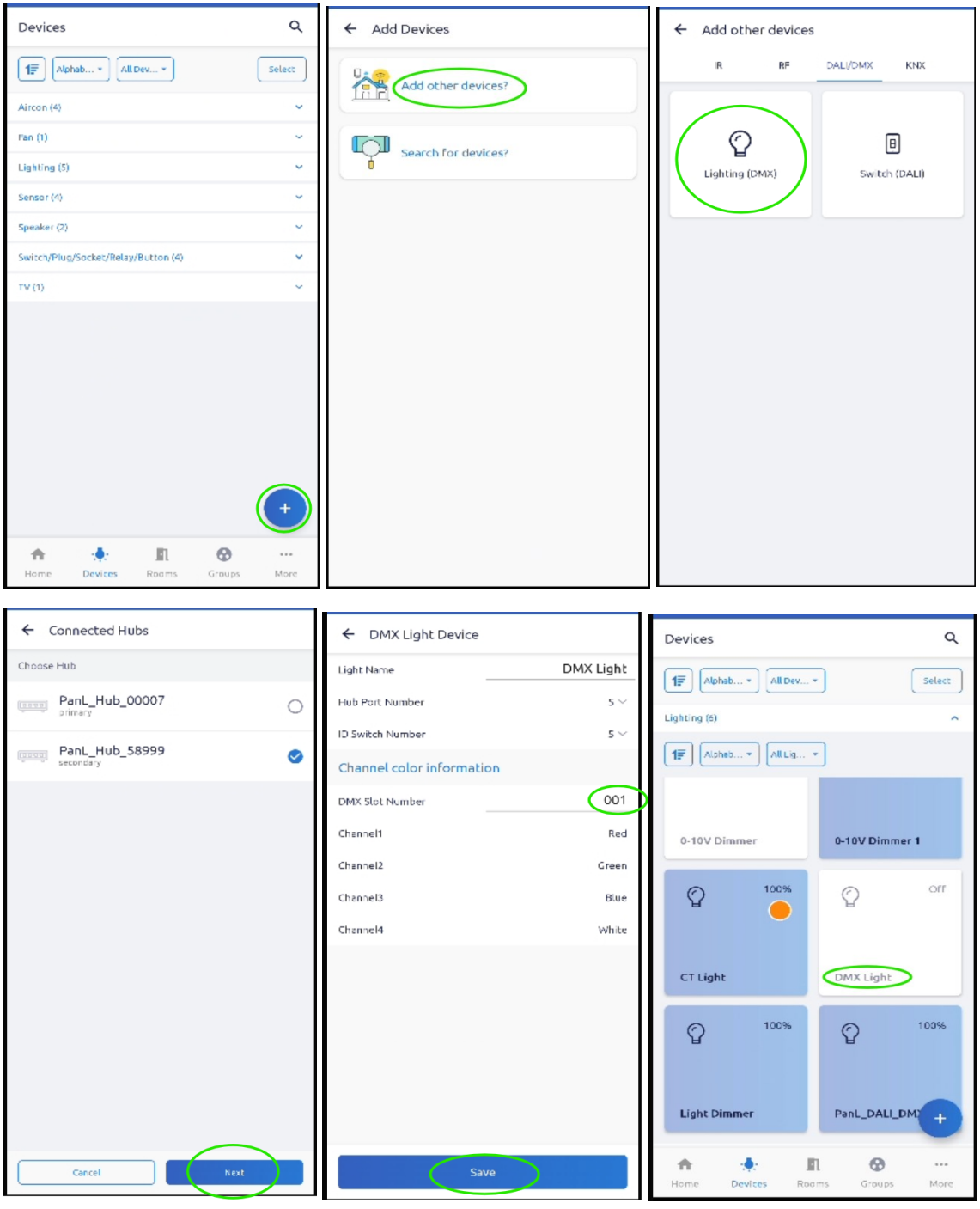




4.2 DMX

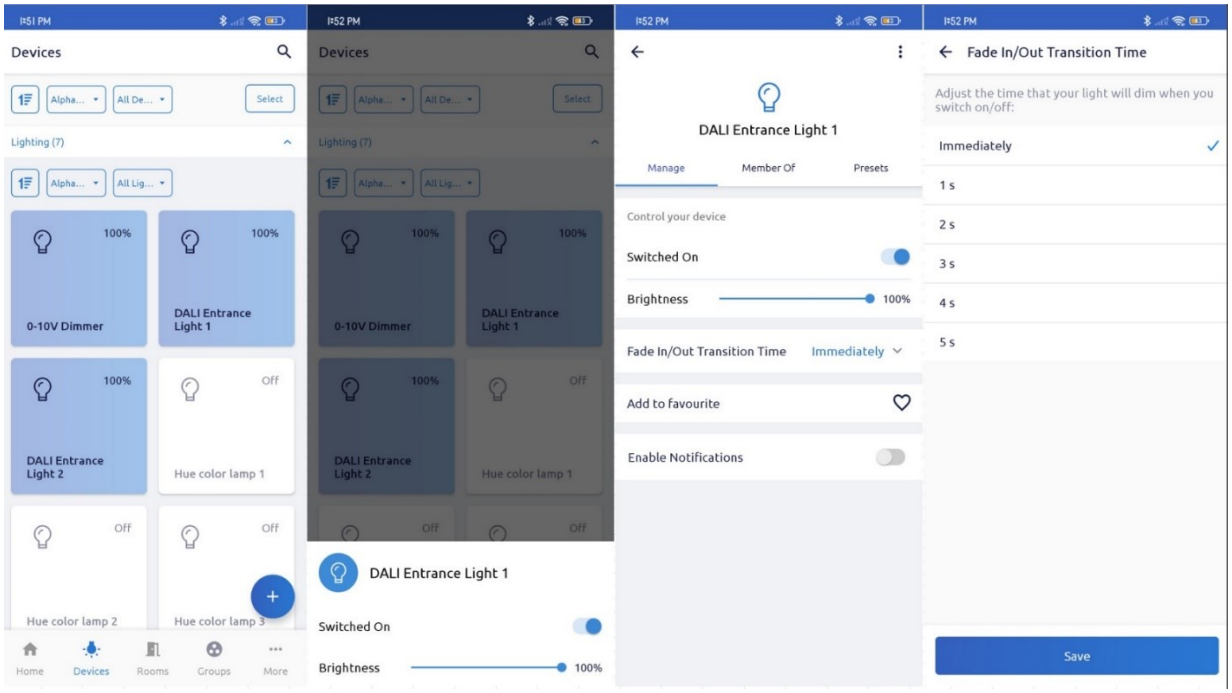
4.2.1 Lighting

DMX lights as well need an additional configuration of selecting the DMX Decoder Address (can be configured in the DMX decoder – please check the DMX Decoder for more info) before starting to use the lights in the System.



5 Host Control

DALI Light status and brightness can be controlled through the quick control popup and Device detail page. DALI fade transition time will be affected immediately after altering the options on the settings page (the fourth image).

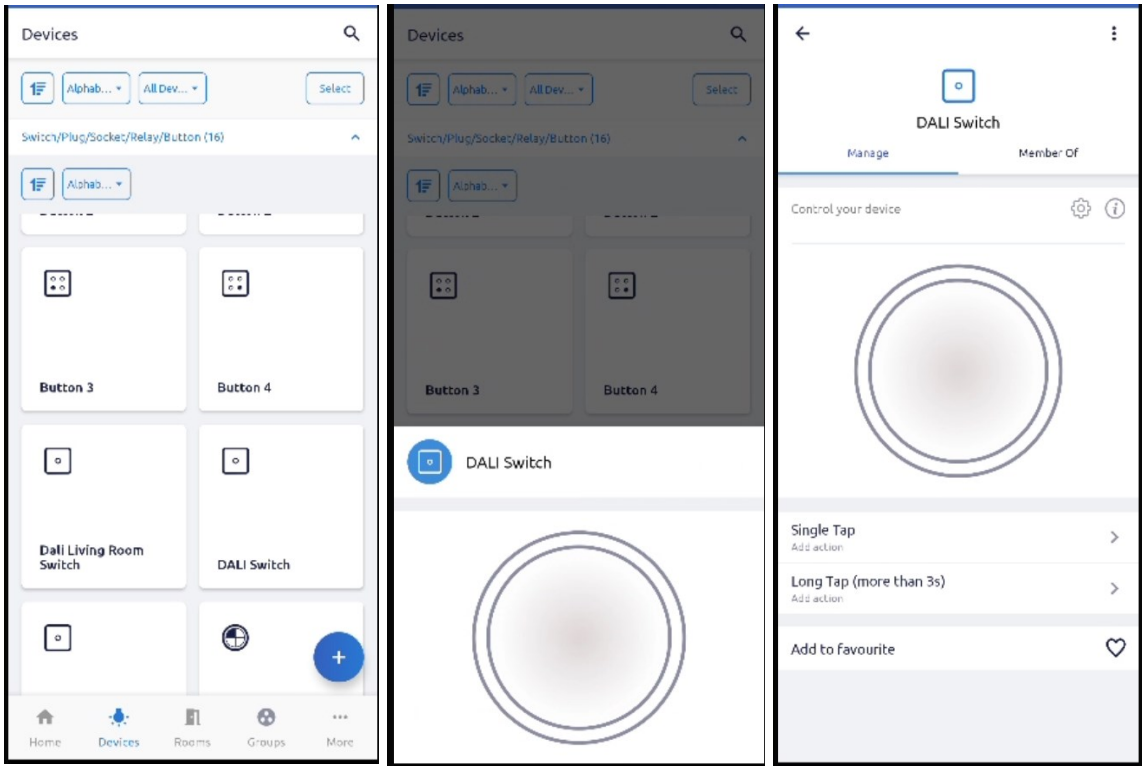


DALI Switches action can be configured in the Device detail page by adding Action for Short Tap and Long Tap. Once this is configured, every Tap (Short/Long Tap) on the physical button or emulator (mobile app) would trigger the configured action.

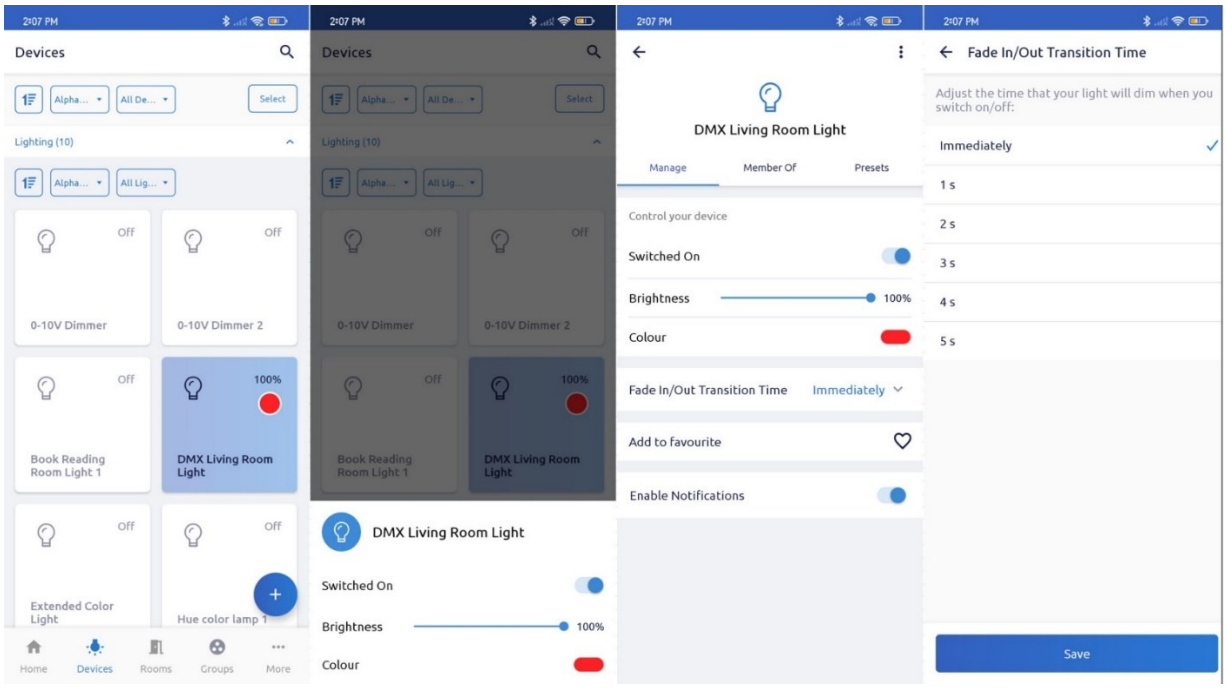
Note: A long tap is detected when the screen is tapped for more than 3 seconds.

Sample Action:

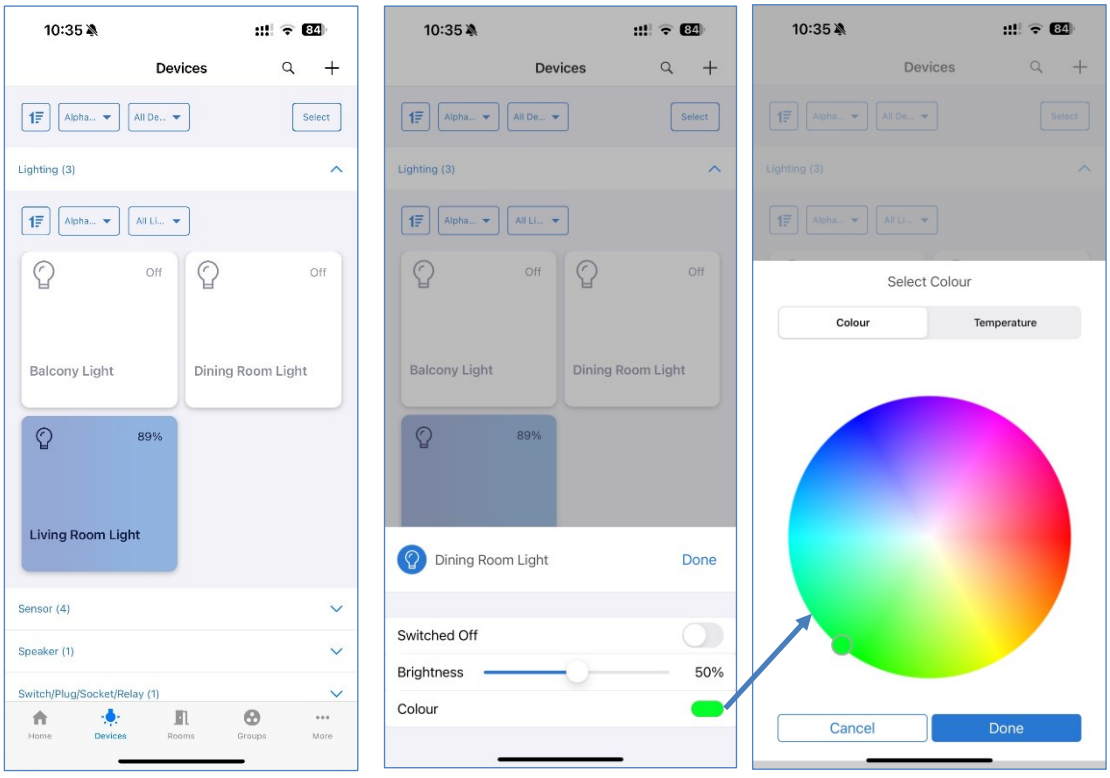
1. Turn on/off device/s
2. Turn on/off room/s
3. Turn on scenes – For example, setting color and brightness of a light.



DMX Light status and brightness control will function similarly to DALI, and changes to the settings page's parameters will instantly impact the fade transition time (see the fourth image).



Moreover, the PSL application allows you to adjust the DMX Light's colour using the colour wheel.



6 Contact Information

Refer to https://brtsys.com/contact-us/ for contact information.

Appendix A – References

Document References

PanL Mood Lighting DALI/DMX 512 Controller Datasheet

PanL Mood Lighting DALI/DMX 512 Controller Quick Start Guide

Acronyms and Abbreviations

Terms	Description
DALI	Digital Addressable Lighting Interface
DMX	Digital Multiplex
RJ45 8P8C	Registered Jack 45 (Number indicates listing number) 8 Position/8 Conductor
WRGB	White, Red Green Blue

Appendix B – List of Figures

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NA

Appendix C – Revision History

Document Title: BRTSYS_AN_068 PanL Mood Lighting (ML)DALI/DMX 512 Controller

Document Reference No.: BRTSYS_000144

Clearance No.: BRTSYS#100

Product Page: https://brtsys.com/product/mood-lighting-controller/

Document Feedback: Send Feedback

Revision	Changes	Date
1.0	Initial Release	02-04-2025