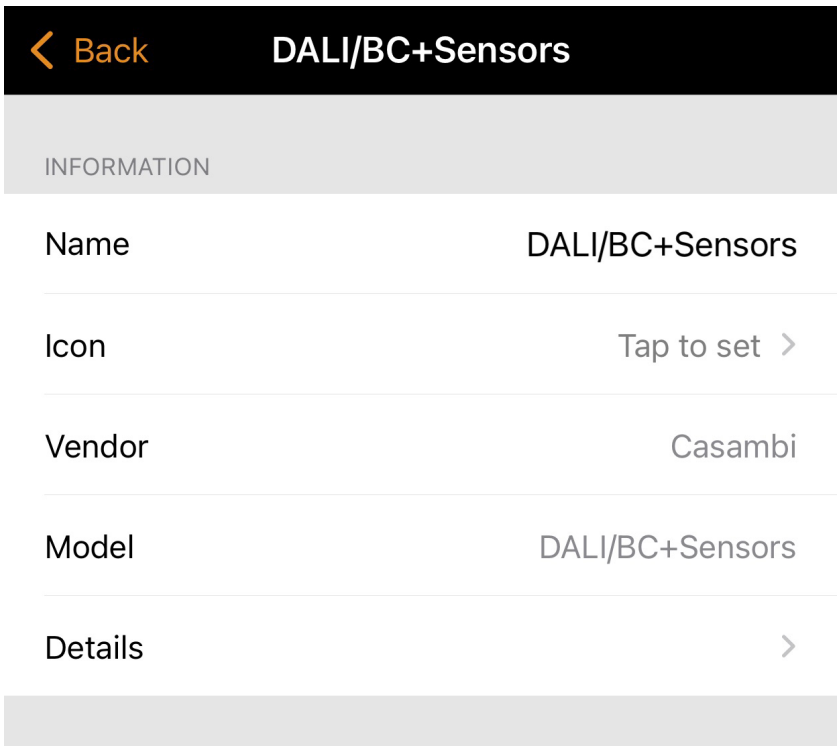
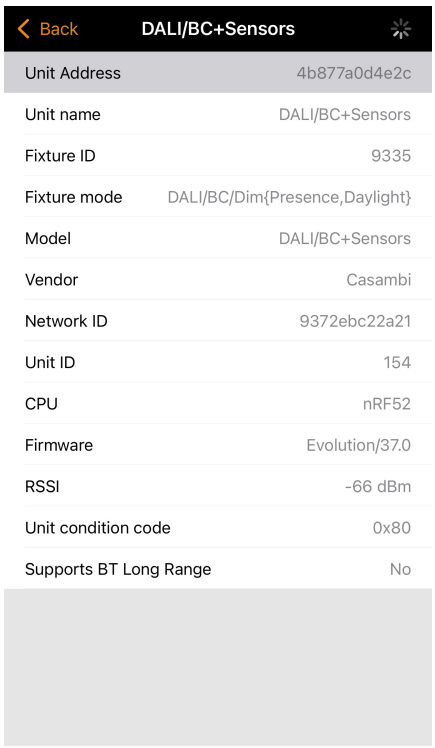
DALI Configuration in Casambi apps

Version 2023-01-30

Casambi applications allow configuration of DALI fixtures by users.

Inside unit settings view that is opened by double-tapping on device icon, there is “Details” navigation to diagnostics/configuration page





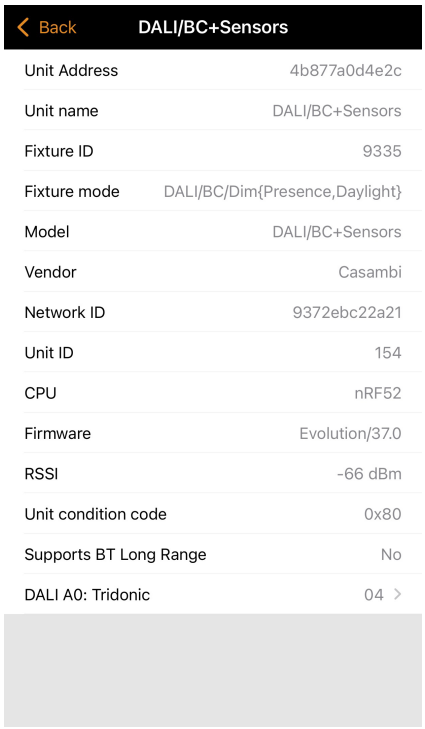
When opened for the first time, automatic scanning will start discovery of DALI devices:

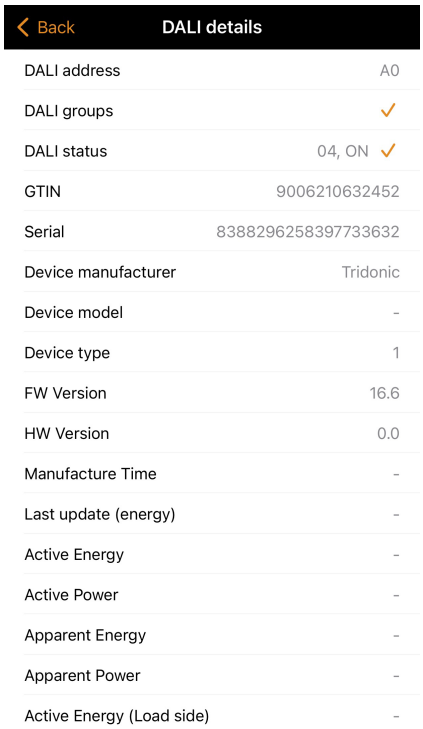
- fast detection of “DALI An” entries
- slower pass of scanning for each detected address: device capabilities and other details

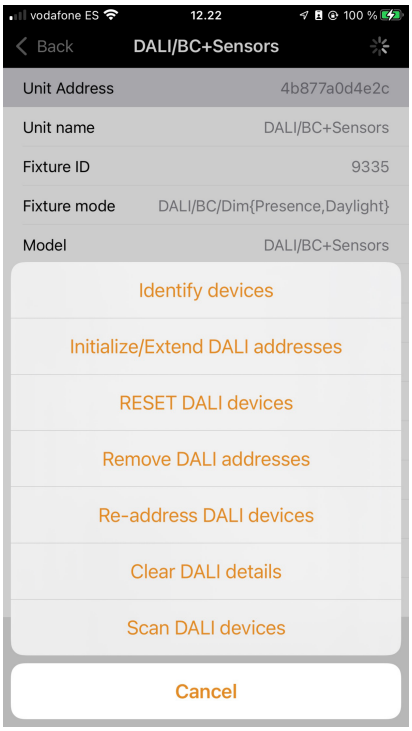
For individual DALI devices, sub-view will show additional details

- DALI address, group membership
- STATUS value
- Details from DALI memory bank 0: GTIN, Serial, FW / HW version identifiers

- Device types: combination of “1”, “6”, “8”, “50”, “51”, “52” for DT1/6/8 and D4i features
- For devices with D4i data, extra fields are populate on every access to the view and also on clicking the “Last update (energy)” row in the table







If the Casambi fixture does not have any addressed devices, but unaddressed drivers are detected, then “Unaddressed gear present” row is added in the view.

DALI devices in connected to the Casambi control module can be managed with command from menu that is opened by tapping on the top “Unit address” row.

- IDENTIFY DEVICES:
  Send broadcast *IDENTIFY DEVICE* commands to DALI drivers and Emergency (DT1) devices

- INITIALIZE/EXTEND DALI DEVICES:
  Addressing of yet-unaddressed DALI devices. It is also known as “system extension” mode.

The first unused addresses starting from A0 onward will be populated with newly addressed devices.

- RESET DALI DEVICES:
  Broadcast the *RESET* command to all connected device.
  Note that addresses are not changed by this command, only returns other device parameters (depending on device type there can be additional settings) to the factory/DALI defaults.

- REMOVE DALI ADDRESSES:
  Broadcast command that unsets (to MASK/0xFF value) device addresses. It is effectively removes earlier address assignments.

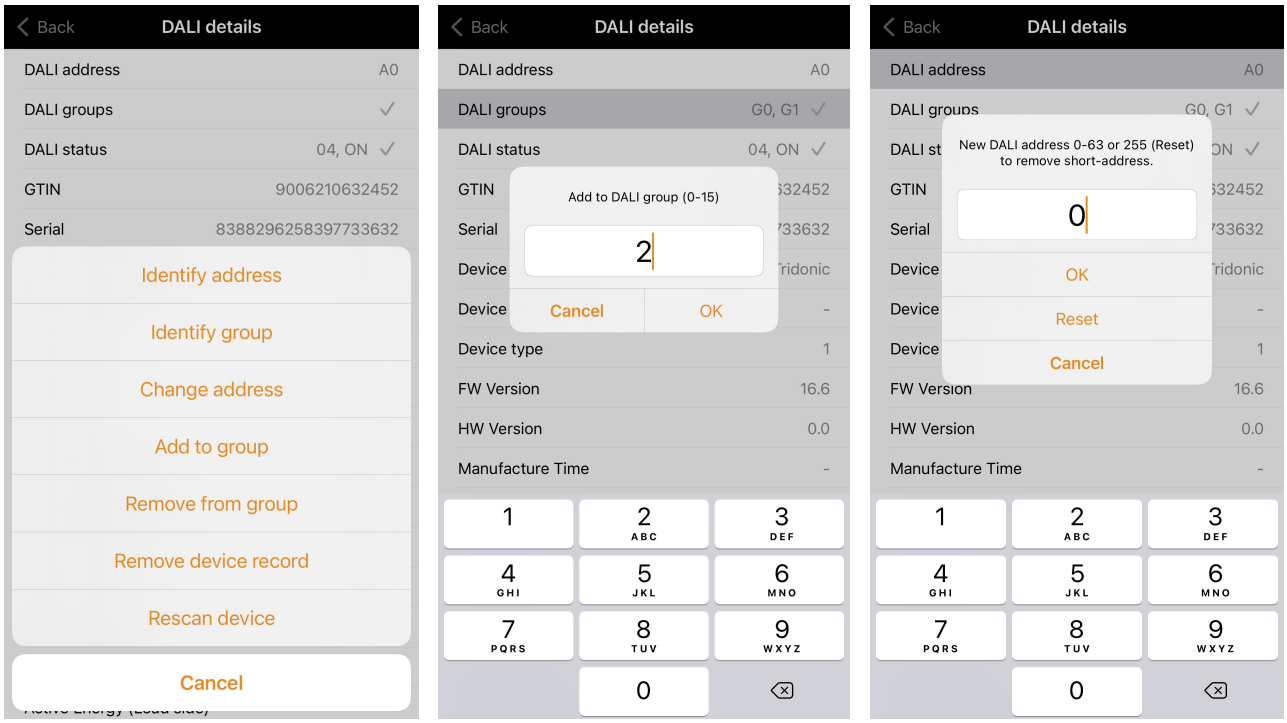
- RE-ADDRESS DALI DEVICES:
  Addressing mode in which all devices are stripped of addresses and addressed again, taking preferred addresses A0, A1, .. onward.

- Commands CLEAR DALI DEVICES and SCAN DALI DEVICES can be used for removal of earlier scan results
  - these are not normally needed unless old entries need to be removed or scanning of devices at addresses beyond A11 is needed (normal scans stop a

Inside “DALI An” views (DALI device details), additional actions are found on menus opened from “DALI address” and “DALI groups” rows:

- IDENTIFY ADDRESS
- IDENTIFY GROUP / ADD TO GROUP / REMOVE FROM GROUP (enter group number)
- CHANGE DALI ADDRESS

As with Clear Devices and Scan devices commands, the “Remove device record” and “Rescan device” are only used for management of local device information created by apps and does not alter devices in the DALI fixture.



Configuration of DALI addresses

Usual set of steps to perform when device has no configuration or replacement of DALI device is done. New DALI hardware needs to be configured in suitable way for receiving Casambi control.

Single-driver/address fixture:

- If address is detected, but it is not “A0”, then it either changed to A0 in device details or the “Re-address DALI devices” action can be executed with the same effect;
- if no address is detected, execute “Initialize/Extend DALI addresses” or “Re-address DALI devices”

Multi-driver / multi-address fixture:

When multiple addresses are involved for multi-dimmer control, there is need to:

- ensure that addresses are in the range A0..An that corresponds to the number of dimmers, “slider” controls in Casambi app, for the device
- arrange device addresses between devices so that their order is suitable for corresponding control sliders in the app (number according position in track, pole, for example)

Steps to perform:

- **Addressing** or **re-addressing** of devices
- **Identification** of devices (from details view), in order to define which address is which physical light output
- **Change/swapping of addresses** - moving of one address to another; what Casambi app does is swapping of two addresses between two (temporary unassigned address is used for swapping)
    - several steps may be needed to put devices to the right address order

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Excerpt from release notes for FW v36 / Casambi app v3.7

Extended DALI action menu in Casambi apps v3.7:

- **Identify devices** broadcast; INDENTIFY and DT1 START IDENTIFICATION
- **Initialize/Extend DALI addresses** using INITIALIZE (0xFF)
- **RESET DALI devices** broadcast RESET command
- **Remove DALI addresses** broadcast SET SHORT ADDRESS (0xFF)
- **Re-address DALI devices** using INITIALIZE (0)

This set of commands together with address-specific allows complete configuration of DALI fixture without use of additional tools.

After initial addressing and scanning of DALI resources, additional commands for individual devices can be done from the “DALI An...” DALI details views:

- **Identify address**
- **Identify group** [select 0-15 or use the current device group]
- **Change address** [move or swap via address A63 if the address is taken]
- **Add to group**
- **Remove from group**

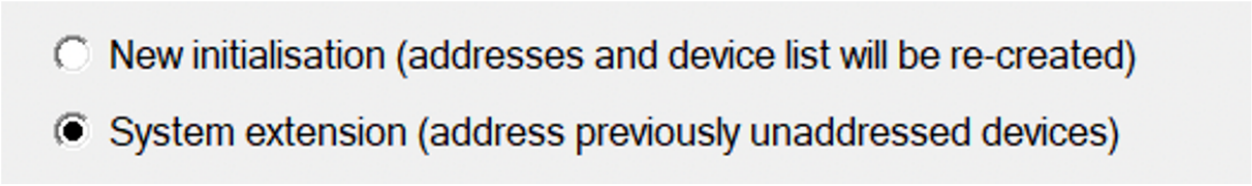
Complete re-addressing of all devices is called “Re-address DALI devices”. It is the operation that the auto-addressing by Casambi modules were performing so far, when activated by the auto-configuration options in the fixture profile.

New type of addressing is called “*Initialize/Extend DALI addresses*” in Casambi app unit details action menu (double tap > Details... > select Unit address).

In this mode, DALI addressing is executed with the *INITIALIZE* {*0xFF*} (unaddressed) configuration option.

All found devices are assigned addresses from A0 onward, but existing addresses (already addressed devices) are skipped after a pre-check (QUERY CONTROL GEAR PRESENT is used on the address).

It is also referred to as “system extension” (address previously unaddressed devices) is DALI software tools.



An example of the two different addressing modes in the masterCONFIGURATOR tool.

An example of the two different addressing modes in the masterCONFIGURATOR tool.
Further changes for DALI configuration features in the apps are expected in future releases of Casambi apps, where the addressing actions and address/group management overall are more convenient and intuitive.

New in Casambi FW v36:

Summary of behavioral changes of DALI auto-configuration procedures:

- Perform *"Extend DALI addresses"* configuration of multi-channel fixtures
- Perform *"Re-address DALI devices"* configuration of 1-channel fixture profiles
- For multi-channel fixture profiles, do not trigger "Configuration failure" if an address is missing

New behavior is to employ "Extend DALI addresses" option on multi-channel (multi-address) fixture profiles, where missing addresses that are bound to output channels of Casambi fixture are attempted to be filled with yet-unaddressed (newly added) devices from the same bus (a track system or a multi-driver luminaire where some components were replaced or added).

Motivation:

Whenever fixture is using DALI addresses (not a broadcast or group-addressing mode), all expected addresses are checked at the startup and **any missing address triggers auto-addressing**.

The original behavior for DALI addressing procedure was to involve all devices and recreate all addresses – using the **INITIALIZE {0=ALL}** mode – whenever addressing procedure is started.
In multi-driver fixtures it leads to **randomization** of resulting addresses. As a result, practical use of multi-driver fixtures demanded configuration of Casambi fixture profiles as "Preconfigured" (auto-addressing is disabled) and pre-configuration of all DALI devices at the luminaire manufacturing time.

Support of "system extension" kind of addressing by Casambi controllers avoid the problem of address changes. Existing configuration is safe from accidental change, and yet can tolerate (temporarily) missing devices.

The primary use case and problem to solve here is to support robust configuration and replacement of drivers with new (unaddressed) components and to support partially populated DALI track systems while utilizing the same multi-dimmer profile (DIM 8CH fixture, for example, for 4 or 6 drivers).

Where luminaire blocks (spots in a track system, for example) are moved between Casambi controllers, they should be unaddressed first – by using of the existing functions of Casambi app – to be accepted automatically in another system where an output node (DALI address) is missing.