



Intesis[®]
BY HMS NETWORKS

Application note DALI local Control – Input Devices



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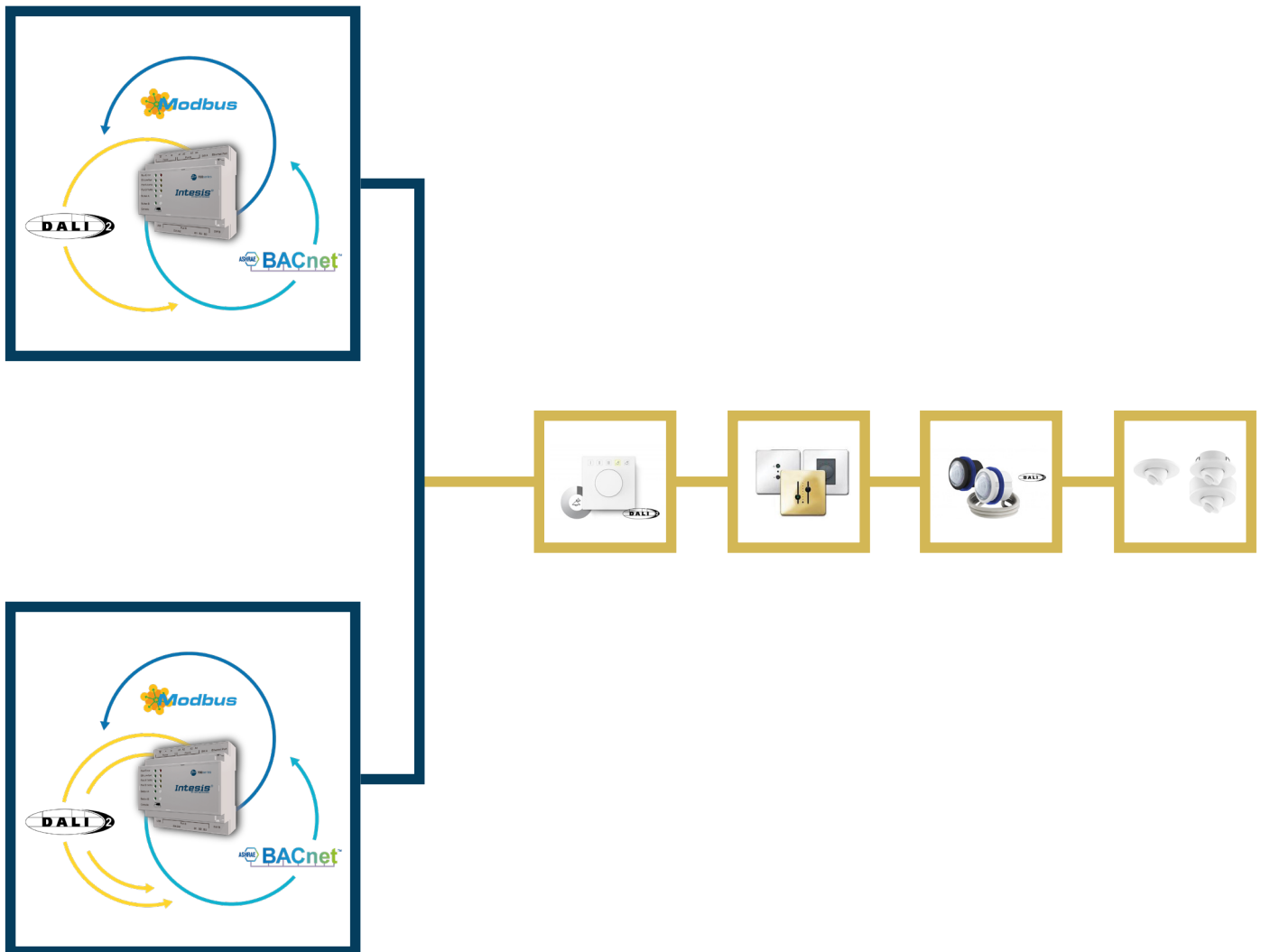
SW and FW requirements and available HW

Summary



Introduction

Local control options for DALI gateways have been expanded with the new Intesis 700 Series DALI gateways to cover all input device types, as local management for occupancy and daylight sensors has been added to the already existing coverage for push buttons and absolute inputs. This document describes in detail the options and modes available for all these input devices' local control.



Input device and instances supported

Intesis is certified to support the following parts for input devices:

- Push button instances (Part 301)
- Absolute input device instances (Part 302)
- Occupancy sensor instances (Part 303)
- Light sensor instances (Part 304)

**DALI ALLIANCE
DATABASE PRODUCT**

INSTANCE:

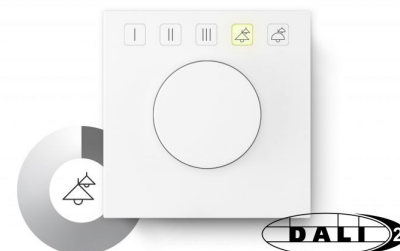
An instance is the specific set of features that a sensor, push button, or any input device can support. Up to ten associated instances can be defined for each input device.

INPUT DEVICE TYPES:

PUSH BUTTONS:

Input device type used to control lights locally. It can send these events:

- Press
- Release
- Short-press
- Long-press
- Double-press
- Button-stuck

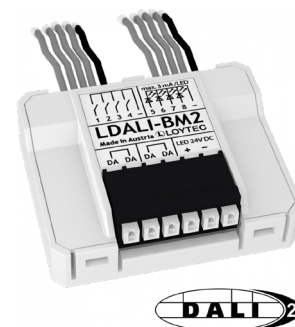


ABSOLUTE INPUTS:

This type covers a variety of devices, such as:

- Multi-position switches
- Analog inputs
- Slider or rotary controls

It sends a “position” event.



OCCUPANCY SENSORS:

Movement or presence type sensors. Depending on the sensor type, events can be triggered on state change to:

- Occupied
- Vacant
- Movement
- No movement



LIGHT SENSORS:

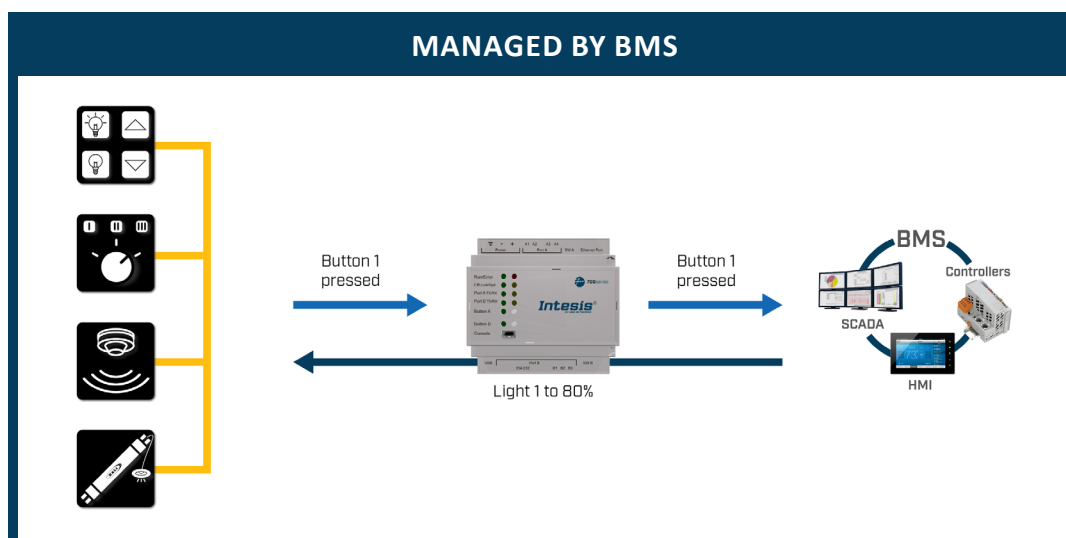
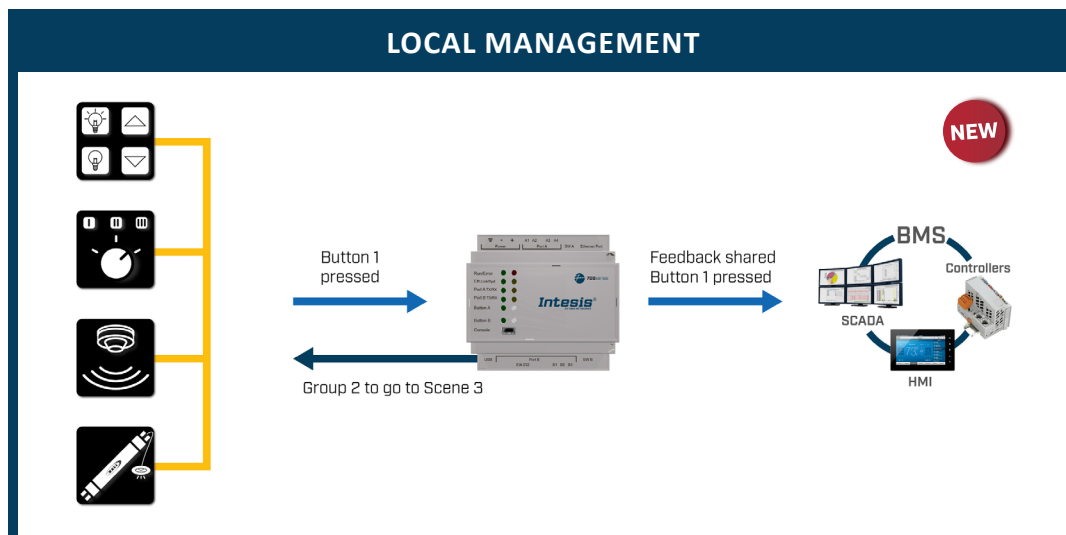
Allow measurement of the illuminance level. Hysteresis is programmable to minimize bus traffic.



Available control types

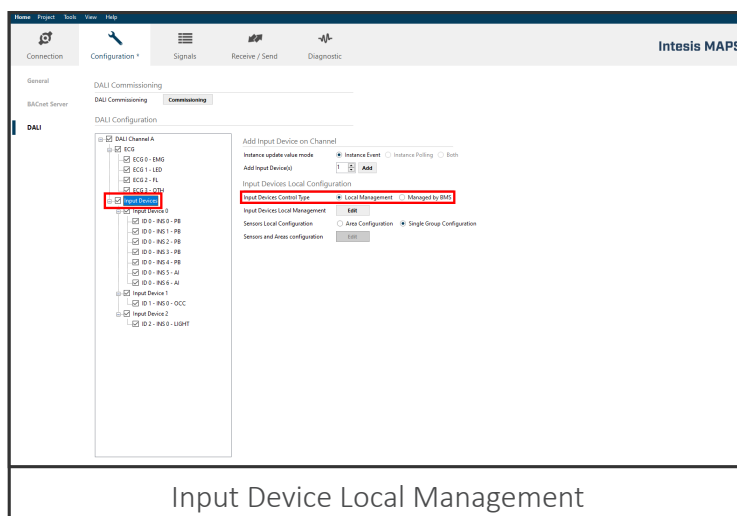
All input devices (push buttons, absolute input devices, light sensors, and occupancy sensors) can be handled in two different ways:

- **Local Management (default):** The gateway manages the input device instances directly, achieving a quicker reaction time. This also helps to reduce the BMS' DALI requests load, something especially appreciated by BMS manufacturers.
- **Managed by BMS:** The gateway acts as just a protocol translator. All input device instances are managed by the BMS.



Input device local management

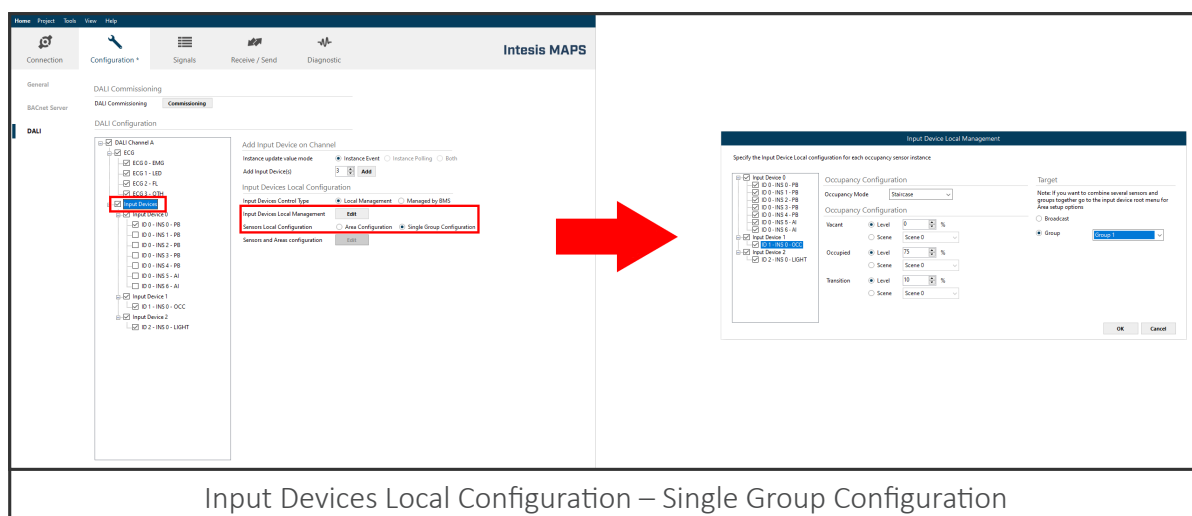
To enable the Area Configuration and the Single Group Configuration options, set the Input Devices Control Type in Local Management.



Input Device Local Management

Once enabled, there are two available options:

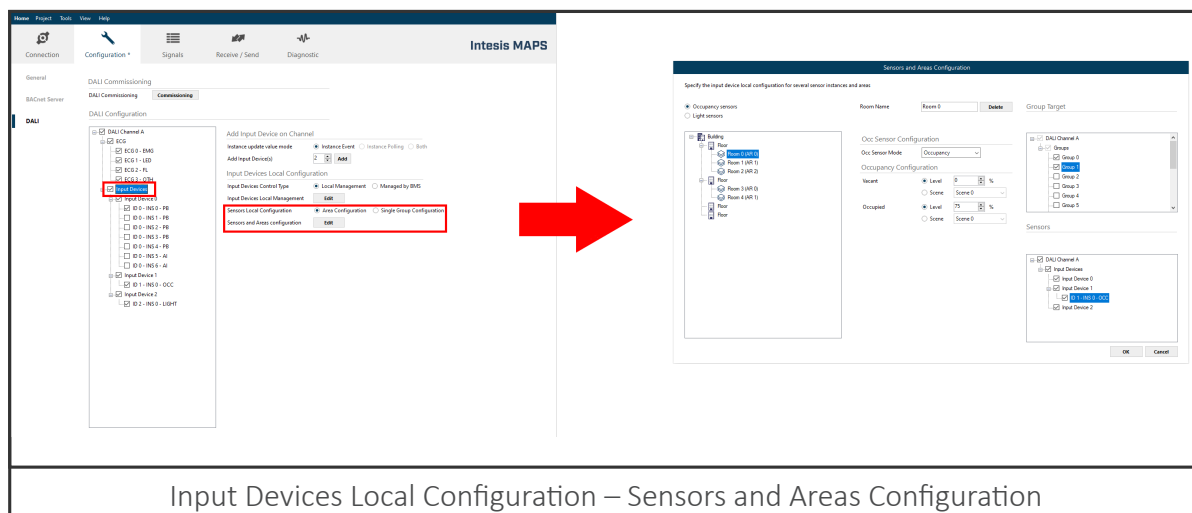
■ **Single Group Configuration (default value):** Used to associate one sensor to a group or channel, so the targeted group or channel will receive the selected commands from this sensor. All input device types are visible on the Input Device Local Management window.



Input Devices Local Configuration – Single Group Configuration

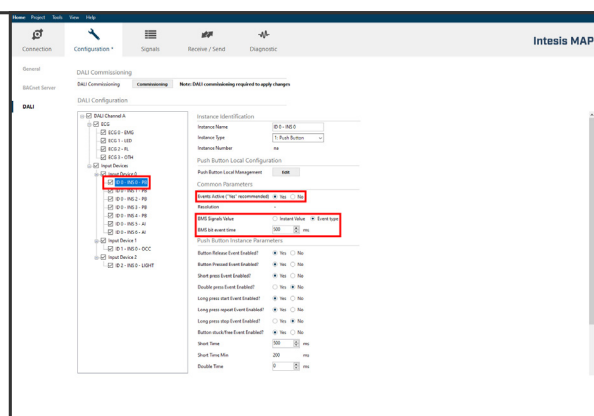
DALI Local Control – Input Devices

■ **Area Configuration:** Allows configuring and grouping multiple occupancy and light sensors to operate together by defining a three-level hierarchy based on building, floors, and rooms. Sensors will not appear in the Input Device Local Management window when area configuration is enabled.



Input Devices Local Configuration – Sensors and Areas Configuration

The events and parameters for the desired functionalities must be activated, as well as the specific events required for the application, like for example the double press event for push buttons or the position event for sliders. Setting Events Active to Yes is also mandatory.



PUSH BUTTON CONFIGURATION

The configurable options for push buttons in input device local management are:

- **Single action:** It is triggered by the short press event.
- **Dimmer:** It requires the long press repeat event and uses the value from the Repeat Time parameter for the interval.
- **Toggle:** It is used to implement two actions in a single button, like a simple ON/OFF or more elaborated actions.
- **Multi-action:** This option can be used to expand the button functionality, as it is used to define a different action for the short press, the long press, and the double press events.

The screenshot shows the 'Input Device Local Management' dialog box. The title bar is 'Input Device Local Management'. Below the title bar, it says 'Specify the Input Device Local configuration for each push button instance'. On the left, there is a tree view showing 'Input Device 0' expanded, with 'ID 0 - INS 0 - PB' selected. The main area is divided into two sections: 'Push Button Configuration' and 'Target'. Under 'Push Button Configuration', 'Push Button Mode' is set to 'Single action'. Below that, 'Single Action Configuration' has two options: 'Level' (selected) with a value of '100.00' and a '%' sign, and 'Scene' (unselected) with a dropdown set to 'Scene 0'. Under the 'Target' section, 'Broadcast' is selected, 'Group' is unselected with a dropdown set to 'Group 0', and 'Short Address' is unselected with a value of '0'. At the bottom right, there are 'OK' and 'Cancel' buttons.

OCCUPANCY SENSOR CONFIGURATION

There are three available modes for the occupancy sensor:

- **Occupancy mode:** Lights turn on and off automatically according to movement detection, with no direct user interaction.
- **Vacancy mode:** Lights turn off automatically when the user leaves but must be turned on manually by the user when entering the room.
- **Staircase mode:** Lights turn on and off automatically according to movement detection, with an active transitional light level to let the user know that lights are about to turn off. This transition time is configurable.

Every mode allows for the related levels to be defined or for a scene to be linked to: Vacant for vacancy mode, vacant and occupied for occupancy mode, and vacant, occupied, and transition for staircase mode.

The screenshot shows the 'Input Device Local Management' dialog box. The title bar is 'Input Device Local Management'. Below the title bar, it says 'Specify the Input Device Local configuration for each occupancy sensor instance'. On the left, there is a tree view showing 'Input Device 1' expanded, with 'ID 1 - INS 0 - OCC' selected. The main area is divided into two sections: 'Occupancy Configuration' and 'Target'. Under 'Occupancy Configuration', 'Occupancy Mode' is set to 'Staircase'. Below that, 'Occupancy Configuration' has three sections: 'Vacant' with 'Level' selected and value '0', 'Occupied' with 'Level' selected and value '75', and 'Transition' with 'Level' selected and value '10'. Each section also has a 'Scene' option with a dropdown set to 'Scene 0'. Under the 'Target' section, 'Broadcast' is selected, 'Group' is unselected with a dropdown set to 'Group 0', and 'Short Address' is unselected. A note is present: 'Note: If you want to combine several sensors and groups together go to the input device root menu for Area setup options'. At the bottom right, there are 'OK' and 'Cancel' buttons.

DALI Local Control – Input Devices

As mentioned above, occupancy sensors can be combined together to define areas. When using this feature, the Sensors and Areas Configuration window allows the configuration of occupancy sensors at room level.

Sensors and Areas Configuration

Specify the input device local configuration for several sensor instances and areas

☒ Occupancy sensors
☐ Light sensors

Room Name: Room 0 [Delete]

Group Target:

Occ Sensor Configuration: Occ Sensor Mode: Occupancy

Occupancy Configuration

Vacant: ☒ Level: 0 %
☐ Scene: Scene 0

Occupied: ☒ Level: 75 %
☐ Scene: Scene 0

Sensors

DALI Channel A

Groups: ☒ Group 0, ☒ Group 1, ☐ Group 2, ☐ Group 3, ☐ Group 4, ☐ Group 5

Input Devices: ☐ Input Device 0, ☒ Input Device 1, ☒ ID 1 - INS 0 - OCC, ☐ Input Device 2

[OK] [Cancel]

LIGHT SENSOR CONFIGURATION

Allows to set a target lux level that the defined target (a group or a scene) will automatically be adjusted to according to the sensor measurements.

Input Device Local Management

Light Local Configuration

Light Sensor Configuration

Target Lux level: 400

Power up behaviour: ☒ continue if active
☐ wait for re-activation

Target

Note: If you want to combine several sensors and groups together go to the input device root menu for Area setup options

Group: Group 0
Scene: Scene 0
Start level: 75 %

[OK] [Cancel]

DALI Local Control – Input Devices

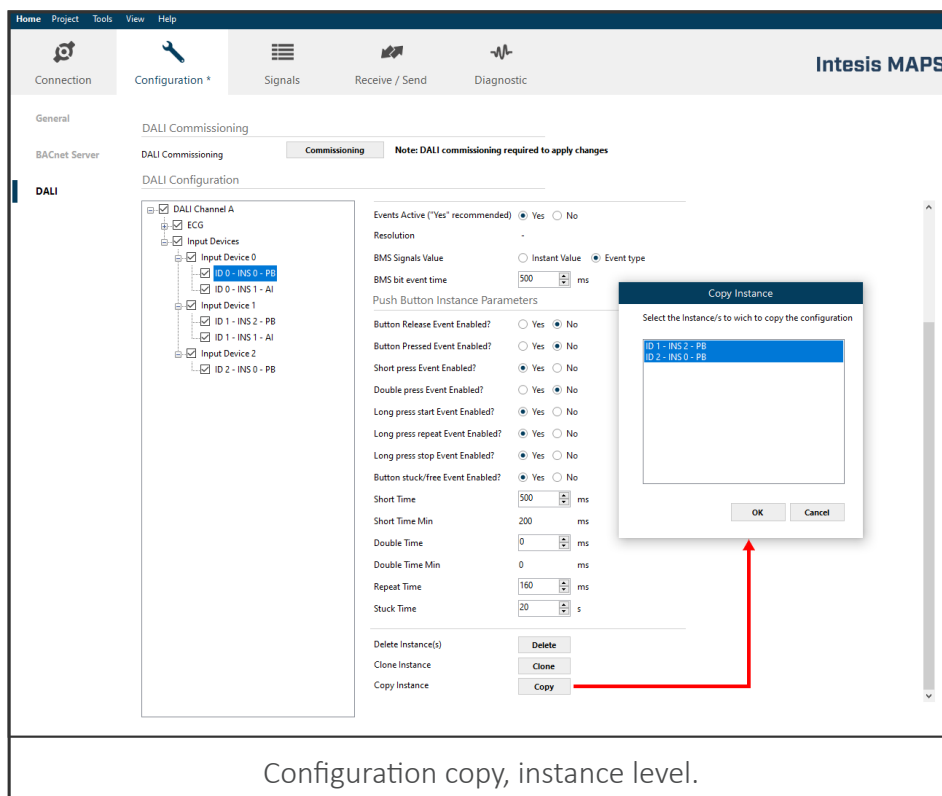
Just like occupancy sensors, light sensors can also be combined together to define areas, so when using this feature, the Sensors and Areas Configuration window allows the configuration of light sensors at room level as well.

The screenshot shows the 'Sensors and Areas Configuration' window. At the top, it says 'Specify the input device local configuration for several sensor instances and areas'. There are two radio buttons: 'Occupancy sensors' and 'Light sensors', with 'Light sensors' selected. To the right, there's a 'Room Name' field with 'Room 2' and a 'Delete' button. Further right is a 'Group Target' field. On the left, a tree view shows a hierarchy: Building > Floor > Room 0 (AR 0), Room 1 (AR 1), Room 2 (AR 2) (highlighted), and Room 3 (AR 3). In the center, the 'Light Sensor Configuration' section has fields for 'Target Lux level' (400), 'Scene' (Scene 0), 'Start level' (75 %), and 'Power up behaviour' (radio buttons for 'continue if active' and 'wait for re-activation', with 'continue if active' selected). On the right, there are two tree views. The top one, under 'DALI Channel A', shows a 'Groups' list with Group 0 through Group 5. The bottom one, under 'Sensors', shows a tree with 'DALI Channel A' > 'Input Devices' > 'Input Device 0', 'Input Device 1', 'Input Device 2' (checked), and 'ID 2 - INS 0 - LIGHT' (checked). At the bottom right are 'OK' and 'Cancel' buttons.

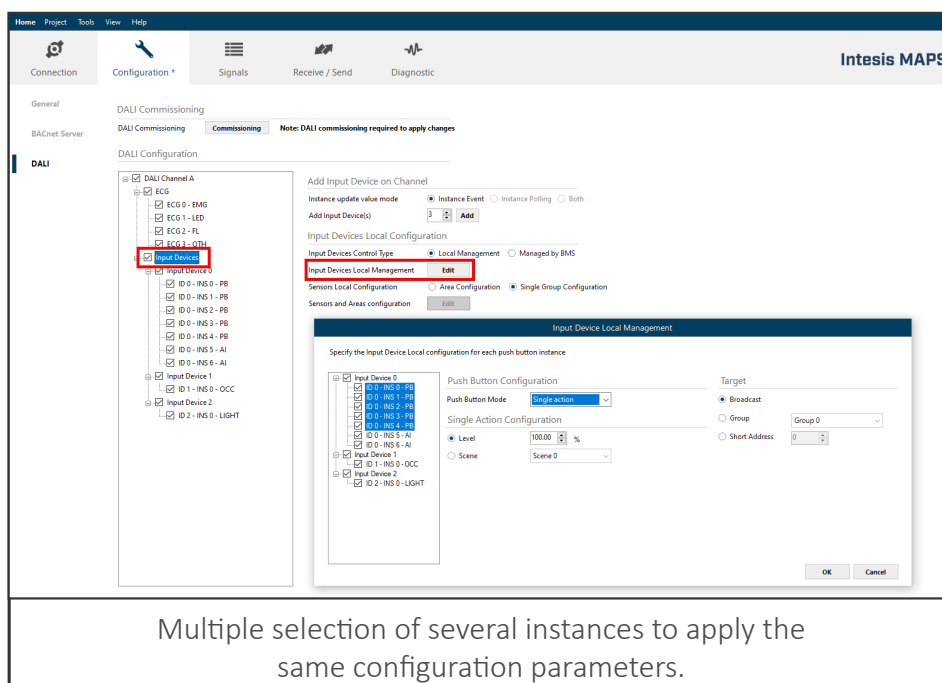
MULTI-EDITING OPTIONS:

In a configuration with multiple input devices and instances, it is possible to copy the configuration from one instance to others of the same type to help speed up the commissioning process. Configuration can also be copied at input device level (this is, the settings of all its instances), as long as the target input device shares the same structure.

DALI Local Control – Input Devices



Multiple instance management is possible by selecting the Input Devices root from the tree view and clicking the Input Devices Local Management Edit button. A new window will open, where we can click on the instances while holding the shift key to select multiple instances and configure them simultaneously.



Applications and case studies

APPLICATIONS:

- Support for DALI input devices such as Push buttons (switches) and Absolute inputs (sliders) in a DALI bus-based installation to allow for manual interaction.
- The response to the switch press can be configured, ranging from basic actions such as on/off to more complex ones like scenes, being also possible to assign responses like dimming or multi-action, with different responses to short presses, long presses, and double presses.
- Support for additional input devices such as occupancy and light sensors, with different modes available resulting in both energy savings and increased comfort.
- Occupancy and light sensors can be configured and grouped to operate together in a defined area, distributed in a three-level hierarchy based on buildings, floors, and rooms.

CASE STUDY:

Assembly Hall – Selective lighting

Problem: A large assembly halls needs different lighting levels for the audience area and the stage, they also need direct control to swap between lighting scenarios as necessary.

Solution: A DALI installation will solve the general selective lighting needs, and the addition of DALI-2 switches to the installation will bring manual control. By setting up the push buttons (switches) to be locally managed by the Intesis DALI gateway, the reaction time from push to action will also be faster.

Office building – Energy waste

Problem: Office workers may accidentally leave the lights on overnight when leaving the building. This results in an increase in costs, waste of energy, and a reduced lifespan for luminaires.

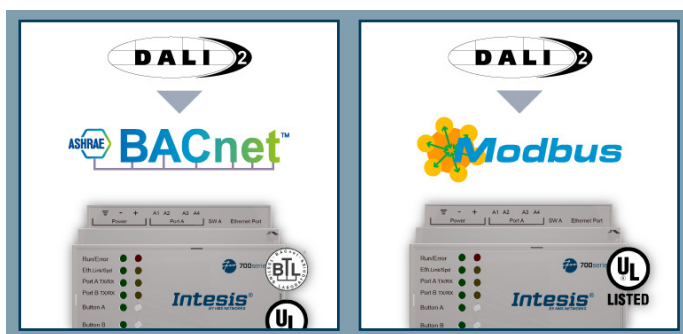
Solution: A DALI installation with occupancy sensors solves this problem, as with the sensors configured to occupancy mode, the lights will turn off automatically when people leave.

SW and HW requirements

INTESIS MAPS 1.2.10.0 – AVAILABLE FROM 03/11/2023

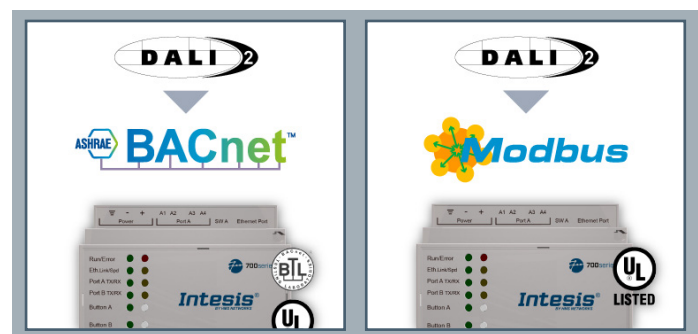
Part Numbers	Description
IN703DAL0640000	Intesis DALI-2 Protocol Translator with Serial and IP support- 1 DALI channel
IN704DAL1280000	Intesis DALI-2 Protocol Translator with IP support- 2 DALI channels

AVAILABLE HARDWARE



IN703DAL0640000

Intesis DALI-2 Protocol Translator
with Serial and IP support - 1 DALI channel



IN704DAL1280000

Intesis DALI-2 Protocol Translator
with IP support - 2 DALI channels

CONSIDERATIONS – FEATURES

The Intesis MAPS configuration tool software is used to swap between applications for the BACnet and Modbus internal protocols. It also allows the configuration of local management options for the input devices in the installation, i.e., push buttons, absolute input devices, and occupancy and light sensors. Several configuration tools are available to help reduce commissioning time considerably, such as the possibility of cloning control gear, input devices, and instances, as well as applying the same configuration to a multiple selection.

Summary

This document covers how the local control options of the 700 Series DALI gateways support all input device types: push buttons and absolute input instances were already supported in previous models, and occupancy sensors and light sensors have been newly added. After a small overview of the different input device types, more information can be found about how all these input devices can be managed as usual (just sending the information to the BMS) or locally in the gateway, reducing response times and data transmission load to the BMS.

Next, the steps to set up the local management method through the Intesis MAPS configuration tool are also covered, showing the available options and how each input device can be individually or collectively configured, as well as the specifics of sensor configuration, with their corresponding single group and area configuration options. Additional features, such as copy options and multiple selection, are also explained.

Some use case examples of these new features are also outlined, showing how they can be implemented to cover a wide range of needs. Finally, you can find more information on the new Intesis 700 Series DALI gateways, covering the currently available hardware and their corresponding part numbers.

