



Welcome to the ABB STOTZ KONTAKT training program about ABB i-bus KNX. This e-learning module deals with basic information regarding the DALI Light Controller DLR/S 8.16.1M. If you need help navigating through this module, please click the Help button. To view the presenter notes as text, click the Notes button in the bottom right-hand corner. In addition, you can download this presentation in printable format by clicking the attachment button in the top right-hand corner.

Learning objectives



Upon completion of this eLearning module we will have detailed knowledge of ...

- constant light regulation with ABB i-bus KNX and DALI
- solutions
- the uses of the DALI Light Controller DLR/S 8.16.1M

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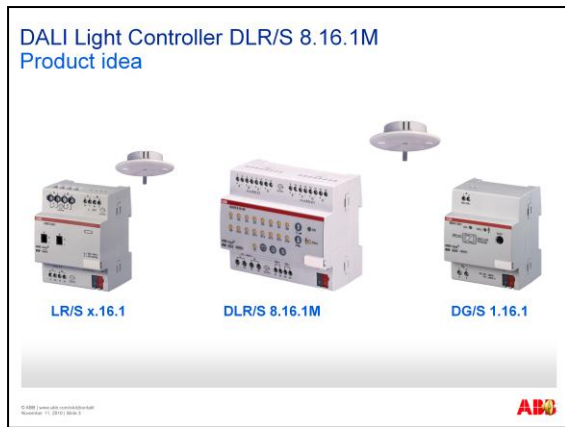


At the end of this eLearning module we will have detailed knowledge of ...

... the new concept of linking ABB i-bus KNX with the DALI system for constant light control applications

... the operating principle and potential of this solution

... the efficient, economical and technical applications of the DALI Light Controller DLR/S 8.16.1M

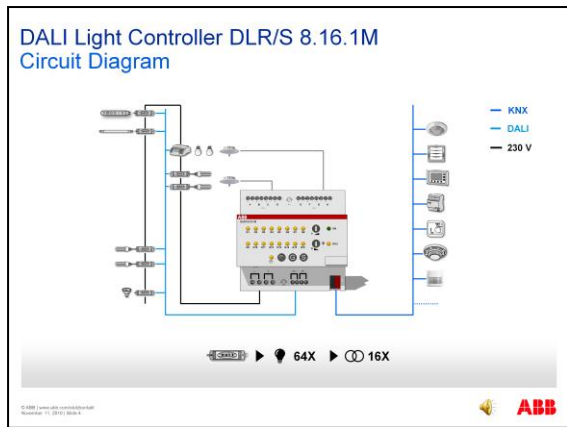


The Dali Light Controller DLR/S 8.16.1M: which product idea is behind this device? In principle it is the combination of 2 proven ABB i-bus KNX devices.

Firstly, the Light Controller LR/S 2.16.1 or 4.16.1 for controlling electronic ballasts with 1-10 V control voltage for lighting control. With its many software functions and the option of calibrating the controlling this second generation device meets all the requirements of the market.

And secondly, the DALI Gateway DG/S 1.16.1 can control up to 64 DALI lamps in 16 groups

The device combines the advantages of both solutions (light control and DALI) in one component. Additional features such as manual operation, enhanced functions and attractive costs per channel mean a competitive solution for a demanding application - constant light control, plus energy savings in lighting of up to 50%.

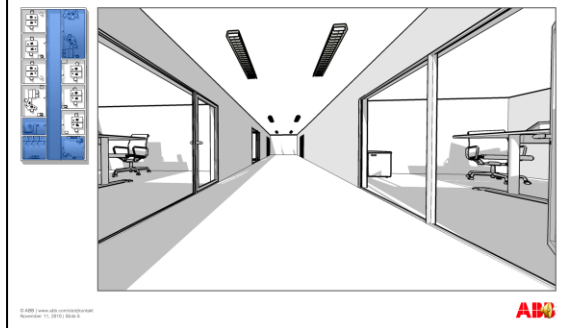


The following circuit diagram gives an overview of the total solution. The DALI light controller is the gateway between DALI and KNX.

The DALI control cable enables up to 64 luminaires to be interconnected, allocated in up to 16 groups. Any combination of lamps with DALI ballasts is possible. In addition, every ballast or lamp, as well as the DALI Light Controller, is connected to the mains voltage.

A separate two-core cable connects every light sensor directly to the DLR/S 8.16.1M.

DALI Light Controller DLR/S 8.16.1M Office Lighting



An office floor can consist of a variety of rooms, such as offices of different sizes, kitchen, storeroom, sanitary rooms as well as a corridor.

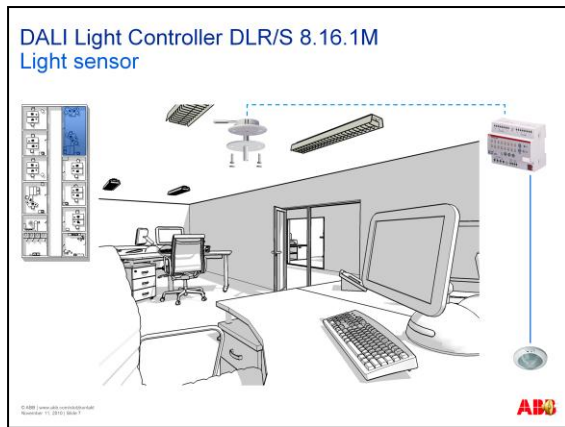
The appropriate lamps with DALI ballast are installed in all of these areas.

DALI Light Controller DLR/S 8.16.1M Office Lighting



A DALI Gateway DLR/S 8.16.1M is deployed for the whole lighting control system.

Sensors, for example motion or presence detectors or buttons, are installed in the rooms, all interconnected via KNX.



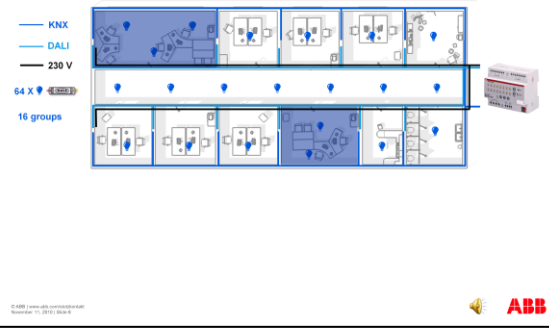
The LF/U 2.1 light sensor is identical to the Light Controller LR/S sensor with 1-10 V technology.

The LF/U 2.1 is installed in the ceiling above the area to be monitored and measures the brightness below the sensor, i.e. the reflection of the brightness in this area.

A two-core shielded cable up to 100 meters long is connected directly to the Light Controller on the distribution board. Compared with other solutions which have bus communication between sensor and dimmer, this concept does not overload the bus with telegram traffic.

Besides light control, the detection of persons in a room is a perfect application for an energy-efficient building. This can also be performed with a KNX presence detector.

DALI Light Controller DLR/S 8.16.1M Office Lighting



Besides the KNX bus line there is also a DALI control cable where all the lamps with DALI ballasts are electrically connected in parallel and every lamp must be connected to the 230 V power supply. Individual lamps are bundled in DALI groups.



In the corridor the lighting is switched on by sensor, and the programmed staircase lighting timer switches the lighting off again automatically. There is constant light regulation in the offices.

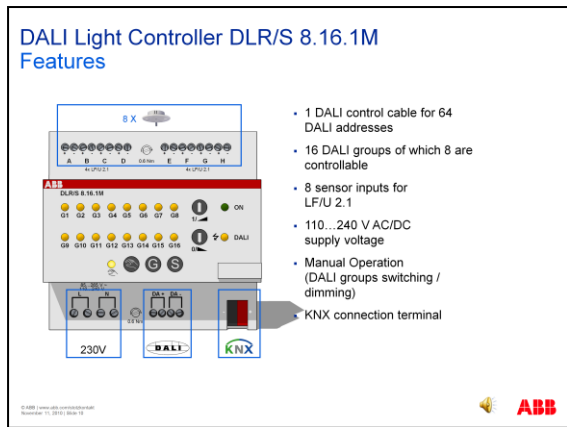
There is also an LF/U 2.1 light sensor mounted in the ceiling in every room, connected by a 2-core control cable to the light controller.

A total of 8 control circuits can be realized with a single device. The master/slave function is used for lighting control in the two bigger offices.

A light sensor controls 2 groups, with differing levels of brightness between the lamps on the wall or at the window, if this is needed.

In the adjoining rooms the classic switch and dimming function is used.

In other words a KNX actuator can control a large number of lighting circuits in a variety of ways. All in all this is an extremely economic, effective solution.



Here we can see the connections to the DALI Light Controller:

The DALI control cable, in which the terminals are doubled for cable-feeding purposes, allows up to 64 DALI devices or addresses to be connected.

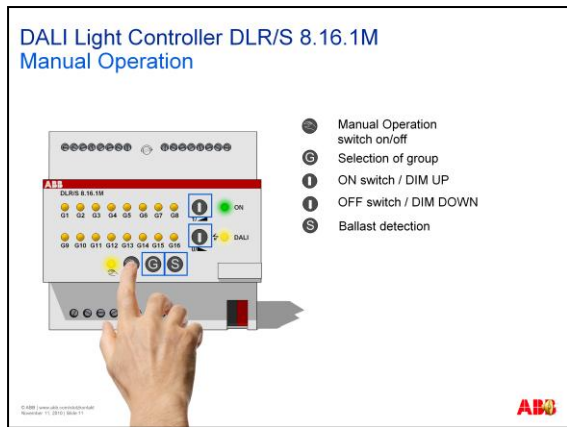
As with the Gateway DG/S 1.16.1, 16 lighting groups can be formed, 8 of which are controllable.

For this purpose up to 8 LF/U 2.1 light sensors can be connected directly to the device.

As the Light Controller also acts as a power supply to the connected DALI devices, a connection to the supply voltage is needed. The 110 – 240 V AC or DC range meets the requirements of all existing supply networks, including an emergency power supply.

The extensive control panel with push buttons and LEDs on the front of the device enables manual operation for testing and commissioning purposes.

And, of course, there must be a connection to KNX.



The manual operation options are as follows:

This button switches manual operation off and on.

Button G selects the group to be served. Every group can be selected consecutively by pressing the button repeatedly, following which the corresponding LED lights up.

After selecting the group, press the button with the arrow upwards briefly to switch on the group of lights.

By pressing longer, the lights are then dimmed up.

Another function, dimming down and switching off, is performed when the arrow downwards is pressed.

The S button starts the “Tracking“ function, in which all the operating devices connected to the DALI are identified.

A green LED „ON“ shows the connection to the supply voltage,

Possible faults, such as a DALI short circuit, are shown by another LED.



The DALI Light Controller software offers a wide range of functions, such as 14 light scenes, arranged at random from the connected light groups.

The Light Controller's behaviour in a KNX or DALI failure and recovery can be parameterized, for example maximum brightness or the lighting can be switched off.

The burn-in function prevents the lighting being dimmed for a given time and the brightness remains constant at 100 %, to guarantee optimum performance and a long operating life.

Fluorescent lamps should not be dimmed for the first 100 hours of operation. As the dimming speed can be altered with a telegram the user can make adjustments without the need for extra programming.

Dimming curve adaption allows the dimming function to be aligned to the local conditions, in particular for DALI the display of the usable area on KNX.

The information regarding possible faults is extremely comprehensive. Lamp and ballast errors can be displayed in groups or, if required, for each lamp or ballast.

DALI Light Controller DLR/S 8.16.1M Commissioning

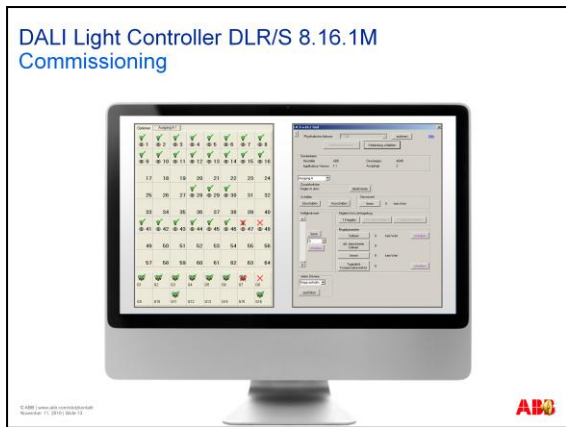
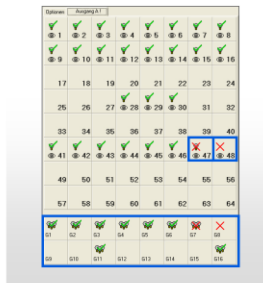


ABB provides 2 software tools for ease of commissioning and diagnosing the DALI Light Controller. These tools are simple and can be learnt rapidly. They are also free of charge.

DALI Light Controller DLR/S 8.16.1M Commissioning



DGS commissioning software

- DALI addressing
- Detection of lamp and ballast errors
- Allocation of DALI devices in DALI group(s)
- Additional tool for setting control parameters

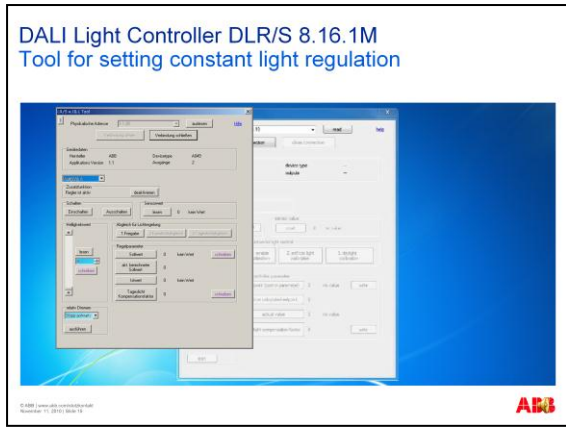
The DGS commissioning software allows the connected DALI-devices to identify and, if necessary, change the DALI address.

Lamp or ballast errors can be identified.

It is also here that the allocation of the lamps to the 16 DALI groups is carried out.

The tool for setting the constant light regulation ...

DALI Light Controller DLR/S 8.16.1M Tool for setting constant light regulation



... enables simple control of the light groups and the subsequent adjustment of this control .
Numerous values such as set value can be read out or transferred.

DALI Light Controller DLR/S 8.16.1M Tool for setting constant light regulation



Now you will see a short demonstration of the adjustment tool.

As an example you will see the principle of the artificial light calibration, which is essential for a precise, constant light-control.

The connection to the DALI Light controller, DLRS 8.16.1M will be carried out via the physical address similar to the ETS. In this case via the USB-interface.

In this example the group G1 is a light-circuit in the room to be controlled.

The light can be switched on and dimmed manually.

By means of a LUX-meter the required brightness in the room will be adjusted using artificial light only.

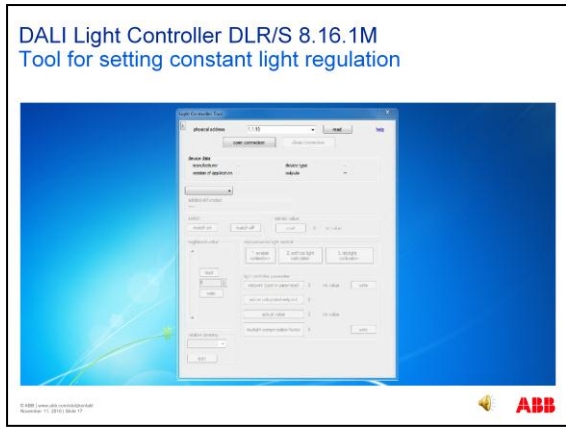
Afterwards the adjustment will be enabled and the artificial light-calibration will be started.

The light will be switched on with maximum brightness and then dimmed down slowly.

During this process the dimming behavior in the room will be recorded.

There are further operating options and also readable values available, which allows a comfortable adjustment of constant light-control.

DALI Light Controller DLR/S 8.16.1M
Tool for setting constant light regulation



The only requirement for the tools is that the physical address is programmed with ETS.

Memorize

Have you understood everything so far?



What have we learnt so far?

- MDRC device for controlling and monitoring DALI light groups
- Optimization of the energy consumption in the building through constant light control
- 64 DALI consumers, 16 DALI groups of luminaires
- 8 independent light sensors
- Numerous extra functions
- Commissioning tool
- Adjustment tool



What have we learnt so far?

The DALI Light Controller DLR/S 8.16.1M is a compact modular DIN-Rail component for controlling and/or monitoring DALI groups in a single device with no additional KNX bus load.

Constant light control optimizes energy consumption in the building, with potential savings of up to 50 %.

KNX can control 64 DALI devices in up to 16 DALI groups.

8 independent flush-mounted light sensors measure the room brightness for constant light control.

There are numerous additional functions, such as master / slave operation and a staircase function which can also be combined with light control.

There is a commissioning tool (independent of ETS) for intuitive visual DALI addressing and alignment.

There is also an adjustment tool for ideal control setting.

Have you understood everything so far? If you have, please click the „Yes“ button to continue or, “No” if you would like to repeat the topic.



Thank you very much for taking this first unit of the eLearning course about the DALI Light Controller DLR/S 8.16.1M. We hope that this course has been interesting and helpful in extending your knowledge of our DALI light controller, the technologies involved and their areas of operation.