General description

The OccuSwitch DALI is a combined sensor and controller. It will dim and switch the lights in a room or area on occupancy and available daylight, with options for local override, parallel operation and network links to Building Management Systems (BMS). Savings up to 75% can be achieved with functions like daylight depending dimming, occupancy control and over dimension correction. The OccuSwitch DALI is designed for an office area of 20 – 25 m², or a classroom of around 40 m² but the area can be doubled, or even tripled, with the extension sensor LRM8118. Up to 15 luminaires can be controlled.

A detachable wiring connector enables easy installation and mounting in the ceiling. Separate Wieland cables are available for an even easier, fast and trouble-free installation.

It is possible to link up to 22 (advanced only) OccuSwitch DALI units in parallel to cover larger area’s with a specific “open plan” mode to ensure maximum comfort and savings.

The LRM2090 can be linked to most BMS or other control systems that have standard DALI interfaces. This makes simple yet very effective control scenarios in a building possible.

The LRM2095 has tunable white control, capable of creating atmospheres with different color temperature. The LRM2095 is part of the SchoolVision proposition.

The OccuSwitch DALI family exists of:

- **LRM2070** Basic functionality
- **LRM2071** Basic functionality + EnOcean® interface
- **LRM2080** Parallel operation
- **LRM2081** Parallel operation + EnOcean® interface
- **LRM2090** DALI interface for BMS or other network
- **LRM2091** DALI interface for BMS + EnOcean® interface
- **LRM2095** Tunable white + interface for local/central control
- **LCC2070** Wieland cable for LRM207x
- **LCC2080** Wieland cable for LRM208x and LRM209x
- **LRH2070** Ceiling mounting box
- **LCU2070** Push-button Unit for 4 switches
- **LCU2071** Additional Push-button Unit (for LRM2095 only)
- **IR T8097** OmniProg easy, commissioning tool
- **IR T8099/10** OmniProg, commissioning tool
- **IRT8096** OmniProg, dedicated for LRM2095

Dimensions in mm
Applications

The OccuSwitch DALI is designed for use in offices and similar applications like schools, including corridors, meeting rooms, etc. It is optimized for recessed ceiling mounting and for mounting heights between 2.5 and 4 meter.
The surface box allows surface mounting as well, with either recessed wiring or surface mounted ducts.
The advanced OccuSwitch DALI can be connected in parallel (max 22) to cover larger area’s like open plan offices. The use of different mains groups or even phases is no problem.
The OccuSwitch DALI design guide (available on www.philips.com/occuswitchdali) gives all necessary design information for offices, schools and meeting rooms.

Typical applications

Features

Window/corridor and dynamic offset control
For optimal energy savings the window and corridor luminaires are controlled separately as indicated in the graph. Window-side lights will switch off (or not switch on entrance, the daylight override function) when sufficient daylight is available. The corridor side however will by default dim to minimum only, hence indicating to the user that the system is operational. This feature can be disabled.

Energy indicator
The LED on the OccuSwitch DALI indicating movement or communication will change color depending on the energy usage. Dimming levels below 30% will show a green color, below 70% yellow, and above red.
DALI addressing
The OccuSwitch DALI can be used with one channel only or two (window / corridor control), using the physical outputs (LRM2070 only). However all versions can be used with DALI addressing as well. Up to 4 channels can be defined.

<table>
<thead>
<tr>
<th>DALI group</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Window</td>
</tr>
<tr>
<td>2</td>
<td>Corridor</td>
</tr>
<tr>
<td>3</td>
<td>Additional presence</td>
</tr>
<tr>
<td>4</td>
<td>Additional absence</td>
</tr>
</tbody>
</table>

The additional luminaire groups can switch on together with the window and corridor groups or only switch on manually (absence). All groups will switch off when the area is vacated. Pre-programmed luminaires will be recognized upon start-up.

Auto commissioning
The OccuSwitch DALI can determine the installed lux level and take this as set point for the daylight depending regulation. This is easy to use without the need for a Lux meter.

DALI network interface
The LRM2090 can be controlled with a DALI network interface. This means that this device can be connected to most BMS or other control system with a DALI interface. This enables functions like switching on/off or dim, scenes and queries for lamp/ballast states, the set light level and even more functions.

With an specific gateway, supporting the OccuSwitch DALI BMS functions, it is also possible to use parallel occupancy control, very much like the OccuSwitch DALI advanced.

EnOcean® interface
OccuSwitch DALI allows the use of wireless switches with EnOcean® RF technology. Both single rocker and dual rocker switches can be used. You can connect up to 4 switches to a single OccuSwitch DALI, if required each with different functions. Switches and OccuSwitch DALI units are bound with each other during the commissioning process. A single switch can be linked to several OccuSwitch DALI units.

Functions

- window + corridor + additional presence
- window or corridor
- window + corridor + additional absence

For all functions

- press shortly
  - 0 lights off
  - 1 lights on
- press longer
  - 0 lights dim down
  - 1 lights dim up

Binding procedure see www.philips.com/omniprog

Commissioning tools
The OccuSwitch DALI comes with two commissioning tools, the Omniprog and Omniprog easy. With both tools the light levels can be set, witnessing mode be started and window/corridor be assigned. The Omniprog can also set the desired mode, Start-up behaviour, IR group and assign more luminaire channels.

Witnessing mode
With the Omniprog (easy) the witnessing mode can be started. This makes it possible to check if the OccuSwitch DALI and the connected luminaires are correctly installed and fully operational. Quick and easy.

100 hours burn-in
Many lamp manufacturers advise not to dim fluorescent lamps for a 100 hours period prior to normal use. Especially to maintain the light quality at (very) low dimming. The OccuSwitch DALI can do this automatically. During 100 hours lights will not be dimmed, and all dimming functions are adapted. Only during witnessing (to test the installation) and commissioning dimming is allowed to make the necessary adjustments.
Extension sensor
The LRM8118 extension movement detector can be used to double the movement detection area. This sensor is connected to the same DALI channel as the luminaires. Installation is simple since mains is not required.

Smart Timer
On some occasions with very little movement it is possible that the standard delay time of the OccuSwitch DALI is too short. If movement is detected during switch off (including fade this takes 10 seconds), the delay timer is automatically increased by 10 minutes.

The OccuSwitch DALI detection pattern (see drawing) is 4 by 5 meters for small movements (desk work) and 6 by 8 meters for larger movements like walking.

We strongly suggest using the 4 by 5 meters for the design. It is also the right range for the Light Sensor (for daylight depending regulation). The detection area of the movement detector can be extended by two extension sensors (LRM8118) each with an equal detection pattern as the OccuSwitch DALI.

Push-button Unit
The LCU2070 Push-button unit (PBU) makes it possible to connect up to 4 switches to the OccuSwitch DALI to dim and switch different channels. This PBU is connected to the DALI channel (DA and X (LRM2070/10) or DA only (LRM2080/10 and 2090/10)). It derives its power form the DALI channel, so no additional power supply is required. The PBU uses the same interface technique as the Enocean® or Touch & Dim: press shortly and it will switch on when off, and off when on, pressed for a longer time and it will alternatively dim up and down.

Up to two PBUs can be used on a single OccuSwitch DALI. It is possible to interconnect (single) switches to several PBUs to control several OccuSwitch DALI units.

Note: the LCU2070 requires the /10 versions of the OccuSwitch DALI.
The BMS version has a second DALI interface ("X"). The OccuSwitch DALI will act as a DALI slave.
This interface makes it possible to connect the OccuSwitch DALI to a building management system using a controller with a DALI interface or a DALI gateway.
It also makes it possible to use DALI user interfaces to override the OccuSwitch DALI.
This interface is fully compliant to DALI but the unit will act, of course, a bit different than a standard DALI ballast.

**Response to DALI commands**
If a DALI command is received (for instance a direct arc power command) every lamp on any channel connected to the OccuSwitch DALI will respond, and respond in the same way.
The OccuSwitch DALI sends most of these DALI commands directly to the ballasts.
Every command that changes the output level will disable the daylight depending regulation, and restart the occupancy timer.

**Response to DALI queries**
The OccuSwitch DALI will respond to all DALI queries like a DALI (#102) ballast.
A query on the ACTUAL LEVEL will result in the value of the window side (channel 1).
The unit performs a regular scan on the connected ballasts. Queries on status and lamp failure will report the result of this scan, if a single ballast reports an error, the OccuSwitch DALI will do as well.
Other queries like MAX LEVEL will show the value and status as stored in the OccuSwitch DALI.

**Exceptions**
- The OccuSwitch DALI will not recall SCENE 1. It will use the default light level settings and start daylight depending regulation again.
- Any command resulting in a different output level will (re)start the occupancy timer. If you need to keep the lights on (or off) you need to repeat the command periodically with a shorter repeat time than the set occupancy timer.

**Addressing**
The OccuSwitch DALI supports the standard ways to address units, including physical selection (using the Push-button on the front).
All address (including grouping) related commands are NOT relayed to the connected ballasts.
It is also possible to use the IRT8099/10 OmniProg to set the short address of the unit.
This is only possible when the address has not been set before, or after a complete reset (back to basic) of the unit.
Aim at the unit with the IRT8099/10 and press within 5 seconds the required 2 digit address on the numeric keypad, for instance 36 or 05.
The OccuSwitch DALI will blink its LEDs and connected lights to confirm the new settings.
Mechanical installation

The OccuSwitch DALI can be mounted in two ways: recessed in the ceiling or surface mounted using the ceiling box. The ceiling box (LRH2070) has a breakout port for cable ducts and a breakout centerpiece.
Electrical installation

The OccuSwitch DALI can be installed with either conventional wiring or Wieland connectors. For the last option the Wieland cable (LCC2070 or LCC2080) is required. The OccuSwitch DALI comes with a detachable mains connector for easy installation. This connector is removed if the Wieland cable is used. The mains connection is protected by a retractable cover and secured with two tie raps.

The DALI signal from a ballast or luminaire, although low voltage and isolated from mains, cannot be treated as a safe signal (SELV). All wiring and isolation materials used must be similar to mains wiring (FELV). The same applies to the network connection of the LRM208x and LRM209x.
Commissioning

**Desired standard light level**

There are three ways to set the light level.

**Automated mode**

Step 1  Press the OccuSwitch DALI button for 3 seconds until the LEDs start a yellow/green sequence.
Step 2  Release and press again, the LEDs will now blink red/green.
Step 3  Clear the area beneath the OccuSwitch DALI.
Step 4  Within 10 seconds the automatic calibration starts:
  - Lights will switch off and on to determine the installed lux level.
  - Lights will flash to indicate a successful operation.
  - The calibration is finished.

**Manual with normal control**

Step 1  Use a remote or switch to set the desired light level.
Step 2  Press the OccuSwitch DALI button until the LEDs start a yellow/green sequence.
Step 3  Clear the area beneath the OccuSwitch DALI.
Step 4  The light level existing 10 seconds after step 2 is used as set point.
  - Lights will flash to indicate a successful operation.
  - The calibration is finished.

**Manual with OmniProg (easy)**

Step 1  Use the OmniProg’s up and down keys to create the desired light level.
Step 2  Press the “SAVE” button.
Step 3  The lights will flash once to indicate calibration was successful.

**Delay time occupancy control**

With the rotary it is possible to select a delay time of either 70s, 5 till 30 min (in steps of 5 minutes).

**Further commissioning**

**OmniProg (easy)**

The OccuSwitch DALI will acknowledge commissioning commands by flashing the lights.
For detailed information please refer to the manual or www.philips.com/omniprog.
The OmniProg tool has a low power and very narrow beam to prevent that neighbouring OccuSwitch DALI units are programmed by mistake.
You must be within 3 meters of the device and aim exactly at it.
Commissioning of switches with EnOcean® RF technology

Shortly press the front button of the OccuSwitch DALI, all LEDs will flash shortly.
Press again but now hold the button down until the green and red LEDs start to flash rapidly.
Wait till the flashing slows down.
Press one of the keys of the switch you want to bind to the OccuSwitch DALI.
The LEDs will flash rapidly again. Wait till the flashing slows down.
You can now bind another switch.
Press the front button (shortly), or wait for 30 seconds, to stop the commissioning. The green/red flashing will now stop and normal operation is resumed.

If you make a mistake or want to make alterations, stop the commissioning process, and restart again.

The following settings are sent all at once with the green SEND button. After selection of the function the red LED on the transmitter will switch on.

Change IR group
Both the OccuSwitch DALI and transmitters can operate in 7 different groups. Both the transmitter and OccuSwitch DALI must be in the same group.
Select “group A-G” on the IRT8099, followed by the desired IR group (A-G, buttons 1-7).

Change power-up behaviour
The OccuSwitch DALI switches the output on when it is connected to the mains. If the area is vacated the lights will switch off after 5 minutes.
It is possible to leave the output off and start movement detection 30 seconds after the mains is connected.
Select “power up ON/OFF” on the IRT8099, followed by either “ON” or “off”.

Restore defaults
To restore the default settings aim the IRT8099 towards the OccuSwitch DALI and press on “basics” and press SEND.

Attention
The IRT8099 will send all parameters when the SEND button is pressed.

Error states
The OccuSwitch DALI is designed to create (if possible) a safe situation if the device itself or its peripherals fail.
Depending on the failure the OccuSwitch DALI will continue “as good as possible” or switch the lights on.
The LED on the device will be always yellow and will not switch off, even if there is no movement or communication detected.
Please refer to the manual or www.philips.com/OccuSwitch DALI for more information and diagnostic flow charts.

Attention
The OccuSwitch DALI should not be used in the following situations:
• In applications outside the specification range, most notable heights above 4 meter.
• Environmental conditions other than in a normal office environment (temperature, humidity).
• In applications with heat sources like electrical heaters, within the detection range of the device.
• In applications with (semi continuous) IR appliances like IRDA communication, IR communication between PDA and phones and other devices, headsets operating with IR communication, etc. etc. Please note that some devices with IR communication send IR messages, even when there is no active communication link. These features must be disabled.
• In applications with electronic ballasts that operate up or near a frequency of 36Khz. Also when these ballasts are not used in combination with the device, but the light from the lamps they operate is visible to the IR receiver.
OccuSwitch DALI Modes

The OccuSwitch DALI is set, by default, with a generic set of parameters for a standard office. But it is possible to recall 8 other application (specific cell, open plan or meeting room) modes as mentioned below. This makes the system very flexible for all different kinds of applications. With the aid of the advanced mode selection tool IRT8099 specific modes can be selected. Once selected, the mode can be stored and copied via a point and shoot method. The mode will be stored in a non-volatile memory. Even when the luminaires are switched off for a longer period, stored parameters are kept. The modes are compatible with the Actilume system’s modes, except for modes 4 and 5.

<table>
<thead>
<tr>
<th>Mode 1</th>
<th>Mode 2</th>
<th>Mode 3</th>
<th>Mode 4</th>
<th>Mode 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell office</td>
<td>Open plan office</td>
<td>School, classroom</td>
<td>Cell office</td>
<td>Open plan office</td>
</tr>
<tr>
<td>Auto on</td>
<td>Auto on</td>
<td>Manual on</td>
<td>Comfort mode, EN 12464</td>
<td>Comfort mode, EN 12464</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode 6</th>
<th>Mode 7</th>
<th>Mode 8</th>
<th>Mode 9</th>
<th>Mode 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor</td>
<td>Toilets</td>
<td>Meeting rooms</td>
<td>Open plan</td>
<td>Open plan</td>
</tr>
<tr>
<td>Auto on</td>
<td>Auto on DDR off</td>
<td></td>
<td>Always light</td>
<td>Comfort mode, always light</td>
</tr>
</tbody>
</table>

Mode 6: Corridor
Mode 7: Toilets
Mode 8: Meeting rooms
Mode 9: Open plan
Mode 10: Open plan

Custom mode
<table>
<thead>
<tr>
<th>Mode</th>
<th>Application</th>
<th>Occupancy</th>
<th>Smart timer (minutes)</th>
<th>Background period (minutes)</th>
<th>Daylight override</th>
<th>Daylight dependent regulation</th>
<th>Daylight dependent switching</th>
<th>Parallel link period (Advanced only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cell office (default)</td>
<td>Auto ON/OFF</td>
<td>10</td>
<td>0</td>
<td>Window only</td>
<td>Window / corridor</td>
<td>Window only</td>
<td>Local occupancy</td>
</tr>
<tr>
<td>2</td>
<td>Open plan office</td>
<td>Auto ON/OFF</td>
<td>10</td>
<td>120</td>
<td>Window only</td>
<td>Window / corridor</td>
<td>Window only</td>
<td>Local occupancy</td>
</tr>
<tr>
<td>3</td>
<td>Classroom</td>
<td>Manual ON/auto OFF</td>
<td>10</td>
<td>0</td>
<td>N.a.</td>
<td>Window / corridor</td>
<td>Window / corridor</td>
<td>Local occupancy</td>
</tr>
<tr>
<td>4</td>
<td>Cell office*</td>
<td>Disabled</td>
<td>10</td>
<td>0</td>
<td>N.a.</td>
<td>Window / corridor</td>
<td>Window only</td>
<td>N.a.</td>
</tr>
<tr>
<td>5</td>
<td>Open plan*</td>
<td>Disabled</td>
<td>10</td>
<td>0</td>
<td>N.a.</td>
<td>Window / corridor</td>
<td>Window only</td>
<td>N.a.</td>
</tr>
<tr>
<td>6</td>
<td>Corridor</td>
<td>Auto ON/OFF</td>
<td>10</td>
<td>60</td>
<td>Window / corridor</td>
<td>Window / corridor</td>
<td>Window / corridor</td>
<td>Local occupancy</td>
</tr>
<tr>
<td>7</td>
<td>Toilets</td>
<td>Auto ON/OFF</td>
<td>0</td>
<td>15 (portal only)</td>
<td>Disabled</td>
<td>Disabled</td>
<td>Disabled</td>
<td>Local occupancy</td>
</tr>
<tr>
<td>8</td>
<td>Meeting room</td>
<td>Manual ON/auto OFF</td>
<td>10</td>
<td>0</td>
<td>Disabled</td>
<td>Window / corridor</td>
<td>Window only</td>
<td>Local occupancy</td>
</tr>
<tr>
<td>9</td>
<td>Open plan office**</td>
<td>Auto ON/OFF</td>
<td>10</td>
<td>Infinite</td>
<td>Window only</td>
<td>Window / corridor</td>
<td>Window only</td>
<td>Background lighting</td>
</tr>
</tbody>
</table>

* Equals mode 1 and 2, but without MD active. Do not use these modes for normal applications.

** This mode works differently in the advanced (LRM2080) version. Here the lights will switch off (the basic never switches off) when none of the advanced OccuSwitch DALI units in the parallel network detect movement. If one, or more, do detect movement all other units will go to background level.
LRM2095

Introduction
The LRM2095 is a special version of the OccuSwitch DALI. On top of the normal OccuSwitch DALI functions it is capable of changing the color temperature of the lighting (assuming the luminaires have the same capability).

The system has been released for lighting systems with 2 lamp types in a single luminaire (each with a DALI driver), with cold (17000 K) and warm (2700 K) lamps. This section provides the differences between the standard (LRM2070) and the LRM2095 OccuSwitch DALI functions.

Application
The main application is for use in classrooms.

The (occupancy) detection range can, like with the other OccuSwitch DALI versions, be extended with the LRM8118 extension sensors.

Standard Philips Dynamic Lighting (DL) or SchoolVision luminaires are already pre-programmed and can be used without any programming.

<table>
<thead>
<tr>
<th>Channel</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cold lamps (&quot;window&quot;)</td>
</tr>
<tr>
<td>2</td>
<td>Warm lamps (&quot;window&quot;)</td>
</tr>
<tr>
<td>3</td>
<td>Additional presence</td>
</tr>
<tr>
<td>4</td>
<td>Additional absence (board lighting)</td>
</tr>
<tr>
<td>5</td>
<td>Cold lamps (&quot;corridor&quot;)*</td>
</tr>
<tr>
<td>6</td>
<td>Warm lamps (&quot;corridor&quot;)*</td>
</tr>
</tbody>
</table>

* See window/corridor control

Window/corridor control
The LRM2095 does not have a separate window corridor steering for daylight depending regulation. Due to the nature of the color temperature system this could lead to color differences between window and corridor. It is however possible to address the luminaires as window or corridor, so that several settings are still possible, like daylight override and/or daylight switching for window row only.

It is not possible to manually override window or corridor luminaires separately from each other.

Push-button Units
The LCU2070 and LCU2071 can be used with the LRM2095. Please be aware that the functions of the LCU2070 are not the same for the LRM2095 as for all other OccuSwitch DALI units.

The functions and connections can be found below:

With
F1  Intensity
F2  Color temperature

Additional presence
This channel (without color control) is available but should normally not be used. This channel will switch together with the DL luminaires, both on automatic as manual control. It is not possible to control this group separately.

There are no controls available for this channel on manual control (IR remote control) and Push-button Unit.

Enocean® interface
There is no Enocean® option for this product.

Loads
The LRM2095 can handle up to 24 loads on the master (DA) output. Each unit (Philips DALI driver (or ballast, either LED or fluorescent), extension sensor and PBU) counts as one load.

For other driver systems than Philips use for safety 2 loads.
Remote control
The LRC2095 can be used with standard Philips IR remotes, like the other OccuSwitch DALI units. There are some differences though:
• Do not use IR channel 2 and 3
• Use IR channel 1 to control the main lighting (intensity only)
• Use IR channel 5 to control the board lighting.

The IRT7090 can be used as well for the standard luminaires (no option available for board lighting, a separate control (eg. IRT8050) is required.

User Interfaces
There are several user interface options available for this product. Refer to the SchoolVision propositions for more details.

Calibration
(see also commissioning guide)

I RT8096
The IRT8096 is a specific tool for SchoolVision. It can set the required light level and change Preset 1 (normal) to another value than 300 Lux.

Operation of the IRT8096
General light level calibration
Step 1 Select (preset) 3
Step 2 Change the light level with the arrows to the required light level, for SchoolVision this will be 1000 Lux.
Step 3 Press Save 3, the lights will blink to confirm that the setting has been accepted and stored.

Change “Normal” (preset 1) to 500 Lux
Step 1 Select (preset) 1
Step 2 Change the light level with the arrows to the required light level, for instance to 500 Lux.
Step 3 Press Save 1, the lights will blink to confirm that the setting has been accepted and stored.

Safety
The OccuSwitch DALI uses DALI or DALI like signals to communicate to other devices, ballasts or BMS systems. The interfaces (DA and X) on the OccuSwitch DALI are supplementary isolated from mains (SELV). However most DALI devices (like ballasts in luminaires) only provide basic isolation between mains and DALI. Therefore to avoid Installation safety issues all interface wiring (also on the X-Interface) should be treated as FELV, so mains rated isolation is required.
We strongly recommend to always use cabling with mains rated isolation to prevent potential unsafe installations.

Short circuit and protection
The DA (all units) and X (LRM207x and 208x) interface provides DALI (or other) power in order to be able to communicate. These interfaces are protected against a short circuit if used within specification.
External power (DALI) supplies can only be used on the BMS DALI network of the LRM209x (X-Interface). The use of more than 22 LRM208x units in parallel connected on the X-Interface can damage the X-Interface circuit.
The network (X) interface of the LRM209x is extended protected against mains connection. For all OccuSwitch DALI devices the DA and X interface (except X-Interface on LRM209x) will be damaged beyond repair if mains power is connected. Although safe, smoke and a strong smell can occur if this happens.

Parallel mode
The LRM208x OccuSwitch DALI advanced supports parallel mode for occupancy control (X-interface). This means that the separate units have their own daylight depending and local control and their own settings. Only the MD signal from connected units is shared. This means that lights will stay on if one of the connected systems detects movement. Lights will stay on and only switch off, or go to background level when the last MD timer in the group elapses.
Exception to this rule is mode 9. The parallel link is refreshed every 60 seconds. So when movement is detected a signal will be given, than after 60 seconds again, and again, until the timer elapses. This signal is visible on the unit.
### Technical data

#### Environmental conditions

**Storage conditions**
- Temperature: -20 .. +70 ºC
- Relative humidity: 10 to 85 %; no condensation

**Operating conditions**
- Temperature: +5 .. +50ºC
- Relative humidity: 15% to 80%; no condensation

#### Mains connection

**Voltage**
- 230VAC +/10%, 50/60Hz

**Power consumption**
- Stand-by <1 W (without DALI load)
- Max. 1.7 W (with 15 ballasts)
- LRM20x1 (Enocean® option) adds 0.2W

**Connector screw terminal**
- MRT3P7.62-3VE or GMVSTBW2.5/3-ST-7.62

**Wire range**
- 0.75 .. 2.5 mm²

**Note**
- Wires must be >= 0.75 mm²

**Mains distribution system**
- TN-S, 16A max, with Neutral grounded

#### Interfaces

**Parallel interface (LRM208x only)**
- Up to 22 units in parallel
- Free topology wiring and polarity sensitive

**BMS interface (LRM209x only)**
- DALI compatible
- Up to 64 units in parallel (depending on control device used as master)
- Free topology and polarity insensitive

#### DALI output interface

**Protocol**
- Bi phase coded according to EN60929:Extend annex E
- Network polarity and polarity insensitive

**Load capacity**
- Maximum 15 DALI devices per output (for LRM207x: X+DA Interface)

**Protection**
- Interface is short circuit proof
- Max. 1200 bits per second
- DALI voltage
- 11.5VDC to 21.5VDC
- Connector type
- Wieland BST 14i2; blue
- LED indicators
- Switch off delay
- Light levels
- Detection range
- Light sensor

**Standards**
- EN/IEC 61347-2-11 Lamp control gear, Particular requirements for miscellaneous electronic circuits used with luminaires
- IEC 60598-1 Luminaires, General requirements and tests
- UL94 V-0
- 960°C/5s

**Classification**
- Class I
- degree 2
- category III

**Pollution**
- Over voltage
- Approval

**Protection Class**
- UL94 V-0
- 960°C/5s

**Flammability**
- Supplementary insulation between Mains and SELV

**Glow wire test**

**Insulation**

**EMC**
- Compliance IEC (EN) 61347-2-11 / 60598-1
- Immunity IEC (EN) 61547
- Emission IEC (EN) 55015 and IEC (EN) 55022, class B
### Packing data

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### Ordering data

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