LIGHT MANAGEMENT SYSTEMS

LIMAS • RFL • LIMAS Air • LIMAS Line

SCHUCH

Light on Demand
by intelligent lighting control

LIMAS

Wireless Light Management System for outdoor areas

Light only where it is needed, only when it is essential, only as bright as necessary and only as long as it is required - with the help of a light management system, the efficiency potential of LED technology can be optimally exploited.

Intelligent, demand-controlled light saves a great deal of energy costs and is extremely environmentally friendly and sustainable thanks to the considerable reduction in CO_2 emissions associated with it. In addition, the networking of the light points opens up a wide range of options for implementing smart city applications, provides an overview of the most important system parameters and enables proactive, targeted maintenance and troubleshooting. Therefore, both when renovating and installing new outdoor lighting systems, the question of the use of a light management system should always be discussed.
But when is the right time to use it?

Directly with the new installation or renovation of the conventional lighting has started, or should you wait a few more years? Perhaps the financial resources are lacking at the time of the renovation or you would like to start with a small test installation to gain experience. There is no clear answer to this question. But no matter how you decide, one thing is certain: once standard luminaires have been installed, simple retrofitting or conversion to a light management system is no longer possible.

We offer you two alternatives:

RFL - Light Fittings

Luminaires that are prepared for retrofitting light management components and sensors.

LIMAS - Light Fittings

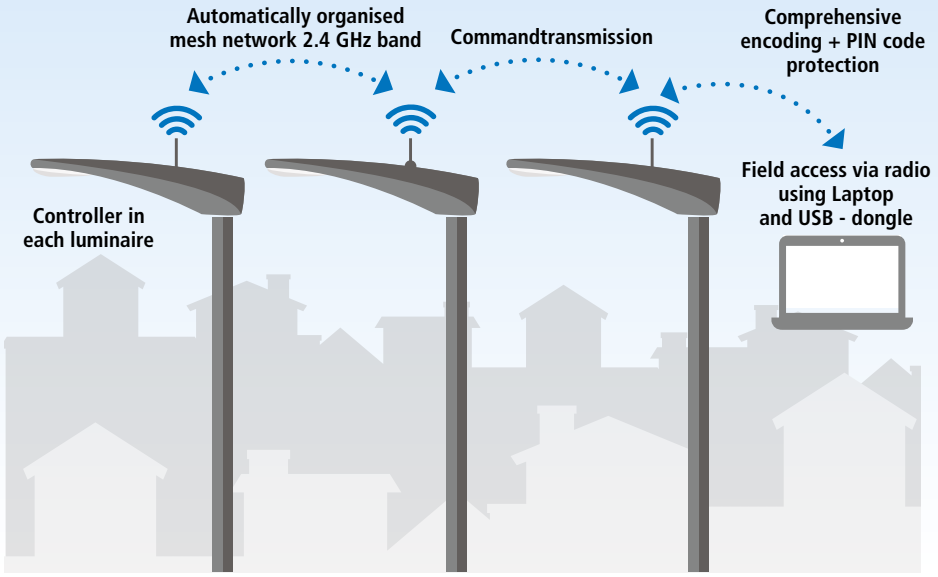
Luminaires that are factory-fitted with all the required light management components.

The system versions explained on the next pages, apply to both alternatives.

System versions

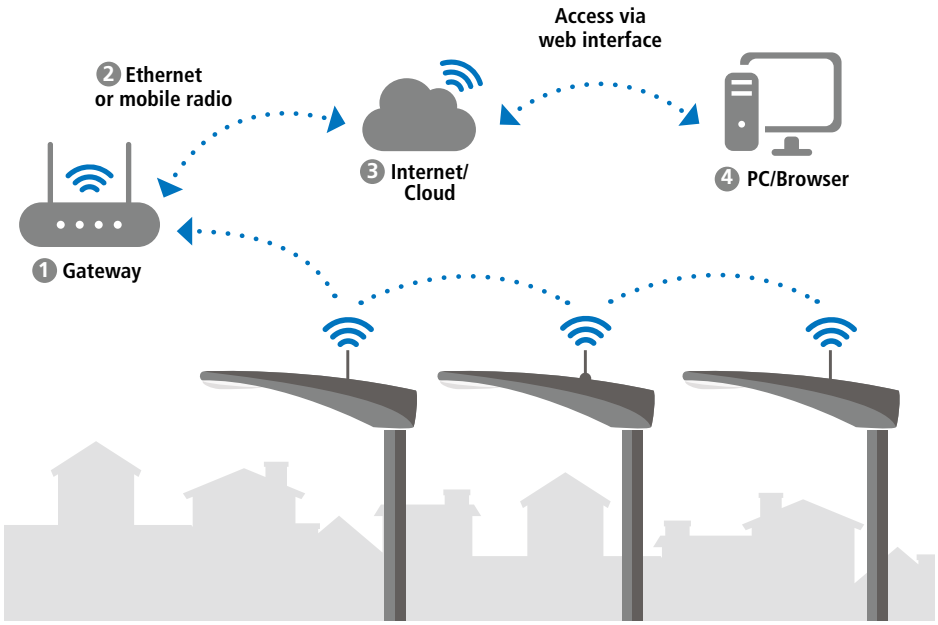
With USB dongle (standalone solution)

With this simple solution, each individual luminaire is controlled independently, e.g. via a twilight switch or a motion detector without a cloud connection. The light fittings can be operated independently without a server. Programming and any subsequent adjustments, are done on site using a laptop and USB dongle. Up to 250 light fittings can be controlled and read out by each USB dongle. After setting up / programming, the luminaires work completely independently. If required, the programming can also be factory-made.



With gateway [1] (interactive network)

With the gateway solution, the light fittings are controlled and monitored centrally via a PC and gateways in the field. The gateways ❶ are installed in switch cabinets within radio range of the light fittings and communicate via mobile network or ethernet ❷ with the cloud ❸. The light fittings in the field can be controlled with the server and a PC ❹.
The server collects the data from the gateways and provides access to the system functions via a web / browser application ❹. A maximum of 250 light fittings can be controlled per gateway. Since several gateways can be combined, the number of luminaires that can be summarised in a system is theoretically not limited.



Control components

[1] An annual hosting fee applies to the gateway.

LIMAS USB-Dongle	Art. No 90545 0001	software with license, for setting up / programming or retrospectively adapting the light fittings in the field
LIMAS Gateway 3 EU	Art. No 90545 0004	for extensive monitoring and control of the light fittings from afar with a SIM card via the mobile network or Ethernet (LAN / WLAN) including data logging functionality

Benefits

***(D)** = Solution with USB dongle **(G)** = Solution with gateway*

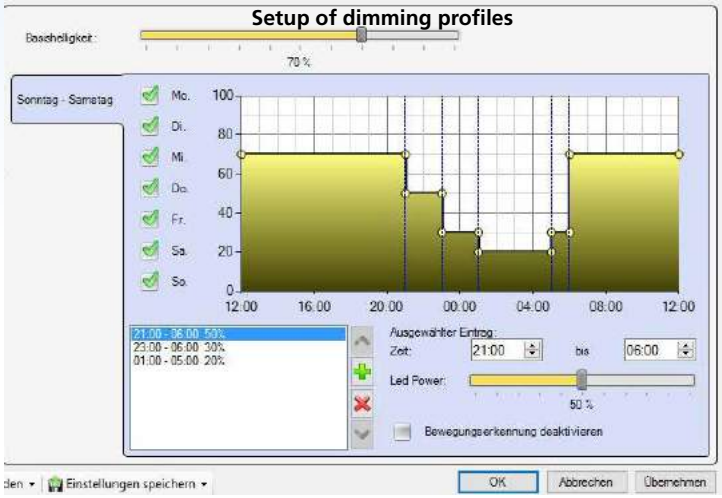
(D) + (G)	**Optimised energy savings** through light on demand
(D) + (G)	**Easy cost control** through energy consumption metering
(G)	**Evaluation and export** of selected/ stored lighting data from the data base **from afar**
(D)	**Evaluation and export** of selected/stored lighting data from the data base **locally on site**
(G)	**Proactive, targeted maintenance and failure elimination** through the light fittings' automatic failure reporting and location display
(D) + (G)	**User-friendly interface** with graphic display of the light fittings' operating status, energy consumption, function and location
(D) + (G)	**Flexibility** thanks to straightforward wireless modification of dimming profiles, together with easy integration of new light fittings into the system with a self-organising mesh network
(G)	**Time and date updates via time server** for time dependent dimming
(D) + (G)	**Safety** thanks to system-wide encryption with PIN code protection
(D) + (G)	**Central control and (with (G) automatic) monitoring** of every single light point
(D) + (G)	**No additional wiring required**

System functions

- **Freely configurable dimming profiles**
  based on time of day, duration, dimming level and motion profile
- **Real-time access to the light fittings**
  for Instant-On or to alter dimming profiles as required
- **Integrated constant luminous flux function**
  to keep the luminous flux constant over the LEDs' entire service life
- **Energy consumption metering**

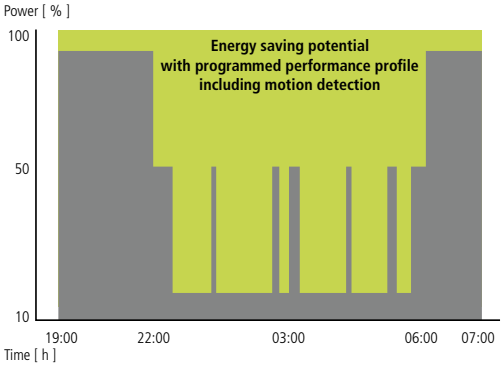
Optional:

- Motion detection with a motion sensor (Light on Demand)
- Optimised On/Off with daylight sensor
- Time, date, parameter and positon monitoring via GPS receiver and GPS-enabled control unit, together with automatic failure notifications with location information

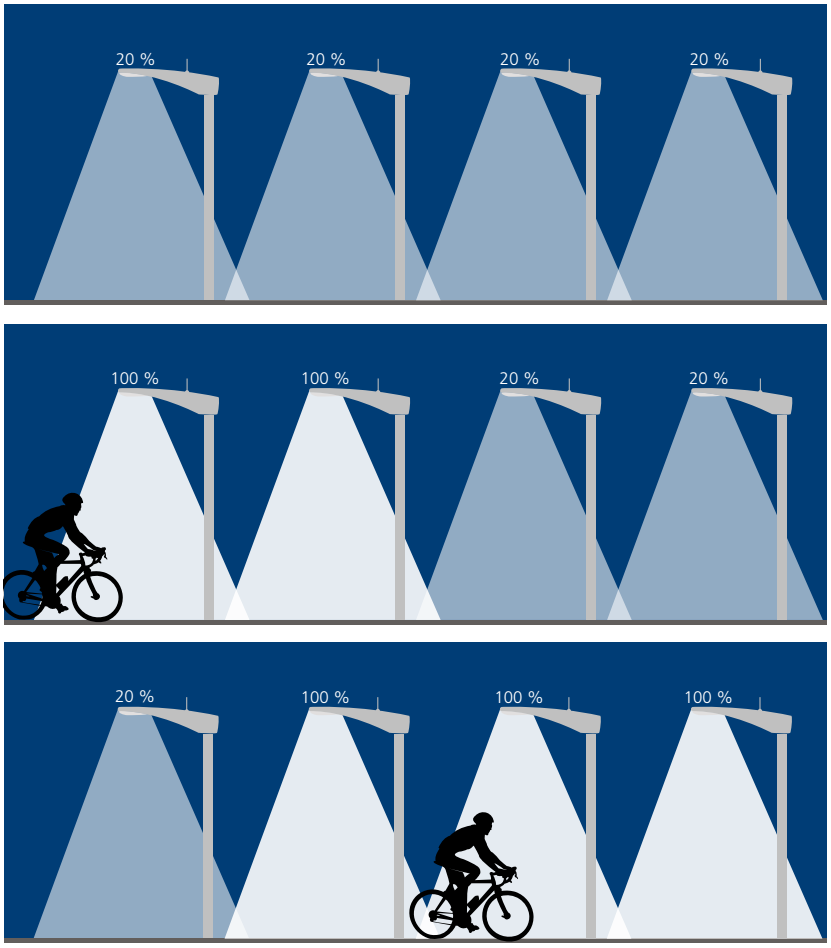


Motion detection - Light on Demand

If a road user enters a road, a cycle path or a footpath, this is recognized by the motion sensors integrated in the luminaires (LMS IR) or retrofitted (accessory RFL) and the dimmed light fittings automatically adjust to the programmed lighting level. The signal is transmitted wirelessly from luminaire to luminaire, which then also increase their lighting levels. The light accompanies the road user dynamically. After the programmed holding period has elapsed, the light fittings automatically return the lighting level to the presetd dimming level.



The road with cyclists is only used here as an example to clarify the general process.



LIMAS - Light Fittings

Intelligent light control right from the start

Ligth Fittings in LIMAS version are factory-fitted with all the required light management components.
No further modifications need to be made to efficiently illuminate streets, squares or cycle paths. If requested by the customer, LED profiles can be programmed at the factory.

Almost all SCHUCH outdoor light fittigs are available in LIMAS version.

In general the following versions are possible

- **LMS** standard version with radio antenna
- **LMS IR** with an additional infrared sensor for a needs-based light control (Light on Demand)
- **LMG** with GPS antenna for precise dimming on time in the case of an autarkic operation without gateway
- **LMG IR** with an additional infrared sensor for a needs-based light control (Light on Demand)

Further types on request.

Equipment

Sensor box external box, networked with the luminaires to house various components

(e.g. control of the lighting via a separate twilight switch, a light barrier or an external switch.)

A time-dependent dimming behavior requires at least one light fitting in the LMG version, when the system version with USB dongle is selected.

A hub (also called „node") is a network device that connects such several devices within a (radio) network. In network technology, it serves as a distributor for the data packages. This will create a wireless local area radio network (‚Mesh').

RFL - Light Fittings

Ready for the future

You have the choice - you determine the timing, because luminaires in RFL version (Ready for Light Management System) are prepared for retrofitting light management components and sensors.
One or two Zhaga-compliant sockets integrated into the light fitting housing enable the required components to be installed at a later date without tools. The use of autonomous sensors without a connection to a light management system is also possible with the RFL luminaires at any time (stand-alone solution).
Thanks to the standardization of the base according to Zhaga Book 18, you are not tied to a specific light management system. In theory, you have the freedom to choose from all manufacturers who also use standardized Zhaga sockets for their components.
Of course, you can also equip RFL light fittings immediately during the initial installation with the corresponding light management components. If RFL LIMAS HUBs are used (see system components), RFL luminaires can also be combine with LIMAS light fittings.

A large number of SCHUCH outdoor luminaires are already as standard available in RFL version (see chapter "Outdoor Light fittings").

In general the following versions are possible

- RFL**O**: with Zhaga socket on the **top side of the housing** for subsequent retrofit of light management components e.g. a controller with antenna *(see system components)*
- RFL**U**: with Zhaga socket at the **bottom of the housing** for subsequent retrofit of sensors to control the light fittings self-sufficient *(see system components)*
- RFL**OU**: with Zhaga socket at **top and bottom of the housing**. Thus it's possible to retrofit both, light management components and sensors *(see system components)*

In oder to control the light fittings - after appropriate retrofitting of the light management components - the corresponding light management software as well as possibly further components are necessary *(see control components).*

D4i™ Excluisively D4i control gear is being used in RFL luminaires from Schuch. All D4i Zhaga Book 18 certified controllers and D4i Zhaga Book 18 certified sensors available on the market can be used in combination with RFL luminaires from Schuch. Controllers and sensors which do not comply with the D4i standard can limit the functionality of the luminaires and components. Moreover, in individual cases, such non-certified components may cause damage to both the luminaires and the components.

Advantages

- Implementation of a light management system is possible at any time
- Tool-free, quick and easy installation of the light management system components → simply screw off the socket cap and screw on the system component
- Standardized Zhaga-compliant sockets allow a free choice of the light management system
- In case of using the LIMAS light management system, LIMAS light fittings and RFL light fittings (equipped with rfl limas HUB) can be combined easily

RFLOU with mounted HUB (top - O) and unequipped socket (bottom - U)

System components

Type	Art. No		Illustration
RFL LIMAS HUB3	90546 9009	light management controller	1
RFL LIMAS HUB3 GPS	90546 9010	light management controller with GPS (optional with SIM card)	2
RFL LIMAS BM RAD HUB LPH max. 8m	90546 9011	control element / radar motion detector	3
RFL LIMAS BM RAD MA LPH max. 10m	90546 9012	control element / radar motion detector	4
RFL DS20 HUB 20lux ON/OFF	90546 9000	twilight switch	5
RFL BM/DS IR HUB LPH max. 8m	90546 9004	motion detector with infrared and twilight switch	6
RFL BM/DS IR HUB LPH max. 12m	90546 9006	motion detector with infrared and twilight switch	7

Other sensors, e.g. environmental sensors (fine dust, CO_2, weather station etc.) on request.

Control components

An annual hosting fee applies to the gateway.

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LIMAS Gateway 3 EU	90545 0004	for extensive monitoring and control of the light fittings from afar with a SIM card via the mobile network or Ethernet (LAN / WLAN) including data logging functionality

Photo: Andrea Badrutt, Chur

More than 2,500 SCHUCH light fittings of the 47 and 48 series ... with the LIMAS light management system have been installed in the city of Chur / Switzerland since 2015. As a browser-based solution with gateways, they are spread across the city, enabling light on demand and saving energy costs.

LIMAS Air

Radio-based light management system for industrial areas

In many areas of an industrial or commercial enterprise, there is considerable potential for saving energy. By using new technology, a lot can usually be achieved here - especially in lighting systems.

This is how intelligently controlled LED lighting performs from the start to a noticeable reduction in costs and, in the sense of a sustainable corporate management, to a significant reduction in CO_2 emissions.

With the radio-based LIMAS Air light management system, you can now make your lighting system smart in no time at all, easily and without any additional installation work.

Main features

It is not uncommon for production processes to change, and as a result, lighting requirements as well. If industrial interior areas are used differently, the lighting systems must also be adapted to the new visual tasks. The LIMAS Air light management system offers a high degree of flexibility and enables quick adaptation to new requirements.

The lights equipped with LIMAS Air communicate via a radio-based mesh network. Mesh networks organize themselves decentrally and are „self-healing" - should a luminaire/ component fail, the communication takes place automatically via a functioning „neighbor". This mode of operation ensures a high level of reliability for the entire system.
By integrating various sensors, the lights are controlled efficiently and according to requirements, which leads to significantly reduced operating times and thus also to considerable cost savings. In addition, the service life time of the luminaires is extended.

Advantages

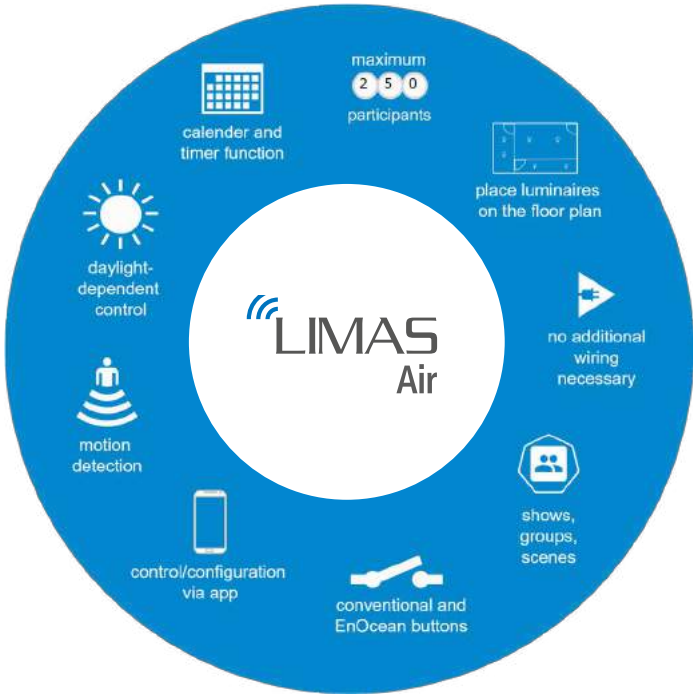
- Modular
- Tailor-made and expandable
- Comfortable
- Flexible
- Easily controllable
- Reliable
- Future-proof
- Sustainable and cost-efficient
  → (reduction of energy consumption and thus reduced CO_2 emissions

Functionality

SCHUCH high-bay and damp-proof light fittings in the DIMD version can be connected by using the LIMAS Air radio module. On all SCHUCH DIMD high-bay luminaires with FastConnect plug the radio module can be easily connected (plug & play). Networking makes an additional line superfluous and thus saves additional effort, time and money.

Based on CASAMBI® radio technology and the Bluetooth radio standard, the lighting system can be controlled reliably with low power consumption and a large range.
If there are already DALI light fittings with CASAMBI® radio module in an existing system, these can be integrated. Using the free CASAMBI® app, the system can be configured simply and intuitively via smartphone or tablet. The various sensors (e.g. motion or daylight-dependent) and actuators (e.g. buttons) specially developed for industry can be integrated and flexibly grouped accordingly. An overall comfortable and user-oriented control.

Features



- Up to 250 participants (luminaires, pushbuttons and sensors) in one mesh network
- Different usage scenarios programmable
  → if requirements change, easy and quick regrouping
- Daylight-dependent control
- Control via motion detection
- Animations can be realized
  (sequence of scenes or transition between scenes)
- Calendar and timer function
- Integration of battery- and wireless EnOcean pushbuttons
- Integration of conventional pushbuttons
- User-friendly user interface with floor plan display and location display of luminaires and components
- Readout of luminaire data
  (energy consumption, device version, dimming curve, etc.)
- Monitoring of the system with automatic failure notification
- Optional solution with gateway for central control and monitoring of the lighting system
- LIMAS Air lighting installation can be combined and controlled with wired DALI luminaires using the LIMAS Line PRO system

Areas of application

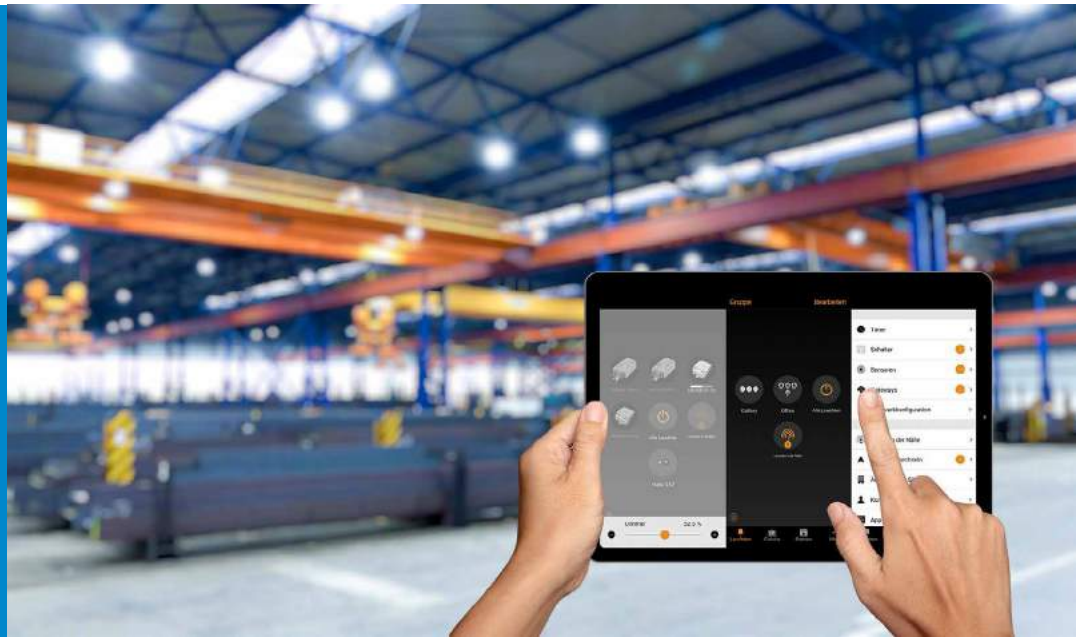
Industry

Parking garages

Commercial enterprises

Production halls

Warehouses & logistics

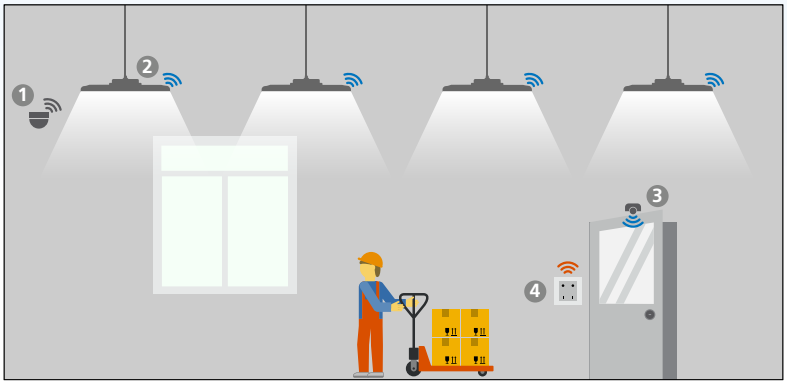


Schematic representations of possible energy savings potential

For an optimal lighting level and associated maximum energy savings, the motion detector and daylight sensor should always be combined. By a pushbutton the lighting can be manually overridden/ switched at any time.

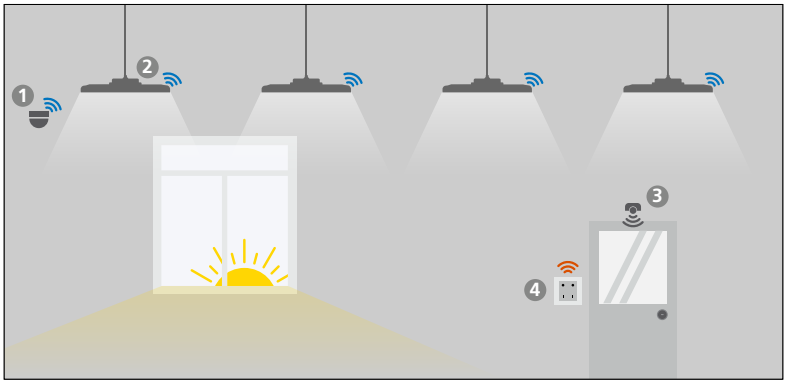
1 Daylight sensor 2 Luminaire with LIMAS Air radio module 3 Motion detector 4 Pushbutton

Presence detection

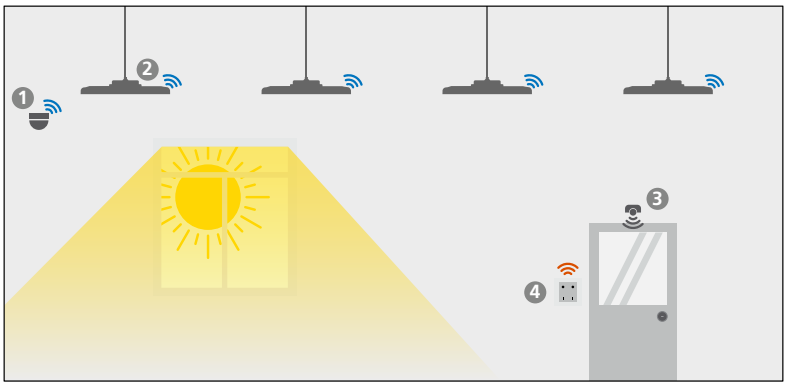


The motion detector ensures that the lighting is only switched on when people or objects with a temperature difference to the surroundings are present. In case of absence, the lighting is either completely switched off or dimmed to a preset level (such as 10%).

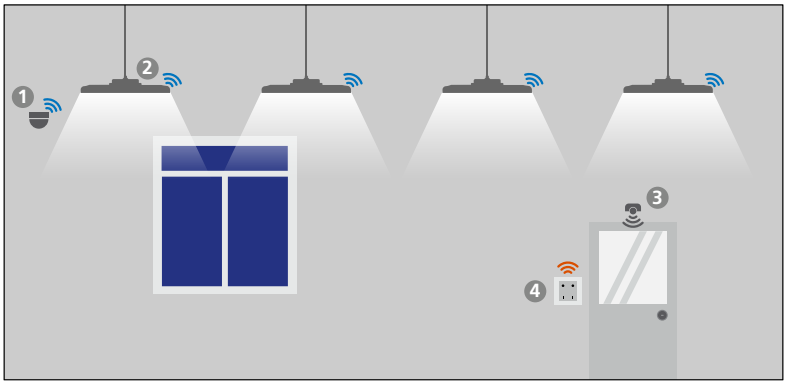
Daylight control



Depending on the amount of daylight, the light sensor dims the lighting to the desired level.



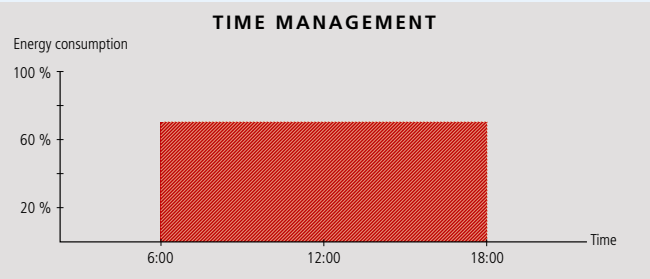
When there is sufficient daylight the sensor switches the lighting completely off.



At night, when no daylight is available, the lighting is set to 100% or to a different preset level.

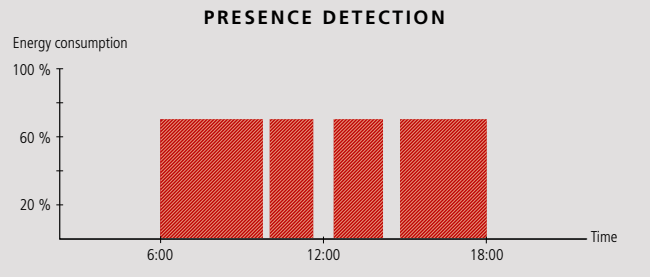
Energy savings potential

The smarter the lighting system, the greater the savings.
If luminaires are only switched on when they are needed, this has many advantages: energy costs are reduced, CO_2 emissions are lowered, resources are saved and the service life time of the luminaires is extended. The more concretely the duration and the intensity of need for artificial light are defined, the better the efficiency potential of LED lighting can be exploited.



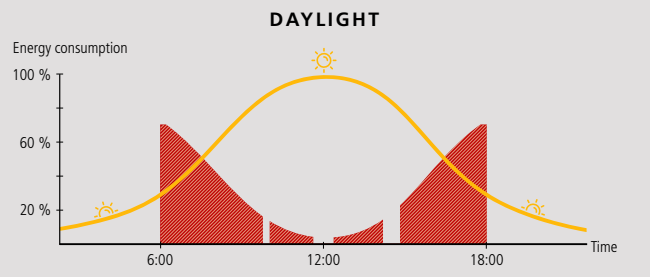
The light fittings are switched on continuously in the production hall during the entire operating time.

→ **Minor savings, as the luminaires are only switched off outside working hours.**



Motion detectors capture the presence of people in the production facility. During breaks or when no movement is detected, the lighting remains switched off.

→ **Increased savings as the light system is controlled according to demand during working hours.**



Daylight sensors measure the brightness in the production hall. This varies due to incident sunlight during the course of the day. The entire lighting system is continuously adapted to this and dimmed accordingly.

→ **Optimum savings, as each luminaire only provides as much artificial light as necessary.**

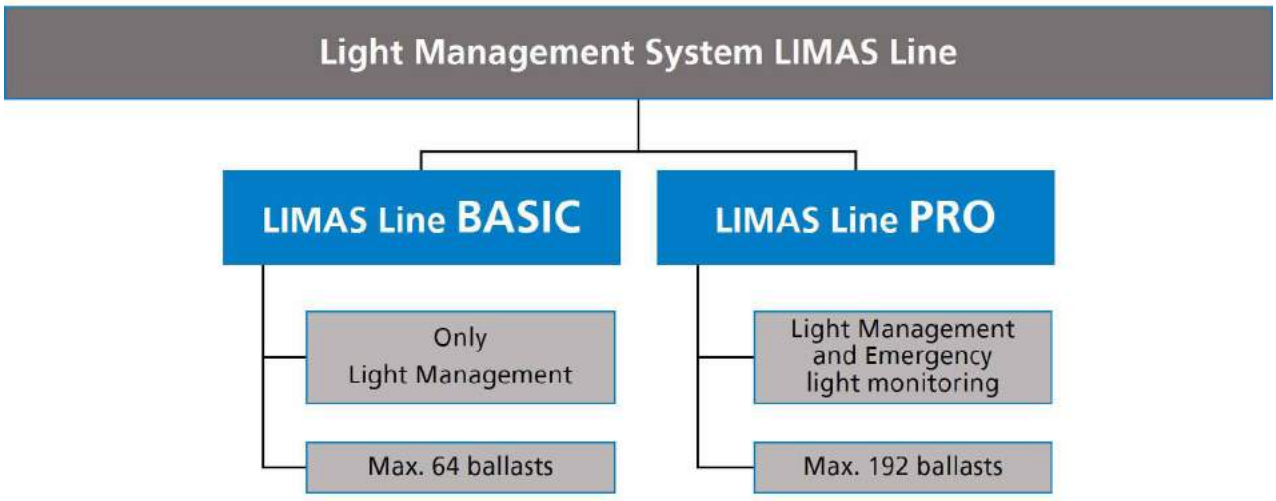
LIMAS Line

Wired DALI - Light Management System

Diverse activities in a room, different frequentation of areas and zones as well as day and season changing lighting conditions hold a high energy and CO_2 saving potential in lighting.
Individually adapted light through intelligent lighting control is not only of great advantage from an economic and ecological point of view, it also focuses on the different needs of people.

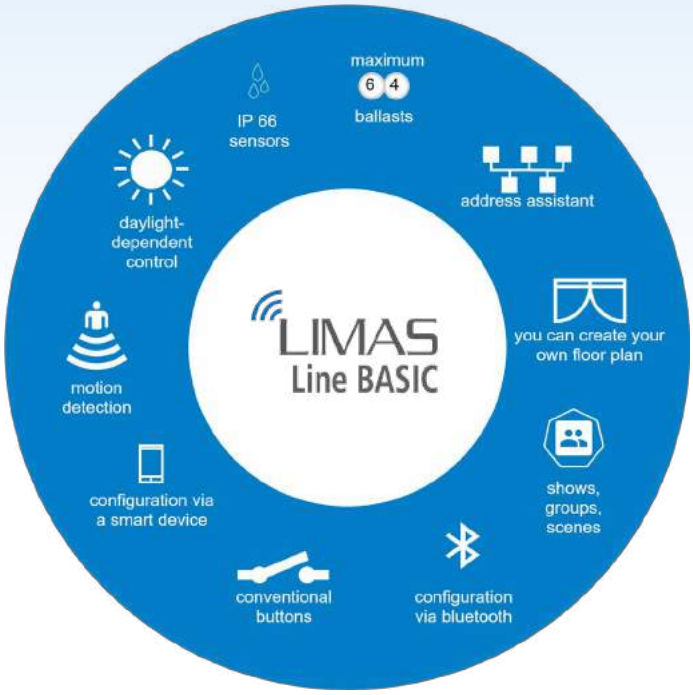
LIMAS - Line is available in two different versions:

- **BASIC - standard version**
- **PRO - extended version**



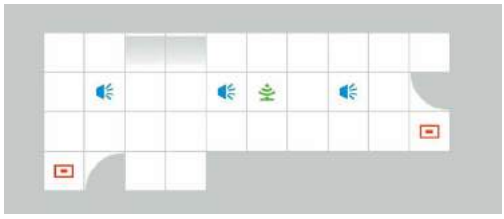
LIMAS Line BASIC

The standard version with all basic functions



LIMAS Line BASIC
enables fully automated, dynamic light and thus offers a high degree of individuality.
The sensors register every deviation from the predefined values and report them to the controller, which reacts immediately. If, for example, the proportion of daylight changes, the lux value of the artificial light is adjusted accordingly. Swirching on / off in the event of presence or absence is fully automated too.It is also possible to link the light settings of different zones and rooms with one another. The user himself does not notice the lively communication between the sensors and the controller. Everything that he perceives is needs-based, always optimally adjusted illuminance, which is activated at all times where and when he needs it.

User interface in the app:
exemplary floor plan design



The LIMAS Line BASIC light management system is configured via Bluetooth using a smart device (Android or iOS). All this requires is a free app. If this is installed, the room to be illuminated can be recreated in the form of a rudimentary floor plan and then equipped and configured accordingly with lights, sensors and buttons.

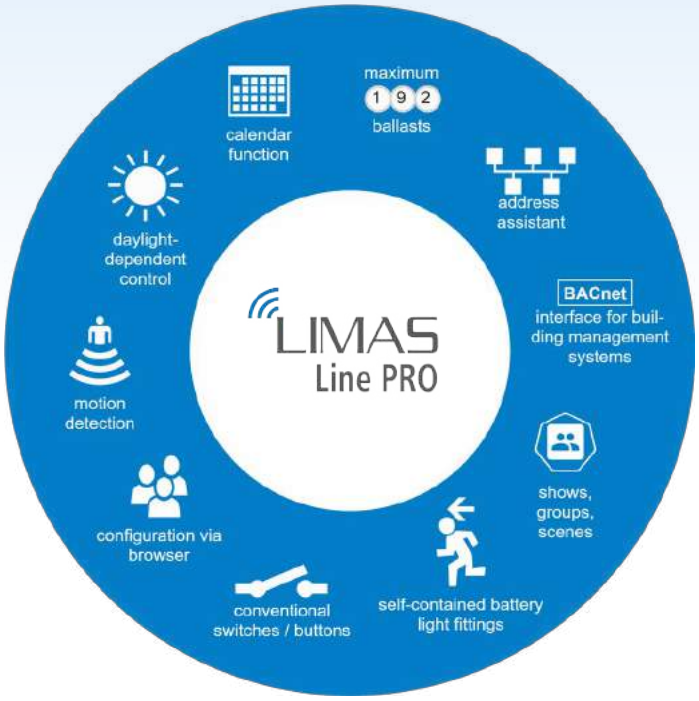
All DIMD-Light Fittings from the SCHUCH portfolio can be controlled by LIMAS Line BASIC.

Features and advantages

- 64 ballasts (max.) can be controlled and monitored per system
- Daylight-dependent control
- Motion detection
- Configuration via smart device (smartphone / tablet)
- Easy integration of new light fittings
- Flexibility by simply changing dimming profiles and group assignments
- Conventional buttons can be integrated
- Integration of IP 66 sensors
- DALI2 sensors & actuators from third-party suppliers can be integrated

LIMAS Line PRO

The extended version that simply has more to offer



LIMAS Line PRO
enables an easy addressing and grouping of luminaires, the integration of standard pushbutton switches and sensor-based automation.
In addition to DALI (DIMD) light fittings, this system can also be used to control and monitor all self-contained emergency light fittings (MA-Z, DIMDI and DI) in the SCHUCH portfolio.
The configuration and control is done by PC without additional software - a browser is sufficient. The conjunction between a PC and LIMAS Line PRO can either be via an existing network or by establishing a peer-to-peer connection. There is no internet connection required to operate the system.

All DIMD, MA-Z, DIMDI and DI-Light Fittings from the SCHUCH portfolio can be controlled by LIMAS Line PRO.

Regulation according to needs

LIMAS Line PRO offers the possibility to integrate sensors. In addition to the presence-dependent control by temperature differences (PIR sensor), daylight-dependent control of the lighting can also be taken into account. Thanks to different detection areas, this is also the right solution for industrial halls.

Automation through calendar function

With the calendar function, day and time-specific lighting settings (scenes) are possible. This can include both: one-off events and annually recurring (public holy-) days can be saved.

Individual control

A converter is required to connect conventional switches or buttons. A maximum of four switches / buttons can be connected to each converter. The compact design of the converter allows it to be easily placed in surface and flush-mounted boxes.

Monitoring of self-contained emergency light fittings

When integrating self-contained emergency luminaires, function and duration tests can be carried out at any time and thus a central monitoring can be realized (look at DIN VDE V 0180-100-1).
The results of the emergency lighting tests are documented centrally and can be exported.

Features and advantages

- 192 ballasts (max.) can be controlled & monitored per system
- Daylight-dependent control
- Motion detection
- Control / configuration via PC (LAN connection)
- Emergency light monitoring
- User-friendly operating interface for the consumer
- Intuitive installation by the assembly personnel
- Easy integration of new light fittings into the system
- Calendar function for the configuration of daily / time-specific lighting settings (scenes)
- Flexibility by simply changing dimming profiles & group assignments
- No DALI power supply system required
- DALI2 sensors & actuators from third-party providers can be integrated
- IP66 sensors
- Conventional switches / buttons can be integrated
- Integration of the light management system in a higher-level building management system (BACnet protocol)
- Up to 5 Contollers (max. 960 luminaires) can be combined to form a system network

High Bay light fittings control by using the calendar function -
In addition to full days, time-specific settings can also be selected. It makes sense if e.g. the complete lighting should be switched to 100% in a company during core working hours.

Integration of emergency luminaires with self-contained batteries -
Emergency luminaires can be used with the following three types of circuit: Continuous light, standby light and controlled light.

With passion for excellent lighting - since 1895!

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