LIGHT MANAGEMENT SYSTEMS

LIMAS • RFL • LIMAS Air • LIMAS Line

SCHUCH

Light Management Systems for industrial areas

LIMAS Air

Radio-based Light Management System

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 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 can be 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

SCHUCH

Functionality

SCHUCH high-bay light fittings in DIMD version can be interconnected by using the LIMAS Air radio module. The radio module can be connected quickly and easily to all DIMD high-bay light fittings by means of a FastConnect connection (Plug & Play). LIMAS Air is also available for our dust- and **waterproof light fittings**. In this case, no additional radio module is required. All components needed for an interconnected lighting environment are already included in the luminaire itself. This innovative integration offers the highest level of convenience and efficiency

without compromising on quality. Networking through the LIMAS Air radio module or the integrated radio capability in our dust- and waterproof light fittings eliminates the need for additional wiring, saving not only effort but also valuable time and money. The lighting installation is thus made intelligent and flexible without the complexity of additional wiring. LIMAS Air opened the door to modern control options and created a smart environment for lighting requirements. Based on CASAMBI® radio technology and the 2.4 GHz radio standard, the lighting system can be reliably controlled with low power consumption and a long range. If DALI

light fittings with a CASAMBI® radio module are already part of an existing system, they can also be integrated. Using the free CASAMBI® app, the system is set up simply and intuitively via smartphone or tablet. Various sensors (e.g. motion- or daylight-dependent) and actuators (e.g. push-buttons) specially developed for the industry can be integrated accordingly and grouped flexibly. - An overall comfortable and user-friendly control system.

Features
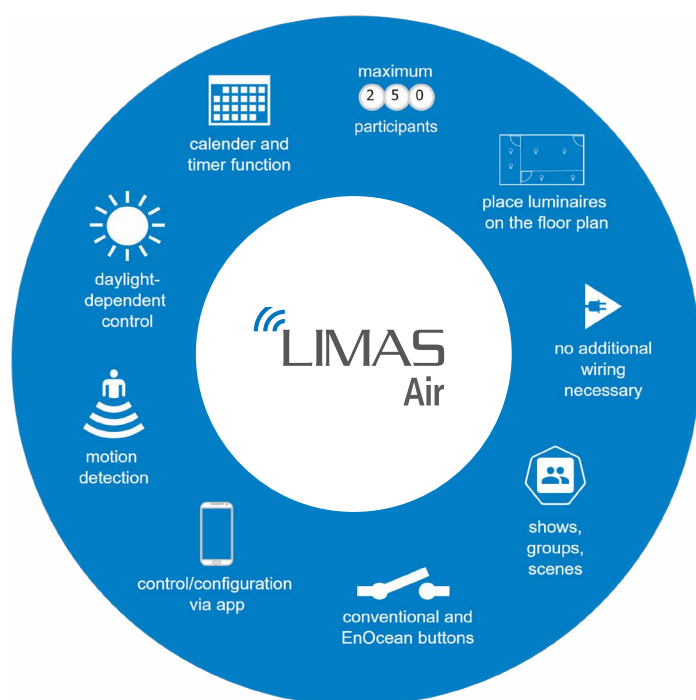
- Up to 250 participants (luminaires, pushbuttons and sensors) in one mesh network
- Various scenarios programmable
  → easy and quick regrouping if requirements change
- Daylight-dependent control
- Control via motion detection
- Animations can be implemented
  (sequence of scenes or transition between 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 sensor and daylight sensor should always be combined. By a pushbutton the lighting can be manually overridden/switched at any time.
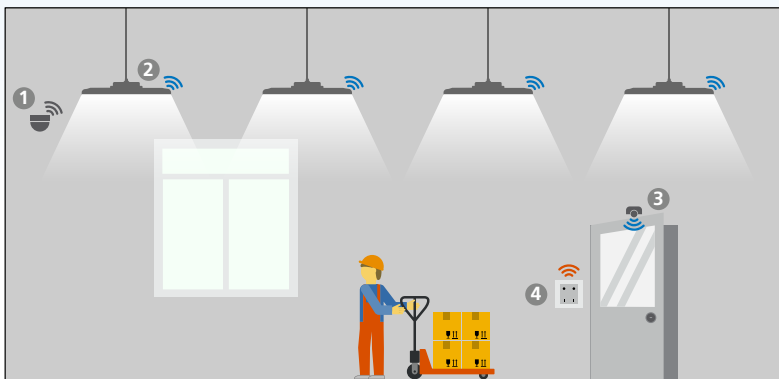
**1** Daylight sensor   **2** Luminaire with LIMAS Air radio module   **3** Motion sensor   **4** Pushbutton

Presence detection

The motion sensor 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 %).
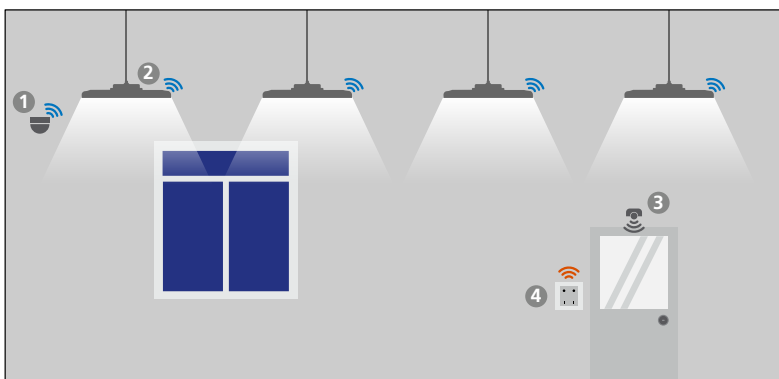
Daylight control
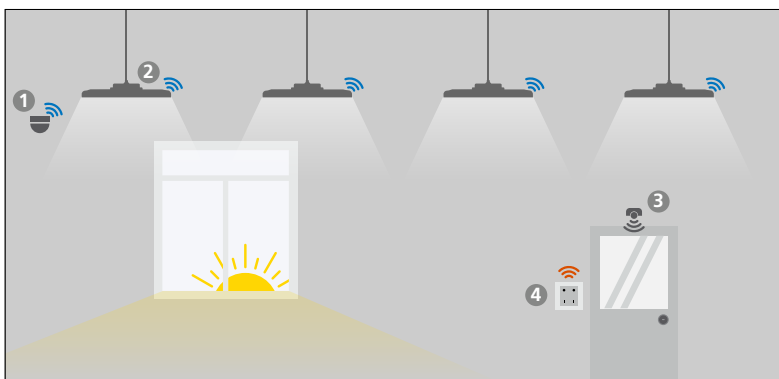
Depending on the amount of daylight, the light sensor dims the lighting to the desired level.
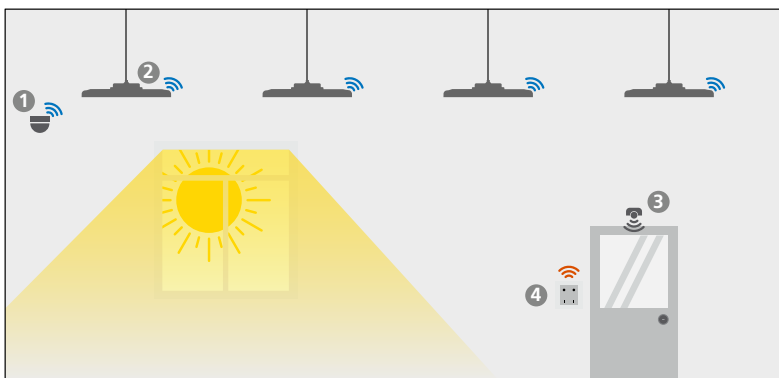
When there is sufficient daylight the sensor switches the lighting completely off.

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 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.

TIME MANAGEMENT
(Energy consumption vs Time chart: 100%, 60%, 20% axes; 6:00, 12:00, 18:00)
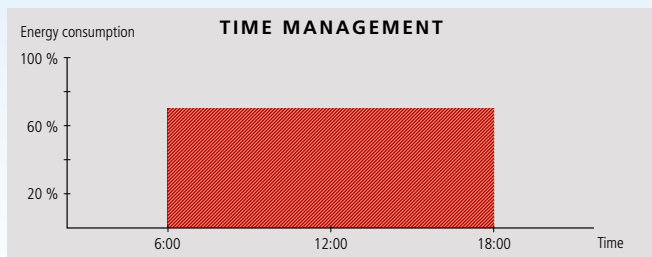
The light fittings are switched on continuously in the production hall during the entire operating time.

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

PRESENCE DETECTION
(Energy consumption vs Time chart: 100%, 60%, 20% axes; 6:00, 12:00, 18:00)
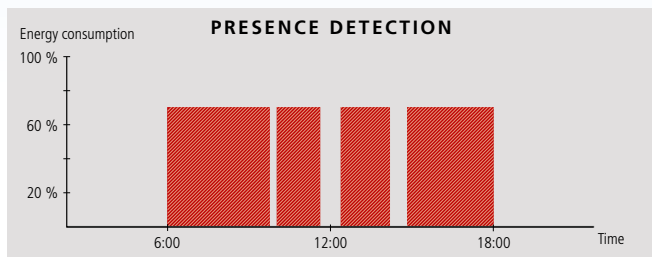
Motion sensors capture the presence of people in the production facility. During breaks or when no movement is detected, the lighting remains switched off.

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

DAYLIGHT
(Energy consumption vs Time chart: 100%, 60%, 20% axes; 6:00, 12:00, 18:00)
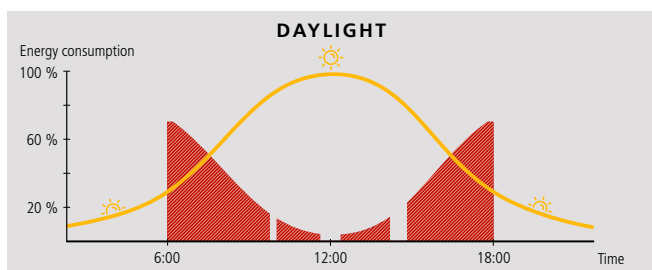
Daylight sensors measure the brightness in the production hall. This varies due to incident sunlight during the course of the day. The entire lighting system is continuously adapted to this and dimmed accordingly.

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

Control components

LIMAS Air FM	90547 9001	CASAMBI® radio module with FastConnect quick-connector for controlling DIMD luminaires
LIMAS Air FM MK	90547 9002	CASAMBI® radio module with FastConnect quick-connector and 1 m cable

System components

Type	Art.-No.		Figure
LIMAS Air BM/DS IR LPH 5,0-16,0m Oval	90547 9013	Motion and light sensor for a mounting height of max. 5.0 - 16.0 m and a detection area of max. 19 m x 30 m.	1
LIMAS Air BM/DS IR LPH 2,0-10,0m	90547 9014	Motion and light sensor for a mounting height of max. 2.0 - 10.0 m and a detection area of up to 24 m in diameter.	
LIMAS Air BM/DS IR LPH max. 20,0m	90547 9007	Motion and light sensor for a mounting height of max. 20 m and a detection area of max. 5 m diameter.	
LIMAS Air BM/DS IR LPH max. 2,2m	90547 9008	Motion and light sensor for a mounting height of max. 2.2 m and a detection area of max. 5 m diameter.	2
LIMAS Air TAST INTER UP max. 4 KONT	90547 9009	Push-button interface for connecting up to 4 analogue push-button contacts. Intended for mounting in a flush-mounted box.	3
LIMAS Air DALI PS/C	90547 9010	Radio module with DALI power supply and broadcast control of up to 60 ECGs (total current 120 mA). Power supply 230 V.	4
LIMAS Air TAST UP max. 4 KONT	90547 9011	Battery-free 4-fold „EnOcean" wireless pushbutton. When the button is pressed, energy is generated to supply the button electronics.	5
RFL LIMAS Air HUB TRI	90546 9013	Light management controller (2.4 GHz mesh network) with radio antenna and RFL base.	6

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LIMAS

Light Management Systems for industrial areas

LIMAS
Air GUARD

Radio-based Light Management System for self-contained emergency luminaires

The reliable operation of emergency lighting systems is essential for commercial and industrial businesses. The easier the system is to install, monitor and control, the more efficient and comfortable it is for the operator.

With the introduction of the radio-based LIMAS Air GUARD lighting management system for monitoring, controlling and testing self-contained emergency luminaires, we offer efficiency and safety at the highest level.


Functionality

The self-contained emergency luminaires are equipped with integrated radio modules that enable wireless networking. Based on CASAMBI® radio technology and the 2.4 GHz radio standard, the luminaires communicate reliably and energy-efficiently via a self-organising mesh network. The connection between the luminaires and the central monitoring unit of the LIMAS Air GUARD system is guaranteed at all times. The monitoring unit is configured and controlled via PC without additional software - a browser is all that is needed. The connection between the PC and the mo-

nitoring unit can be realised either via an existing network or by establishing a peer-to-peer connection. An Internet connection is not required. The lights themselves are conveniently set up using a free app for Android or iOS.Up to 192 luminaires can be monitored and controlled via the central monitoring unit. The operating status of each luminaire can be read and luminaire faults are displayed centrally. The required tests according to DIN EN 50172 can be managed and initiated via stored test lists. The central monitoring unit can also be integrated into any building management

system via open interfaces or utilised via software (lichtMONITOR).
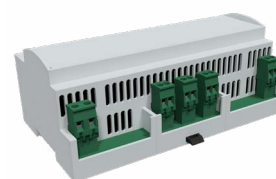
Advantages

- **Quick installation,** no additional wiring required
- **Cost-efficient,** no time-consuming inspections, no manual documentation
- **Maximum security,** early error detection, automatic error message with location display, audit-proof documentation
- **High data security,** no cloud connection required
- **Monitoring of up to 192 self-contained emergency luminaires**
- **Permanently stable wireless communication** thanks to self-organising mesh network
- **Readout of luminaire data** such as energy consumption etc.
- **Individually adjustable test times** for function and duration tests
- **Light management ready and scalable,** integration of sensors and DALI luminaires possible
- **Integration into building management systems** possible
- **No follow-up costs,** no ongoing fees or subscriptions

All CS luminaires from the SCHUCH portfolio can be controlled, MA-Z CS luminaires can be monitored and DIMD MA-Z CS luminaires can be both controlled and monitored.

## The most important differences to LIMAS Line PRO:

- Radio networked, no additional wiring required
- Quick installation
- Focus on luminaire monitoring

Easy monitoring with lichtMONITOR

The additional lichtMONITOR software offers a user-friendly way of monitoring and controlling the emergency lighting system. The intuitive user interface and comprehensive functions make lichtMONITOR a valuable tool for managing emergency lighting systems.

Advantages:

- Clear, detailed representation of the system in the floor plan
- All information on the status of the system at a glance
- Automatic reporting of errors, breakdowns and faulty tests, e.g. by e-mail to the facility manager
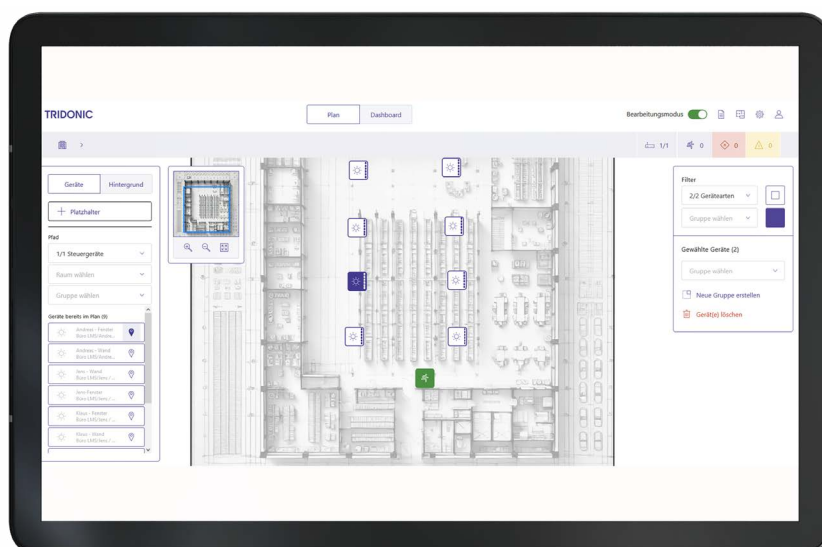
LIMAS Line

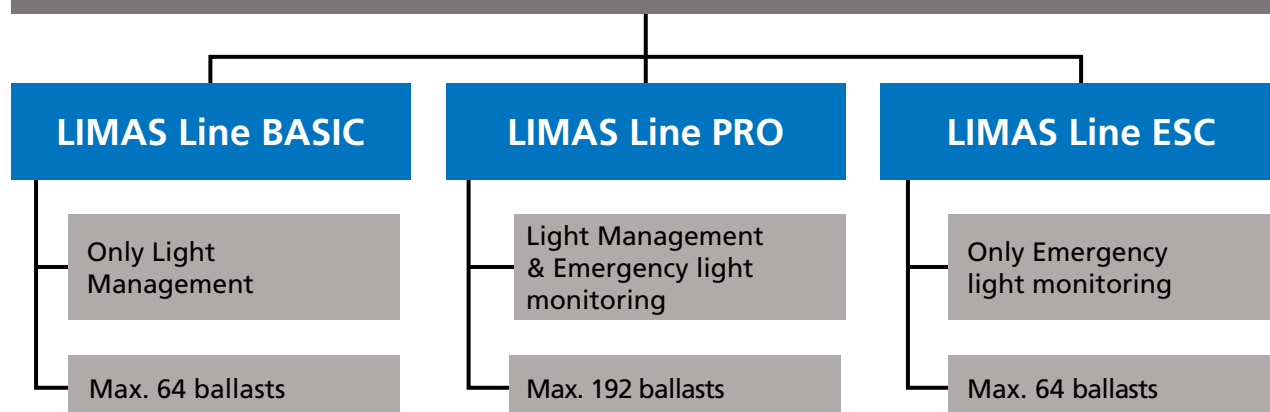## Wired DALI - Light Management Systems

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 intelli-gent 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.
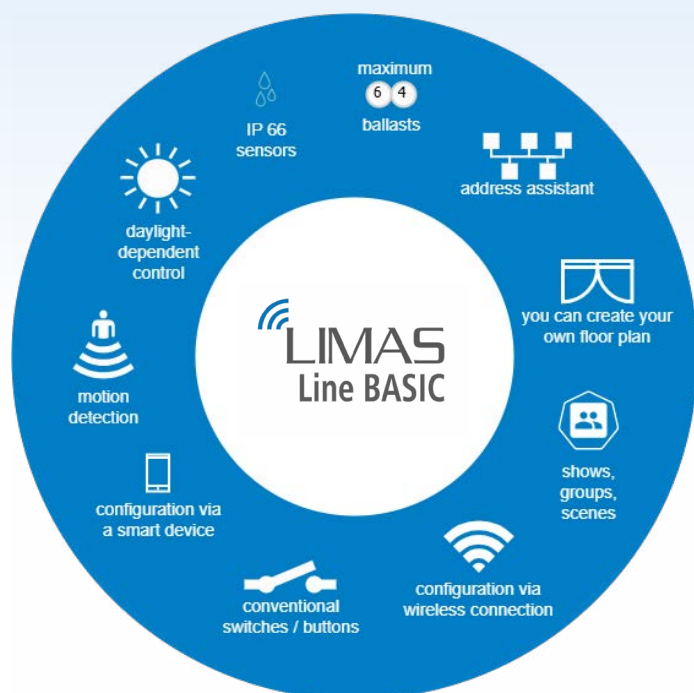
LIMAS Line is available in three different versions:
- **BASIC - standard version**
- **PRO - extended version**
- **ESC - for central monitoring of self-contained emergency luminaires**

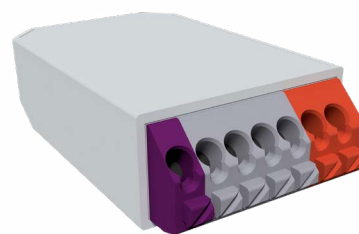| Light Management System LIMAS Line		
LIMAS Line BASIC	**LIMAS Line PRO**	**LIMAS Line ESC**
Only Light Management	Light Management & Emergency light monitoring	Only Emergency light monitoring
Max. 64 ballasts	Max. 192 ballasts	Max. 64 ballasts

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 incidence 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
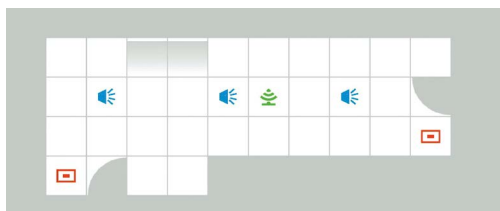
The LIMAS Line BASIC light management system is configured via a wireless connection using a smart device (Android or iOS). All this requires is a free app. If this is installed, the room to be illuminated can be recreated in the form of a rudimentary floor plan and then equipped and configured accordingly 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 IP66 sensors
- DALI2 sensors & actuators from third-party suppliers can be integrated

LIMAS Line PRO

The extended version that simply has more to offer
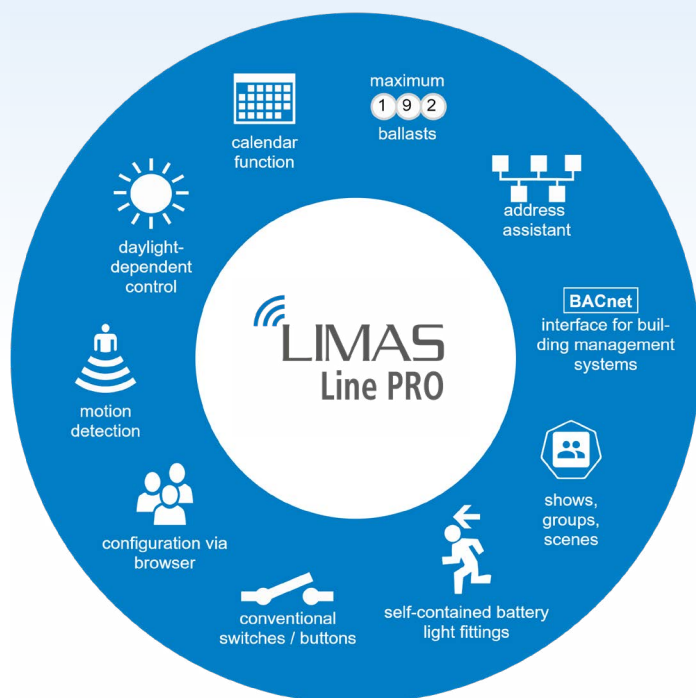
LIMAS Line PRO
allows easy addressing and grouping of luminaires, the integration of standard pushbutton switches and sensor-based automation.
In addition to DALI (DIMD) light fittings, this system can also be used to control and monitor all self-contained emergency luminaires fittings (MA-Z, DIMD MA-Z and DIMDI) in the SCHUCH portfolio.
The configuration and control is done by PC without additional software - a browser is sufficient. The connection 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 luminaires from the SCHUCH portfolio can be controlled, MA-Z luminaires monitored and DIMD MA-Z/ DIMDI luminaires both controlled or monitored.

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 days (e.g. public holidays) can be saved.
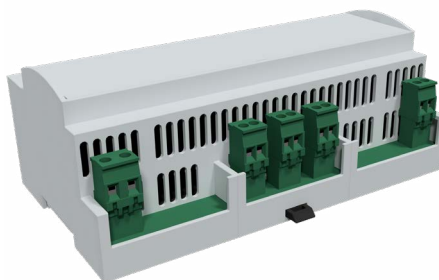
Individual control

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 luminaires

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 EN 50172 VDE 0108-100:2024-10).
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 Controllers (max. 960 light fittings) can be combined to form a system network
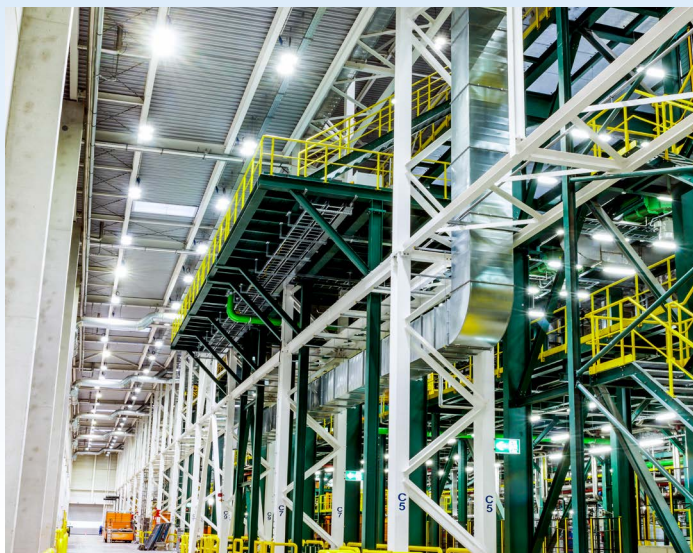
High Bay light fitting control by using the calendar function - In addition to full days, time-specific settings can also be selected. If, for example, all lighting is to be switched to 100 % only during working hours

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

Control components

Type	Art.-No.		Figure
LIMAS Line BASIC SCS	90545 0005	DALI2 controller for controlling up to 64 devices.	1
LIMAS Line PRO SCE	90545 0031	DALI2 controller for controlling up to 192 devices. Monitoring of self-contained emergency luminaires possible.	2
LIMAS Line ESC	90545 0042	7-inch touch panel/controller to monitor up to 64 self-contained emergency luminaires.	3

System components

Type	Art.-No.		Figure
LIMAS Line IC	90545 0015	DALI-2 input controller with 4 independent inputs for connection of floating contacts/buttons.	4
LIMAS Line DALI PS 240mA	90545 0016	DALI bus power supply with max. 240 mA.	5
LIMAS Line BM/DS PIR 2,5-4,0m	90545 0035	Infrared DALI2 motion sensor including light sensor for mounting heights of 2.5 - 4.0 m.	
LIMAS Line BM/DS PIR 4,0-14,0m	90545 0036	Infrared DALI2 motion sensor including light sensor for heights up to 4.0 - 14.0 m.	6
LIMAS Line BM/DS PIR 4,0-16,0m	90545 0037	Infrared DALI2 motion sensor with light sensor for mounting heights up to 4.0 - 16.0 m.	
LIMAS Line BM/DS PIR 1,8-2,5m	90545 0038	Infrared DALI2 motion sensor with light sensor for vertical wall mounting for height up to 1.8 - 2.5 m.	
LIMAS Line BM/DS PIR 2,5-5,0m	90545 0039	Infrared DALI2 motion sensor with light sensor for a mounting height of up to 2.5 - 5.0 m and a maximum detection area of 6 m x 23 m.	
LIMAS Line BM/DS HF 2,0-4,0m	90545 0040	HF DALI2 motion sensor with light sensor for a mounting height of up to 2.0 - 4.0 m and a maximum diameter of the detection area of 8 m.	7
LIMAS Line MK4x10A	90545 0041	Four potential-free relays, switchable with DALI. Suitable for signaling test and system states of self-contained emergency luminaires.	8
LIMAS Line ESC PS	90545 0043	24 V power supply for the LIMAS Line ESC controller.	9
LIMAS Line XR DS 2,0-4,0m	90545 0045	DALI2 light sensor in encapsulated housing for areas exposed to harmful gases, mounting heights of 2.0 - 4.0 m.	

LIMAS **Line ESC**

Monitoring of self-contained emergency luminaires according to
DIN EN 50172 VDE 0108-100:2024-10

NEW

**LIMAS Line ESC
allows standard-compliant, central monitoring of self-contained emergency luminaires.**

- exclusively for monitoring self-contained emergency luminaires
- emergency light fittings can be switched with general lighting switches via L', special converters or DALI lines to the switch are not required

The panel automatically starts the function and operating duration tests and displays the system status and any error messages centrally. The time and frequency of the tests can be set individually with the help of the calendar function. When connected to the internet, error messages can be automatically forwarded to the user by e-mail. As the light fittings are provided with addresses and are named, an exact localisation of faults, and thus an optimal maintenance of the entire system, is possible. For documentation purposes, the test reports can be exported by e-mail. Operation and set-up is intuitive via the touchscreen display. An external PC is not necessary for control. LIMAS Line ESC allows monitoring of up to 64 self-contained emergency luminaires on one DALI line. The system can be expanded with up to three additional DALI lines. Two DALI addresses can be specified for fault signalling. This allows to transfer the error status to a higher-level system via relay modules. All MA-Z and DI self-contained emergency luminaires from the SCHUCH portfolio can be monitored with LIMAS Line ESC.

The LIMAS Line ESC system provides a user interface, that displays the current status and test results of the self-contained emergency luminaires systems. For convenient monitoring and functional testing, tests can be scheduled and automated. The test results are logged and, if desired, sent by e-mail. A 7 inch touch screen provides an easy operation of the system. With its customisable settings and technical specifications, it offers flexibility and reliability for use in different environments.

All MA-Z and DI self-contained emergency luminaires from the SCHUCH portfolio can be monitored with LIMAS Line ESC.
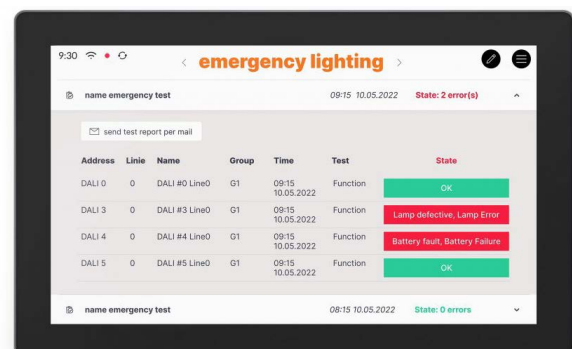
The most important differences to LIMAS Line PRO

- monitoring of up to 64 light fittings
- mounting on a flush-mounted box
- operation via the integrated touch screen panel, no PC required
- supply via 24 V or Power Over Ethernet - POE

SCHUCH

LIMAS

Light Management Systems for outdoor areas

Wireless light management system

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.

Benefits

(D) = Solution with USB dongle (C) = Solution with Cloud Connection

(D) + (C)	**Optimised energy savings** through light on demand
(D) + (C)	**Easy cost control** through energy consumption metering
(D) + (C)	**Evaluation and export** of read or saved luminaire data
(C)	**Proactive, targeted maintenance and failure elimination** through the light fittings' automatic failure reporting and location display
(D) + (C)	**User-friendly interface** with graphic display of the light fittings' operating status, energy consumption, function and location
(D) + (C)	**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
(C)	**Time and date updates via time server** for time dependent dimming
(D) + (C)	**Central control and (with (C) automatic) monitoring** of every single light point
(D) + (C)	**No additional wiring required**
(C)	**Access to all system functions** at any time and from anywhere in the world via the Internet

Version with USB dongle (standalone solution, no cloud connection)

With this system solution, the luminaires can be programmed and read out on site in the field using a USB dongle and Windows PC/tablet.
The luminaire parameters such as dimming level, run-on time and behaviour in the event of motion detection are stored in the radio controls/HUBs. The luminaires can be operated without a connection to the USB dongle. Both items also each contain a photocell for a twilight switch. Here, one HUB is defined as the master brightness sensor in the field, which transmits the correspondingly measured brightness value to all other HUBs in the field (slave). At least one GPS SIM HUB is required for time-accurate switching via the light management system. This HUB supplies the integrated GPS antenna and the connection to satellites in the neighbourhood the exact time and forwards it to neighbouring HUBs via radio. HUBs via radio.

Automatically organised mesh network 2.4 GHz band

Commandtransmission

Comprehensive encoding + PIN code protection

Field access via radio using Laptop and USB - dongle
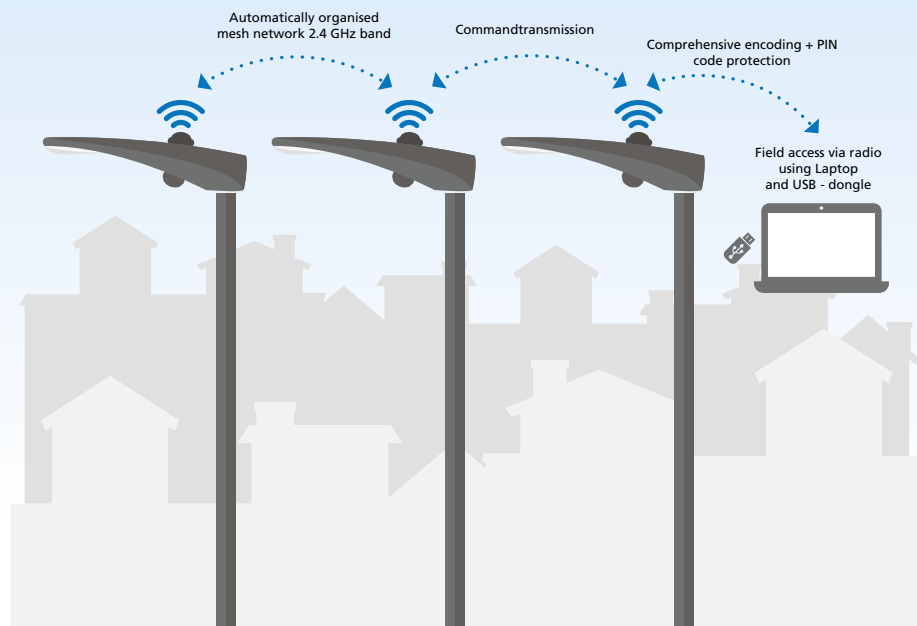
Version with RFL LIMAS HUB3 G2 GPS SIM (cloud connection)

With this system solution, the luminaires can be programmed, read out and monitored remotely using cloud access via any Internet browser and any operating system ❺. The GPS SIM HUB ❶ uses its integrated SIM card ❷ to wirelessly connect neighbouring HUBs ❸ to the cloud ❹.
The GPS SIM HUB uses the integrated GPS antenna and the connection to satellites in the vicinity to provide the exact time and forwards this to neighbouring HUBs via radio. The exact position is also recorded using satellite technology.
The luminaire parameters such as dimming level, run-on time and behaviour in the event of motion detection are stored in the radio controls/HUBs. The HUBs of the luminaires therefore continue to work independently even without a connection to the cloud. Both items each contain a photocell for twilight switching.
Here, one HUB is defined as the master brightness sensor in the field, which transmits the correspondingly measured brightness value to all other HUBs in the field (slave).

Access via web interface

❺ Control and monitoring via any browser interface in conjunction with a PC or mobile device (tablet, smartphone)

❷ mobile radio

❹ Internet / Cloud

❶ GPS SIM HUB   ❸ HUB   ❸ HUB
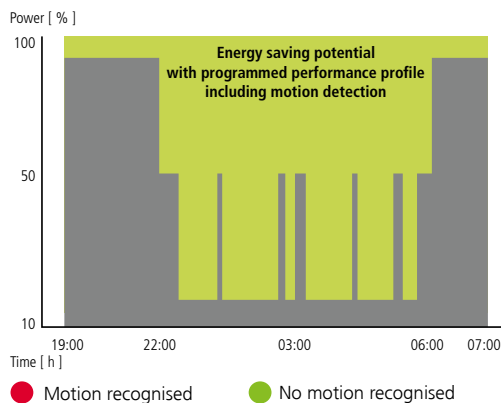
SCHUCH
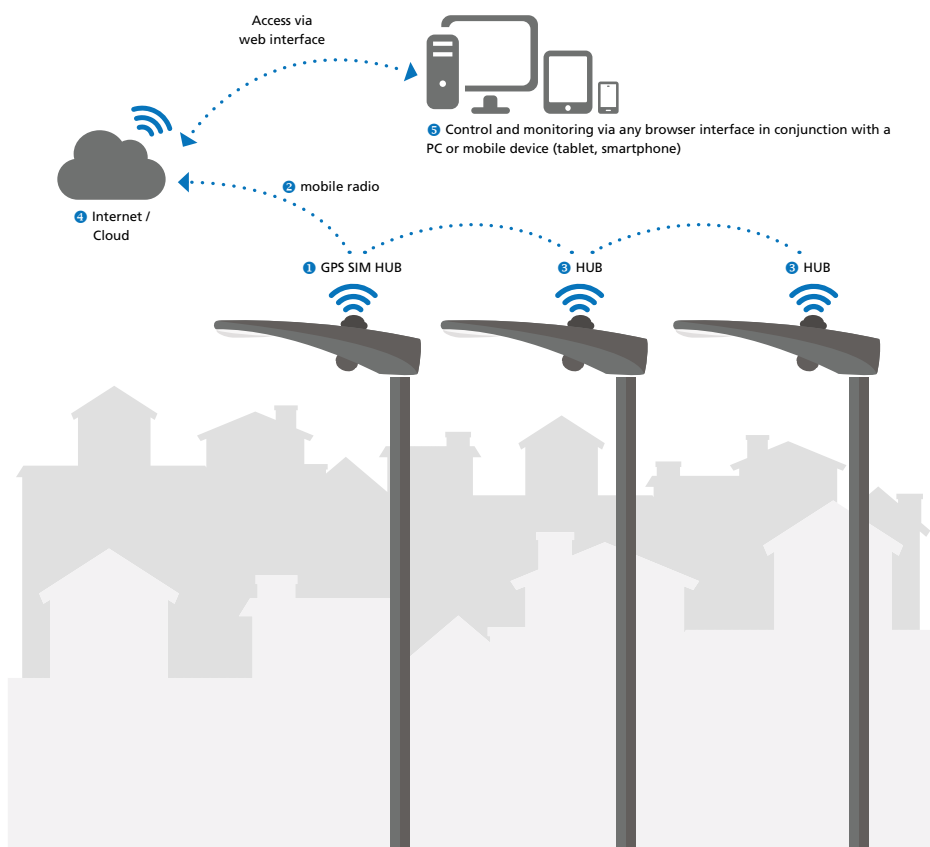
System functions

- **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

Setup of dimming profiles

Energy consumption indicator

Location indicator
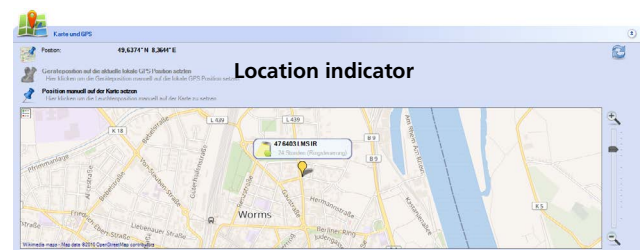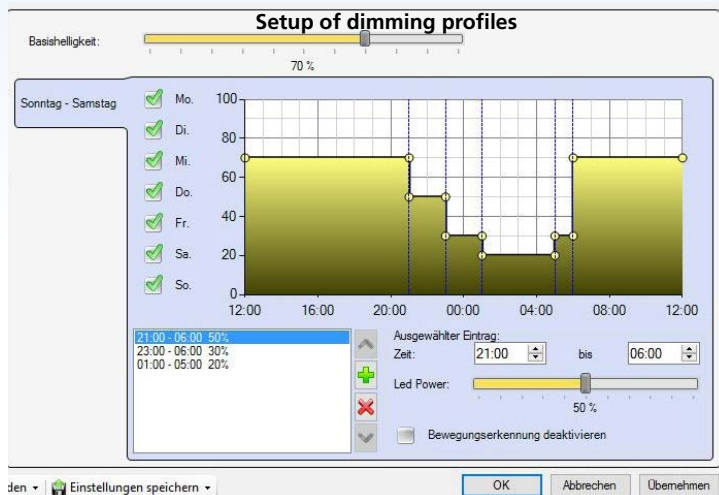
Motion detection - Light on Demand

If a road user passes an RFL luminaire with HUB and motion sensor, this is detected by the motion sensor and, depending on the programming, the luminaire switches from background level 10 % to 100 % illuminance with a defined follow-up time, e.g. 1 minute.

Neighbouring luminaires can be linked via the light management system in order to set up a leading light. As soon as a motion sensor of a luminaire detects an object in conjunction with a radio control system, the neighbouring luminaires in the street are also switched to a higher lighting level via radio.

Reports detected movement

Reports detected movement

Energy saving potential with programmed performance profile including motion detection

- 🔴 Motion recognised
- 🟢 No motion recognised

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

HUB
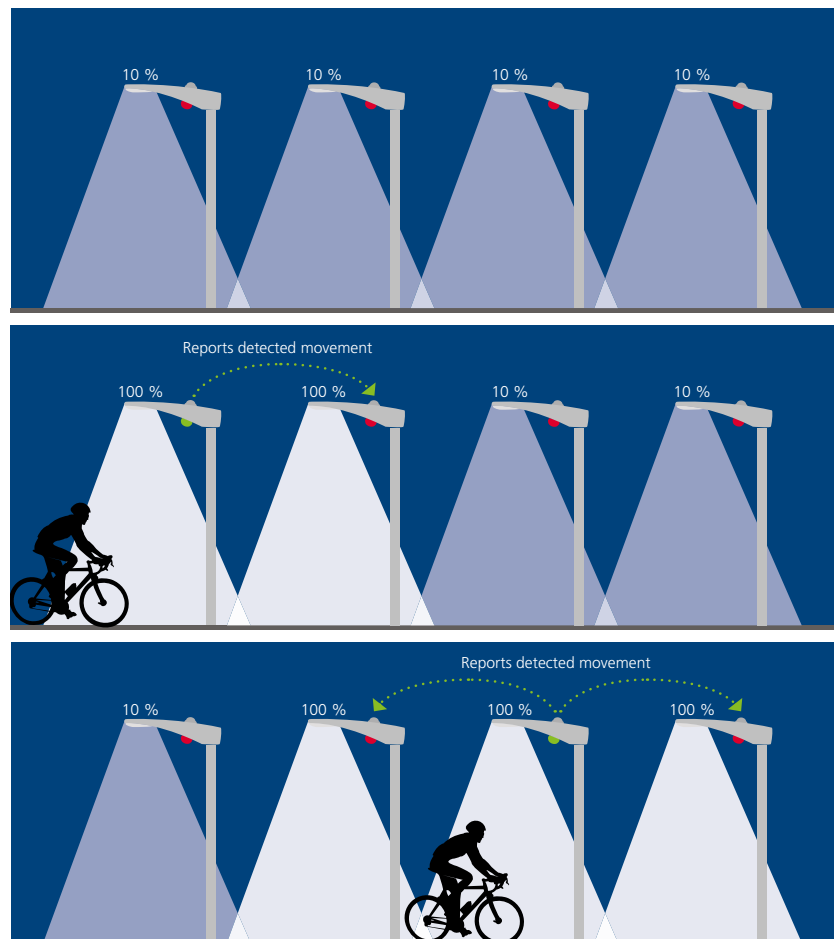
Zhaga socket O
e.g. for system component RFL LIMAS HUB
with integrated light management controleent

Zhaga socket U
e.g. for motion detector

A hub (also called „node") is a net-work device that connects such seve-ral 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 LIGHTMANAGEMENT SYSTEMS

You have the choice - you determine the timing!

RFL luminaires are the basis for the installation of the light management system LIMAS. One or two Zhaga bases integrated into the luminaire housing enable tool-free installation of the components required for light control.
You have a choice of 2 options:
1.   Installation of the RFL luminaires initially without components.
     The components required for lighting control are retrofitted at a later date.
2.   Simultaneous installation of RFL luminaires and components.

**Almost all SCHUCH outdoor light fittigs are available in RFL version
(see chapter "Outdoor Light fittings").**

In general the following versions are possible

- RFL**O**:   1 Zhaga base on the **top of the luminaire**, for mounting the radio control components or the twilight switch for independent control.
- RFL**U**:   1 Zhaga base on the **underside of the luminaire**, for mounting the moti-on sensors or the motion sensor/twilight switch in standalone mode..
- RFL**OU**: 1 Zhaga base each on the **top and bottom of the luminaire**, for mounting the control components and sensors.

To control the luminaires, the appropriate **light management software is also requi-red**, which is programmed using the USB dongle or connected via the HUB GPS SIM *(see components for programming....).*

D4i™ Excluisively D4i control gear is being used in RFL luminaires from Schuch. All D4i Zhaga Book 18 certified con-trollers 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 fun-ctionality 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
- The use of standardised Zhaga Book 18 compliant sockets allows the later use of D4i or SR compliant light management controllers or motion sensors at any time
- 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

* Luminaire types with permanently installed radio antenna and light management controller (LMS versions)

More than 3,400 SCHUCH light fittings of the 47 and 48 series with the light management system ⁀LIMAS 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.
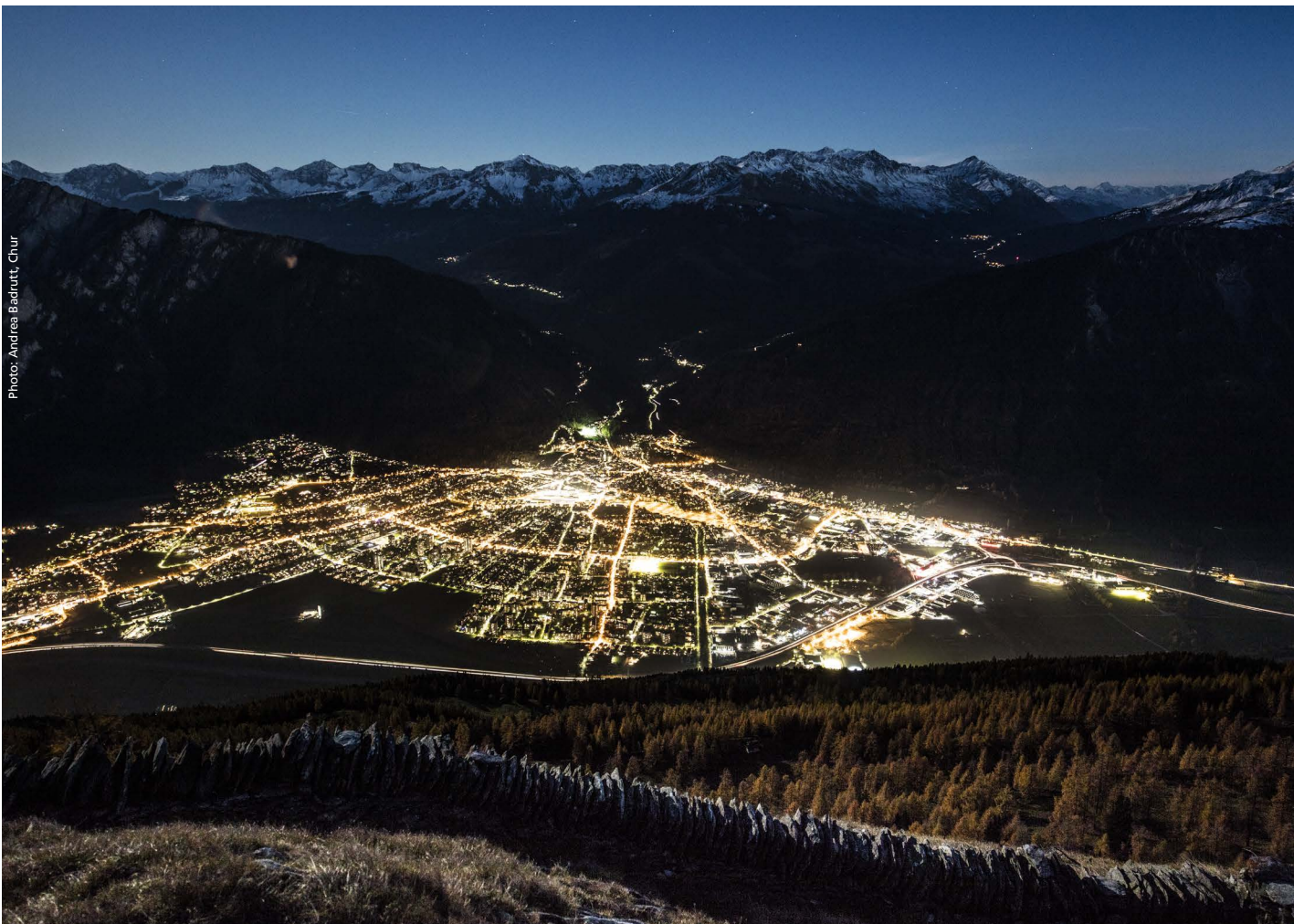
Photo: Andrea Badrutt, Chur

Components for programming or connection to the cloud for RFL luminaires

Art.-No.	Type	
90545 0001	LIMAS Dongle USB	Enables programming/setup of LIMAS components on site using software and Windows operating system
90546 9010	RFL LIMAS HUB3 G2 GPS SIM	Control element with photocell/twilight switch, GPS antenna and SIM card

System components for RFL luminaires

Art.-No.	Type		
90546 9010	RFL LIMAS HUB3 G2 GPS SIM	Radio control with GPS antenna (automatic position detection of the luminaire) and photocell (twilight switching) for radio networking of RFL luminaires (2.4 GHz Mesh-Net), with integrated SIM card for connecting a maximum of 100 neighbouring devices/HUBs to the cloud. Enables remote programming/setup and monitoring of the system and is used for timing in the system (GPS)	
90546 9014	RFL LIMAS HUB3 G2	Radio control with photocell (twilight switching) for networking RFL luminaires (2.4 GHz Mesh-Net)	
90546 9011	RFL LIMAS BM RAD HUB LPH max. 8m	Radio control with integrated radar motion sensors for networking RFL luminaires (2.4 GHz Mesh-Net)	
90546 9012	RFL LIMAS BM RAD MA LPH max. 10m	Radio control with integrated radar motion sensors for networking RFL luminaires (2.4 GHz Mesh-Net) for pole mounting	
90546 9000	RFL DS20 HUB 20lux ON/OFF	Twilight switch for autonomous control of RFLO luminaires. Not permitted in conjunction with other system components	
90546 9004	RFL BM/DS IR HUB LPH max. 8m	Infrared motion sensor - can only permitted in conjunction with RFL LIMAS HUB3 G2 and RFL LIMAS HUB3 G2 GPS SIM	
90546 9017	RFL BM RAD HUB LPH max. 12m	Radar motion sensor - can only permitted in conjunction with RFL LIMAS HUB3 G2 and RFL LIMAS HUB3 G2 GPS SIM	
90546 9018	RFL BM/DS IR HUB LPH max. 12m	Infrared motion sensor/twilight switch permitted in standalone mode or in conjunction with RFL LIMAS HUB3 G2 and RFL LIMAS HUB3 G2 GPS SIM - suitable accessories: Cover mask to limit the detection area (item no. 90546 9020)	

Accessoiries

Art.-No.	Type	
Request	Sensorbox (SENSBOX)	External box connected to the RFL luminaires via radio (2.4 GHz Mesh-Net) to accommodate various components

Operating modes

		Radio networking	Motion detection	Twilight switching	Time-based control	Programming	Connection to the cloud
1 RFL LIMAS HUB3 G2 GPS SIM		✓	✗	✓	✓	USB dongle + Cloud	✓
	+ RFL BM/DS IR HUB LPH max. 8m	✓	✓	✓	✓	USB dongle + Cloud	✓
	+ RFL BM RAD HUB LPH max. 12m	✓	✓	✓	✓	USB dongle + Cloud	✓
	+ RFL BM/DS IR HUB LPH max. 12m	✓	✓	✓	✓	USB dongle + Cloud	✓
2 RFL LIMAS HUB3 G2		✓	✗	✓	Optional with article ❶	USB dongle	Optional with article ❶
	+ RFL BM/DS IR HUB LPH max. 8m	✓	✓	✓	Optional with article ❶	USB dongle	Optional with article ❶
	+ RFL BM RAD HUB LPH max. 12m	✓	✓	✓	Optional with article ❶	USB dongle	Optional with article ❶
	+ RFL BM/DS IR HUB LPH max. 12m	✓	✓	✓	Optional with article ❶	USB dongle	Optional with article ❶
3 RFL LIMAS BM RAD HUB LPH max. 8m		✓	✓	Optional with article ❶ or ❷	Optional with article ❶	USB dongle	Optional with article ❶
4 RFL LIMAS BM RAD MA LPH max. 10m		✓	✓	Optional with article ❶ or ❷	Optional with article ❶	USB dongle	Optional with article ❶
5 RFL BM/DS IR HUB LPH max. 12m		✗	✓	✓	✗	Standard sensor programming	✗
6 RFL DS20 HUB 20lux ON/OFF *		✗	✗	✓	✗	✗	✗

USB dongle

Cloud connection

Standard sensor programming, can be customised ex works

* runs independently and cannot be combined with other components

LIMAS Air

Radio-based Light Management System for sports facilities

Whether small field facilities, sports fields or training grounds for football, hockey, tennis, etc., the powerful, energy-efficient and durable floodlights of the AREALO series offer you many possibilities. Our aim is to achieve the best possible result for your sports facility in terms of illuminance, uniformity and glare limitation, taking into account the requirements of DIN 12193. Among many other advantages, the extremely long service life of the AREALO of at least 100,000 hours is particularly remarkable. With an average of 300-500 operating hours per year, this is an investment for generations, maintenance-free and without regular lamp replacement, as is the case with conventional installations. With the use of the LIMAS Air light management system, maximum savings can also be achieved in terms of energy costs and CO_2 impact on the environment.

Intelligent light control

Simply switching the floodlights of a sports facility on and off is neither efficient nor cost-saving and environmentally friendly. When converting to LED technology, the question of intelligent lighting control therefore arises. If one then takes into account the subsidies from the federal government within the framework of the municipal guidelines as well as the state sports associations and possibly the respective federal state, which can currently amount to up to 80 % cumulatively at peak times, the decision should not be difficult.

Dimming - The introduction to light control

The simplest solution is to dim the floodlights via DALI. Since the maximum illuminance is usually only required for matches and competitions, energy can be saved to a considerable extent by continuously dimming or switching on preset lighting levels during training. All that is required for this is an AREALO in DIMD version.

Smart lighting control with LIMAS Air

With the LIMAS Air light management system, you can conveniently control your floodlighting system via radio, without additional wiring, and save a maximum of energy costs at the same time. The system is configured and controlled via a free app (Android or iOS) using a smartphone or tablet. Neither an internet connection nor a gateway is required for this. The luminous flux of each individual luminaire/mast unit can be controlled separately. In conjunction with push-buttons, the pre-programmed scenes can be called up easily and conveniently, for example match and competition mode, training, half-field lighting or goalkeeper training, etc.

Please contact us. We will be happy to show you the possibilities LIMAS Air offers and support you in planning, projecting and configuring your system.

Control components

Art.-No.	Type		
10183 0002	LIMAS Air SENSBOX	Repeater/amplifier box for LIMAS Air light management systems. An RFL LIMAS Air HUB radio control unit (90546 9013) is also required (not included).	
90546 9013	RFL LIMAS Air HUB TRI	Light management controller (2.4 GHz mesh network) with radio antenna and RFL base.	
90547 9009	LIMAS Air TAST INTER UP max 4 KONT	Push-button interface for connecting up to 4 analogue push-buttons, mounting in flush-mounted box/branch box.	
90547 9011	LIMAS Air TAST UP max 4 KONT	Battery-free quadruple wireless pushbutton, pressing the pushbutton generates energy to supply the pushbutton electronics.	

SCHUCH

With passion for
excellent lighting - since 1895!

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