Light guides the way

Siteco DL® 20 LED

Outstanding design and efficient LED technology. Lighting Tools for cost-efficient and future-fit road lighting. **Light is OSRAM**
DL® 20 LED

Outstanding design and efficient LED technology.
Lighting tools for cost-efficient and future-fit road lighting.
DL® 20 LED
A design luminaire for all urban applications

A road luminaire with outstanding design, high-efficiency LED technology and excellent optics: the DL® 20 LED from Siteco provides cost-efficient lighting with maximum visual comfort and a genuine feel-good factor, and is ideal for the standard-compliant illumination of residential and collection roads as well as for the atmospheric lighting of parks and town squares.

The continued development of a successful design
The DL® 20 LED assumes the lantern-based design that characterised the MUSHROOM LUMINAIRE in 1960, and LANTERN, CITY LIGHT, FANTASIE and GALAXIE are also based on this form.
Future-oriented LED technology
The DL® 20 LED represents the consistent transition from conventional lamps to LED technology.
Designing public areas
During the day the filigree appearance of the DL® 20 LED comes to the fore, and at night the purist corona of the LED ring.
One luminaire type for variable uses

The DL® 20 LED can be specifically used as a design object and for increasing the appeal of urban environments, for either conscious presentation or discreet integration into existing ensembles.

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**Lighting classes**

<table>
<thead>
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<th>S2</th>
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<tr>
<td><strong>DL® 20 LED</strong></td>
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The DL® 20 LED complies with standards for S and ME lighting classes for technical road lighting.
A uniform concept for maximum efficiency

A single philosophy dictated all development phases of the DL® 20 LED: to create an aesthetically ambitious luminaire that actively contributes to cutting energy consumption and that also sustainably reduces costs. All DL® 20 LED components were efficiency-optimised to achieve this aim, and the result is a luminaire with extremely low energy consumption. It thus also enables significant CO₂ savings and sustainably improves the energy balance for outdoor lighting.

Efficiency factors

- **LED quality**
  State-of-the-art LED units and matching control gear with maximum quality are used.

- **Lighting technology**
  Optimised lighting technology enables optimal current feed and ensures that maximum light reaches the working plane.

- **Thermal management**
  The sophisticated thermal management effectively dissipates heat from the LEDs, thus increasing diode efficiency.

- **Design concept**
  The modular construction of luminaire arm and ring enables rapid installation and reduces stock-keeping.

- **Control options**
  The intelligent control system enables adaptation of luminous flux according to needs and lowers operating costs.

Durable, solidly constructed, low maintenance

The highly robust and low-maintenance technology and the extremely long-life LEDs (up to 100,000 h) reduce maintenance, servicing and use of personnel.

The DL® 20 LED is thus an ideal luminaire for both new lighting installations and for updating obsolete systems.
Quality of life for residents
Residential roads are evenly illuminated for pedestrians and drivers. Luminaires are aesthetically appealing and provide a high degree of safety.
LED – easily the most efficient technology

The LED technology of the DL® 20 LED is highly efficient, and with intelligent control its potential can be exploited even further. This in turn cuts costs and CO₂ emissions. Luminous flux during night hours can be reduced to required levels via the stepless reduced mode, thus saving on energy consumption and operating costs.

The complete luminaire system also provides further savings potential because the DL® 20 also features a long lifespan and dependable reliability. The exceedingly high quality of the housing, quality of manufacture and quality of the components used, as well as optimal coordination within the complete system, is what makes the final difference with the analysis of overall costs across the complete service life of up to 100,000 hours.

Saving energy via reduced operation: luminous flux reduction to 50 percent cuts energy needs over many hours without reducing safety.
Efficient savings in two steps!

100 % operation

The disadvantage with HME and HST:
These are inferior to LED technology in terms of luminous efficacy and optical efficiency.

Night-time power reduction to 50 %

The disadvantage with HME and HST:
Reduction to 50 % luminous flux only saves 40 % of energy.

The advantage of DL® 20 LED Plus: Power reduction with efficiency bonus

DL® 20 LED achieves significantly superior values than HME and HST luminaires both in 100 % mode and with night-time reduction, and the less LEDs are fed with current the more efficient they function.

Basis for calculation: 1 km road; light points: 31; lighting class: ME6; mounting height 6.0 m; mast spacing 32 m; 4000 operating hours/year; with reduced operation: 1600 h at 100 % operation, 2400 h at 50 % operation; CO₂ factor: 0.6 kg/CO₂/kWh. All luminaires fulfill the same photometric task. Connected load: HME: 125 W, power consumption 139 W (50 %: 93 W); HST: 70 W, power consumption 83 W (50 %: 54 W); DL® 20 LED Plus: power consumption 36 W (50 %: 18.4 W).
A purist design with maximum functionality

Good design relegates itself to its tasks, and this concept determines the look and materials of the DL® 20 LED. No excess elements disturb the appearance and the luminaire blends discreetly into a wide variety of surroundings. The luminaire ring and arm are constructed with high quality, highly durable aluminium. The weather-resistant surface is powder-coated in Siteco® metallic grey (DB 702S). The cover of toughened safety glass repels soiling and ensures good light transmission factors over the complete service life. Mast mounting is via two screws and the electrical connection is convenient via the junction box. The modular design with luminaire arm and ring optimises warehouse stocking due to low space requirements.

Aesthetic, technical connections
The luminaire arm and ring are mounted with an intelligent plug connection and fixed on each arm side with two screws. The connector blends seamlessly into the glass cover.

Organic forms improve acceptance
The timeless look of the DL® 20 LED with its gently curved luminaire arm and discreet luminaire ring is similar to well-known lantern designs. This appearance increases the level of acceptance among the public.

Optics harmoniously integrated
The qualitative white glass completely seals the luminaire from below. LEDs and lighting technology are integrated on the inside, and the outer is colour-printed in the style of the luminaire body.
DL® 20 LED | Form and function

Award for intelligent concept and outstanding technology

Design mast for a uniform appearance
The design mast, in addition to the luminaire, is powder-coated in Siteco® metallic grey (DB 702S), and its offset spigot enables a flush transition to the luminaire.
Precisely aligned micro LED reflectors direct the light onto the luminaire reflector. These reflectors manufactured with MIRO® quality convert the high luminance levels of the LEDs into glare-free light. The white glass cover achieves a transmission factor that is 8% higher than comparable glasses.

Compliance with Dark Sky directives

The technical concept of the DL® 20 LED meets very demanding Dark Sky directives.

The optics guide the light completely to the ground, and the construction form of the luminaire prevents the spill of light upwards into the hemisphere. Adverse effects for the orientation of migrant birds or the lifestyle habits of nocturnally active animals are almost completely excluded. LED technology avoids the UV rays produced by conventional lamps that attract insects and can become death traps for these.
Good glare reduction for improved vision

Greater safety in road traffic due to optimal visual conditions is achieved by the outstanding glare limitation of the DL® 20 LED. No glare is subjectively noticed, and values measured in accordance with standards are significantly below limit values. This improves the visual acuity of vehicle drivers on collection roads to enable longer response times, and this effect can contribute to a reduction in the risk of accidents and help reduce their seriousness. A direct view of the LEDs from typical observer positions is also avoided, important for example in residential roads and highly frequented piazzas. Excessive, uncontrolled radiation to the ground below the luminaire is avoided.

LED with lens technology: danger of glare from visible LEDs
The individual light points with LED luminaires featuring open lenses create extremely high luminance levels, and these cause strong glare if seen directly, especially in the near field. This effect will increase in the future with the increasing lumen output of future LEDs.

DL® 20 LED: glare-free thanks to twin-level light distribution
The LEDs are positioned so that diodes cannot be seen from the typical observer positions of pedestrians and vehicle drivers, thus avoiding direct glare. The two-step light distribution via the micro LED reflector and luminaire reflector ensures best possible glare limitation.
Harmonious light distribution without dark zones

The quality of LED luminaires depends significantly on its lighting technology, because this is what transforms the high luminance of high-performance LEDs into soft, pleasant outdoor lighting. The DL® 20 LED achieves homogeneous illumination that cannot be beaten in its lighting class. The light is specifically directed into the far, central and near fields with very harmonious transitions of contrast, and this avoids the hazard of dark zones on pedestrian routes for example with a subsequent reduced sense of safety with residents.

Combination solutions
Thanks to various reflectors, parking areas and roads for example can be equipped with the same luminaire model.
Three reflectors with typical light characteristics

All standard situations in outdoor lighting can be illuminated with the three DL® 20 LED variants to fulfill current standards, achieved with optical systems with symmetric, asymmetric wide and asymmetric extremely wide distribution light. The basis for this is the precise alignment of each micro LED reflector.

Symmetric distribution

Typical applications:
- Piazzas, urban areas, parking areas
- For the uniform, discreet lighting of public spaces and exposed parking zones
- Mast spacing to 25 m, mounting height 4 to 6 m

Asymmetric wide distribution

Typical applications:
- Collection roads, residential roads
- Use e.g. in residential areas
- Mast spacing to approx. 40 m, mounting height 4 to 6 m

Asymmetric extremely wide distribution

Typical applications:
- Collection roads, residential roads, cycle paths, park routes
- Also suitable for wide mast spacing and low mounting heights
- Mast spacing to 42 m, mounting height 4 to 6 m

Individual Consultation

Good outdoor lighting always comes about as the result of detailed planning and measurements. Siteco sees itself as a reliable partner for local councils, institutes and companies. Our sales representatives are always keen to advise you in all stages when installing a new system or with the refurbishment of obsolete systems. This consultation ranges from information concerning support programs and energy saving to practical advice for individual lighting design.
Safety, well-being, acceptance

Extensive comparative research by the Darmstadt Technical University in Germany proves the level of acceptance for qualitative LED road luminaires. In their survey luminaires with HME (high pressure mercury vapour) lamps, HST (high pressure sodium vapour) lamps and LED technology were installed on a 500 metre-long residential street with identical mast distances. Test persons always positively evaluated the LED luminaires whether in terms of road brightness, recognition of pavement edges, impediments and people with warning vests, personal feeling of safety, colour rendition and light colour. The responses were almost always significantly better than with comparative luminaires.

Research proves acceptance*
Positive responses to LED technology: all test groups judged the light quality of LED to be significantly superior. The feeling of safety was also highest. Car drivers criticised that the perception of obstacles with HME lighting was insufficient.

Evaluation of light quality

<table>
<thead>
<tr>
<th></th>
<th>HME</th>
<th>HST</th>
<th>LED</th>
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<tbody>
<tr>
<td>Colour</td>
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<tr>
<td>Obstructions</td>
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</table>

* Outdoor Lighting: comparison of road lighting with LEDs and conventional light sources. Analysis based on a scientifically-based test road. Dipl.-Ing. Christoph Schiller, Dipl.-Ing Thomas Kuhn, Marvin Böll, Prof. Tran Quoc Khanh, Darmstadt. Published in: LICHT 10/2009

Neutral white
Functionality and safety
Neutral white light increases the feeling of safety. It ensures greater response times in road traffic, and can thus improve traffic safety. Neutral white also improves the sense of well-being for residents and traffic participants.
Warm white
Light atmosphere and orientation
Warm white light is experienced as pleasant and cosy, and is therefore especially suitable for applications where a sense of ambience should be created, for example when illuminating piazzas and paths.

Siteco Luminaire Test Road
Scientific surveys are one thing, but personal experience counts for more. Interested parties can experience a comparison between LED systems and conventional luminaires on the luminaire test road at the Siteco company premises in Traunreut, Germany. A wide variety of application scenarios can be simulated, and various mounting heights, mast spacing distances and luminaire technologies can be specified to achieve realistic situations. In addition, the DL® 20 LED in the in-house luminaire park can also be evaluated.

Interested? Simply contact your personal Siteco sales representative.
Factors for an efficient luminaire system

Photometric expertise combined with a high level of engineering capability makes the DL® 20 LED an outdoor luminaire that defies comparison. The luminaire has been designed with technical maturity for low-maintenance and fault-free, continuous operation and features high quality materials and technical features in proven Siteco quality. An example of this is thermal management with the LED unit in the luminaire ring and the control gear in the mast mounting element. The LED unit is permanently screw-fastened to the luminaire ring. In this way a service life of up to 100,000 operating hours is ensured. Thermal management also helps to save energy, because the better an LED luminaire is cooled the better is the ratio of luminous efficacy per watt.

An efficient cooling system for a long service life
DL® 20 LED uses the principle of convection for effective luminaire cooling. The control gear is accommodated in the mast mounting element and dissipates its heat at this location into the ambient air. The aluminium of the luminaire ring serves as heat sink for the LEDs, and cool air flows from below along the mast and luminaire. The rising air dissipates heat and pulls cool air through after it.
High operating life for LEDs and operating technology
The separation of LEDs and control unit means the DL® 20 LED features an optimal thermal design. This improves performance of the LEDs and extends their service life.

High IP66 protection
A gasket running between the safety glass and luminaire ring effectively seals the complete luminaire technology from the outside. This ensures an IP66 protection rating for the luminaire.

Defined drip edge retards dirt
The basis construction of the DL® 20 LED avoids the collection of leaves, but in addition the drip edge means that smaller particles are washed away with rain.

High service life due to air-permeable exchange membrane
An air-permeable membrane ensures pressure equalisation in the inner of the luminaire with changing exterior temperatures, and simultaneously avoids the collection of condensation in the housing.

Clean glass due to integral glass edge
The toughened safety glass has a flush transition to the luminaire ring. This avoids soiling and damage of the glass.
Light according to needs
Intelligent control of light makes the DL® 20 LED a lighting solution for all situations.
Intelligent control saves energy

Not every traffic situation, type of weather or time of the day needs the same quantity of light. At the same time, the lighting must always comply with legislative standards, and the maxim is as little as possible and as much as is required. Modern LED technology can be dimmed and switched steplessly and almost without power loss. Even individual control is possible with supplementary electronic components. In this way the luminaire can be specifically set for its application with high precision and according to needs.

Two functional packages available:

- Uniform lighting conditions over the complete service life: reduction of luminous flux as a result of ageing is automatically compensated for
- 2-step power reduction (settable time value and dimming value), control wires not required
- Powerline-ready via integrated luminaire controller
- Maximum flexibility and efficiency via integration into intelligent, networked lighting management and monitoring systems

The functions in detail

<table>
<thead>
<tr>
<th>Standard</th>
<th>Overheat protection</th>
<th>Electronic power reduction</th>
<th>Efficiency</th>
<th>Flexible luminous flux parameterisation</th>
<th>Time-dependent luminous flux control</th>
<th>Constant luminous flux control</th>
<th>Communication</th>
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<tr>
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The DL® 20 LED complies with standards for S and ME lighting classes for technical road lighting

*The Street Light Control (SLC) luminaire controller for mast installation for upgrading to the Premium version must be separately ordered as an accessory.
DL® 20 LED for mast post-top mounting
asymmetric wide distribution

Mast luminaire for post-top mounting
— LED with reflectors, for uniform, asymmetric wide light distribution; with flat, reflection-reduced white glass cover
— microprocessor-controlled LED operating electronics; with control functionality for lighting management and monitoring
— housing of cast aluminium, Siteco® metallic grey (DB 702S); cover of toughened safety glass (ESG)
— protection rating: IP66
— insulation class: II
— service life: up to 100,000h
— mast spigot: \( d_a = 76 \times 100 \text{mm} \); \( l = 100 \ldots 150 \text{mm} \)
— mast spigot inner diameter: \( d_{i} \geq 68 \text{mm} \) (suitable for design mast or standard steel mast)
— recommended mounting height: \( MH = 4 \ldots 6 \text{m} \)
— luminaire incl. installed connection cable

Function
All versions: with temperature monitoring for protection of LEDs from thermal overload
— Plus version: with luminous flux constancy over complete service life; with integrated, programmable timer for luminous flux reduction at two levels; all parameters settable via Service Box; on request: can be integrated via SDI into existing digital control systems and controlled from a central control point; alternative luminous flux reduction via 230V control voltage
— Premium version: (implemented with supplementary luminaire controller in mast): functional range as with Plus version, but for individual monitoring and control of the luminaire from a central control point from any distance via LON PowerLine without supplementary control wires (instead of SDI)

Luminaire can be operated with factory pre-setting. The pre-setting with the Plus and Premium versions can be modified with the mounted and dismantled luminaire.

Lamps

<table>
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<th>OSRAM</th>
<th>Siteco</th>
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— for Premium version please order luminaire controller additionally to luminaire ‘Plus version’ if required
— please order further SLC lighting management components separately if required

Accessories

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4050737758664
SXA51282NA008
1 x LED 4000K / CRI ≥ 80 600 3120 lm

Luminous intensity class according to EN13201-2: G4

Mounting height 4 m 70° 0°
DL® 20 LED for mast post-top mounting
asymmetric extremely wide distribution

- Mast luminaire for post-top mounting
  - LED with reflectors, for uniform, asymmetric extremely wide light distribution; with flat, reflection-reduced white glass cover
  - microprocessor-controlled LED operating electronics; with control functionality for lighting management and monitoring
  - housing of cast aluminium, Siteco® metallic grey (DB 702S); cover of toughened safety glass (ESG)
  - protection rating: IP66
  - insulation class: II
  - service life: up to 100,000h
  - mast spigot: \( d_a = 76 \times 100 \text{mm} \); \( l = 100 \ldots 150 \text{mm} \)
  - mast spigot inner diameter: \( d_i \geq 68 \text{mm} \) (suitable for design mast or standard steel mast)
  - recommended mounting height: \( MH = 4 \ldots 6 \text{m} \)
  - luminaire incl. installed connection cable

- Function
  - All versions: with temperature monitoring for protection of LEDs from thermal overload
  - Plus version: with luminous flux constancy over complete service life; with integrated, programmable timer for luminous flux reduction at two levels; selectable luminous flux for max. operation and for both reduction levels; all parameters settable via Service Box; on request: can be integrated via SDI into existing digital control systems and controlled from a central control point (alternative luminous flux reduction via 230V control voltage)
  - Premium version: implemented with supplementary luminaire controller in mast; functional range as with Plus version, but for individual monitoring and control of the luminaire from a central control point from any distance via LON/Poweline without supplementary control wires (instead of SDI)

- Lamps

<table>
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  - for Premium version: please order luminaire controller additionally to luminaire 'Plus version' if required
  - please order further S.L.C lighting management components separately if required

- Accessories

  | Siteco® Service Box, for Plus version | 1.7 | 4039060999927 SE6TEF01 |
  | luminaire controller, recessed in mast | 0.6 | 4050737758176 SEAPOPL |
DL® 20 LED for mast post-top mounting
symmetric distribution

Mast luminaire for post-top mounting
— LED with reflectors, for uniform, symmetric wide light distribution; with flat, reflection-reduced white glass cover
— microprocessor-controlled LED operating electronics; with control functionality for lighting management and monitoring
— housing of cast aluminium, Siteco® metallic grey (DB 702S); cover of toughened safety glass (ESG)
— protection rating: IP66
— insulation class: II
— service life: up to 100,000h
— mast spigot: di = 76 x 100mm; l= 100…150mm | mast spigot inner diameter: di ≥68mm (suitable for design mast or standard steel mast)
— recommended mounting height: MH= 4…6m
— luminaire incl. installed connection cable

Function
All versions: with temperature monitoring for protection of LEDs from thermal overload
— Plus version: with luminous flux constancy over complete service life | with integrated, programmable timer for luminous flux reduction at two levels | settable luminous flux for max. operation and for both reduction levels | all parameters settable via Service Box | on request: can be integrated via SDI into existing digital control systems and controlled from a central control point | alternative luminous flux reduction via 230V control voltage
— Premium version: (implemented with supplementary luminaire controller in mast): functional range as with Plus version, but for individual monitoring and control of the luminaire from a central control point from any distance via LON PowerLine without supplementary control wires (instead of SDI)
Luminaires can be operated with factory pre-setting. The pre-setting with the Plus and Premium versions can be modified with the mounted and dismantled luminaire.

Lamps

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— for Premium version please order luminaire controller additionally to luminaire ’Plus version’ if required
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<tr>
<td>luminaire controller, recessed in mast</td>
<td>0.6</td>
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</tbody>
</table>
**Accessories**

**Siteco® Servicebox**
for parameterising the operating electronics of all Siteco LED ‘Plus’ version road luminaires | maximum energy efficiency via individual adaptation of lighting level, switching time and reduction level | Service Box includes software* | with plug-in coupling for connection of Y-cable | housing of plastic; plug-in coupling with protection cap | IP54 | insulation class II

<table>
<thead>
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<th>Article</th>
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</table>

— Incl. Y-cable for looping the Service Box into luminaire supply cable | Incl. ‘workshop’ cable set for parameterising the unmo unted luminaire in the workshop; safety plug on one end

**Luminaire controller**
Street Light Control (SLC) luminaire controller for mast installation | for upgrading Siteco ‘Plus’ version LED outdoor luminaires to ‘Premium’ versions | controlling of luminaire controller via LON PowerLine; with pre-assembled cables for connection at cable junction box in the mast and at luminaire control unit | housing of plastic, white | IP54 | insulation class II

<table>
<thead>
<tr>
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— Power consumption: S= 6.7 VA / 1 VA (transmission mode/standby)
— Surge voltage strength: U = 6 KV

**Junction box**
for 2 cables to 5 x 16 mm² or 3 cables to 5 x 10 mm² | two D01 fuse-bases with E14 screw caps | housing of plastic | IP44 | insulation class II

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— Power consumption: S= 6.7 VA / 1 VA (transmission mode/standby)
— Surge voltage strength: U = 6 KV

**Design mast**
with offset spigot for flush-fitting connection of mast to luminaire | conical round mast | powder-coated in Siteco® metallic grey (DB 702S)

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Light according to needs through intelligent control

Intelligent control functions are an integral part of all Siteco outdoor LED luminaires. This intelligence integrated into the LED operating electronics of the luminaire enables the efficiency potential of the LEDs to be exploited even further. The control functions take advantage of the outstanding characteristic of the LED light source for reducing luminous flux without loss to thus increase energy and cost savings.

The control functions of the DL® 20 LED are combined in the differing Plus and Premium functional packages. With the Plus version, luminous flux values can be configured individually with the Siteco® Servicebox, and with the Premium version centrally via the Street Light Control (ordered separately as an accessory).

**Plus functional package**

- Power reduction, overheating protection, constant luminous flux control, flexible luminous flux configuration, time-dependent luminous flux control, digital communication interface,

**Advantage:**
- Precise configuration of the luminaire to ambient condition or application is possible
- Supplementary functions can be set for optimizing the light point
- Activated via the Siteco service box
- No additional control components required

**Premium functional package**

- Power reduction, overheating protection, constant luminous flux control, flexible luminous flux configuration, time-dependent luminous flux control, Street Light Control*

**Advantage:**
- Central control and automatic monitoring of each light point is possible
- No additional cabling required
- Reduction of maintenance paths and maintenance costs
- Safety increased due to lighting adapted according to requirements

*The “Street Light Control (SLC) luminaire controller for mast installation for upgrading to the Premium version must be ordered separately as an accessory.
Power reduction
All Siteco LED luminaires are equipped with an intelligent connection for identifying power reduction via a switched control wire (230 V). Factory setting with power switchover with control wire:
$L_{u}= 230 V > 100 \% \text{ luminous flux (all night)}$
$L_{t}= 0 V > 50 \% \text{ luminous flux (twilight)}$
The switching logic can be reversed with Plus version luminaires with the service box. If there is no control wire, the luminaire supplies 100% luminous flux (connection remains open).

Overheating protection
The LED module temperature and operating electronics are permanently monitored. At excessive temperatures, the light level and light output are automatically reduced and the luminaire can cool down. If a temperature threshold is reached, the luminaire returns to its original performance and light level. This function is a pure safety function to guarantee the long lifespan despite possible erroneous operation (e.g. due to unintended daytime switch-on at very high ambient temperatures or direct exposure to the sun). With operation within the specifications, the temperatures of the luminaire lie reliably within the safety range.

Constant luminous flux control
Each light source, including LEDs, is subject to luminous flux degradation along its lifespan curve. This must be considered during the planning phase and the system must be correspondingly over-planned. This causes excessive lighting and waste of energy. The Siteco constant luminous flux control compensates for this degradation. It continuously tracks the output of the LEDs. Luminous flux remains constant over the lifespan. The light source degradation factor is 1 and the maintenance factor is increased. Thus over-planning is no longer necessary. This results in an energy-optimized and standard-compliant lighting system at all times.

Flexible luminous flux configuration
Because of the commitment to fixed wattages with standard light sources (e.g. 70 W, 100 W, 150 W), the calculated result of a system is only achieved in very seldom cases. The next-higher wattage must be specified and the system is over-illuminated. Energy is wasted. With flexible luminous flux configuration, the light level can now be individually modified precisely to the calculated result. Both the switch-on value (full night) and reduction values (twilight) can be modified according to requirements.

Time-dependent luminous flux control
Siteco LED Plus luminaires enable light and therefore also energy consumption to be reduced automatically in late evening hours without external control components. Based on the nominal operating time of the last five days, the luminaire calculates an artificial (virtual) midnight. Time windows can be defined based on this midnight value in which the luminaire reduces to freely settable light levels via one or two steps. Because of the continuous, internal updating of the nocturnal operating hours, the luminaire adapts automatically to differing operating times according to the season of the year.

Digital communication interface
This function represents the luminaire interface to the outside world. It enables the modification of all requisite parameters according to needs using the Siteco® Servicebox, such as light level, reduction wire control and automatic night-time power reduction. This interface is also responsible for connection to higher-level control systems (on request).

Street Light Control
Connection to Street Light Control enables the luminaires to be integrated into our modern and pioneering control system. Without supplementary cabling, each light point can be individually triggered from a central control point, enabling control and monitoring according to requirements and with maximum flexibility and energy efficiency. Data transmission is implemented via the existing power network over a standardized LON protocol. The system can be expanded at any time by integrating additional sensors. Consumption values are recorded and logged, and luminaire faults are automatically reported via e-mail or SMS. Maintenance plans can be designed accordingly and route planning for maintenance crews optimized.
Lighting planning

Tools for calculating outdoor lighting systems

The modernization of obsolete road lighting systems certainly pays. Approximately 2.7 billion kWh of energy, 1.6 tons of carbon dioxide and therefore 400 million Euros in Germany alone are made available for this purpose. The quickest way to achieve this is by refurbishing obsolete lighting systems with new, energy-efficient luminaires and lighting technology. Siteco’s online calculation program enables individual energy-related savings potentials to be simply identified. Our website features our economic efficiency calculator, the Siteco Lighting Tool and sample systems for these purposes.

Sample systems

These are differentiated in the various applications of office, industry, traffic, shopping, public and sports, and saved in the form of lighting calculations (Relux, Dialux and PDFs), based on specifically valid standards. The sample systems are components for planning support with application suggestions. With specific examples, the sample systems show the results achieved with which luminaires in this application sector. This makes initial conceptions easier and more time-saving for users and serves as the basis for an overview of power consumption and economy (W/m²).

Direct link to sample systems: www.siteco.com/sample-projects

Economic efficiency calculator

The Siteco economic efficiency calculator is a web application for evaluating the economy of two outdoor lighting systems. The systems (“comparison system” and “new system”) can be compared with each other in terms of investment costs and operating costs over variable operating durations. To evaluate cost effectiveness, the amortization of a multiple investment is calculated statistically and dynamically over the operating duration and displayed in tables or diagrams.

The economic efficiency calculator makes available the following information and services:
- A concise comparison of the old and new system
- Data for investment, operating and energy costs
- Reliable amortization calculations
- Display of results in tabular and graphic form
- Simple step-by-step user guidance
- Creation and saving of individual projects
- Documentation and download of results as PDF files

Direct link to the economic efficiency calculator: www.siteco.com/eco-calculator-outdoor
Siteco Lighting Tool

The tool enables the selection of a product with just a few clicks and the forwarding of this to the Relux and Dialux lighting planning programs. The indoor and outdoor product ranges are available for this purpose. Products can be selected using the catalog structure (product segment, group or family) or via features (mounting method, lamp type, lamp quantity, control gear etc.). The tool also provides a full search feature for more detailed searches. Specific data can be forwarded to Dialux or Relux via drag and drop. The Siteco Lighting Tool is currently being expanded with an indoor and outdoor application search. The tool is aimed at users with lighting design experience and experience in handling specifically valid standards. The tool is intended to provide support when searching for an optimum luminaire from the Siteco product range, and among other questions provides answers to the following (example of road lighting): Which luminaire complies with the specified lighting class, and with the widest mast distance? Which luminaire complies with the specified lighting class with the lowest energy consumption per meter? Which lighting class is complied with by a luminaire for a specific road configuration? The result can be printed out via “output” or saved as a PDF.

Direct link to the Siteco Lighting Tool: www.siteco.com/lighting-calculation