

PHILIPS
dynamalite

Hospital

Application Guide



Human-centric lighting solutions for hospitals

Support health and well-being with intelligent lighting control

Introduction

Historically, hospitals have utilized simple lighting control, comprising standalone room control and switching/dimming through conventional wall switches. However, separate-room infrastructures such as this cannot offer the modern benefits of multifunctional sensor control, energy management, or intelligent maintenance. By comparison, the Dyalite system presents a future-proof, flexible, scalable, and energy-efficient lighting solution, capable of real-time system status updates and fault reporting. As well as enabling automated responses and light scheduling, Dyalite delivers greater flexibility for occupants to control their immediate environment.

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Connected lighting – an intelligent approach

You cannot overstate the importance of having the right lighting that works for you in every situation.

By implementing an intelligent lighting system that applies the correct level of light as required, you can move to a sustainable, low-impact lighting solution that helps you meet energy consumption and carbon emissions targets, legislative requirements, and can substantially reduce your expenditure while improving comfort for patients and staff.

The success of any intelligent lighting system depends on four principal stages: system design, installation, commissioning, and maintenance. All four factors affect user experience as well as ongoing savings. The Dyalite system combines several controls strategies to improve energy performance by up to 55%, and up to 80% when paired with energy-efficient LEDs.

The Dyalite system can scale up or down to meet the needs of your project. Solutions range from local networks targeting a specific room or department to fully integrated systems that cover an entire building or campus.

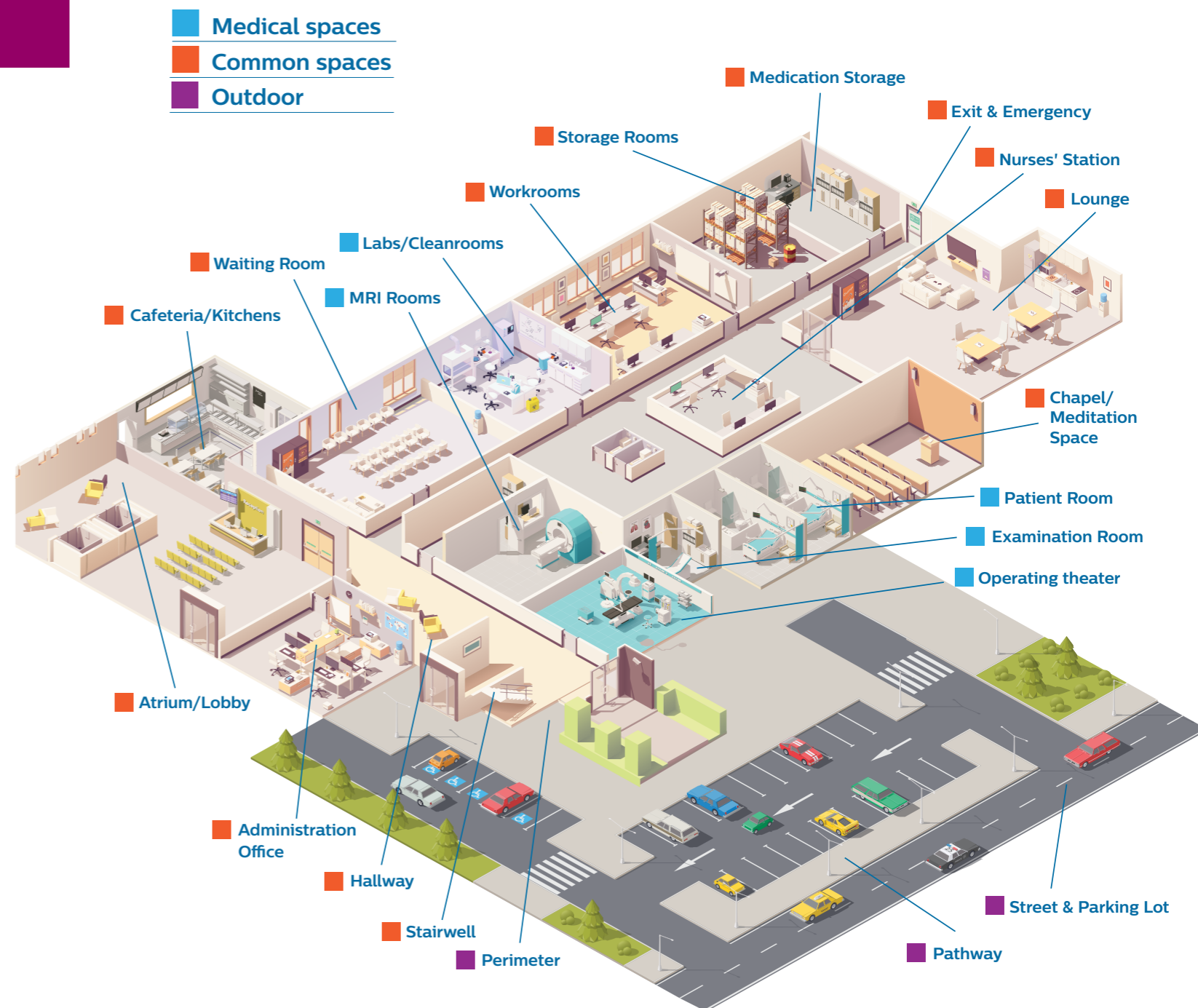
Automated monitoring of connected devices and luminaires provides valuable analytics – such as intelligent energy calculation and shared occupancy information. This monitoring functionality also enhances maintenance operations, with proactive alerts and intelligent reporting on device errors, lamp health/run-time, and other vital system information. Integration with third-party systems such as HVAC and motorized blinds provides total control via a single unified interface.

The Dyalite system delivers optimal building performance to ensure maximal comfort, easier maintenance, and minimal energy usage, with the flexibility and scalability to accommodate future expansion or restructuring.

Functional segmentation

Hospitals are made up of a large number of different kinds of rooms. Many of these – restaurants, administration rooms, lobbies, etc., can also be found in other large public buildings and, from a lighting point of view, are not very different. Many others, however, are completely unique to the hospital environment, such as patient wards, examination rooms, imaging rooms and operating theatres. Lighting for such a variety of spaces presents a significant challenge.

The European standard (EN12464-1) for the lighting of indoor workplaces, defines nearly 50 different healthcare premises, all with their own, often widely differing, lighting requirements. For example, the required level of maintained illuminance varies from 5 lux for night lighting (observation lighting) in maternity wards to 5000 lux in the pathology lab. In the operating theatre it is even higher – between 10,000 and 100,000 lux on the operating table.



See what light can do

for your staff and patients



“Today’s healthcare consumers are well informed and expect better choices. They want hospitals to be welcoming and efficient places to go for treatment. They expect to be offered customized care and high levels of service.”

System outline

A Dynalite lighting solution offers digital communication, occupancy control, daylight harvesting and configurable lighting level presets tailored to each room. The system is set up to optimize background lighting levels automatically, while enabling staff and patients to override default settings for specific tasks or to enhance the ambience.

The Dynalite portfolio includes bio-adaptive lighting control that cycles the light intensity and color temperature over the course of the day to mimic natural light. This has been demonstrated through trials and research to improve the sense of well-being for both patients and staff. Patients are able to fall asleep faster and sleep for longer, with measurable elevations in their mood, as measured by HADS (Hospital Anxiety and Depression Scale) scores.

Our healthcare lighting solutions use the natural power of light combined with an intelligent networked system to provide advanced lighting strategies and scientific light recipes for high-quality, glare-free relaxation, recreation, or work. The system also improves patient and staff satisfaction.

Light levels are typically higher than normal for indoor environments, but much lower than light levels experienced outdoors. Patient sensitivity to hospital lighting conditions can vary greatly, especially when influenced by illness, anxiety, or certain medications.

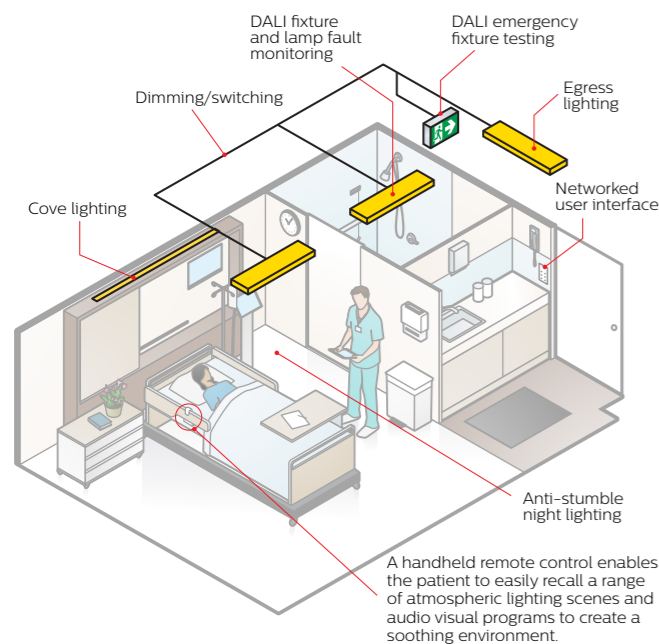
With the press of a button, hospital staff can override the automated day-rhythm lighting curves to better serve patient needs such as post-surgery rest.

Key components

User interfaces are a key component of Dynalite healthcare systems. Patients represent a transient user base, so user interfaces can be custom designed to provide new users, even those in a confused or distressed state, with simple, intuitive access to the controls they need.

As well as providing easy-to-operate user interfaces, Dynalite offers the flexibility for use in both new and retrofit applications. The system architecture allows the installer to add new sections without disrupting any elements of the existing lighting control infrastructure. This ability facilitates the organic growth of the lighting system over time without any detrimental effects in the day-to-day running of the hospital.

Patient room example



- Comprehensive solution, comprising digital lighting, multifunction sensors, smart user interfaces, real-time clocks, software, remote monitoring, and active alarms.
- Hugely scalable platform with efficient wiring topology that supports integration with third-party systems.
- Supports all fixture types with a wide range of control options.
- Delivers optimized energy management efficiencies.
- Encompasses state-of-the-art reporting and maintenance planning.
- Enhances comfort for staff and patients alike.
- Simplifies control of lighting, drapery, heating, cooling, and fans in one reliable integrated system.

Scalable Architecture

Software

System Manager head-end software provides a central overview of system performance and highlights outstanding or imminent maintenance issues, catered to the needs of each user.

Through our intuitive software, users can self-manage maintenance and reconfiguration of the system throughout its lifetime, without the need for rewiring or calling out an engineer or electrician.

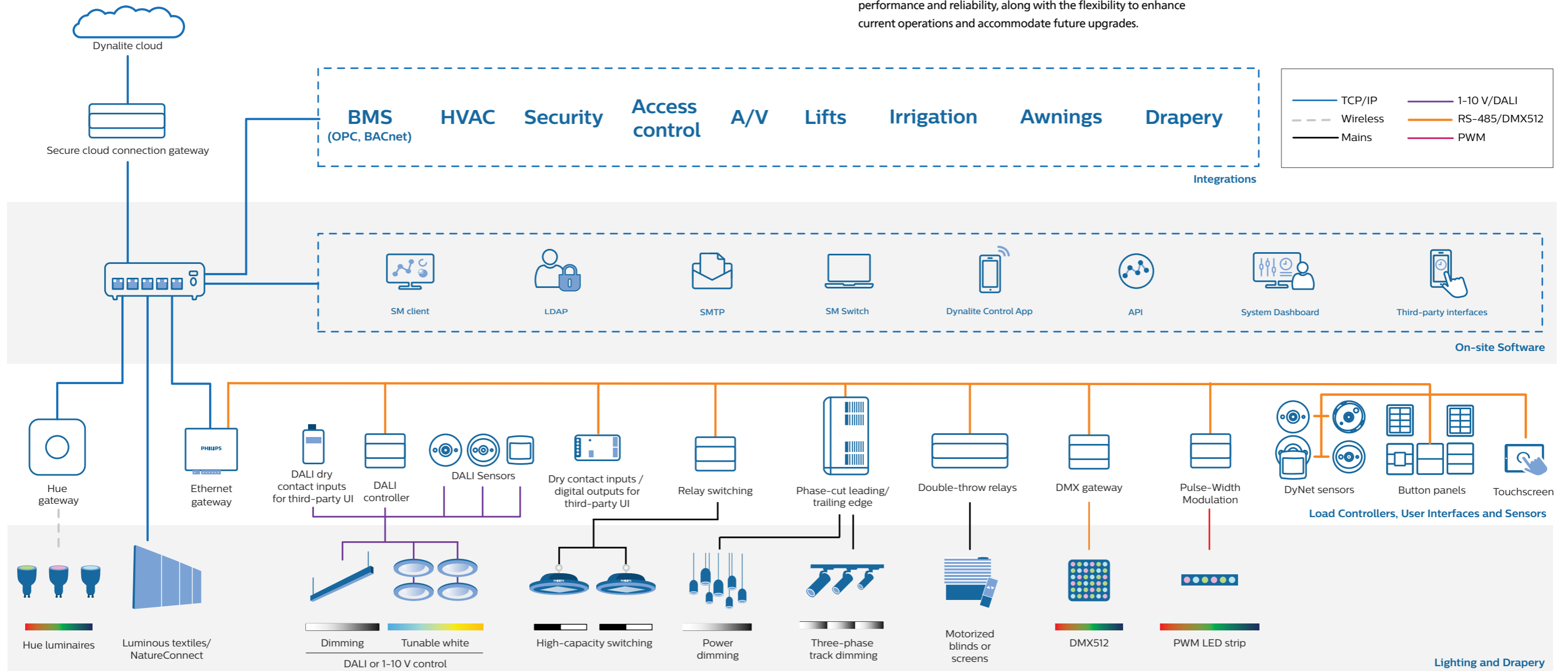
Connected system

Dynalite's Ethernet backbone incorporates the latest technologies to support a future-proof system. The multicast nature of the topology further ensures the highest possible level of operational performance and reliability, along with the flexibility to enhance current operations and accommodate future upgrades.

The Dynalite solution features layers of control to promote usability, while its BACnet/Modbus/OPC capability supports seamless integration with building management systems (BMS).

Multifunction sensors facilitate the switching, dimming and color control of lights in unoccupied areas while maintaining lit pathways, and real-time clocks manage scheduled lighting events. Sensor behavior is tailored to the needs of each room type, occupancy, daylight levels, and time of day. By automating the majority of functions, the system frees your staff to focus on patient care.

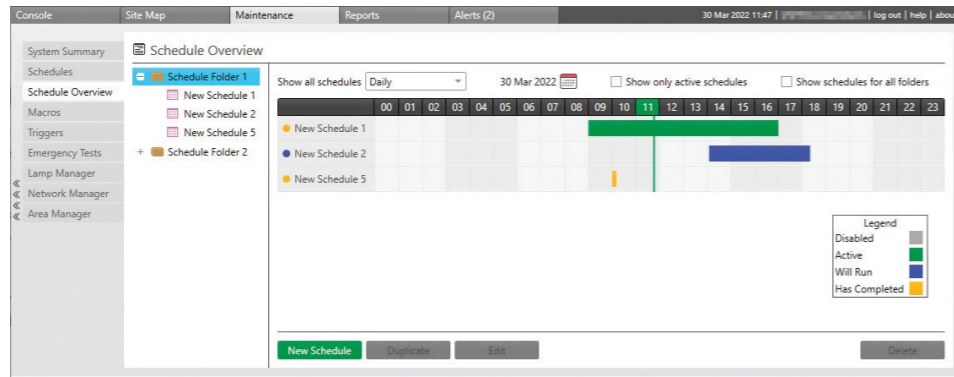
Distributed intelligence supports reliability, enabling each area to operate independently, while our broad range of products ensures that the Dynalite system can meet the precise needs of each unique application.



Automating the system with schedules and sensors provides error free operation

Scheduling

Scheduled scene selection frees staff from needing to manually set the lighting for routine hospital activities. With our intuitive software, different users can create schedules to control their own areas of your healthcare facility. You can cater for weekdays and weekends, changing seasons, public holidays, and special events.



Schedules can be based on date, time, and sunrise/sunset throughout the year.

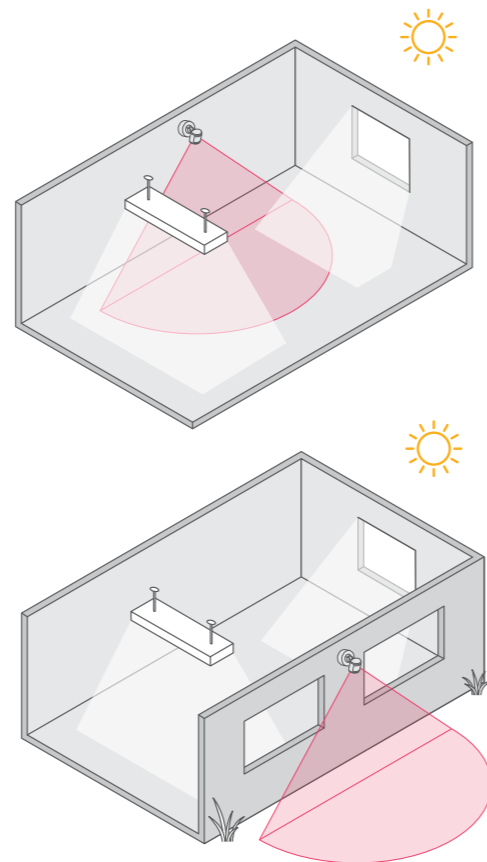
Sensor Light Detection

Daylight harvesting (closed loop)

A sensor positioned near a window or skylight monitors combined natural and artificial light, dynamically adjusting nearby luminaires to maintain consistent lux levels while saving energy.

Remote lux level (open loop)

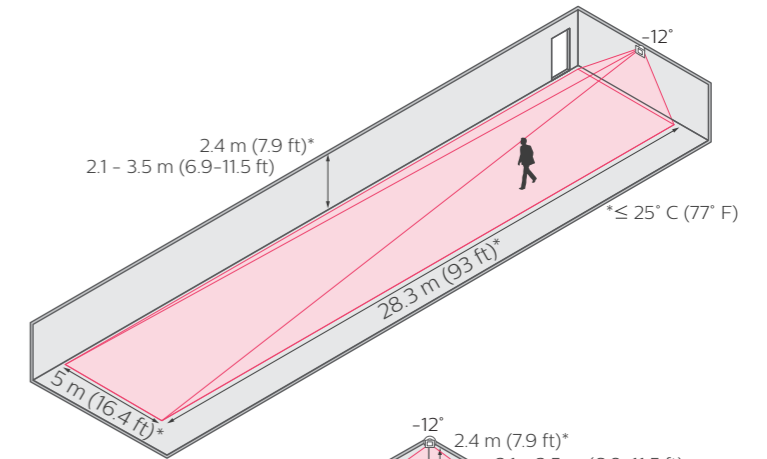
A sensor monitors light levels in one location and automatically adjusts luminaires in another. This feature enables intelligent system behaviors to enhance occupant comfort and safety, such as mimicking natural daylight in enclosed spaces, automatically brightening carpark lighting during storms, or matching lux levels across adjoining rooms.



Sensor Motion (Occupancy) Detection

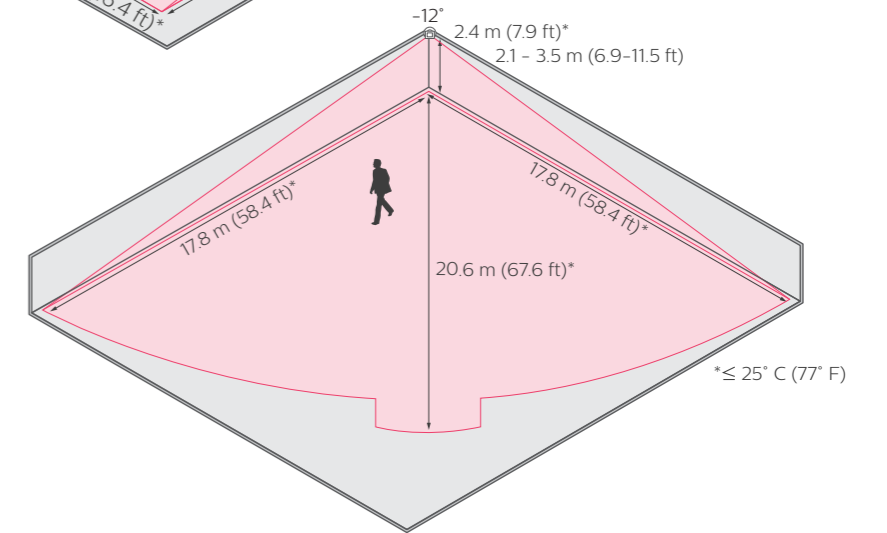
30° scan pattern

Wall/ceiling-mount sensor with IP54 rating and multiple mounting options. The sensor detects movement and responds with the programmed actions. Suitable where a long detection area is required. Available with DALI or RS-485 interface.



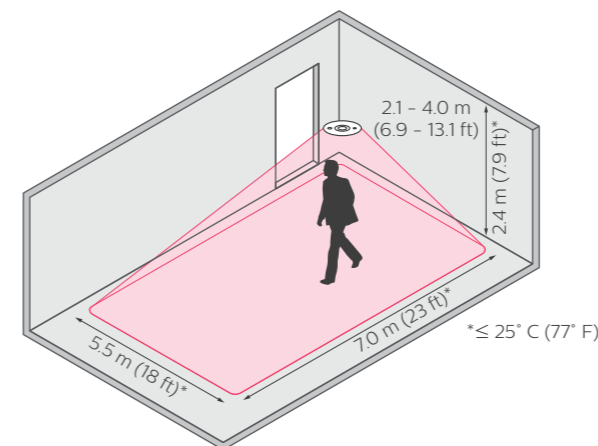
90° scan pattern

Wall/ceiling-mount sensor with IP54 rating and multiple mounting options. The sensor detects movement and responds with the programmed actions. Suitable where a wide detection area is required. Available with DALI or RS-485 interface.



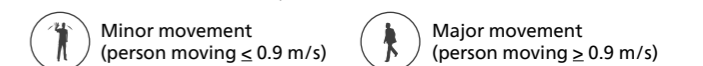
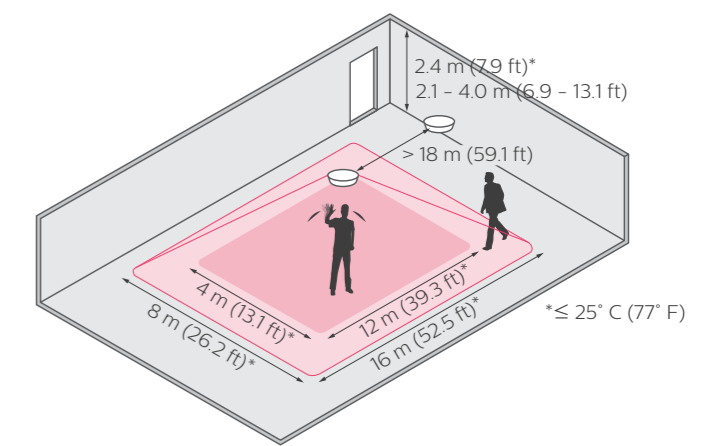
360° scan pattern

Recessed or surface ceiling-mount sensors detect movement and respond with the programmed actions. They are suitable for most room types and accommodate different ceiling types and heights. Available with DALI or RS-485 interface.



360° PIR and ultrasonic scan pattern

Surface ceiling-mount sensors detect movement with a combination of PIR and ultrasonic sensing, responding with the programmed actions. They are suitable for complex room shapes and can sense through walls if required. Available with RS-485 interface.





Hospital application examples

Façade

Just as a hospital's interior lighting influences perceived comfort and quality of service, façade lighting is equally important in creating a good first impression.

Functional lighting safely guides patients and staff to and from the hospital, whilst decorative lighting showcases the architecture and aesthetics of your building.



Gift Shop

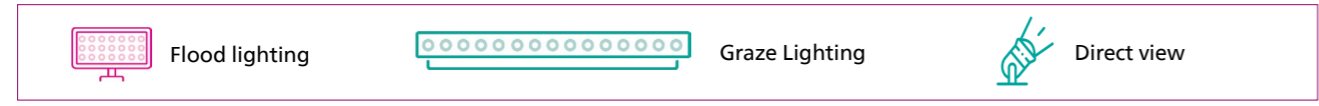
You can create a memorable customer experience that encourages spending, loyalty and repeat visits. The control system provides both functional and experiential lighting, enabling your retail location to shine in the best possible light.



Elevation view of a typical façade



- Patient and visitor needs**
 - Easy to identify building
 - Well-lit entrance
 - Safe and friendly feeling
- Staff needs**
 - Pride in working in a prestigious building
 - Minimal light pollution
 - Soothing atmosphere



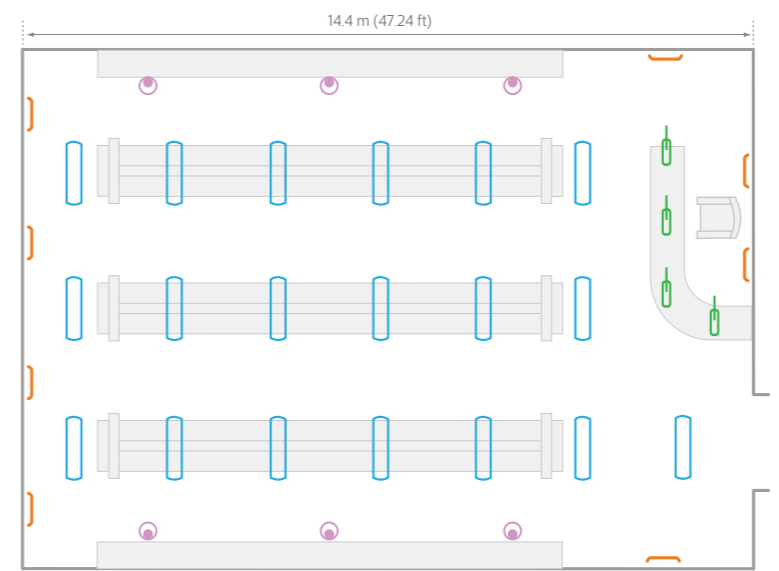
Building your vision

LED lighting offers unprecedented design freedom with color, dynamics, granularity, architectural integration, and energy efficiency, opening up new possibilities for brand building and ambience creation, including dynamic highlighting and color effects. Architectural outdoor lighting can effectively turn your building into a prominent landmark, a living symbol of care and hospitality.

Control features

- Save energy by synchronizing external lighting with sunrise and sunset.
- Slowly transition between custom scenes and colors.
- Design default scenes to enhance hospital brand and image.
- Entrance lighting effects create an open and inviting ambience to foster a safe and friendly atmosphere for staff and visitors.
- Trigger dynamic light shows to mark key holidays.
- Create, amaze, attract, interact, and more. Almost anything is possible with your imagination and architectural lighting.
- The system can monitor lamp failures to ensure building signage remains prominent and entrances are safely lit at all times.

Plan view of a typical gift shop



- Patient and visitor needs**
 - Welcoming ambience
 - Support interaction at the counter
 - Provide clear product visibility
 - Safely navigate around the shop
- Staff needs**
 - Set a brand-specific tone
 - Good task light for work behind counter
 - Reduce staff burden and errors with automation
 - Reduce operational costs

Good retail lighting highlights the merchandise and prevents dark shadows so the shop feels safe, comfortable, and inviting. The store remains bright and welcoming during opening hours. After closing, the lighting across the sales floor is turned off while the shop window is dimmed to a warm glow. This saves energy whilst preserving the brand's image.

Changing the lighting settings takes a single button press on a simple, intuitive interface. Dynamic lighting displays attract passing customers, while the Dyalite system's flexibility adapts to layout and decor changes without the need for expensive electrical rewiring.

Control features

- Optimize the appearance of products.
- Highlight zones of interest or promotional displays.
- Guide the customer's eye as they journey through the space.
- Create lighting schedules for time of day, special events, or seasonality.
- Boost employee comfort while they perform their tasks.
- Simple controls in the shop enable authorized staff to manually override automated lighting behaviors.
- Dynamic shop window, light displays.
- User interface with access to PIN-protected configuration menu.
- Optimized lighting scenes enable energy savings combined with effective lighting.
- Scenes for pre-trading / trading / after-trading / night and more.
- Networked to building-wide system.

Entrance and Reception

Entrance halls generally consist of four distinct zones – the entrance area, the reception desk, the waiting area, and thoroughfares into the rest of the building. The entrance hall almost always connects to a restaurant and a shop. The reception desk should be the focal point of the space, so that visitors are immediately drawn to it if they require assistance.



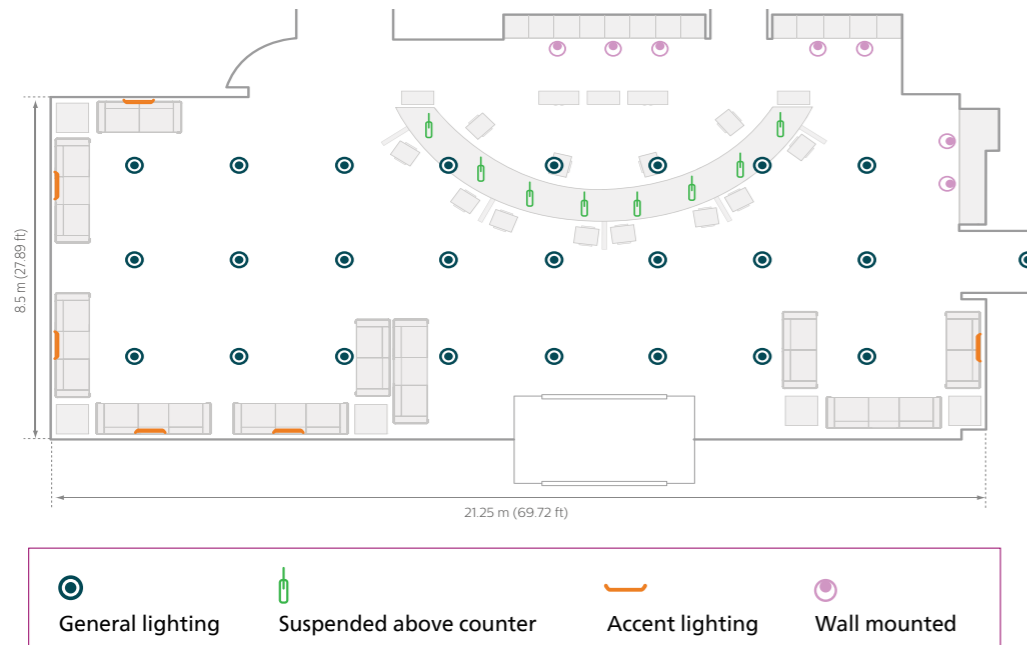
Corridor

Corridors are the arteries of any hospital, providing a means for safe and efficient movement between departments.

Patients and visitors who are on their way to a doctor or specific department naturally benefit from a brightly illuminated corridor and specific lighting to optimize guidance. A well-designed lighting system ensures safety and security for patients, staff and visitors.



Plan view of a typical entrance and reception

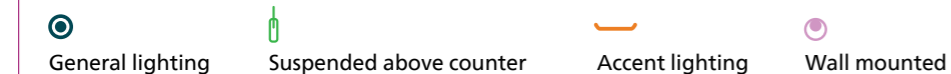


Patient and visitor needs

- Welcoming atmosphere
- Attract and guide visitors
- Support face-to-face interaction at the counter
- Safe comforting environment

Staff needs

- Good task light for work behind counter
- Reduce staff burden and errors with automation



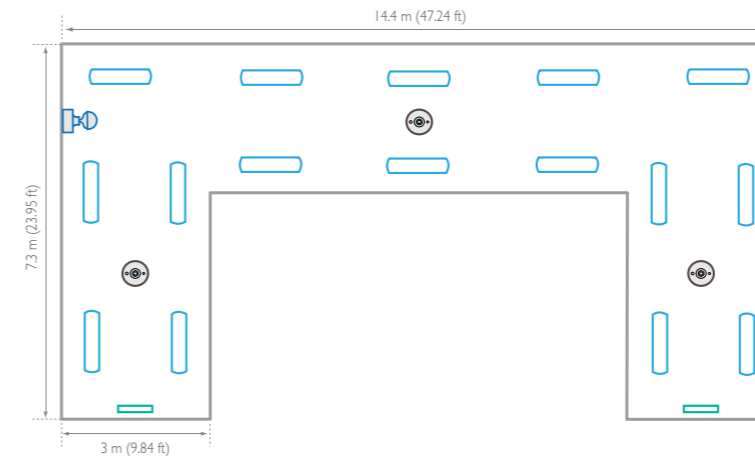
Attractive lighting in the entrance area can make a hospital more inviting and create a positive first impression. A harmonious lighting atmosphere reduces anxiety and enhances comfort. Additionally, patients and visitors are less likely to feel intimidated if they can find their way around easily, supported by lighting that aids wayfinding and orientation.

Combining functional and decorative lighting solutions can include local task lighting for desk work along with more creative light using slow dynamics and soft colors to provide a peaceful atmosphere that makes people feel more at ease.

Control features

- Automated lighting, blinds, and HVAC to support 24-hour activity cycle.
- Daylight regulation is used to save energy in areas exposed to natural light.
- Reception staff have access to their own System Manager console to monitor and control the system.
- Mobile app enables easy control for cleaning staff when walking around the floor.
- UV-C-air disinfection scientifically proven to inactivate bacteria and viruses quickly and safely.
- System uses schedules and alarms, allowing staff to focus on their duties.

Plan view of a typical corridor



Patient and visitor needs

- Guidance, safety, and reassurance
- Connection to outside
- Feeling of cleanliness and hygiene enhances trust in the institution

Staff needs

- Comfort
- Automated behavior
- Energy saving
- Emphasize the different functional areas



In areas where patients, visitors, and staff circulate, factors of key importance are guidance, safety, and reassurance, which can be supported by using diffused homogeneous lighting to avoid dark spots. For corridors where patients are wheeled along on trolleys, it is important to avoid sharp contrasts that may cause discomfort when they are looking upwards.

Corridors provide a perfect opportunity for energy saving: In daytime when the corridors are in full use, lighting can be complemented with daylight regulation to save energy while maintaining a comfortable ambience. After hours, when corridors are less frequently used, the lighting can be dimmed to a lower, but comfortable, level for orientation, and when a person is detected, lights will fade up to normal levels.

For internal corridors that are part of patient wards, bio-adaptive lighting can improve occupant perception and mood by harnessing the positive effects of natural daylight to create a sense of well-being.

Control features

- Sensors and scheduling save energy based on occupancy, time of day, and natural daylight levels.
- Dimmable diffuse lighting helps patients in beds remain comfortable when looking up, especially when already stressed and anxious.
- Illuminated signage and directional indicators.
- Automatic switching to emergency lighting when needed.
- Bio-adaptive lighting supports circadian rhythms and well-being of occupants.
- Automated regular testing for emergency lighting.
- Lighting varies depending on functional area and time of the day.
- Corridor lighting can stay on when adjacent rooms are occupied.
- Responsive maintenance with proactive alerts and failure alarms.

Waiting Room

The waiting room is where patients and their loved ones wait for medical procedures, diagnostic tests, or surgery, and receive updates on the patient's status. It is a place where families can receive emotional support, share information, and prepare for medical decisions. The waiting room can be a stressful environment, so it's important that this space is made as comfortable and soothing as possible.

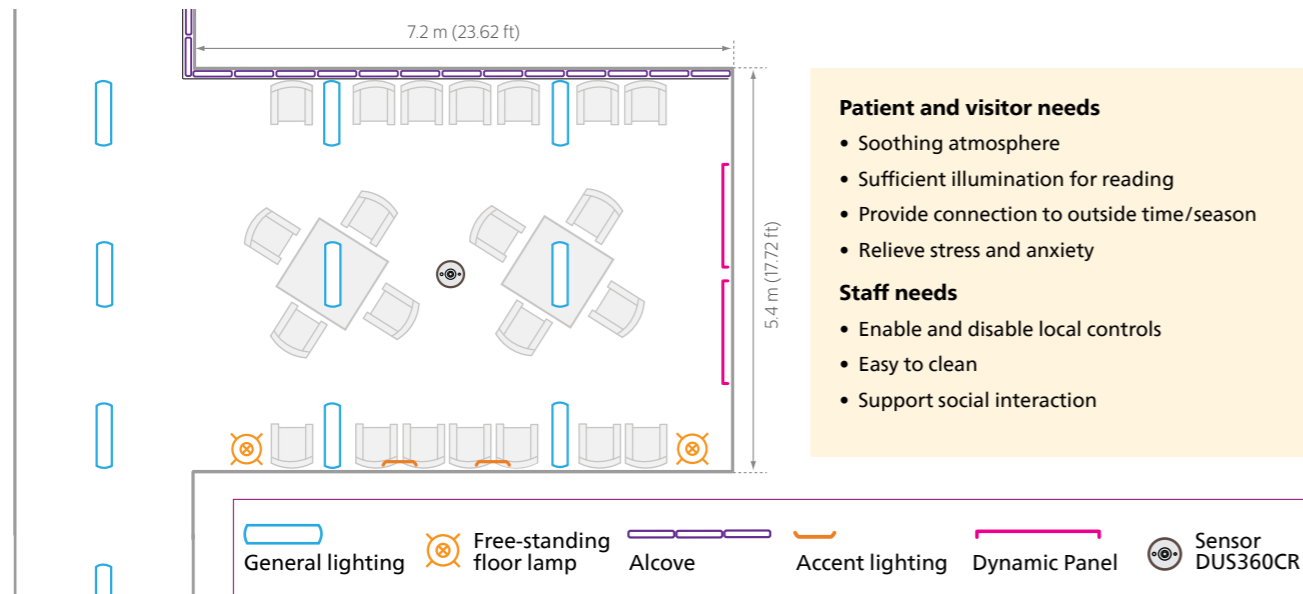


Examination Room

The examination rooms lighting needs to be optimal for evaluating a patient's condition, and easy to adjust to cater for different patient needs. It should also create a safe and comfortable ambience for medical practitioners to discuss the patient's diagnosis and treatment plan.



Plan view of a typical waiting room

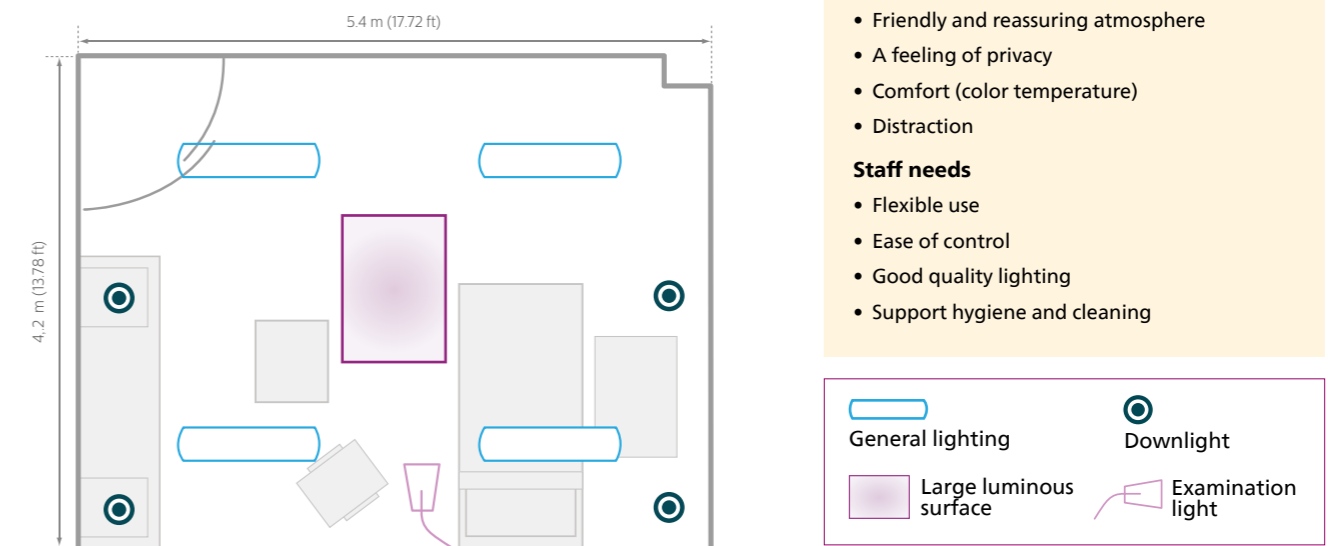


Lighting solutions are designed to create more of a 'domestic' experience with a calming effect on waiting patients and families. This can be achieved using soft glare-free illumination, combining indirect wall lighting and freestanding luminaires. White cove lighting gives the impression of natural daylight to make the area seem more spacious. Accent lighting illuminates pictures, posters, and notification boards and dynamic panels add visual interest.

Control features

- Smart automation connects with staff routines to transition to the right scene at the right time.
- Total room integration with lighting, drapes, HVAC, and entertainment.
- Sensors save energy by harvesting daylight to provide consistent lighting levels and can turn lights off when the area is unoccupied, with or without a partially dimmed grace period.
- Dynamic panels enhance the atmosphere, improve acoustics, and promote a relaxing environment.
- Bio-adaptive lighting can improve occupant experience by using day rhythms to bring the positive effects of natural daylight indoors and create a sense of well-being.
- Intuitive touch-sensitive keypad or touchscreen conveniently placed at room entrance to adjust room services for different activities.
- System Manager can override room settings and enable/disable keypad.
- The system can monitor lamp failures, room temperature, fan speed, blind position, and occupancy status.

Plan view of a typical examination room



To support healthcare workers in the performance of their duties, the system can create a variety of atmospheres with different preset scenes – whether calming to assist with patient conversations or brighter heat-free task lighting for examinations.

Advanced solutions feature optimal task lighting for medical staff and dynamic comfort lighting to enhance patient well-being. Above the examination chair or bed, we can use a combination of dynamic white light and a large luminous surface. On the screen a variety of content can be shown to create a relaxing mood and soothe the patient. Additional downlights are installed to create an optimal lighting level across the whole room.

Control features

- Before and after treatment, the general lighting can fade to a soothing and reassuring warm light, to create a comfortable environment for the patient. This makes the patient feel more at ease and allows staff to work more efficiently.
- Optimal light color and high-quality color rendering assist in examinations and diagnosis, helping staff perform better.
- Implement lighting zones to create a feeling of privacy.
- A large range of brightness to help medical staff to properly evaluate the patient's condition and reduce the risk of errors.
- Large luminous surface light provides a relaxing distraction for the patient.
- Easy controls to adjust the lighting in the room to fit the task or procedure or personal preferences of the user.

Clean Room

Hospital clean rooms are essential for the safe and effective delivery of healthcare. They provide a controlled environment where staff can go between procedures to minimize the risk of infection and cross-contamination. There are a number of factors to consider when designing and operating a hospital clean room, including the type of procedures that will be performed, the level of cleanliness required and the budget.

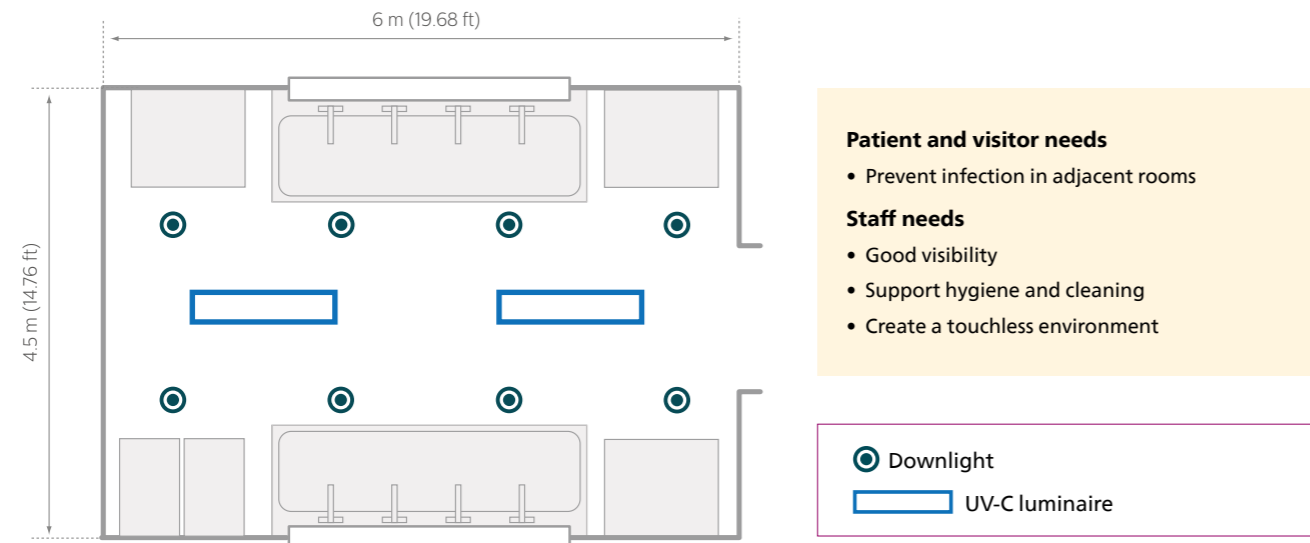


Imaging Room

Lighting brightens the lives of patients and staff alike. Going through a scanning process can be unsettling and patients can feel vulnerable. By creating a calming environment, lighting can help to make this a less anxious experience while at the same time supporting the patient through every step of the process.



Plan view of a typical clean room



The lighting in a clean room must be adequate to provide good visibility for staff, but it must also be designed to minimize the generation of dust and other particles. DALI lighting control is recommended for the required functionality and automated maintenance that hospital staff depend on to perform their critical tasks with patients.

Clean rooms typically have air filtration to remove contaminants, which requires regular cleaning and disinfection. Access control to clean rooms helps prevent the introduction of contaminants. This typically employs a badge system or biometric scanner.

Occupancy sensors respond to entry and exit, setting lighting to a predetermined level so that nurses and physicians do not need to touch light switches within the room.

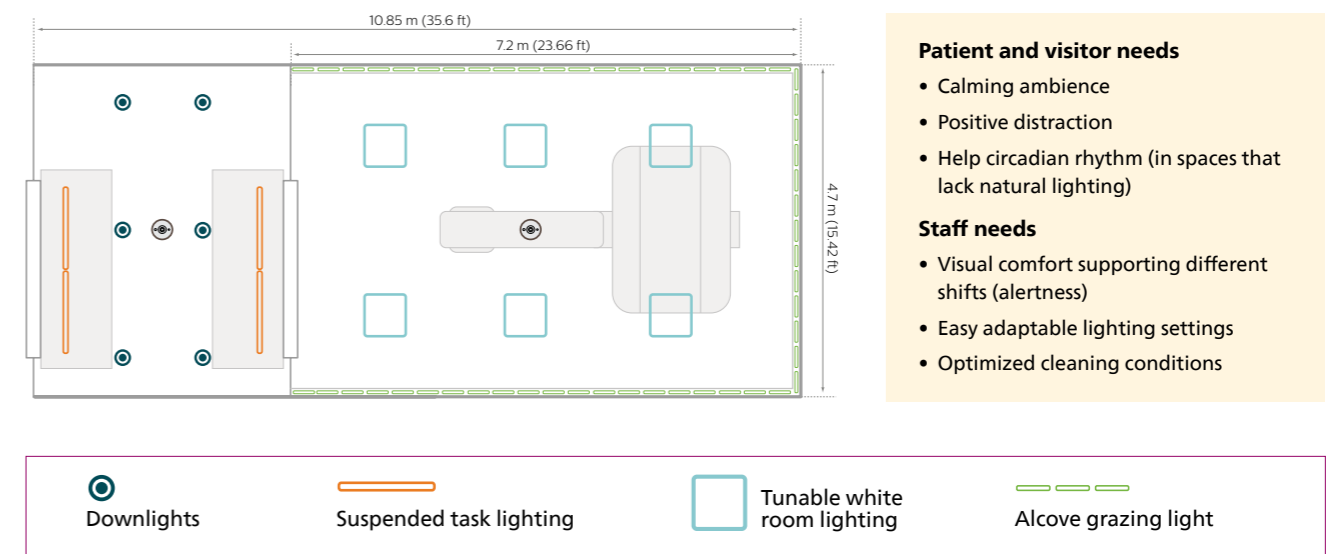
While the clean room is occupied, the lighting control system maintains associated corridor or connecting room lighting so that physicians will not walk into a dark room or be required to touch local user interfaces for required lighting.

The lighting control system supports at least four dry contact inputs connected to common control panels that are used to coordinate other services within the clean room.

Control features

- Corridor linking.
- Occupancy detection automatically turns lights on and off.
- Data from sensors and luminaires enables quick response to issues.
- Dry contact integration enables monitoring and control of third-party services in the room.
- UV-C luminaires for surface or upper air disinfection (must use certified control system).

Plan view of a typical imaging room



To deliver a better patient experience, a standard soft-colored ambient glow is created through indirect cove lighting. This can be combined with a range of options from dimmable and tunable white lighting to colored lighting with integrated multimedia such as music or video projection to further enhance the mood of the room. The whole experience is friendly and accessible, helping your patients feel less intimidated and your staff to perform their tasks efficiently.

Due to the nature of imaging equipment, we use specially designed luminaires that remain unaffected by magnetic fields. Whichever options you choose, the goal is to create an atmosphere that helps patients to relax and facilitates a sympathetic environment for staff to carry out diagnostic imaging.

Control features

- Best-in-class LED lights with very low energy consumption, very low maintenance, and up to 15 times longer lifetime than traditional halogen.
- General lighting is fully dimmable using DALI control.
- Dynamic LED lighting along the perimeter washes the walls with inviting colors.
- Sensors detect when rooms are not in use and after a delay can dim and then turn off the lighting to save energy.
- Convenient control via touchscreen or touchpad.
- Colored lighting and projection options can be selected by the patient to help them to feel more in control, more at ease, and create a positive distraction.
- Smart automation connects with staff routines to transition to the right scene at the right time.
- Cleaning staff can select a bright scene to remove dark shadows and improve visibility and safety.

Patient Room

Staying in an unfamiliar environment such as a hospital room for any length of time can be stressful. Giving patients control over the light settings in their room can help them feel more at home and promote a quicker recovery. The Dynalite system offers customization to suit patient needs while supporting the workflows of medical staff.

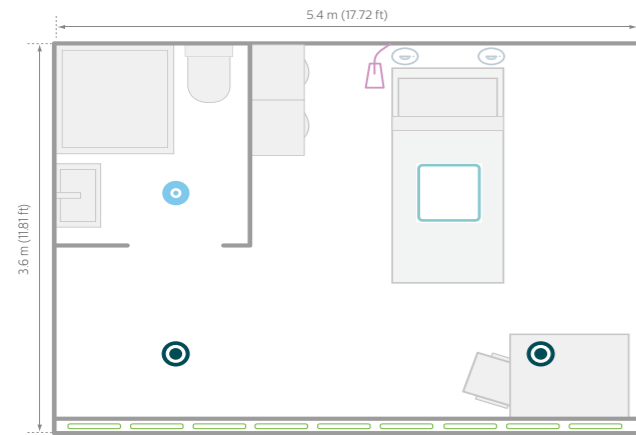


Intensive care

The intensive care unit (ICU) is setup for care of critically ill patients that require close monitoring. The ICU is staffed by highly trained people with a higher staff-to-patient ratio. The main areas of a typical ICU are a central nurse station with visual lines to the ICU patient beds. ICU departments often get little or no daylight, which negatively influences the well-being of patients as well as staff. The challenge for the ICU environment is to create the best environment for patients to recover while optimizing the environment for medical staff to be efficient.



Plan view of a typical patient room



Patient and visitor needs

- Comfortable home-like ambience
- Control over light settings
- Support circadian rhythm
- Short recovery time

Staff needs

- Brightness and accurate color rendering to support medical procedures
- Simple controls
- Minimal patient disturbance, especially at night
- Clean and safe environment



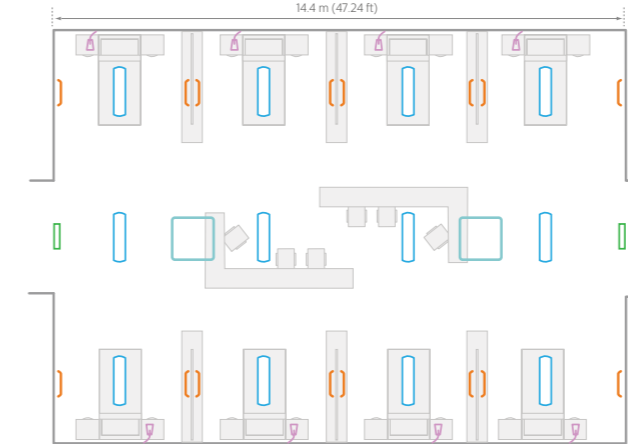
Research has confirmed the impact of lighting on human health. Low-quality or poorly timed light exposure can disrupt our circadian rhythm and interfere with important biological processes. An intelligent networked control system can offer a complete patient room solution with bio-adaptive lighting that simulates the varying patterns of natural daylight. Medical staff can easily override these lighting settings whenever required, such as for examinations and emergencies.

Patients can select their lighting scenes and control blinds, temperature setpoint, and audio-visual equipment to create a pleasant ambience, enhancing the healing environment. At night, anti-stumble sensors near the ground detect the patient's feet on the ground and illuminate a pathway to the bathroom. The light gently fades away when the patient returns to bed. A wall-mounted reading light can be controlled independently and a task light above the table makes the space more open and inviting for visitors, while dimmable downlights in the bathroom provide safe and effective lighting.

Control features

- Bio-adaptive lighting follows daylight rhythms, varying light intensity and color temperature to improve patient mood.
- Patients can control room atmosphere from a single handheld user interface by the bedside.
- A single button press provides quick access to optimal lighting scenes for staff duties.
- Scheduled scene changes support staff routines.
- Ambient colored light in cove opposite the bed provides orientation light at night.
- Anti-stumble sensors.
- Combining LEDs with lighting controls reduces energy usage.
- NatureConnect skylight simulation changes over the course of the day.

Plan view of a typical ICU



Patient and visitor needs

- Feel at home
- Improved sleep and daily activity
- Reduce risk of cognitive problems
- Shorten duration of stay

Staff needs

- Reduce staff stress and fatigue
- Reduce risk of errors
- Minimize impact on patients
- Feel comfortable to interact with colleagues and patient's relatives



The ICU environment tends to be noisy and intimidating and often lacks daylight or outside views. This has negative effects on recovery and long-term outcomes. Up to 75% of ICU patients experience cognitive problems including delirium during or after their admission. To improve recovery and long-term outcomes, the Dynalite system can create a soothing environment with lighting that supports circadian rhythms and improves sleep quality. ICU staff also benefit from connected lighting, having their daily routines supported by lighting fit for the task at hand. Bio-adaptive lighting can relieve stress, reduce fatigue, and help prevent errors.

Control features

- NatureConnect provides calming natural dynamics such as dappled light and random motion seen in nature, to help patients connect with the outside.
- Observation light to avoid disturbing patients, especially at night.
- High brightness and tunable white with 90+ color rendering index (CRI) to facilitate examinations.
- Indirect and task light above nurse station to support computer, reading, and writing tasks.

Neonatal intensive care unit

- Cozy light scenes to support bonding between mother and child that can include dynamic patterns or ambient sounds.
- Easy controls to personalize lighting to the patient or situation.
- Special light recipes based on the infant's needs to avoid intense environmental stimuli like bright light, hard transitions, and noise.
- Lighting in the on-call room helps medical staff to relax or sleep between shifts.

Family Lounge

Family lounge rooms benefit from a relaxed home-like feel where patient's family and friends can socialize and enjoy a moment of respite during a stressful time.

Lighting features such as colorful indirect lighting and dynamic lighting can offer a welcome distraction, helping occupants to feel at ease.

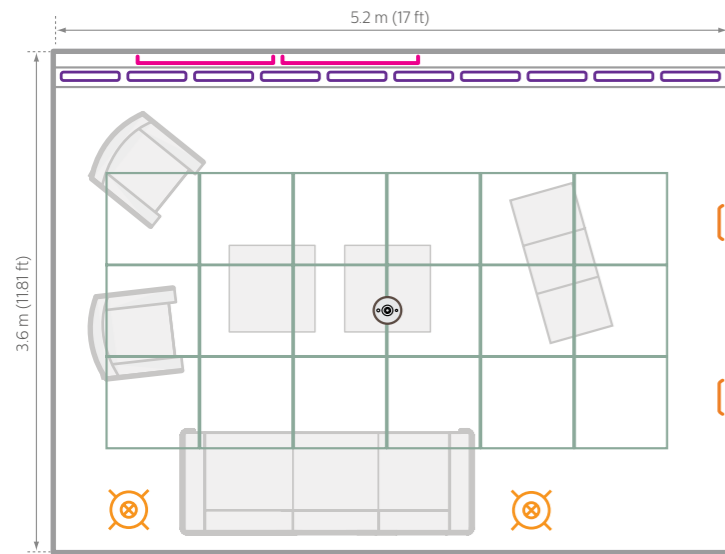


Labor and Delivery

Giving birth is a life-altering experience. Connected lighting can create a calm and supportive environment, allowing the expectant mother to relax and focus on the birth. Scene control via an intuitive user interface allows the color temperature and brightness to be tailored to create the desired ambience. Staff also have task-adaptable lighting to enable them to perform their duties and prioritize care of the mother and infant.



Plan view of a typical family lounge



- LED tile
- Free-standing floor lamp
- Alcove
- Accent wall lighting
- Dynamic Panel
- 360° multifunction sensor

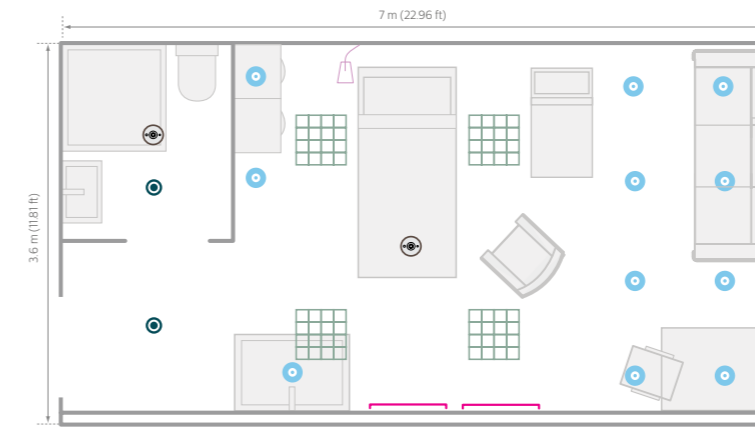
Patient and visitor needs

- Comfortable soothing atmosphere
- Sufficient illumination for reading
- Feel connection to outside time/season
- Distraction from situational stresses
- Social interaction

Staff needs

- Feeling of well-being
- Reduce noise
- Easy to clean

Plan view of a typical delivery room



Patient and visitor needs

- Calming ambience
- Positive birth experience
- Support breathing
- Support different stages of the process (welcome, comforting, breathing, relaxation)

Staff needs

- Automated background behavior
- Easy to clean
- Good visibility for medical procedures

- Wall-mounted luminous textile
- DALI-dimming LED tile
- Bedside lighting
- DALI-dimming downlight
- DMX512 downlight
- Occupancy sensor

The goal is to create a family friendly indoor environment where sound and light behave in a more natural way. General lighting has been created with LED tiles on the ceiling. Besides creating a glare-free, comfortable ambience, the system contributes to good room acoustics and a healthy indoor space. A pleasant ambience is created by the use of floor lamps and alcove lighting which can be programmed in different colors. To help welcome and reassure visitors and patients, two luminous textile panels are integrated into the walls. A single 360° multifunction sensor can save energy by making the most of natural daylight and ensuring lights are off when the room is vacant.

Control features

- Total room integration with lighting, drapes, HVAC and entertainment.
- Sensors can detect occupancy and turn the lights off when the room is not in use. They can also detect natural daylight from nearby windows and adjust the artificial light to achieve the perfect illuminance.
- Dynamic lighting panels enhance the atmosphere, improve acoustics, and promote a relaxing environment.
- Intuitive user interface allows occupants to adjust room services for different activities.
- Bio-adaptive lighting can improve occupant experience by using day rhythms to bring in the positive effects of natural daylight and create a sense of well-being.
- System Manager can monitor lamp failures, room temperature, fan speed, blind position and occupancy status.

The use of lighting, sound and imagery in delivery rooms is based on developments over many years. This is intended to calm and reassure women in labor, enhancing the birthing experience for the mother as well as attending family and loved ones. Lighting is designed to avoid glare on the patient's face while supporting medical staff to assist with the birth. Luminous textile panels with specially developed programs create a sense of peace and harmony. Soothing tones, color-changing lighting, and imagery on the walls produce a calming and stimulating ambience to benefit patients, families, and staff.

Control features

- Luminous textile with moving images and sound.
- Indirect lighting to avoid glare.
- Dimmable DALI LED examination lights in the ceiling around delivery area.
- Recessed DMX512 downlights for RGB mood lighting.
- Preset lighting scenes to support different stages.
- Dimmable DALI downlights in bathroom and near entrance.
- Sensors save energy by automating lighting behavior based on occupancy, turning the lights on and off.
- Color touchscreen with custom pages specifically designed for delivery room lighting control.
- Handheld remote control by the bedside.

Nurse Station

From the moment patients and visitors approach a nurse station area, it is important that they feel comfortable and at ease.

The nurse station is the heart of the floor and needs a well-lit work area 24/7 for staff to exchange information with colleagues and with patients and their family. Natural lighting creates a welcoming ambience and helps connect with outside to improve staff well-being and reduce stress.



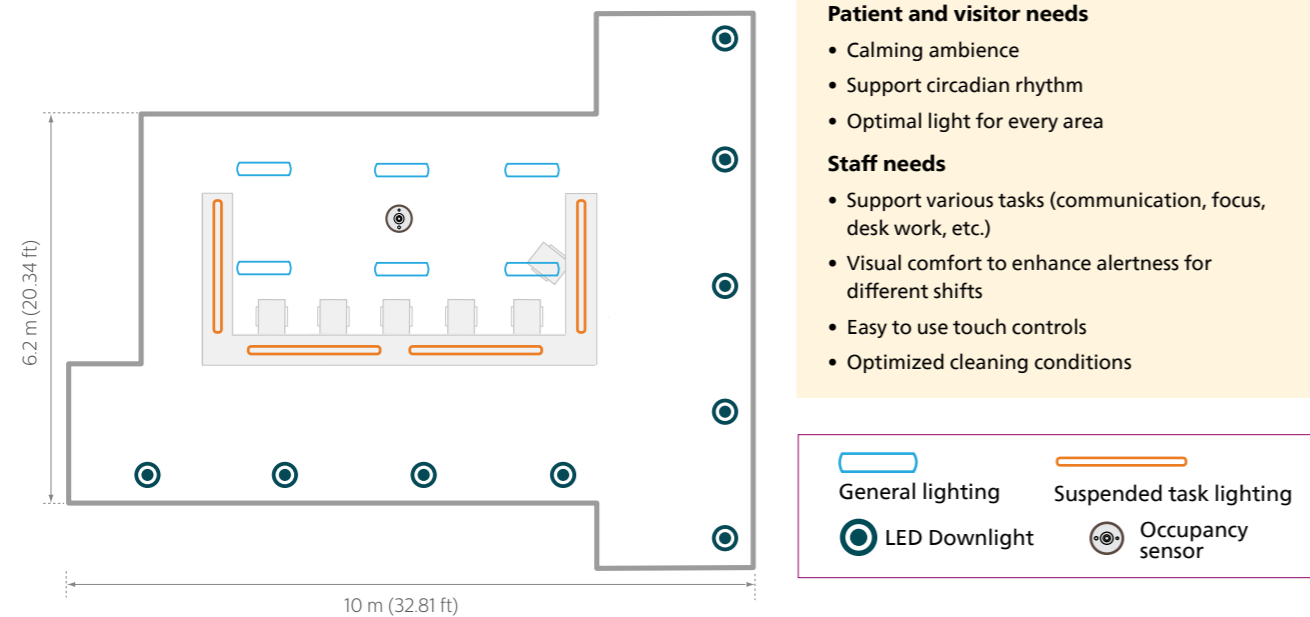
Operating Theater

In operating theaters, it is vitally important to have optimal settings for lighting, sound, ventilation, temperature and humidity. A team of skilled surgeons and nurses is less likely to make mistakes when they are comfortable, have clear communication and good visibility.

The controls must be designed to maintain a safe and clean environment for surgery, which helps to reduce the risk of infection and provides patients with the best possible care.



Plan view of a typical nurse station



Above the desk, suspended luminaires provide effective task lighting. Using simple button or touch controls, the lights can be set to meet the personal needs of staff. This can prevent fatigue, reduce errors, and create a pleasant working atmosphere. Automatic or manual dimming makes the entire area feel more spacious and accessible.

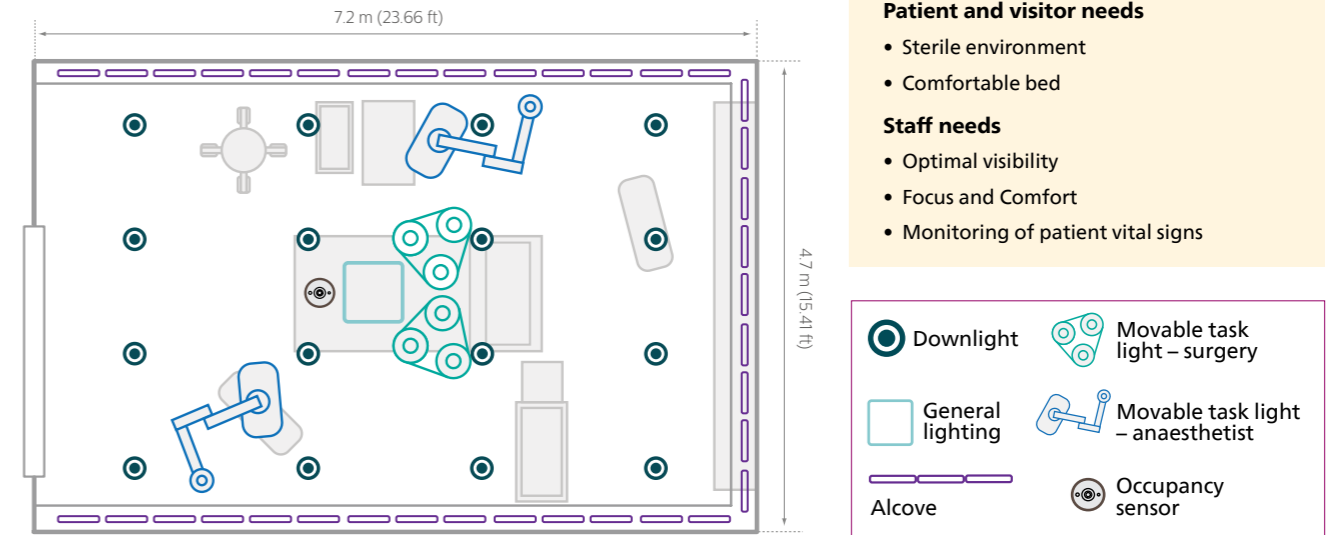
From the nursing station PCs, the lighting control system client software allows staff to monitor each patient's room lighting, temperature, blind position, and occupancy status with easy-to-follow icons.

A button or touch user interface can be mounted near the nursing station to perform hallway lighting override after hours. This user interface is automatically disabled during daylight hours to avoid accidentally turning off the hallway lighting.

Control features

- High quality downlights reduce glare and have no flicker, with a color rendering index (CRI) of 80+.
- General lighting is fully dimmable using DALI control.
- Simple button or touch interface on the wall.
- Scene selection to suit different activities.
- A sensor detects when the station is unattended and after a delay can dim and then turn off the lighting to save energy.
- Bio-adaptive lighting simulates the outdoor environment, encouraging a sense of well-being.
- Cleaning staff can select a bright scene to remove dark shadows and improve visibility and safety.
- Lighting can respond dynamically to alarms and schedules.

Plan view of a typical operating theatre



Operating theaters benefit greatly from DALI lighting control, which delivers dependable lighting performance that hospital staff need to perform their critical tasks with patients.

The lighting control system supports D4i DALI drivers with data on their expected lifespan and operating temperature. The Dynalite system uses this data to predict potential driver and lamp failure, with alert notifications via the System Manager head-end software. Hospital facility management can define notification thresholds to perform preventative maintenance actions and proactively replace aging drivers.

DALI RGBWAF control provides ultimate flexibility in lighting options. From a locally mounted user interface, occupants can select from a series of presets to change the lighting level, color temperature, and other room settings. Button labeling with icons and/or text in the local language ensures ease of use for all staff.

While the operating theater is occupied, the lighting control system maintains associated corridor or connecting room lighting so that physicians do not walk into dark rooms or need to touch user interfaces for required lighting.

Control features

- Luminaires have good light intensity and the right spectral content.
- Light is filtered to remove UV radiation, which can damage tissues.
- Sensors provide occupancy detection and corridor linking for safety and hands-free functionality.
- Dry contact inputs are integrated into common control panels that are used to coordinate the entire operating theater.
- Local network control ensures lighting continues to operate independently of the main network.
- Driver and lamp data is proactively monitored by the head-end software.

Recovery Area

The recovery area is where patients typically go after a procedure, allowing them to wake up from a general anesthetic. A central nurse station with visual lines to the patient beds allows nurses to monitor each patient and provide follow up care. Beds are typically separated by curtains for privacy with separate controls for lighting in each bay. Lighting control plays an important role supporting medical staff in their duties and helping patients to recover by maintaining a safe yet nurturing atmosphere that supports their circadian rhythm and improves sleep quality.

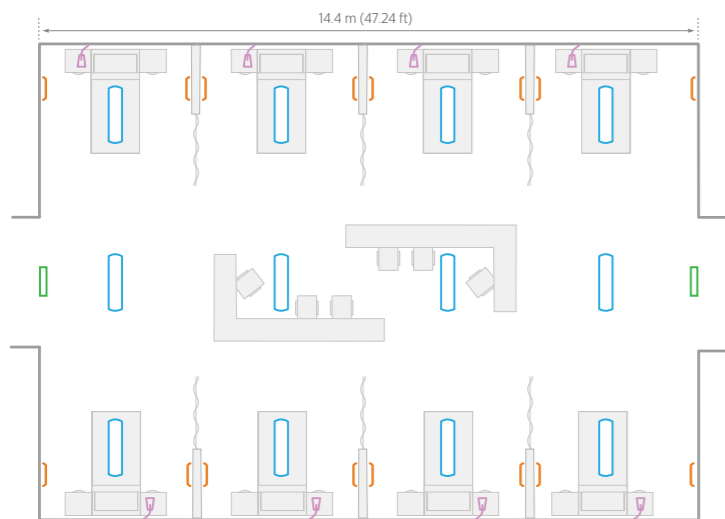


Medication Storage

The safe and secure storage of medications is essential to the quality of patient care. Hospitals require a controlled environment to store a wide variety of medications. For example, temperature-sensitive medications are stored in refrigerators or freezers, and hazardous medications are stored in locked cabinets. Access to the medication storage room is restricted to authorized personnel and the room is equipped with security measures, such as security cameras and alarms, to prevent theft or tampering.



Plan view of a typical recovery area

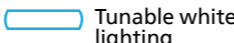
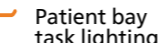
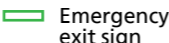



Patient and visitor needs

- Feel at ease.
- Improved sleep and daily activity
- Shorten duration of stay

Staff needs

- Reduce staff stress and fatigue
- Reduce risk of errors
- Minimize impact on patients
- Foster comfortable interaction with colleagues and patient's relatives

 Tunable white lighting	 Patient bay task lighting
 Emergency exit sign	 Bedside lighting

Using simple button or touch controls, the lights can be set to meet the personal needs of staff at the nurse station. This can prevent fatigue, reduce errors, and create a pleasant working atmosphere. Automatic or manual dimming makes the entire area feel more spacious and accessible.

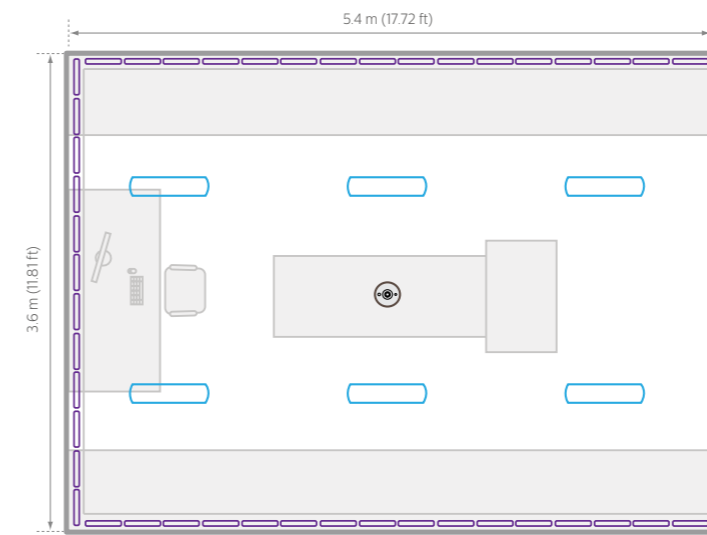
From the nursing station PCs, the lighting system client software enables staff to monitor and control the room lighting with easy-to-follow icons.

A button or touch user interface can be mounted in each bay to enable task lighting for different activities such as reading and examinations.

Control features

- High quality downlights reduce glare and have no flicker, with a color rendering index (CRI) of 80+.
- Bio-adaptive lighting simulates the outdoor environment, encouraging a sense of well-being.
- General lighting is fully dimmable using DALI control.
- Cleaning staff can select a bright scene to remove dark shadows and improve visibility and safety.
- Simple button or touch interface on the wall.
- Lighting can respond dynamically to alarms and schedules.
- Scene selection to suit different activities.
- A sensor detects when the station is unattended and after a delay can dim and then turn off the lighting to save energy.

Plan view of a typical medication room






Patient and visitor needs

- Fast and reliable dispensing of medicines

Staff needs

- Adequate illumination of storage shelves
- Good visibility to read labels.
- Secure access

 General lighting	 LED strip lighting
 Motion Sensor	

Medication rooms rely on highly organized storage, access control, and strict procedures. The lighting is critical to help staff select and handle medications correctly. DALI lighting control is recommended to provide the required control and automated maintenance that hospital staff depend on.

LED strip lighting on each shelf ensures a consistent illumination in each part of the room and a wall mounted keypad enables manual control of shelf and room lighting.

Motion sensors respond to entry and exit, automatically setting lighting to a predetermined level. While the storage room is occupied, the lighting control system also ensures that associated corridors and connected rooms remain lit.

Control features

- Corridor linking keeps the corridor lights on when the room is occupied.
- High quality general lighting reduces glare and has no flicker, with a color rendering index (CRI) of 90+.
- Occupancy detection automatically turns lights on and off to save energy and ensure staff are never in the dark.
- Access control integration automatically recalls optimal lighting for cleaning staff upon entry.
- Data from sensors and DALI luminaires enable fast response to issues.

Administration Office

Good office lighting design can play a significant role in improving the work environment by creating a relaxed or uplifting ambience.

Dimming and tunable white luminaires improve visual comfort and reduce glare. Paired with energy-efficient LEDs, connected lighting can reduce light-related energy costs by up to 80%.

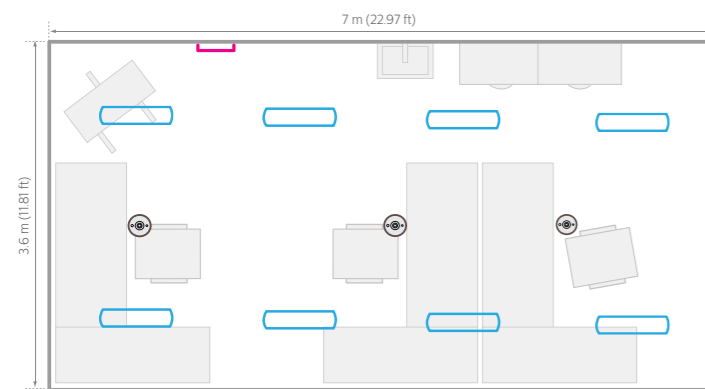


Cafeteria

A cafeteria presents a convenient and affordable way to feed hospital staff, patients and visitors. It offers a sense of normalcy by offering a place to eat, relax, watch TV and socialize. In some cases, hospital cafeterias can generate revenue for the hospital to offset running costs and provide additional resources for patient care.



Plan view of a typical administration office

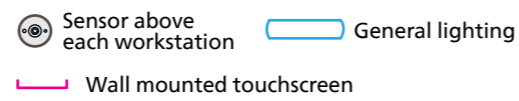


Patient and visitor needs

- Safe comforting environment
- Support face-to-face interaction

Staff needs

- Support circadian rhythm
- Easy to adjust light settings for different tasks
- Prevent fatigue and reduce stress



DALI tunable white luminaires and daylight sensors automatically regulate artificial light levels based on distance from the window, and adjust the color temperature to suit the time of day. Daylight harvesting functionality automatically activates one hour after sunrise and deactivates one hour before sunset. After an area is vacated, the lighting system turns off the lighting and notifies the BMS to shut down other services such as HVAC. On the next occupancy detection, the lighting control system restores HVAC settings and adjusts the color temperature to the automated level for the time of day. The lighting control system is responsible for driving automated blinds to ensure that glare from the rising or setting sun is kept to a minimum.

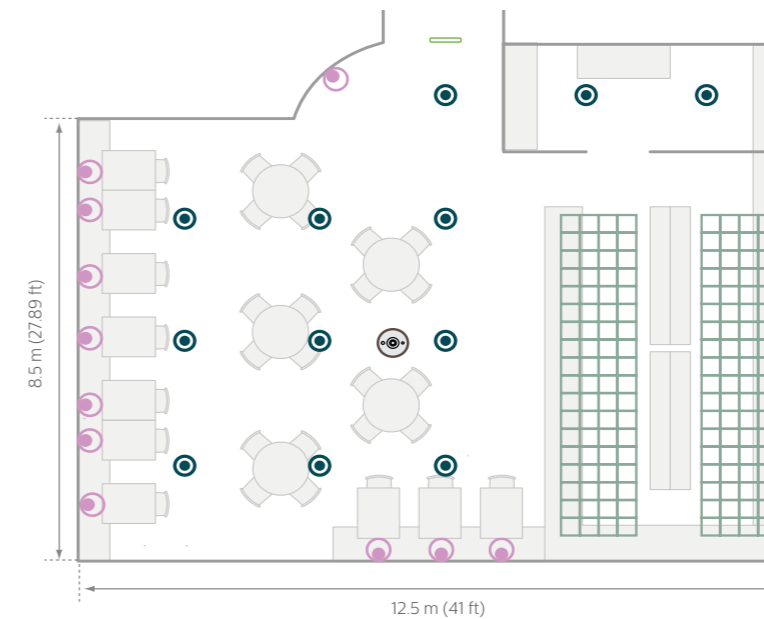
Single offices, meeting rooms, and breakout areas each have a local user interface (keypad or touchscreen) to allow staff to override the system's current lighting scene and edit stored scenes.

Multifunctional rooms for sharing information, presenting, education, and team meetings support direct integration to the AV system via RS-232 or RS-485 so that when the AV system is triggered the lighting control system can simultaneously open/close the blinds, raise/lower the projection screen, turn on the projector, and select a suitable lighting scene.

Control features

- DALI tunable white luminaires with scientific light recipes to improve alertness, focus and calmness.
- Daylight harvesting with separate window and corridor algorithm saves energy in areas exposed to natural light.
- Automated control of lighting, window coverings, and BMS/HVAC systems.
- Wall mounted keypad or touchscreen for saving levels and recalling scenes.
- Advanced occupancy control per workstation.
- Bio-adaptive lighting automatically mimics daylight patterns according to the time of the day.
- Desktop app for remote control of individual workstation lighting.
- Software for centralized management and monitoring of your entire lighting system.

Plan view of a typical cafeteria

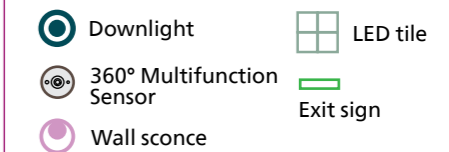


Patient and visitor needs

- Comfortable soothing atmosphere
- Sufficient illumination for dining
- Social interaction
- Distraction from situational stresses

Staff needs

- Comfortable lighting for reading
- Feel connection to outside time/season
- Easy to clean



Tunable white DALI luminaires dynamically adjust light intensity and color temperature to create a friendly indoor environment where light behaves in a more natural way. To welcome and reassure occupants, wall sconces produce a pleasant glare-free ambience. Automated scene changes reduce reliance on manual intervention by staff and deliver an imperceptibly smooth transition between breakfast, lunch, and dinner sessions.

A single 360° sensor provides daylight harvesting functionality. This is automatically activated by a scheduled system event one hour after sunrise and deactivated one hour before sunset.

User interfaces installed behind the counter allow local overrides such as preset scene selection, ramping up/down of different sections, ramping of color temperature, and raising/lowering blinds. A touchscreen provides authorized staff with access to scene editing via password/PIN. Lighting scenes are stored within the load controllers and not the touchscreen so that the edited scenes can be recalled from other user interfaces or scheduled events. The system also monitors scene status, lamp failures, room temperature, and blind position.

Control features

- Total room integration with lighting, blinds, HVAC, and entertainment.
- Sensors save energy by harvesting daylight to provide consistent lighting levels.
- Selection of user interfaces with custom icons/labeling.
- Bio-adaptive lighting enhances the atmosphere by mimicking natural daylight.
- Downlights over the counter highlight food displays.
- Emergency lighting provides an egress pathway during evacuation.

Outdoor area

Outdoor areas provide a welcome break from the hospital environment by allowing people to get some fresh air and sunlight. Studies have shown that exposure to nature reduces stress, elevates mood, and boosts immune function.

Having access to outdoor areas also provides more of a community feel, improving the morale of patients, staff, and visitors.

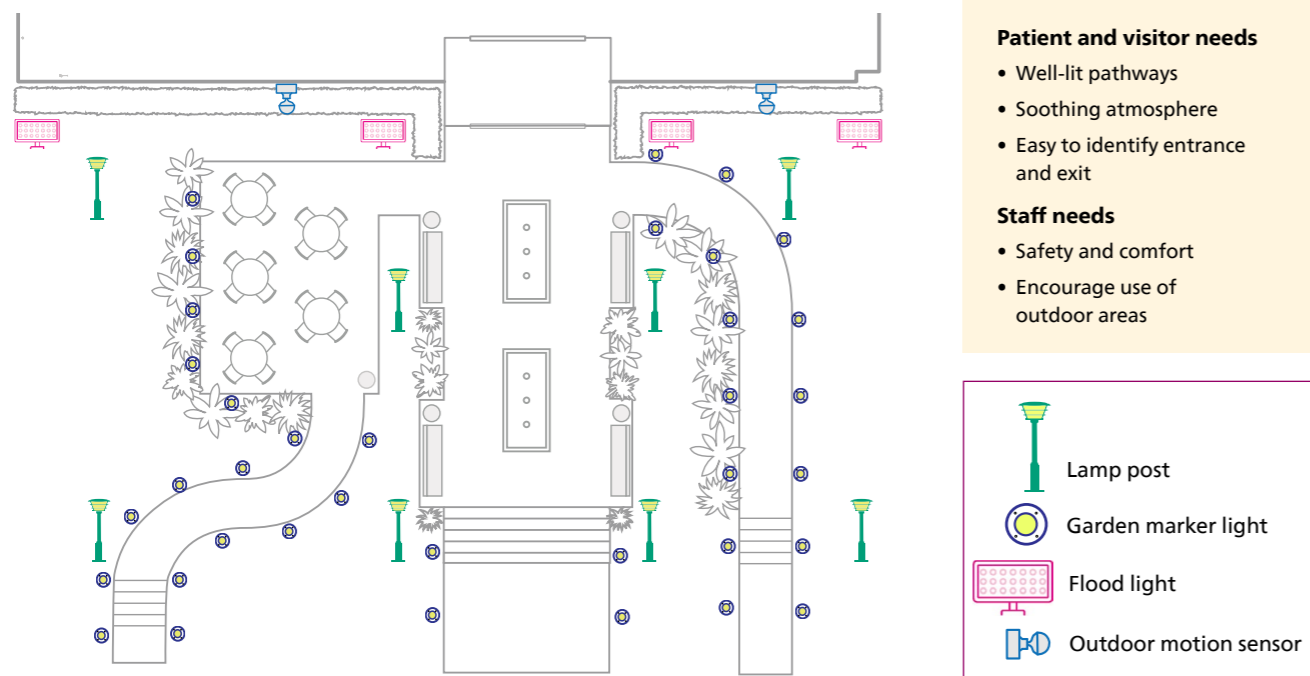


Car park

During hours of reduced daylight or at night, good lighting benefits both drivers and pedestrians. Light levels should be functionally high enough to allow easy tracking of a parked vehicle and bright enough to allow pedestrians to feel safe in their nearby surroundings. Through the use of a smart motion sensing technology, energy can be saved without compromising safety.



Plan view of a typical outdoor area



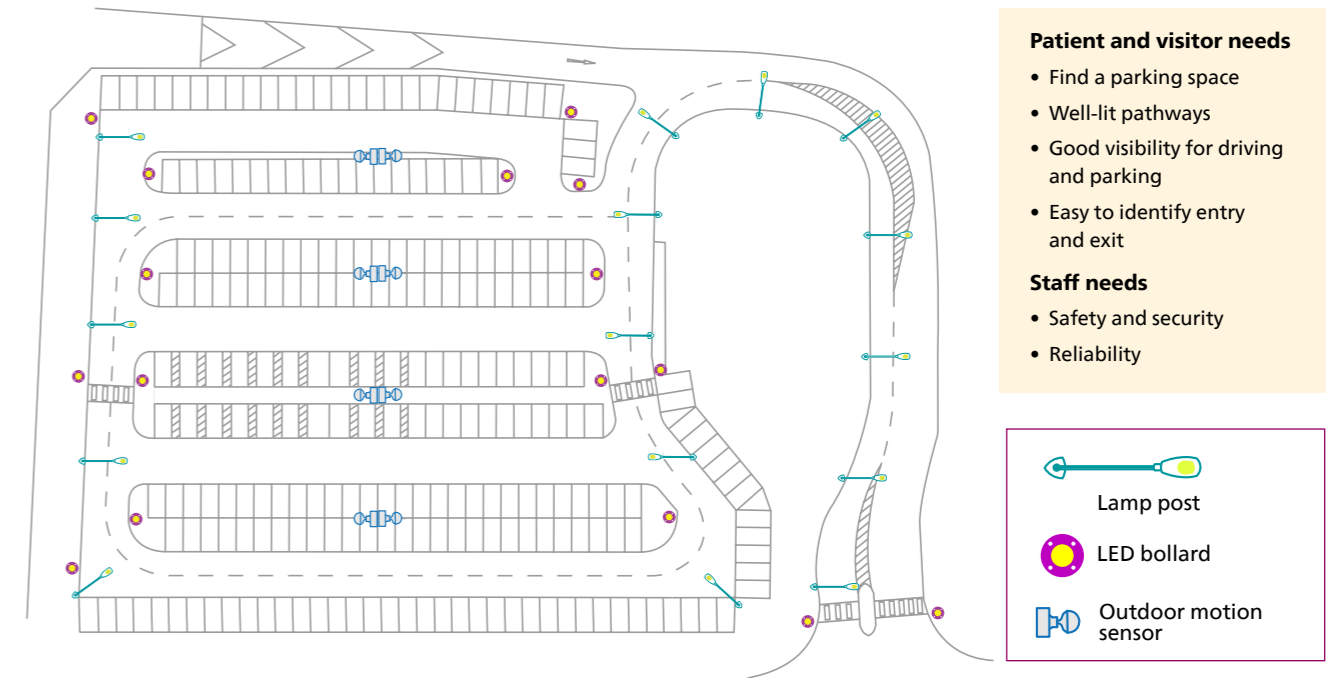
Beautify garden areas and enhance the look and feel of the building with well-designed outdoor lighting. Low-voltage marker lights provide guidance, while subtle illumination of trees and other features creates a pleasant and inviting ambience. Additionally, you can create visual interest with colorful lighting projections that respond to movement in recreation areas.

In the evening and night, outdoor lighting is essential for safety and security reasons, however this often results in wasteful 24/7 lighting of unoccupied and naturally illuminated areas. In view of sustainability and energy saving, it makes sense to have lighting only where and when it's needed. Automated switching of outdoor lighting linked to sunrise and sunset saves energy throughout the year with no need for manual adjustment. Further reductions are achieved by grouping lights into zones that illuminate only when activity is detected. This results in up to 80% energy savings compared to traditional lighting solutions, without compromising safety or security.

Control features

- Garden lighting effects create an open and inviting ambience and provide a safe and friendly feeling for staff and visitors.
- Slow transition between custom scenes and colors.
- Automated lighting zones based on motion detection.
- Save energy by synchronizing external lighting with sunrise and sunset.
- Automated monitoring of lamp failures and occupancy status.
- Networked to building-wide system.

Plan view of a typical car park



DALI lighting provides car parks and garages with all required control and maintenance functionality. Red or green illumination above each parking space indicates occupancy at a glance for arriving vehicles.

The car park can be divided into independently responsive lighting zones for individual sections (visitors, staff departments, etc.). Lamp-mounted motion sensors ensure that lighting is one step ahead of pedestrians and vehicle traffic exactly where needed. Visitors are always moving into the light and can feel safe and certain while travelling to and from their cars or navigating through the car park.

A strategically positioned open loop daylight sensor detects available natural light in the area, enabling automated daylight harvesting between sunrise and sunset.

Control features

- Pathway lighting provides a safe and friendly feeling for staff and visitors.
- Save energy by synchronizing external lighting with sunrise and sunset.
- Automated lighting zones based on motion detection.
- The system can monitor lamp failures and operational status.
- Motion sensors provide energy savings whilst maintaining safety and security.
- Networked to building-wide system.

Product Ordering Codes*

Product name	Description	12NC Ordering Code
User Interfaces		
PAXBPA	AntumbraButton American	Go to Dynalite Design Studio at www.dynalite.com
PAXBPE	AntumbraButton European	Go to Dynalite Design Studio at www.dynalite.com
PADPA	AntumbraDisplay American	Go to Dynalite Design Studio at www.dynalite.com
PADPE	AntumbraDisplay European	Go to Dynalite Design Studio at www.dynalite.com
PATPA	AntumbraTouch American	Go to Dynalite Design Studio at www.dynalite.com
PATPE	AntumbraTouch European	Go to Dynalite Design Studio at www.dynalite.com
PDRxA	Revolution Series American	Go to Dynalite Design Studio at www.dynalite.com
PDRxE	Revolution Series European	Go to Dynalite Design Studio at www.dynalite.com
PAXBLE	AntumbraLite European	Go to Dynalite Design Studio at www.dynalite.com
DACM-DyNet	DyNet Application Communication Module	913703072809
PDT5	Networked Touchscreen	913703334309
Sensors		
DUS180WR	Anti-stumble faceplate – pack of 40	913703338209
DUS360CR	Multifunction Sensor	913703334309
DUS360CR-DA	Multifunction Sensor	913703029309
DUS360CR-D	Multifunction Sensor	913703213009
DUS360CS	Multifunction Sensor	913703243109
DUS360CS-D	Multifunction Sensor	913703023909
DUS804CS-UP	Multifunction Sensor	913703070409
DUS90CS	Multifunction Sensor	913703244209
DUS30CS	Multifunction Sensor	913703244309
DUS90AHB-D	Multifunction Sensor	913703015409
DUS90WHB-D	Multifunction Sensor	913703015509
DUS30LHB-D	Multifunction Sensor	913703015609
Relay Controllers		
DDRC-GRMS-E	Multi-Protocol Switching Room Controller	913703334009
DDRC420FR	Relay Controller	913703244609
DDRC810DT-GL	Relay Controller	913703035209
DDRC1220FR-GL	Relay Controller	913703243009
DMRC210	Relay Controller	913703050009
Power Dimmers		
DDLEDC605GL	PWM Controller	913703061209
Signal Dimmers		
DDBC120-DALI	DALI-2 Driver Controller	913703685109
DDBC320-DALI	DALI-2 Driver Controller	913703031209
DDBC516FR	1-10V/DALI Dimmer Controller	913703031509
DDBC1200	1-10V/DALI Dimmer Controller	913703333909
DBC905	1-10V/DALI Dimmer Controller	See Philips Dynalite Portfolio for ordering codes
DMBC110	1-10V/DALI Dimmer Controller	913703030009

Product name	Description	12NC Ordering Code
Multipurpose Controllers		
DDMC802	Multipurpose Modular Controller	913703243509
DMC2	Multipurpose Modular Controller	913703666009
DMC4	Multipurpose Modular Controller	913703667809
Control Modules	DDMC802 Multipurpose Controllers	See Philips Dynalite Portfolio for ordering codes
Control Modules	DMC Multipurpose Controllers	See Philips Dynalite Portfolio for ordering codes
Integration Devices		
DDNG232	RS-232 Gateway	913703081809
DDNG-KNX	KNX Gateway	913703080509
DLI8180	Dry Contact Interface	913703023009
DPMI940-D	Dry Contact Interface	913703080609
DDMIDC8	Low Level Input Integrator	913703081109
DDFCUC	Fan Coil Unit Controller	913703367009
Network Devices		
PDDEG-S	Ethernet Gateway - Supervisor	913703027409
PDEG	Ethernet Gateway	913703013809
PDEB	Ethernet Bridge	913703240009
DDNG485	RS-485/DMX512 Gateway	913703366709
DDTC001	Timeclock	913703074009
DTK622-USB	PC Node	913703090209
DTK622-232	Serial Port Node	913703090109
Electrical Accessories		
PAEFE	Antumbra Electrical Frames	See Philips Dynalite Portfolio for ordering codes
DDNP1501	Network Power Supply	913703090309
DMAL120F	Active Load	913703061609
DyNet-STPCABLE-LSZH	Cat 5e Cable	913703898809
DyNet-SFLAT6-CABLE	Flat Cable	See Philips Dynalite Portfolio for ordering codes
DH2X24	DIN Rail Enclosure	913703339909
DINGUS	Serial Port Connectors	See Philips Dynalite Portfolio for ordering codes
Wired Systems		
PDRAS	Multizone Control System	See Philips Dynalite Portfolio for ordering codes
PDUVCC	UV-C control system	See Philips Dynalite Portfolio for ordering codes
PD-KoD	DALI Demo Case	913703335009
PD-KoD-TC	DALI Mini Training Case	913703351509
Software and Apps		
Philips Dynalite System Manager	System control, monitor & manage	SW913703089909
Philips Dynalite System Builder	Lighting control system set-up	Available for authorized users on www.dynalite.com
Philips Dynalite Control App	Intuitive mobile interface	Search iOS App Store for 'Philips Dynalite'.
Philips Dynalite DynamicTouch	Customizable Mobile App	Search iOS App Store for 'Philips Dynalite'.
Philips Dynalite EnvisionTouch	Self-configuring Mobile App	Search iOS App/Google Play Store for 'Philips Dynalite'.

*Not all products available in all markets.



stryker



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