HOSPITAL

LIGHTING THE SMART WAY!

INTELLIGENT LIGHTING CONTROLS FOR HOSPITALS & HEALTHCARE FACILITIES.

Hospitals and healthcare facilities are essential institutions in all countries, accounting for a substantial percentage of annual national expenditure. As the level of industry sophistication increases, intelligent lighting control systems offer multiple benefits to developers and operators of healthcare institutions worldwide.

The current focus in hospital management is on creating more patient-friendly environments and services, improving cost-efficiency, providing advanced medical equipment, systems and facilities, and developing superior practices and materials selection for optimal hygiene.

A hospital's primary mission is to provide seamless 24-hour/365-day treatment to patients – frequently in acute critical condition. Reliable and appropriate lighting control systems are essential in all areas of the modern hospital, and must offer centralized system architecture, multi-point programming and switching, the ability to operate with all types of standard and specialized lamps, as well as robust operation, ease of maintenance and superb product support.

THE HOSPITAL AND HEALTHCARE INDUSTRY

There are many types of facility within the healthcare industry, and their lighting needs vary, with specific requirements for different sectors. Facilities for which intelligent dimming systems are applicable include general and specialized hospitals, clinics and consulting practices, and treatment/therapy centers.

GENERAL AND SPECIALIZED HOSPITALS

Hospital operational lighting requirements generally include appropriate systems for:

- reception & waiting areas for patients and visitors
- emergency reception & primary care areas
- public facilities
- outpatient areas
- ICU (Intensive Care Units)
- examination & therapy rooms, operating theaters
- nurse stations, dispensary
- corridors, patient suites, sick rooms & wards
- function, conference & seminar facilities, lecture rooms
- administration & office areas
- medical & service staff facilities
- public food & beverage outlets
- parking & security lighting
- interior & exterior architectural lighting.

Most hospitals will incorporate conference and seminar facilities, often including dedicated conference auditoriums with theater-style seating. These venues may require special programmable lighting controls.

Private 'luxury' hospitals
A recent development is the 'luxury healthcare' option, with the advent of hospitals offering designer décor, private suites and personal service. These hospitals focus, above all, on providing the finest in personal comfort and convenience in patient rooms and services, along with superb medical care and surgical treatment. There are usually fully-featured public area and in-room lighting controls, in addition to the standard lighting controls for hospitals.

Clinics & consulting practices
Clinics may or may not provide patient accommodations, however those that do usually provide premium rooms and services, with appropriate lighting systems. Day clinics will typically include reception and nurse areas, examination and consulting rooms, and basic operating theater facilities for minor surgery. Smaller stand-alone lighting controllers and a mixture of standard and surgery switchplates are the norm for such facilities.

LIGHTING HOSPITALS & HEALTH FACILITIES — THE INTELLIGENT WAY!

Smart systems
Intelligent lighting control systems are becoming standard in the hospital and healthcare industry where patient care and support services are essential. An intelligent lighting control system, correctly specified, installed and maintained, can provide programmable control of public area, sick room, and medical and surgical area lighting, as well as some 'back-of-house' support areas.

Smart accessories
Futronix intelligent lighting control systems provide more than just centralized control of lighting throughout a hospital. Futronix also design and manufacture a comprehensive range of system accessories and options, designed to customize selected dimmer channels to allow specialized features for specific purposes and areas.

Smart solutions for hospital lighting control
The recommended solution for larger hospitals is installation of stand-alone switching and/or dimming systems for each floor or ward, networked together with a centralized monitoring/control system. This effectively creates a whole-building lighting control system for controlling lights in all public and medical/surgical areas, augmented by stand-alone or networked dimmers in patient rooms and elsewhere. With stand-alone systems provided for each floor, single-point-of-failure vulnerability is minimized.

Futronix manufactures one of the world's most advanced ranges of intelligent lighting control systems for hospitals – the **Futronix PFR** and **PFS** switching control systems, and the flagship range of **PFX System** dimmer racks. Futronix **ancillary systems** and **accessories** complement the core systems to provide a truly comprehensive solution to any hospital lighting challenges.

Hospital interior lighting control systems are typically required to operate cost-effectively, with large areas of non-dim lighting requiring switching controls, and only some areas requiring scene-dimming capabilities. Smaller departments or areas may require or benefit from specific lighting control systems and/or accessories.

PFR switching for public & administration areas, corridors and wards
PFR relay switching panels are specified in hospitals to control heavy-duty non-dim lighting loads in reception lobbies, waiting lounges, administration and office areas, corridors and patient wards.These areas require similar lighting – mostly open areas lit primarily by concealed or recessed fluorescent lamps or other non-dim lighting – so the primary requirement is heavy – duty relay switching of low-energy high-efficiency fluorescents, providing efficient energy management and light usage with flexible centralized control of discrete areas. A large hospital may require in excess of 500 to 1,000 separate channels of switched area lighting.

Primarily specified for high-powered switching mainly of lighting loads such as fluorescent metal halide, sodium, SON and other non-dim loads, the PFR chassis-mounted relay switching panel is available in 8 up to 16 channel formats, with MCB and isolator switch protection.

PFR switching panels contribute to energy efficiency with programmed schedules for switching lights on and off for daytime/nighttime operations, and switching off selected lights late at night. PFR units switch all load types, and connect directly to PFX dimmer systems.

PFS switching units for controlling dimmable fluorescent lighting
The **PFS switching unit** is used in hospitals for controlling **dimmable** fluorescent lighting ballasts, often in conjunction with occupancy and daylight sensors to provide energy-efficient 'daylight harvesting' in glass-walled hospital lobbies and waiting areas.

The PFS switching unit, available in up to 16-channel formats, can control the opening and closing of sunshades and drapes – or other events – according to detected ambient light. It is configurable according to function and switchable independently or as part of a 'scene', an event or a macro.

PFX System 'scene' dimmers for hospital lobbies and public spaces
As more major hospitals are being built with impressive lobbies and reception areas, sophisticated lighting control systems are specified to achieve distinctive lighting effects.

Lobbies, reception areas and waiting lounges in a hospital can be lit effectively with the **Futronix PFX System** plus selected accessories. An unlimited-channel lighting control and automation system, the PFX System is a modular system of linked dimmer racks and switch panels, typically installed in hospital lobbies, auditoriums or other areas requiring 'scene' dimming capabilities.

With PFX System/s installed, true '**scene dimming**' is available with a comprehensive list of features and options unrivalled by competing systems. True 'scene dimming' – as against simple ON/OFF controls or manual faders – provides various user-programmed lighting scenes for multiple areas, with dimming software ensuring smooth transitions between scenes.

With 'scene dimming', area lighting can be effortlessly transformed for ambient lighting of public areas such as patient and visitor reception areas and lobbies.

Most types of lighting – including continuous tungsten, low voltage, halogen, neon/cold cathode, and fluorescent (high frequency) – can be controlled by the standard PFX System. PFX System dimmer racks can be programmed for auto-sequencing to light selected features or areas at specific times. Up to 20 scenes can be set in each room or area, with multiple functions, hundreds' of 'extra' scenes and macros to run pre-set 'environments'.

Fully-digital PFX Systems of unlimited size and complexity are quiet in operation, accurate, highly reliable and can interface with BMS, security and alarm systems.

For operational flexibility, security, and ease of operation, all PFX System operations can be performed centrally from a linked PC and/or Futronix **HI-C Color TouchScreen** controller, from a remote control handset, or from wall-mounted switch panels.

Hx DIMMERS & RECEPTION CONTROLLERS FOR PRIVATE SICK ROOMS & CLINICS

Room and bathroom lighting for private patient rooms typically features direct and indirect compact fluorescent lighting, controlled on a floor-by-floor basis with Futronix **Hx Dimmer** units installed in each room and linked to a Reception Controller, centrally-located at the floor Nurse's Station.

A flexible solution for patient room/suite lighting control, the innovative **Futronix Hx Controller** can be installed either free-standing or networked to the hospital BMS (Building Management System). The Hx Controller is a remotely mounted dimmer that can be tailored to requirements with up to 8 channels of dimming, or up to 4 channels each of dimming and/or switching.

Modular design allows for networking multiple units, and provides for multi-point switching control. Designed for mounting in the overhead ceiling cavity or other electrical void, the Hx unit will connect to other equipment including switchpanels and a PC.

The **Hx** also incorporates 4 channels of 1-10V dimming, a 7-day/24-hour timer, hard switching inputs from a normal light switch, occupancy inputs, and wall switchplates featuring a display with IR receiver.

Hx units are also suitable for controlling lighting for **clinics** and smaller **private hospitals**, offering fully-featured dimming and switching controls in stand-alone, networkable units.

ACCESSORIES PROVIDE ADDITIONAL LIGHTING CONTROL FEATURES FOR LOBBIES

Hospital lobbies can feature attractive architectural lighting effects easily using the **Futronix LD** – a special accessory unit for dimming LED lighting. Spotlights composed of clusters of ultra-bright white LED's are highly popular: usually installed as uplights and downlights for atmospheric exterior and interior lighting, they are also ideal for back-lighting translucent panels.

Fluorescent lighting is frequently specified for under counters or ceiling coffers in these areas. The Futronix **1-10v fluorescent dimming controller** provides industry-standard fluorescent dimming.

An **NC30 Neon Controller** linked to a PFX dimmer can directly control **3-color cold-cathode neon lighting**. A superior option for lighting coffers & recesses is a **4-color cold-cathode neon controller** – the addition of warm white to specifically selected shades of red/green/blue provides more subtle fades and gradations than standard RGB.

The Futronix **Photo Cell-switch** monitors light levels for triggering PFS switching units controlling opening and closing of sunshades and drapes – or other events – according to detected ambient light.

LIGHTING CONTROLS FOR ICU'S, OPERATING THEATERS & SURGERIES

ICU's, operating theaters and surgeries feature sophisticated medical lighting systems. However, for specific surgical procedures, different room lighting programs in operating theaters and surrounding areas can be programmed by a centralized PFS switching unit.

With a PFS unit installed, 'scenes' can be pre-set for optimal lighting for vision during surgery. In these mission-critical areas, PFS units provide emergency failsafe relay backup on all circuits. In the event of system breakdown, task lighting defaults to all lights full on.

LINKING WARD AND NURSE'S STATIONS TO PATIENT ROOMS

Ward and nurse stations themselves are often lit by recessed and/or direct lighting above a counter or alcove, controlled by the installed floor-by-floor PFR floor switching units.

At Nurse's Stations or Floor Reception Desks for superior quality hospital rooms or suites, a Futronix **Reception Controller** – linked to **Hx dimmers** in individual patient rooms – allows floor nurses to remotely turn on lights, open or close drapes, and activate other preparatory features before or during a patient's stay at their designated room.

For top-level in-room or centralized control via an intuitive graphical interface, a Futronix **HI-C Color TouchScreen Controller** (see below) at the Nurse's Station can connect directly to Hx dimmers.

With Hx dimmers installed, multi-point **switchpanels** installed alongside patient room doorways allow nurses or attendants to select from pre-programmed lighting 'scenes' ranging from bright, high illumination to a dimmed bedside or table lamp, with a single touch. Dedicated lighting switchpanels beside beds provide patients with one-touch control of selected room lighting. Recommended switchpanels for sick rooms are made of anti-microbial 'germkilling' brass, or of polished stainless steel (see 'Switchplates' below).

LIGHTING CONTROLS FOR HOSPITAL CONFERENCE & SEMINAR ROOMS, AND AUDITORIUMS

Functions, conferences and seminars are daily activities in most hospitals- especially so in 'teaching hospitals'- and these also have special lighting requirements. **Enviroscene** dimmers (see preceding section) are ideal for conference and seminar room lighting control. Contributing to hospital energy efficiency, **PIR** Movement Detectors in conference rooms conserve energy when rooms are set up, then left empty for long periods before a meeting or presentation.

Lighting requirements for hospital **auditoriums** typically include pre-event lobby lighting, and lighting controls for dimming different sets of lights for speeches, A/V presentations, staff functions and meetings, as well as for full conferences and seminars.

For **larger auditoriums**, installation of a dedicated **PFX System** scene dimmer rack is an option, with local switchplate and remote controls and (optional) monitoring/ control from the building control center. The PFX's **X-BUS** protocol allows all power and data to be sent down a single multi-stranded cable, daisy-chained to each control switch plate in turn.

This useful feature for lighting control for large pillarless areas such as auditoriums requires significantly less cabling and installation, and provides greater reliability due to fewer components and connections, easier terminations and more robust cable.

ENVIROSCENE 'SCENE' DIMMERS FOR RESTAURANTS, CONFERENCE & SEMINAR ROOMS

If not designed as part of a centralized lighting control system, fully-featured lighting control for a hospital's public **restaurants** and cafeterias – as well as **conference** and **seminar** rooms and other specialized areas – can be provided by a stand-alone Futronix **Enviroscene** multi-channel controller, which can also be networked to the building manager's monitoring and operations center.

The Enviroscene offers true 'scene dimming' to control ambience, programmed for maximum-cost-efficiency lighting taking into account patronage cycles, time of day/night etc. The Enviroscene can also control a host of other programmable automation features – including curtains and drapes, heating and air conditioning, TVs and screen lifts – and can interface with security and alarm systems.

With massive external heatsinks, the Enviroscene features power circuitry with highest-in-class noise suppression and protection.

An Enviroscene dimmer can operate lighting in up to 128 circuits in 16 different areas, with up to 20 scenes per area.

SWITCHPLATES — A CRITICAL ELEMENT IN HOSPITAL & HEALTHCARE HYGIENE!

Combining multiplex functionality with simple elegance, Futronix switchplates provide multi-location switching to select scenes in different rooms or areas. Switch-panel outstations for all Futronix dimming and switching systems are visually designed to complement each other in a range of styles and finishes, so networked and stand-alone dimmers can be installed in the same hospital.

Eclipse switchplates for luxury rooms

Stylishly thin Eclipse switchplates made of surgically cleanable glass and polished stainless add elegance to any décor scheme – perfect for private hospital rooms. Eclipse switchplates operate with all Futronix scene dimmer systems.

Switchplate material specifications & disease control

Futronix recommend that switch-panels throughout a hospital should be specified as high-grade stainless steel, or in some areas, non-lacquered brass.

Chemical-resistant stainless steel can be effectively cleaned to prevent spread of diseases – a major concern in all hospitals these days when antibiotic-resistant bacteria are always a hazard. Stainless steel switch-panels are already mandatory for hygiene reasons in industrial kitchens in many countries, partly because scratches or marks remain superficial and thus harmful bacteria can't penetrate deeply.

Stainless steel surfaces used in hospitals appear to be clean yet can still harbor deadly microbes for days, even months. Recent studies (see footnote) demonstrate that naturally anti-microbial copper, not stainless steel, is the better surface to protect against severe infections resulting from the bacteria found in many hospital and healthcare settings.

Hospitals are especially recommended to change materials from stainless steel to copper alloys in critical care areas where patients are at greatest risk of being infected, such as intensive care units, burn units or quarantined areas.

** see **'footnotes on copper surfaces for hospital hygiene'***

LIGHTING HOSPITAL EXTERIORS

Exterior hospital lighting may include exterior architectural and landscape lighting, exterior signage and main entrance illumination, as well as parking, security and emergency lighting.

Typically the requirement is for switching of heavy-duty non-dim loads, and Futronix **PFR** units (see above) are frequently specified for switching of exterior lighting.

NETWORKING LIGHTING CONTROLLERS WITH THE HI-C COLOR TOUCHSCREEN

Offering sophisticated remote control of networked PFR, PFS, PFX, Enviroscene and Hx dimmers and other automation systems, the Futronix **HI-C Color Touch Screen** controller provides an enhanced lighting control option for hospitals.

The HI-C TouchScreen unit links dimmers together, with one-touch macros programmed to run pre-set 'environments' adding multiple functions for hospital-wide ambient lighting control.

A full-color TFT touch-screen displays pre-programmed graphics representing building layout, system components, performance circuit levels & other programmable settings in a clear and logical user-friendly format. The controller can re-program lighting scenes, raise and lower lighting circuit levels and save system changes.

An in-built 365-day astronomical timer can also provide the hospital manager and engineer with master automation control for an entire hospital complex, able to program lighting for events far in advance, and with the ability to control AV equipment and security alarms as well as lighting.

For large hospital installations, the touch screen unit is usually located in the operational manager's office, or in a separate control/distribution room. In self-contained hospital departments where free-standing control is desired, HI-C Touch Screens are typically fitted by entrance doors, with switch panels in other rooms or areas to provide multi-point local switching control.

LIGHTING MANAGEMENT, CONTROL & SECURITY

Futronix systems provide solutions for all hospital lighting management challenges. Typically, dimming and switching racks are installed out of sight in an electrical control room, with equipment, wiring and accessory components arranged for easy cabling, installation, programming, inspection and maintenance.

The hospital engineer/manager can program and monitor all lighting and related operations either from a centrally-located PC, a Futronix HI-C Color TouchScreen controller in his office, or from a remote handset or laptop computer anywhere in the building. PC computers are typically used for engineering and maintenance functions, with an optional HI-C touch screen unit preferred for intuitive visual accessibility for programming and operation.

With lighting controls networked and monitored from a central location, facility security and management can be further enhanced by entrance and occupancy detection, security and perimeter lighting subject to automated commands, and emergency lighting linked to installed hospital BMS systems.

Futronix have supplied the largest architectural lighting control system ever built, and have a solid reputation for design, quality and reliability.

And as Futronix systems are fully compatible both backwards & forwards, an investment in a lighting control system will retain its value over the years - with maintenance, service and spare parts always available.

INTELLIGENT LIGHTING FOR HOSPITALS AND HEALTHCARE FACILITIES WITH FUTRONIX

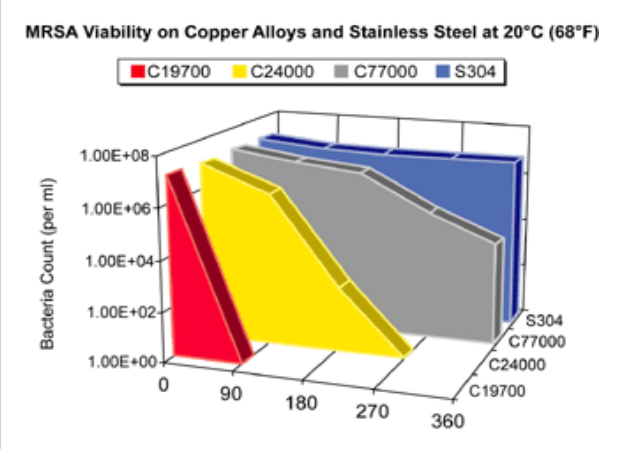
Whether a hospital is a large public complex or an exclusive private clinic, with appropriate intelligent lighting control systems installed, quality hospitals of all types and sizes can enjoy the benefits of more efficient and appealing lighting combined with operational simplicity and robust reliability.

A planned combination of Futronix switching and dimming racks with selected accessories – together with medical quality switchpanels – provides any healthcare facility with 24/7 reliability, convenience, cost-savings, and hygiene in a seamless, professional lighting control system.

Footnotes on copper surfaces for hospital hygiene:

According to the U.S. Centers for Disease Control (CDC), infectious organisms lurking on healthcare surfaces contribute to nosocomial infections acquired in healthcare facilities – including the MRSA 'superbug' that does not respond to conventional antibiotics - that now result in some 88,000 deaths each year in the USA.

Scientists at the University of Southampton in England reported that untreated copper and copper-alloy surfaces effectively stop the spread of MRSA by limiting the time bacteria are able to live on its surface. MRSA can survive for a maximum of 90 minutes on a surface made from 99% copper, while the bacteria stay alive for 72 hours or more on stainless steel – the most common metal used in healthcare facilities today. Slightly tarnished copper alloy surfaces are actually more effective against microbes than fresh, untarnished surfaces of the same alloy.



CONTACT

For further information contact: +44 (0)1883 373 333
www.futronix.com