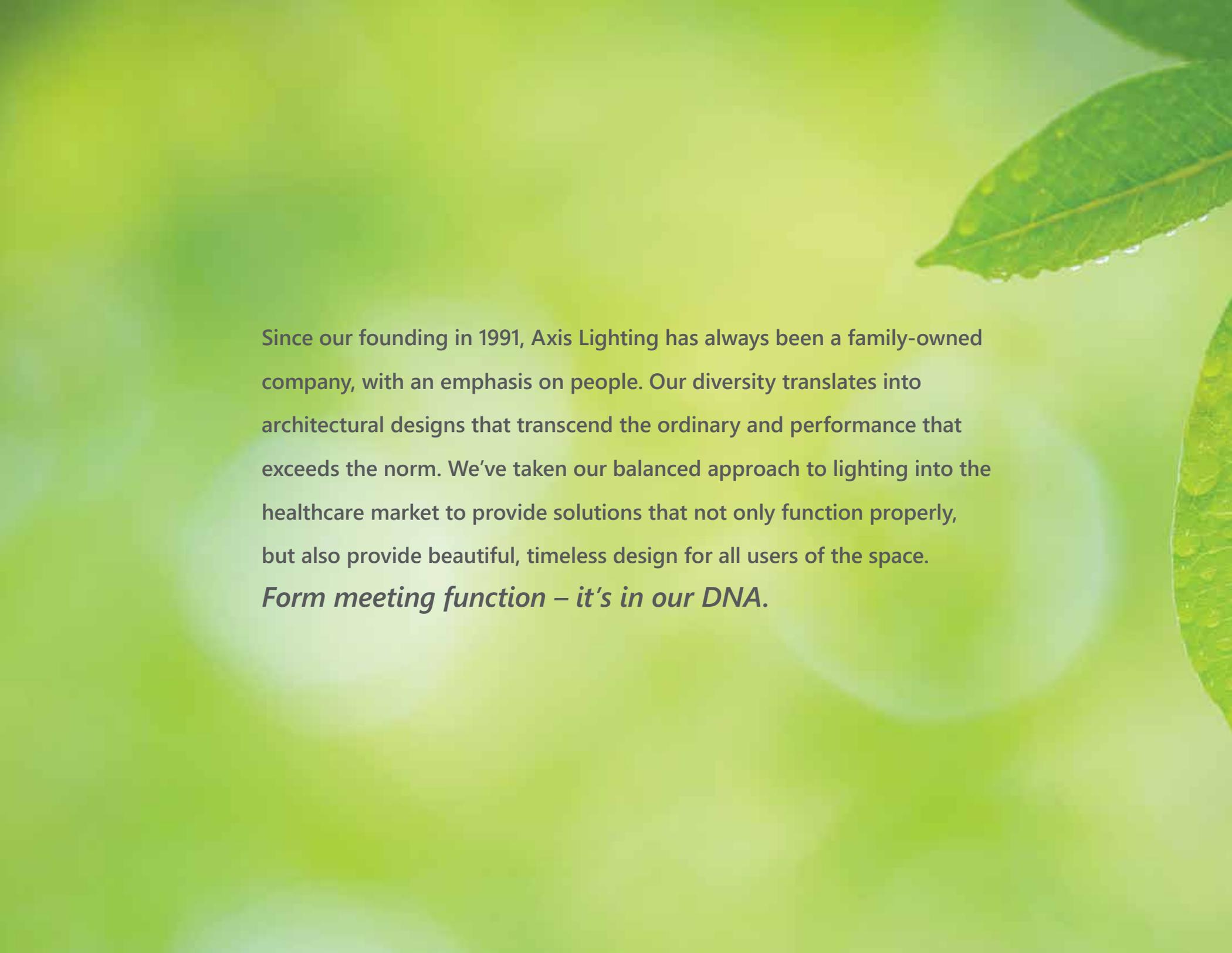




Healthcare Lighting Without Compromise



Healthcare division
BalancedCare™

The background is a soft, light green gradient. On the right side, there are several green leaves with water droplets on them, partially visible. The text is centered in the lower half of the image.

Since our founding in 1991, Axis Lighting has always been a family-owned company, with an emphasis on people. Our diversity translates into architectural designs that transcend the ordinary and performance that exceeds the norm. We've taken our balanced approach to lighting into the healthcare market to provide solutions that not only function properly, but also provide beautiful, timeless design for all users of the space.

Form meeting function – it's in our DNA.



BalancedCare™

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The BalancedCare™ Approach



Design for healthcare has been a tale of two extremes – offering either functional but institutional appearance, or extremely decorative forms while ignoring cleanability and other critical standards. The BalancedCare™ family by Axis Lighting ties it all together. BalancedCare™ provides lighting for wellness without trade-offs, offering patent-pending BeWell™ performance optics for both visual comfort and functionality, along with features that promote infection control and equipment compatibility. Finally – a product offering that addresses **ALL** the requirements of today's complex healthcare environment.

BalancedCare™ Pillars



WELLNESS

The built environment can have a positive effect on the overall state of a person's physical and emotional wellbeing. With a focus on patient and staff wellness, thoughtfully configured lighting that balances both visual and circadian needs, as well as links to nature, promotes healing outcomes.



ARCHITECTURAL FORM

BalancedCare™ luminaires provide timeless, stylized forms concealing sophisticated technologies that complement and enhance today's architecture. Sleek, low profile styles replace mundane, institutional looks of the past and elevate healthcare lighting design to today's standards.



FUNCTIONAL OPTICS & VISUAL COMFORT

BeWell™ light guide technology provides multiple precise distribution options to deliver the many layers of light required in healthcare environments, as well as glare-free comfortable lighting that supports the visual tasks of staff while enhancing the overall wellbeing of patients.



INTELLIGENT CONTROL

BalancedCare™ is an intuitive 'controls-agnostic' collection with intelligent patient bed control compatibility, as well as wireless and POE; and spectral programmability provided by Axitune® Tunable White and BIOS® SkyBlue technologies. We partner with industry-recognized controls suppliers for integration into any building automation system.



INFECTION CONTROL & PERFORMANCE

BalancedCare™ products are constructed of materials and finishes that withstand hospital cleaning protocols, standing up to the most stringent infection control requirements. They meet functional and application-specific industry listings such as UL, ADA, Ingress Protection (IP) and National Sanitation Foundation (NSF) standards.



EASE OF MAINTENANCE

Smooth, non-corrosive surfaces can withstand the harsh cleaning protocols necessary to minimize risk of hospital-acquired infections (HAIs). Room-side access to drivers and components facilitates maintenance efforts, reduces costs, and prolongs sustainability of luminaire systems.

Providing Multidimensional Distribution and Immersive Illumination



Precisely coded and aligned molecules in the light guide shape LED output, from individual points of light, in all three dimensions. The science is complicated. The result is easy – controlled distribution that puts light only where you need it. Direct, indirect, asymmetric or a combination with high efficacy performance, no matter the distribution.



Visual comfort takes on a whole new meaning. Instead of reflected glare, the unique light guide produces comfortably diffuse illumination for a more natural appearance. It matters most when placed in line of sight, like a bed light directly above the patient. That's where comfort is put to the test.



GENERAL AMBIENT



READING



EXAM



NIGHT CHECK

MULTIPLE LIGHT DISTRIBUTION OPTIONS

Light guide technology with precision optics allows multiple distributions within the same luminaire dedicated to ambient, exam and reading functions

UNIFORMITY

BeWell™ Optics provides uniformly diffuse light without streaks, hot spots or shadows

HEALTHCARE LIGHTING WITHOUT THE HARSHNESS

Light-emitting area is comfortable to view, even in direct line of sight, as over a patient bed

EFFECTIVE, EFFICIENT, AND EFFICACIOUS

Better visual acuity means more effective care with high efficacy performance for all distributions

CIRCADIAN-SUPPORTIVE LIGHT

Intensity, spectrum and multi-directional distribution can be tailored to deliver light comfortably to the patient's eye, where that light cue is then transmitted to the body's master clock for circadian regulation

BeSealed® Construction

All BalancedCare™ luminaires feature BeSealed® design attributes that enable easier maintenance, less costly construction, updated lighting technology, and engineered features that support today's stringent infection control standards. BeSealed® is the BalancedCare™ total mechanical solution.



Constructed of materials and finishes that can withstand harsh cleaning protocols, sealed to meet Ingress Protection (IP) and National Sanitation Foundation (NSF) requirements

One-piece gasket seals housing to optical cartridge

Plug-and-play drivers for easy replacement

Patent-pending sealed optical cartridge houses BeWell™ LED Optics

Modular cartridge is accessible from room-side

BalancedCare™ lightweight sealed housing technology eliminates complex and costly welded housing construction



Extruded aluminium housing maximizes LED heat dissipation to ensure cool operation and long life

LENS TOOL



The lens tool seamlessly pulls the doorframe away from the housing and provides easy access to the internal electrical cartridge

TORSION SPRINGS



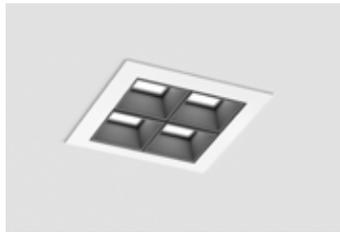
Torsion springs secure the doorframe to the housing, and ensure a tight seal without the use of exposed fasteners for aesthetics and cleanability



MRI Series of products

Architectural Form

BalancedCare™ MRI luminaires provide timeless, stylized forms concealing sophisticated technologies that complement and enhance today's architecture. Sleek, low-profile styles replace mundane, institutional looks of the past, emphasize aesthetics, and elevate MRI lighting design to today's standards.



MRI Pixel™ Downlights



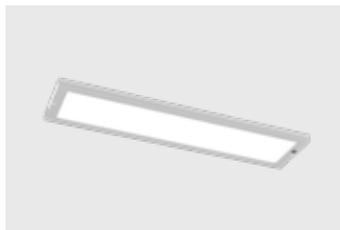
MRI Beam Recessed



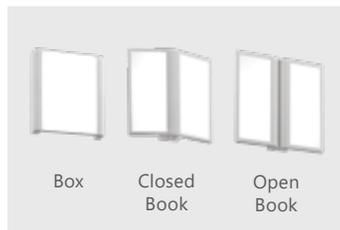
MRI Flexible Ambient



MRI Sketch® Curved Recessed



MRI Undercabinet



MRI Sconces

Tranquility Options

With Tranquility's broad selection of appealing images and textured patterns – and wide choice of wall-mount and ceiling-mount luminaires and layout possibilities – the MRI Tranquility Series has all the flexibility to add soothing biophilic design to the MRI suite.



MRI Drop Lens



MRI Overlay Lens



MRI Regressed Lens



MRI Box



MRI Closed Book



MRI Open Book



MULTI-FUNCTION OVERBED

SCONCES

UNDERCABINET

STEPLIGHTS

VANITY MIRROR





ELLE™ LINEAR

GENERAL AMBIENT

TRANQUILITY GRAPHIC SCENES

MRI SERIES

COMPLEMENTARY PRODUCTS





Multi-Function Overbed

Recessed 2' x 2' or 2' x 4' overbed luminaires with ambient, exam, and fixed angle reading. Axis Lighting's BeWell™ Optics delivers glare-free visual comfort with multi-functionality embedded into the light guide. These cleanable optics provide optimal illumination for examination and other medical tasks with soothing ambient illumination throughout the patient room.

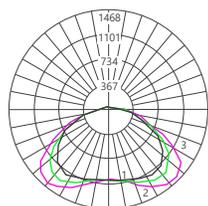
- BeWell™ light guide transitions from soft ambient to high powered exam to deliver multi-functional optics without segmented compartments, transition lines, or pixelation
- Reading light option: 3000K – 4000K
- Ambient and exam CCTs: 3000K – 4000K
- Axitune® Tunable White and BIOS® also available for ambient mode
- Modular optical chamber easily accessible with lens tool
- Low profile design, housing only 4" deep
- Compatible with common pillow speaker controls



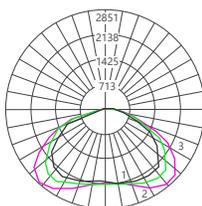
Reading Light Option



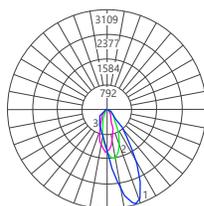
BCMF22



AMBIENT



EXAM



READING



MULTI-FUNCTION
OVERBED
BCMF24



Patent Pending



Multi-Function Asymmetric Overbed

The recessed multi-function 6" x 48" asymmetric luminaires mount on either side of the bed, which leaves the center ceiling clear for lift rails and other essential equipment. The BeWell™ Optics transition between ambient and exam functions seamlessly for the most comfortable, shadow-free illumination.

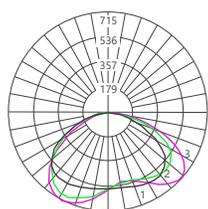
- BeWell™ Optics uses light guide technology for superior quality of light
- Three functional modes: ambient, exam, and reading
- Reading light option: 3000K – 4000K
- Ambient and exam CCTs: 3000K – 4000K. Axitune® Tunable White available
- Mounts offset from bed to eliminate shadows & clear center ceiling
- Low profile design, housing only 3 3/4" deep
- Compatible with common pillow speaker controls
- Sealed, seamless construction provides smooth surface for cleanability
- Sold in pairs. Single luminaire 6" x 48" available



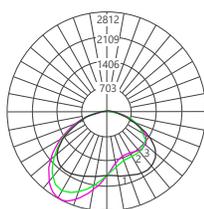
Single BCASY1 throws light asymmetrically into room



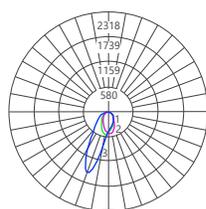
Reading light option



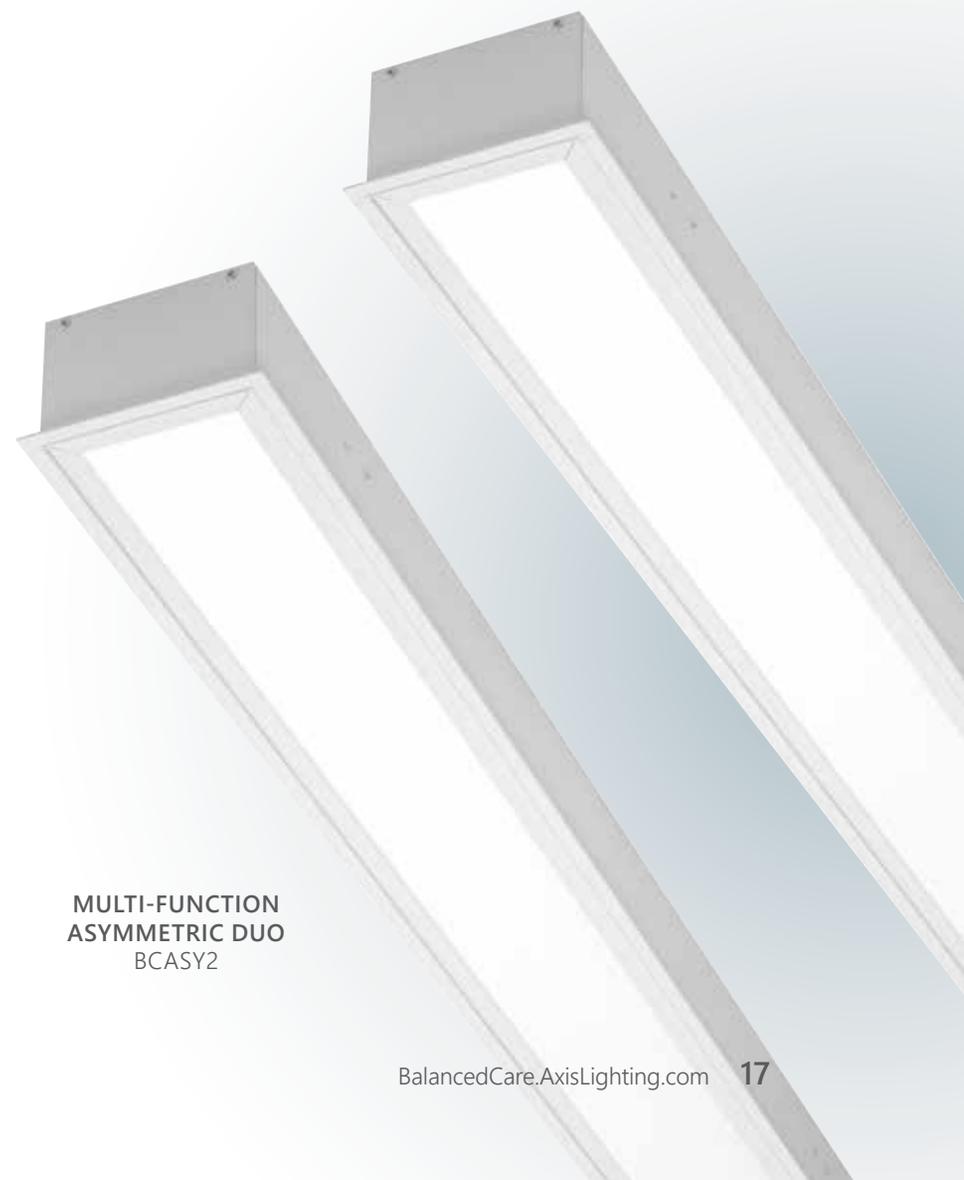
AMBIENT



EXAM



READING



MULTI-FUNCTION
ASYMMETRIC DUO
BCASY2



Patent Pending



Sconces

Architectural sconces complement ambient lighting in the corridor, and often provide low-level lighting when daytime transitions to evening. BalancedCare™ Lighting offers three decorative designs in multiple sizes for scalability, with integral nightlight option to aid navigation. Additionally, each luminaire is low profile to meet ADA requirements, and features BeSealed® Construction for cleanability.

- Designed with comfortable BeWell™ Optics providing ambient lighting and wall glow
- Amber nightlight option to aid navigation
- Detachable backplate for quick-disconnect and room-side access to driver
- Horizontal or vertical orientation, surface mounting in multiple lengths and widths
- Shallow depth (Open Book - 2-3/8", Box - 2", Closed Book - 3-1/8")
- BIOS® and Axitune® Tunable White available in select sizes



BOX
BCSB



CLOSED BOOK
BCSC



Low profile (less than 3")
ADA compliant



OPEN BOOK
BCSO

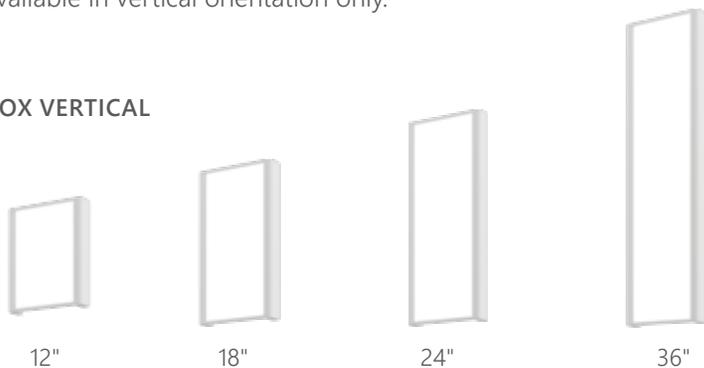


Patent Pending



All BalancedCare™ sconces are available in 4 lengths - 12", 18", 24" and 36" in both vertical and horizontal orientations. Nightlight available in vertical orientation only.

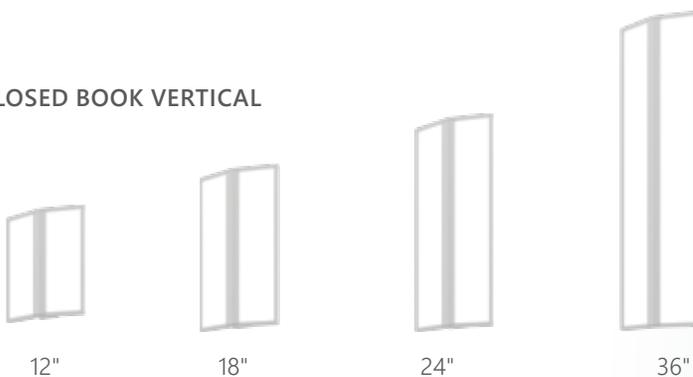
BOX VERTICAL



BOX HORIZONTAL EXAMPLE



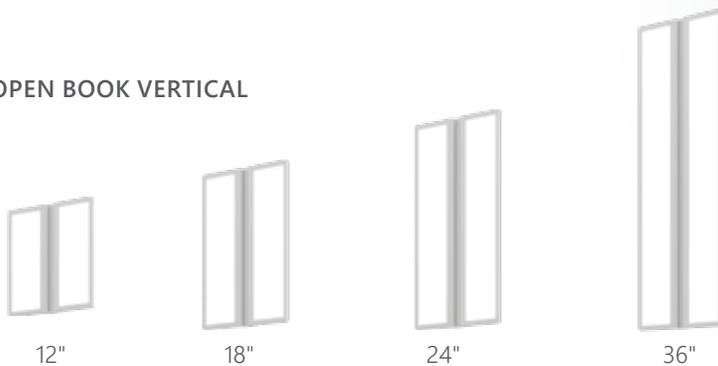
CLOSED BOOK VERTICAL



CLOSED BOOK HORIZONTAL EXAMPLE



OPEN BOOK VERTICAL



OPEN BOOK HORIZONTAL EXAMPLE





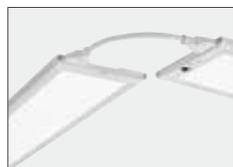
Undercabinet

The BalancedCare™ undercabinet series features state-of-the-art hand motion technology to enable touch-free dimming, which supports infection control standards. This wafer thin design with BeWell™ lightguide technology features sharp cutoff distribution and enables user selection of white LED color temperatures from 2700K-4000K.

- Wafer-thin - less than 0.5" profile in 6 lengths: 10", 16", 23", 30", 36", and 42"
- Four-position selectable CCT or static CCT
- Available CCTs: 2700K, 3000K, 3500K, 4000K
- Touch-free dimming for infection control
- Available with interconnect and power cordset accessories
- Finish: White or Black; Black finish available with 90 CRI only
- Mounting: Surface Mount and Surface Magnet Mount available



Wafer thin - less than 0.5" profile



Linking connectors in 6", 12", and 24" lengths



Power cordset



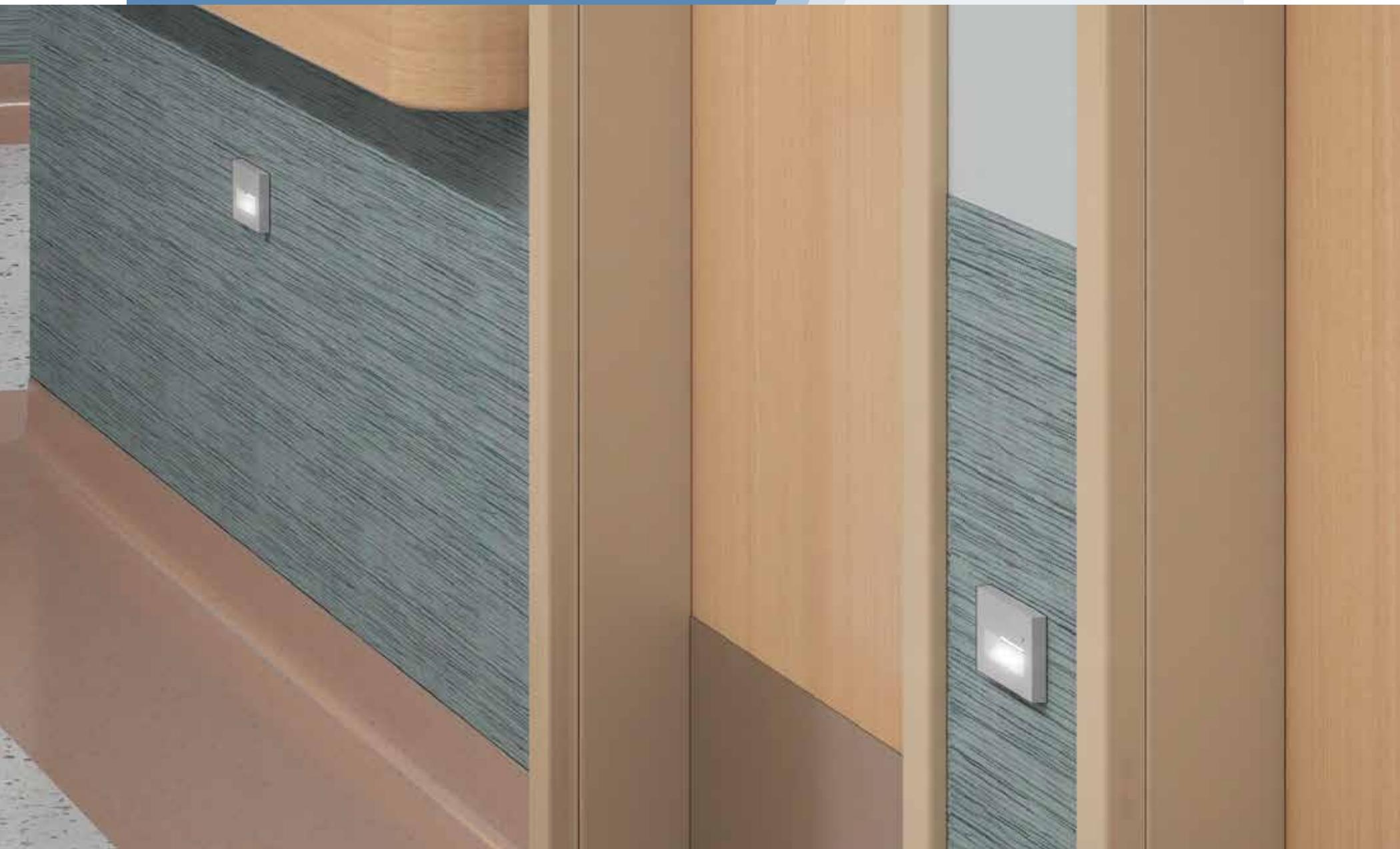
Sensor-enabled touch-free on/off and dimming

UNDERCABINET
BCUC



Joiner link for continuous runs

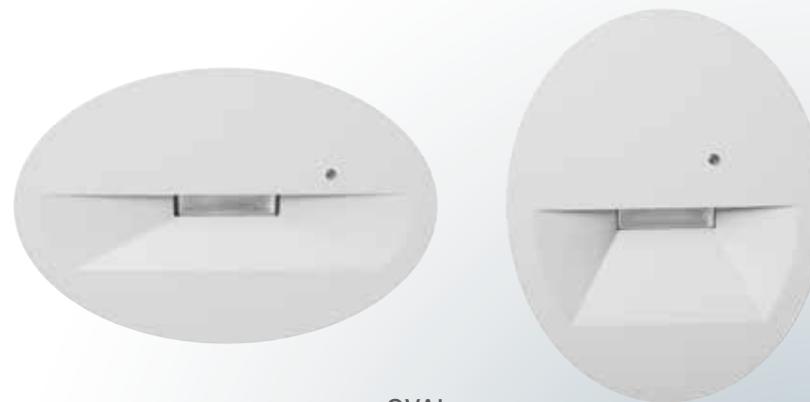




Steplights

BalancedCare™ Steplights provide safe navigation through the patient room, bathroom, corridors and other common areas. Durable in design, they are available in multiple styles and optional white (2700-4000K), amber or blue LED.

- Rectangular and oval faceplates, horizontal and vertical mounting
- Steplights mount to a standard junction box
- 90° cutoff obstructs light trespass
- Multiple LED choices: White 2700 - 4000K, Amber or Blue
- Activation by photocell sensor
- Pre-set light level can be adjusted up or down during installation
- Semi-recessed; faceplates extend only 5/8" off wall
- Soft contoured design prevents dust collection and is easy to clean



OVAL
BCSOH / BCSOV



RECTANGULAR
BCSRH / BCSRV



Thru wall option



White LED:
2700-4000K

Amber LED

Blue LED



Patent Pending



Elle™ Linear

The elegant Elle series is ideal for high traffic areas such as corridors, cafeterias, elevator lobbies and other common areas. In a busy circulation area like a corridor, this patent-pending curved light guide tucks quietly into the corner where ceiling meets wall, asymmetrically directing comfortable light into the corridor and protecting patients on gurneys and wheelchairs from typical harsh glare. Elle evokes organic flow and incorporates BeWell™ CLS Optics to service a multitude of applications. Its curved design facilitates cleaning and is designed for durability, especially when mounted vertically in high traffic areas.

- Curved illuminated surface enabled by patent-pending BeWell™ CLS light guide technology
- InstaHinge™ wall-to-ceiling corner mounting mechanism for easy installation and access
- Hairline joiner for continuously illuminated runs
- Integral Axis mini constant current driver, 0-10V dimming standard
- Individual lengths up to 8'



Ceiling Line (ELSC)



Corner (ELSCV)



45° Ceiling (EL45)



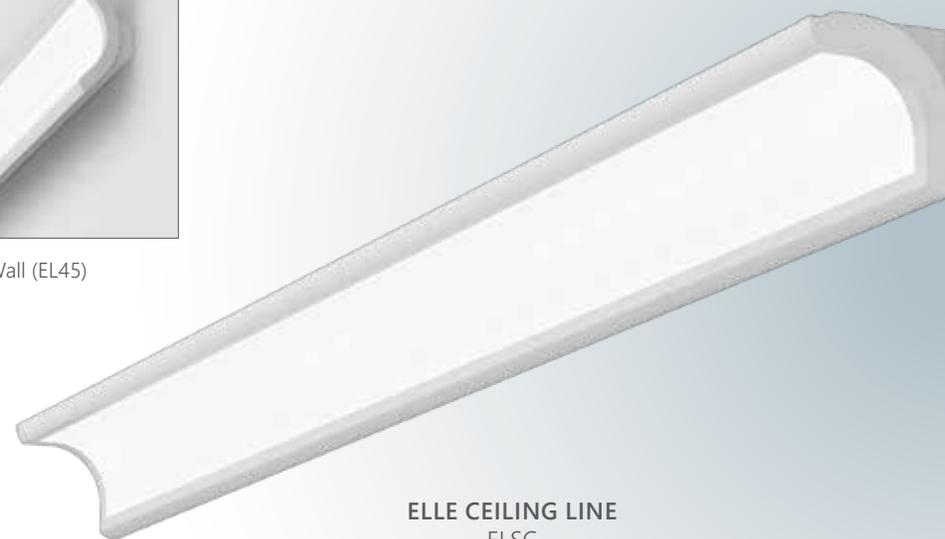
45° Wall (EL45)



InstaHinge™ secures fixture in both ceiling line and corner installations



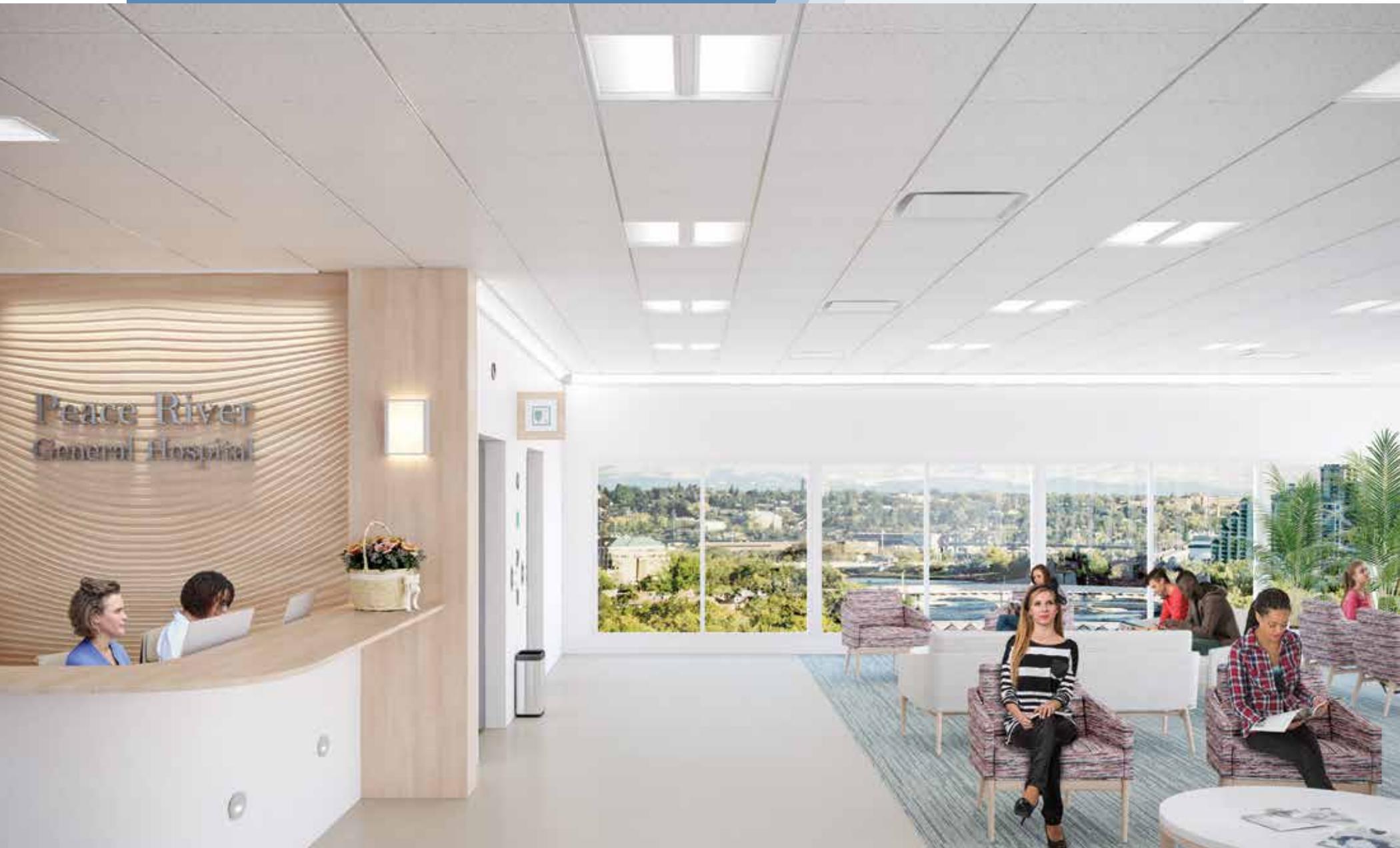
Patent-pending concave luminaire design results in an unobtrusive clean line down the corridor



ELLE CEILING LINE
ELSC



Patent Pending



Flexible Ambient

Employing BeWell™ light guide technology, this series delivers multiple light distributions with glare-free visual comfort. The center strip can be illuminated or left blank, or customized with accents, Mikrolite™ downlights or decorative louvers. Available in 1'x1', 1'x4', 2'x2' and 2'x4' dimensions.

- BeWell™ light guide directs light from each point source, eliminating transition lines, pixelation, and shadows
- General diffuse and wide distributions available
- Modular optical chamber with room-side access
- Controls and sensor ready
- Optional integration of Mikrolite™ recessed downlights or Stencil™ surface accents (1'x4', 2'x2', 2'x4')
- Low profile design, housing only 4" deep
- Available CCTs: 3000K, 3500K, 4000K
- Axitune® Tunable White and BIOS® also available



BCFA11
(1'x1')

BCFA14
(1'x4')

BCFA22
(2'x2')

BCFA24
(2'x4')



**FLEXIBLE AMBIENT 2X2
WITH MIKROLITE
BCFA22**



Patent Pending

Flexible Ambient Options

The Flexible Ambient Series is available with multiple options to enhance design. The center strip can be left blank or illuminated, to add an extra boost of ambient light. Mikrolite™ downlights are also available in various configurable lengths and multiple beam spread offerings, while stylish accents can field rotate 359° to add a spot of light where desired. The louver allows higher lumen outputs in a visually comfortable package.



Flexible Ambient provides general ambient lighting with adjustable accents to highlight signage and add extra dimension in an elevator lobby.



ILLUMINATED
CENTER STRIP



BLANK CENTER STRIP



MIKROLITE



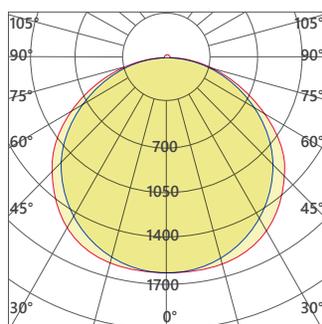
LOUVERED



ACCENTS

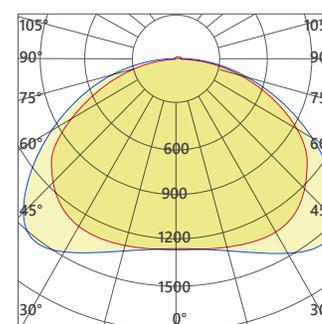
Flexible Ambient Distributions

The Flexible Ambient family takes ambient lighting to a whole new level. Its two distinct distributions — general diffuse and wide — allow spacing flexibility between luminaires, depending on ceiling height and application. The general diffuse distribution is suitable for lower or standard height ceilings, such as waiting areas, offices or nurses' stations; the wide distribution can be spaced farther apart for higher ceilings in areas such as lobbies, dining areas or atria.



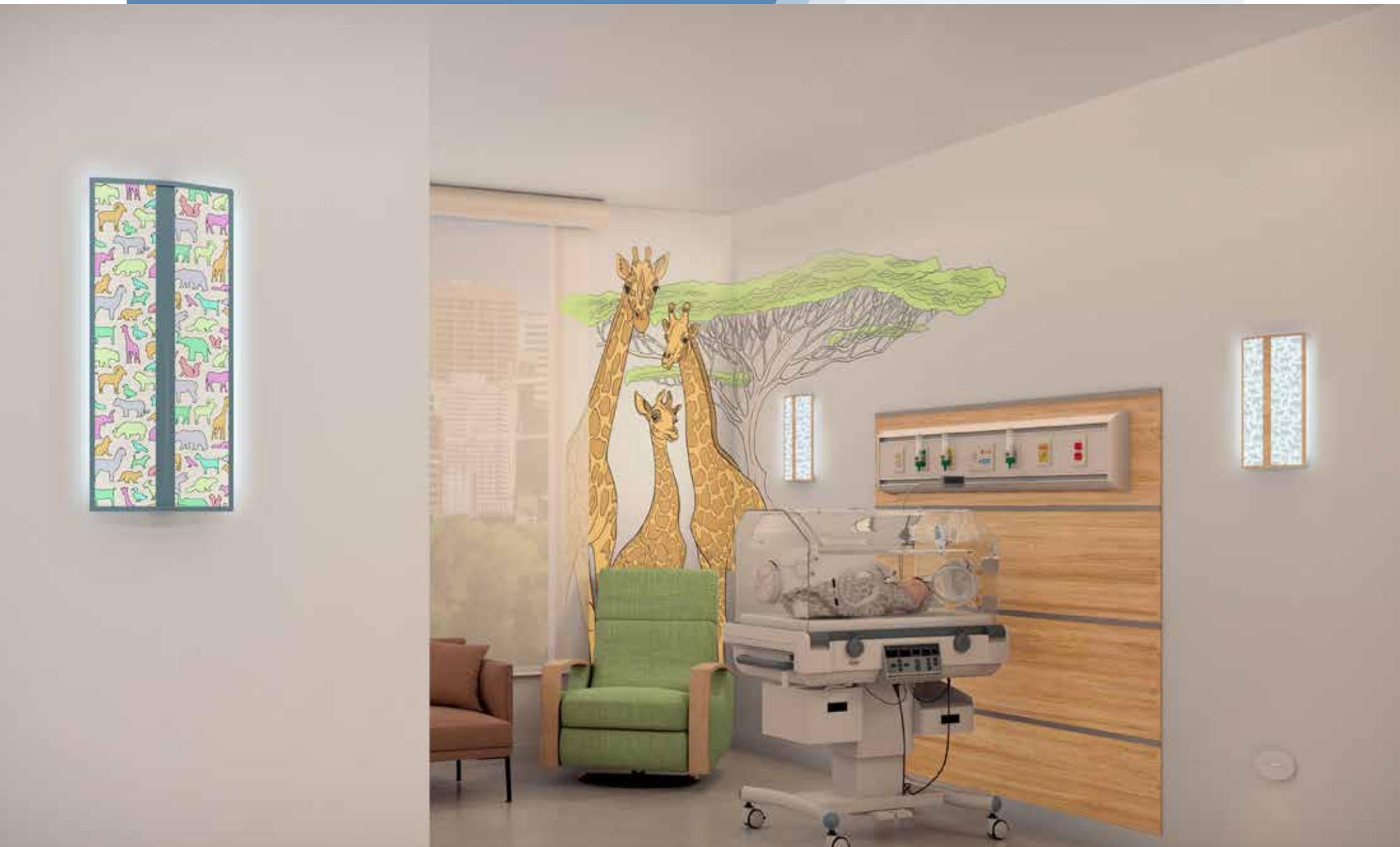
GENERAL DIFFUSE

For standard ceilings at 8' to 9' height, such as this nurses' station with floating ceiling, integrating luminaires with general diffuse distribution, at a closer spacing, provides uniformity and visual comfort for ambient lighting throughout busy days and nights.



WIDE

For 12' to 15' ceilings, the wider distribution luminaires can be placed farther apart, acting as a quiet backdrop to guest activity or architectural details. They provide uniform, shadow-free lighting for areas such as waiting rooms, lobbies or atria.



Tranquility Series™

Bring the outdoors in. In healthcare facilities nature scenes and other imagery are known to lessen anxiety, improve mood and foster healthier outcomes. There are opportunities for “positive distractions” by bringing in playful, colorful images to an otherwise stressful environment. Tranquility Series™ leverages a wide variety of uplifting, aesthetic images seamlessly applied over BalancedCare luminaire optics. Stunning graphics adapt to 3D luminaires and are customizable, enabling design freedom for health and wellness.

- Extensive library of high resolution photography and designer patterns
- Complete family with unique 3D Drop Lens, Overlay Lens, and Regressed Lens options
- Integration into Open Book, Closed Book and Box Sconces
- Available CCTs: 2700K, 3000K, 3500K, 4000K
- Axitune® Tunable White options: 2700K - 5000K or 2700K - 6500K



SCONCES
Open Book
BCSOTQ



SCONCES
Closed Book
BCSCTQ



SCONCES
Box
BCSBTQ



OVERLAY LENS
BCTQG



REGRESSED LENS
BCTQR

DROP LENS
BCTQD

Tranquility Series™ Graphics Gallery

There are opportunities for ‘positive distractions’ through illuminated panels and nature images. Select from the full collection of graphics on our website. Bring the outdoors in with complete design freedom. Custom image options are also available. Please refer to page 39 for more information.





BalancedCare™ Tranquility Drop Lens

...create a 3D ceiling that captivates and inspires

Exclusive 3D optics ideal for creating distinctive luminous ceilings

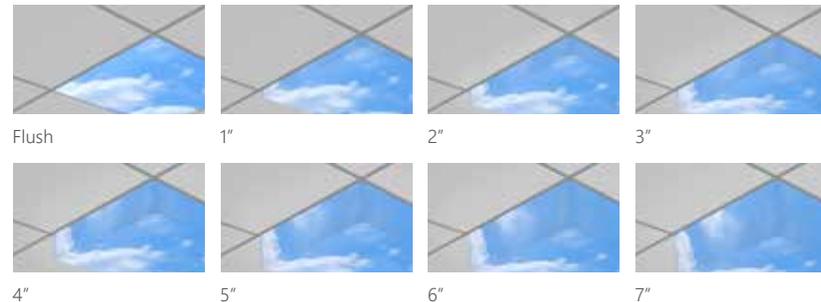
Play with the different lens depths to deliver a fresh, unique approach to the ceiling profile.

- 2'x2' Dimension
- Lens depths from flush to 7" in 1" increments
- Recessed housing less than 5" deep
- 3000 lumens*
- Compatible with 9/16" and 15/16" grids



DROP LENS
BCTQD

*Lumens based on standard luminaire without graphics.
The addition of Tranquility graphics will reduce output.



Design Flexibility

The Drop Lens family provides design flexibility, with lens options from flush to 7" depths. These can be field adjusted, to complement any application and add 3D interest to the ceiling.

Multiple depths and configurations possible to create unique profile 3D ceiling effects.

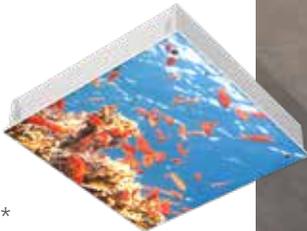


BalancedCare™ Tranquility Overlay Lens

...features dimmable ambient lighting that transforms multi-unit graphics into a single, continuous image.

Clean, uninterrupted appearance

- 2'x2', 4'x4' Dimensions
- Recessed housings suited to shallow plenums:
 - 2'x2': 3 1/2" deep
 - 4'x4': 5 1/8" deep
- Output: 2'x2' – 4000 lumens*, 4'x4' – 8000 lumens*
- Compatible with 9/16" and 15/16" grids

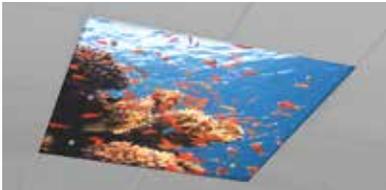


OVERLAY LENS
BCTQG 2'x2'

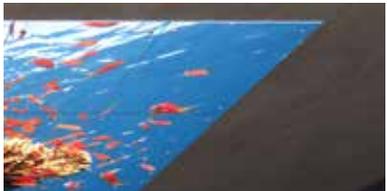
*Lumens based on standard luminaire without graphics. The addition of Tranquility graphics will reduce output.



OVERLAY LENS BCTQG 2'x2'



OVERLAY LENS BCTQG 4'x4'



Clean appearance when installed side-by-side, fully concealing T-bars. Decorative fasteners made of brushed aluminum.

Multiple configurations possible to create a single image up to 20' x 20'.





BalancedCare™ Tranquility Regressed Lens

...low profile, elegant architectural effect – a regressed lens skylight that appears to float in the ceiling.

Skylight appearance

- Regressed lens to enhance skylight effect
- Easy-to-remove lift'n'shift lens – no visible latches
- 2'x2': 2100 lumens*, fits 9/16" and 15/16" grids
- 2'x4': 5400 lumens*, fits 9/16" and 15/16" grids

*Lumens based on standard luminaire without graphics.
The addition of Tranquility graphics will reduce output.



REGRESSED LENS BCTQR 2'x2'



REGRESSED LENS BCTQR 2'x4'



REGRESSED LENS
BCTQR 2'x2'



BalancedCare™ Tranquility Sconce

...lets you add soft layers to complement any environment

Creating soft layers of light

- Horizontal or vertical orientation, surface mounting in multiple lengths.
- Amber nightlight option helps with nocturnal wayfinding.
- Detachable backplate for quick-disconnect and room-side access to driver.
- Shallow depth:
 - Box – 2"
 - Open Book – 2 3/8"
 - Closed Book – 3 1/8"



BOX
BCSBTQ



OPEN BOOK
BCSOTQ



CLOSED BOOK
BCSCTQ



Sky Scenes and Nature Scenes

From sky to sea to tropical landscapes, select from a wide variety of original photographic images to explore and admire, or provide your own.



TQ100

CLOUDS



TQ113

TREES AND CLOUDS



TQ124

TREES AND CLOUDS



TQ144

LANDSCAPE



TQ103

CLOUDS



TQ116

TREES AND CLOUDS



TQ127

TREES AND CLOUDS



TQ147

UNDERWATER



TQ106

CLOUDS



TQ119

TREES AND CLOUDS



TQ130

TREES AND CLOUDS



TQ145

UNDERWATER



TQ109

CLOUDS



TQ122

TREES AND CLOUDS



TQ133

TREES AND CLOUDS



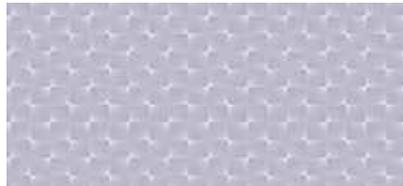
TQ146

UNDERWATER

Designer Patterns

Natural weaves and textures to complement any interior and...whimsical pediatric patterns to distract children from uncomfortable procedures. Each pattern available in six colorways, or request a custom color.

For additional patterns and color options, please visit our website at balancedcare.axislighting.com



STARBURST



CHECK



GEO



MOSAIC



ROPE



LEAVES



MEADOW



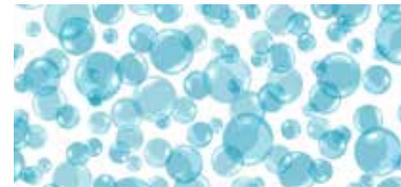
SUCCULENT



BALLOON CLUSTER



BALLOONS



BUBBLES



BUTTERFLY TANGLE



FISH TANGLE



SUNSHINE SQUARE



AT SEA



CRITTER CAMP



MRI



PATIENT ROOM



PATIENT BATHROOM



CORRIDORS



NURSES' STATION



WAITING ROOM



OTHER COMMON AREAS





BalancedCare™ MRI

The very nature of an MRI room is intimidating; designing for this application goes beyond meeting the required light levels. It's about creating a sense of calm by introducing biophilic elements, while providing safe operation among all the sensitive equipment in the room. Architectural linear lighting has traditionally been excluded from complex MRI suites - until now.

BalancedCare™ by Axis addresses these needs with an expanded portfolio of architectural healthcare luminaires for MRI applications. Now featuring SilentSource™ technology, an all-inclusive approach that reduces the noise responsible for unwanted artifacts in scanned images, housed in an easy-to-install enclosure, complete with filters, drivers and wiring. Form meeting function – it's in our DNA.



NON-FERROUS CONSTRUCTION

Due to the intense magnetic force of the MRI machine, where even the tiniest object can become a dangerous projectile, luminaires must be constructed of non-ferrous materials, meaning those containing no iron, such as aluminum or copper. Our MRI luminaires are all-aluminum construction.



FUNCTIONAL OPTICS & VISUAL COMFORT

BeWell light guide technology provides multiple precise distribution options to deliver the many layers of light required in MRI environments. Comfortable lighting that is dimmable, glare-free, and flicker-free supports the visual tasks of staff while contributing to a relaxed, reduced-stress environment for patients.



INTELLIGENT CONTROL

Remote 24V drivers with remote 0-10V analog dimming allow dimming to happen on the enclosure side, not on the luminaire side. Each 24V line is EMI-filtered, and each 0-10V circuit goes to a wall dimmer switch outside the MRI scanning room - further reducing risk of EMI.





ARCHITECTURAL FORM

Sleek, low-profile luminaires designed around today's LED technology - sophisticated optics in a miniature downlight, recessed linear shapes that include curved and circular options for creative patterns, and a unique Tranquility graphic series to enhance biophilic design - all combine to deliver a fresh, updated approach to the MRI.



SAFE OPERATION

BalancedCare MRI luminaires are sealed for infection control and designed with SILENT SOURCE™ technology to protect against Electromagnetic Interference (EMI). Our smaller filters produce less noise, which introduces less EMI to the space, reducing the risk of artifacts in scans. Each luminaire is non-ferrous and DC-powered, providing constant voltage and dimming capability for flexible illuminance levels, and each has passed stringent Military Standard 461-G testing, meeting criteria for conducted and radiated emissions.



EASE OF MAINTENANCE

Maintenance downtime in an MRI room can be considerably costly. BalancedCare luminaires are designed for ease of maintenance and sealed for cleanability. Our Remote Power Supply (RPS) houses electrical components such as drivers, filters and wiring. Combined with room-side access to luminaires, this system facilitates maintenance efforts, reduces costs, and prolongs the sustainability of luminaire systems.



MRI Challenges

MRI scanners employ very strong magnetic fields (usually between 1.5 Tesla and 3 Tesla*), radio waves, and Radio Frequency (RF) sensors to create images of body organs. The combination of strong magnetic fields and radio waves makes the MRI machine a source of extremely high electromagnetic emissions while making it susceptible to interference from external sources, as well. Even the lowest levels of noise can impact the MRI machine functionality and create artifacts in the scans.

The RF produced inside the room, as well as noise from other sources, can cause interference with equipment, and can reach MRI machines and digital circuits by traveling through electrical cables or through the air. Reduction or elimination of that noise is required for both conducted (cables) and radiated (air) emissions.

MRI equipment, supporting systems and lighting all require electrical power to operate, therefore cabling must enter the room. Cable installation can compromise the integrity of the MRI room shield, allowing both radiated and conducted emissions to enter and exit the room. MRI room filters have traditionally been used to address this concern.

* Tesla (T) is a unit of magnet strength measurement; one Tesla = 10,000 Gauss. By comparison, the earth's magnetic field is 0.00006 T or 0.5 Gauss.

Since the BalancedCare™ Silent Source™ system is outside the shielded room, it greatly minimizes the risk of compromising the shield and ultimately provides the safest levels of operation in the industry.

What is EMI?

Electromagnetic Interference (EMI) is equipment-generated 'noise' that can create unwanted artifacts, or distortions that appear in tissue and structures in MRI scans. EMI can be caused by interference with RF from various electronic components, or when RF shielding is compromised.



All Silent Source™ components are isolated within one remote enclosure located in the equipment room, facilitating maintenance and operation.

Optimal MRI Performance	Architectural Lighting Design	Positive Patient & Staff Experience
<ul style="list-style-type: none"> • Reduced risk of scan artifacts due to exclusive Silent Source™ technology in all MRI Series lighting systems. • Specially engineered platform ensuring low-noise MRI lighting. • Low-wattage, constant voltage drivers requiring smaller filters, increasing scalability, and producing less noise. • Multiple small filters provide a safeguard if a single filter malfunctions. • Each 0-10V circuit from a Remote Power Supply (RPS) allows dimming at a wall dimmer switch, which is physically located outside the MRI Scanning Room; this results in less risk of radio frequency interference. • Luminaires should be independently tested and certified to meet Military Standard 461G. 	<ul style="list-style-type: none"> • A comprehensive offering of architectural designs and dimensions to provide a fresh approach to MRI lighting. • Streamlined luminaires designed around today's LED technology. • Unique graphic series that includes a novel 3D effect, a continuous uninterrupted luminous image, a recessed skylight effect, and a series of sconces to tie a theme together - all provide comfort through biophilic design. 	<ul style="list-style-type: none"> • Modern design options provide dimming for a more soothing experience. • Biophilic options bring a sense of tranquility. • Flicker-free illumination protects patients and staff alike. • Visual comfort via shadow-free, glare-free patented BeWell™ optics.

MRI Design Objectives

The MRI suite is typically comprised of three main areas: a control room where staff read scans; a scanning room where the MRI machine – whether open or closed – is located and patients are wheeled in and transferred to the MRI table to prepare for the image scanning procedure; and a component or equipment room, which houses remote drivers, EMI/RF filters, and power supplies.



Shielded Imaging Room

Because of the strong magnetic force in the actual imaging room, luminaires need to be constructed of non-ferrous materials (no iron). Additionally, MRI machines emit powerful RF signals that can interfere with electronic equipment in the room. To prevent image artifacts, luminaire drivers must be equipped with protective RF filters. The lighting must be visually appealing and dimmable to create a relaxing environment for the patient. The recommended light levels range from 5-50fc.



Control Room (Non-Shielded MRI Installation)

Lighting in the control room should enhance the staff's ability to evaluate the images on a monitor. Indirect lighting on the surrounding walls and dimmable LED sources is desirable, giving the staff control of the light levels for their tasks. The recommended lighting requirement is 10-30fc on the horizontal task plane.



Equipment Room (Non-Shielded MRI Installation)

The equipment room houses all electronic components, RF filters and power supplies. It is a service area that facilitates maintenance of all electronic equipment used in the room. General ambient illumination, 30-50fc, is ideal for this space.

Beyond ensuring that MRI luminaires are non-ferrous* and won't create objectionable radio frequency (RF) interference, they must meet recommended illuminance requirements for this complex environment. In general the lighting requirements vary, but the target illuminance levels range from 5 - 50 footcandles (fc) - see chart below.

Another consideration is the ability to control the light levels for patient comfort. Dimmable sources are ideal in this space to help ease anxiety for the patient, and minimize veiling reflections on the monitors for the staff. Lighting should be uniform throughout the suite, but concentrated over the procedure bed. Lighting is typically used as a soothing technique, with playful graphics or color-changing capability to distract the patient from the procedure at hand.



Diagnostic Radiology & Imaging				
Criteria apply to various scanning methods, such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Ultrasound				
Task	Note	Horizontal (Eh)	Vertical (Ev)	Uniformity (Avg:Min)
Control Room/ Alcove	Eh at 2'6" AFF Ev at 4' AFF	10fc	5fc	3 to 1
Image Viewing	Eh at 2'6" AFF Ev at 4' AFF	30fc	10fc	3 to 1
Ceiling Art	Introduce backlit photomurals or art panels above recumbent patient's head position			
Preparation	Eh at 3' AFF Ev at 4' AFF	50fc	15fc	3 to 1
Procedure	Eh at 3' AFF Ev at 4' AFF	5fc	2fc	4 to 1

The most important lighting objectives in this suite are:

- Use of non-ferrous* materials in luminaires – even a paper clip can become a projectile due to the strength of the MRI's magnetic fields.
- Meet the recommended industry-established illuminance criteria.
- Luminaire layout is task-oriented for the staff, yet comfortable and positively distracting for the patient.
- Remote DC-rated low-voltage drivers; driver output must be filtered prior to entering the shielded MRI suite.
- Designed for ease of installation and maintenance.

*Non-ferrous materials, such as aluminum and copper, do not contain iron.

Silent Source™ Technology

The Remote Power Supply (RPS) system designed for MRI Series features Silent Source™. This technology is engineered to meet the stringent requirements of the MRI room, including reduction of Electromagnetic Interference (EMI).



The BalancedCare™ Silent Source™ Difference

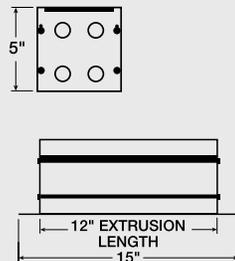
Our RPS houses low-wattage drivers that require smaller filters, which produce less noise and are less expensive than traditional larger filters. All filters are also contained in this specially-designed enclosure. The 0-10V dimming circuit, which runs from the RPS to the control room outside the MRI room, does not require a filter.

Silent Source™ simplifies dimming and maintenance by use of unique analog 0-10V dimming, which happens in the remote enclosure, not in the luminaire. Eliminating use of pulse-width modulation (PWM) allows slow changes in operation vs rapid changes - and that helps minimize ripple current, which, although transient, is another potential 'noise' source. Each 24V output from the RPS enclosure is connected to a required number of EMI filters; and each 0-10V circuit runs from the RPS enclosure to a wall dimmer switch, outside the MRI room.

The RPS enclosure is a non-ferrous, all-aluminum construction. It is available in three sizes:

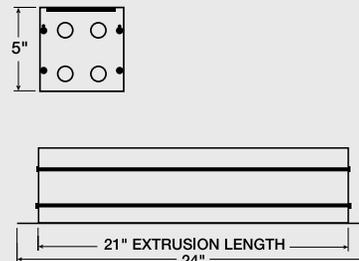
12" (RPSMRI12)

Contains one EMI filtered driver



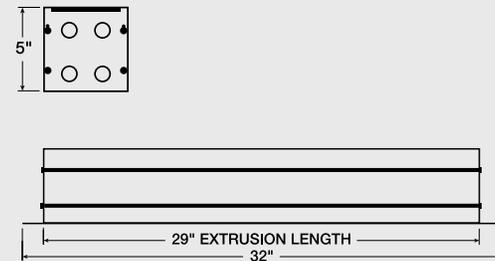
21" (RPSMRI21)

Contains two EMI filtered drivers



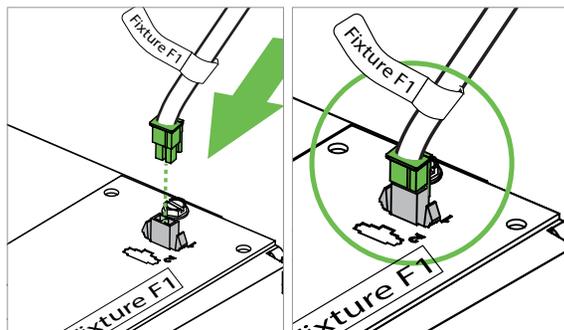
29" (RPSMRI29)

Contains three EMI filtered drivers



The Remote Power Supply (RPS) contains design features that, when combined with locating the RPS outside the MRI scanning room, comprise Silent Source™ – a strategy to control EMI.

Drivers	The EMI Filter	Power Cable
<p>AC/DC 120-277V constant voltage 24V with unique analog 0-10V integrated circuit.</p> <p>Up to three low-wattage drivers can be combined per RPS enclosure. Additional RPS enclosures can be used to accommodate as many drivers or zones as needed.</p>	<p>Designed to reduce electromagnetic noise to comply with MIL-STD-461G, which is a set of testing procedures that is part of the Air Force/Navy Fixed - a Department of Defense Interface Standard for EMI compatibility. Compliance means the equipment is rated to provide a high level of protection against radiated emissions (RE-102), and conducted emissions (CE-102).</p>	<p>One pre-installed cable (50-foot max. length) runs from an RPS to each luminaire, and both the cable and luminaire plate are labeled with the luminaire type to ensure they are paired correctly. The supplied Molex® quick-connect plug facilitates wiring from cable to luminaire. A cable enclosure within aluminum conduit is recommended for additional EMI shielding purposes, although not required.</p>



Easy to install

Fifty-foot plug-and-play cables run from the RPS to the luminaires for quick installation. Each cable is clearly identified to correspond to its matching luminaire to make installation a snap.

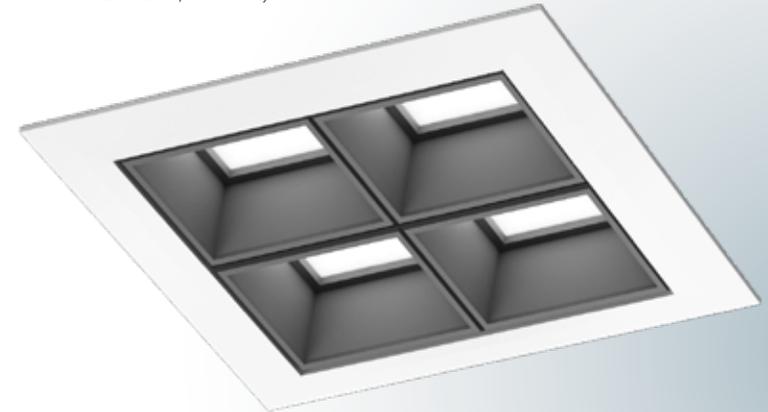


MRI Pixel™ Downlights

The highly aesthetic 1.5" square-in-square optical system delivers superior visual comfort, even at high light output levels. This new, architecturally pleasing take on MRI downlighting is constructed to meet the demands of any MRI room while outperforming yesterday's traditional reflector-based technology. BalancedCare™ MRI Pixel™ Downlights offer a sleek modern alternative to round recessed downlights. Precision optics deliver glare-free visual comfort. The minimalist look, featuring MikroLite® 1.5, is available in 4- and 8-cell linear forms, as well as 4-cell square forms.

- Linear forms: 1×4 cell (500* lm at 24VDC, 3500K) and 1×8 cell configurations (1000* lm at 24VDC, 3500K)
- Square form: 2×2 cells (500* lm at 24VDC, 3500K)
- 90 CRI
- Three beam spread options: 38°, 55°, 60°
- Efficacy: up to 111 lm/W with black finish
- CCTs: 3000K, 3500K, 4000K, 5000K
- Available in black, white and grey finish

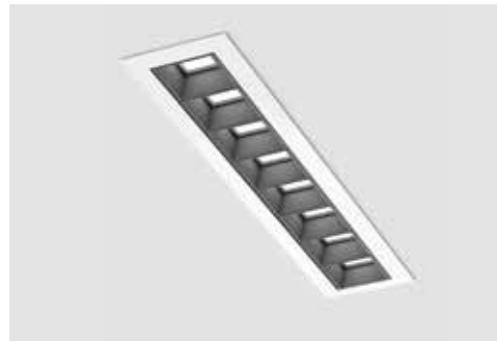
*Typical lumens, absolute value may vary.



MRI Pixel Downlights 2x2 Cell
BCPIXMRI22



MRI Pixel Downlights 4-Cell
BCPIXMRI14



MRI Pixel Downlights 8-Cell
BCPIXMRI18



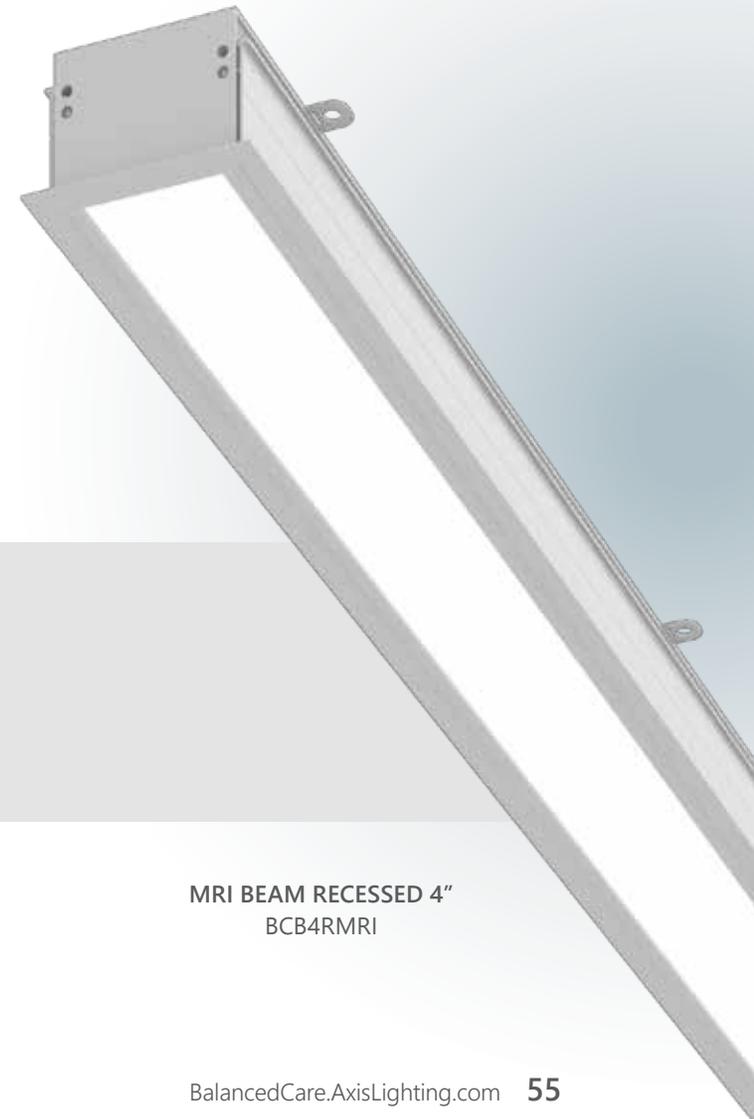


MRI Beam Recessed

BalancedCare™ offers a timeless architectural alternative to lay-in troffers commonly used for general ambient illumination in MRI applications. This non-ferrous linear collection supports consistent architectural design throughout the facility to create a balance between aesthetics, visual comfort and lighting performance.

- Lengths: Up to 12' or continuous run
- Recessed batwing, wall wash and graze optics available
- 90 CRI
- CCTs: 3000K, 3500K, 4000K, 5000K
- BCB2RMRI: 750* lm/ft at 24VDC, 3500K;
BCB4RMRI: 850* lm/ft at 24VDC, based on SO Lens at 3500K.
- Choice of aperture widths: 2" (BCB2RMRI) and 4" (BCB4RMRI)

*Typical lumens, absolute value may vary. Lumens vary with shielding; consult specification sheets.



BCB2RMRI and BCB4RMRI offer design versatility with batwing, wall wash, and graze optic options.

MRI BEAM RECESSED 4"
BCB4RMRI





MRI Flexible Ambient

MRI Flexible Ambient provides pleasant ambient illumination through a choice of lambertian or batwing distributions, ideal in the MRI suite. Both 1'x1' and 2'x2' configurations feature all-aluminum construction and a removable optical chamber that enables easy access to electrical components for quick maintenance. Flexible Ambient also employs BeWell™ lightguide technology, delivering multiple light distributions for general ambient lighting.

- BeWell™ lightguide ensures uniform distribution without glare, pixelation or shadows
- General diffuse and wide distribution options available for general ambient illumination
- 1' x 1': 2000* lm at 24VDC, 3500K, 2' x 2': 4000* lm at 24VDC, 3500K
- Low-profile design: housing only 4" deep
- 90 CRI
- CCTs: 3000K, 3500K, 4000K, 5000K

*Typical lumens, absolute value may vary.



MRI FLEXIBLE AMBIENT 1' X 1'
BCFAMR11



MRI FLEXIBLE AMBIENT 2' X 2'
BCFAMR122





MRI Sketch® Curved Recessed

Whether surrounding the ceiling in a round, rectangular or arc shape, the BalancedCare™ Sketch® Curved Recessed offers the ability to create soft curves of light, a design feature to promote calm and ease anxiety during procedures. The MRI Sketch® Curved Recessed family combines a high-efficiency mixing chamber with spotless high transmission lens to eliminate pixelation on the luminous surfaces. The system consists of curved and straight segments, which can be combined in select arrangements to form sinuous lines of uninterrupted light.

- Partial or complete circles available in 2.5', 12.5', and 22.5' diameters
- Circle sections can be used individually, or connected to create an arc
- Circle sections can be combined with straight sections, in lengths up to 8' or longer system runs, to create rectangles; consult specification sheet
- 90 CRI
- CCTs: 3000K, 3500K, 4000K, 5000K
- Typical lumens: 700 lm/ft at 4000K
- Drywall mounting

*Typical lumens, absolute value may vary.

Available configurations



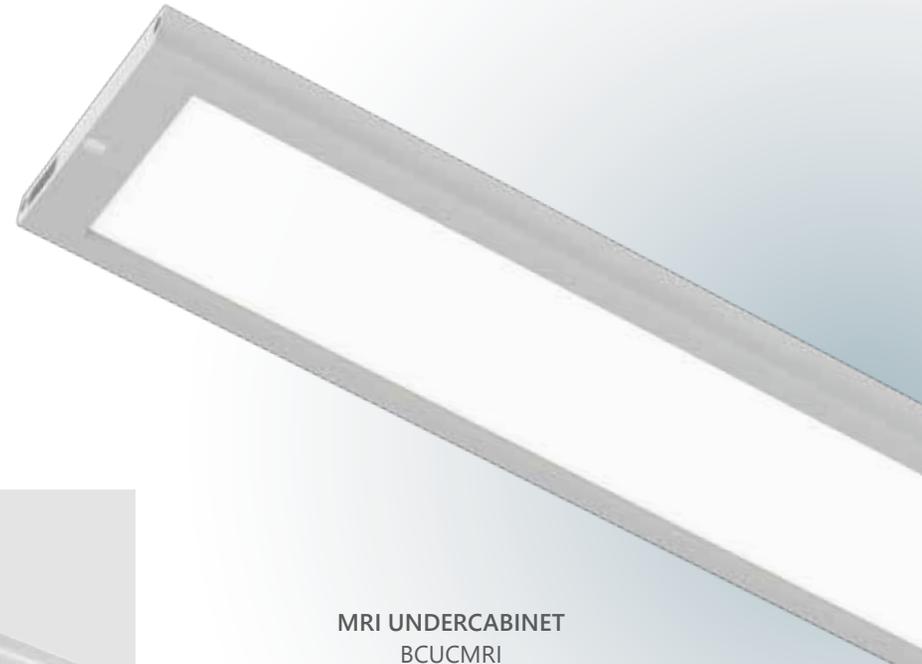
MRI SKETCH® CURVED RECESSED
BCSKMRI



MRI Undercabinet

Good things come in small packages. This ultra-thin undercabinet features high-lumen output, excellent uniformity and color rendering, and a smooth surface for easy cleanability. The BalancedCare™ MRI Undercabinet luminaire features our signature wafer-thin design, non-ferrous construction and BeWell™ lightguide technology, optimizing lumen output while providing sharp cutoff distribution.

- Wafer thin - less than 0.5" deep
- Available in 6 lengths: 10", 16", 23", 30", 36", 42"
- Output: Typical 400 lm/ft
- 90 CRI – CCT: 4000K
- White or Black housing finish options
- 24VDC driver located in remote power supply
- Available with interconnect and powercord accessories



MRI UNDERCABINET
BCUCMRI



Linking connectors in 6", 12", and 24" lengths



Joiner link for continuous runs





MRI Sconces

BalancedCare™ MRI Sconces provide an added layer of light combining aesthetics, function and flexibility - scalable to any room within the MRI suite, from prep room to scanning room to control room. These ultra low-profile sconces make MRI lighting more welcoming than institutional. Our lightguide technology delivers low glare, omni-directional ambient light while also providing a soft wash on the surrounding wall.

- Designed with visually comfortable BeWell™ Optics providing ambient lighting and wall glow
- CCTs: 3000K, 3500K, 4000K, 5000K
- Horizontal or vertical orientation, surface mounting
- Available in three lengths: 12", 24" and 36"
- Typical lumens: 600 lm/ft; 90 CRI standard
- Shallow depth (Open Book - 2-3/8", Box - 2", Closed Book - 3-1/8")



MRI BOX
BCSBMRI



MRI CLOSED BOOK
BCSCMRI



MRI OPEN BOOK
BCSOMRI







BalancedCare™ PATIENT ROOM

The patient room is multi-layered, demanding various lighting requirements for both the patient and staff. The lighting goal for the patient is to create a visually comfortable, glare-free environment that provides a natural 24-hour sequence of light for better sleep quality, safer navigation and overall healing. The lighting goal for the staff is the ability to perform multiple tasks under the proper lighting for the best care of the patient. Because of these objectives, healing environments should incorporate multiple options. From general ambient to exam, steplight to task functions — along with the sophistication of personal lighting control for patient comfort, and tailored solutions from white light to color tuning options for circadian entrainment — BalancedCare™ by Axis brings it all together.



WELLNESS

Today's patient room challenges the most thoughtful designs: provide a welcoming, relaxed environment that promotes a sense of wellbeing, while equipping it to perform the most critical tasks and adhere to the most stringent standards. Lighting is the element that connects people to this environment – it affects performance, recovery, emotions and state of mind.



FUNCTIONAL OPTICS & VISUAL COMFORT

Glare-free lighting is of paramount importance in a nurse's ability to function without distraction, and to a patient's comfort and satisfaction for the duration of their stay. BeWell™ Optics enhances both patient and staff experience by providing seamless visual comfort with smooth transitions between functions. Combined with BeWell™ Controls, you have a layered system approach designed to work in concert with each other.



INTELLIGENT CONTROL

Since patient room lighting is multifunctional due to the various tasks performed in these spaces, proper control of these functions is critical. BeWell™ Controls will ensure seamless integration between the lighting, control devices and users. Luminaires can also be sensor-ready to enable behaviors that not only enhance patient and staff experience, and improve quality of care, but serve to improve hospital efficiency as well.





ARCHITECTURAL FORM

Sleek, low profile architectural forms that blend into the healing environment are a refreshing change from the mundane and institutional looks of many healthcare products today; they conceal the sophisticated features and state-of-the-art performance these luminaires provide.



INFECTION CONTROL & PERFORMANCE

Sealed housings and optical media prevent transference of pathogens from patient room to plenum to help reduce risk of healthcare associated infections (HAIs). Ingress Protection (IP) ratings determine that fixtures are sealed against contaminants and the National Sanitation Foundation (NSF2) ratings assure cleanability. Look for the performance icons associated with each product



EASE OF MAINTENANCE

Smooth, non-corrosive surfaces can withstand the harsh cleaning protocols necessary to minimize risk of healthcare associated infections (HAIs). Room-side access to drivers and components facilitates maintenance efforts, reduces costs, and prolongs sustainability of luminaire systems.



Innovative Optical System Directs Light Where It's Needed — Comfortably

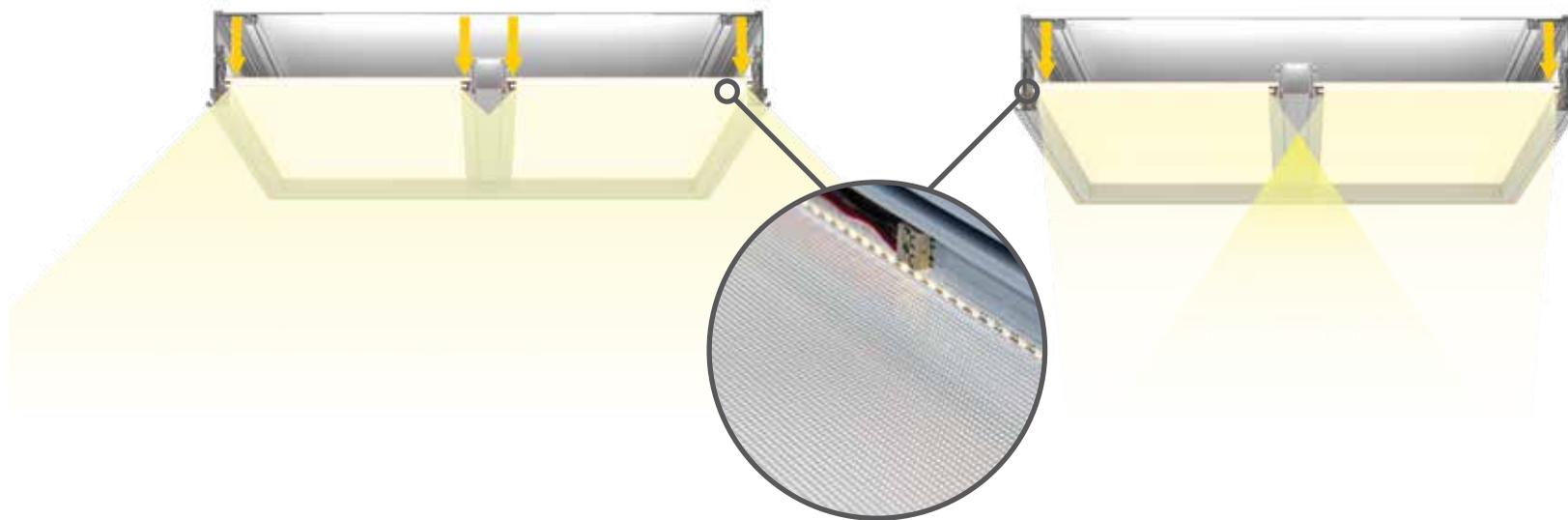
BeWell™ Optics delivers lighting that promotes a healing environment. BeWell™ is a patent pending, materials-based technology that uses molecular optics to direct - not reflect - light. The result is amazingly uniform distribution, without glare, shadowing, or pixelation. BeWell™ provides better visual acuity for tasks, and softer, healing visual comfort in the space.

AMBIENT

BeWell™ Optics replaces traditional segmented reflectors to disperse the light uniformly across the entire lens.

EXAM

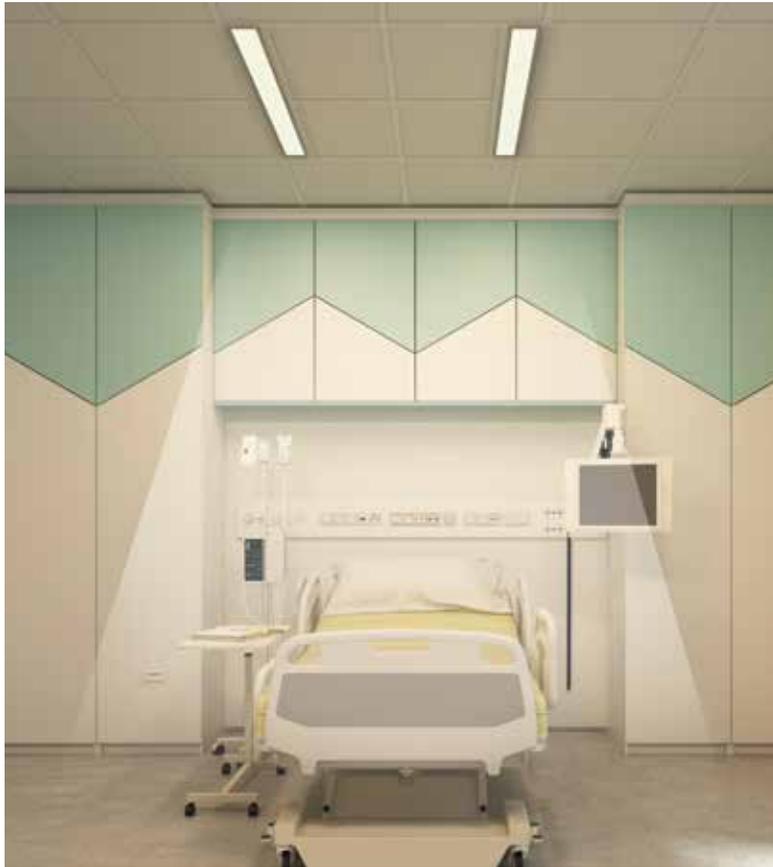
In the same luminaire, BeWell™ optics balances concentrated higher intensity light for examination with softer ambient light.



SEALED LIGHT GUIDE

Unique patent pending sealed light guide design, optimized for optics, infection control and multi-function controllability

No more segmented reflectors in clunky housings... just beautiful, seamless optics switching between functions



General Ambient - a base layer of light for general conversation and circulation around the patient bed, which the patient can control from their remote pillow speaker or staff can control from a wall switch; light level and spectrum can be tailored to provide circadian stimulus



Exam - adds asymmetric beams of light to the ambient layer, delivering a higher intensity of uniformly distributed, high color rendering light onto the bed, to allow examination of the patient from head to toe; staff can control from wall switch at headwall and entry

Lighting Requirements

Today's patient rooms may convert from acute care to critical care in a matter of minutes. Lighting must accommodate diverse needs from enabling a nurse to evaluate a patient's condition by their skin coloration to assisting a surgeon who rushes in to perform an emergency procedure.

OVERBED GENERAL AMBIENT



Ambient – diffuse lighting for general conversation and movement around the patient bed, recommendation is 100-200 lux at floor for area surrounding bed, 4:1 avg:min uniformity.

OVERBED EXAM



Exam – requires excellent color rendering to evaluate a patient's condition; sufficiently high, uniform light levels focused on the bed area for examination of patients from head to foot. Provides recommended 500-1000 lux at 36" Above Finished Floor (AFF), 2:1 avg:min uniformity.

OVERBED READING



Reading – focused light onto a 45° incline plane, recommendation is 400-800 lux on horizontal when patient is in elevated reading position, 3:1 avg; min uniformity.

NIGHT CHECK



Night check – light levels dimmed low enough for staff to check on patients during the night without waking them from sleep, recommendation is 30 lux at 36" Above Finished Floor (AFF).

Supplementary Lighting

Distinct functional modes deliver high quality lighting for a complex environment: These functions work independently or together to deliver light levels and distributions that align with recommended practice, designed to suit both patient and staff needs.

STEPLIGHT



Reducing the risk of falls is one of the highest priorities in patient rooms. Low level steplights help patients safely navigate from bed to bathroom at night. Mounted at 18" Above Finished Floor (AFF), with 90° cutoff to minimize glare, they provide recommended low level illuminance of 4 lux.

DECORATIVE SCONCE

Slim, soft-glow decorative sconces provide a soothing aesthetic, project less than 3" from the wall for ADA compliance and include an integral amber nightlight. They contribute to general ambient illuminance in any location.

UNDERCABINET



Provides adjustable illuminance levels for day or night, selectable correlated color temperature (CCT), and touch-free controls for ease of operation and infection prevention. Recommended 500 lux, 3:1 avg:min uniformity on workplane.

GENERAL AMBIENT



Families or visitors may spend an hour or overnight. Diffuse, glare-free lighting provides an atmosphere for conversation, casual seating, reading or working on a laptop; contributes to recommended 300 lux at 30" AFF, 3:1 avg:min uniformity.

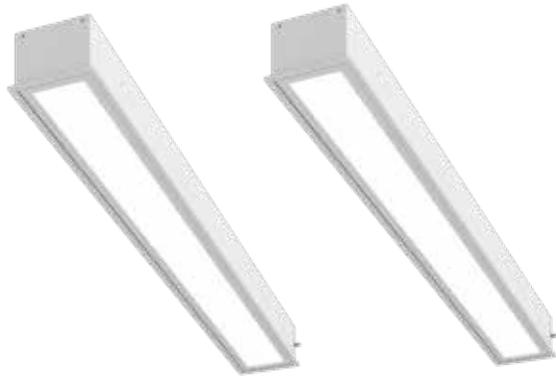
Multi-Function Overbed



MULTI-FUNCTION OVERBED
BCM22 (2'x2') BCM24 (2'x4')



Multi-Function Asymmetric Duo



MULTI-FUNCTION ASYMMETRIC DUO
BCASY2



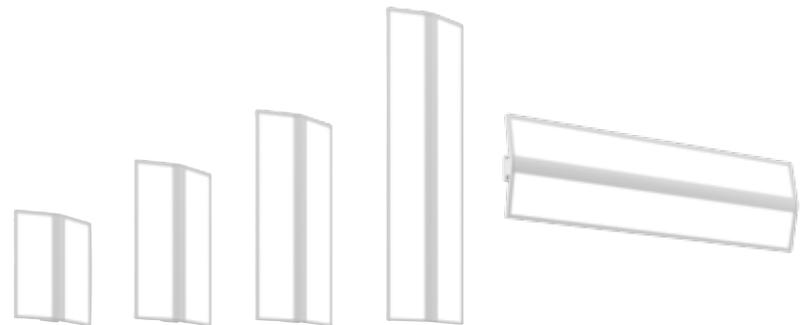
Sconces



BOX
BCSB

OPEN BOOK
BCSO

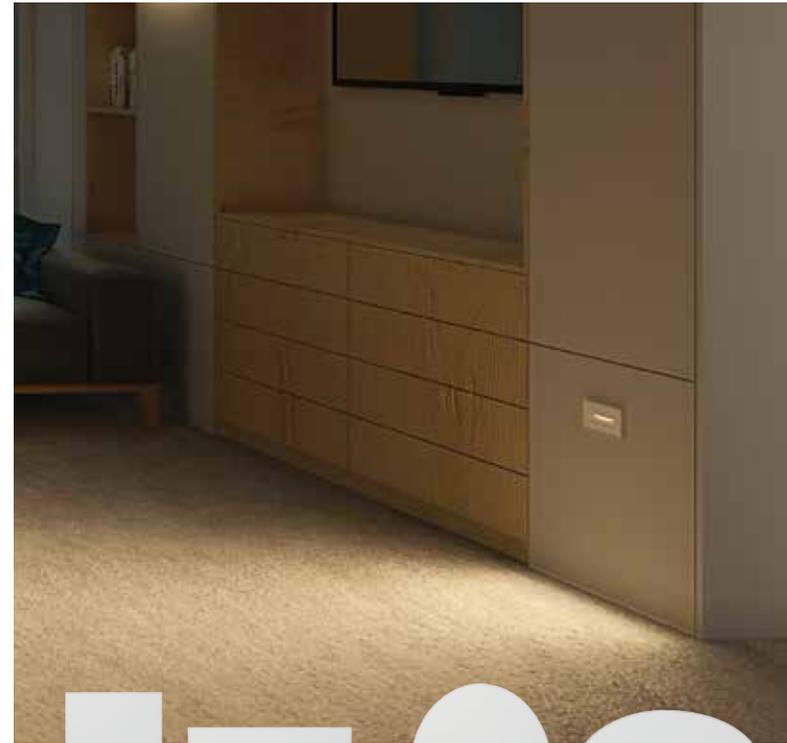
CLOSED BOOK
BCSC



Four lengths - 12", 18", 24" and 36" - are available for each family. Luminaires can also be mounted horizontally



Steplights



White LED:
2700-4000K



Amber LED



Blue LED



Thru wall option



RECTANGULAR
BCSRV / BCSRH

OVAL
BCSOV / BCSOH



Flexible Ambient



FLEXIBLE AMBIENT
BCFA
1'x1', 1'x4', 2'x2', 2'x4'



Flexible Ambient is available with Stencil™ surface accessories.



Undercabinet



UNDERCABINET BCUC

Six lengths: 10", 16", 23", 30", 36", and 42"



Wafer thin - less than 0.5" profile



Linking connectors in 6", 12", and 24" lengths



Power cordset



Joiner link for continuous runs

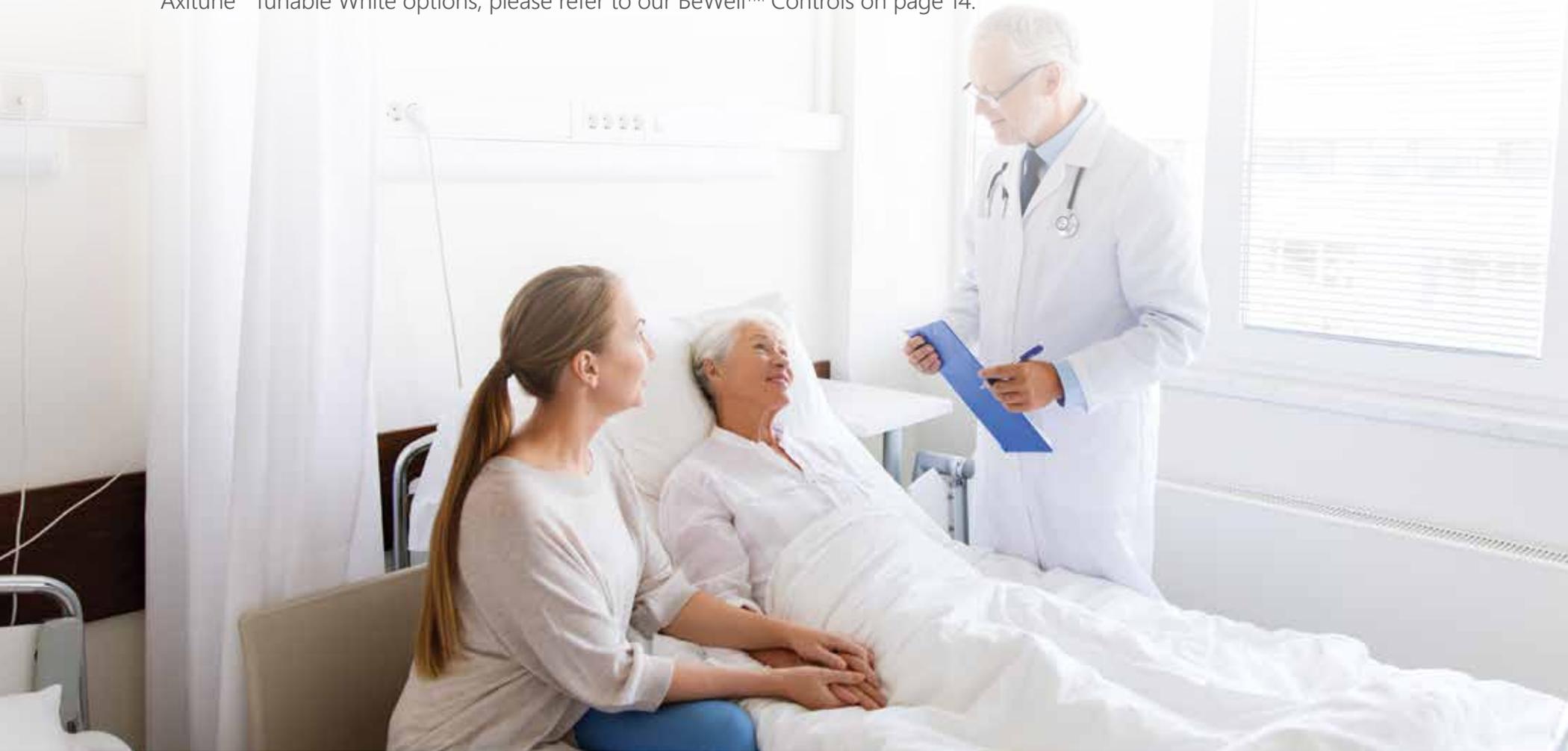


Sensor-enabled touch-free on/off and dimming



Patient Room

Since patient room lighting is multi-functional due to the various tasks performed in these spaces, proper control of these functions is critical. BalancedCare™ luminaires with BeWell™ Controls will ensure seamless integration between the lighting, control devices and users. Luminaires can also be sensor-ready to enable behaviors that not only enhance patient and staff experience, but serve to improve hospital efficiency as well. For additional information on Axis' overall controls platform and Axitune® Tunable White options, please refer to our BeWell™ Controls on page 14.





REGO TABLET*



PILLOW SPEAKER*



LOW VOLTAGE CONTROLLER**

From patient-controlled pillow speakers that communicate with nurse call systems, to wall switches controlled by the care providers, Axis has partnered with trusted industry leaders to tie the patient room into the overall healthcare operating system.

WALL SWITCH OPTIONS:



BCWS1



BCWS2



BCWS3



BCWS4



BCWS5



BCWS6

*Supplied by Curbell

**Integral to recessed luminaires





BalancedCare™ PATIENT BATHROOM

Providing safe patient navigation to and from the patient bathroom to prevent dangerous falls is a critical concern. Steplights placed outside the bathroom balance the need for safe navigation while avoiding circadian disruption. Like the patient room, the lighting in the bathroom is also multi-functional. These spaces benefit from modern, hospitality-driven designs with enhanced functionality, such as sconces with integral nightlights and vanity mirrors with high vertical illumination. BalancedCare™ by Axis brings it all together.

Patient Bathroom



WELLNESS

Reducing the risk of falls is of the highest priority in patient bathrooms. Safe maneuverability from vanity to toilet area, often assisted by staff, is improved by uniform, shadow-free illumination. In addition to effective lighting in patient bathrooms, BalancedCare™ addresses safety and infection control concerns for overall wellness.



FUNCTIONAL OPTICS & VISUAL COMFORT

BeWell™ Optics optimizes light distribution, comfortably directing light where needed for patient bathroom needs. High vertical light levels at the vanity – without shadowing – improve facial modeling for patients of all ages. Glare-free lighting is important for both patient comfort and safety while tending to hygiene, as well as a nurse's ability to effectively assist. Low level amber nightlighting introduces a layer of safety without disturbing patients' sleep patterns.



INTELLIGENT CONTROL

BeWell™ Controls encapsulates everything from wall switches to sensors in patient bathrooms, to provide safety and enhance the patient and staff experience. Sensor-enabled nightlighting from the vanity mirror guides a patient from bed to bath without reaching for a wall switch or being disturbed by harsh white light. Bathroom light turns on simultaneously with overbed exam light to facilitate patient evaluation. Convenience and safety are prioritized.





ARCHITECTURAL FORM

Sleek, low profile architectural forms that blend into the healing environment are a refreshing change from the mundane and institutional looks of many healthcare products today; they conceal the sophisticated features and state-of-the-art performance these luminaires provide.



INFECTION CONTROL & PERFORMANCE

Sink basins, showers and commodes introduce opportunities for bacteria and viruses to propagate. BalancedCare™ luminaires feature sealed housings and optical media, along with smooth, corrosion resistant surfaces for ease of cleanability. Ingress Protection ratings determine that fixtures are sealed against contaminants and moisture in these areas, and NSF2 ratings assure cleanability. Look for the performance icons associated with each product.



EASE OF MAINTENANCE

Smooth, non-corrosive surfaces can withstand the harsh cleaning protocols necessary to minimize risk of healthcare associated infections (HAIs). Roomside access to drivers and components facilitates maintenance efforts, reduces costs, and prolongs life of luminaire systems.



Lighting Requirements

Distinct functional modes deliver high quality lighting for a complex environment: These functions work independently or together to deliver light levels and distributions that align with recommended practice, designed to suit both patient and staff needs.

MIRROR



Integrally illuminated vanity mirror, flat or beveled, with color rendering and illuminance levels to enhance facial modeling or to evaluate skin tones for patients of all ages and abilities. Mirror has 5° tilt option for wheelchair viewing angle; provides recommended 400 lux vertically from 36" to 60" at vanity's edge.

NIGHTLIGHT



Sensor-enabled white or amber nightlight (590 nm) provides safe entry into bathroom without having to fumble for a switch. Turning on a bright white light could prevent patient from returning to sleep and disrupt circadian rhythms; provides the recommended 60 lux on vanity surface.

Supplementary Requirements

Layers of light are especially important in a patient bathroom, allowing patients to navigate safely any time day or night, and providing staff with light levels, color rendering and controls to effectively evaluate patients' conditions whenever necessary.

STEPLIGHT



Low level steplights help patients safely navigate from bed to bathroom at night. Mounted at 18" Above Finished Floor (AFF), with 90° cutoff to minimize glare, they provide recommended low level illuminance of 4 lux.

GENERAL AMBIENT



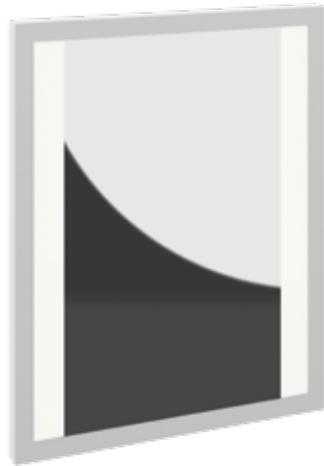
Recessed ceiling mounted luminaires and/or sconces help fill the volume of space with shadow-free lighting to provide the recommended 100 lux at floor, 2:1 avg:min uniformity.

SCONCE



Slim, soft-glow decorative sconces provide a soothing aesthetic, project less than 3" from the wall for ADA compliance and include an integral amber nightlight. They contribute to general ambient lighting.

Vanity Mirror



FLAT
BCVF



Flexible Ambient



FLEXIBLE AMBIENT
BCFA11 (1'x1') BCFA14 (1'x4')



Steplights



RECTANGULAR
BCSRV / BCSRH

OVAL
BCSOV / BCSOH







BalancedCare™ CORRIDORS

Hospital corridors are high-volume circulation spaces used by nurses, doctors, patients and visitors alike. Maintaining uniform, glare-free light levels is important for fall prevention measures, wayfinding, and also a consideration for patients wheeled on a gurney or in a wheelchair. Typically, functional asymmetrical lighting is preferred with complementary decorative sconces and steplights to help layer the lighting down the corridor. Luminaires need to be easy to service with access from below, and durable enough to withstand potential impacts within these congested areas.

BalancedCare™ by Axis brings it all together.

Corridor Lighting



WELLNESS

A holistic approach to lighting extends to all areas of patient and guest circulation. Lighting that is welcoming, and clearly defines wayfinding, creates a positive, less stressful experience for family and friends when seeking a specific destination within complex hospital environments.



FUNCTIONAL OPTICS & VISUAL COMFORT

Hospital corridors pulse with congestion and activity 24 hours a day. BeWell™ Optics delivers light that can be directed where needed without causing uncomfortable glare for patients viewing it from any angle; or for staff and visitors as they move from one zone to another. Balancing layers of light from multiple low profile luminaires and directions creates a discrete yet effective backdrop to active corridors.



INTELLIGENT CONTROL

BalancedCare™ luminaires can integrate 24-hour corridor operation into the building's lighting control system, and customize programming to coordinate with adjacent zones. It can also include sensing options to track equipment and staff, and monitor room usage to optimize space utilization. Layered with BeWell™ Optics, they simplify healthcare solutions.





ARCHITECTURAL FORM

Let lighting be your guide. Sleek, linear architectural forms 'follow' the corridor to reinforce the sense of passage and movement. Slim wall sconces complement ambient lighting, provide night lighting, and visually add identity to the diversity of corridors in a complex hospital system.



INFECTION CONTROL & PERFORMANCE

Transfer of bacteria and pathogens do not exclude corridors. Smooth, non-corrosive luminaire surfaces can withstand the harsh cleaning protocols necessary to minimize risk of healthcare associated infections (HAIs). BalancedCare™ with the appropriate listings for these applications, ADA-compliant sconces among them. Look for the performance icons associated with each product.



EASE OF MAINTENANCE

In these high congestion areas, easy-to-clean surfaces and room-side access to drivers and components facilitates maintenance efforts, reduces costs, and prolongs life of luminaire systems. The ability to remove a component cartridge and replace it without disruption to traffic flow and daily activities is especially valued.



Lighting Requirements

Distinct functional modes deliver high quality lighting for a complex environment: These functions work independently or together to deliver light levels and distributions that align with recommended practice, designed to suit both patient and staff needs.

GENERAL AMBIENT



Sleek, architecturally integrated perimeter lighting provides glare-free passage from any vantage point, as well as recommended light levels for patient corridors of 100 lux day, 50 lux night, 2:1 avg:min uniformity.

STEPLIGHT



With choices in color of light and faceplate style, these low profile steplights provide a visible rhythm of light for navigation, 90° cutoff to minimize glare, mounted at 18" Above Finished Floor (AFF) to provide low recommended light level of 4 lux.

SCONCES



Slim, soft-glow decorative sconces provide a soothing aesthetic, project less than 3" from the wall for ADA compliance and include an integral amber nightlight. They contribute to recommended light levels, at floor, of 100 lux day, 50 lux night.

Decentralized Nurses' Station

Complex lighting needs require flexible lighting systems with simple controls and glare-free optics. Nestled between two patient rooms, these nurses' stations allow nurses to give more personal attention to fewer patients at a time. They need clear visibility into the room, without veiling reflections on windows or monitors, personal control over the lighting at their station for visual tasks and circadian regulation, and overriding control in case a patient is in distress.



Elle Ceiling Line



ELLE
ELSC

ENDCAP OPTIONS



Step



Flat



InstaHinge™ on track
90° rotating mechanism
secures fixture along
ceiling line



Patent-pending concave
luminaire design results in
an unobtrusive clean line
down the corridor



Pose



POSE TASK
PSBC



Surface - Flat



Surface - Right Angle



Wall - Flat



Wall - Step

TWO OPTICS + TWO SIDES



One illuminated side



Two illuminated sides



Beam 3 SurroundLite™



Featuring SurroundLite™ optics, Beam 3 delivers sharp cutoff and reduced contrast to improve visual comfort. Additionally, luminaires can be more widely spaced so fewer are needed to light the corridor.



Create clean, seamless runs that are easier to install with this quality press-in acrylic lens that will not crinkle or bow. Available in lengths up to 48'

RECESSED BEAM 3
B3RLED



Cove Perfekt™



COVE CEILING
CC

COVE WALL
CCW



Sconces



BOX
BCSB

CLOSED BOOK
BCSC

OPEN BOOK
BCSO



Steplights



RECTANGULAR
BCSRV / BCSRH

OVAL
BCSOV / BCSOH





28

29



BalancedCare™ NURSES' STATION

Nurses' stations hold prominence both as destination and hub of life-giving information. They often work in coordination with adjacent corridors, requiring similar solutions for safe navigation. Increased daytime ambient light levels, reduced nighttime levels and low-illuminance steplights help staff safely circulate from zone to zone – nurses' station to corridor to patient room. Lighting should also support the visual and non-visual needs of nurses of all ages, who work an inordinate number of hours and defy normal 24-hour schedules. BalancedCare™ by Axis brings it all together.

Nurses' Station



WELLNESS

Nurses' schedules are erratic – day shift, permanent night shift, rotating night shift – causing circadian disruption and dips in alertness. Spectrally tunable task lighting, views to nature, sufficient contrast on monitors – a lighting system tailored to personal schedules and visual needs can provide balance to their days, nights and overall health and wellbeing. Private spaces dedicated to personal light therapy, or perhaps just meditation, offer refuge and an outlet to release the emotions of difficult days.



FUNCTIONAL OPTICS & VISUAL COMFORT

Layers of light may never be more important than in nurses' stations. When eyes need to adapt to screen brightness then jump to tedious visual tasks such as reading scribbled prescriptions or notes on paper, eye fatigue sets in. Luminaire optics that spread light uniformly and without glare help balance a space as busy and complex as a nurses' station; they mitigate discomfort, prevent washout on monitors, and enliven a hub of information and caregiving. They are BeWell™ Optics.



INTELLIGENT CONTROL

Patient controlled pillow speakers that relay to the nurses' station, or automatic 24-hour programs with manual overrides for ambient lighting, give nurses the control they need for their station, as well as for patient rooms and corridors within their zone. Sensors that provide asset tracking to easily locate equipment save time and energy, and improve hospital efficiency.





ARCHITECTURAL FORM

Linear forms that disappear into walls and ceilings, including task lighting that blends into partitions, provide lighting with purpose, not distraction. A departure from the traditional, these luminaires exude a positive energy and clean aesthetic particularly suited to today's hospital environments.



INFECTION CONTROL & PERFORMANCE

During these times of meticulous precautionary measures, BalancedCare™'s smooth, noncorrosive luminaire surfaces can withstand the harsh cleaning protocols necessary to minimize risk of healthcare associated infections (HAIs). BalancedCare™ luminaires have been tested and certified with the appropriate listings for these applications. Look for the performance icons associated with each product.



EASE OF MAINTENANCE

Areas as active and populated as nurses' stations do not allow time for maintenance interruptions, Easy-to-clean surfaces and room-side access to drivers and components facilitate maintenance efforts, reduce costs, and prolong life of luminaire systems.



Lighting Requirements

The nurses' station is an opportunity for the lighting to shine and guide – a beacon at a potentially confusing crossroad of corridors leading to different destinations. Distinct functional modes deliver high quality lighting for this complex environment: These functions work independently or together to deliver light levels and distributions that align with recommended practice, designed to suit both patient and staff needs.

GENERAL AMBIENT



Volumetric distribution via BeWell™ Optics provides a comfortable backdrop for visual tasks and prevents washout or veiling reflections on monitors. Minimum of 300 lux day, 100 lux night, at floor, 3:1 avg:min uniformity.

COVE



Visually comfortable, shadow-free lighting with architectural distinction accentuates linear runs such as corridors and facilitates easy passage from zone to zone.

UNDERCABINET



Task lighting that does not diminish screen contrast, provides adjustable illuminance levels for day or night, offers selectable correlated color temperature (CCT) - and touch-free controls for ease of operation and infection prevention. Recommended 500 lux, 3:1 avg:min uniformity on workplane.

Supplementary Requirements

Visible from corridors and patient rooms, nurses' station lighting should complement the corridor lighting yet elevate its prominence both as destination and hub of life-giving information. Its lighting should also support the visual and non-visual needs of nurses spanning all ages, who work an inordinate number of hours and defy normal 24-hour schedules.

PERIMETER



Sleek, linear architectural forms enhance and delineate its perimeter, making it visible from any direction. This layer of visually comfortable, shadow-free lighting, contributes to recommended light levels of 400 lux day, 300 lux night, at floor.

SCONCES



Slim, soft-glow decorative sconces provide a soothing aesthetic, project less than 3" from the wall for ADA compliance and include an integral amber nightlight. They contribute to recommended light levels of 100 lux day, 50 lux night, at floor.

STEPLIGHT



With choices in color of light and faceplate style, these slim steplights provide a visible rhythm of light for navigation. Mounted at 18" Above Finished Floor (AFF), with 90° cutoff to minimize glare, they provide recommended low level illumination of 4 lux.

Flexible Ambient



FLEXIBLE AMBIENT
BCFA
1'x1', 1'x4', 2'x2', 2'x4'



Flexible Ambient is available with Stencil™ surface accessories.



Sconces



BOX
BCSB



CLOSED BOOK
BCSC



OPEN BOOK
BCSO



Steplights



RECTANGULAR
BCSRV / BCSRH



OVAL
BCSOV / BCSOH



Elle Ceiling Line



ELLE CEILING LINE, HORIZONTAL WALL MOUNT
ELSC

Undercabinet



UNDERCABINET
BCUC
Six lengths: 10", 16", 23", 30", 36", and 42"



Pose



POSE TASK
PSBC



Surface - Flat



Surface - Right Angle



Wall - Flat



Wall - Step

TWO OPTICS + TWO SIDES



One illuminated side



Two illuminated sides







BalancedCare™ COMMON AREAS

Waiting rooms, lobbies, reception and check-in areas, cafeterias, gift shops, general corridors – the many common areas throughout a hospital complete its anatomy. Lighting for these areas conveys a hospital's strength and vibrancy. It contributes to the value that patients, families and staff perceive upon entering for the first time or staying longer due to stressful circumstances. Lighting for these environments should both soothe and energize – help reduce stress factors, exude cleanliness and efficiency, and consistently reinforce the hospital 'brand' through a fresh, attractive aesthetic.

BalancedCare™ by Axis brings it all together.

Common Areas



WELLNESS

Lighting is the connector, the element linking the many common areas throughout a hospital. Luminaire designs adapt to the varying personalities of spaces – ranging from lobbies that need to make that first uplifting impression, to small patient waiting rooms that call for a sense of calm, to large cafeterias that energize and keep people moving.



FUNCTIONAL OPTICS & VISUAL COMFORT

BeWell™ Optics provides a variety of distributions to support visual comfort in common areas. Lighting that clearly delineates transitions from one area to another supports wayfinding, as does well illuminated signage. Balancing layers of direct and indirect light improves the perception of spaces, from a focal point such as reception desks, to waiting rooms and general corridors. It also reduces glare and visual discomfort, adding to personal comfort – which may ease some of the anxiety associated with seeking or waiting for news or information.



CONTROLS

BalancedCare™ luminaires can integrate into a 24-hour automated system that can control all lighting functionality throughout the facility. Appropriate light levels and spectral content extends to the many types of waiting areas, physician and nurse lounges, and dining areas that are open 24 hours for those working irregular shifts – and whose circadian rhythms are vulnerable to disruption.





ARCHITECTURAL FORM

Today's modern LED sources deserve modern lower-profile design. Diffuse ambient lighting and asymmetric distributions can be layered in sleek architectural form factors, providing uniform, shadow-free lighting for ease of visibility and circulation. Accent lighting provides contrast for signage or facial modeling. All elements benefit from thoughtful up-to-date luminaire design.



INFECTION CONTROL & PERFORMANCE

Lighting in common areas demands low profile designs that are easy to clean and stand up to a hospital's cleaning protocols. Sealed housings and optical media prevent transference of pathogens from room side to plenum to help reduce risk of healthcare associated infections (HAIs). Luminaires are tested to meet the appropriate performance requirements for these spaces.



EASE OF MAINTENANCE

Smooth, non-corrosive surfaces can withstand the harsh cleaning protocols necessary to minimize risk of healthcare associated infections (HAIs). Room-side access to drivers and components facilitates maintenance efforts, reduces costs, and prolongs life of luminaire systems.



Lighting Requirements

Distinct functional modes deliver high quality lighting for a complex environment: These functions work independently or together to deliver light levels and distributions that align with recommended practice, designed to suit both patient and staff needs.

GENERAL AMBIENT



Crisp, minimalist overhead lighting is a quiet guest in a waiting area, balancing daylight with comfort for reading or conversing; 300 lux at 30" Above Finished Floor (AFF), with 4:1 avg:min uniformity.

COVE



Linear forms integrated into the architecture guide and direct people moving from general corridors to all zones throughout a hospital - without glare or shadows; 100 lux at floor, 2:1 avg:min uniformity.

PERIMETER



Graze, wallwash or perimeter lighting adds interest and provides a soothing layer of light in an otherwise stressful environment, while contributing to the recommended light levels for circulation of 100 lux at floor, 2:1 avg:min uniformity.

Supplementary Requirements

From corridors to reception desks to elevator lobbies - steplights and accent lighting on signage communicate information, adding a layer of light to help visitors find their way from one area to another.

STEPLIGHT



With choices in color of light and faceplate style, these slim steplights provide a visible rhythm of light for navigation. Mounted at 18" Above Finished Floor (AFF), with 90° cutoff to minimize glare, they provide recommend low level illumination of 4 lux.

General Ambient

Employing BeWell™ light guide technology, this series delivers multiple light distributions with glare-free visual comfort. Customize with an illuminated center strip, decorative louvers, MikroLite™ downlights, or Stencil™ accent. Available in 1'x1', 1'x4', 2'x2' and 2'x4' housings.



FLEXIBLE AMBIENT

BCFA

1'x1', 1'x4', 2'x2', 2'x4'



Flexible Ambient is available with Stencil™ surface accessories customize with an illuminated center strip, decorative louvers, MikroLite™ downlights, or Stencil™ accents.



Sconces



BOX
BCSB



CLOSED BOOK
BCSC



OPEN BOOK
BCSO



Cove Perfekt™



COVE CEILING
CC



COVE WALL
CCW



Elle



Corner (ELSCV)

45° Ceiling (EL45)

45° Wall (EL45)



Elle Ceiling Line



Ceiling Line (ELSC)

ELLE CEILING LINE, HORIZONTAL WALL MOUNT
ELSC



Pose



POSE TASK
PSBC



Surface - Flat



Surface - Right Angle



Wall - Flat



Wall - Step

TWO OPTICS + TWO SIDES



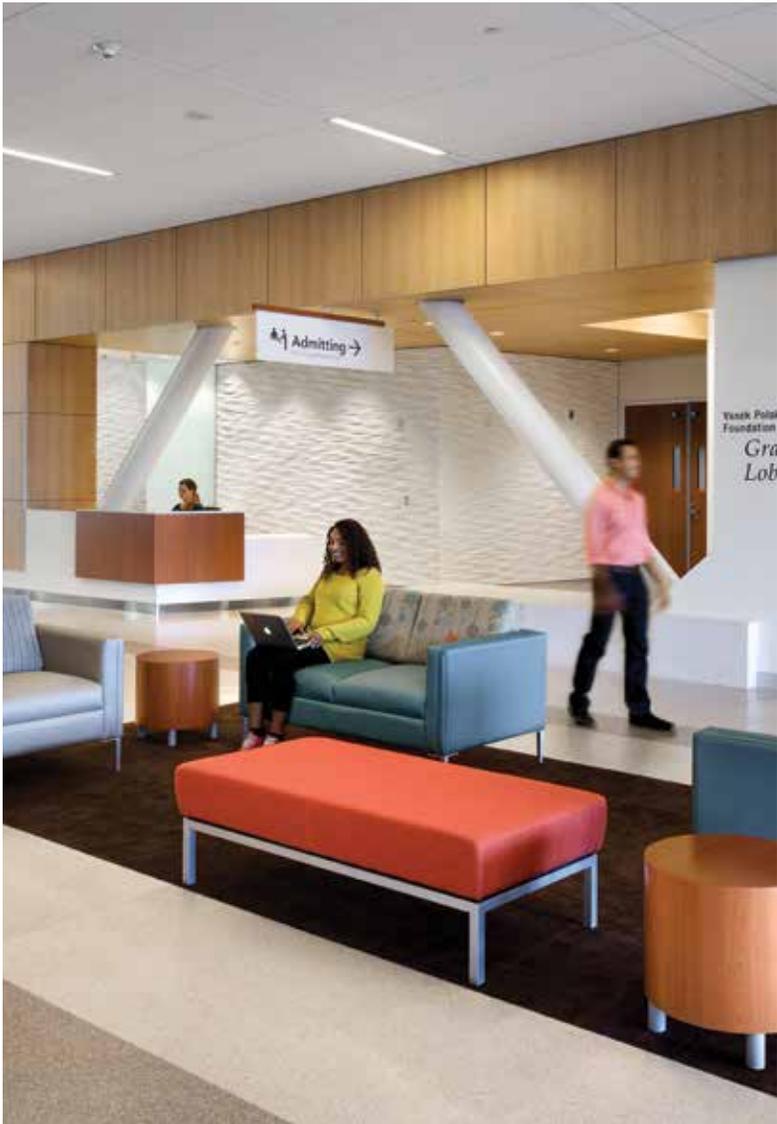
One illuminated side



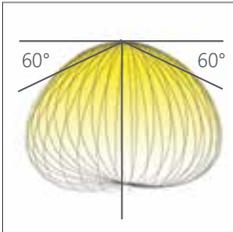
Two illuminated sides



Beam 3 SurroundLite™



RECESSED BEAM 3
B3RLED



Featuring SurroundLite™ optics, Beam3 delivers sharp cutoff and reduced contrast to improve visual comfort. Additionally, luminaires can be more widely spaced so fewer are needed to light the corridor.

Create clean, seamless runs that are easier to install with this quality press-in acrylic lens that will not crinkle or bow. Available in lengths up to 48'





BalancedCare™ TECHNOLOGIES

BalancedCare™ by Axis Lighting creates the required balance between innovation and patient/healthcare worker wellness. This is achieved by combining BeWell™ Optics, BeWell™ Controls and BeSealed® luminaire construction in the next generation of healthcare solutions.

BeWell™ light guide optics provides glare-free, comfortable lighting that supports the visual tasks of staff, and enhances the overall wellbeing of patients.

BeWell™ Controls is an intuitive, “controls-agnostic” approach with intelligent patient bed control compatibility, as well as wireless and POE; and spectral programmability provided by Axitune® Tunable White and BIOS® SkyBlue technologies.

BeSealed® ties it all together with product design features that support easy maintenance and cleanability, that meet the most rigorous independent listings in the industry.



Dynamic white lighting allows for tailored color mixing resulting in a wide range of CCTs to meet user’s changing needs and preferences. These systems offer visual comfort for all occupants, enable critical task performance for staff, and support both staff and patients’ circadian entrainment. The 2-channel systems allow users to independently adjust CCT and brightness to their desired effect, and dim along a constant linear dimming curve to 1%. Internal color mixing and proprietary BeWell™ Optics ensures the best in color uniformity and consistency. Please consult the factory for product compatibility with Axitune® Tunable White technology.

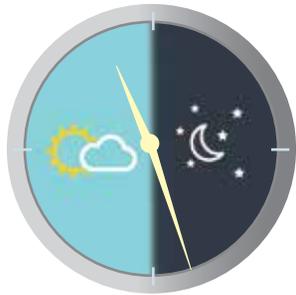


TUNABLE WHITE



CCT Range	Ordering Code	Available CRI
2700K to 5000K	TW2750	80 or 90
2700K to 6500K	TW2765	80 or 90

SOLUTIONS DESIGNED TO SIMPLIFY CIRCADIAN LIGHTING IN EVERYDAY APPLICATIONS



BIOS® SkyBlue for Healthcare

Life is all about contrast, perhaps none as important as light and dark, day and night.

As humans, we have evolved with blue sky and daylight as natural cues to keep our body clocks aligned with the 24-hour day. This healthy contrast between daylight and darkness allows our circadian rhythms to function as designed.

Even though this natural lighting cycle is healthy, hospital lighting typically feels anything but natural. BIOS® SkyBlue uses technology to bridge the gap, stimulating circadian response while maintaining the appearance of white light in familiar correlated color temperatures (CCTs).

WHAT YOU DON'T SEE CAN HELP YOU

Benefits of Natural Light without Compromised Light Quality



To the naked eye, the white light produced by a BalancedCare™ luminaire with SkyBlue® option may appear identical to the white light from traditional LEDs, but the actual spectrum is different – it delivers greater melanopic content, which contributes to higher melanopic to photopic (m/p) ratios, higher equivalent melanopic lux (EML) and circadian stimulus (CS) – current circadian lighting metrics.

A broad range of Axis luminaires seamlessly integrate SkyBlue® technology to enable creation of environments that improve alertness and promote better sleep, health and well-being. For additional Axis lighting featuring BIOS® SkyBlue technology, please visit www.axislighting.com



BCFA
BalancedCare™ Flexible Ambient



BCSB/BCSC/BCSO
Sconces



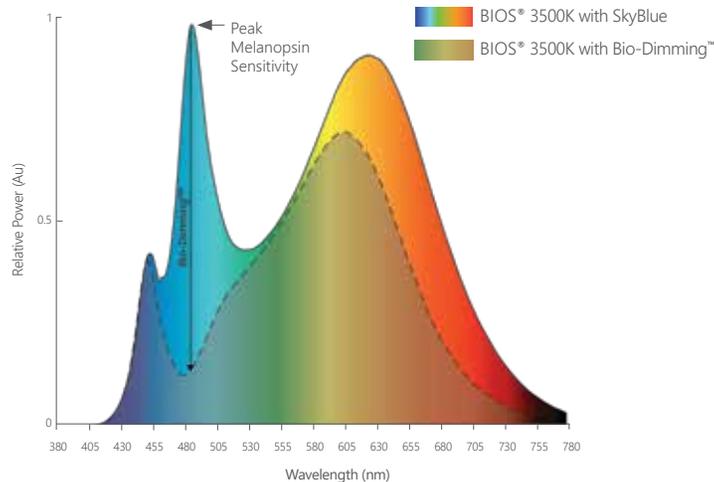
BCMF*
BalancedCare™ Multi-Function Overbed

*Ambient Mode Only

BIOS® DYNAMIC SOLUTION FOR 24-HOUR FACILITIES
 Better sleep by night, improved alertness by day



BIOS® 3500K Dynamic Engine Spectral Power Distribution



Dimmer Settings With Bio-Dimming™ *

	DIMMER SETTINGS*	BIOS® SKYBLUE*	LIGHT OUTPUT		
█	100% (FULL ON)	100%	100%	BIO-DIMMING™	BIOS® SkyBlue maintained for maximum circadian impact. Light output remains relatively constant.
█	99%-51%	100%-0%	100%-90%		
█	50%	NO BIOS®	90%	INTENSITY DIMMING	BIOS® SkyBlue removed to provide minimal circadian impact. Light output dims down linearly.
█	49%-0%	NO BIOS®	LINEAR DIMMING		

* Also compatible with push button dimmers

BIOS® dynamic light engines use easy-to-program Bio-Dimming™ to provide full SkyBlue® content during the day and allow SkyBlue® to be removed in the evening while light levels remain constant. Once SkyBlue® is reduced then light levels can be changed.

Functional white light with healthy impact

- Maintains appearance of white light while invisibly delivering a spectrum with greater melanopic content
- Peaks at 490 nanometers (nm) to target melanopsin, the light-sensitive protein contained in our non-visual photoreceptors

Static solution supports proper daytime circadian stimulus

- The static spectrum delivers a steady but invisible blue-light boost to white light throughout the day, in choice of 3000K, 3500K or 4000K

Dynamic solution for 24-hour facilities

- Supports daytime circadian stimulus, reduces nighttime stimulus
- Skin color in its true light
- CRI > 80; R9 > 75 at each correlated color temperature, because color rendering is so important in healthcare

The controls you know

- Uses any single channel LED driver with 0-10V dimming interface

CIRCADIAN LIGHTING METRICS

Circadian Stimulus (CS), Equivalent Melanopic Lux (EML), and Melanopic Equivalent Daylight Illuminance (MEDI)



Metrics have been developed as tools to enable lighting professionals to create environments that promote alertness by day and good sleep at night – prime examples of circadian rhythms, or biological processes that repeat every 24 hours.

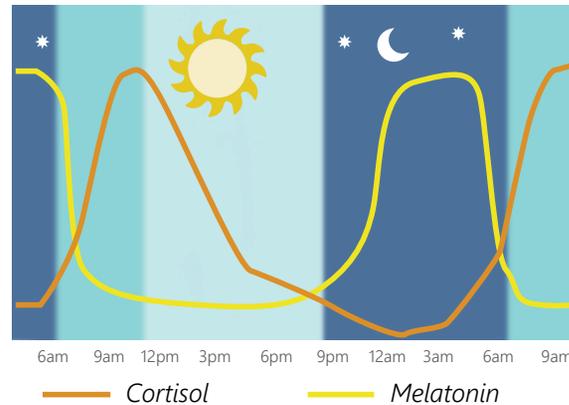
This becomes especially important in hospitals where schedules are erratic, where support of circadian health can also improve overall health and wellbeing.

Key elements to entrain – or synchronize – humans’ biological clocks to the light/dark cycles of the 24-hour day are amount, spectrum, length of exposure, time of day, distribution, and personal light history – one’s sensitivity to light.

Research has shown that these elements, when delivered in the right combination, can improve sleep quality, reduce agitation, depression, and fatigue for patients, caregiving staff, and families in hospital environments. These positive effects can last beyond a patient’s discharge or after a night shift nurse leaves to go home.

Delivering the right light at the right time of day helps avoid circadian disruption, which can cause poor sleep but also increase risk of serious illnesses such as cancer, heart disease and delirium.

Recently discovered photoreceptors in the human eye – photosensitive retinal ganglion cells or ipRGCs– contain the protein melanopsin, which is highly sensitive to 460-480 nm blue wavelengths. When stimulated by light, ipRGCs send a signal to the body’s master clock, telling it to reset its cycle for the next 24 hours. That signal triggers a variety of biological processes, including essential production of hormones such as melatonin and cortisol.



Importance of light/dark signal:

Cortisol rises with the early light of day, keeping us awake and alert. Melatonin is suppressed by light during the day, but rises as darkness sets in to promote sleep.



ALL CIRCADIAN METRIC CALCULATIONS REQUIRE

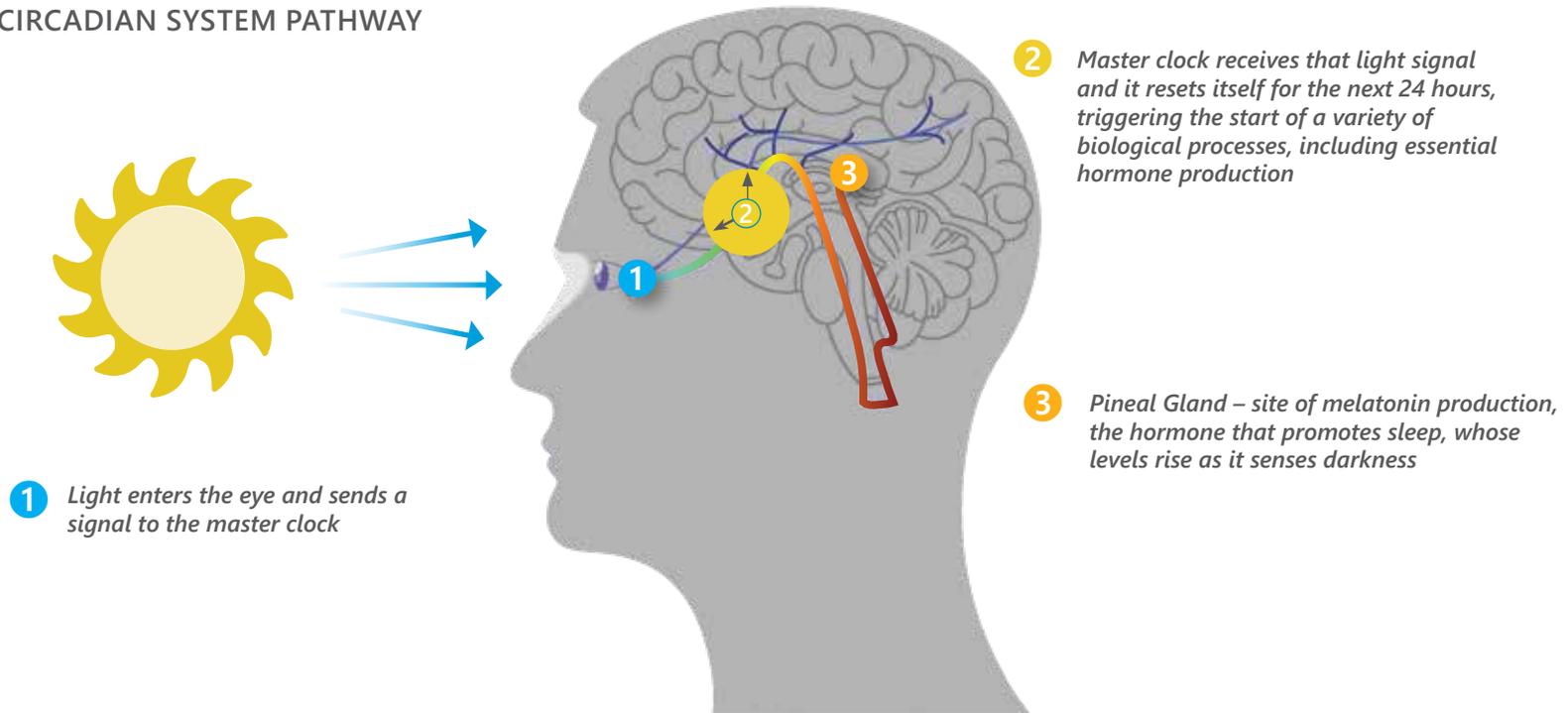
Spectral power distribution (SPD) of light sources; correlated color temperature (CCT) is not an accurate measure

Light measured on the **vertical plane at eye level**, either 4'-0" Above Finished Floor (AFF) or 18" above the workplane, for adjustable height desks

While we might be able to see well under moderate to low light levels, those levels will not be sufficient to entrain our circadian system! Healthy circadian rhythms require strong light and dark signals, which help to promote healthy sleep patterns - and contribute to overall wellness.



CIRCADIAN SYSTEM PATHWAY

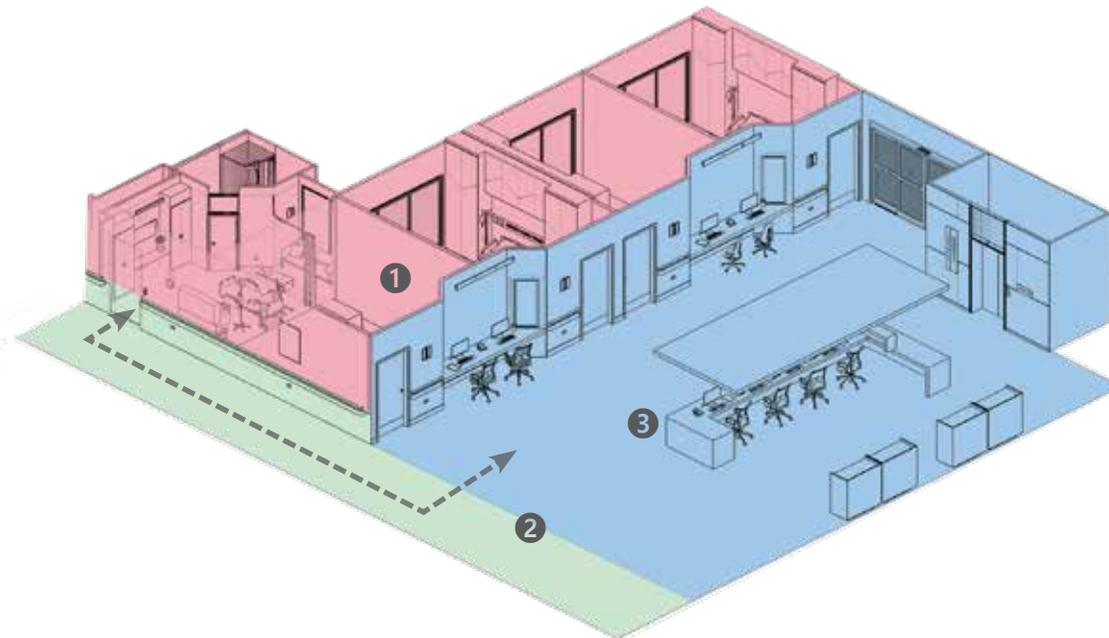


CIRCADIAN VS VISUAL SYSTEM

The circadian system, part of the non-visual system, processes and responds to light differently than the visual system. The visual system does not care about quantity or spectrum - it is stimulated by the faintest glimmer of light. The circadian system, however, requires higher light levels and longer exposure time as a stimulus - and it is also most sensitive to short 'blue' wavelengths.

The hospital ecosystem: balancing circadian health with visual needs

For the diverse populations within a hospital - patients, staff and families - lighting systems should be able to deliver optimal light levels and spectrum at the right time of day for circadian regulation, as well as provide appropriate light levels to complete critical visual tasks.



1 PATIENT ROOM

- High stimulus by day - patient benefits from bright light environment, exposure to daylight, cool spectrum preferred but not required, early to mid-morning
- Low stimulus at night - dim light environment, warm spectrum preferred, two hours before bedtime
- Staff controls light for critical visual tasks as needed

2 CORRIDORS

- Transition zone between patient rooms and nurses' station
- Reduce light level from day to night, while maintaining safe passage

3 NURSES' STATION

- High stimulus by day - staff benefits from bright light environment, exposure to daylight, cool spectrum preferred but not required, early morning through late afternoon
- Low stimulus at night - lower light levels, avoid cool spectrum - except when alerting boost is needed
- Maintain light levels for visual tasks as needed

WHAT MATTERS?

Light level at the eye - sufficient light to stimulate the circadian system is most important

Spectrum - it is most sensitive to 'sky blue' wavelengths in the 460-480 nm range; daylight is great!

Duration - light is processed over time, so exposure to target light levels for at least two hours early morning achieves a stimulus effect

Time of day - bright light/high stimulus early morning; low light levels/reduced stimulus evening - follows nature's lead!

Personal Light history - every person has a different 'threshold', or sensitivity to light, depending on their typical daily exposure

Circadian lighting is at the heart of health and wellness in hospital environments.

It's simple – the circadian system requires more light and longer processing time than the visual system. We now have the knowledge and tools to provide appropriate lighting for both, creating a balance between light needed for critical visual tasks with light needed to entrain, or synchronize, the human body to the 24-hour day – and maintain healthy circadian rhythms.

Lighting that does not provide strong light/dark cues from day to night can lead to circadian disruption, which results in poor sleep, delirium, and greater risk of serious illnesses such as cancer, diabetes, and heart disease. There is no upside to circadian disruption.



Circadian lighting is not about a single luminaire, or an isolated area. It considers the lighted environment as a whole.



***Patient room** lighting should provide high daytime stimulus and low nighttime stimulus, sending the appropriate light/dark signal to the body's master clock to maintain its natural 24-hour biological cycle; darkness activates a rise in melatonin levels, the hormone that promotes good sleep—and good sleep can lead to quicker recovery.*

Circadian Lighting in Hospitals

Patient Room – patients are not only affected by their room and bathroom lighting; since they view the corridor and nurses' station from their bed, they are also affected by light that spills into their room during the night. If this overall lighting is static and monotonous – with no distinction between day and night, as is often the case in hospitals – then delirium can set in.



Is it 3am or 3pm? Lighting that does not provide distinction between bright days and dark nights, especially without a view to daylight, diminishes the strong light cue needed to activate and maintain healthy circadian rhythms.

Corridors – typically transition zones between patient rooms and nurses' stations. Their lighting should balance the daytime and nighttime conditions of both. Consider that spill light into patient rooms from corridors is often the only 'nightlight' that patients see at night when bright white light should be avoided.



The corridor is the bridge between patient rooms and nurses' stations. If light levels are reduced by 50% evenings and nighttime, yet still maintain safe light levels for passage, it will minimize the effect of spill light into patient rooms, which can be so disruptive to good sleep.

Nurses' Stations – nurses may alternate day and night shifts, and night shifts can be rotating or permanent – erratic schedules that easily disrupt circadian rhythms over time. Since adjacent corridor lighting also affects their environment, lighting systems should allow nurses control over spectrum, intensity and time of day, to suit their personal needs and schedule.



CS characterizes the human response to light in terms of melatonin. EML and MEDI characterize a light source's effectiveness at stimulating melanopsin. The three are not interchangeable, and each tells a different story – but any of them will indicate if one is on the right path to effective circadian lighting design, depending on the application.

Each metric provides its own calculation tool and counts toward achieving points in the **WELL Building Standard**, v1 or v2, in the **Circadian Lighting Design** category.

CS

- Factors in contribution of all five photoreceptors, along with amount and spectrum to assess circadian stimulation
- It estimates the percentage of melatonin a person will suppress after one-hour exposure to a light source during the day, which in turn affects that person's melatonin levels at night
- Robust melatonin levels may result in better sleep, improved mood, performance, and feelings of alertness
- High CS of >0.3 recommended for early morning, reducing to <0.1 in the evening
- <https://www.lrc.rpi.edu/cscalculator/>

EML

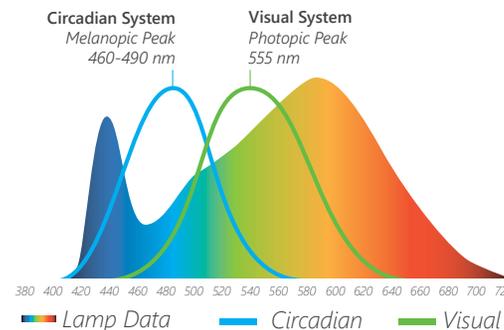
- Introduces the unit 'melanopic lux' as a measure of light's effect on stimulating the circadian system compared to the visual system
- It is a two-part calculation involving the melanopic to photopic (M/P) ratio and illuminance at the eye (Ev)
- The M/P ratio formula converts visual response to circadian response based on the SPD of one (or more) light sources
- It will indicate whether light source A is better or worse than light source B, of equal energy, at stimulating melanopsin
- **EML = M/P ratio x Ev (vertical illuminance)**
- <https://standard.wellcertified.com/tables> > Table L1: Melanopic Ratio > IWBI link to spreadsheet

MEDI

- Factors in contribution of all five photoreceptors to determine how the ipRGCs respond to light compared to rods and cones
- Like EML, it is a two-part calculation requiring the melanopic daylight efficacy ratio (m-DER) and illuminance at the eye (Ev)
- M-DER compares a light source's ability to stimulate melanopsin to that of standard daylight
- **MEDI = m-DER x Ev (vertical illuminance)**
- https://balancedcare.axislighting.com/wp-content/uploads/2020/11/CIE-S-026-alpha-opic-Toolbox_Nov2020.xlsx



Image by Lighting Research Center



Unified Glare Rating (UGR)

WHAT IS UGR?

Glare is in the eye of the beholder! UGR measures its impact on visual comfort while helping to achieve WELL points.



The Unified Glare Rating (UGR) is a metric used to predict *discomfort glare* in interior applications and considers the direct light component. It has gained renewed interest of late to achieve points toward WELL certification. Well v2 of the WELL Building

Standard, under the L04 Electric Light Glare Control category, allots points for achieving a UGR of 16 or lower as a luminaire consideration, or as a space consideration, for regularly occupied spaces. As a glare evaluation method, UGR has been defined in CIE documents: CIE 117-1995, CIE 190-2010, CIE 232-2019.

UGR is not meant to be an attribute of the luminaire alone – but should be based on an application.



It indicates the contrast, or ratio, between luminaire luminance (perceived as brightness) to background luminance from a reference vantage point, i.e., a patient sitting up in bed, looking straight ahead, with a multi-function luminaire above their head and recessed general ambient luminaires in the adjacent guest area.

Line of sight is important – the relationship of viewers to luminaires will result in multiple UGR values, as shown in the application example below, where:

Luminaires	UGR (Average) at 3.5' AFF	Observer Position
A-1-1000 lm+C-Ambient-7000 lm (shown below)	11.95	Patient Viewpoint from right to left across room, in example below
	11.77	Guest Viewpoint from top to bottom towards bed, in example below
A-1-1000 lm+C-Exam-14,280 lm	11.02	Patient Viewpoint
	13.39	Guest Viewpoint

Type A-1 is the BalancedCare™ Flexible Ambient 1×1 (BCFA) and Type C is the BalancedCare™ Multi-Function 2×4 (BCMF24).

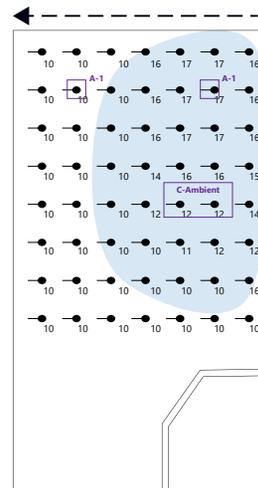


Figure 1: calculation results in UGR of 11.95 from patient viewpoint (Ambient mode shown).

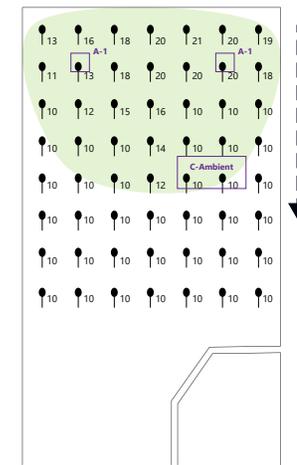


Figure 2: calculation results in UGR of 11.77 from guest viewpoint (Ambient mode shown).

HOW IS IT CALCULATED?

Software programs such as AGi32 and Dialux can calculate UGR values – average, max and min – based on this formula

UGR = 8 log [0.25/Lb * Σ Ls2*ω/p2] that factors in:

- background luminance (cd/m²)
- luminance of the apertures of each luminaire in the direction of the observer’s eye (cd/m²)
- solid angle of the luminous parts of each luminaire at the observer’s eye (sr)
- displacement of luminaire from line of sight

WHAT DO THE NUMBERS MEAN?

Values are given in the range of 10-30, lower is better; 16 is considered perceptible, 19 just acceptable; above 19 it becomes more uncomfortable. The table below compares UGR values with corresponding 7-step discomfort glare criteria (developed by R.G. Hopkinson).

While these numbers are an indication, it is important to remember that interpretations of glare are subjective, as each person’s perception differs.

UGR	Discomfort Glare Criterion
10	Imperceptible
13	Just perceptible
16	Perceptible
19	Just acceptable
22	Unacceptable
25	Just uncomfortable
28	Uncomfortable

Factors Contributing To High UGR, In General:

- Lumen package – increased lumens could mean higher UGR
- Larger room sizes – more sources in field of view
- Lower ceiling heights, which indicate lower mounting heights
- Luminaire distributions with high angle brightness
- Lower surface reflectances
- Luminaire aperture size
- Spacing – farther apart could mean higher UGR
- Relationship of luminaire (max candela angle) to observer’s line of sight



UGR considers reflectances of surrounding room surfaces, and luminaires within a person’s line of sight that may cause them to sense glare

Single luminaire values are possible, but they do not tell the whole story

Although it is misleading to assign a UGR value to a single luminaire, for those seeking that number Photometric Toolbox calculates for uniform arrays of luminaires, based on a single IES file. It sorts results into a table of 190 individual calculations based on an assortment of 19 common room shapes and five combinations of surface reflectances for two observer positions.

Illuminance Tables



Patient Room		Illuminance (Lux)		Uniformity
Task	Notes	Horizontal (E _h)	Vertical (E _v)	Avg:Min
Ambient	E _h At Floor - To Cover 3ft Border Surrounding Bed	100-200		4 to 1
	E _v At 5' AFF*		20-40	
Exam	E _h on bed at 3' AFF	500-1000		2 to 1
	E _v at 4' AFF		200-400	
Reading	E _h and E _v at lap area on bed at 3' AFF	400-800	100-200	3 to 1
Night Check	E _h at 3' AFF; E _v at 4' AFF	30-60	6 to 12	4 to 1
Nightlight	at floor	2 to 4	N/A	
Medical Service	E _h at 3' AFF; E _v at 4'AFF	500	300	3 to 1
Guest Area Sitting	E _h and E _v at 2'-6" AFF	150-300	50-100	3 to 1



Patient Bathroom		Illuminance (Lux)		Uniformity
Task	Notes	Horizontal (E _h)	Vertical (E _v)	Avg:Min
General Ambient	E _h at floor; E _v at 3' to 5' AFF*	50-100	30-60	2 to 1
Vanity	E _h at 3' AFF	150-300		2 to 1
	E _v at 3' to 5' AFF at sink edge		200-400	
Nightlight	E _h at floor; E _v at 3' to 5' AFF	50-100	30-60	
Shower	E _h at floor; E _v at 3' to 5' AFF	100-200	50-100	2 to 1

To convert lux to footcandles, divide lux value by 10.7

Illuminance levels listed in the charts above represent recommended industry standards for ages ranging from 25 to > 65

*AFF = Above Finished Floor



Corridors		Illuminance (Lux)		Uniformity
Task	Notes	Horizontal (E _h)	Vertical (E _v)	Avg:Min
General Corridors	E _n at floor; E _v at 5' AFF*	100-200	30-60	2 to 1
Patient Corridors				
Day	E _n at floor; E _v at 5' AFF	100-200	50-100	2 to 1
Night	E _n at floor; E _v at 5' AFF	50-100	20-40	2 to 1

Nurses' Station		Illuminance (Lux)		Uniformity
Task	Notes	Horizontal (E _h)	Vertical (E _v)	Avg:Min
Workplane	E _n at 2'-6" AFF*	500-1000	200-400	2 to 1
Work Station				
Day	E _n at floor; E _v at 5' AFF	300-600	200-400	3 to 1
Night	E _n at floor; E _v at 5' AFF	100-200	40-80	3 to 1



Common Areas		Illuminance (Lux)		Uniformity
Task	Notes	Horizontal (E _h)	Vertical (E _v)	Avg:Min
General Corridors	E _n at floor; E _v at 5' AFF*	100-200	30-60	2 to 1
Lobby				
Day	E _n at floor; E _v at 5' AFF	400-800	75-150	4 to 1
Night	E _n at floor; E _v at 5' AFF	200-400	30-60	4 to 1
Reading/Waiting Areas	E _n and E _v at 2'-6" AFF	300-600	150-300	4 to 1
Reception Desk	E _n at 3'-6" AFF; E _v at 5' AFF	300-600	100-200	4 to 1
Waiting Rooms				
Day	E _n at floor; E _v at 4' AFF	200-80	15-30	4 to 1
Night	E _n at floor; E _v at 4' AFF	100-80	15-30	4 to 1

Illuminance levels listed in the charts above represent recommended industry standards for ages ranging from 25 to > 65

*AFF = Above Finished Floor

To convert lux to footcandles, divide lux value by 10.7

Listing and Technology

- 
ADA Compliant — objects projecting from walls (e.g., sconces) shall protrude no more than 4" into walks, halls, corridors, passageways or aisles between 27" and 80" above the ground.
- 
CCEA Approved — The City of Chicago Environmental Air (CCEA) rating ensures that the luminaire is inherently airtight. Wiring and/or branch circuit terminations are sealed off and gasketed from the plenum air space. This listing ensures that the luminaire is sealed to limit air flow from the room side to the plenum.
- 
Damp — Denotes that the luminaire is UL Listed for Damp Locations. A damp location is normally or periodically subject to condensation of moisture in, on, or adjacent to the electrical components of a luminaire.
- 
IK10 — An IK rating indicates the capacity of an enclosure to protect its contents from external impacts in accordance with IEC 62262:2002 and IEC 60068-2-75:1997. The IK10 rating is the maximum on the scale from IK00 (no protection) and provides protection against 20 joules of impact (the equivalent to the impact of a 5kg mass dropped from 400mm above the impacted surface)
- 
IC — Insulated Ceiling (IC) recessed lights are rated for direct contact with insulated ceilings or, that is, they can be installed in contact with combustible material or blanketed with thermal insulation.
- 
IP64 — UL Certified IP64 per IEC 60598 ensures that the enclosure is dust-tight and protected against splashing water without any harmful effects.
- 
NSF/ANSI2 — Indicates that the luminaire product and labeling has been objectively verified by a trusted third party. The listing signifies that the luminaire has been evaluated for corrosion resistance, cleanability, and the ability of exposed material to withstand normal wear. This demonstrates Axis' commitment to quality, compliance and safety and supports established infection control standards.
- 
UL/CUL Listed — All BalancedCare™ luminaires have been tested to be in compliance with Underwriter's Laboratory (UL) performance standards. UL is a world leader in product safety testing and certification.



MIL-STD-461G — Military Standards test for both conducted (CE-102) and radiated (RE-102) emissions in a Radio-Frequency (RF) noise controlled laboratory. Products tested to this standard operate within safe frequency range levels with minimal risk of Electromagnetic Interference.



BeWell™ Optics — BeWell™ is a patent-pending, materials-based lightguide technology that uses molecular optics to direct light. These highly efficient optics are multi-functional, available in direct, indirect, asymmetric or a combination to deliver high performance, comfortable illumination.



BeSealed® Construction — Design attributes that enable easier maintenance, less costly construction, updated lighting technology, and engineered features that support today's stringent infection control standards.



BeWell™ Technologies — BeWell™ Technologies encompasses BalancedCare™ controls (which includes patient controls, wireless and POE), Axitune® Tunable White and color tuning systems, and BIOS® SkyBlue.



BeWell™ Controls — BeWell™ Controls takes a systems approach to ensure seamless integration between the luminaires, sensors, control devices and users. It includes all elements of a facility's controls system, supporting Axis' agnostic approach to provide comprehensive systems support.



POE — Power over Ethernet (POE) delivers both lighting power and data transfer on one low-voltage wire, and enables communication with multiple building systems using Ethernet protocol, along with many types of sensors. All BalancedCare™ luminaires are UL Listed 2108 for POE compatibility.



Axitune® Tunable White — Tunable white technology enables the user to independently control both color temperature and intensity of light within a given application. This provides the ability to change the color of light from warm to neutral to cool in appearance, over time, based on the needs of the occupant or the space. See page 16 for additional information.



BIOS® — Axis Lighting is a proud partner with BIOS® Lighting. Its SkyBlue technology creates environments that improve alertness and promote better sleep, health and well-being. BIOS® is available in BalancedCare™ overbed luminaires.

Ratings Explained

EXAMPLE

IP64 DEGREES OF PROTECTION INDICATED BY THE FIRST CHARACTERISTIC NUMERAL

Numeral	Short Description	Brief details of objects which will be "excluded" from the enclosure
0	Non-protected	No special protection
1	Protected against solid objects greater than 50 mm	A large surface of the body, such as a hand (but no protection against deliberate access). Solid objects exceeding 50 mm in diameter.
2	Protected against solid objects greater than 12 mm	Fingers or similar objects not exceeding 80 mm in diameter. Solid objects exceeding 12 mm in diameter.
3	Protected against solid objects greater than 2.5 mm	Tools, wires, etc., of diameter or thickness greater than 2.5 mm Solid objects exceeding 2.5 mm in diameter.
4	Protected against solid objects greater than 1.0 mm	Wires or strips of thickness greater than 1.0 mm. Solid objects exceeding 1.0 mm in diameter.
5	Dust-protected	Ingress of dust is not totally prevented but dust does not enter in sufficient quantity to interfere with satisfactory operation of the equipment.
6	Dust-tight	No ingress of dust

EXAMPLE

IP64 DEGREES OF PROTECTION INDICATED BY THE SECOND CHARACTERISTIC NUMERAL

Numeral	Short Description	Brief details of objects which will be "excluded" from the enclosure
0	Non-protected	No special protection
1	Protected against dripping water	Dripping water (vertically falling drops) shall have no harmful effect.
2	Protected against dripping water	Vertically dripping water shall have no harmful effect when the enclosure is tilted at any angle up to 15° from its normal position.
3	Protected against spraying water	Water falling as a spray at an angle up to 60° from the vertical shall have no harmful effect.
4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effect.
5	Protected against water jets	Water projected by a nozzle against the enclosure from any direction shall have no harmful effects.
6	Protected against heavy seas	Water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities.
7	Protected against the effects of immersion	Ingress of water in a harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time.
8	Protected against submersion	The equipment is suitable for continuous submersion in water under conditions which shall be specified by the manufacturer.



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Why is Military Standard 461G relevant relevant in MRI?

Electrical devices can radiate and conduct electrical noise to other electronics, especially those designed to sense electrical signals. The lighting fixtures are identified as a source of radio frequency (RF) noise, creating interference with other sensitive equipment in the room or artifacts in the scans.

For over a decade, Military Standards have been used to determine whether a luminaire operates within safe levels of Electromagnetic Interference in rooms such as surgical suites and imaging suites. Electronic LED drivers can be a source of unintentional radiated interference. The specific section of the standard - Air Force/Navy Fixed (a Department of Defense Interface Standard for EMI) – addresses both radiated and conducted emissions outlined in RE-102 and CE-102, respectively.

- Radiated Emissions (RE-102) measures the transmitted noise measured at one meter from the fixture using various antennae and in two polarities (vertical and horizontal). Each antenna covers a specific range of frequencies measured across the spectrum from 10 kHz to 18 GHz (See Figure 1).
- Conducted Emissions (CE-102) measures the power leads exiting the fixture across the RF spectrum from 10 kHz to 30 MHz. Measurements are done directly in the conductors (Line and Neutral) to indicate how much noise is emitted through the wires, which might affect other equipment in the vicinity of the device under test (See Figure 2).

This particular section of the standard relates back to aircraft and ships as the equipment is fixed in place (as in an MRI room), and the testing has to be within one meter of the device. This testing correlates the closest with what's happening in these sensitive healthcare environments. If the luminaires can pass these testing requirements, it ensures that they will perform effectively in an MRI suite.

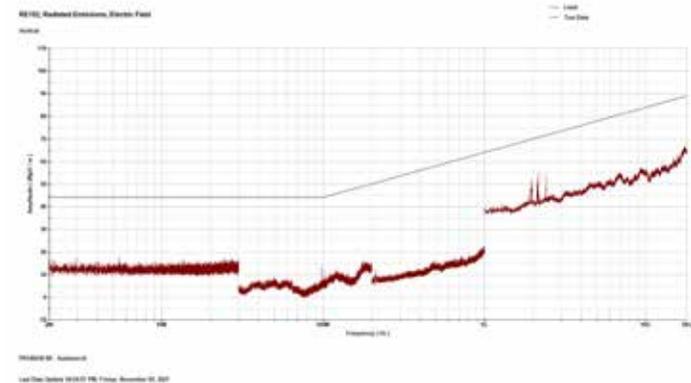


Fig. 1: RE102 Graph of an ambient scan, measuring vertical polarity; illustrates radiated noise measurements tested per MIL-STD-461G; measurements fall below the black limit line for all frequencies, therefore meet the Standard's requirements.

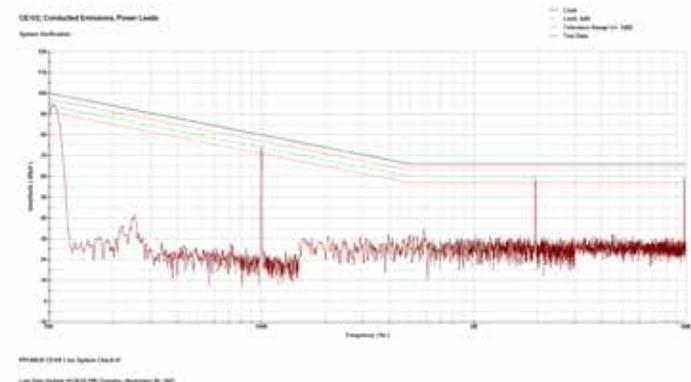
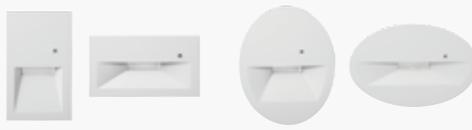
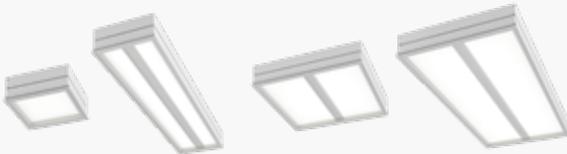


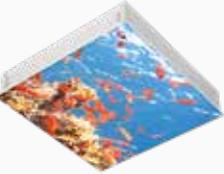
Fig. 2: CE102 System Verification (Line Conductor) - Graph illustrates conducted noise measurements tested per MIL-STD-461G; measurements fall below the black limit line for all frequencies, therefore meet the Standard's requirements.

BalancedCare™ Product Matrix

PRODUCT	APPLICATION						LISTINGS	PAGE
	MRI	Patient Room	Patient Bathroom	Corridors	Nurses' Station	Common Areas		
<p>MULTI-FUNCTION OVERBED</p>  <p>BCMF-22 (2'x2') BCMF-24 (2'x4')</p>							    	14, 15, 72
<p>MULTI-FUNCTION ASYMMETRIC OVERBED</p>  <p>BCASY2 (6"×48")</p>							    	16, 17, 73
<p>SCONCES</p>  <p>BCSB BCSC BCSO</p>							  	11, 18-21, 62, 63, 74, 97, 105, 115

PRODUCT	APPLICATION						LISTINGS	PAGE
	MRI	Patient Room	Patient Bathroom	Corridors	Nurses' Station	Common Area		
<p>UNDERCABINET</p>  <p>BCUC</p>							  	22, 23, 60, 61, 77, 106
<p>STEPLIGHTS</p>  <p>BCS BCS BCS BCS</p>							    	24, 25, 75, 87, 97, 105
<p>VANITY MIRROR</p> 							  	84, 86
<p>FLEXIBLE AMBIENT</p>  <p>BCFA-11 (1'x1') BCFA-14 (1'x4') BCFA-22 (2'x2') BCFA-24 (2'x4')</p>							    	28-31, 56, 57, 76, 87, 104, 114

BalancedCare™ Tranquility Product Matrix

PRODUCT	APPLICATION						LISTINGS	PAGE
	MRI	Patient Room	Patient Bathroom	Corridors	Nurses' Station	Common Area		
TRANQUILITY DROP LENS  <div style="display: flex; align-items: center; margin-left: 20px;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">2'x2'</div> </div>	🌿			🌿	🌿	🌿	   	11, 33, 34
TRANQUILITY OVERLAY LENS  <div style="display: flex; align-items: center; margin-left: 20px;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">2'x2'</div> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">2'x2'</div> <div style="border: 1px solid gray; padding: 5px; margin-left: 20px;">4'x4'</div> </div>	🌿			🌿	🌿	🌿	   	11,33, 35
TRANQUILITY REGRESSED LENS  <div style="display: flex; align-items: center; margin-left: 20px;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">2'x2'</div> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">2'x2'</div> <div style="border: 1px solid gray; padding: 5px; margin-left: 20px;">2'x4'</div> </div>	🌿			🌿	🌿	🌿	   	11, 33, 36
TRANQUILITY SCONCES <div style="display: flex; justify-content: space-around; align-items: center; margin-bottom: 5px;">    </div> <div style="display: flex; justify-content: space-around; font-size: small;"> BOX CLOSED BOOK OPEN BOOK </div>	🌿			🌿	🌿	🌿	  	11, 32, 33, 37

Complementary Product Matrix

PRODUCT	APPLICATION						LISTINGS	PAGE
	MRI	Patient Room	Patient Bathroom	Corridors	Nurses' Station	Common Areas		
BEAM 3 SURROUNDLITE 							   	96, 119
BEAM 2, BEAM 4 							  	11, 54, 55
COVE 							  	96, 115
ELLE 							  	26, 27, 94 106, 116, 117
PIXEL 							 	11, 52, 53
POSE 							 	95, 107, 118
SKETCH CURVED RECESSED 							  	11, 58, 59

Design Guides by Application



MRI SERIES



TRANQUILITY SERIES



PATIENT ROOM



PATIENT BATHROOM



CORRIDORS



NURSES' STATION



COMMON AREAS



axis

Healthcare division

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