



HOLOPHANE[®]

AcuityBrands[®]



THE QUEEN'S AWARDS
FOR ENTERPRISE:
INNOVATION
2017



HALOPRISM[™]

**PERFORMANCE
THROUGH TECHNOLOGY**



PATENT PENDING
REGISTERED EUROPEAN DESIGN



HALOPRISM™



Performance through Technology - Taking high bay lighting to new levels of lumen output with superior light control. Haloprism™ fuses the latest in LED technology with the distinguished dynamics of Holophane's durable prismatic glass optics. Combined to deliver the highest LED lumen package, longest system life and lowest maintenance high bay luminaire solution.

For over 120 years Holophane has enjoyed an enviable reputation throughout the world for expertise, quality and innovation in lighting. From the earliest days, when the company pioneered its famous glass refractor, the Holophane name has been ever present as a leader in the field of luminaire and lighting design. Haloprism is a continuation of this proud tradition.

optics / light source

- > Available with 5 light distributions; Narrow, Focused, Intensive, Broad and Extensive
- > Lumen packages ranging from 15,000 to 60,000
- > 80CRI
- > 4000°K colour temperature
- > Fully soak tested high powered LEDs
- > Efficiencies of up to 153 lm/W
- > Incorporates mid-power and LED technologies

Lighting & Productivity

Good lighting in the workplace is essential for optimal task performance. The effects of good lighting have been scientifically proven to show the positive influence of light on health and well-being of people in the work environment.

Better lighting contributes positively to work task performance (in terms of higher speed and lower failure rate), safety and accident rates, absenteeism, health and well-being. In the manufacturing industry, for example, good lighting can be expected to help increase productivity by upto 11%.

TM66 CEAM-Make rating

Preliminary Rating: 2.3 (Definite/substantial progress to circularity)

approvals

Complies with: EN60598
DIN 18032-3:1997-04*

CE

IP IP20 luminaire, IP65 option available.

Ta Up to 55°C

*Testing of safety against ball throwing for Sports Halls (gymnastics, games and multi-purpose use).

For further information please visit www.holophane.co.uk

Typical Luminaire Performance

Configuration	Delivered Lumens	Power Consumption	Driver Current	Projected Life of LED Module (L70B50 @Tq 30°C)**
HAL.LM1548	c.15000	108w	350mA	100,000 hrs
HAL.LM2048	c.20000	163w	525mA	100,000 hrs
HAL.LM3048	c.30000	213w	230mA	100,000 hrs
HAL.LM4048	c.40000	299w	325mA	100,000 hrs
HAL.LM5048	c.50000	383w	415mA	100,000 hrs
HAL.LM5548	c.55000	426w	460mA	100,000 hrs
HAL.LM6048	c.60000	475w	510mA	100,000 hrs

Note: Data is correct at time of print.

** For other life metric data in line with IEC PAS62722-2-1 and 62717 contact your Holophane Representative for details.



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Why Glass Refractors?

With all of the materials available today (plastics, acrylics, polycarbonate), Holophane has chosen to focus its intellectual energy on glass for one simple reason... the benefit to you, the customer. Glass is actually a very difficult material to work with in manufacturing, but we have chosen to invest heavily in this technology because it has great economic advantages in application. Here are just a few of these advantages...



Thermal shock

Glass shows very low thermal expansion or contraction



UV impervious

Sunlight and lamp energy don't affect it.
No change with prolonged exposure to sunlight or lamp.



Longevity

Doesn't degrade over time!



Temperature resistance

Typical fixture temperatures are comfortably within the melting point of glass.



Chemical resistance

Remember the test tubes in chemistry class?
Making glass ideal for industrial environments and aggressive atmospheres.



Low dirt accumulation

Glass doesn't build electrostatic charge unlike metals and plastics.



Recyclable

Made from recyclable glass.



HALOPRISM™

Which LED Configuration?

With the development and improvement of LED technology the industry is seeing different types of LED packages being introduced. Each LED type has its own associated benefit that allows Holophane to deliver a product that best suits your application and requirement.

Haloprism with LM Technology

- > High efficacy of up to 153lm/W.
- > Delivers excellent ROI.
- > Suitable for non-corrosive general lighting applications.

Having this tailored approach to our Haloprism products ensures we are incorporating the latest technologies and delivering the optimum lighting solution.

TO LOWER ENERGY COSTS?
TURN UP THE TECHNOLOGY



**REDUCED
MAINTENANCE**

**ENERGY SAVING:
HOLOS Controls: 57% reduction in energy
consumption using HOLOS Air**



HALOPRISM™

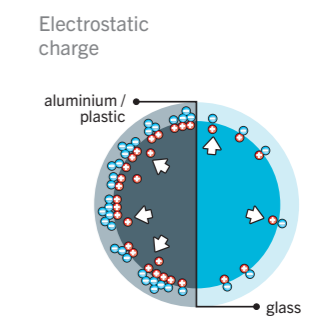
Holophane's Optical Design 

In today's ultra-competitive environment, it is becoming increasingly important to reduce operating costs to improve profitability. Holophane is your expert when it comes to delivering the most efficient lighting solutions to help you achieve that goal. Taking advantage of the most advanced technologies available, you can achieve a energy saving of up to 60%* over existing installations based on a point for point replacement.

Holophane's HALOPRISM optics enable you to reduce installation and long term maintenance costs. It delivers three additional benefits as standard, which help maximise your return on investment.

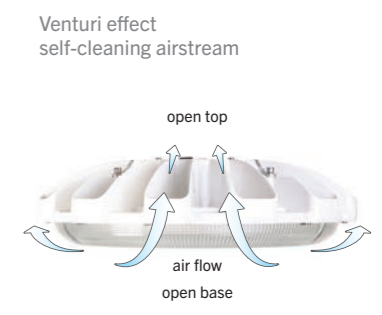
Glass Refractor

The major advantage of glass over aluminium or plastic is its low electrostatic charge, which makes it less susceptible to dust and dirt accumulation over time. A glass refractor has a much lower light depreciation over time than either aluminium or plastic. Fewer luminaires are required, significantly reducing installation, operating and maintenance costs.



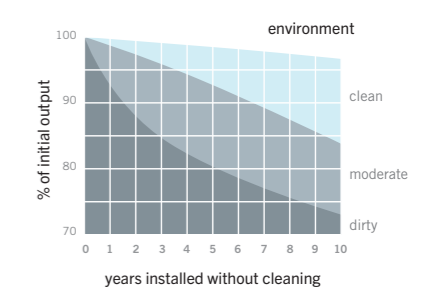
Self Cleaning Effect

The semi-torus glass optics and the vertical ventilation slots in the heat-sink chassis work together in creating a self-cleaning optic. The heat generated by the luminaire helps to channel cooler and denser air across the low static optical glass surface thus preventing the settling of dust particles. When cleaning is required, a simple wiping of the smooth outer surface will restore 'as new' efficiency.



Luminaire Maintenance

The graph opposite shows the Holophane glass reflector/refractor maintenance factors over a 10 year period without cleaning. These curves can be used with confidence to calculate accurate illuminance levels throughout the chosen maintenance life of the installation. The lower dirt depreciation of Holophane industrial luminaires ensures more light from fewer luminaires yielding lower operating costs.



*Compared to a 400W HID circuit.

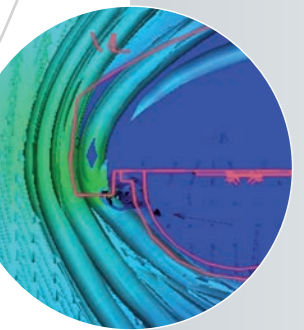
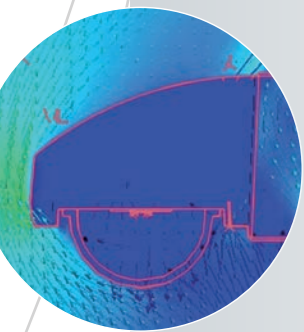
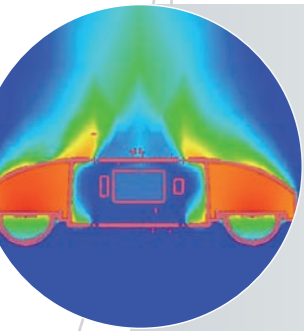
**TO GET MORE LIGHT?
INSTALL FEWER FITTINGS**

performance

Thermal management

Fully ventilated Haloprism™ luminaire with inner and outer perimeter vents and a ventilated driver chamber optimises cooling by natural convection of heat sensitive electronic components. This provides market leading light output whilst maintaining a high product life. Complete 'through ventilation' of driver electronics chamber ensures minimal dust build up.

Haloprism™ utilises all three heat transfer principles of conduction, convection and radiation to ensure that the high powered LEDs mounted to the aluminium backed PCB and electronic drivers are thermally managed well within their limit to maximise system life.



- 1 Heat generated by the LEDs causes air to accelerate above the luminaire
- 2 This rising ambient air draws in more cooler and denser air from under the luminaire
- 3 Cooler air passes through the ventilated driver compartment which is located away from the heat generated by the LEDs
- 4 This cooler air brushes past the surface of the low static prismatic glass refractors and accelerates as it travels through the vertical slots in the luminaire heat-sink chassis - venturi type effect
- 5 The highly conductive material of the luminaire heat-sink chassis and vented holes on the chassis utilises convection to transfer the heat generated by the LEDs
- 6 The curved design of the heat-sink chassis results in a 'coanda' type effect where the air is directed horizontally along the fins thus further improving heat transfer
- 7 Once the cycle gains momentum, the air-flows across the low static glass optics have been simulated to reach speeds of up to 1.44Km/h in a 25° ambient



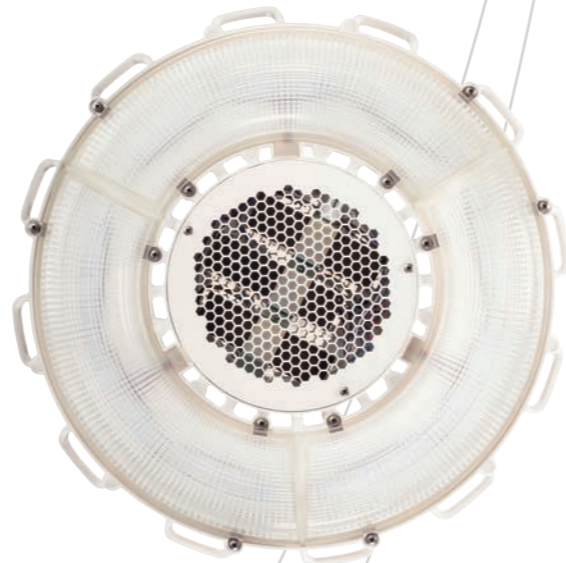
CONDUCTION
FROM LED JUNCTION TO LUMINAIRE
HEAT-SINK CHASSIS



CONVECTION
FROM LUMINAIRE HEAT-SINK
CHASSIS & DRIVER ELECTRONICS
TO AMBIENT AIR



RADIATION
MORE ACTIVE IN AMBIENT
TEMPERATURES ABOVE 25°C



specification

The luminaire shall utilise PrismaLED optics consisting of three, twin-active, prismatic glass lenses manufactured from soda-lime glass (SiO₂74CaO11Na₂O13) mounted with specially designed stainless steel deformable clips to hold the prismatic glass in place. The fully ventilated finned luminaire chassis is manufactured from LM20 aluminium (AlSi12Cu) to maximise heat transfer. The luminaire, with inner & outer perimeter vents and ventilated electronic driver chamber, utilises all three heat transfer mechanisms of conduction, convection and radiation to ensure that the LEDs mounted to the aluminium backed PCB and electronic drivers are thermally managed. The prismatic glass lenses are sealed within the main luminaire chassis with a die cut gasket that has internal wire pass holes to ensure IP65 is maintained.

features and benefits

Unique Ventilated Design

- > Finned luminaire design with inner and outer perimeter chamber vents, utilises conduction and convection to ensure heat is managed away from the LEDs to maintain a long system life.
- > Ventilated driver chamber optimises cooling by natural convection of air over heat sensitive electronic components and ensures dust build-up is minimised.

Exceptional Optical Performance

- > Incorporates PrismaLED technology which delivers a wholly luminous effect that accurately controls the output of the LEDs and reduces glare.
- > Glass refractor technology with rounded 'light blending' prisms on the inner surface and sharper 'light controlling' prisms on the outer surface help to 'blend and shape' the light output.
- > Five distributions catering for a wide range of high mounting height and spacing requirements.

Enhanced Lumen Maintenance

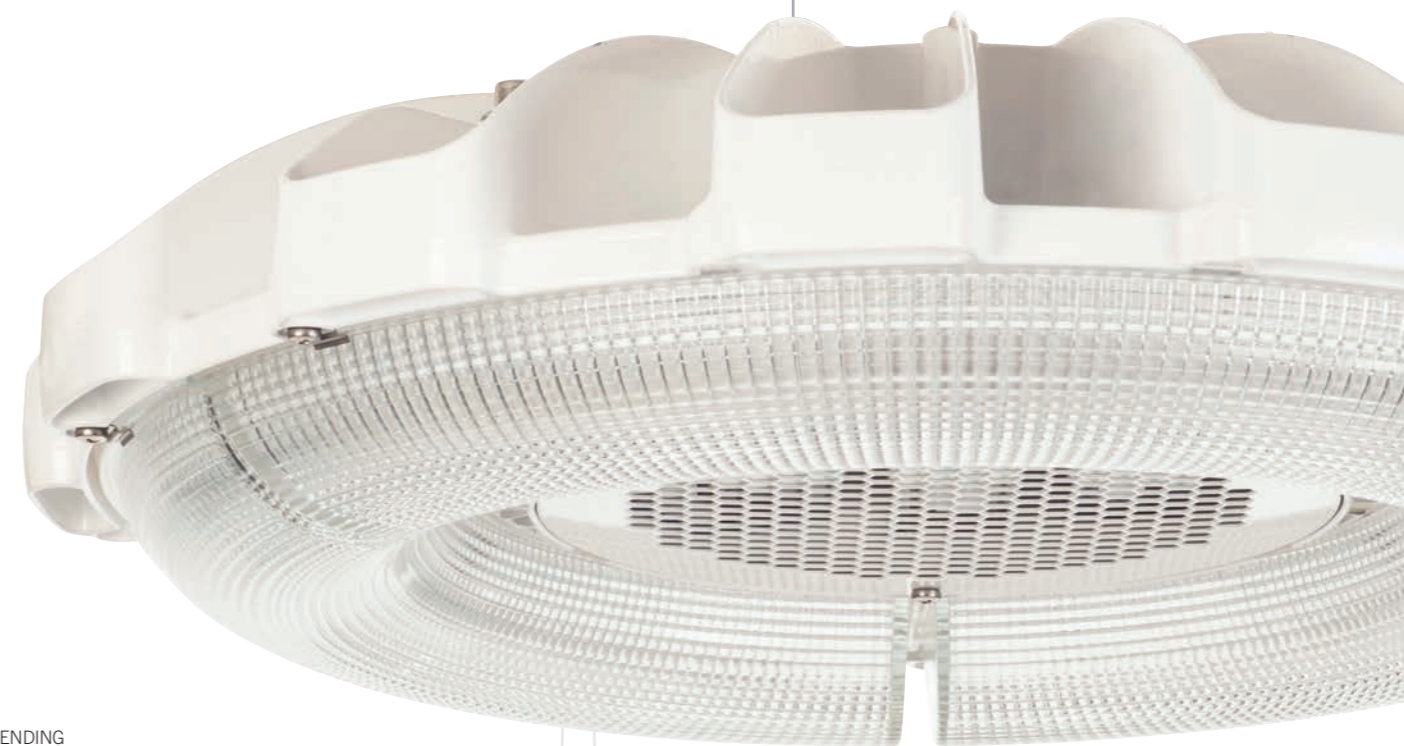
- > Low electrostatic 'semi-torus' glass optics and the vertical ventilation slots of the luminaire heat-sink work together to create a self-cleaning optical system.
- > Glass optics proven to minimise dust and dirt accumulation over time, dramatically improve the lumen maintenance over life.

High Efficient LED Technology

- > High quality, efficient LEDs used in conjunction with the latest in LED drivers ensures that the best lumen per watts and a long system life are achieved.

Fully Controllable Luminaire

- > DALI (up to 3 x DALI addresses) and 1-10V analogue controls options available.
- > Fully integrable into Holophane's HOLOS system.
- > Local control via standalone 1-10V infrared presence detector (HEL.PIR) - accessory.
- > Plug and play controls connection.



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Customer benefit expressed in numbers on a new build
HALOPRISM™ compared to an equivalent LED high bay.

It is critical that customers of industrial and warehousing applications find ways to reduce the amount of energy required to light their facilities. HALOPRISM™ is the first LED high-bay luminaire that can directly replace 400W HID high-bays, enabling significant energy savings. LEDs also provide instant light and the possibility to dim the light level instantly. HALOPRISM™ is DALI-dimmable (3 x DALI addresses), so even more energy can be saved.

Design Parameters

- > 10,000 hours
- > Dirty environment
- > Reflectances C50%, W30%, F10%
- > Room dimensions (m): Length: 50, Width: 30, Height: 9
- > Luminaire Installation height of 9m
- > Total area 1500m²
- > Target Lux : 500, Uniformity : >0.60 as per BSEN12464-1 2011
- > Facility operating 12hrs per day, 365 days a year
- > 2 years cleaning cycle

new build

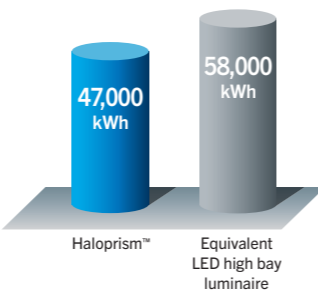
Product Used

- 28 HALOPRISM™ high bay luminaires
- > Luminous flux: c40,000 lm
 - > Luminous efficiency: 128 lm/W
- 45 Equivalent LED high bay luminaires
- > Luminous flux: 24,000 lm
 - > Luminous efficiency: 95 lm/W

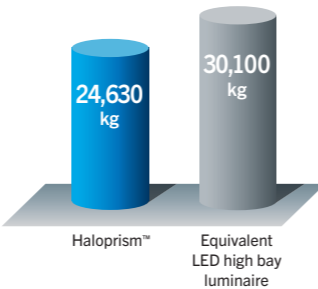
Benefits

- > 19% Year 1 Energy Saving
- > 38% less luminaires reducing installation costs
- > Improved light control
- > Better uniformity
- > Low glare
- > Exceptional vertical illumination
- > Over 6 tonnes of CO₂ saved

Year 1 energy consumption



Year 1 total CO₂



19% ENERGY SAVING

Customer benefit expressed in numbers on a retrofit installation
HALOPRISM™ compared to conventional HID and fluorescent luminaires.

retrofit

Existing luminaires

- 84 400W HIE High bay luminaire
- > Luminous flux: c32,500 lm
 - > Luminous efficiency: 75 lm/W

or

- 50 6 x 80W Fluorescent luminaires
- > Luminous flux: 39,300 lm
 - > Luminous efficiency: 75 lm/W



New luminaires

- 50 HALOPRISM™ high bay luminaires
- > Luminous flux: c20,000 lm
 - > Luminous efficiency: 153 lm/W

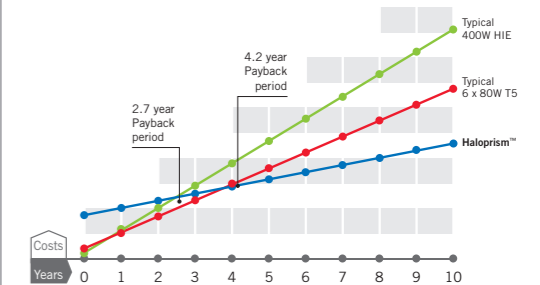
Benefits

- > 68% Year 1 Energy Saving vs 400W HIE luminaire
- > 55% Year 1 Energy Saving vs 6 x 80W T5 fluorescent luminaires
- > Over 55 tonnes of CO₂ saved
- > Improving the lighting from 506lux to 643lux

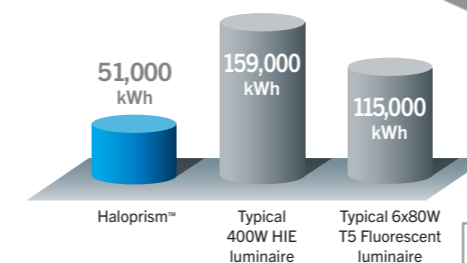
resulting:

- > Increase in task performance
- > Reduction in number of rejects
- > Accident Reduction

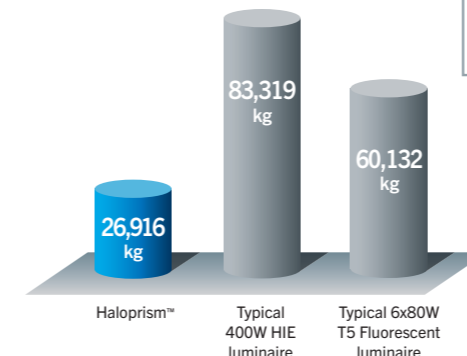
Amortisation on Retrofit Installation
including luminaire and running costs



Year 1 energy consumption



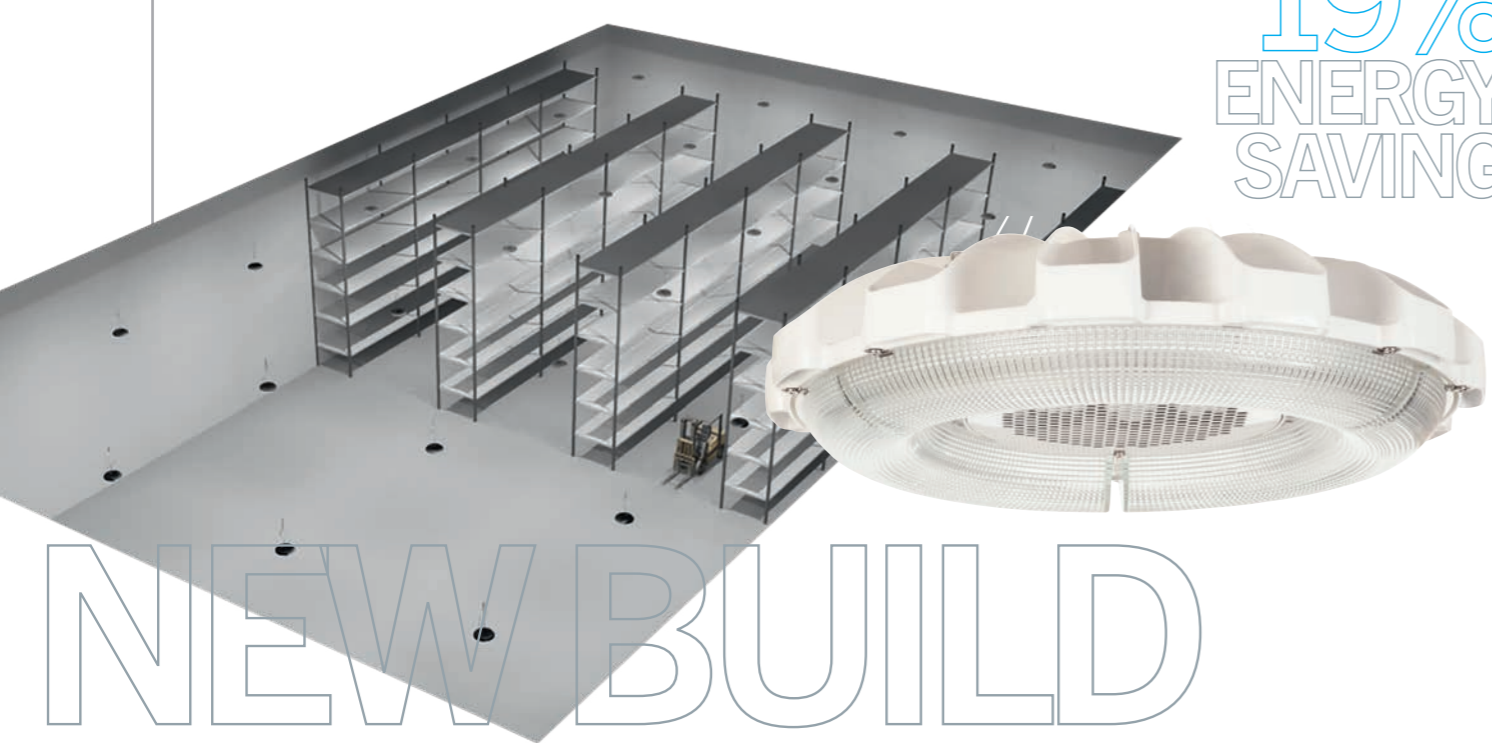
Year 1 total CO₂



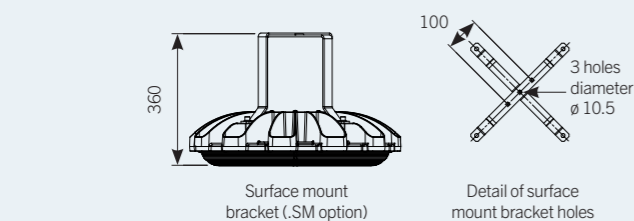
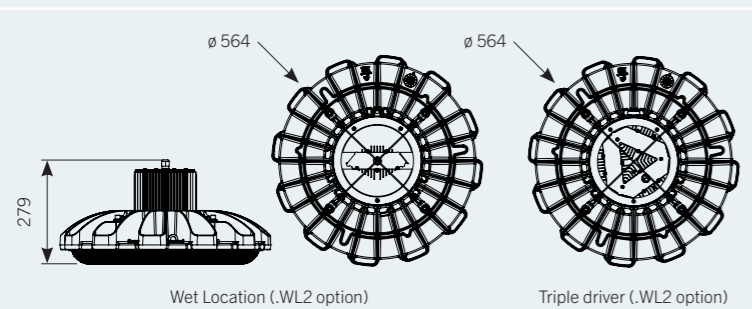
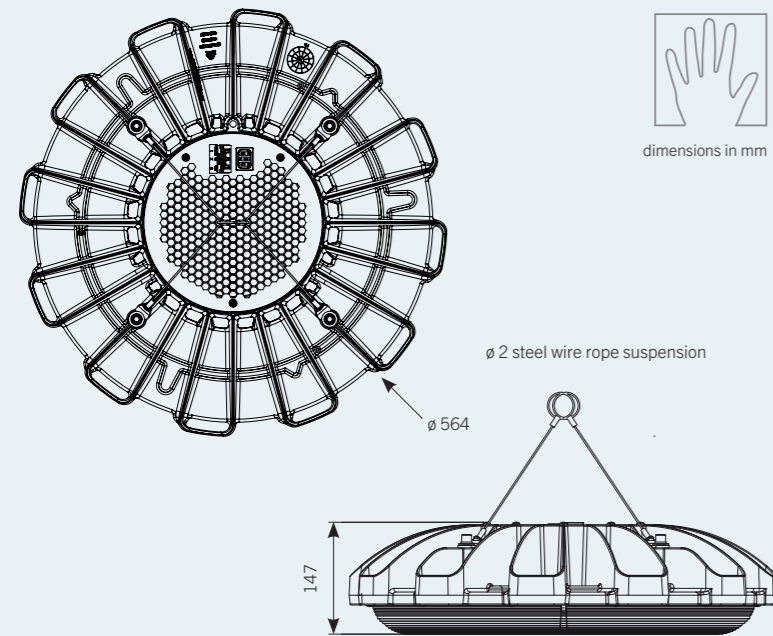
RETROFIT

68% ENERGY SAVING

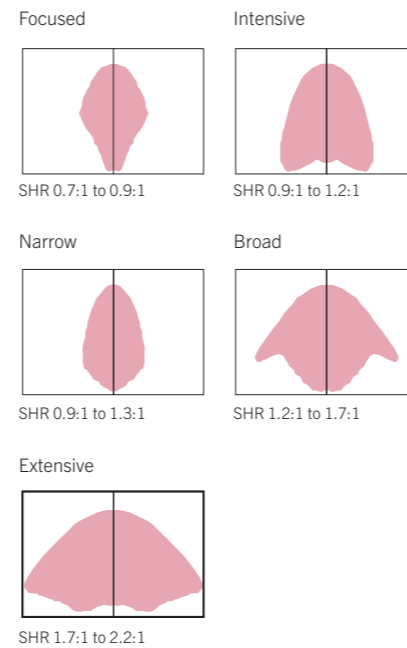
NEW BUILD



ordering details - luminaire



light distribution



applications

- Factories
- Warehouses
- Aircraft Hangers
- Exhibition areas
- Gymnasiums
- Large retail stores
- Railway stations
- Airports
- Atria

weight (with control gear)

Standard with triple driver	17kg
.WL with single driver	18kg
.WL with triple driver	19kg

TA

Up to 55°C

Note: The specifications of the Holophane luminaire represents typical values. All descriptions, illustrations, drawings and specifications in the Holophane catalogue and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

*Electrical termination (supplied with centre chamber extension and 2.5m 5-core flying lead)

**Projected life of the product will vary

Code

HAL	Haloprism Luminaire	
Code	Lamp Type (required)	
.LM1548	LED 'mid power' light engine producing c.15,000 lm with a nominal 4000K colour temperature, 80CRI	
.LM2048	LED 'mid power' light engine producing c.20,000 lm with a nominal 4000K colour temperature, 80CRI	
.LM3048	LED 'mid power' light engine producing c.30,000 lm with a nominal 4000K colour temperature, 80CRI	
.LM4048	LED 'mid power' light engine producing c.40,000 lm with a nominal 4000K colour temperature, 80CRI	
.LM5048	LED 'mid power' light engine producing c.50,000 lm with a nominal 4000K colour temperature, 80CRI	
.LM5548	LED 'mid power' light engine producing c.55,000 lm with a nominal 4000K colour temperature, 80CRI	
.LM6048	LED 'mid power' light engine producing c.60,000 lm with a nominal 4000K colour temperature, 80CRI	
Code	Light Distribution (required)	
.FD	Focused Distribution (SHR 0.7:1 to 0.9:1)	
.ID	Intensive Distribution (SHR 0.9:1 to 1.2:1)	
.ND	Narrow Distribution (SHR 0.9:1 to 1.3:1)	
.BD	Broad Distribution (SHR 1.2:1 to 1.7:1)	
.ED	Extensive Distribution (SHR 1.7:1 to 2.2:1)	
Code	Optics (option)	
.FGL	Frosted glass lens (10% lumen depreciation on original luminaire output)	
Code	Colour (required)	
.C1	White RAL9016	
.RAL****	RAL Colour (customer choice)	
Code	Control gear (option)	
.ANF	Analogue (0-10 volt DC) fast dim system**	
.D4	DALI (up to 3 x DALI addresses)	
.CL7	Programmed to deliver 70% of the initial lumens over the life of the luminaire	
.CL8	Programmed to deliver 80% of the initial lumens over the life of the luminaire	
.CL9	Programmed to deliver 90% of the initial lumens over the life of the luminaire	
Code	Fixing Method (option)	
.SM	Surface mounted (factory installed surface mount bracket)	
Code	IP Rating (option)	
.WL2	Wet location IP65 (supplied with 3, 5-core flying lead)	
Code	Guard (option)	
.WG	Wire guard	
Code	Cable Entry (option)	
.FL3	Supplied with 3m 5-core flying lead	
Code	Enclosure (option)	
.SF	Silicon free	
Example	HAL .LM1548 .FD .FGL .C1 .ANF .SM .WL2 .WG .FL3 .SF	

** .ANF option only available with .LM3048 lumen package options.

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturers data) and luminaire power of +/- 5%.

accessories:

Code

- HEL.PIR** Standalone high-bay PIR kit 20m analogue (1-10V). Suitable for up to 20 x 1-10V drivers.
- HEL.PIR.D4** Standalone high-bay PIR kit 20m analogue (DALI). Suitable for up to 20 x DALI drivers.



Standard Plug & play power connection



Plug & play controls connection



Standalone PIR (HEL.PIR)



Wire Guard (.WG)



Safety Chain attachment as standard (chain not included)



Single point suspension



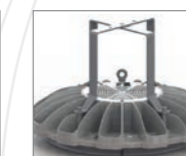
Twin point suspension WL2 version for LM3048 without D4



Wet location (WL2) version for LM1548 and LM2048



Wet location (WL2) version for LM3048, LM4048, LM5048 and LM5548



Factory installed surface mount bracket (.SM)

Note: Every luminaire other than those ordered with option .WL2 or .SM are supplied with two carabiner clips allowing for either single or twin point suspension.

HOLOS Air



Take control

HOLOS Air powered by Luxon, is a web-based, wireless control, monitoring and management system for lighting. It gives users the freedom to commission, configure and completely control their own lighting to maximise energy savings and reduce carbon emissions.

Early generation lighting controls provided energy savings but were difficult and expensive to fit retrospectively, requiring specialist engineers. Once installed, they were difficult to alter and not well suited to respond to changing occupancy patterns in buildings.

HOLOS Air banishes these problems. Installation and initial configuration is **simple** and controls can be altered at the touch of a button to meet a building's changing needs. Comparisons with existing technology are impressive; it is capable of **controlling 200 HOLOS Air devices** from one **wireless gateway** compared to DALI's 64.

HOLOS Air enables a variety of control strategies to be employed, for example daylight harvesting, occupancy sensing, time scheduling, and scene setting.

The solution also allows wireless conversion of 3rd party sensors via volt-free connection to HOLOS adapters and complete personalised mapping per user.

CONTROLLED TECHNOLOGY

Case study

Tunbridge Wells Tennis Centre

Requirements

The recently refurbished indoor tennis courts at the Tunbridge Wells Sports Centre required a lighting solution that delivered the desired lighting levels, reduced their energy consumption and also met the differing scene settings required.

The Solution

The following control strategies were recommended:

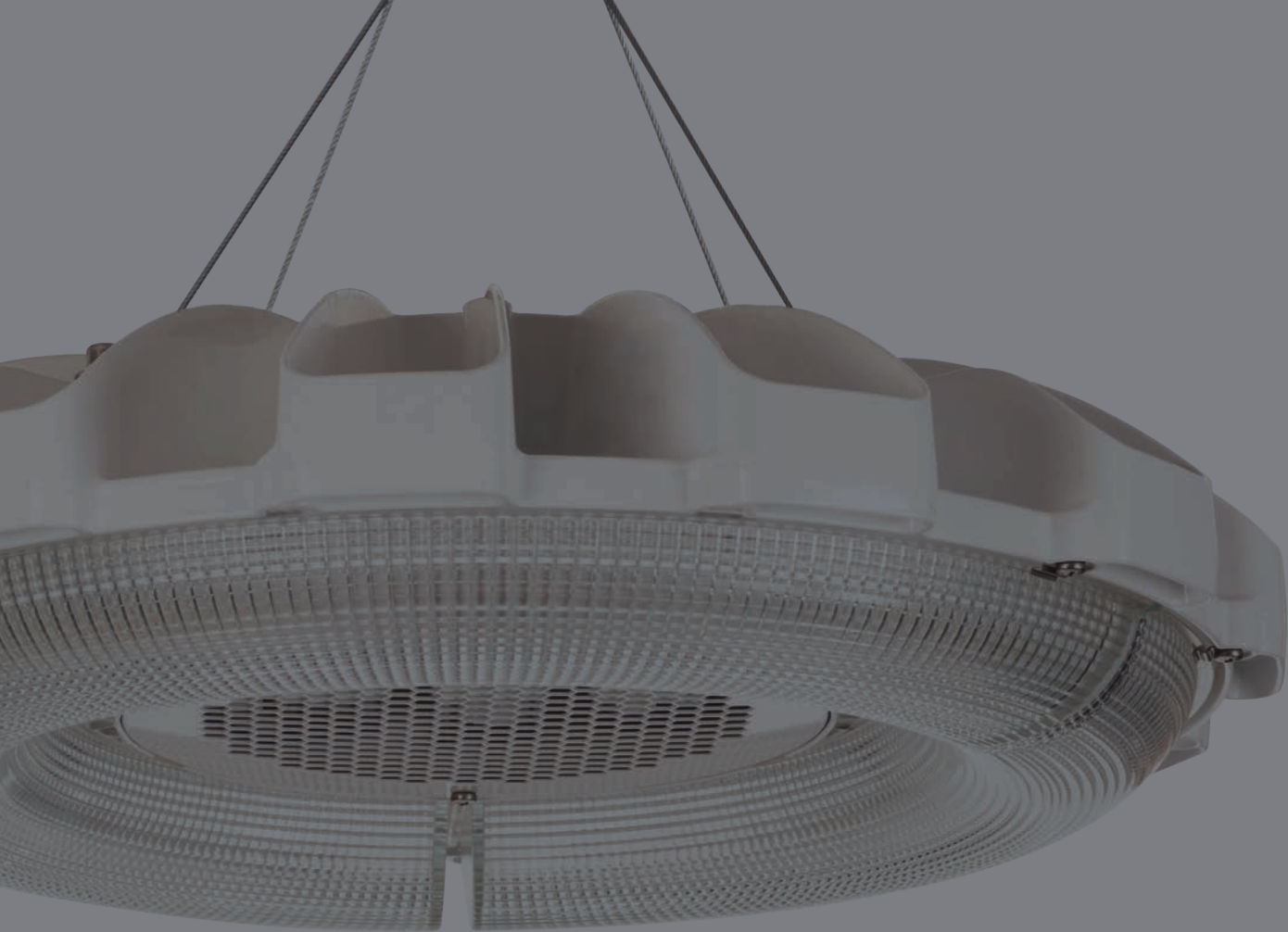
- > Haloprism luminaires and HOLOS controls system delivers superb visual comfort and playing conditions.
- > The new lighting scheme completely eliminates the previous dark spots associate with the old lighting and performs well even with uneven mounting heights.
- > The intelligent HOLOS control system ensures lighting is dimmed on unused courts by monitoring court usage via long range presence detectors.
- > Three preset lighting levels for maintenance, recreation and competition are easily achieved by the control system to reduce running costs.
- > Each pre-set lighting level can easily be selected using a simple switch. These can be adjusted as and when required.

Lighting Controls Case Study

As an example this complete turnkey Holophane project utilising the Holophane Haloprism luminaire together with the HOLOS Wired controls scheme delivered impressive energy savings for the customer whilst visually improving the users experience in space. Similar savings can be achieved with the HOLOS Air system with the added benefit of no controls BUS cabling being required. This significantly reduces installation costs and time over traditional wired controls systems.

57% SAVINGS





HALOPRISM™

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