HMAO

Advanced
LIGHTING TECHNOLOGIES

HMAO
High Mast Advanced Optix

HOLOPHANE®

MADE IN BRITAIN®

HIGH MAST
HMAO

The High Mast Advanced Optix (HMAO) luminaire has been engineered for new and retrofit high mast applications. With the latest in high-efficiency LED technology it provides a complete lighting solution for the simplest through to the most complex area lighting applications.

The specially engineered optical modules come with a full range of distribution options to meet the highest performance standards and deliver outstanding visibility and uniformity.

For over 125 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. HMAO is a continuation of this proud tradition.

Durability
Performance
Reliability

Applications

- Freight Terminals
- Industrial Facilities
- Car Parks
- Truck stops
- Ports and Docks
- Airports
- Motorways
- Toll Plazas

Overview

- 3000°K & 4000°K colour temperature.
- CRI > 70.
- Lumen packages ranging from 30,000 - 100,000 lumens.

TM66 CEAM-Make Rating

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

Approvals

CE UKCA

Complies with EN60598

IP65 and IK07

-20˚C to +45˚C (L75X limited to +40˚C)

LUX Awards 2015 WINNER

MADE IN BRITAIN

For further information please visit the Holophane website **www.holophane.co.uk**

PRODUCT FEATURES

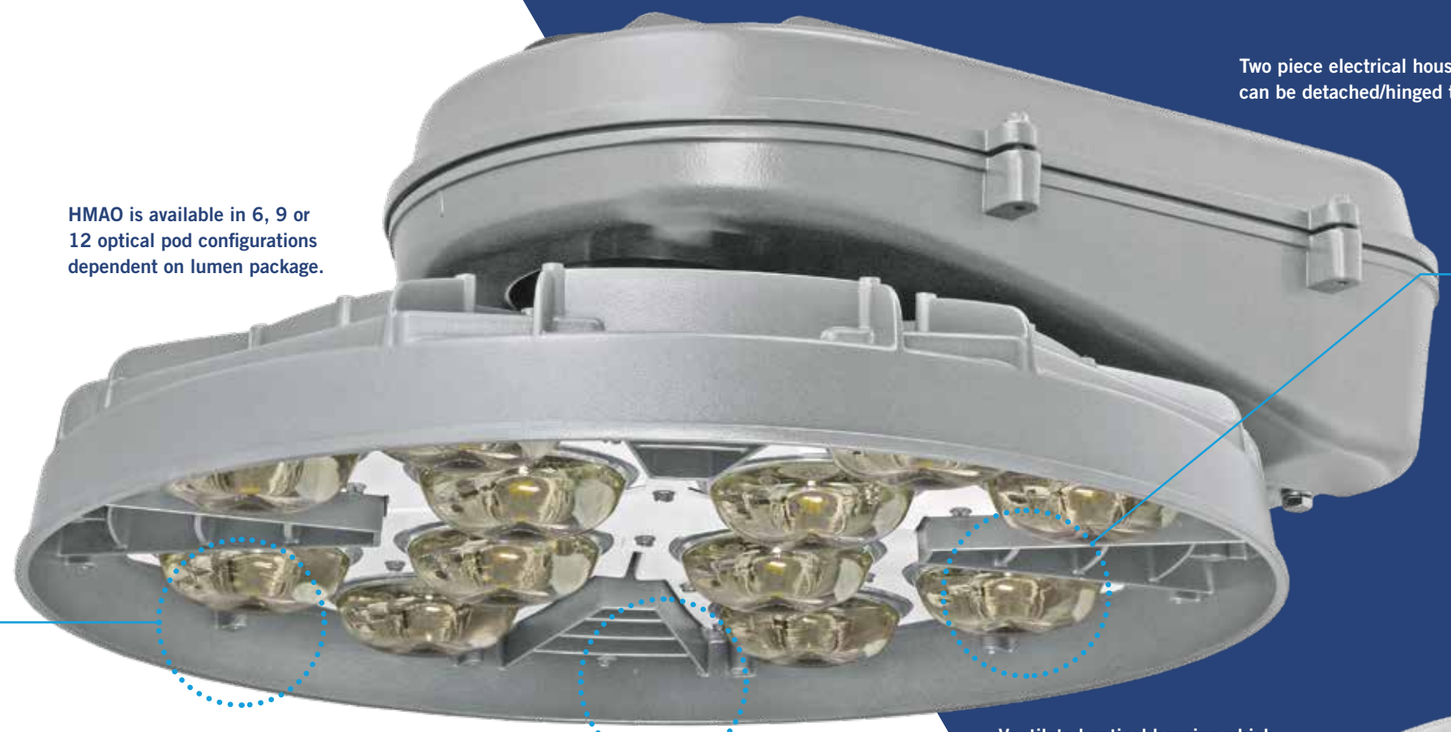
HIGH MAST HMAO

In this very competitive environment, it is becoming increasingly important to reduce operating costs and improve efficiency. 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 an energy saving of up to 66% over existing installations. Holophane's High Mast Advanced Optix (HMAO) helps you to reduce installation and long term maintenance costs.

HMAO is available in 6, 9 or 12 optical pod configurations dependent on lumen package.

Two piece electrical housing. Upper casting can be detached/hinged to aid installation.



Advanced optical control

By combining the latest in LED technology with our advanced glass refractor optic we are able to break up the image of the LEDs with a PrismGlow effect. This reduces the glare normally associated with individual LEDs and eliminates hot stops on the working environment thus creating a more uniformed vertical and horizontal lighting solution.

Glass Refractor

The major advantage of glass over aluminium or plastic is its low electrostatic charge, which makes it less attractive 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.

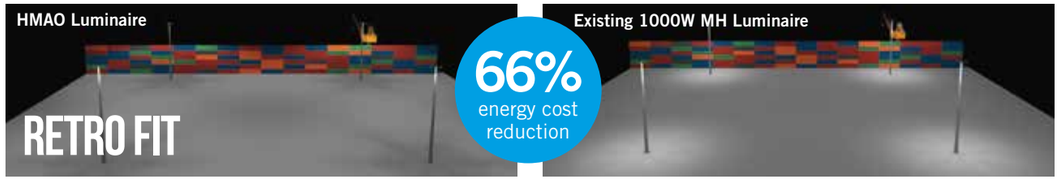
Self-cleaning Effect

The 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 LEDs helps to channel cooler and denser air across the low static optical glass surface thus preventing the settling of dust particles and enhancing the lumen maintenance of the luminaire.

Ventilated optical housing which can be rotated to suit application.

RETROFIT
NEW BUILD

Customer benefit expressed in numbers on a new build and retrofit installation.



Design Parameters

- Designed to EN 12464-2:2014
- Target of 30 lux
- 30m mounting height in a 1000m grid
- Designed to 8000 hours

Product Used

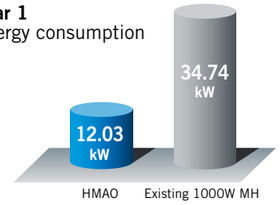
32 High Mast Advanced Optix
- Luminous flux: c45,000
- Luminous efficiency: 144 lpw

32 1000MH Luminaire
- Luminous flux: c67,000
- Luminous efficiency: 62 lp/W

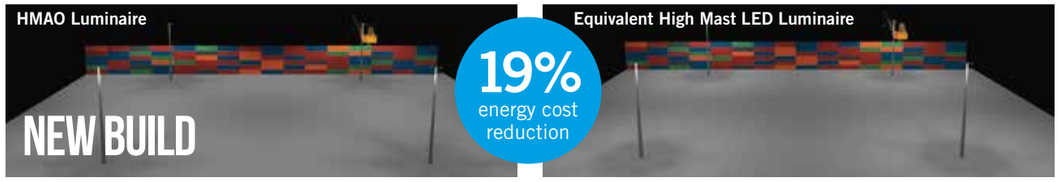
Benefits

- 66% year 1 energy savings
- Improved light control
- Horizontal/vertical uniformity improved

Year 1
energy consumption



HMAO		1000W MH
32	No of Luminaires	32
32	Eav (lux)	31
0.597	Uniformity	0.552
12.03	Total Power Load kW	34.72



Design Parameters

- Designed to EN 12464-2:2014
- Target of 30 lux
- 30m mounting height in a 1000m grid
- Designed to 8000 hours

Product Used

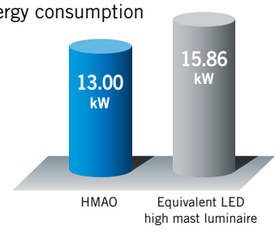
26 High Mast Advanced Optix (HMAO)
- Luminous flux: c60,000
- Luminous efficiency: 144 lpw

26 Equivalent LED High Mast Luminaire
- Luminous flux: c56,000
- Luminous efficiency: 93 lp/W

Benefits

- 19% year 1 energy savings
- 20% improvement in uniformity
- Improved vertical illumination
- Low glare

Year 1
energy consumption



HMAO		Equivalent LED high mast luminaire
26	No of Luminaires	26
30	Eav (lux)	30
0.779	Uniformity	0.651
13.00	Total Power Load kW	15.86

* Designed to EN12464-2:2014 ref 5.4

SPECIFICATION

Specification

HMAO shall consist of six, nine or twelve prismatic glass refractors manufactured from borosilicate glass to ensure longevity and minimise dirt depreciation. Each glass lens houses an LED module and creates individual optical pods. Each optical pod is housed in a fully ventilated and finned housing manufactured from aluminium to maximise heat transfer. The electrical housing consists of two castings containing the drivers, 10kV surge protection and electrical termination. The luminaire chassis and electrical housing utilises all three heat transfer mechanisms of conduction, convection and radiation to ensure that the high density modules and electronic drivers are thermally managed. Mounting is via the four bolt side arm mounting with +/-5 degree tilt and suitable for 42mm and 60mm.

3000K or warmer must be selected for IDA dark sky certification.

Features and benefits

Thermally Managed Solution

- Utilises convection and conduction to thermally manage the LEDs ensuring longer life and high delivered lumen outputs to replace 400-1000 watt metal halide systems.
- Gear housing designed to maximise heat dissipation, via conduction, from critical electronic components to ensure that they are run as cool as possible to deliver a long system life.

Exceptional Optical Performance

- Glass refractor technology which delivers a wholly luminous effect that accurately controls the output of the LEDs, reduces glare with its 'PrismGlow' and delivers excellent uniformity.
- Rotatable optical assembly providing on site alignment of distributions to specific lighting requirements and ensuring equal weight distribution on existing mast head frame.
- Seven dedicated distributions designed for all types of retrofit or new installations where high mounting is required.

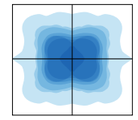
Enhanced Lumen Maintenance

- Glass optics ensure a low electrostatic charge which make it less attractive to dust and dirt accumulation over time so improving dirt depreciation.
- Ventilated luminaire chassis works together with the glass optics to create self-cleaning system which enhances the lumen maintenance of the luminaire over time.

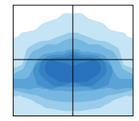
Installation Flexibility

- Suitable for side entry mounting via the integrated four bolt mounting system which also offers 0 or 5 degree tilt.

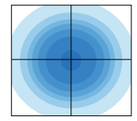
Light Distributions



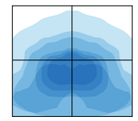
Square (.SQ)



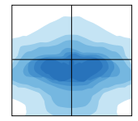
Asymmetric (.AY)



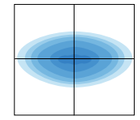
Symmetric (.SY)



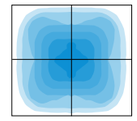
Forward Throw (.FW)



Long & Narrow (.NR)



High Beam Symmetric (.HS)



Square Wide (.SQW)*

*Series 4 only

SPECIFICATION

ORDERING DETAILS

Code	**Luminaire** (required)	
HMAO	High Mast Advanced Optix	
	Series (required)	
.4	Series 4	
	Lamp Type (required)	
	.LC30X	LED light engine producing c.30,000 lm with a nominal 3000K or 4000K colour temperature
	.LC35X	LED light engine producing c.35,000 lm with a nominal 3000K or 4000K colour temperature
	.LC45X	LED light engine producing c.45,000 lm with a nominal 3000K or 4000K colour temperature
	.LC50X	LED light engine producing c.52,000 lm with a nominal 3000K or 4000K colour temperature
	.LC60X	LED light engine producing c.60,000 lm with a nominal 3000K or 4000K colour temperature
	.LC70X	LED light engine producing c.70,000 lm with a nominal 3000K or 4000K colour temperature
	.LC75X	LED light engine producing c.75,000 lm with a nominal 3000K or 4000K colour temperature
	.LC80X	LED light engine producing c.80,000 lm with a nominal 3000K or 4000K colour temperature
	.LC90X	LED light engine producing c.90,000 lm with a nominal 3000K or 4000K colour temperature
	.LC100X	LED light engine producing c.100,000 lm with a nominal 3000K or 4000K colour temperature

Replace 'X' in lamp type code with either: 3 for 3000K 4 for 4000K

Code	**Optics**
.NR	Long and Narrow light distribution
.HS	High beam symmetric distribution
.AY	Asymmetric light distribution
.FW	Forward throw light distribution
.SQ	Square light distribution
.SY	Symmetrical light distribution
.SQW	Square wide light distribution

Code	**Colour**
.C9	Metallic Silver RAL9006
.RAL****	RAL Colour (customer choice)

Code	**Control Gear** (options)
.LRD	DALI, number of addresses will vary on the lumen version configured
.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	**Photocell** (options)
.TSZ	Complete with miniature 70 lux factory fitted photocell (Zodion SS12)
.T1	Complete with NEMA socket (to accept standard NEMA Photocell, available from Holophane*)
.T5	Complete with 5-pin dimming NEMA ANSI C136.41 socket (suitable photocell/node supplied by others)
.T5T	Complete with 5-pin dimming NEMA ANSI C136.41 socket (photocell/node supplied by others) with weather proof locking top
.T7	Complete with 7-pin dimming NEMA ANSI C136.41 socket (suitable photocell/node supplied by others)
.T7T	Complete with 7-pin dimming NEMA ANSI C136.41 socket (photocell/node supplied by others) with weather proof locking top
.TZ01	Complete with 4-Pin Zhaga Socket - Top (suitable photocell/node supplied by others) with weather proof locking top.†

Code	**Paint Finish** (options)
.C	Enhanced Paint Finish

Code	**Voltage** (options)
.C-PROTEC	With 20kV/10kA surge protection

HMAO	.4	.LC30X	.NR	.C9	.LRD	.TSZ	.C	

Example

Note: 42/60mm side entry, 10kV/10kA surge protection as standard.
*Luminaire is IP65 when options .T1 or .T are selected. † Not available with .LRD

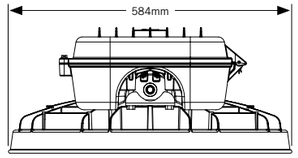
Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturers data) and luminaire power of +/- 5%.

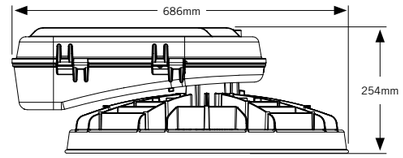
accessories

Code	
HMAO.SD90	90º shield
HMAO.SD120	120º shield
HMAO.SD180	180º shield

DIMENSIONS & PERFORMANCE

dimensions in mm





Typical luminaire performance

Configuration	Delivered Lumens	Power Consumption (W)	Driver output current (mA)	Luminaire total no. of LED modules	Luminaire efficacy (lm/W)	Rated life of LED module (L70B50 @Tq 25°C)
HMAO.4.LC30X	c.30,000	180	565	6	167	100,000
HMAO.4.LC35X	c.35,000	212	667	6	165	100,000
HMAO.4.LC45X	c.45,000	279	878	6	161	100,000
HMAO.4.LC52X	c.50,000	317	989	6	164	100,000
HMAO.4.LC60X	c.60,000	374	787	9	160	100,000
HMAO.4.LC70X	c.70,000	446	938	9	157	100,000
HMAO.4.LC75X	c.75,000	486	1017	9	154	100,000
HMAO.4.LC80X	c.80,000	502	792	12	159	100,000
HMAO.4.LC90X	c.90,000	583	919	12	154	100,000
HMAO.4.LC100X	c.100,000	658	1040	12	152	100,000

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%.

Weight

HMAO 23 kg

Windage

HMAO 0.120 m^2

Rotatable optical assembly

Four bolt mounting suitable for 42mm and 60mm side entry

Hinged upper casting

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HMAO
High Mast Advanced Optix

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Expanding the boundaries of lighting™