



**Fael LUCE**<sup>®</sup>  
DOING IT BETTER



**GENERAL CATALOGUE | 2019** 







**Eael LUCE**  
DOING IT BETTER

Eael LUCE

## Since 50 years, we light up your passions

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Fael Luce is a leading company in supplying innovative and sustainable lighting systems.

The huge range of products includes lighting systems for large areas and sport facilities, urban lighting, industrial and commercial structures. Established in 1965, headquartered in Agrate Brianza (Italy), FAEL Luce experienced a vast development, that allowed the Company to be present in many markets worldwide, where the export rate reaches 70% of the production.

Fael Luce Spa is headquartered close to Milan, where the commercial and administrative offices are located.

The plant uses the most modern machinery for manufacturing of entire product range. It has high production possibilities, and a considerable stock of ready goods.

The production process is performed entirely inhouse and all finished and semifinished products are made in Italy. The company is certified UNI EN ISO 9001 and UNI EN ISO 14001.

- Established in 1965
- Headquarter: Agrate Brianza, 10 km far from Milan
- Global presence
- A branch office in Dubai
- 12800 m<sup>2</sup> of covered area



## Fael environment friendly

We strongly believe that technique and spirituality can rediscover the harmony that binds them.

We are convinced that what man creates should be linked with the pleasure of sharing what is produced for his well being.

Our raw material is light, essential element for life, and we desire to offer the best that technology can give to create light in its most natural and functional shapes.

We know that we always have to look for the harmonic convergence between technological performance and the magic of light sources and we often face endless and creative challenges in order to determine the evolution of our products in the most efficient way.

The certainty that what we produce is perfectly integrated in the concept of eco-

logical sensibility of living together and of the culture of energetic saving, so to unite rationality and emotivity.

In which way?

First of all, our factory is equipped with solar panels to produce clean, renewable energy that makes us independent in the industrial process. Then, we engage in the research for products with low environmental impact, favoring the use of eco-friendly materials, such as aluminum, and reducing the use of copper and plastic components.

Finding solutions that increase performance and energy saving, harmonize emotion and functionality, improve well-being and quality of life .... a continuous creative challenge that we like to win.

For the good of all.

· 1200 solar panels installed

· More than 150 tons of CO<sub>2</sub> per year not emitted into the atmosphere







## Doing it better

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**LIGHT: physical entity which causes the eye excitation in visual sensations.**

**Unique visual sensations.  
Technology. Services.**

We use them to their best as we wish to offer you only the best, with our lighting systems. When light interacts with matter, your eye deserves the experience of those who does it better.

We strive to achieve the utmost in performance and energy saving. Our holistic and flexible approach guarantees relia-

ble and designer products. And our value chain becomes tangible through a comprehensive service, which always responds promptly when you might need. Whatever your needs, we follow the project with the utmost care, from the study of the lighting concept to final execution. Reporting problems and opportunities and, if required, attending personally to ensure supervision during the mounting and aiming phases on site.



Advanced design  
for streetlight



## LAB Light: where the solutions arise

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The market demands innovation and safety. Research and development are essential to study solutions of tomorrow, reliable and with low environmental impact. In the **LAB Light**, our R & D department, an expert team works with two objectives:

- innovating and improving existing products;
- developing and researching new materials and concepts for future products.

For this reason every day we do tests, inspections, prototyping; we make changes, improvements; we measure the performance, we test functionalities always looking towards the future: to the most innovative technologies such as LED, that opened

new frontiers and application modalities.

Moreover, we realized internally the entire range of optics of our systems and the related patents. Our innovative capacity is certified by UL International body with the issuing of the ENEC mark on our products and by CSQ with the release of the compliance with ISO 9001, in reference to the company's quality system. This is not only a guarantee of professionalism and prestige, but especially an effective tool for the benefit of customers.

Indeed, being able to verify and certify internally, we are able to give fast and precise answers, based on direct knowledge of the technological task to solve.





**PaeLuxE**  
QUALITY CONTROL PASSED  
Operator: 213

## A corporate culture of quality

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Fael products are prevalent in the world as they are appreciated for engineering, ease of installation, maintenance, durability. To keep these winning characteristics, the entire production is located in Italy, at the plant based in Agrate, and designed with the latest technologies.

The objective is to control the entire production chain: from the choice of materials and components to the assembly of systems. For this reason, particular attention is dedicated to the controls and thermal, optical and functional analysis. In fact, every product is inspected several times to check, step by step, all mechanical, constructional and electronic performances.

### **PRODUCTION CONTROLS**

All lighting fixtures are subjected to strict controls to ensure the reliability and compliance of the products to the Customer's expectations.

The controls performed are following:

- Operational and electrical parameters tests on the 100% of the lot, as requested by the IMQ Regulation.
- Test of the color temperature, color rendering and luminous flux emitted by floodlights, using a sophisticated computerized instrumentation available on the assembly line;
- Test duration of at least 5 hours on samples of the produced lot: with this test is possible to check heat distribution inside and outside the floodlight;
- Floodlight thermal dissipation check via an infrared thermal camera; the results are compared with thermal picture of the sample.

All processes are monitored and recorded on the basis of accurate and detailed operating instructions.

Fael Luce, confirming the qualitative approach that characterizes the entire structure and corporate culture, produces its lighting fixtures in compliance with national

and international standards to ensure the utmost security and lighting efficiency. Fael Spa is also the only Italian company certified by FIFA Authority.

### QUALITY AND ENVIRONMENTAL CERTIFICATION SYSTEMS

IQNet (International Certification Network) is the largest certification network in the world. CISQ (Italian Certification of Company Quality Systems) and CSQ (Certification of Quality Systems) belong to this network and they have certified that Fael quality system complies with ISO 9001, for the design, manufacturing and marketing of lighting fixtures.



#### ISO 9001 QUALITY SYSTEM

Fael LUCE got the C.S.Q. - I.Q.N.E.T. quality certification according to UNI EN ISO 9001 rule. It's an important recognition of the quality processes which allows the Customers to be absolutely confident in the faithful fulfillment of commitments and the continuity of business relationships. These are the main points of the business policy to which FAEL Spa cannot absolutely renounce.



#### ENVIRONMENTAL CERTIFICATION ISO 14001

Fael LUCE got the environmental certification UNI EN ISO 14001 that establishes the requirements of an "environmental management system", the result of the voluntary choice of the company to establish / implement / maintain active or improve its environmental management system. The certification shows that Fael LUCE has a management system that is adequate to keep the environmental impacts of its activities under control, and systematically seeks improvement in a coherent, effective and above all sustainable way.



#### CE MARKING

The CE marking placed on the product and on the package means conformity to the European Community standards: LV/73/23/CEE - 93/68/CEE - 2006/95 CE EMC 89/336/CEE - 92/31/CEE - 93/68/CEE - 2004/108/CE.



#### ENEC MARKING

ENEC is the European mark for the certification of lighting products and related accessories.

For admission to the brand, the products Fael are subjected to tests carried out by a third party who has the right to use its own laboratories and inspectors for the regular visits to the company.

For the new borns in Fael house, the laboratory tests are carried out inside, in the presence of certification body technicians.

The certification body (accredited according to ISO / IEC 17020:2012 - Conformity assessment - Requirements for the operation of various types of bodies performing inspection) affixes the ENEC certificate only after the product is in conformity with the directives and standards in force in the European Community.

The products that satisfy the "ENEC AGREEMENT" have a valid certification for all the signatory countries ENEC, which currently are:

OVE (Austria)	LCIE (France)
IMQ (Italy)	IPQ (Portugal)
BSI (United Kingdom)	AENOR (Spain)
CEBEC (Belgium)	VDE (Germany)
SEE (Luxembourg)	TUV (PS)
TUV (Rheinland)	SEMKO (Sweden)
DEMKO (Denmark)	ELOT (Greece)
NEMKO (Norway)	ASTA (United Kingdom)
EZU (Czech Republic)	SEV (Switzerland)
FIMKO (Finland)	NSAI (Ireland)
KEMA (Netherlands)	BEAB (United Kingdom)
SIQ (Slovenia)	MEEI (Hungary)

## Our certifications for your satisfaction

### SAFETY

Fael products are manufactured in compliance with the safety rule CEE 73/23 and will not compromise the safety of persons, domestic animals or property, if correctly installed, in accordance with their intent, and properly mounted.



### ECODESIGN

Fael insists in pursuing sustainability in all aspects: from concept and design, the entire range of lighting fixtures and good practices developed within the company, contributing to the reduction of costs, energy consumption and emissions of CO<sub>2</sub>.

The protection of the environment, under different points of view, has always been a top priority of the company: the investments in the photovoltaic system to the careful use of resources, from the programs for the elimination of waste and hazardous substances to the development of systems for sustainable lighting.

A 360° commitment that involves the entire production cycle. An Eco-Vision that also certifies the conformity of production processes to the Directive 2009/125/EC for ErP (Energy-related-Products), better known as Eco-design, that establishes the requirements for eco-design products energy.

### ROHS 2 - 2011/65/EU DIRECTIVE

All the lighting fixtures manufactured by FAEL Spa, comply to the European directive "2011/65/EU RoHS 2 - Restriction of dangerous substances in electrical and electronical equipments".



### PARTNERSHIP WITH CONI SERVIZI



Fael LUCE is the **Partner Company of CONI SERVIZI**, operational branch of the National Italian Olympic Committee (CONI) that is appointed the task of organizing and improving the country's Sport activities and promoting the best diffusion of Sport practice among Italians. The international relevance of CONI SERVIZI confirms, once again, the long experience of Fael LUCE in sports lighting.

# Our products

## Symmetrical Floodlights



LM 2000 47



LM 1000 55



LM 1000 E40 59



Jet 2000 75



Jet 1000 81



Mach 5 93



Mach 4 99



Mach 3 105



Mach 2 111

## Asymmetrical Floodlights



LM Max 23



LM 2000 48



LM 1000 56



LM 1000 E40 60



LM Compact 65



Jet 2000 76



Jet 1000 82



Mach 5 93



Mach 4 99











Mach 3 106



Mach 2 112

### SYMBOL

-  Wired power corrected with lamp
-  Wired power corrected
-  Product certification (European Norms Electrical Certification)
-  Suited direct mounting on normally flammable surfaces

-  Mark for devices with limited temperature complying with the technical regulation EN 60598-2-24
-  Floodlight with CE marking only
-  Class II
-  Electronic ballast



## Circular Floodlights

## Street lightings



LM One

35



Sky Cannon

41



LM 2000

49



Itinera

121



LM 1000

57




LM 1000 E40


60




Smart

129

 Inside protection fuse

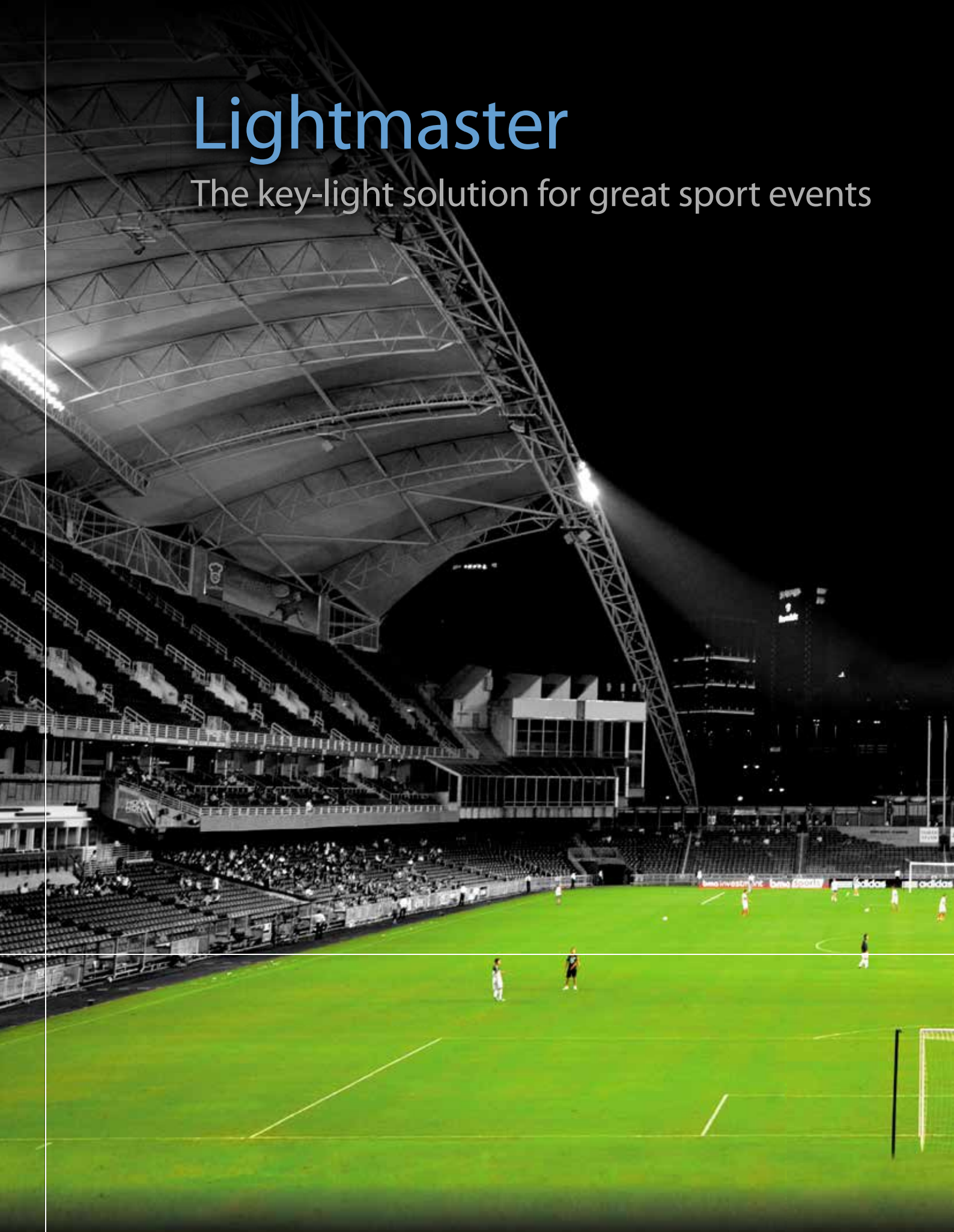
 Silver RAL 9006

 Black RAL 9005

 Internal thermal protection - if required by the building characteristics of the lamp, which must be installed in the device, inside the reactor of the electrical circuit there is a thermal protection. In case of malfunctioning of the lamp (rectification) the protection opens the circuit avoiding dangerous heating and keeping the safety of the device.

# Lightmaster

The key-light solution for great sport events





The **LIGHTMASTER** range is the result of a high level of research & development activities, aimed to create an advanced professional sports lighting system, that combines high efficiency light output with multiple optics to achieve the most advanced flexible system for lighting projects. The careful control of luminous flux system, obtained with deflector, provides an excellent glare restriction and a significant reduction of light pollution. The lightweight and compact body, together with

the design concept, offer the minimum levels of wind resistance. This characteristic allows the use of smaller masts and the perfect integration with the sports venues architecture.

**LIGHTMASTER** floodlights allow both spectators and players an excellent clear vision combined with perfect broadcast quality light levels, showing bright and natural colours with an excellent chromatic balance.



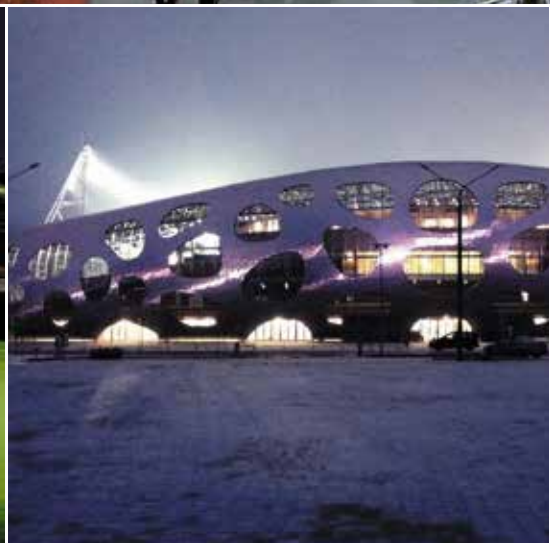
18 BATE BORISOV Stadium, Borisov, Belarus

Global ChampionsTour, Wien, Austria

Golf Club Al Ain, Abu Dhabi, UAE



Poliedro de Caracas, Venezuela



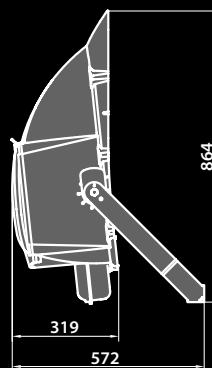
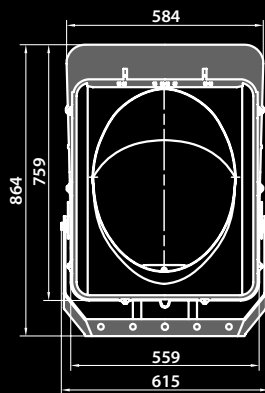
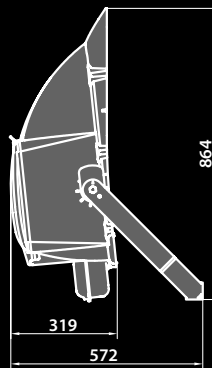
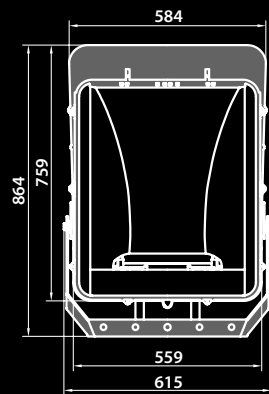
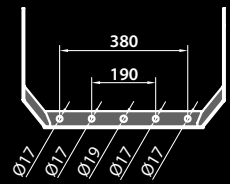
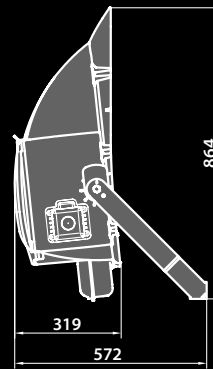
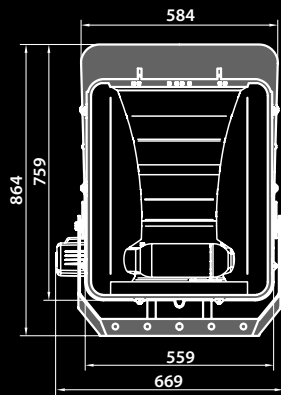
Bate Borisov Stadium, Borisov, Belarus



Velodromo Pruszkow, Poland

# LIGHTMASTER MAX





## The revolution in light

The design philosophy of **LIGHTMASTER MAX** floodlight includes the best of the entire series LIGHTMASTER: aesthetics, technology, photometric performance and flexibility of use.

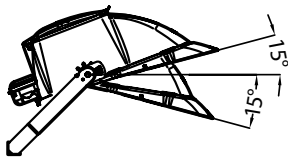
A careful study applied to asymmetric optics make it the most rational and efficient floodlight for professional lighting of sports facilities, sports arenas, outdoor areas, events and shows in large open areas.

The maximum intensity is in most of the executions of more than 60° from the vertical, thus ensuring an excellent lighting uniformity, in compliance with the strictest regulations against light pollution.

The floodlight can be equipped with a wide and complete range of lamps: the 2000W double-ended metal halide lamp short and long arc, the 1000W E40 metal halide lamp and high pressure sodium and metal halide 2000W E40.

# Technical features of Lightmaster Max

## Aiming



## Description

### CHARACTERISTICS

- Body and rear cover in die cast aluminium with primary alloy and low copper content, with a high weather proof rating.
- Coated with silver polyester powder.
- Front tempered glass resistant to high temperatures and to thermal shock, anchored to the body with 10 special stainless steel devices.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket. A series of equidistant holes allows an accurate positioning and fixing. For wall mounting applications, it is necessary to provide the proper accessory.
- Connection box in special selfextinguish plastic material. For double ended lamps, the connection box is complete with ignitor.
- Aluminum protractor scale to perform precise vertical aiming of the projector.
- Two pressure compensation filters in teflon.
- Insulation class I.
- Protection degree against external impacts: IK 08.
- Floodlight body weight Kg 20,50.
- Maximum surface wind resistance at 0°= 0,165 m<sup>2</sup>;
- Maximum surface wind resistance of floodlight complete with anti-glare louvre = 0,182 m<sup>2</sup>;
- Control gear box CABLO SERVICE, in die-cast aluminium IP 65, may be used for the supply of the lamp.
- In the double ended lamp versions, the mounting distances between the gear box and the body can be up to 50/70 meters.
- Designed for indoor and outdoor applications.
- The fixture is approved for nominal temperature of 25°C. Thus, according to EN 60598-1, the fixture can be used, for discontinuous periods, at 45°C.
- Hot Restrike version with one security knife switch for double ended with short arc lamp 1000W and 2000W, available on request. In these versions, to allow the maintenance of the distances for high voltage, the lighting performances are 5% lower compared to the standard version.

### OPTICAL SYSTEM

- All optics are designed to obtain horizontal and vertical illumination values with best uniformity terms, in full compliance with national and international recommendations against light pollution.

- The careful study of the optics and the choice of high-performing materials guarantee lighting values higher than 75% and an optimal control of the luminous flux, thanks to the lamp centering device.
- The floodlight is equipped with two kind of optics:
  - **Asymmetric Trapezoidal Optics** in high purity aluminum (99,99%) with elevated reflectance and performance. This optic may accommodate:
    - Double ended short arc and long arc lamps 1000 and 2000W with three types of optical systems: intensive, semi intensive and wide beam;
    - E40 lamps, 1000 and 2000W with two optical types: intensive and wide beam.
 The floodlight can be equipped with an anti-glare louvre in cast aluminum and painted in silver colour.
  - **Asymmetric rotational paraellissoide optic** for double ended short and long arc lamps of 1000 and 2000W.
    - With intensive emission, D1, D2, D3 type, with maximum intensity of 64°. The floodlight can be equipped with an anti-glare louvre in cast aluminum and painted in silver colour to move the maximum intensity to 70°.
    - With intensive emission, D5, D6, D7 type, with maximum intensity of 54°. The floodlight can be equipped with an anti-glare louvre in cast aluminum and painted in silver colour to move the maximum intensity to 60°.

### LAMP MOUNTING AND REPLACEMENT


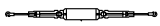

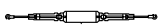



The access to the lamp is allowed by rear compartment opening, which remains blocked with two solid stainless quick release clips. In E40 lamps version, the lampholder is equipped with an anti-screwing out device and a special centering and supporting lamp device. For safety reasons, in versions for double-ended lamps 1000 and 2000W, the opening action disconnects power automatically.

The floodlight is available in two versions:

- With two power knife switches: when the cover is opened, the power supply to lampholders is directly interrupted.
- With one security knife switch: in this case the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply.

Lamp replacement is facilitated with cover opening angle, at a very comfortable amplitude of 110°. In case of lamp failure or at the end of lamp life, it's absolutely necessary to open the E switch to inhibit the ignitor's discharge, till the lamp is changed.

### LAMPS

	MD 2000W short arc
	MD 2000W long arc
	MD 1000W short arc
	MD 1000W long arc
	MT (JM-T) 2000W E40
	MT (JM-T) 1000W E40
	ST (SAP-T) 1000W E40

### COLOUR



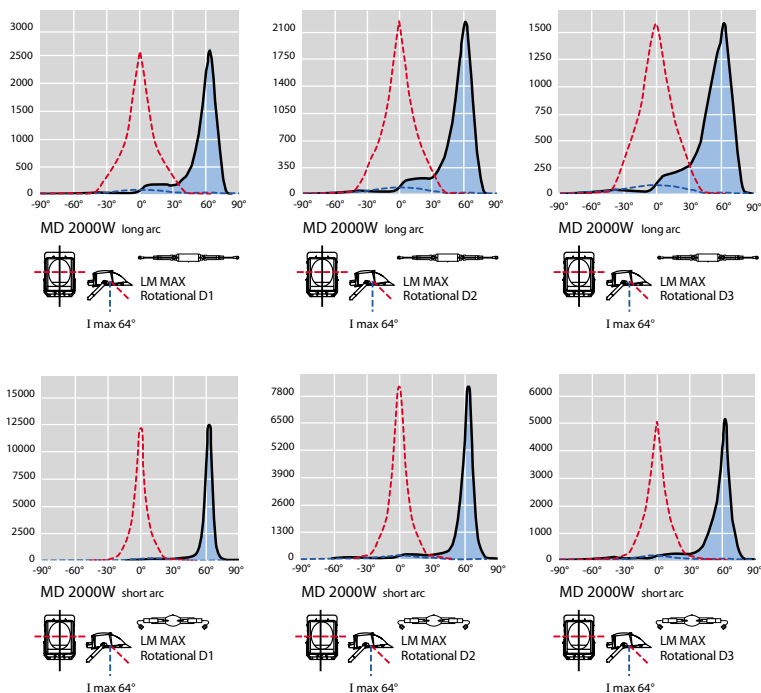
Silver



## Photometric data



Asymmetric Rotational Paraelissoide®



## Product codes

### LIGHTMASTER MAX 2000W ASYMMETRIC ROTATIONAL PARAEISSOIDE® ANGLE OF ASYMMETRY 64° - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73021	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73022	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73023	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73061	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73062	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73063	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

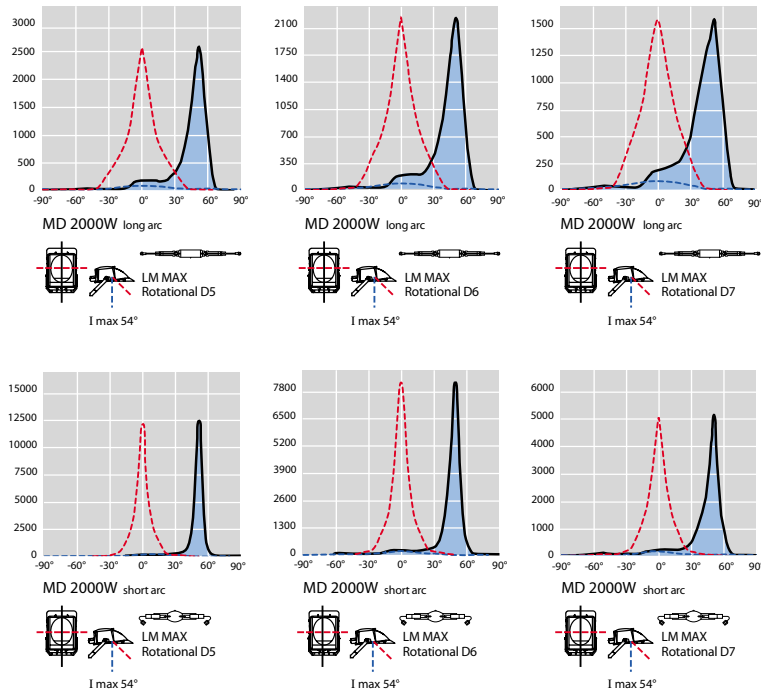
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73121	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73122	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73123	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73161	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73162	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73163	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977

With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restrike system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.

# Photometric data



Asymmetric Rotational Paraellissoide®



## Product codes

### LIGHTMASTER MAX 2000W ASYMMETRIC ROTATIONAL PARAELLISSOIDE® ANGLE OF ASYMMETRY 54° - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73035	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73036	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73037	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73075	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73076	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73077	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

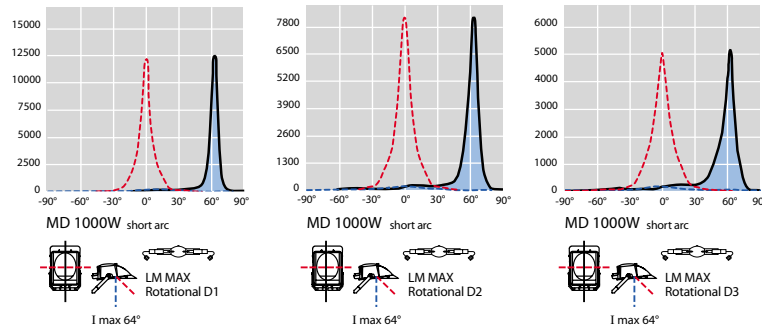
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73135	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73136	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73137	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73175	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73176	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73177	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977

With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restrike system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.

# Photometric data



Asymmetric Rotational Paraelissoide®



## Product codes

### LIGHTMASTER MAX 1000W ASYMMETRIC ROTATIONAL PARAEISSOIDE® ANGLE OF ASYMMETRY 64° - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73461	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73462	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73463	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73421	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73422	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73423	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

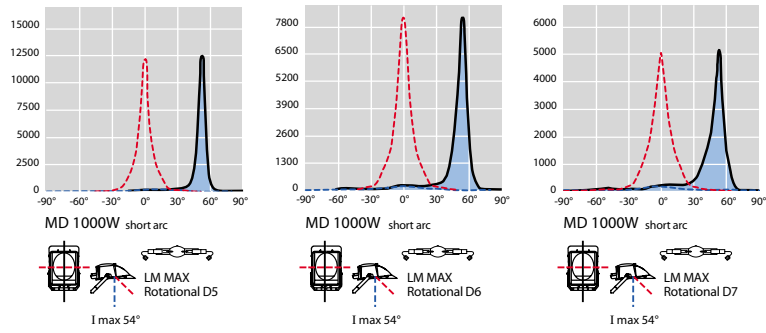
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73561	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73562	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73563	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73521	Silver body - Rotational reflector - D1 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73522	Silver body - Rotational reflector - D2 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73523	Silver body - Rotational reflector - D3 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977

With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restriking system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.

# Photometric data



Asymmetric Rotational Paraelissoide®



## Product codes

### LIGHTMASTER MAX 1000W ASYMMETRIC ROTATIONAL PARAELLISSOIDE® ANGLE OF ASYMMETRY 54° - CL I

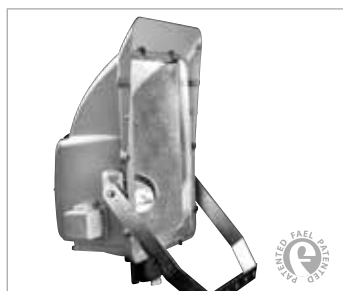
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73475	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73476	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73477	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73435	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73436	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73437	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977

**With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.**

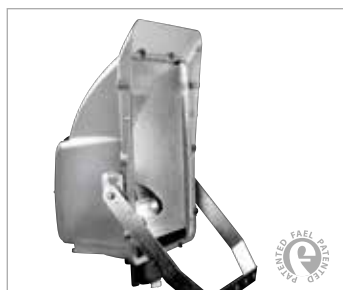
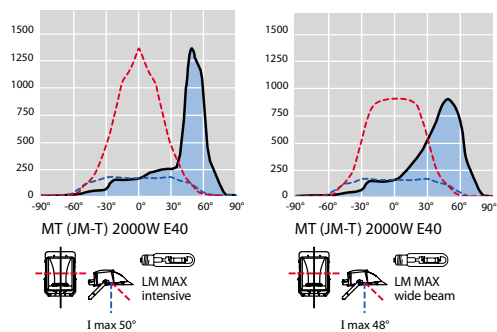
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73575	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73576	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73577	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73535	Silver body - Rotational reflector - D5 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73536	Silver body - Rotational reflector - D6 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73537	Silver body - Rotational reflector - D7 optic	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977

**With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restrrike system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.**

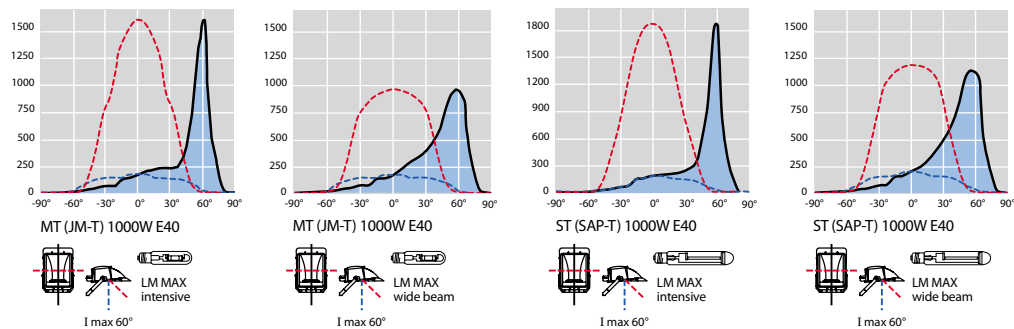
# Photometric data



Asymmetric Trapezoidal E40 2000W



Asymmetric Trapezoidal E40 1000W



## Product codes

### LIGHTMASTER MAX E40 ASYMMETRIC TRAPEZOIDAL - CL I

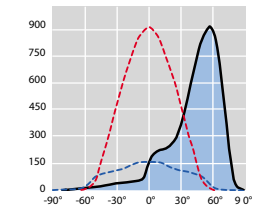
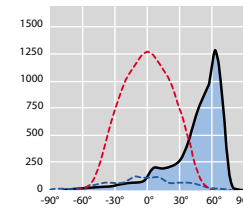
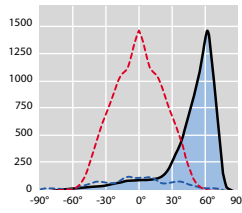
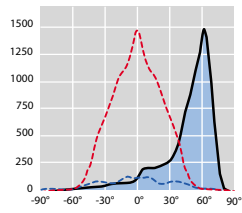
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73901	Silver body - Intensive	MT (JM-T) 2000W	23.50	1	10	0.2438
73902	Silver body - Wide beam	MT (JM-T) 2000W	23.50	1	10	0.2438
73911	Silver body - Intensive	MT (JM-T) - ST (SAP-T) 1000W	23.50	1	10	0.2438
73912	Silver body - Wide beam	MT (JM-T) - ST (SAP-T) 1000W	23.50	1	10	0.2438



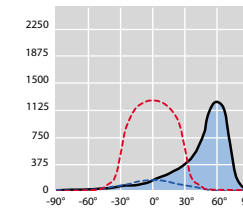
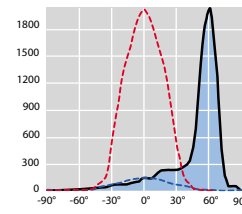
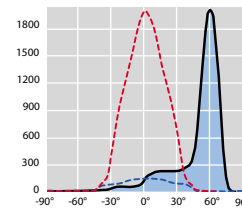
# Photometric data



Asymmetric Trapezoidal long arc



Asymmetric Trapezoidal short arc



## LIGHTMASTER MAX 2000W ASYMMETRIC TRAPEZOIDAL - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73001	Silver body - Intensive	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73002	Silver body - Intensive with deflector	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73005	Silver body - Semi-intensive	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73006	Silver body - Wide beam	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73041	Silver body - Intensive	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73042	Silver body - Intensive with deflector	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73046	Silver body - Wide beam	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977

**With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.**

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73101	Silver body - Intensive	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73102	Silver body - Intensive with deflector	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73105	Silver body - Semi-intensive	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73106	Silver body - Wide beam	MD (JM-TS) 2000W Osram long arc	23.00	1	10	0.1977
73141	Silver body - Intensive	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73142	Silver body - Intensive with deflector	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977
73143	Silver body - Wide beam	MD (JM-TS) 2000W Osram short arc	23.00	1	10	0.1977

**With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restrike system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.**

## LIGHTMASTER MAX 1000W ASYMMETRICAL TRAPEZOIDAL - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73441	Silver body - Intensive	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73442	Silver body - Intensive with deflector	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73446	Silver body - Wide beam	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73401	Silver body - Intensive	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73402	Silver body - Intensive with deflector	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73406	Silver body - Wide beam	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977

**With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.**

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
73541	Silver body - Intensive	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73542	Silver body - Intensive with deflector	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73546	Silver body - Wide beam	MD (JM-TS) 1000W Osram short arc	23.00	1	10	0.1977
73501	Silver body - Intensive	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73502	Silver body - Intensive with deflector	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977
73506	Silver body - Wide beam	MD (JM-TS) 1000W Philips long arc	23.00	1	10	0.1977

**With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restrike system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.**



## Accessories and spare parts



**60451**  
Aluminium antiglare louvre,  
coated in silver colour.



**60455**  
Wall mounting accessory in  
galvanized steel.

### LIGHTMASTER MAX

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60451</b>	Aluminium louvre	1.95	Silver		0.0195
<b>60455</b>	Wall mounting accessory	5.00	Galvanized steel		0.0058
<b>14846</b>	Glass for trapezoidal version				
<b>16547</b>	Glass for rotational version				

#### For double ended 2000W lamps

<b>10240</b>	Osram lamp short arc 6100K	0.35		HQI-TS 2000W/D/S	
<b>13110</b>	Osram lamp short arc 4450K	0.35		HQI-TS 2000W/D/S	
<b>13111</b>	Philips lamp short arc 5600K	0.35		MHN-SB 2000W/956	
<b>10239</b>	Osram lamp long arc 4100K	0.45		HQI-TS 2000W/N/L	
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>06901</b>	Ballast 2000W 10,3A 400V	15.00			0.0030
<b>14342*</b>	Capacitor 30 µF 450V - aluminium case	0.25			
<b>60401***</b>	Connecting plate 2000W 380-400-415V 50HZ 10,3A for installation in cabinets (power supply losses 100W)	17.10			0.0200

#### For E40 2000W lamps

<b>04192**</b>	Osram lamp	0.80		HQI-T 2000W/D/I	
<b>07131</b>	Osram lamp	0.80		HQI-T 2000W/N/E/SUPER	
<b>06891</b>	Philips lamp	0.70		HPI-T 2000W/380V	
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>05146</b>	Ignitor 1,2kV-400V JM Philips	0.10			
<b>06900</b>	Ballast 2000W 8,6/8,8A 400V	15.00			0.0030
<b>06901</b>	Ballast 2000W 10,3A 400V	15.00			0.0030
<b>15679*</b>	Capacitor 20 µF 450V - aluminium case	0.25			
<b>14342*</b>	Capacitor 30 µF 450V - aluminium case	0.25			
<b>60401***</b>	Connecting plate 2000W 380-400-415V 50HZ 10,3A for installation in cabinets (power supply losses 100W)	17.10			0.0200
<b>60392***</b>	Connecting plate 2000W 380-400-415V 50HZ 8,8A for installation in cabinets (power supply losses 100W)	15.10			0.0200

#### For double ended 1000W lamps

<b>10292</b>	Osram lamp 4400K	0.30		HQI-TS 1000W/NDL/S	
<b>10293</b>	Osram lamp 6100K	0.30		HQI-TS 1000W/D/S	
<b>10294</b>	Philips lamp 4200K	0.35		MHN-LA 1000W/842 230V	
<b>10295</b>	Philips lamp 5600K	0.35		MHN-LA 1000W/956 230V	
<b>13967</b>	Philips lamp 4100K	0.35		MHN-FC 1000W/740 230V	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.15			
<b>02955</b>	Ballast 1000W 10,3A 230V	10.00			0.0026
<b>09569*</b>	Capacitor 50 µF 280V for 1000W - aluminium case	0.30			

#### For E40 1000W lamps

<b>00472</b>	Osram lamp	0.40		HQI-T 1000W/D	
<b>00475</b>	Osram lamp	0.40		NAV-T 1000W	
<b>06660</b>	Philips lamp	0.40		HPI-T 1000W	
<b>07826</b>	Philips lamp	0.40		SON-T 1000W	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.15			
<b>04644</b>	Ignitor 1.2kV 230V JM Philips 1000W	0.15			
<b>02955</b>	Ballast 1000W 10,3A 230V	10.00			0.0026
<b>06700</b>	Ballast 1000W 8,2A 230V JM Philips	9.00			0.0018
<b>09568*</b>	Capacitor 35 µF 280V for 1000W JM Philips - aluminium case	0.30			
<b>09569*</b>	Capacitor 50 µF 280V for 1000W - aluminium case	0.30			

\* Wiring box: 2 capacitors for each lamps.

\*\* Incorporated ignitor.

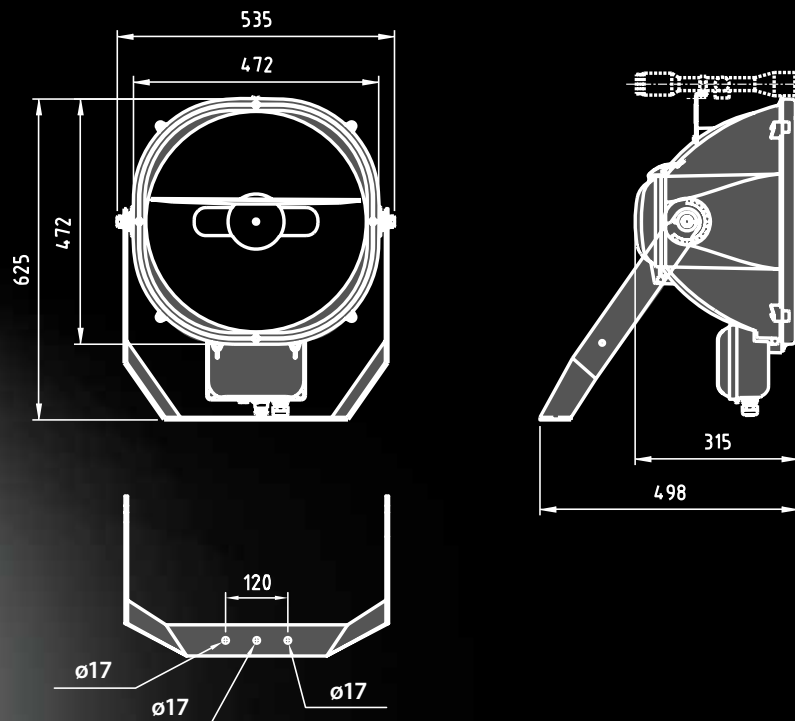
\*\*\* Without ignitor: the size of the cabinet, in which plates would be installed, should be calculated by the designer.





# LIGHTMASTER ONE





## When the light becomes design

The bodies, lightweight and compact, are manufactured in die cast aluminium, with primary alloy and low copper content with a high tight rating.

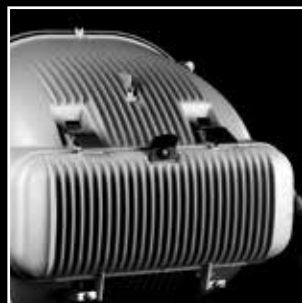
The enhanced construction design reduces the weight and allows easy handling during mounting and aiming phases. The design, with the characteristic cooling fins, reduces wind resistance to a minimum.

The **LIGHTMASTER ONE** floodlights have

been designed to light up:

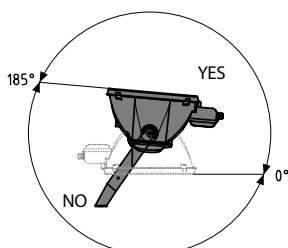
- medium and large stadiums with HD cameras
- sports halls
- large indoor sports areas
- events and shows in large open areas.

The projectors are suitable for installation on masts and line arrangements at heights up to 50/70 meters above and around the surface area.

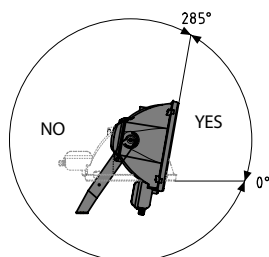


# Technical features of Lightmaster One

## Aiming



1000W



2000W

The aiming is achieved both with a mechanical sighting device, using a lateral protractor scale that indicates the angle of tilt and can be used for pre-aiming, or, for a more precise aiming, a telescope 6x36 mounted on the sighting device (optional).

## Description

### CHARACTERISTICS

- Body, rear cover and glass frame in die cast aluminium with primary alloy and low copper content, with a high weather proof rating.
- Coated with silver polyester powder.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket.
- Connection box in special selfextinguish plastic material, complete with ignitor.
- Two pressure compensation filters in teflon.
- Insulation class I.
- Protection degree against external impacts: IK 08.
- Floodlight body weight Kg 13,50.
- Wind exposed surface with tilt  $70^\circ = 0,20 \text{ m}^2$ .
- Control gear box CABLO SERVICE, in die-cast aluminium IP 65, may be used for the supply of the lamp.
- The projector can be equipped with the innovative and efficient metal halide lamp 2000W high flow (230000 lm), requiring the versions especially designed for this lamp. Even the power supplies unit must be requested in special version.
- The mounting distances between the gear box and the body can be up to 50/70 meters, as the ignitor is fitted within the rear housing of the projector.
- Designed for indoor and outdoor applications.
- The fixture is approved for nominal temperature of  $35^\circ\text{C}$ . Thus, according to EN 60598-1, the fixture can be used, for discontinuous periods, at  $45^\circ\text{C}$ .
- Hot Restrike version for short arc lamp available on request (for 1000W Hot Restrike please specify if it's used for up or down lightings). In these versions, to allow the maintenance of the distances for high voltage, the lighting performances are 5% lower compared to the standard version.

### OPTICAL SYSTEM

High Intensity **paraboloid rotational reflector**, made by optics R1, R2, R3, R4, R5, R6, R7, R8, R9 for short arc lamps. The careful study of the optics and the choice of high-performing materials allows an excellent control of the luminous flux and a considerable glare reduction thanks to the centering device of the lamp. The deflector allows a huge glare reduction, providing an excellent visual comfort.

### LAMP MOUNTING AND REPLACEMENT

The lamp is accessed by opening the rear cover by using two strong stainless steel quick release clips. When the rear cover is opened the power is automatically disconnected. The floodlight is available in two versions:

- With two power knife switches: when the cover is opened, the power supply to lampholders is directly interrupted.
- With one security knife switch: in this case the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Lamp replacement is achieved by opening the cover housing at an angle of  $110^\circ$ .

In case of lamp failure or at the end of lamp life, it's absolutely necessary to open the E switch to inhibit the ignitor's discharge, till the lamp is changed.

### LAMPS



MD 2000W short arc



MD 2000W HF short arc



MD 1000W short arc

### COLOUR

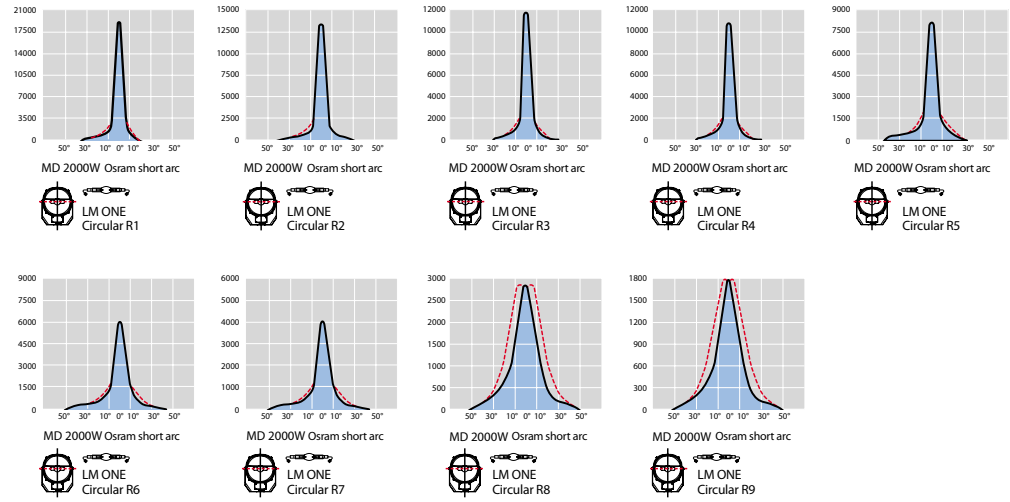


Silver

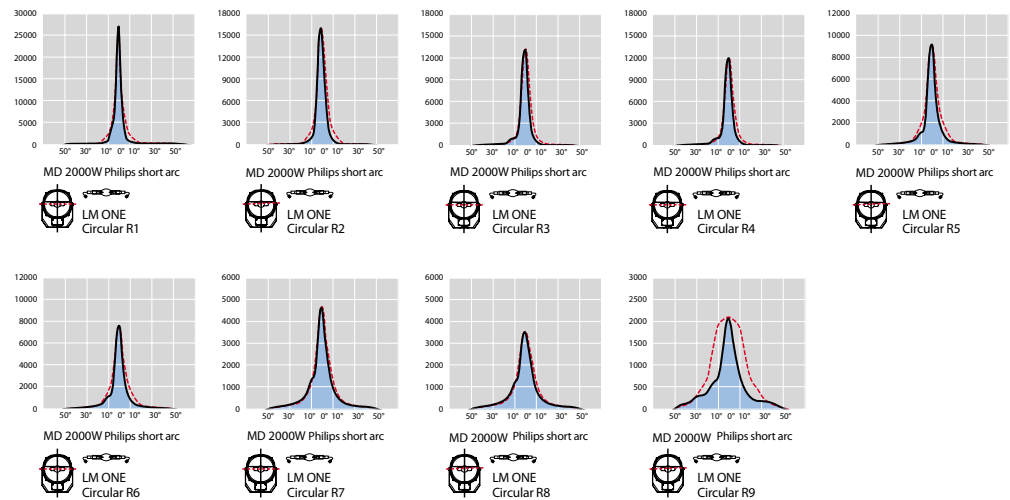
# Photometric data



Lightmaster ONE R1



Lightmaster ONE R9



## LIGHTING LEVELS RECOMMENDED BY FIFA FOR TV SHOOTINGS

Class	Calculation towards	VERTICAL ILLUMINANCE			HORIZONTAL ILLUMINANCE			PROPERTIES OF LAMPS	
		EV Ave	Uniformity		EH Ave	Uniformity		Colour temperature	Colour rendering
V international	Fixed camera	>2.000	0,6	0,7	3.500	0,6	0,8	>4.000	≥65
	Mobile camera (at pitch level)	1.800	0,4	0,65					
IV national	Fixed camera	2.000	0,5	0,65	2.500	0,6	0,8	>4.000	≥65
	Mobile camera (at pitch level)	1.400	0,35	0,6					

Vertical illuminance refers to illuminance toward selected camera position.

## Products codes

### LIGHTMASTER ONE - 1000W - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
75231	Silver Body - Circular type R1	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75232	Silver Body - Circular type R2	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75233	Silver Body - Circular type R3	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75234	Silver Body - Circular type R4	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75235	Silver Body - Circular type R5	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75236	Silver Body - Circular type R6	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75237	Silver Body - Circular type R7	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75238	Silver Body - Circular type R8	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75239	Silver Body - Circular type R9	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270

**With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.**

### LIGHTMASTER ONE - 1000W - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
75281	Silver Body - Circular type R1	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75282	Silver Body - Circular type R2	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75283	Silver Body - Circular type R3	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75284	Silver Body - Circular type R4	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75285	Silver Body - Circular type R5	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75286	Silver Body - Circular type R6	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75287	Silver Body - Circular type R7	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75288	Silver Body - Circular type R8	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270
75289	Silver Body - Circular type R9	MD (JM-TS) 1000W short arc	15.50	1	12	0.1270

**With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.**

### LIGHTMASTER ONE - 2000W - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
75031	Silver Body - Circular type R1	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75032	Silver Body - Circular type R2	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75033	Silver Body - Circular type R3	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75034	Silver Body - Circular type R4	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75035	Silver Body - Circular type R5	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75036	Silver Body - Circular type R6	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75037	Silver Body - Circular type R7	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75038	Silver Body - Circular type R8	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75039	Silver Body - Circular type R9	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270

**With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.**

### LIGHTMASTER ONE - 2000W - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
75081	Silver Body - Circular type R1	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75082	Silver Body - Circular type R2	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75083	Silver Body - Circular type R3	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75084	Silver Body - Circular type R4	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75085	Silver Body - Circular type R5	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75086	Silver Body - Circular type R6	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75087	Silver Body - Circular type R7	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75088	Silver Body - Circular type R8	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270
75089	Silver Body - Circular type R9	MD (JM-TS) 2000W short arc	15.50	1	12	0.1270

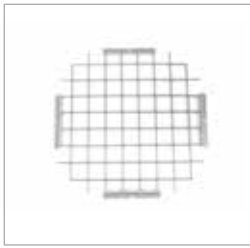
**With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.**

### LIGHTMASTER ONE - 2000W HF VERSION - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
75111	Silver Body - Circular type R1	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75112	Silver Body - Circular type R2	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75113	Silver Body - Circular type R3	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75114	Silver Body - Circular type R4	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75115	Silver Body - Circular type R5	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75116	Silver Body - Circular type R6	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75117	Silver Body - Circular type R7	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75118	Silver Body - Circular type R8	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270
75119	Silver Body - Circular type R9	MD (JM-TS) 2000W HF short arc	15.50	1	12	0.1270

**With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.**

## Accessories and spare parts



**60410**  
Protection grille in galvanized steel, coated in silver colour.



**60412**  
Circular louvre in stainless steel, coated in silver colour.



**60414**  
Safety grid in stainless steel.

### LIGHTMASTER ONE

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60410</b>	Grille	0.75	Silver		
<b>60412</b>	Circular louvre	2.10	Silver		0.0670
<b>60414</b>	Safety grid	0.70			
<b>12144</b>	Glass				
<b>10240</b>	Osram lamp short arc 6100K	0.35		HQI-TS 2000W/D/S	
<b>10819</b>	Osram lamp short arc 6200K	0.35		HQI-TS 2000W/D/S HF	
<b>10292</b>	Osram lamp short arc 4400K	0.30		HQI-TS 1000W/NDL/S	
<b>10293</b>	Osram lamp short arc 6100K	0.30		HQI-TS 1000W/D/S	
<b>13110</b>	Osram lamp short arc 4450K	0.35		HQI-TS 2000W/NDL/S	
<b>13111</b>	Philips lamp short arc 5600K	0.35		MHN-SB 2000W/956	
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25			
<b>06901</b>	Ballast 2000W 10,3A 400V	15.00			0.0030
<b>17768</b>	Ballast 2000W HF 12,2A 400V	18.00			0.0035
<b>02955</b>	Ballast 1000W 10,3A 230V	10.00			0.0027
<b>14342*</b>	Capacitor 30uF 450V for 2000W - aluminium case	0.25			
<b>17769*</b>	Capacitor 35 µF 400V for 2000W HF - aluminium case	0.25			
<b>09569*</b>	Capacitor 50uF 280V for 1000W - aluminium case	0.30			
<b>60401**</b>	Connecting plate 2000W 380-400-415V 50Hz 10,3A for installation in cabinets (power supply losses 100W)	17.10			0.0200
<b>60428**</b>	Connecting plate 2000W 400V 50Hz 12,2A for installation in cabinets (power supply losses 100W)	19.10			0.0200

\* Wiring box: 2 capacitors for each lamps.

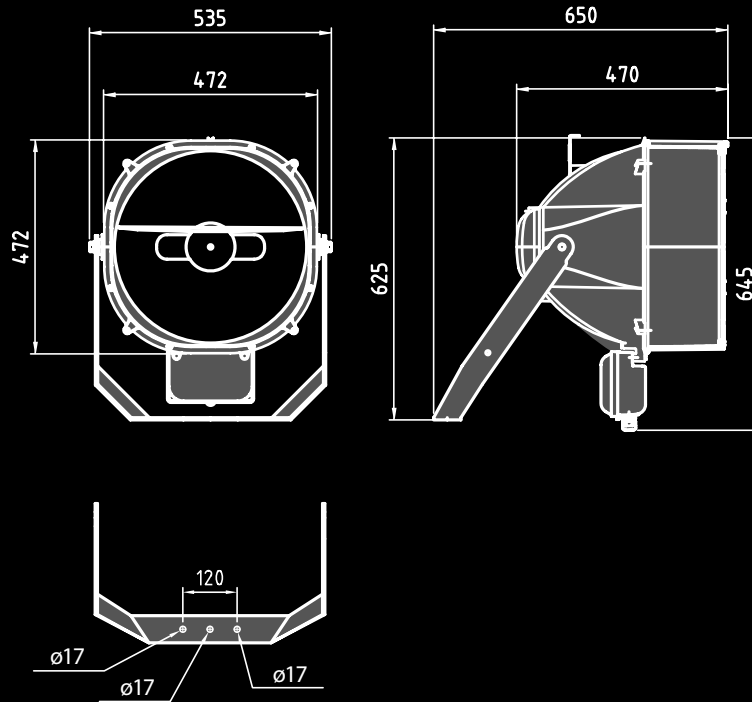
\*\* Without ignitor: the size of the cabinet, in which plates would be installed, should be calculated by the designer.



# SKY CANNON



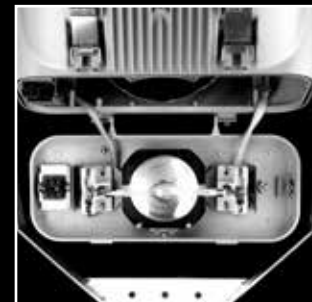




## The game of light

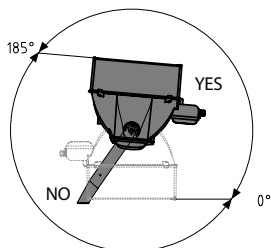
**SKY CANNON** is a perfect and powerful uplighting floodlight, particularly suitable in architectural and scenographic applications. Die cast booster mounted on the body works as a spacer between the glass and the light source, allowing a considerable heat reduction.

This solves brilliantly the problem drawn from this specific use, allowing the uplighting, using a standard safety glass. Sky Cannon is also used in sport facilities as it gives an excellent glare control.



# Technical features of Sky Cannon

## Aiming



1000-2000W  
Transparent glass

The aiming is achieved both with a mechanical sighting device, using a lateral protractor scale that indicates the angle of tilt and can be used for pre-aiming, or, for a more precise aiming, a telescope 6x36 mounted on the sighting device (optional).

## Description

### CHARACTERISTICS

- Body, rear cover and glass frame in die cast aluminium with primary alloy and low copper content, with a high weather proof rating.
- Coated with silver polyester powder.
- Booster in die cast aluminium coated with black polyester powders, complete with front transparent tempered glass.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket.
- Connection box in special selfextinguish plastic material, complete with ignitor.
- Two pressure compensation filters in teflon.
- Floodlight body weight Kg 15,80.
- Wind exposed surface with tilt  $70^\circ = 0,22 \text{ m}^2$
- Control gear box CABLO SERVICE, in die-cast aluminium IP 65, may be used for the supply of the lamp.
- The mounting distances between the gear box and the body can be up to 50/70 meters, as the ignitor is fitted within the rear housing of the projector.
- Designed for indoor and outdoor applications.
- The fixture is approved for nominal temperature of  $35^\circ\text{C}$ . Thus, according to EN 60598-1, the fixture can be used, for discontinuous periods, at  $45^\circ\text{C}$ .
- Hot Restrike version for short arc lamp available on request, specifying if it's used for up or down lightings. In these versions, to allow the maintenance of the distances for high voltage, the lighting performances are 5% lower compared to the standard version.

### OPTICAL SYSTEM

- High Intensity **paraboloid rotational reflector**, made by optics R1, R2, R3, R4, R5, R6, R7, R8, R9 for short arc lamps.  
The careful study of the optics and the choice of high-performing materials allows an excellent control of the luminous flux and a considerable glare reduction thanks to the centering device of the lamp.

### LAMP MOUNTING AND REPLACEMENT

The lamp is accessed by opening the rear cover by using two strong stainless steel quick release clips. When the rear cover is opened the power is automatically disconnected.

The floodlight is available in two versions:

- With two power knife switches: when the cover is opened, the power supply to lampholders is directly interrupted.
- With one security knife switch: in this case the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Lamp replacement is achieved by opening the cover housing at an angle of  $110^\circ$ .

In case of lamp failure or at the end of lamp life, it's absolutely necessary to open the E switch to inhibit the ignitor's discharge, till the lamp is changed.

### LAMPS



MD 2000W short arc



MD 1000W short arc

### COLOUR

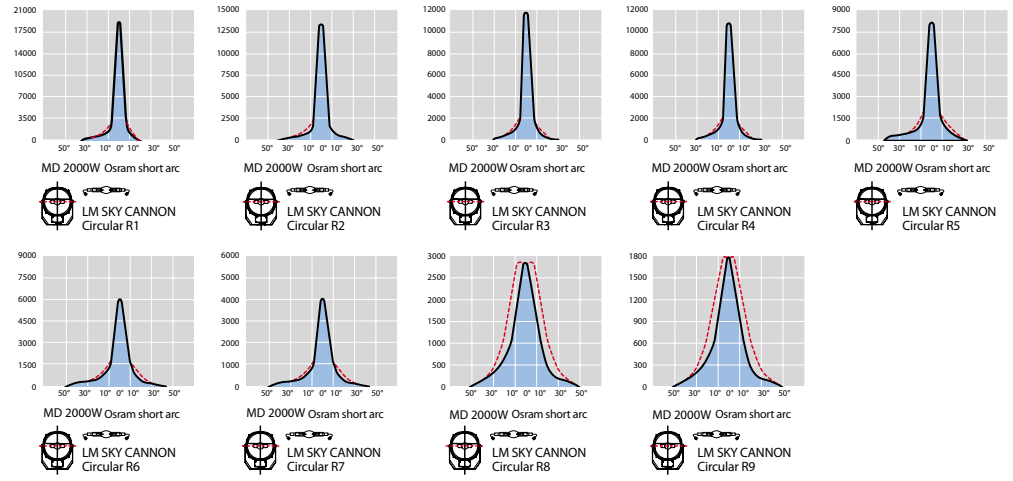


Silver

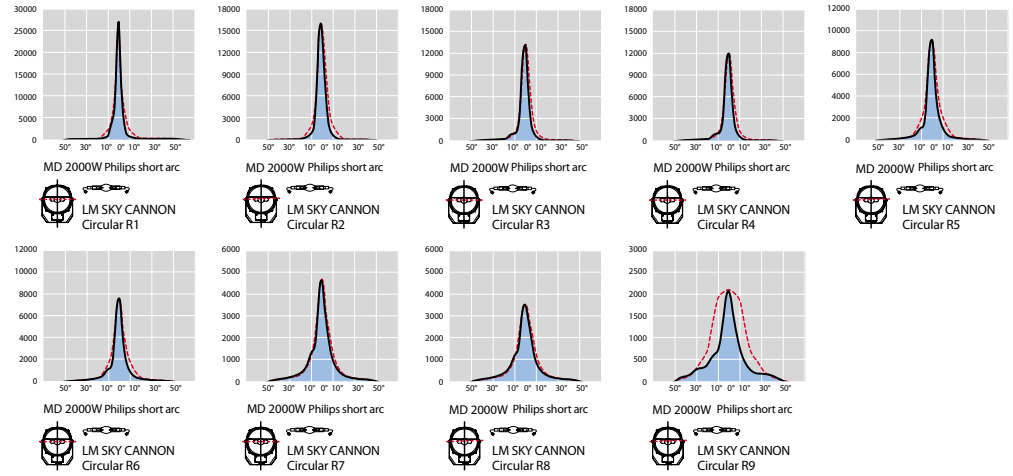
# Photometric data



Sky Cannon R1



Sky Cannon R9



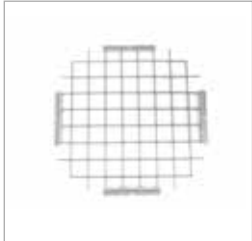
## Products codes

### SKY CANNON

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
75681	Silver Body - Circular type R1	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75682	Silver Body - Circular type R2	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75683	Silver Body - Circular type R3	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75684	Silver Body - Circular type R4	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75685	Silver Body - Circular type R5	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75686	Silver Body - Circular type R6	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75687	Silver Body - Circular type R7	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75688	Silver Body - Circular type R8	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75689	Silver Body - Circular type R9	MD (JM-TS) 1000W short arc	19.23	1	8	0.1660
75481	Silver Body - Circular type R1	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75482	Silver Body - Circular type R2	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75483	Silver Body - Circular type R3	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75484	Silver Body - Circular type R4	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75485	Silver Body - Circular type R5	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75486	Silver Body - Circular type R6	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75487	Silver Body - Circular type R7	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75488	Silver Body - Circular type R8	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660
75489	Silver Body - Circular type R9	MD (JM-TS) 2000W short arc	19.23	1	8	0.1660

**With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply.**

## Accessories and spare parts



**60410**  
Protection grille in galvanized steel, coated in silver colour.



**60412**  
Circular louvre in stainless steel, coated in silver colour.



**60414**  
Safety grid in stainless steel.



**60247**  
Circular booster painted in black colour.

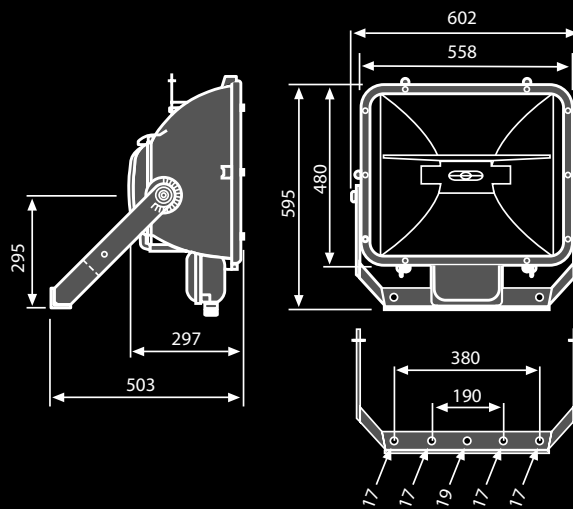
### SKY CANNON

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60410</b>	Grille	0.75	Silver		
<b>60412</b>	Circular louvre	2.10	Silver		0.0670
<b>60414</b>	Safety grid	0.70			
<b>12215</b>	Glass				
<b>60247</b>	Additional black circular booster	2.35	Black		0.0330
<b>10240</b>	Osram lamp short arc 6100K	0.35		HQI-TS 2000W/D/S	
<b>10292</b>	Osram lamp short arc 4400K	0.30		HQI-TS 1000W/NDL/S	
<b>10293</b>	Osram lamp short arc 6100K	0.30		HQI-TS 1000W/D/S	
<b>13110</b>	Osram lamp short arc 4450K	0.35		HQI-TS 2000W/NDL/S	
<b>13111</b>	Philips lamp short arc 5600K	0.35		MHN-SB 2000W/956	
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25			
<b>06901</b>	Ballast 2000W 10,3A 400V	15.00			0.0030
<b>02955</b>	Ballast 1000W 10,3A 230V	10.00			0.0027
<b>14342*</b>	Capacitor 30uF 450V for 2000W - aluminium case	0.25			
<b>09569*</b>	Capacitor 50uF 280V for 1000W - aluminium case	0.30			

\* Wiring box: 2 capacitors for each lamps.

# LIGHTMASTER 2000





## The technique in the light

The **LIGHTMASTER 2000** floodlight is the result of high level research made by our designers and engineers, which aim to create an advanced professional lighting system, suitable in sports hall, large indoor sports areas, events and shows in large open areas.

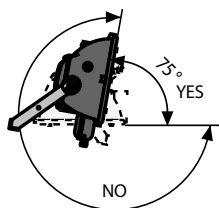
The installation of the projectors can be

on masts, towers and line arrangements, to heights that can go up to 50/70 meters above the playing areas. The compact body, light weight and the new design concept, offer the minimum levels of wind resistance that allows the use of smaller masts and seamless integration with the architecture of the sports facilities.



# Technical features of Lightmaster 2000

## Aiming



The aiming is achieved both with a mechanical sighting device, using a lateral protractor scale that indicates the angle of tilt and can be used for pre-aiming, or, for a more precise aiming, a telescope 6x36 mounted on the sighting device (optional).

## Description

### CHARACTERISTICS

- Body, rear cover and glass frame in die cast aluminium with primary alloy and low copper content, with a high weather proof rating.
- Coated with silver polyester powder.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket. For wall mounting applications, it is necessary to provide the proper accessory.
- Connection box in special selfextinguish plastic material, complete with ignitor.
- Two pressure compensation filters in teflon.
- Insulation class I.
- Protection degree against external impacts: IK 08.
- Floodlight body weight Kg 17.
- Wind exposed surface with tilt  $70^\circ = 0,2540 \text{ m}^2$ .
- Control gear box CABLO SERVICE, in die-cast aluminium IP 65, may be used for the supply of the lamp.
- The mounting distances between the gear box and the body can be up to 50/70 meters, as the ignitor is fitted within the rear housing of the projector.
- Designed for indoor and outdoor applications.
- The fixture is approved for nominal temperature of  $35^\circ\text{C}$ . Thus, according to EN 60598-1, the fixture can be used, for discontinuous periods, at  $45^\circ\text{C}$ .
- Hot Restrike version available on request for short arc lamp with one security knife switch. In these versions, to allow the maintenance of the distances for high voltage, the lighting performances are 5% lower compared to the standard version.

### OPTICAL SYSTEM

The careful study of the optics and the choice of high-performing materials allows an excellent control of the luminous flux and a considerable glare reduction thanks to the centering device of the lamp.

- The **symmetrical** floodlight is supplied with two types of optics:
  - wide beam;
  - intensive.
 The flux reflecting skirt reduce considerably the direct glare, ensuring an improved visual comfort.
- The **asymmetrical** floodlight is supplied with two types of optics.
  - wide beam with or without deflector;
  - intensive and semi-intensive in high pure (99,99%) aluminium for high reflectance and efficiency with or without deflector.
 The luminaire can be equipped with an aluminium anti-glare louvre painted in silver that allows to move the plane of maximum intensity to  $60^\circ$ , in full compliance with national and international legislation against light pollution.
- High intensity **paraboloid rotational** optical system, made up of R1, R2, R3, R4, R5, R6, R7, R8, R9 optics for short arc lamps and R1, R2 and R5 optics for long arc lamps. The flux reflecting skirt reduce considerably the direct glare, ensuring an improved visual comfort.

### LAMP MOUNTING AND REPLACEMENT

The lamp is accessed by opening the rear cover by using two strong stainless steel quick release clips. When the rear cover is opened the power is automatically disconnected.

The floodlight is available in two versions:

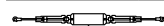
- With two power knife switches: when the cover is opened, the power supply to lampholders is directly interrupted.
- With one security knife switch: in this case the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Lamp replacement is achieved by opening the cover housing at an angle of  $110^\circ$ .

In case of lamp failure or at the end of lamp life, it's absolutely necessary to open the E switch to inhibit the ignitor's discharge, till the lamp is changed.

### LAMPS



MD 2000W short arc



MD 2000W short arc

### COLOUR



Silver

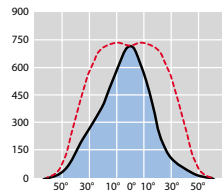




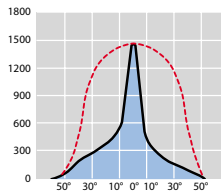
## Photometric data



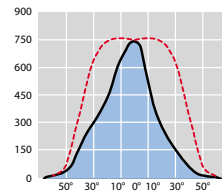
Symmetric



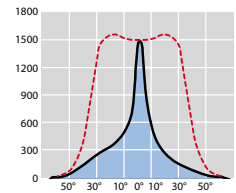
MD 2000W long arc  
LM 2000 Symmetric - wide beam



MD 2000W long arc  
LM 2000 Symmetric - intensive



MD 2000W short arc  
LM 2000 Symmetric - wide beam



MD 2000W short arc  
LM 2000 Symmetric - intensive

## Products codes

### LIGHTMASTER 2000 SYMMETRIC - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70001	Silver Body - Intensive	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70002	Silver Body - Wide beam	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70004	Silver Body - Intensive	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70005	Silver Body - Wide beam	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70007	Silver Body - Intensive	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70008	Silver Body - Wide beam	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

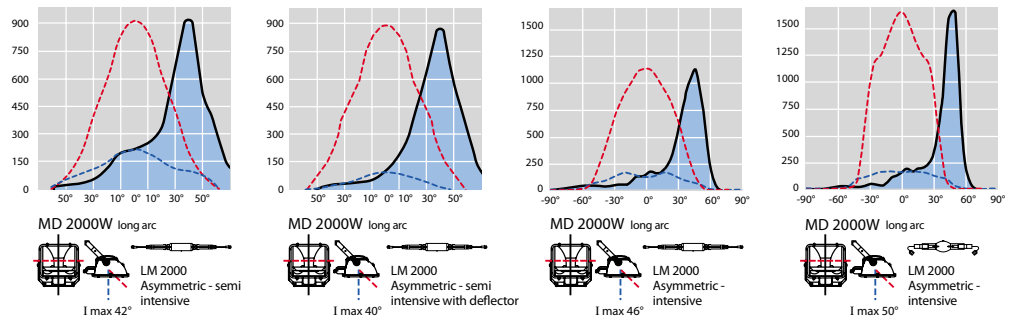
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70011	Silver Body - Intensive	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70012	Silver Body - Wide beam	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70014	Silver Body - Intensive	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70015	Silver Body - Wide beam	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70017	Silver Body - Intensive	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70018	Silver Body - Wide beam	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377

With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.

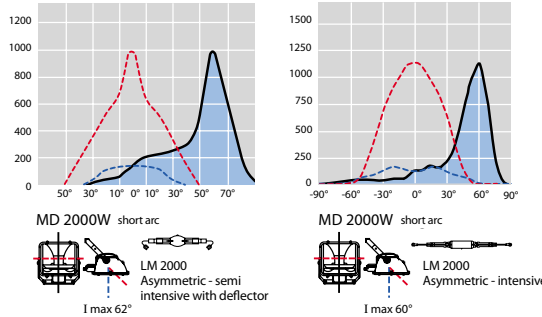
# Photometric data



Asymmetric



Asymmetric with louvre



## Products codes

### LIGHTMASTER 2000 ASYMMETRIC - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70031	Silver Body - Semi intensive with deflector	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70034	Silver Body - Semi intensive with deflector	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
74612	Silver Body - Wide beam	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70037	Silver Body - Semi intensive with deflector	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70038	Silver Body - Wide beam with deflector	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70201	Silver Body - Semi intensive	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
74602	Silver Body - Wide beam	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70204	Silver Body - Semi intensive	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70207	Silver Body - Semi intensive	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
74601	Silver Body - Intensive	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
74611	Silver Body - Intensive	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

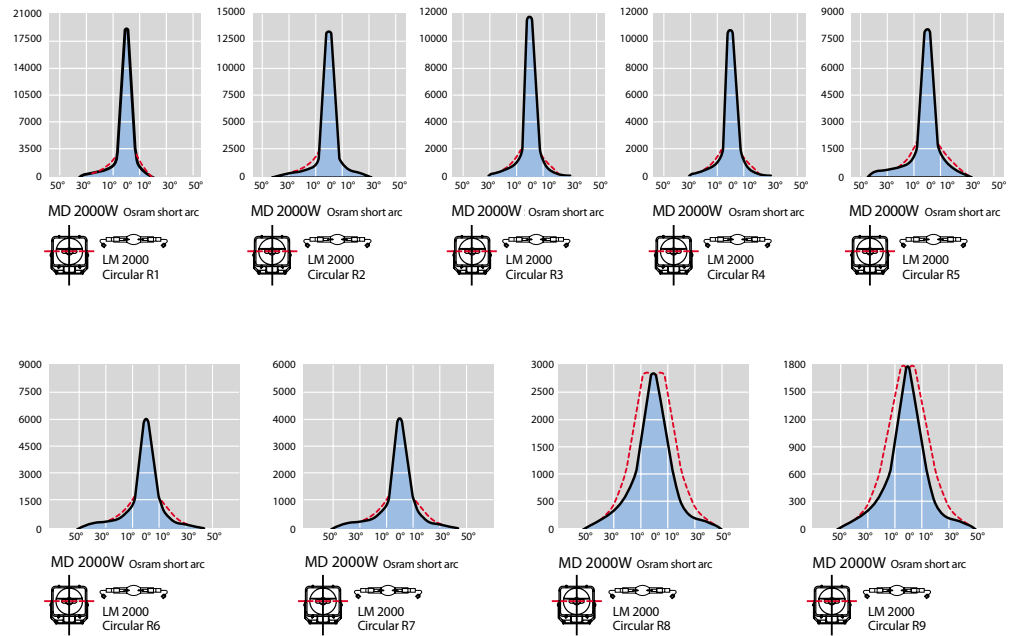
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70041	Silver Body - Semi intensive with deflector	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70044	Silver Body - Semi intensive with deflector	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
74672	Silver Body - Wide beam	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70047	Silver Body - Semi intensive with deflector	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70048	Silver Body - Wide beam with deflector	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70211	Silver Body - Semi intensive	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
74652	Silver Body - Wide beam	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70214	Silver Body - Semi intensive	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70217	Silver Body - Semi intensive	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
74671	Silver Body - Intensive	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
74651	Silver Body - Intensive	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377

With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.

# Photometric data



Circular



## Products codes

### LIGHTMASTER 2000 CIRCULAR - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70051	Silver Body - Circular R1	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70052	Silver Body - Circular R2	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70053	Silver Body - Circular R3	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70054	Silver Body - Circular R4	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70055	Silver Body - Circular R5	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70056	Silver Body - Circular R6	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70057	Silver Body - Circular R7	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70058	Silver Body - Circular R8	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70059	Silver Body - Circular R9	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70221	Silver Body - Circular R1	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70222	Silver Body - Circular R2	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70223	Silver Body - Circular R5	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70226	Silver Body - Circular R1	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70227	Silver Body - Circular R2	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70228	Silver Body - Circular R5	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377

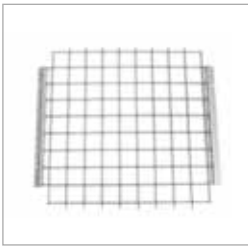
With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70121	Silver Body - Circular R1	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70122	Silver Body - Circular R2	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70123	Silver Body - Circular R3	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70124	Silver Body - Circular R4	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70125	Silver Body - Circular R5	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70126	Silver Body - Circular R6	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70127	Silver Body - Circular R7	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70128	Silver Body - Circular R8	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70129	Silver Body - Circular R9	MD (JM-TS) 2000W Osram short arc	19.40	1	12	0.1377
70251	Silver Body - Circular R1	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70252	Silver Body - Circular R2	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70253	Silver Body - Circular R5	MD (JM-TS) 2000W Osram long arc	19.40	1	12	0.1377
70256	Silver Body - Circular R1	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70257	Silver Body - Circular R2	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377
70258	Silver Body - Circular R5	MD (JM-TS) 2000W Philips long arc	19.40	1	12	0.1377

With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.



## Accessories and spare parts



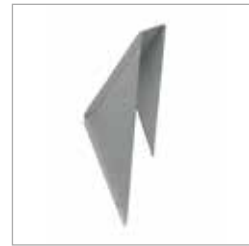
**60286**  
Protection grille in galvanized steel, coated in silver colour.



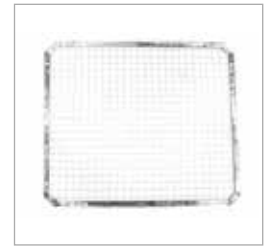
**60285**  
Circular louvre in stainless steel, coated in silver colour.



**60289**  
Vertical protection louvre in galvanized steel, coated in silver colour.



**60287**  
Aluminium antiglare louvre, coated in silver colour.



**60288**  
Safety grid in stainless steel.



**60455**  
Wall mounting accessory in galvanized steel.

### LIGHTMASTER 2000

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60286</b>	Grille	1.15	Silver		0.0670
<b>60285</b>	Circular louvre	2.10	Silver		0.0670
<b>60289</b>	Louvre for symmetrical version	1.96	Silver		
<b>60287</b>	Louvre for asymmetrical version	1.40	Silver		
<b>60288</b>	Safety grid	0.85			
<b>60455</b>	Wall mounting accessory	5.00	Galvanized steel		0.0058
<b>09229</b>	Glass				
<b>10240</b>	Osram lamp short arc 6100K	0.35		HQI-TS 2000W/D/S	
<b>13110</b>	Osram lamp short arc 4450K	0.35		HQI-TS 2000W/NDL/S	
<b>10239</b>	Osram lamp long arc 4100K	0.45		HQI-TS 2000W/N/L	
<b>13111</b>	Philips lamp short arc 5600K	0.35		MHN-SB 2000W/956 400V	
<b>10235</b>	Philips lamp long arc 4200K	0.45		MHN-LA 2000W/842 400V	
<b>10236</b>	Philips lamp long arc 5600K	0.45		MHN-LA 2000W/956 400V	
<b>13966</b>	Philips lamp long arc 4200K	0.45		MHN-FC 2000W/740 400V	
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>06901</b>	Ballast 2000W 10,3A 400V	15.00			0.0030
<b>14342*</b>	Capacitor 30uF 450V for 2000W - aluminium case	0.30			
<b>60401**</b>	Connecting plate 2000W 380-400-415V 50HZ 10,3A for installation in cabinets (power supply losses 100W)	17.10			0.0200

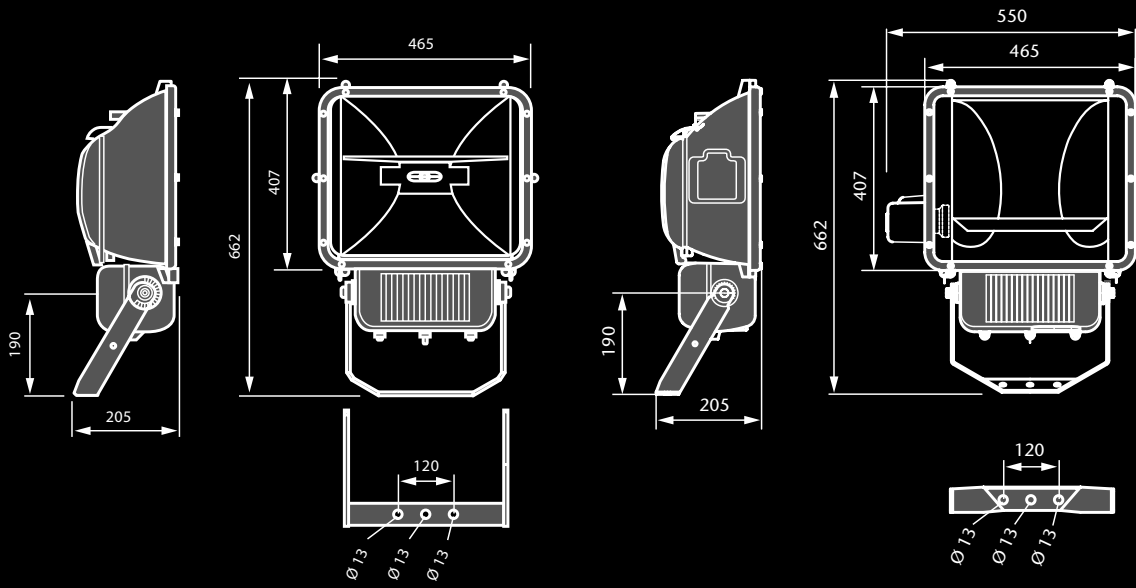
\* Wiring box: 2 capacitors for each lamps.

\*\* Without ignitor: the size of the cabinet, in which plates would be installed, should be calculated by the designer.



# LIGHTMASTER 1000

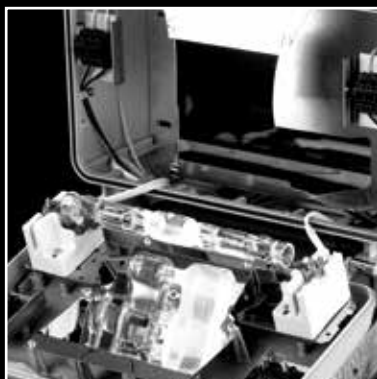




## The versatility of the light

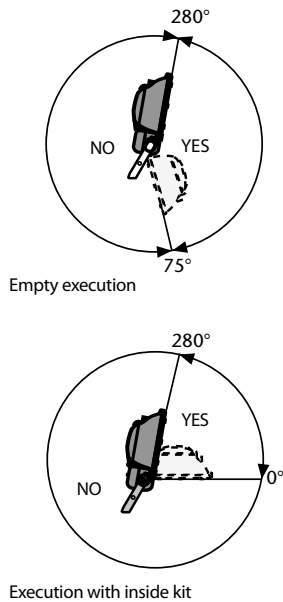
The **LIGHTMASTER 1000** series is the most complete range of 1KW projectors available on the market thanks to the possibility to integrate all types of 1000W lamps, double ended short and long arc and E40, to different types of reflectors.

The versatility of this powerful floodlight, make it suitable in several application: sport facilities, large and industrial areas such as sea ports, terminal docks, container storage, railway yards and airstrips.



# Technical features of Lightmaster 1000

## Aiming



The aiming is achieved both with a mechanical sighting device, using a lateral protractor scale that indicates the angle of tilt and can be used for pre-aiming, or, for a more precise aiming, a telescope 6x36 mounted on the sighting device (optional).

## Description

### CHARACTERISTICS

- Body, rear cover and glass frame, in die cast aluminium, with primary alloy and low copper content with a high weather proof rating.
- Coated with silver polyester powder.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket.
- Wind exposed surface with tilt  $70^\circ = 0,2160 \text{ m}^2$ .
- Pressure compensation filter in teflon.
- Insulation class I.
- Protection degree against external impacts: IK 08.
- Gear housing separated from optical housing, complete of ignitor.
- In the execution with two power switches, the fixture is available also in incorporated control gear kit version.
- In the other versions, the CABLO SERVICE box, in die-cast aluminium IP 65, may be used for the supply of the lamp.
- The mounting distances between the gear box and the body can be up to 50/70 meters, as the ignitor is fitted within the rear housing of the projector.
- Designed for indoor and outdoor applications.
- The fixture is approved for nominal temperature of  $35^\circ\text{C}$  (incorporated control gear kit version excluded). Thus, according to EN 60598-1, the fixture can be used, for discontinuous periods, at  $45^\circ\text{C}$ .
- The incorporated control gear kit execution is suitable for outdoor applications and maximum ambient temperature of  $25^\circ\text{C}$ .
- Hot Restrike version for short arc lamp with one security knife switch available on request. In these versions, to allow the maintenance of the distances for high voltage, the lighting performances are 5% lower compared to the standard version.

### OPTICAL SYSTEM

The careful study of the optics and the choice of high-performing materials allows an excellent control of the luminous flux and a considerable glare reduction thanks to the centering device of the lamp.

- The **symmetrical** floodlight is supplied with two types of optics:
  - wide beam;
  - intensive.

The flux reflecting skirt reduce considerably the direct glare, ensuring an improved visual comfort.

- The **asymmetrical** floodlight is supplied with semi-intensive reflector, with or without deflector, in high pure aluminium (99,99%) with elevated reflectance and efficiency.

The luminaire can be equipped with an aluminium anti-glare louvre, painted in silver colour, that allows to move the plane of maximum intensity to  $60^\circ$ , in full compliance with national and international legislation against light pollution.

- High intensity paraboloid rotational optical system, made up of C1, C2, C3, C4, C5 optics. The flux reflecting skirt reduce considerably the direct glare, ensuring an improved visual comfort.

### LAMP MOUNTING AND REPLACEMENT

The lamp is accessed by opening the rear cover, using two strong stainless steel quick release clips. When the rear cover is opened the power is automatically disconnected.

The floodlight is available in two versions:

- With two power knife switches: when the cover is opened, the power supply to lampholders is directly interrupted.
- With one security knife switch: in this case the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply.

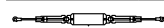
Lamp replacement is achieved by opening the cover housing at an angle of  $110^\circ$ .

In case of lamp failure or at the end of lamp life, it's absolutely necessary to open the E switch to inhibit the ignitor's discharge, till the lamp is changed.

### LAMPS



MD 1000W short arc



MD 1000W long arc

### COLOUR



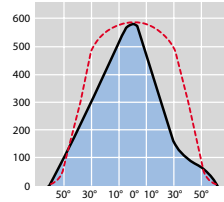
Silver



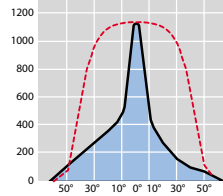
## Photometric data



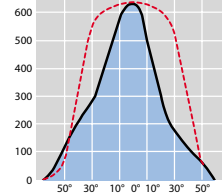
Symmetric



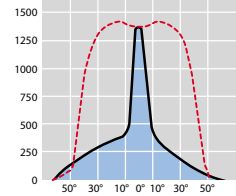
MD 1000W long arc  
LIGHTMASTER 1000  
Symmetric - wide beam



MD 1000W long arc  
LIGHTMASTER 1000  
Symmetric - intensive



MD 1000W short arc  
LIGHTMASTER 1000  
Symmetric - wide beam



MD 1000W short arc  
LIGHTMASTER 1000  
Symmetric - intensive

## Products codes

### LIGHTMASTER 1000 SYMMETRIC - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>70501</b>	Silver Body - Intensive	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70502</b>	Silver Body - Wide beam	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70507</b>	Silver Body - Intensive	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
<b>70508</b>	Silver Body - Wide beam	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
€ <b>70750</b>	CR Silver Body - Intensive	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ <b>70751</b>	CR Silver Body - Wide beam	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ <b>70757</b>	CR Silver Body - Intensive	MD (JM-TS) 1000W Philips	25.40	1	20	0.080
€ <b>70758</b>	CR Silver Body - Wide beam	MD (JM-TS) 1000W Philips	25.40	1	20	0.080

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>70511</b>	Silver Body - Intensive	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70512</b>	Silver Body - Wide beam	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70517</b>	Silver Body - Intensive	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
<b>70518</b>	Silver Body - Wide beam	MD (JM-TS) 1000W Philips	13.25	1	20	0.080

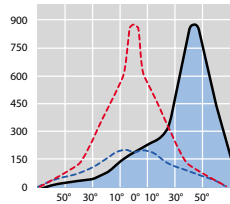
With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.

€ Floodlight with CE marking only.

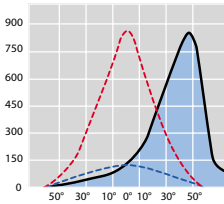
# Photometric data



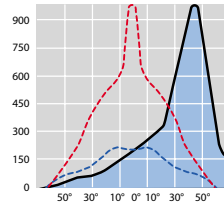
Asymmetric



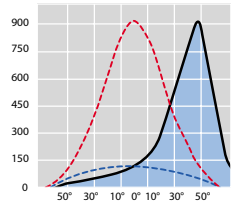
MD 1000W long arc  
LIGHTMASTER 1000  
Asymmetric semi intensive  
I max 46°



MD 1000W long arc  
LIGHTMASTER 1000  
Asymmetric - semi intensive with deflector  
I max 46°



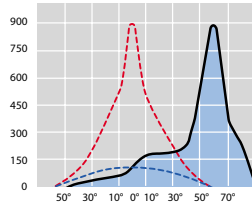
MD 1000W short arc  
LIGHTMASTER 1000  
Asymmetric semi intensive  
I max 48°



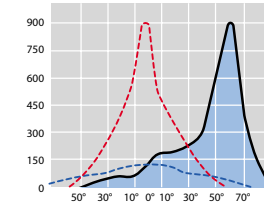
MD 1000W short arc  
LIGHTMASTER 1000  
Asymmetric - semi intensive with deflector  
I max 48°



Asymmetric with louvre



MD 1000W long arc  
LIGHTMASTER 1000  
Asymmetric - semi intensive with anti-glare louvre  
I max 60°



MD 1000W short arc  
LIGHTMASTER 1000  
Asymmetric - semi intensive with anti-glare louvre  
I max 62°

## Products codes

### LIGHTMASTER 1000 ASYMMETRIC - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>70531</b>	Silver Body - Semi intensive with deflector	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70537</b>	Silver Body - Semi intensive with deflector	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
<b>70701</b>	Silver Body - Intensive	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70707</b>	Silver Body - Intensive	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
€ <b>70761</b>	CR Silver Body - Semi intensive with deflector	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ <b>70767</b>	CR Silver Body - Semi intensive with deflector	MD (JM-TS) 1000W Philips	25.40	1	20	0.080
€ <b>70771</b>	CR Silver Body - Intensive	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ <b>70777</b>	CR Silver Body - Intensive	MD (JM-TS) 1000W Philips	25.40	1	20	0.080

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>70541</b>	Silver Body - Semi intensive with deflector	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70547</b>	Silver Body - Semi intensive with deflector	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
<b>70711</b>	Silver Body - Semi intensive	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
<b>70717</b>	Silver Body - Semi intensive	MD (JM-TS) 1000W Philips	13.25	1	20	0.080

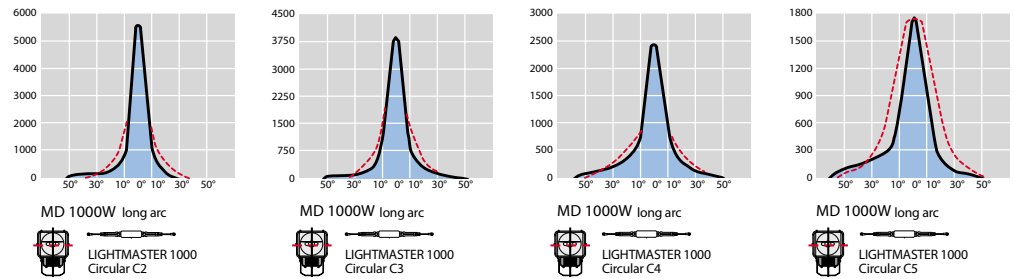
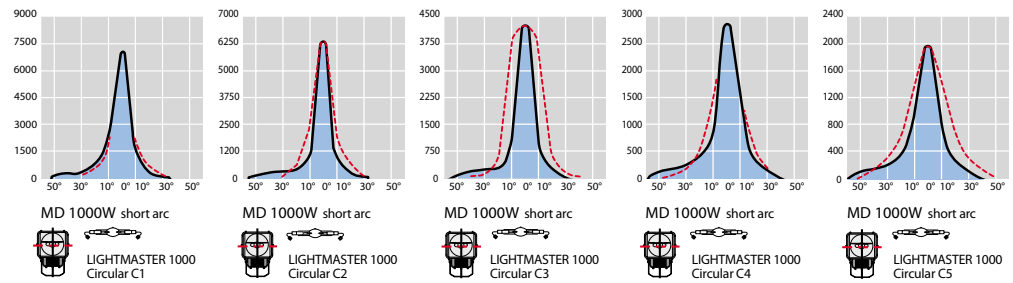
With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.

€ Floodlight with CE marking only.

# Photometric data



Circular



## Products codes

### LIGHTMASTER 1000 CIRCULAR - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70561	Silver Body - Circular C1	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70562	Silver Body - Circular C2	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70563	Silver Body - Circular C3	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70564	Silver Body - Circular C4	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70565	Silver Body - Circular C5	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70572	Silver Body - Circular C2	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
70573	Silver Body - Circular C3	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
70574	Silver Body - Circular C4	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
70575	Silver Body - Circular C5	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
€ 70781	CR Silver Body - Circular C1	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ 70782	CR Silver Body - Circular C2	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ 70783	CR Silver Body - Circular C3	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ 70784	CR Silver Body - Circular C4	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ 70785	CR Silver Body - Circular C5	MD (JM-TS) 1000W Osram	25.40	1	20	0.080
€ 70792	CR Silver Body - Circular C2	MD (JM-TS) 1000W Philips	25.40	1	20	0.080
€ 70793	CR Silver Body - Circular C3	MD (JM-TS) 1000W Philips	25.40	1	20	0.080
€ 70794	CR Silver Body - Circular C4	MD (JM-TS) 1000W Philips	25.40	1	20	0.080
€ 70795	CR Silver Body - Circular C5	MD (JM-TS) 1000W Philips	25.40	1	20	0.080

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
70581	Silver Body - Circular C1	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70582	Silver Body - Circular C2	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70583	Silver Body - Circular C3	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70584	Silver Body - Circular C4	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70585	Silver Body - Circular C5	MD (JM-TS) 1000W Osram	13.25	1	20	0.080
70592	Silver Body - Circular C2	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
70593	Silver Body - Circular C3	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
70594	Silver Body - Circular C4	MD (JM-TS) 1000W Philips	13.25	1	20	0.080
70595	Silver Body - Circular C5	MD (JM-TS) 1000W Philips	13.25	1	20	0.080

With one security knife switch version, the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Execution with hot restrike ignitor is available, on request, for the version with one security knife switch insulation CL I.

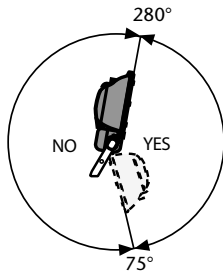
€ Floodlight with CE marking only.



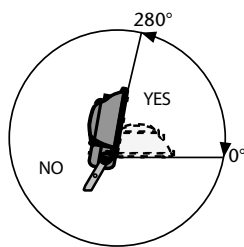
# Technical features of Lightmaster 1000 E40

## Aiming

## Description



Empty execution



Execution with inside kit

The aiming is achieved both with a mechanical sighting device, using a lateral protractor scale that indicates the angle of tilt and can be used for pre-aiming, or, for a more precise aiming, a telescope 6x36 mounted on the sighting device (optional).

### CHARACTERISTICS

- LIGHTMASTER 1000 version suitable to metal halide and high pressure sodium lamps with E40 lampholder.
- Body, rear cover and glass frame, in die cast aluminium, with primary alloy and low copper content with a high weather proof rating.
- Coated with silver polyester powder.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Anti-ageing gaskets in silicon rubber.
- Porcelain E40 lampholder complete with anti-screwing out device.
- Hot deep galvanized sheet steel fixing bracket.
- Gear housing separated from optical housing.
- Wind exposed surface with tilt  $70^\circ = 0,2160 \text{ m}^2$ .
- Pressure compensation filter in teflon.
- The luminaire is also available in the version complete with incorporated control gear kit.
- The CABLO SERVICE box, in die-cast aluminium IP 65, may be used for the supply of the lamp.

### OPTICAL SYSTEM

The careful study of the optics and the choice of high-performing materials allows an excellent control of the luminous flux and a considerable glare reduction thanks to the centering device of the lamp.

The luminaire is supplied with three different types of light output:

- The **symmetrical** floodlight is supplied with two types of optics:
  - wide beam;
  - semi intensive. The flux reflecting skirt reduce considerably the direct glare, ensuring an improved visual comfort.
- The **asymmetrical** floodlight is supplied with semi-intensive reflector, in high pure aluminium (99,99%) with elevated reflectance and efficiency. The floodlight can be equipped with a coated stainless steel anti-glare louvre that allows to move the plane of maximum intensity to  $55^\circ$ , in full compliance with national and international legislation against light pollution.
- **Circular** optic with high intensity rotational reflector. The flux reflecting skirt reduce considerably the direct glare, ensuring an improved visual comfort.

### LAMP MOUNTING AND REPLACEMENT

The lamp is accessed by opening the rear cover by using two strong stainless steel quick release clips.

### LAMPS



MT (JM-T) 1000W E40



ST (SAP-T) 1000W E40

### COLOUR

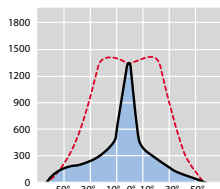


Silver

## Photometric data



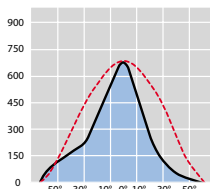
Symmetric



ST (SAP-T) 1000W E40



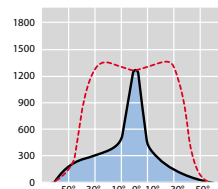
LIGHTMASTER 1000 E40  
Symmetric - semi intensive



ST (SAP-T) 1000W E40



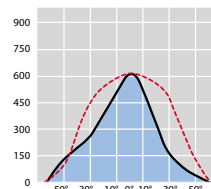
LIGHTMASTER 1000 E40  
Symmetric - wide beam



MT (JM-T) 1000W E40



LIGHTMASTER 1000 E40  
Symmetric - semi intensive



MT (JM-T) 1000W E40



LIGHTMASTER 1000 E40  
Symmetric - wide beam

## Products codes

### LIGHTMASTER 1000 E40 SYMMETRIC - CLI

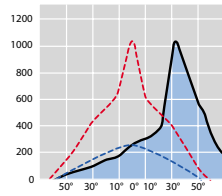
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
CE 70825	Silver Body - Wide beam	MT (JM-T) 1000W Philips	25.50	1	20	0.0946
CE 70826	Silver Body - Wide beam	MT (JM-T) 1000W Osram	25.50	1	20	0.0946
CE 70827	Silver Body - Wide beam	ST (SAP-T) 1000W	25.50	1	20	0.0946
CE 70833	Silver Body - Semi intensive	MT (JM-T) 1000W Philips	25.50	1	20	0.0946
CE 70834	Silver Body - Semi intensive	MT (JM-T) 1000W Osram	25.50	1	20	0.0946
CE 70835	Silver Body - Semi intensive	ST (SAP-T) 1000W	25.50	1	20	0.0946
70836	Silver Body - Wide beam	MT (JM-T) - ST (SAP-T) 1000W	13.50	1	20	0.0946
70837	Silver Body - Semi intensive	MT (JM-T) - ST (SAP-T) 1000W	13.50	1	20	0.0946

CE Floodlight with CE marking only.

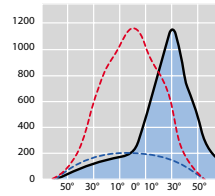
## Photometric data



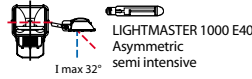
Asymmetric



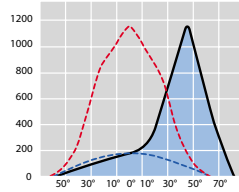
MT (JM-T) 1000W E40



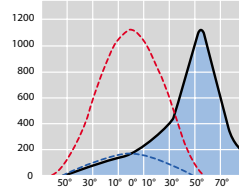
ST (SAP-T) 1000W E40



Asymmetric with anti-glare louvre



ST (SAP-T) 1000W E40



ST (SAP-T) 1000W E40



## Products codes

### LIGHTMASTER 1000 E40 ASYMMETRIC - CLI

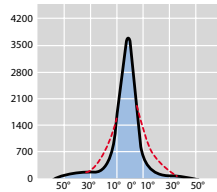
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
☑ 70820	CRL Silver Body - Semi intensive	ST (SAP-T) 1000W	25.50	1	20	0.0946
☑ 70821	CRL Silver Body - Semi intensive	MT (JM-T) 1000W Osram	25.50	1	20	0.0946
☑ 70822	CRL Silver Body - Semi intensive	MT (JM-T) 1000W Philips	25.50	1	20	0.0946
70838	Silver Body - Semi intensive	MT (JM-T) - ST (SAP-T) 1000W	13.50	1	20	0.0946

☑ Floodlight with CE marking only.

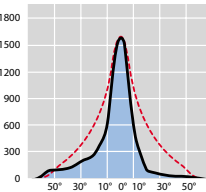
## Photometric data



Circular



MT (JM-T) 1000W E40



ST (SAP-T) 1000W E40



## Products codes

### LIGHTMASTER 1000 E40 CIRCULAR - CLI

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
☑ 70830	CRL Silver Body - Circular	MT (JM-T) 1000W Philips	25.50	1	20	0.0946
☑ 70831	CRL Silver Body - Circular	MT (JM-T) 1000W Osram	25.50	1	20	0.0946
☑ 70832	CRL Silver Body - Circular	ST (SAP-T) 1000W	25.50	1	20	0.0946
70839	Silver Body - Circular	MT (JM-T) - ST (SAP-T) 1000W	13.50	1	20	0.0946

☑ Floodlight with CE marking only.

## Accessories and spare parts



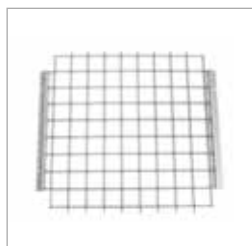
**60293-60137**  
Aluminium anti-glare louvre, coated in silver colour.



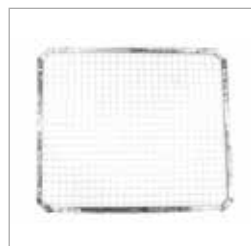
**60291**  
Circular louvre in stainless steel, coated in silver colour.



**60294**  
Vertical protection louvre in galvanized steel, coated in silver colour.



**60290**  
Protection grille in galvanized steel, coated in silver colour.



**60292**  
Safety grid in stainless steel.

### LIGHTMASTER 1000

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60293</b>	Aluminium anti-glare louvre for asymmetric	0.85	Silver		0.0260
<b>60291</b>	Stainless stell circular louvre	2.43	Silver		
<b>60294</b>	Louvre for symmetrical	1.35	Silver		
<b>60290</b>	Protection grille	0.87	Silver		
<b>60292</b>	Safety grid	0.65			
<b>09263</b>	Glass				
<b>10292</b>	Osram lamp 4400K	0.30		HQI-TS 1000W/NDL/S	
<b>10293</b>	Osram lamp 6100K	0.30		HQI-TS 1000W/D/S	
<b>10294</b>	Philips lamp 4200K	0.35		MHN-LA 1000W/842 230V	
<b>10295</b>	Philips lamp 5600K	0.35		MHN-LA 1000W/956 230V	
<b>13967</b>	Philips lamp 4100K	0.35		MHN-FC 1000W/740 230V	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25			
<b>02955</b>	Ballast - 1000W 10,3A 230V	10.00			0.0026
<b>09569*</b>	Capacitor 50 µF 280V for 1000W - aluminium case	0.30			

\* Wiring box: 2 capacitors for each lamps

### LIGHTMASTER 1000 E40

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60137</b>	Aluminium anti-glare louvre for asymmetric	0.50	Silver		0.0260
<b>60291</b>	Stainless stell circular louvre	2.43	Silver		
<b>60294</b>	Louvre for symmetrical	1.35	Silver		
<b>60292</b>	Safety steel grid	0.65			
<b>60290</b>	Protection grille	0.87	Silver		
<b>09263</b>	Glass				
<b>00472</b>	Osram lamp	0.40		HQI - T 1000W/D	
<b>00475</b>	Osram lamp	0.40		NAV - T 1000W	
<b>06660</b>	Philips lamp	0.40		HPI - T 1000W	
<b>07826</b>	Philips lamp	0.40		SON - T 1000W	
<b>04644</b>	Ignitor 1.2kV 230V JM Philips 1000W	0.15			
<b>06700</b>	Ballast - 1000W 8,2A 230V JM Philips	9.00			0.0018
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25			
<b>02955</b>	Ballast - 1000W 10,3A 230V	10.00			0.0026
<b>09569*</b>	Capacitor 50 µF 280V for 1000W - aluminium case	0.30			
<b>09568*</b>	Capacitor 35 µF 280V for 1000W JM Philips - aluminium case	0.30			

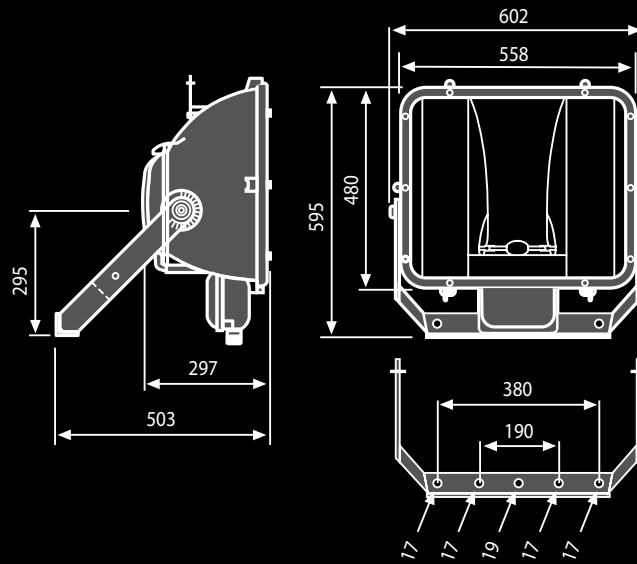
\* Wiring box: 2 capacitors for each lamps



# LIGHTMASTER COMPACT







## Technology in lighting

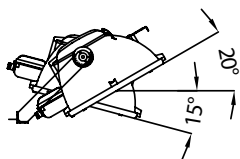
Designed to complete the **LIGHTMASTER** product range, the **COMPACT** variant, thanks to a series of innovative and highly efficient asymmetrical optics, represents the most rational and performing instrument for professional lighting of sport

facilities, sport halls, outdoor areas, events and shows in large open areas. Aesthetic, technical, photometric performance and flexibility of use, represent key features of LIGHTMASTER range since long time.



# Technical features of Lightmaster Compact

## Aiming



## Description

### CHARACTERISTICS

- Body, rear cover and glass frame in die cast aluminium with primary alloy and low copper content, with a high weather proof rating.
- Coated with silver polyester powder.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket.
- Connection box in special selfextinguish plastic material, complete with ignitor.
- Two pressure compensation filters in teflon.
- Aluminum protractor scale to perform precise vertical aiming of the projector.
- Insulation class I.
- Protection degree against external impacts: IK 08.
- Floodlight body weight Kg 17.
- Maximum surface wind resistance at 0° = 0.154 m<sup>2</sup>.
- Maximum surface wind resistance of floodlight complete with anti-glare louvre = 0.179 m<sup>2</sup>.
- Control gear box CABLO SERVICE, in die-cast aluminium IP 65, may be used for the supply of the lamp. When the ignitor is included, the mounting distances between the gear box and the body can be up to 50/70 meters.
- In the double ended lamp versions, the mounting distances between the gear box and the body can be up to 50/70 meters.
- Designed for indoor and outdoor applications.
- The fixture is approved for nominal temperature of 35°C. Thus, according to EN 60598-1, the fixture can be used, for discontinuous periods, at 45°C.
- Hot Restrike version with one security knife switch for 1000W short arc lamp, is available on request. In these versions, to allow the maintenance of the distances for high voltage, the lighting performances are 5% lower compared to the standard version.

### OPTICAL SYSTEM

The careful study of the optics and the choice of high-performing materials guarantee lighting values higher than 75% and an optimal control of the luminous flux, thanks to the lamp centering device.

All optics are designed to obtain horizontal and vertical illumination values with best uniformity terms, in full compliance with national and international recommendations against light pollution.

- **XA SYSTEM - Trapezoidal asymmetric optic** in high purity aluminum (99,99%) with elevated reflectance and performance.

The projector may house:

- Double ended, short and long arcs lamps of 1000W, with intensive and wide beam emissions;
- E40 1000W MT lamps and SAP T 600W lamps, with intensive and wide beam emissions;

All floodlights may be provided with different aluminum louvres, painted in silver colour, in order to switch the plane of maximum intensity of 6° and 12°.

### LAMP MOUNTING AND REPLACEMENT


The access to the lamp is allowed by rear compartment opening, which remains blocked with two solid stainless quick release clips. In E40 lamps version, the lampholder is equipped with an anti-screwing out device and a special centering and supporting lamp device. For safety reasons, in versions for double-ended lamps 1000 and 2000W, the opening action disconnects power automatically.

The floodlight is available in two versions:

- With two power knife switches: when the cover is opened, the power supply to lampholders is directly interrupted.
- With one security knife switch: in this case the remote control switch must be connected to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply.

Lamp replacement is facilitated with cover opening angle, at a very comfortable amplitude of 110°. In case of lamp failure or at the end of lamp life, it's absolutely necessary to open the E switch to inhibit the ignitor's discharge, till the lamp is changed.

### LAMPS

	MD 1000W short arc
	MD 1000W long arc
	MT (JM-T) 1000W E40
	ST (SAP-T) 600-1000W E40

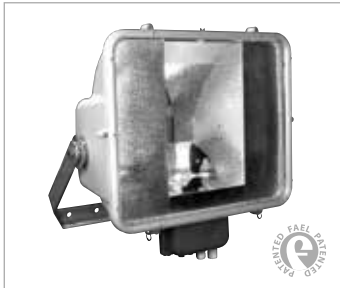
### COLOUR



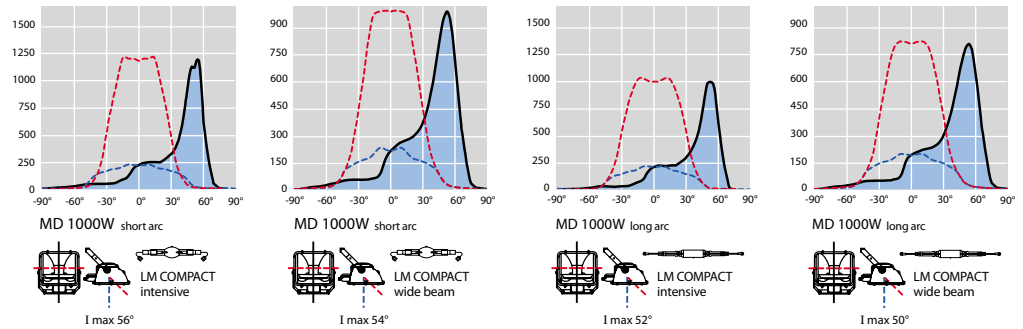
Silver



## Photometric data



Trapezoidal asymmetric



## Products codes

### LIGHTMASTER COMPACT 1000W TRAPEZOIDAL ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
74001	Silver body intensive	MD (JM-TS) 1000W Osram short arc	19.40	1	12	0.1377
74002	Silver body intensive with deflector	MD (JM-TS) 1000W Osram short arc	19.40	1	12	0.1377
74003	Silver body wide beam	MD (JM-TS) 1000W Osram short arc	19.40	1	12	0.1377
74021	Silver body intensive	MD (JM-TS) 1000W Philips long arc	19.40	1	12	0.1377
74022	Silver body intensive with deflector	MD (JM-TS) 1000W Philips long arc	19.40	1	12	0.1377
74023	Silver body wide beam	MD (JM-TS) 1000W Philips long arc	19.40	1	12	0.1377

With two power knife switches when the cover is opened, the power supply to lampholders is directly interrupted.

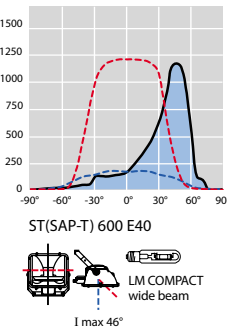
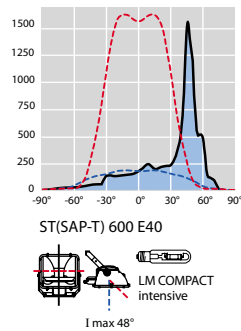
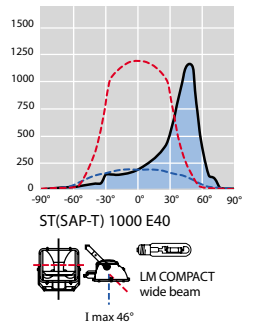
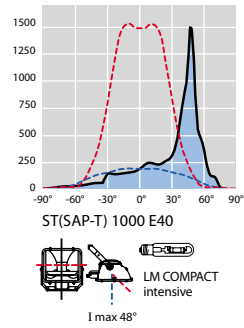
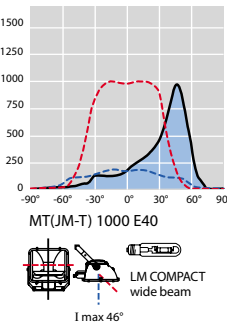
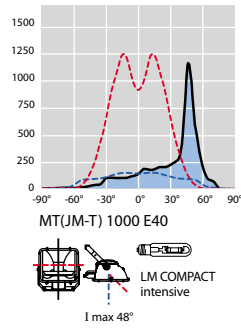
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
74051	Silver body intensive	MD (JM-TS) 1000W Osram short arc	19.40	1	12	0.1377
74052	Silver body intensive with deflector	MD (JM-TS) 1000W Osram short arc	19.40	1	12	0.1377
74053	Silver body wide beam	MD (JM-TS) 1000W Osram short arc	19.40	1	12	0.1377
74071	Silver body intensive	MD (JM-TS) 1000W Philips long arc	19.40	1	12	0.1377
74072	Silver body intensive with deflector	MD (JM-TS) 1000W Philips long arc	19.40	1	12	0.1377
74073	Silver body wide beam	MD (JM-TS) 1000W Philips long arc	19.40	1	12	0.1377

With one security knife switch version it is compulsory to connect the remote control switch to the poles of the terminal block inside the connection box. When the cover is opened, the remote control switch disconnects the power supply. Special restriking system is available on request only for short arc lamp and for the version in insulation Class I with single security switch only.

## Photometric data



Trapezoidal asymmetric E40



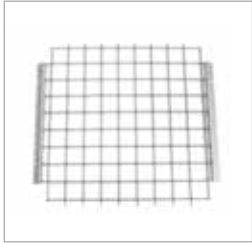
## Products codes

### LIGHTMASTER COMPACT E40 TRAPEZOIDAL ASYMMETRIC - CL I

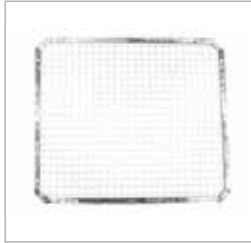
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
74401	Silver body - Wide beam	ST (SAP-T) 600W	19.40	1	12	0.1377
74402	Silver body - Intensive	ST (SAP-T) 600W	19.40	1	12	0.1377
74411	Silver body - Wide beam	MT (JM-T) - ST (SAP-T) 1000W	19.40	1	12	0.1377
74412	Silver body - Intensive	MT (JM-T) - ST (SAP-T) 1000W	19.40	1	12	0.1377



## Accessories and spare parts



**60286**  
Protection grille, in galvanized steel, coated in silver colour.



**60288**  
Safety grid in stainless steel.



**60403**  
Alluminium anti-glare louvre for asymmetrical 6°, painted in silver colour.



**60405**  
Alluminium anti-glare louvre for asymmetrical 12°, painted in silver colour.



**60455**  
Wall mounting accessory in galvanized steel.

### LIGHTMASTER COMPACT

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60286</b>	Protection grille	1.15	Silver		
<b>60288</b>	Safety grid	0.85			
<b>60403</b>	Alluminium anti-glare louvre for asymmetrical 6°	1.40	Silver		
<b>60405</b>	Alluminium anti-glare louvre for asymmetrical 12°	1.40	Silver		
<b>60455</b>	Wall mounting accessory	5.00	Galvanized steel		
<b>09229</b>	Glass for trapezoidal version				
<b>For double ended 1000W lamps</b>					
<b>10292</b>	Osram lamp 4400K	0.30		HQI-TS 1000W/NDL/S	
<b>10293</b>	Osram lamp 6100K	0.30		HQI-TS 1000W/D/S	
<b>10294</b>	Philips lamp 4200K	0.35		MHN-LA 1000W/842 230V	
<b>10295</b>	Philips lamp 5600K	0.35		MHN-LA 1000W/956 230V	
<b>13967</b>	Philips lamp 4100K	0.35		MHN-FC 1000W/740 230V	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25			
<b>02955</b>	Ballast 1000W 10,3A 230V	10.00			0.0026
<b>09569*</b>	Capacitor 50 µF 280V for 1000W - aluminium case	0.30			
<b>For E40 1000W lamps</b>					
<b>00472</b>	Osram lamp	0.40		HQI-T 1000W/D	
<b>00475</b>	Osram lamp	0.40		NAV-T 1000W	
<b>06660</b>	Philips lamp	0.40		HPI-T 1000W	
<b>07826</b>	Philips lamp	0.40		SON-T 1000W	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25			
<b>04644</b>	Ignitor 1.2kV 230V JM Philips 1000W	0.15			
<b>02955</b>	Ballast 1000W 10,3A 230V	10.00			0.0026
<b>06700</b>	Ballast 1000W 8,2A 230V JM Philips	9.00			0.0018
<b>09568*</b>	Capacitor 35 µF 280V for 1000W JM Philips - aluminium case	0.30			
<b>09569*</b>	Capacitor 50 µF 280V for 1000W - aluminium case	0.30			

\* Wiring box: 2 capacitors for each lamps.



# Jet

Working high power



Thanks to its robust construction and wide variety of power ranging, the **JET** series, in 1000 and 2000

versions, is the winning choice in different applications, from industrial to sports.



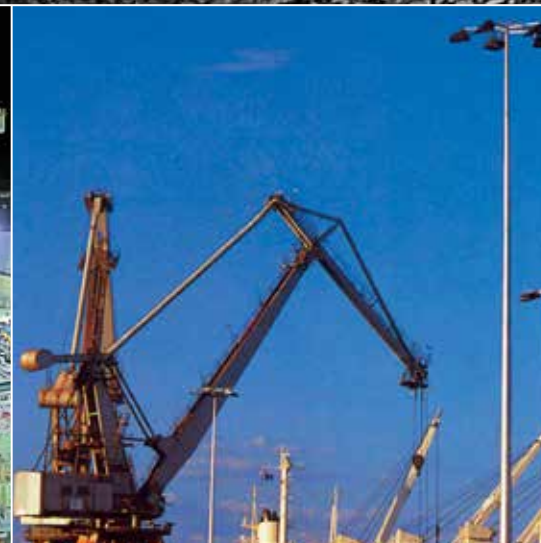
Terminal container Brisbane Port, Australia



Bowls Club NSW New South Wales, Australia



Panama Canal Expansion, Panama



Kembla Porto NSW New South Wales, Australia



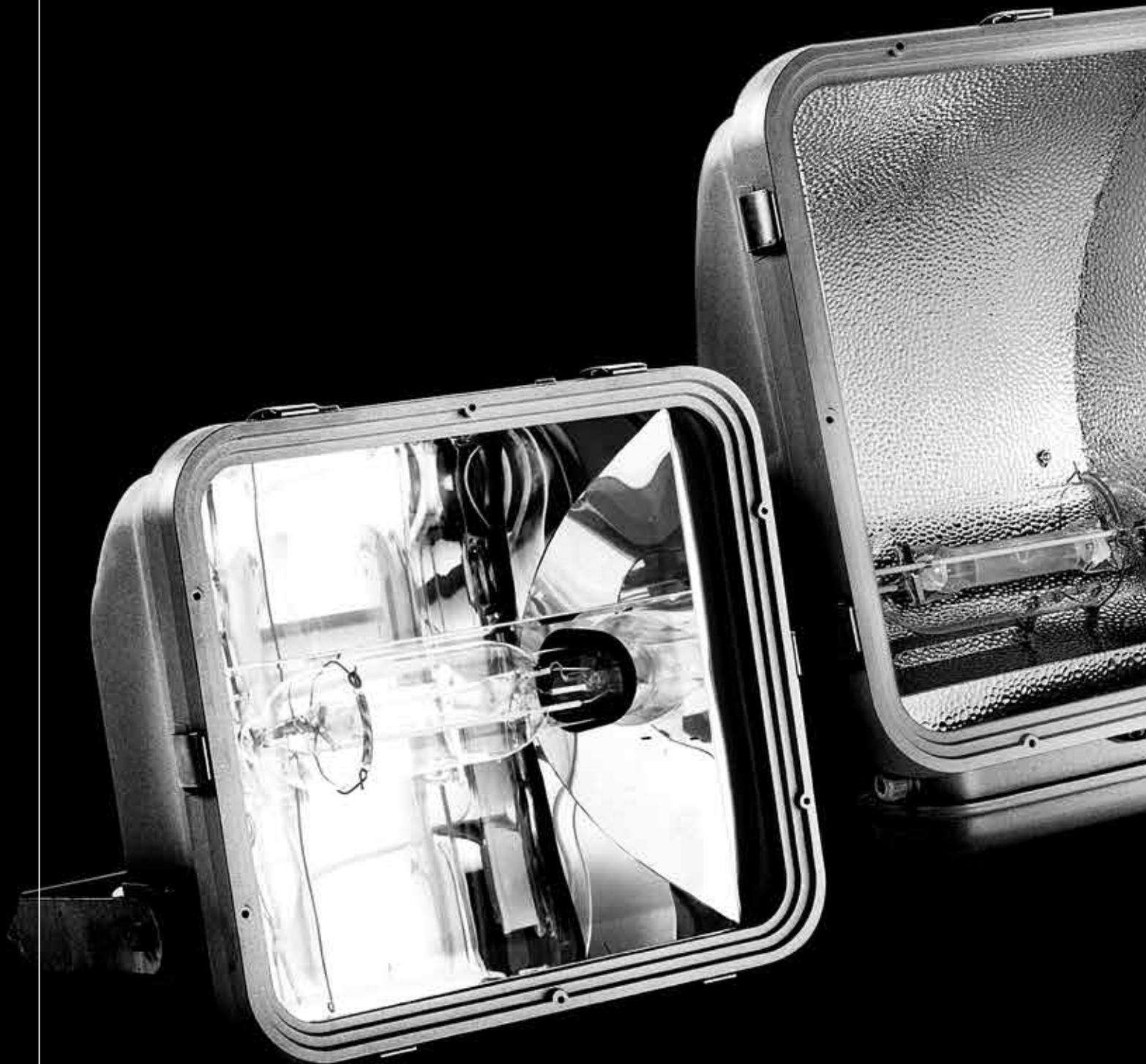


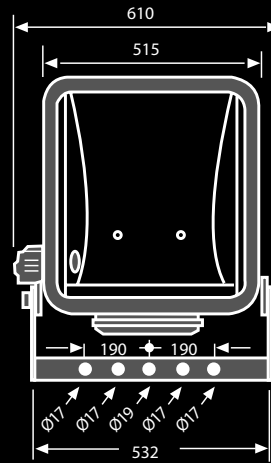
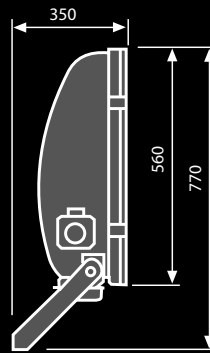
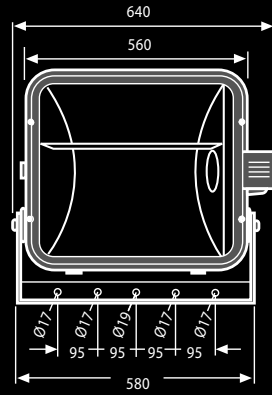
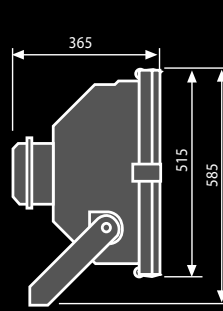
Judo National Institute, Paris, France



Ice Stadium, Regensburg, Germany

# JET 2000





## High performance

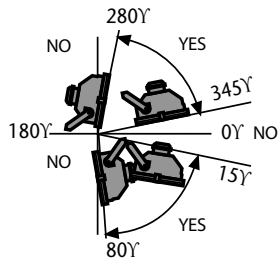
High efficiency outdoor projector for 2000W metal halide lamps.

Suitable for lighting of big areas and sport stadiums.

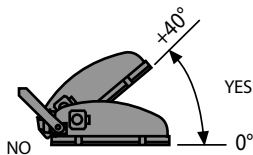


# Technical features of Jet 2000

## Aiming



Jet 2000 Symmetric



Jet 2000 Asymmetric

## Description

### CHARACTERISTICS

- Body and cable compartment in pressed sheet aluminium.
- Glass frame in die cast aluminium with primary alloy and low copper content with a high weather proof rating.
- Coated with silver polyester powders.
- Reflector made of highly pure aluminium sheet, polished and oxidized.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Stainless steel springs for closing the frame.
- Anti-ageing gaskets in silicon rubber.
- Hot deep galvanized sheet steel fixing bracket with index for vertical orientation.
- No-screwing device E40 lampholder, PG 13,5 cable gland.
- The wiring compartment can be used as a junction box, or as housing for the ignitor (to be supplied separately).
- Pressure compensation filter in Teflon.
- CABLO SERVICE series boxes complete with electrical accessories are available for the power supply of the lamp.
- All the electrical components are suitable for power 230V - 50Hz and the projector is manufactured according to EN 60598/1 rules.

### JET 2000 SYMMETRIC

- Floodlight body weight Kg 16.
- Wind exposed surface = 0,27 m<sup>2</sup>, (with 70° vertical aiming).

### JET 2000 ASYMMETRIC

- Floodlight body weight Kg 17.
- Wind exposed surface = 0,275 m<sup>2</sup> (with 40° vertical aiming).

### OPTICAL SYSTEM

- The JET 2000 **symmetrical** projector is supplied with two types of optics:
    - Wide beam.
    - Intensive beam.
  - The flux reflecting skirt reduces considerably the direct glare, ensuring an improved visual comfort.
  - The JET 2000 **asymmetrical** projector is supplied with two types of optics:
    - Wide beam.
    - Semi-intensive beam made in pure aluminium with very high reflection factor.
- A careful study permits excellent control of the luminous flux and a considerable glare reduction. The floodlight has to be installed with aimings towards the vertical from 0° to 40°.

### SUITABLE LAMPS

The projector may use 2000W E40 400V metal halide lamps with following characteristics:

- 10,3 A with incorporated ignitor Osram type
- 8,8 A with incorporated ignitor Osram type
- 8,8 A with outer ignitor Osram type
- 8,2 A with outer ignitor Philips type.

### LAMP



MT (JM-T) 2000W E40

### COLOUR



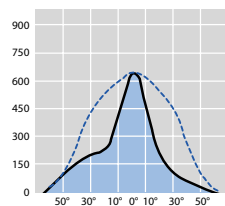
Silver



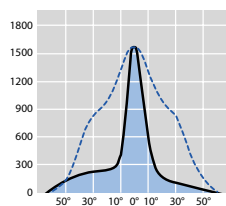
## Photometric data



Symmetric



MT 2000W E40

JET 2000  
Symmetric wide beam

MT 2000W E40

JET 2000  
Symmetric intensive

## Product codes

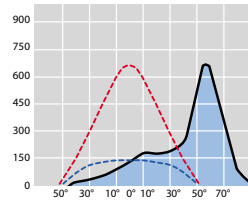
### JET 2000 SYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PZ.)	PALLET (PZ.)	VOLUME
50602	Silver body Wide beam - E40	MT (JM-T) 2000W	17.60	1	12	0.152
50603	Silver body Intensive - E40	MT (JM-T) 2000W	17.60	1	12	0.152

## Photometric data

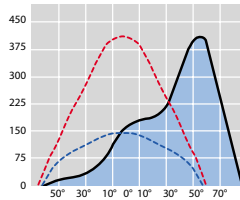


Asymmetric



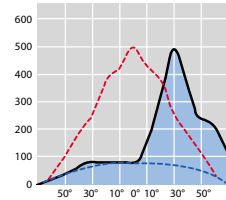
MT 2000 W E40

 JET 2000  
Asymmetric semi intensive  
with anti-glare louvre



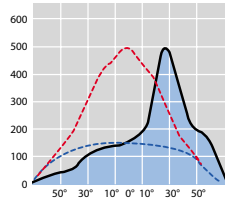
MT 2000 W E40

 JET 2000  
Asymmetric wide beam  
with anti-glare louvre




MT 2000 W E40

 JET 2000  
Asymmetric semi  
intensive with deflector



MT 2000 W E40

 JET 2000  
Asymmetric semi  
intensive

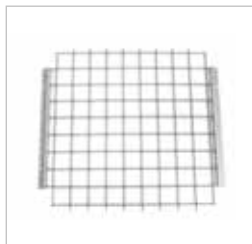
## Product codes

### JET 2000 ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PZ.)	PALLET (PZ.)	VOLUME
50611	Silver body semi intensive with deflector - E40	MT (JM-T) 2000W	18.60	1	10	0.149
50618	Silver body wide beam - E40	MT (JM-T) 2000W	18.60	1	10	0.149
50619	Silver body Semi intensive - E40	MT (JM-T) 2000W	18.60	1	10	0.149



## Accessories and spare parts



**60050**  
Protection grille, in galvanized steel, coated in silver colour.



**60051**  
Louvre in galvanized steel, coated in silver colour.



**60092**  
Anti-glare louvre in aluminium and coated in Silver.

### JET 2000 SYMMETRIC

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60051</b>	Louvre	2.20	Silver		0.0190
<b>60050</b>	Grille	1.20	Silver		0.0055
<b>60060</b>	Frame with glass	5.50	Silver		0.0260
<b>06891</b>	Philips lamp	0.70		HPI-T 2000W/380V	
<b>04192*</b>	Osram lamp	0.80		HQI-T 2000W/D/I	
<b>07131</b>	Osram lamp	0.80		HQI-T 2000W/N/E/SUPER	
<b>05146</b>	Ignitor 1.2kV - 400V for Philips lamp	0.10			
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>06900</b>	Ballast	15.00		JM 2000W-8.6/8.8A 400V	
<b>06901</b>	Ballast	15.00		JM 2000W-10.3A 400V	
<b>14342**</b>	Capacitor 30 µF 450V - aluminium case	0.25			
<b>15679**</b>	Capacitor 20 µF 450V - aluminium case	0.25			
<b>60401***</b>	Connecting plate 2000W 380-400-415V 50HZ 10.3A for installation in cabinets (power supply losses 100W)	17.10			0.0200
<b>60392***</b>	Connecting plate 2000W 380-400-415V 50HZ 8.8A for installation in cabinets (power supply losses 100W)	15.10			0.0200

### JET 2000 ASYMMETRIC

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60092</b>	Anti-glare louvre in aluminium	1.35	Silver		0.0100
<b>60050</b>	Grille	1.20	Silver		0.0055
<b>11624</b>	Frame with glass	5.50	Silver		0.0260
<b>06891</b>	Philips lamp	0.70		HPI-T 2000W/380V	
<b>04192*</b>	Osram lamp	0.80		HQI-T 2000W/D/I	
<b>07131</b>	Osram lamp	0.80		HQI-T 2000W/N/E/SUPER	
<b>05146</b>	Ignitor 1.2kV - 400V for Philips lamp	0.10			
<b>07130</b>	Ignitor 5kV 400V for Osram lamp 2000W SUPER	0.35			
<b>06900</b>	Ballast	15.00		JM 2000W-8.6/8.8A 400V	
<b>06901</b>	Ballast	15.00		JM 2000W-10.3A 400V	
<b>14342**</b>	Capacitor 30 µF 450V - aluminium case	0.25			
<b>15679**</b>	Capacitor 20 µF 450V - aluminium case	0.25			
<b>60401***</b>	Connecting plate 2000W 380-400-415V 50HZ 10.3A for installation in cabinets (power supply losses 100W)	17.10			0.0200
<b>60392***</b>	Connecting plate 2000W 380-400-415V 50HZ 8.8A for installation in cabinets (power supply losses 100W)	15.10			0.0200

\* Incorporated ignitor.

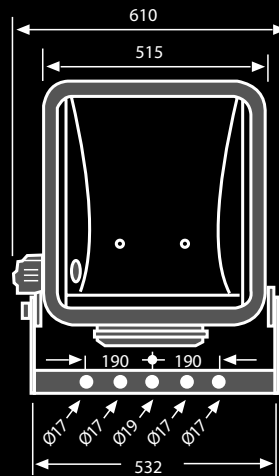
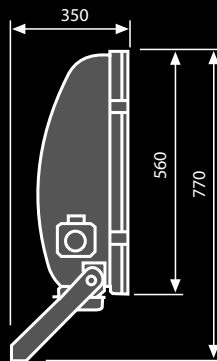
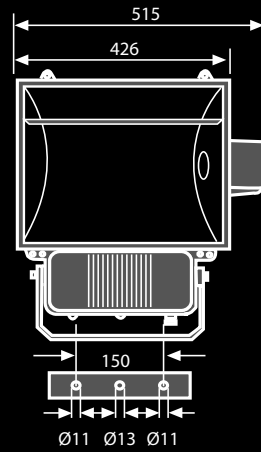
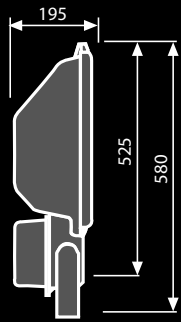
\*\* Wiring box: 2 capacitors for each lamps.

\*\*\* Without ignitor: the size of the cabinet, in which plates would be installed, should be calculated by the designer.

# JET 1000







## High efficiency

Advanced floodlights for metal halide and sodium high pressure lamps 1000W.

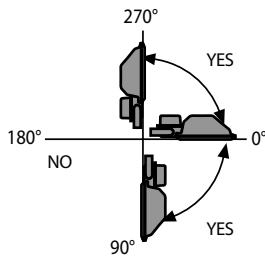
This floodlight has been designed particularly for outdoor and indoor sports halls.



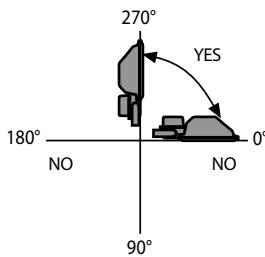
# Technical features of Jet 1000

## Aiming

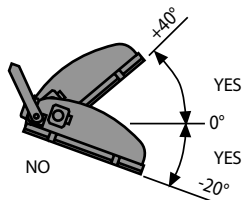
## Description



Jet 1000 Symmetric



JET 1000 Symmetric Leader



Jet 1000 Asymmetric

### CHARACTERISTICS

- Reflector made of highly pure, aluminium sheet, polished and oxidized.
- Front tempered glass resistant to high temperatures and to thermal shock.
- Anti-ageing gaskets in silicon rubber.
- Anti-screwing out device E40 lamp holder. PG 13.5 cable gland.
- The wiring compartment can be used as a junction box, or as housing for the ignitor (to be supplied separately).
- CABLO SERVICE series boxes complete with electrical accessories are available for the power supply of the lamp.
- All the electrical components are suitable for power 230V - 50Hz. The projector is ENEC marked and manufactured according to EN 60598/1 rules.

### JET 1000 SYMMETRIC

- Body and frame in die cast aluminium with primary alloy and low copper content with a high weather proof rating, complete with thermally isolated ignitor housing.
- Coated with polyester powders in black or silver colour.
- Electrical housing cover made of techno polymer material.
- Hot deep galvanized sheet steel fixing bracket and painted, with index for vertical orientation.
- LEADER version is supplied with incorporated control gear and metal halide 1000W lamp. Osram or Philips, suitable for outdoor applications and for ambient temperature of max 25°C.
- Wind exposed surface = 0,203 m<sup>2</sup> (with 70° vertical aiming).

### JET 1000 ASYMMETRIC

- Body and cable compartment in pressed sheet aluminium coated with silver polyester powder.
- Glass frame in die cast aluminium with primary alloy and low copper content with a high weather proof rating.

- Coated with silver polyester powders.
- Stainless steel springs for closing the frame.
- Pressure compensation filter in Teflon.
- Hot deep galvanized sheet steel fixing bracket and painted, with index for vertical orientation.
- SOLAR version is supplied with incorporated control gear and metal halide 1000W lamp, Osram or Philips, suitable for outdoor applications and for ambient temperature of max 25°C.
- Wind exposed surface = 0.275 m<sup>2</sup> (with 40° vertical aiming).

### OPTICAL SYSTEM

- The **symmetrical** optics with two different optics:
  - wide beam
  - intensive beam.

The careful study of the optics guarantee a perfect control of the luminous flux and a considerable glare reduction.

The flux reflecting skirt ensures high lighting performances.

- The **asymmetrical** projector is supplied with two types of emissions:

- Asy1: Max. intensity at approx. 50° recommended for the lighting of large areas (aimings towards the vertical between -20° and + 25°)
- Asy2: Max. intensity at approx. 30° recommended for indoor lighting (aimings towards the vertical between -10° and + 40°).

- There are two optics available:
  - wide beam
  - semi-intensive. in high pure aluminium (99.99%) for high reflectance and efficiency.

A careful study permits an excellent control of the luminous flux and a considerable glare reduction.

The fixture can be fitted with a coated stainless steel anti-glare louvre for moving the plane of maximum intensity up to 62°, in full compliance with national and international legislation on the restriction of light pollution.

The fixture can be fitted with a coated stainless steel anti-glare louvre for moving the plane of maximum intensity up to 62°, in full compliance with national and international legislation on the restriction of light pollution.

### LAMPS



MT (JM-T) 1000W E40



ST (SAP-T) 1000W E40

### COLOURS



Black (Sym)



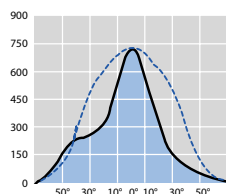
Silver (Sym+Asy)



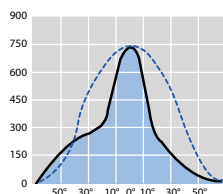
## Photometric data



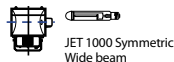
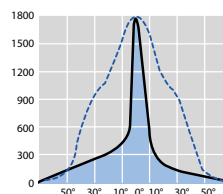
Symmetric



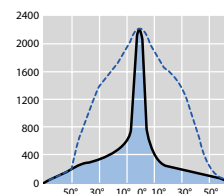
MT (JM-T) 1000W E40

JET 1000 Symmetric  
Wide beam

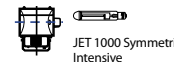
ST (SAP-T) 1000W E40

JET 1000 Symmetric  
Wide beam

MT (JM-T) 1000W E40

JET 1000 Symmetric  
Intensive

ST (SAP-T) 1000W E40

JET 1000 Symmetric  
Intensive

## Product codes

## JET 1000 SYMMETRIC - CL I

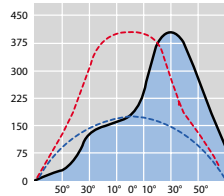
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PZ.)	PALLET (PZ.)	VOLUME
50494	Black Body - Wide beam - E40	MT (JM-T) 1000W Osram	9.70	1	25	0.0648
50495	Black Body - Intensive - E40	MT (JM-T) 1000W Osram	9.70	1	25	0.0648
50497	Black Body - Wide beam - E40	MT (JM-T) 1000W Philips - ST (SAP-T) 1000W	9.70	1	25	0.0648
50498	Black Body - Intensive - E40	MT (JM-T) 1000W Philips - ST (SAP-T) 1000W	9.70	1	25	0.0648
CE 50570	<b>CRL LEADER</b> Black Body - Wide beam	MT (JM-T) 1000W Philips	17.73	1	25	0.0648
CE 50571	<b>CRL LEADER</b> Black Body - Intensive	MT (JM-T) 1000W Philips	17.73	1	25	0.0648
CE 50693	<b>CRL LEADER</b> Black Body - Wide beam	MT (JM-T) 1000W Osram	20.60	1	25	0.0648
CE 50694	<b>CRL LEADER</b> Black Body - Intensive	MT (JM-T) 1000W Osram	20.60	1	25	0.0648
52840	Silver Body - Wide beam - E40	MT (JM-T) 1000W Osram	9.70	1	25	0.0648
52841	Silver Body - Intensive - E40	MT (JM-T) 1000W Osram	9.70	1	25	0.0648
52842	Silver Body - Wide beam - E40	MT (JM-T) 1000W Philips - ST (SAP-T) 1000W	9.70	1	25	0.0648
52843	Silver Body - Intensive - E40	MT (JM-T) 1000W Philips - ST (SAP-T) 1000W	9.70	1	25	0.0648
CE 52845	<b>CRL LEADER</b> Silver Body - Wide beam	MT (JM-T) 1000W Philips	17.73	1	25	0.0648
CE 52846	<b>CRL LEADER</b> Silver Body - Intensive	MT (JM-T) 1000W Philips	17.73	1	25	0.0648
CE 52847	<b>CRL LEADER</b> Silver Body - Wide beam	MT (JM-T) 1000W Osram	20.60	1	25	0.0648
CE 52848	<b>CRL LEADER</b> Silver Body - Intensive	MT (JM-T) 1000W Osram	20.60	1	25	0.0648

CE Floodlight with CE marking only

## Photometric data



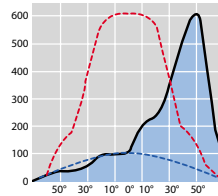
Asymmetric



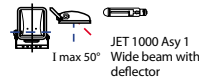
MT 1000 W E40



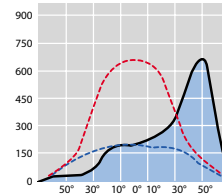
JET 1000 Asy 2  
I max 30° Wide beam



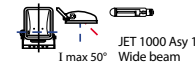
ST 1000 W E40



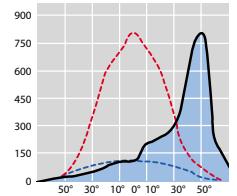
JET 1000 Asy 1  
Wide beam with deflector  
I max 50°



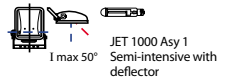
ST 1000 W E40



JET 1000 Asy 1  
I max 50° Wide beam



ST 1000 W E40



JET 1000 Asy 1  
Semi-intensive with deflector  
I max 50°

## Product codes

### JET 1000 ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PZ.)	PALLET (PZ.)	VOLUME
50612	Silver Body - Wide beam with deflector - E40 - ASY 1	MT (JM-T) - ST (SAP-T) 1000W	18.60	1	10	0.1490
50613	Silver Body - Semi-intensive with deflector - E40 - ASY 1	MT (JM-T) - ST (SAP-T) 1000W	18.60	1	10	0.1490
50622	Silver Body - Wide beam - E40 - ASY 1	MT (JM-T) - ST (SAP-T) 1000W	18.60	1	10	0.1490
50623	Silver Body - Semi-intensive - E40 - ASY 1	MT (JM-T) - ST (SAP-T) 1000W	18.60	1	10	0.1490
☒ 50614	<b>SOLAR</b> Silver Body - Wide beam with deflector - ASY 1	MT (JM-T) 1000W Philips	27.35	1	10	0.1670
☒ 50615	<b>SOLAR</b> Silver Body - Semi-intensive with deflector - ASY 1	MT (JM-T) 1000W Philips	27.35	1	10	0.1670
☒ 50624	<b>SOLAR</b> Silver Body - Wide beam - ASY 1	MT (JM-T) 1000W Philips	27.35	1	10	0.1670
☒ 50625	<b>SOLAR</b> Silver Body - Semi-intensive - ASY 1	MT (JM-T) 1000W Philips	27.35	1	10	0.1670
☒ 50699	<b>SOLAR</b> Silver Body - Wide beam with deflector - ASY 1	MT (JM-T) 1000W Osram	28.70	1	10	0.1670
☒ 50698	<b>SOLAR</b> Silver Body - Semi-intensive with deflector - ASY 1	MT (JM-T) 1000W Osram	28.70	1	10	0.1670
☒ 50705	<b>SOLAR</b> Silver Body - Wide beam with deflector - ASY 1	ST (SAP-T) 1000W	28.70	1	10	0.1670
☒ 50704	<b>SOLAR</b> Silver Body - Semi-intensive with deflector - ASY 1	ST (SAP-T) 1000W	28.70	1	10	0.1670
50626	Silver Body - Wide beam - E40 - ASY 2	MT (JM-T) - ST (SAP-T) 1000W	18.60	1	10	0.1490
50627	Silver Body - Semi-intensive - E40 - ASY 2	MT (JM-T) - ST (SAP-T) 1000W	18.60	1	10	0.1490
50641	<b>SOLAR</b> Silver Body - Wide beam - E40 - ASY 2	MT (JM-T) 1000W Philips	27.35	1	10	0.1670
50640	<b>SOLAR</b> Silver Body - Semi-intensive - E40 - ASY 2	MT (JM-T) 1000W Philips	27.35	1	10	0.1670

☒ Floodlight with CE marking only

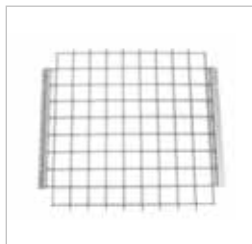
**ASY 1** Max. intensity at approx. 50° - aimings towards the vertical between -20° and + 25°;

**ASY 2** Max. intensity at approx. 30° - aimings towards the vertical between -10° and + 40°.

☒ Asymmetrical versions are available also in insulation Class II.



## Accessories and spare parts



**60349 - 60050**  
Protection grille in galvanized steel coated.



**60339**  
Protection louvre in galvanized steel, coated in black colour.



**60092-60093**  
Anti-glare louvre in aluminium, coated in silver colour.

### JET 1000 SYMMETRIC

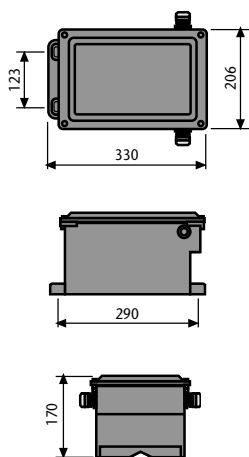
CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60339</b>	Louvre	1.35	Black		0.0100
<b>60349</b>	Grille	0.75	Black		0.0030
<b>05769</b>	Glass	1.50			
<b>00472</b>	Osram lamp	0.40		HQI - T 1000W/D	
<b>00475</b>	Osram lamp	0.40		NAV - T 1000W	
<b>06660</b>	Philips lamp	0.40		HPI - T 1000W	
<b>07826</b>	Philips lamp	0.40		SON -T 1000W	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25		M (JM) Osram - S (SAP)	
<b>04644</b>	Ignitor 1.2kV 230V JM Philips 1000W	0.09		M (JM) Philips	

### JET 1000 ASYMMETRIC

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	LAMP TYPE	VOLUME
<b>60092</b>	Anti-glare louvre in aluminium - ASY 1	1.35	Silver		0.0100
<b>60093</b>	Anti-glare louvre in aluminium - ASY 2	1.35	Silver		0.0100
<b>60050</b>	Grille	1.20	Silver		0.0055
<b>07798</b>	Frame with glass	5.50	Silver		0.0260
<b>00472</b>	Osram lamp	0.40		HQI - T 1000W/D	
<b>00475</b>	Osram lamp	0.40		NAV - T 1000W	
<b>06660</b>	Philips lamp	0.40		HPI - T 1000W	
<b>07826</b>	Philips lamp	0.40		SON -T 1000W	
<b>00878</b>	Ignitor 4kV 230V 1000W	0.25		M (JM) Osram - S (SAP)	
<b>04644</b>	Ignitor 1.2kV 230V JM Philips 1000W	0.09		M (JM) Philips	

# Technical features of Cablo Service

## Dimensions



## Description

### WATERPROOF REMOTE CONTROL GEAR BOX INSULATION CLASS I

- For lamp up to 2000W.
- Die cast aluminium alloy body.
- Cover made by printed aluminium sheet.
- Extractable plate made by steel coated with passivated zinc, for clamp of the complete control gear only for 1000 W.
- Control gear box:  
230V - 50Hz for 1000W lamps  
400V - 50 Hz for 2000W lamps.
- Riphasing capacitor.
- Anti-ageing gasket in silicon rubber.
- Line entry hole with cable-joint PG 16 and clamp 6 mm<sup>2</sup>.
- Output lamp hole cutted screw with cable-joint PG 16 and clamp 6 mm<sup>2</sup>.
- Coated with polyester powders in black and silver colour.



IP 65



## Accessories and spare parts

CODE	DESCRIPTION	WEIGHT (KG)	LAMP TYPE	VOLUME
60214	Clamps for CABLO SERVICE insulation CL I	0.40		0.0010
00878	Ignitor 4kV 230V 1000W	0.21	MT Osram and ST 1000W	
04644	Ignitor 1.2kV 230V for Philips lamp MT 1000W	0.08	MT 1000W Philips	
05146	Ignitor 1.2kV 400V for Philips lamp MT 2000W	0.10	MT 2000W Philips	
07130	5kV 400V for Osram lamp 2000W SUPER	0.35	Osram 2000W Super	
05145	Capacitor 60 µF 450V - plastic case	0.25		
05144	Capacitor 40 µF 450V - plastic case	0.25		
09568*	Capacitor 35 µF 280V for 1000W JM Philips - aluminium case	0.25		
09569*	Capacitor 50 µF 280V for 1000W - aluminium case	0.30		

\* Two capacitors each lamp.

## Products codes

## CABLO SERVICE - INSULATION CL I

CODE	LAMP TYPE	COLOUR	WEIGHT (KG)	PACKING (PCS)	VOLUME
60306 ●	CR M (JM) 1000W Philips	Black	11.02	1	0.0151
60406 ●	CR M (JM) 1000W Philips	Silver	11.02	1	0.0151
60304 ▼	CR M (JM) 1000W Osram - S (SAP) 1000W	Black	14.50	1	0.0151
60404 ▼	CR M (JM) 1000W Osram - S (SAP) 1000W	Silver	14.50	1	0.0151
60309 ■	CR M (JM) 1000W Osram - S (SAP) 1000W	Black	14.90	1	0.0151
	9,3A MASTER MHN-LA 1000W 230V/842 Philips				
	9,3A MASTER MHN-LA 1000W 230V/956 Philips				
	8,9A MASTER MHN-FC 1000W 230V/740 Philips				
	9,6A HQI-TS 1000W/D/S Osram				
	9,7A HQI-TS 1000W/NDL/S Osram				
60409 ■	CR M (JM) 1000W Osram - S (SAP) 1000W	Silver	14.90	1	0.0151
	9,3A MASTER MHN-LA 1000W 230V/842 Philips				
	9,3A MASTER MHN-LA 1000W 230V/956 Philips				
	8,9A MASTER MHN-FC 1000W 230V/740 Philips				
	9,6A HQI-TS 1000W/D/S Osram				
	9,7A HQI-TS 1000W/NDL/S Osram				
60303 ◆	CR M (JM) 2000W	Silver	20.50	1	0.0151
	11,3A MASTER MHN-SA 2000W 400V/856 Philips				
	11,3A MASTER MHN-SA 2000W 400V/956 Philips				
	11,8A MASTER MHN-SA 2000W 400V/956 Philips				
	10,3A MASTER MHN-LA 2000W 400V/956 Philips				
	10,3A MASTER MHN-LA 2000W 400V/842 Philips				
	10,11A MASTER MHN-FC 2000W 400V/740 Philips				
	11,3A HQI-TS 2000W/D/S 400V Osram				
	10,4A HQI-TS 2000W/N/L 400V Osram				
	10,1A HQI-T 2000W/D/I 400V E40 Osram				
60323 ◆	CR M (JM) 2000W	Silver	20.20	1	0.0151
	8,9A - HQI - T 2000W/N 400V Osram (Ignitor included)				
	9,6A - HQI - T 2000W/N/E/SUPER Osram (Ignitor to be ordered separately cod. 07130 - 5kV)				
	8,6A - HPI - T 2000W 400V Philips (Ignitor to be ordered separately cod. 05146 - 1.2kV)				
60324 ▲	CR M (JM) 2000W Philips	Silver	20.50	1	0.0151
	8,6A - HPI - T 2000W 400V Philips				
60147*	Empty gear box for 1000W	Black	3.56	1	0.0151
60447*	Empty gear box for 1000W	Silver	3.56	1	0.0151

\* Only for 1000W and for extra European countries

## POLE CABLO SERVICE - CL I

CODE	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	VOLUME
60391 ●	CR M (JM) 1000W Philips	11.00	1	0.0100
60390 ■	CR M (JM) 1000W Osram - S (SAP) 1000W	12.50	1	0.0100
60386 ◆	CR M (JM) 2000W	17.50	1	0.0124
	11,3A MASTER MHN-SA 2000W 400V/856 Philips			
	11,3A MASTER MHN-SA 2000W 400V/956 Philips			
	11,8A MASTER MHN-SB 2000W 400V/956 Philips			
	10,3A MASTER MHN-LA 2000W 400V/956 Philips			
	10,3A MASTER MHN-LA 2000W 400V/842 Philips			
	11,3A HQI-TS 2000W/D/S 400V Osram			
	10,7A HQI-TS 2000W/N/L 400V Osram			
	10,3A HQI-T 2000W/D/I 400V E40 Osram			
60385 ◆	CR M (JM) 2000W	17.50	1	0.0124
	8,8A - HQI - T 2000W/N 400V Osram (Accenditore incorporato)			
	HQI - T 2000W/N/E/SUPER Osram (Accenditore a parte - cod. 07130 - 5kV)			
	8,6A - HPI - T 2000W 400V Philips (Accenditore a parte - cod. 05146 - 1.2kV)			

● With impulse ignitor (1.2kV) - Max distance of floodlight m.35

▼ With super imposed ignitor max distance from floodlight m.1.5

■ Without ignitor - The fitting needs ignitor Cod. 00878 for MH 1000W - Osram and for all HPS 1000W-E40 lamps

▲ With pulse ignitor (1.2kV - 400V)

◆ Without ignitor

# Mach

The charm of light







The **MACH** floodlights range is characterized by its original and high-tech design, which has been created for both architectural and effect lighting, for external and internal use. MACH floodlights have been designed to enhance forms, beauty, emotions and colors, integrated with the most

advanced technology. A product that reflects the Italian culture and style, made by man for man. With this projector, the light interacts, enhances and accentuates images and volumes, creating exciting stage effects on the architectural structures.



Maybank Tower, Singapore,



Svetickhoveli Monastery, Georgia



Grand Hotel Aston Nizza, France

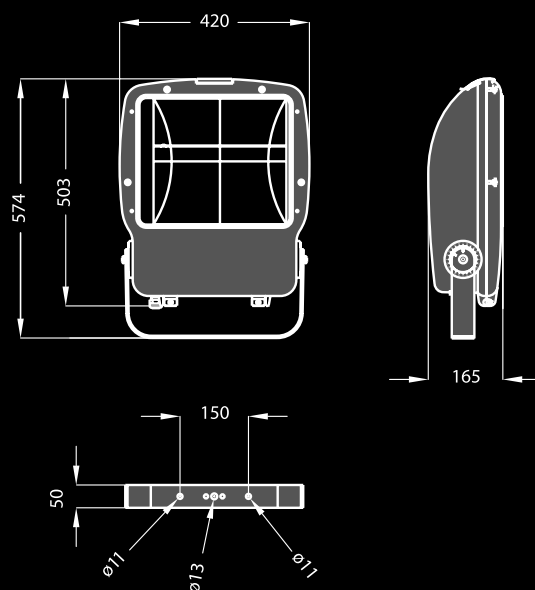


Olympic swimming pool Giulio Onesti Rome, Italy

Kolumna Castle, Poland

# MACH 5





## Light as innovation

The design of this elegant projector expresses the manufacturing philosophy of the whole MACH product range: modern design, latest technology, excellent photometric performances and flexibility in their usage.

The aesthetic values allow to use it in exhibition spaces, large atriums, architectural context, in selected sport venues and, in the urban version, represents a new and pleasing piece of street furniture.

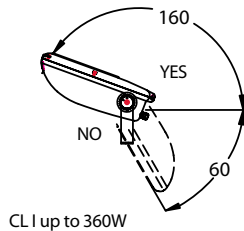
Thanks to its wide range of reflectors and

accessories, **MACH 5** floodlight represents also an excellent choice for urban lighting schemes. Its technical features include a double-valve design and a double closure system that ensure a water tight and very secure closure. The wide range of optics, symmetrical and asymmetrical lighting distribution, enhances the use of **MACH 5** in different contexts. The reflector in the asymmetrical optic version uses a 'special' high reflecting aluminium that is extraordinarily efficient.



# Technical features of Mach 5

## Aiming



## Description

### CHARACTERISTICS

- Body and glass frame manufactured in die cast aluminum with the primary alloy with a low copper content.
- Both body and frame undergo a treatment of phosphor degreasing, phosphor chromate treatment and receive a further special protective surface covering, before they are polyester powder coated in a silver color in order to guarantee a high corrosion resistance.
- Cover hinged in the body bottom and held with stainless steel small rings.
- Lamp-holder in porcelain 18A with anti-unscrewing device.
- Installation by means of a strong steel fork, galvanized and coated with polyester powders in metallized silver color.
- Double goniometric scale for vertical mounting.
- Gaskets in anti-aging silicon rubber.
- Tempered glass suitable for high temperature thermal shocks and crashes, mechanically fixed to the glass frame.
- The power supply cable accesses the device through a PG 13.5 cable gland (IP68).
- Protection degree against external impacts: IK 08.
- Pressure compensation filter in Teflon.
- Projector suitable for E40 metal halide lamps.
- Designed for indoor and outdoor applications and on inflammable surfaces.
- The floodlight can be mounted directly on pole (max. 60 mm diameter). The dedicated accessories AKRON 1 and AKRON 2 allow the single or double top pole mounting. For other methods of installation, please review the wide range of dedicated accessories in the table.
- All electrical components are certified with ENEC mark (230V, 50 Hz). The projector has been manufactured according to EN 60598/1 standards.

### INSULATION CLASS I

- Opening and access to optics and control gear with a single operation, by using hexagon stainless steel screws.
- Wiring board with electrical unit with improved power factor ( $\cos \varphi > 0.90$ ) in galvanized steel.
- The wiring board can be easily removed to make maintenance operations easier. It can be cut away from the supply line through non-reversible connectors with quick coupling.

### OPTICAL SYSTEM

- The **symmetrical** version is available with wide beam reflectors.  
Surface wind resistance = 0,17 m<sup>2</sup>, with vertical aiming of 70°.
- The **asymmetrical** optic is designed to obtain illumination values with best uniformity terms, in full compliance with national and international recommendations against light pollution.  
The projector is supplied with wide beam reflectors.  
With tilt of 15%  $ULOR_{inst} < 0,3 \%$   
To obtain  $ULOR_{inst} = 0$ , use the dedicated antiglare louvre.  
Surface wind resistance = 0,13 m<sup>2</sup>, with vertical aiming of 30°.

### LAMPS



MT (JM-T) E40 360W

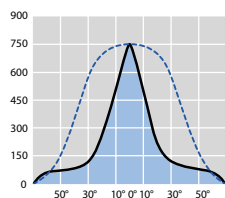
### COLOUR



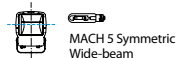
Silver



## Photometric data



MT (JM-T) 360W E40



Symmetric

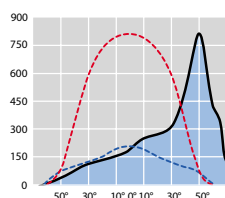
## Product codes

### MACH 5 SYMMETRIC - CL I

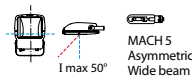
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>30518*</b>	Silver body - Wide beam E40	250W	9.45	1	40	0.0494
<b>50530*</b>	Empty gear plate for CLI max 400W E40					

\* For extra European countries only.

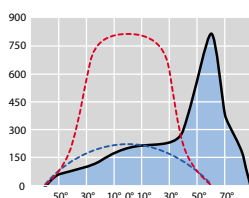
## Photometric data



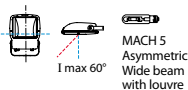
MT (JM-T) 360W E40



Asymmetric



MT (JM-T) 360W E40



## Product codes

### MACH 5 ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>30608*</b>	Silver body - Wide beam E40	250W	9.45	1	40	0.0494
<b>50530*</b>	Empty gear plate for CLI max 400W E40					

\* For extra European countries only.

## Accessories and spare parts



**60231**  
Protection grille in galvanized steel, coated Silver.



**60232**  
Protection louvre in galvanized steel and coated Silver.



**60234**  
Aluminium painted visor for asymmetric, coated in Silver.



**60218**  
Painted stainless steel visor for symmetric, coated in Silver.

### MACH 5

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	PACKING (PCS)	VOLUME
<b>11365</b>	Glass				
<b>60231</b>	Protection grille in galvanized and coated steel	0.60	Silver	1	0.0024
<b>60232</b>	Protection louvre in galvanized and coated steel	1.07	Silver	1	0.0090
<b>60234</b>	Aluminium painted visor for asymmetric	0.80	Silver	1	0.0133
<b>60218</b>	Painted stainless steel visor for symmetric	0.73	Silver	1	0.0010
<b>60239</b>	Extension arm length mm 750 in galvanized and coated steel	6.50	Silver	1	0.0415
<b>60235</b>	AKRON 1	0.50	Silver	1	0.0010
<b>60237</b>	AKRON 2	0.50	Silver	1	0.0010
<b>60238</b>	AKRON 3	1.65	Silver	1	0.0082
<b>60240</b>	AKRON 4 Ø 60 mm	13.50	Galvanized steel	1	0.0490
<b>60242</b>	AKRON 4 Ø 76 mm	14.00	Galvanized steel	1	0.0490
<b>60244</b>	AKRON 5 Ø 60 mm	9.50	Galvanized steel	1	0.0136
<b>60246</b>	AKRON 5 Ø 76 mm	10.00	Galvanized steel	1	0.0136
<b>50530*</b>	Empty gear plate - CLI - max 400W E40	0.40		1	0.0010
<b>25402</b>	Lamp MT 360W 4200K				

\* For extra European countries only.

## Akron: pole or wall system

The Akron installation modular system has been properly studied for MACH 5 floodlights and it is available in the following versions:



**AKRON 1** **60235**  
Single top pole mounting support ø mm 60, in die cast aluminium block painted Silver.



**AKRON 2** **60237**  
Double top pole mounting support ø mm 60, in die cast aluminium twin block painted in Silver.



**AKRON 3** **60238**  
Wall mounting single support for horizontal aiming, in die cast aluminium block painted in Silver.



**AKRON 4** **60242**  
Hot deep galvanized sheet steel accessory for max 4 floodlights, max power 400W for pole max ø 76 mm.



**AKRON 5** **60246**  
Hot deep galvanized sheet steel accessory for num. 2/4 extension arms code 60239 for ø 76 mm pole.

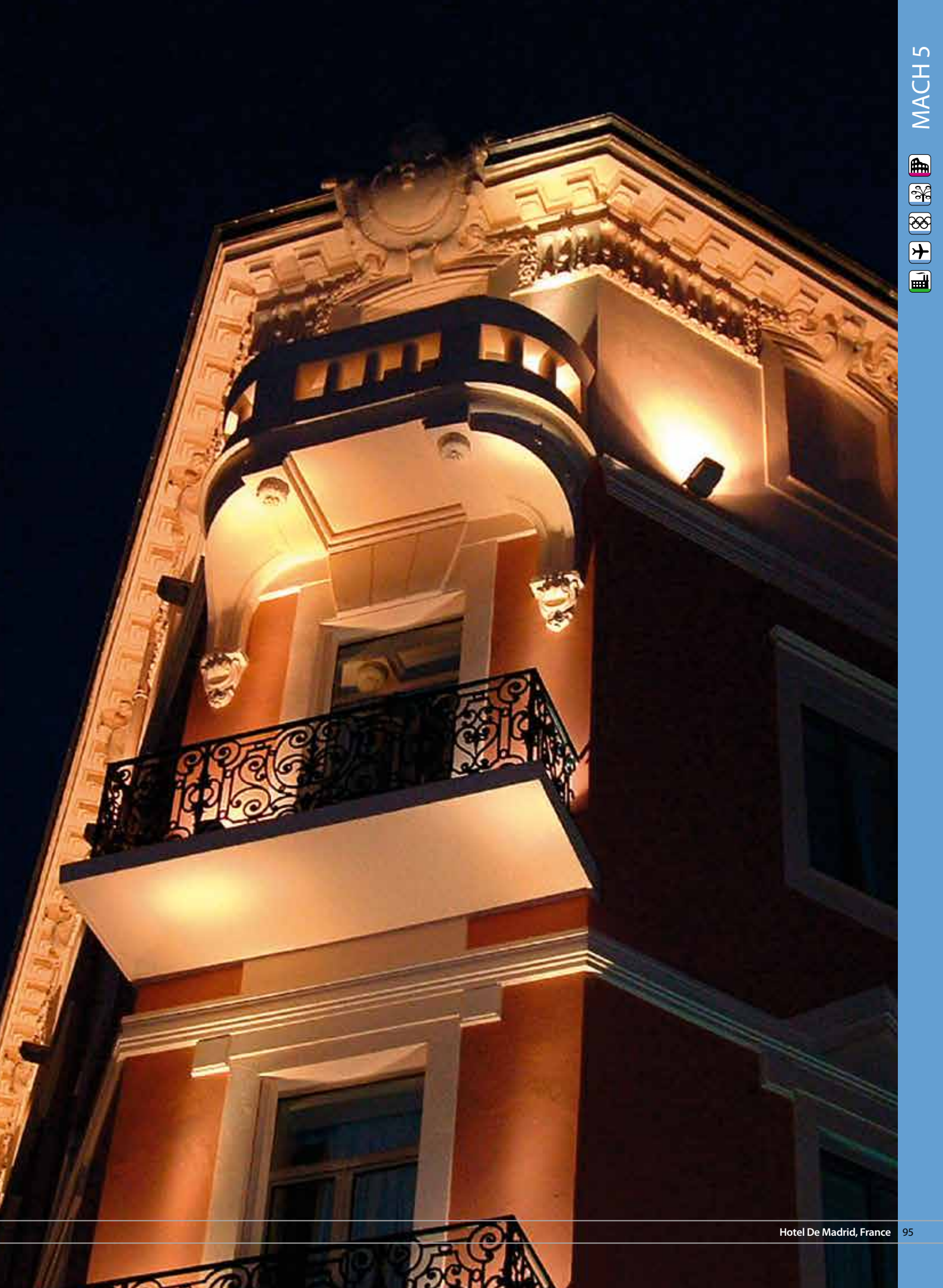


**60239**  
Extension arm length mm 750. Galvanized steel, coated in Silver colour.

**AKRON 4** **60240**  
Hot deep galvanized sheet steel accessory for max 4 floodlights, max power 400W for pole max ø 60 mm.

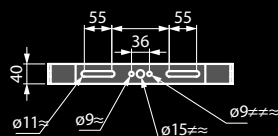
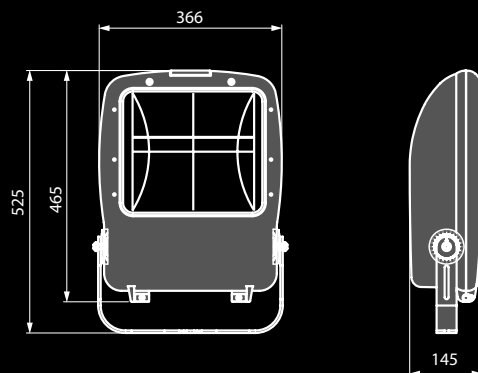
**AKRON 5** **60244**  
Hot deep galvanized sheet steel accessory for num. 2/4 extension arms code 60239 for ø 60 mm pole.





# MACH 4





## Light as show

This range of versatile floodlights embodies the design philosophy at the heart of the entire **MACH** series: aesthetics, technology, photometric performance and highly versatile use.

The aesthetic, particularly sophisticated, allows the use of this floodlight in all internal and external environments such as exhibition areas, halls, facades of important and historic buildings and elegant sports venues. The **MACH 4** series comes with elegant brackets for installation on all surfaces and the double goniometric

scale facilitates vertical adjustment of the device. The structure with double valve ensures excellent impermeability while the choice of double closure system with stainless steel clips or flat screws represent an additional aesthetic choice.

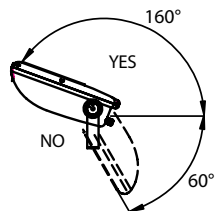
The field of application is also extended with a broad range of symmetrical and asymmetrical optics.

Careful selection of raw materials for the reflectors and the use of almost 100% pure aluminium ensures an exceptional standard of technical lighting.

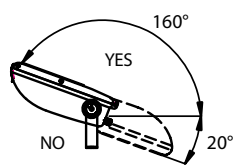


# Technical features of Mach 4

## Aiming



CL I - Symmetric



CL I - Asymmetric

## Description

### CHARACTERISTICS

- Body and glass frame manufactured in die cast aluminum with the primary alloy with a low copper content.
- Both body and frame undergo a treatment of phosphor degreasing, phosphor chromate treatment and receive a further special protective surface covering, before they are polyester powder coated in a silver color in order to guarantee a high corrosion resistance.
- Cover hinged in the body bottom and held with stainless steel small rings.
- Lamp-holder in porcelain 18A with anti-unscrewing device.
- Installation by means of a strong steel fork, galvanized and coated with polyester powders in metallized silver color.
- Double goniometric scale for vertical mounting.
- Gaskets in anti-aging silicon rubber.
- Tempered glass suitable for high temperature thermal shocks and crashes, mechanically fixed to the glass-holding ring.
- The power supply cable accesses the device through a M20 cable gland (IP68).
- Protection degree against external impacts: IK 08.
- Pressure compensation filter in Teflon.
- Projector suitable for E40 metal halide lamps.
- Designed for indoor and outdoor applications and on inflammable surfaces.
- The floodlight can be mounted directly on pole (max. 60 mm diameter). The dedicated accessories AKRON 1 and AKRON 2 allow the single or double top pole mounting. For other methods of installation, please review the wide range of dedicated accessories in the table.
- All electrical components are certified with ENEC mark (230V, 50 Hz). The projector has been manufactured according to EN 60598/1 standards.
- Hot Restrike version available in versions with MD (JM) lamp - FC2 250W for outdoor applications and ambient temperature max of 30°. For indoor applications, please contact our technical department.

### INSULATION CLASS I

- Opening and access to optics and control gear with a single operation, by using hexagon stainless steel screws.
- Wiring board with electrical unit with improved power factor ( $\cos \varphi > 0.90$ ) in galvanized steel.
- The wiring board can be easily removed to make maintenance operations easier. It can be cut away from the supply line through non-reversible connectors with quick coupling.

### OPTICAL SYSTEM

- The **symmetrical** version with wide beam reflector.  
Surface wind resistance = 0,14 m<sup>2</sup>, with vertical aiming of 70°.
- The **asymmetrical** optic is designed to obtain illumination values with best uniformity terms, in full compliance with national and international recommendations against light pollution.  
The projector is supplied with wide beam reflectors.  
With tilt of 15%  $ULOR_{inst} < 0,3 \%$   
To obtain  $ULOR_{inst} = 0$ , use the dedicated antiglare louvre.  
Surface wind resistance = 0,12 m<sup>2</sup>, with vertical aiming of 30°.

### LAMPS



MT (JM-T) E40 230-360W

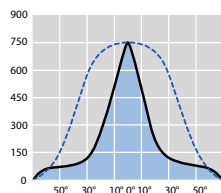
### COLOUR



Silver



## Photometric data



MT (JM-T) 360W E 40



Symmetric

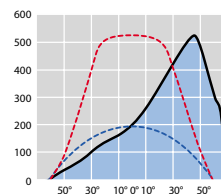
## Product codes

### MACH 4 SYMMETRIC - CL I

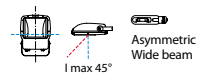
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>32042*</b>	Silver body - Wide beam E40	250W	7.26	1	40	0.0364
<b>32001 EASY CRL</b>	Silver body - Wide beam E40	230W	7.26	1	40	0.0364
<b>32002 EASY CRL</b>	Silver body - Wide beam E40	360W	7.26	1	40	0.0364
<b>33030*</b>	Empty gear plate for CLI		0.35	1		

\* For extra European countries only.

## Photometric data



MT (JM-T) 230W E 40



Asymmetric

## Product codes

### MACH 4 ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>32142*</b>	Silver body - Wide beam E40	250W	7.26	1	40	0.0364
<b>32116 EASY CRL</b>	Silver body - Wide beam E40	230W	7.26	1	40	0.0364
<b>32117 EASY CRL</b>	Silver body - Wide beam E40	360W	7.26	1	40	0.0364
<b>33030*</b>	Empty gear plate for CLI		0.35	1		

\* For extra European countries only.

## Accessories and spare parts



**60468**  
Protection grille in galvanized steel, coated Silver.



**60464**  
Protection louvre in galvanized steel and coated Silver.



**60460**  
Aluminium painted visor for asymmetric, coated in Silver.



**60462**  
Painted stainless steel visor for symmetric, coated in Silver.

### MACH 4

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	PACKING (PCS)	VOLUME
<b>14047</b>	Glass				
<b>60468</b>	Protection grille in galvanized and coated steel	0.40	Silver	1	0.0017
<b>60464</b>	Protection louvre in galvanized and coated steel	0.85	Silver	1	0.0056
<b>60460</b>	Aluminium painted visor for asymmetric	0.28	Silver	1	0.0050
<b>60462</b>	Painted stainless steel visor for symmetric	0.35	Silver	1	0.0060
<b>60239</b>	Extension arm length mm 750 in galvanized and coated steel	6.50	Silver	1	0.0415
<b>60235</b>	AKRON 1	0.50	Silver	1	0.0010
<b>60237</b>	AKRON 2	0.50	Silver	1	0.0010
<b>60238</b>	AKRON 3	1.65	Silver	1	0.0082
<b>60240</b>	AKRON 4 Ø 60 mm	13.50	Galvanized steel	1	0.0460
<b>60242</b>	AKRON 4 Ø 76 mm	14.00	Galvanized steel	1	0.0460
<b>60244</b>	AKRON 5 Ø 60 mm	9.50	Galvanized steel	1	0.0136
<b>60246</b>	AKRON 5 Ø 76 mm	10.00	Galvanized steel	1	0.0136
<b>33030*</b>	Empty gear plate for CLI	0.35		1	
<b>25401</b>	Lamp MT 230W 4200K				
<b>25402</b>	Lamp MT 360W 4200K				

\* For extra European countries only.

## Akron: pole or wall system

The Akron installation modular system has been properly studied for MACH 4 floodlights and it is available in the following versions:



**AKRON 1** **60235**  
Single top pole mounting support ø mm 60, in die cast aluminium block painted Silver.



**AKRON 2** **60237**  
Double top pole mounting support ø mm 60, in die cast aluminium twin block painted in Silver.



**AKRON 3** **60238**  
Wall mounting single support for horizontal aiming, in die cast aluminium block painted in Silver.



**AKRON 4** **60242**  
Hot deep galvanized sheet steel accessory for max 4 floodlights, max power 400W for pole max ø 76 mm.



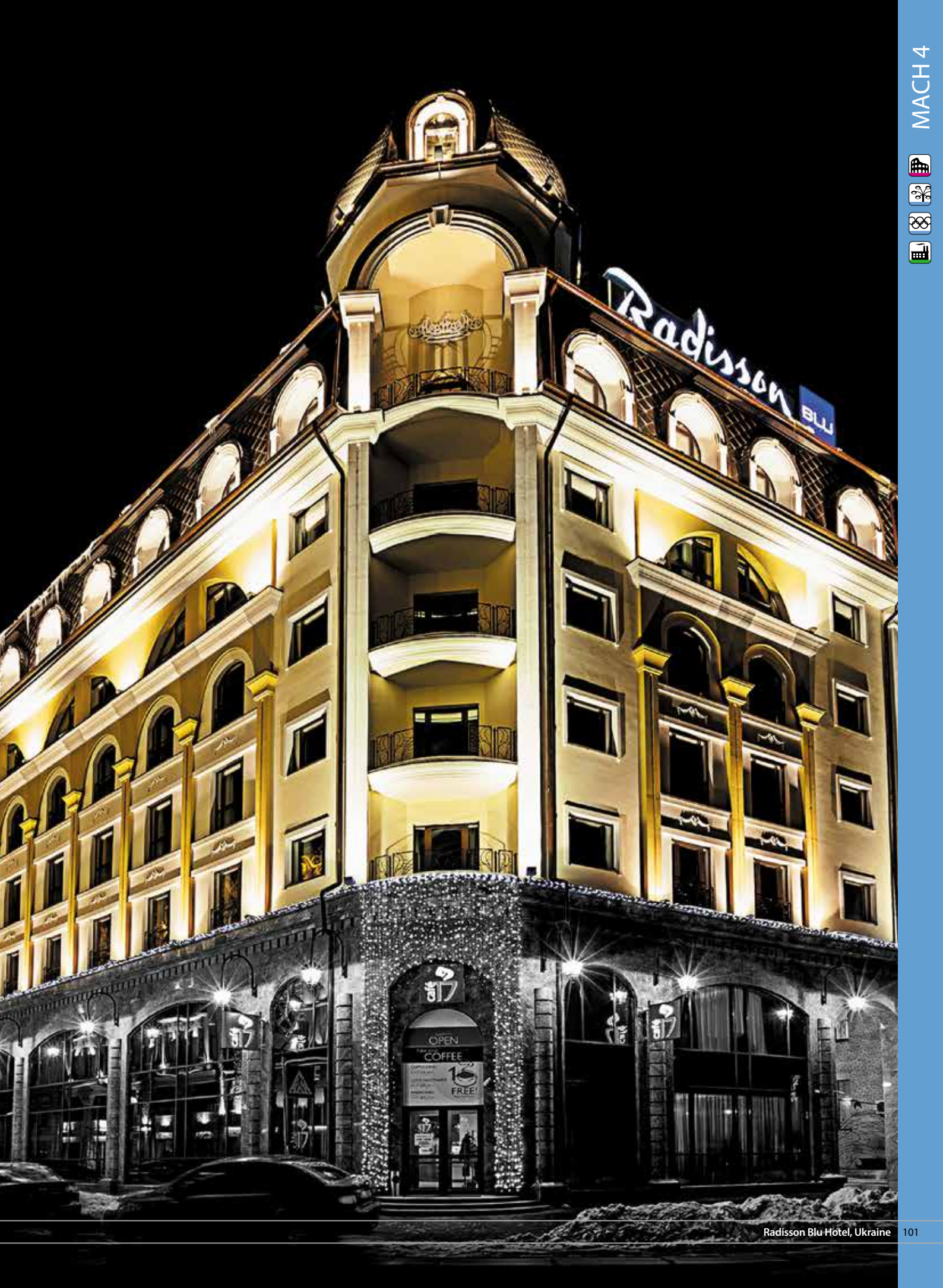
**AKRON 5** **60246**  
Hot deep galvanized sheet steel accessory for num. 2/4 extension arms code 60239 for ø 76 mm pole.



**60239**  
Extension arm length mm 750. Galvanized steel, coated in Silver colour.

**AKRON 4** **60240**  
Hot deep galvanized sheet steel accessory for max 4 floodlights, max power 400W for pole max ø 60 mm.

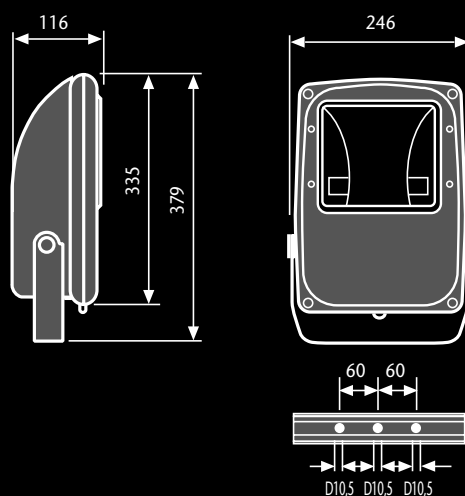
**AKRON 5** **60244**  
Hot deep galvanized sheet steel accessory for num. 2/4 extension arms code 60239 for ø 60 mm pole.



# MACH 3



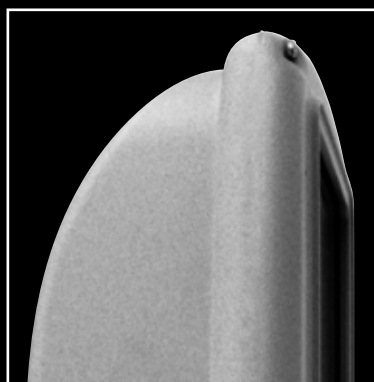




## Light as star

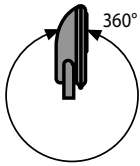
The **MACH 3** floodlight has been designed to offer the ultimate in technical prowess, especially with regard to high-performing sources of light. The floodlight is suitable for metal halide lamps of 150W RX7s.

These luminous sources have excellent lighting characteristics as regards to constancy, colours and luminous efficiency during the entire life of the lamp.



# Technical features of Mach 3

## Aiming



## Description

### CHARACTERISTICS

- Body in die cast aluminium.
- Coated with polyester powders in silver colour.
- Reflector in high pure aluminium, polished and oxidized.
- Tempered front glass, sealed to the cover.
- Maximum surface wind resistance: 0,075 m<sup>2</sup>.
- Gaskets in anti-aging silicon rubber.
- Protection degree against external impacts: IK 08.
- Bracket made of galvanized painted steel with index for vertical orientation.
- The control gear plate is made out of galvanized steel sheet. In insulation class I, the floodlight is complete with a protection fuse.
- All electrical components are certified with ENEC mark (230V, 50 Hz). The projector has been manufactured according to EN 60598/1 standards.

### OPTICAL SYSTEM

- The **symmetrical** version is supplied with wide-beam reflectors.
- The **asymmetrical** optic is designed to obtain illumination values with best uniformity terms, in full compliance with national and international recommendations against light pollution. The projector is supplied with wide beam reflectors.

### LAMPS



MD (JM-TS) 150W RX7s

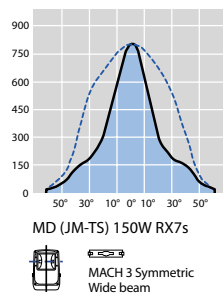
### COLOURS



Silver





## Photometric data



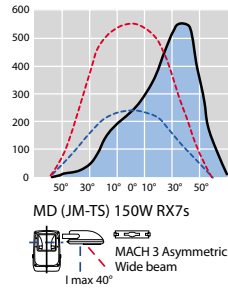
Symmetric

## Product codes

### MACH 3 SYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
50904	 NIK Silver Body - Wide beam - RX7s	MD (JM-TS) 150W 3000K	5.60	1	104	0.0154
52601	 NIK Silver Body - Wide beam - RX7s	MD (JM-TS) 150W 4200K	5.60	1	104	0.0154

## Photometric data



Asymmetric

## Product codes

### MACH 3 ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>50944</b>	<b>LEM</b> Silver Body - Wide beam - RX7s	MD (JM-TS) 150W 3000K	5.60	1	104	0.0154
<b>52604</b>	<b>LEM</b> Silver Body - Wide beam - RX7s	MD (JM-TS) 150W 4200K	5.60	1	104	0.0154



## Accessories and spare parts



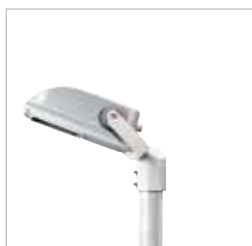
**60110 - 60101 - 60099 - 60108**  
Bracket. Ideal for lighting shopwindows.  
Galvanized steel and coated.



**60255**  
Steel protection grille.  
Galvanized steel, coated in black colour.



**60256**  
Protection louvre. Stainless steel coated in black colour.



**60266-60267-60268-60269**  
Stainless louvre for asymmetric.



**60253-60254-60264-60265**  
Stainless louvre for symmetric.



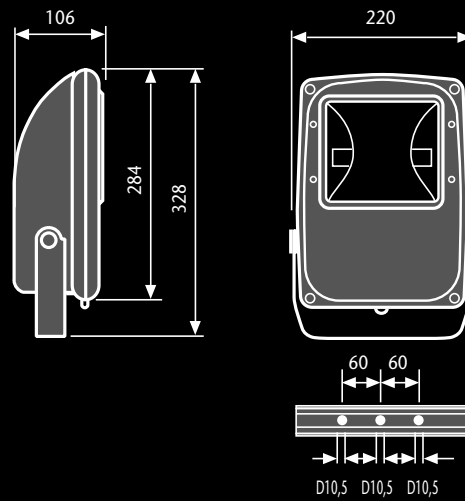
**60280**  
Pole support for 1 floodlight  
Ø pole 60 mm.

### MACH 3

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	PACKING (PCS)	VOLUME
<b>60101</b>	Bracket 600 mm.	2.70	Silver	1	
<b>60254</b>	Anti-glare louvre for symmetric	0.28	Silver	1	0.0018
<b>60267</b>	Anti-glare louvre for asymmetric	0.25	Silver	1	0.0023
<b>08129</b>	Glass	0.34			
<b>09096</b>	Ceramic discharge tube lamp RX7s MD 150W 3000K				
<b>09098</b>	Ceramic discharge tube lamp RX7s MD 150W 4200K				
	<b>WALL SUPPORTS</b>				
<b>60271</b>	Complete of floodlight fixing bracket	0.92	Silver		
	<b>POLE SUPPORTS</b>				
<b>60280</b>	For 1 floodlight Ø pole 60 mm.	0.45	Silver		
<b>60281</b>	For 2 floodlights Ø pole 60 mm.	2.20	Silver		
<b>60282</b>	For 3 floodlights Ø pole 60 mm.	2.65	Silver		

# MACH 2





## Light as emotion

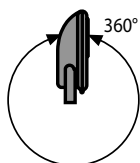
The **MACH 2** floodlight stands out for its versatile, cutting edge structure. It is addressed to a whole range of uses, especially for indoor applications, thanks to its

exceptional design, size and compactness. The floodlight is suitable for metal halide lamps RX7s lampholder, of 70W.



# Technical features of Mach 2

## Aiming



## Description

### CHARACTERISTICS

- Body in die cast aluminium.
- Coated with polyester powders in silver colour.
- Reflector in high pure aluminium, polished and oxidized.
- Tempered front glass, sealed to the cover.
- Maximum surface wind resistance: 0,056 m<sup>2</sup>.
- Gaskets in anti-aging silicon rubber.
- Bracket made of galvanized painted steel with index for vertical orientation.
- The control gear plate is made out of galvanized steel sheet.
- All electrical components are certified with ENEC mark (230V, 50 Hz). The projector has been manufactured according to EN 60598/1 standards.

### OPTICAL SYSTEM

- The **symmetrical** version can accommodate wide beam reflector.
- The **asymmetrical** optics improve considerably the projector's performance and in the same way reduce the glare. The projector is supplied with wide beam reflectors.

### LAMPS



MD (JM-TS) 70W RX7s

### COLOURS

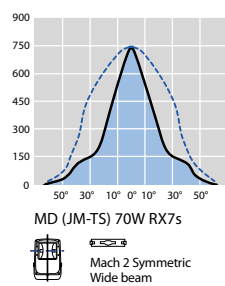


Silver





## Photometric data



Symmetric

## Product codes

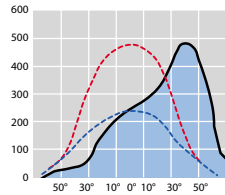
### MACH 2 SYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
50924	<b>MAX</b> Silver Body - Wide beam - RX7s	MD (JM-TS) 70W 3000K	4.10	1	140	0.0114
52501	<b>MAX</b> Silver Body - Wide beam - RX7s	MD (JM-TS) 70W 4200K	4.10	1	140	0.0114

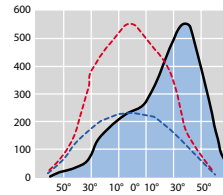
## Photometric data



Asymmetric



MD (JM-TS) 70W RX7s  
Mach 2 Asymmetric  
Wide beam  
I max 40°



SD (SAP-TS) 70W RX7s  
Mach 2 Asymmetric  
Wide beam  
I max 40°

## Product codes

### MACH 2 ASYMMETRIC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
<b>50954</b>	<b>ZAR</b> Silver Body - Wide beam - RX7s	MD (JM-TS) 70W 3000K	4.10	1	140	0.0114
<b>52504</b>	<b>ZAR</b> Silver Body - Wide beam - RX7s	MD (JM-TS) 70W 4200K	4.10	1	140	0.0114



## Accessories and spare parts



**60101**  
Bracket. Ideal for lighting shopwindows.  
Galvanized steel and coated.



**60222**  
Stainless louvre for asymmetric.



**60226**  
Stainless louvre for symmetric.



**60261**  
Wall support, complete of floodlight fixing bracket.



**60280**  
Pole support for 1 floodlight  
Ø pole 60 mm.



**60281**  
Pole support for 2 floodlights  
Ø pole 60 mm.



**60282**  
Pole support for 3 floodlights  
Ø pole 60 mm.

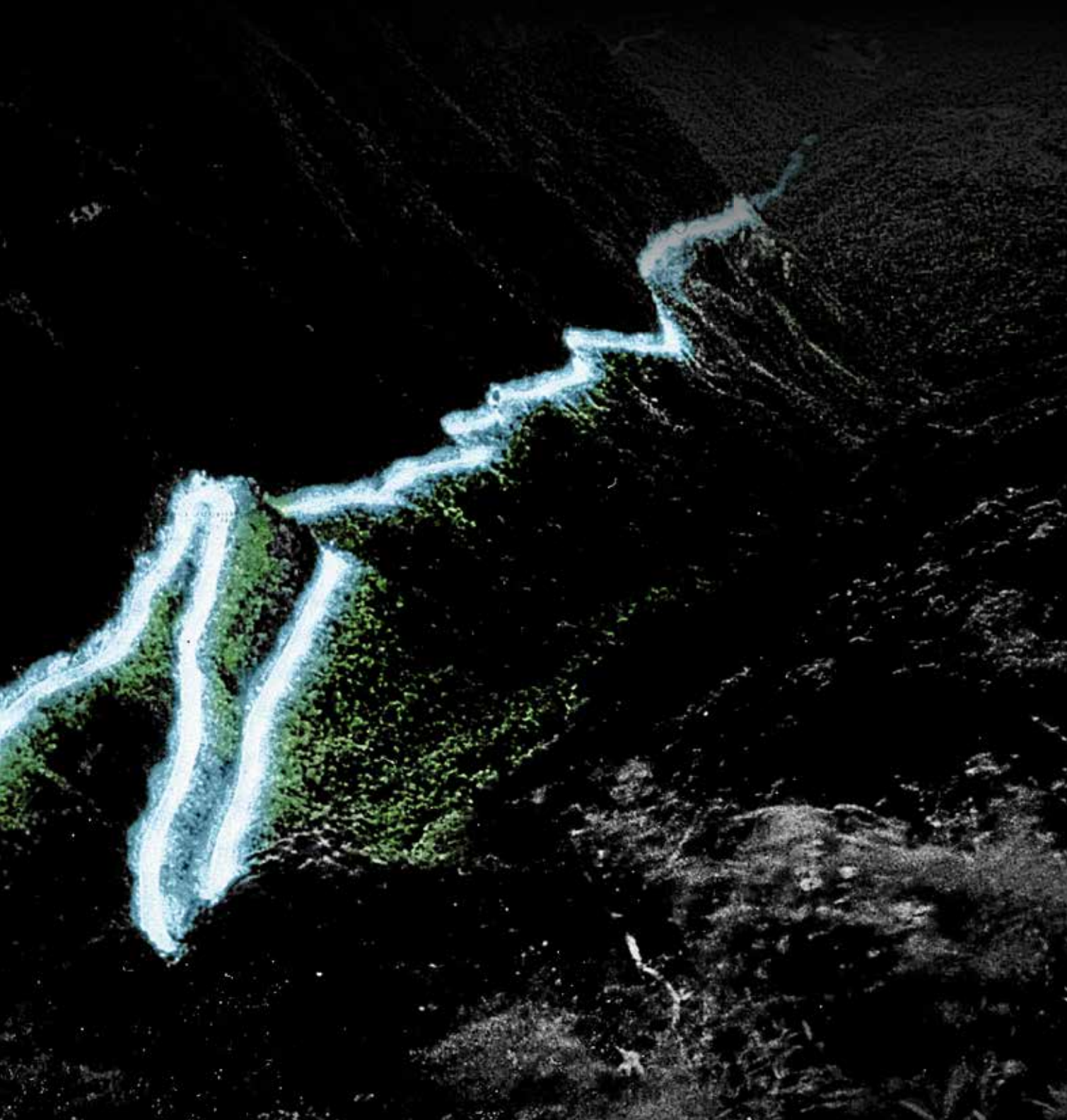
### MACH 2

CODE	DESCRIPTION	WEIGHT (KG)	COLOUR	PACKING (PCS)	VOLUME
<b>60101</b>	Bracket 600 mm.	2.70	Silver	1	
<b>60222</b>	Anti-glare louvre for symmetric	0.24	Silver	1	0.0013
<b>60226</b>	Anti-glare louvre for asymmetric	0.24	Silver	1	0.0016
<b>08107</b>	Glass	0.25			
<b>09095</b>	Ceramic discharge tube lamp RX7s MD 70W 3000K				
<b>09097</b>	Ceramic discharge tube lamp RX7s MD 70W 4200K				
<b>WALL SUPPORTS</b>					
<b>60261</b>	Complete of floodlight fixing bracket	0.88	Silver		
<b>POLE SUPPORTS</b>					
<b>60280</b>	For 1 floodlight Ø pole 60 mm.	0.45	Silver		
<b>60281</b>	For 2 floodlights Ø pole 60 mm.	2.20	Silver		
<b>60282</b>	For 3 floodlights Ø pole 60 mm.	2.65	Silver		

# Street lighting

The design makes its way





The public lighting system is experiencing an enormous technological revolution, mainly aimed to improve the energy efficiency, with a clear reduction of its consumption, in order to promote, develop and use renewable energies and advanced, environmental friendly technologies.

The avantgarde technical processing that distinguishes Fael street lighting systems, comes in different types of equipments, designed to meet every need in any kind of installation. The huge range includes the latest generation products, with traditional lamps in bipower version, in full respect of the environment.



Colleoni Center, Agrade Brianza, Italy



Various ways of communication in Calabria, Italy



"Autostrade per l'Italia" - Main Highways in Italy



Recife, Brazil



Waterfront San Marco in Lamis, Puglia, Italy

"Autostrade per l'Italia" - Main Highways in Italy

ITINERA





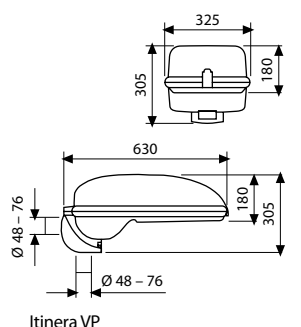
## Designed to light up the world

The state-of-the-art framework is designed to light up roads, motorways, residential areas and open spaces.

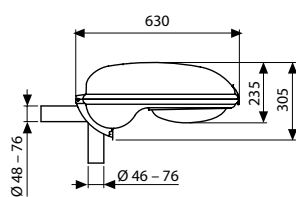
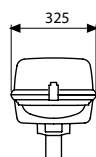


# Technical features of Itinera

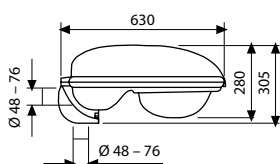
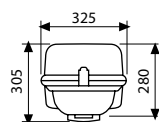
## Dimensions



Itinera VP



Itinera VB



Itinera PC

## Description

### CHARACTERISTICS

- The housing (body and top cover) is manufactured in die-cast aluminium alloy.
- Coated with polyester powders in Silver colour. Twin colours available on request.
- Reflector is made of high purity (99,8%) one piece pressed electro-polished anodised aluminium.
- Post top entry installation,  $\varnothing$  max 76 mm, tilt  $0 + 5^\circ + 10^\circ + 15^\circ$ .
- Side entry installation,  $\varnothing$  max 76 mm, tilt  $0 + 5^\circ$ .
- In case of side entry installation with tilt of  $10^\circ$  and  $15^\circ$ , an inclination luminaire accessory limiting the tilt at  $0^\circ$ , is included.
- Gaskets are made of anti-age weather resistant silicon rubber.
- The connection pole compartment closure is made in plastic material of high resistance.
- For Class II electrical, the luminaire is equipped with a safety switch that disconnects the main power supply on opening the luminaire in maintenance.
- Porcelain lamp holder with horizontal and vertical mechanical focusing device.
- Adjustable reflector in order to optimize the optical performance and light distribution.
- Connection to power supply via a cable gland PG 13,5 IP68.
- Protection degree against external impacts: IK 08.
- Pressure compensation filter in Teflon.
- The gear and lamp compartment can be easily accessed by opening the fore stainless steel hook.
- For quick and safety inspection the luminaire is supplied with anti-tipping cover device.
- Gear plates:
  - for CL I of a galvanized steel sheet.
  - for CL II injection molded with special thermoplastic material.
- Both gear plates are completed with lamp holder and/or electrical connectors for fast replacement and easy maintenance.
- The luminaire can be provided with a fuse (optional).
- Electrical components are certified with ENEC Mark for power supply of 230V 50Hz.
- European Standards: EN 60598/1.

### ITINERA VP

- Output ratio: cut-off.
- Optic group with thermal toughened flat glass.
- Wind exposed surface =  $0,0965 \text{ m}^2$ .





### ITINERA VB

- Output ratio: semi cut-off.
- Optic group with thermal toughened curved glass.
- Wind exposed surface =  $0,1080 \text{ m}^2$ .

### ITINERA PC

- Output ratio: semi cut-off.
- The bowl is in high quality transparent polycarbonate, anti UV.
- Wind exposed surface =  $0,1165 \text{ m}^2$ .

### LAMPS

	SE (SAP-E) - E27 70W - E40 100-150-250W
	ST (SAP-T) - E27 70W - E40 100-150-250-400W
	MT (JM-T) - E27 70W - E40 100-150-250-400W
	ME (JM-E) - E27 70W - E40 100-150-250W

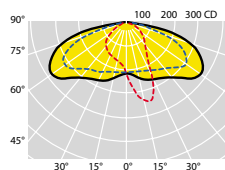




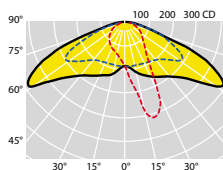
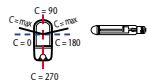
## Photometric data



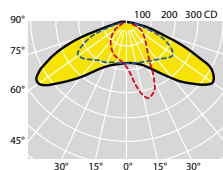
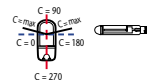
Itinera VP



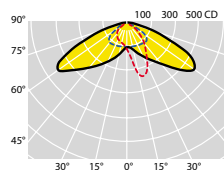
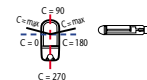
ST (SAP-T) 400W E40  
POS. FIX-3-A C max=15°



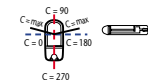
ST (SAP-T) 250W E40  
POS. A-3-A C max=20°



ST (SAP-T) 150W E40  
POS. B-3-D C max=25°



ST (SAP-T) 100W E40  
POS. B-3-D C max=20°



## Product codes

### ITINERA VP - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
40700*		S (SAP) 70W	9.75	1	24	0.0728
40701		M-S (JM-SAP) 100W	10.00	1	24	0.0728
40702		M-S (JM-SAP) 150W	10.90	1	24	0.0728
40703**		M-S (JM-SAP) 250W	12.00	1	24	0.0728
40704**		MT (JM-T) - ST (SAP-T) 400W	13.30	1	24	0.0728
40705		M (JM) 70W	9.75	1	24	0.0728
40747		ST (SAP-T) 600W	16.20	1	24	0.0728

\* With ignitor

\*\* Suitable for MH lamps Osram type

### ITINERA VP - CL II

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
40750*		S (SAP) 70W	9.65	1	24	0.0728
40751		M-S (JM-SAP) 100W	9.90	1	24	0.0728
40752		M-S (JM-SAP) 150W	10.80	1	24	0.0728
40753**		M-S (JM-SAP) 250W	11.90	1	24	0.0728
40754**		MT (JM-T) - ST (SAP-T) 400W	13.30	1	24	0.0728
40755		M (JM) 70W	9.65	1	24	0.0728
40756		MT (JM-T) 250W Philips	10.70	1	24	0.0728

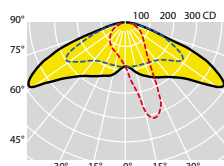
\* With ignitor

\*\* Suitable for MH lamps Osram type

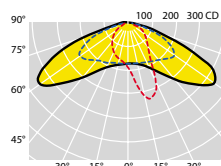
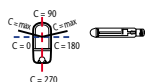
## Photometric data



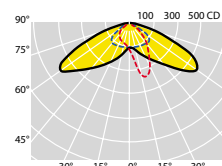
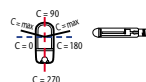
Itinera VB



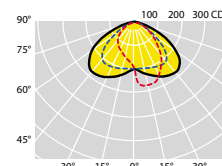
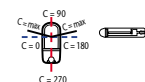
ST (SAP-T) 250W E40  
POS. A-3-A C max=20°



ST (SAP-T) 150W E40  
POS. B-3-D C max=25°



ST (SAP-T) 100W E40  
POS. B-3-D C max=20°



ME (JM-E) 150W E40  
POS. B-3-D C max=25°



## Product codes

### ITINERA VB - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
41800*		S (SAP) 70W	10.25	1	24	0.0728
41801		M-S (JM-SAP) 100W	10.50	1	24	0.0728
41802		M-S (JM-SAP) 150W	11.40	1	24	0.0728
41803**		M-S (JM-SAP) 250W	12.50	1	24	0.0728
41805		M (JM) 70W	10.25	1	24	0.0728

\* With ignitor

\*\* Suitable for MH lamps Osram type

### ITINERA VB - CL II

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
41850*		S (SAP) 70W	10.15	1	24	0.0728
41851		M-S (JM-SAP) 100W	10.40	1	24	0.0728
41852		M-S (JM-SAP) 150W	11.30	1	24	0.0728
41853**		M-S (JM-SAP) 250W	12.40	1	24	0.0728
41855		M (JM) 70W	10.15	1	24	0.0728

\* With ignitor

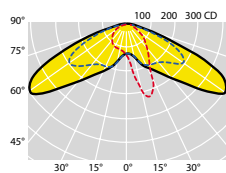
\*\* Suitable for MH lamps Osram type



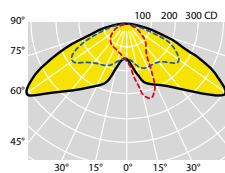
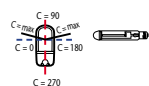
## Photometric data



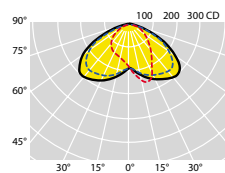
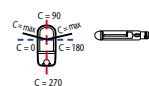
Itinera PC



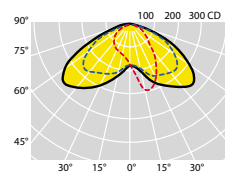
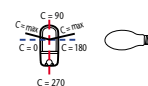
ST (SAP-T) 250W E40  
POS. A-3-A C max=20°



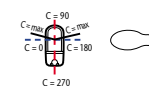
ST (SAP-T) 150W E40  
POS. B-3-D C max=25°



SE (SAP-E) 150W E40  
POS. B-3-D C max=20°



SE (SAP-E) 100W E40  
POS. D-3-D C max=20°



## Product codes

### ITINERA PC - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
40720*		S (SAP) 70W	9.43	1	24	0.0728
40721		M-S (JM-SAP) 100W	9.68	1	24	0.0728
40722		M-S (JM-SAP) 150W	10.58	1	24	0.0728
40723		S (SAP) 250W	11.68	1	24	0.0728
40725		M (JM) 70W	9.43	1	24	0.0728

\* With ignitor

### ITINERA PC - CL II

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
40780*		S (SAP) 70W	9.33	1	24	0.0728
40781		M-S (JM-SAP) 100W	9.58	1	24	0.0728
40782		M-S (JM-SAP) 150W	10.48	1	24	0.0728
40783		S (SAP) 250W	11.58	1	24	0.0728
40785		M (JM) 70W	9.33	1	24	0.0728

\* With ignitor

## Accessories and spare parts



**60026**  
Wall bracket electro welded hot-dip galvanized



**60030**  
Modular wall bracket galvanized



**60063**  
Corner bracket electro welded galvanized



**60031**  
Modular corner bracket galvanized

CODE	DESCRIPTION	WEIGHT (KG)	PACKING (PCS)	COLOURS	VOLUME
<b>09719</b>	Flat glass - Itinera VP	0.77			
<b>10783</b>	Curved glass - Itinera VB	1.05			
<b>09727</b>	Polycarbonate bowl - Itinera PC	0.45			
<b>60026</b>	Wall bracket electro welded hot-dip galvanized Ø 60 mm	1.27	6	Hot galvanized	0.00257
<b>60030</b>	Modular wall bracket galvanized Ø 60 mm	1.05	4	Hot galvanized	0.00160
<b>60063</b>	Corner bracket electro welded galvanized Ø 60 mm	2.60	4	Hot galvanized	0.00835
<b>60031</b>	Modular corner bracket galvanized Ø 60 mm	1.90	3	Hot galvanized	0.00210
<b>16100</b>	Osram lamp MT 70W E27 3000K				
<b>04413</b>	Osram lamp ST 70W E27 - Super				
<b>02676</b>	Osram lamp ST 100W E40 - Super				
<b>12337</b>	Osram lamp ST 150W E40 - Super				
<b>12051</b>	Osram lamp ST 250W E40 - Super				
<b>12874</b>	Osram lamp ST 400W E40 - Super				
<b>12401</b>	Venture lamp ST 70W E27 - Super				
<b>12402</b>	Venture lamp ST 100W E40 - Super				
<b>12403</b>	Venture lamp ST 150W E40 - Super				
<b>12404</b>	Venture lamp ST 250W E40 - Super				
<b>12405</b>	Venture lamp ST 400W E40 - Super				

## Pole and wall accessories

The URBANA series of pole- and wall mounted arms support the luminaires with elegance and lightness, ensuring an installation strictly according to regional legislation on public lighting.

### Description



#### URBANA DOUBLE WAVE

- 2 arms - length 1500 mm
- Pole hooking Ø 60 mm
- Pole fitting with 6 Inox screws M8
- Material Fe S235 JR
- Hot zinc plated - thickness min. 55 mm
- To be used with 2 adaptors

#### URBANA SINGLE WAVE

- 1 arm - length 1500 mm
- Pole hooking Ø 60 mm
- Pole fitting with 6 Inox screws M8
- Material Fe S235 JR
- Hot zinc plated - thickness min. 55 mm
- To be used with 1 adaptor



#### URBANA DOUBLE BEND

- 2 arms - length 1500 mm
- Pole hooking Ø 60 mm
- Pole fitting with 6 Inox screws M8
- Material Fe S235 JR
- Hot zinc plated - thickness min. 55 mm
- To be used with 2 adaptors

#### URBANA SINGLE BEND

- 1 arm - length 1500 mm
- Pole hooking Ø 60 mm
- Pole fitting with 6 Inox screws M8
- Material Fe S235 JR
- Hot zinc plated - thickness min. 55 mm
- To be used with 1 adaptor



#### URBANA WALL WAVE

- 1 arm - length 800 mm
- Wall mounting
- Material Fe S235 JR
- Hot zinc plated - thickness min. 55 mm
- To be used with adaptor

#### URBANA WALL BEND

- 1 arm - length 800 mm
- Wall mounting
- Material Fe S235 JR
- Hot zinc plated - thickness min. 55 mm
- To be used with adaptor

SMART







## Less power great performances

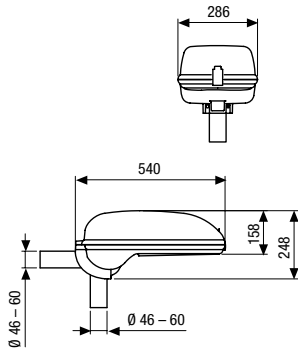
**SMART** is the answer to the increasing demand for both low energy consumption and high efficiency. Based on many years' experience in road light-

ing, it offers extraordinary performances. An indisputably pure design and impeccable construction: the perfect combination to ensure the best on the market.

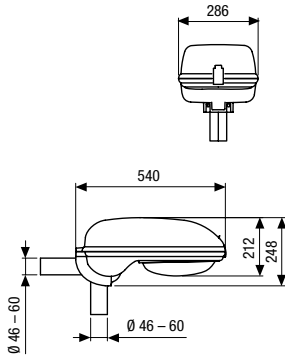


# Technical features of Smart

## Dimensions



Smart VP



Smart VB

## Description

### CHARACTERISTICS

- The housing (body and top cover) is manufactured in die-cast aluminium alloy.
- Coated with polyester powders in Silver colour. Twin colours available on request.
- Reflector is made of high purity (99,8%) one piece pressed electro-polished anodized aluminium.
- Post top entry installation,  $\varnothing 46 \div 60$ mm.
- Post top entry installation with accessory,  $\varnothing 72 \div 76$  mm.
- Post top tilt angles can be in 3 positions:  $0^\circ +5^\circ +10^\circ$ .
- Side entry installation,  $\varnothing 46 \div 60$ mm., the luminaire gets inclination of the arm.
- In case of side entry installation with tilt of  $10^\circ$  and  $15^\circ$ , an inclination luminaire accessory limiting the tilt at  $0^\circ$ , is included.
- Gaskets in anti-aging and weather resistant silicon rubber.
- For Class II electrical, the luminaire is equipped with a safety switch that disconnects the main power supply on opening the luminaire in maintenance.
- Porcelain lamp holder with horizontal and vertical mechanical focusing device.
- Adjustable reflector in order to optimize the optical performance and light distribution
- Connection to power supply via a cable gland PG 13,5 - IP 68
- Protection degree against external impacts: IK 08.
- Pressure compensation filter in Teflon.
- Gear plates:
  - for CL I of a galvanized steel sheet.
  - for CL II injection molded with special thermoplastic material.
- Both gear plates are completed with lamp holder and/or electrical connectors for fast replacement and easy maintenance.
- The luminaire can be provided with a fuse (optional).
- The gear and lamp compartment can be easily accessed by opening the fore stainless steel hook.
- For quick and safety inspection the luminaire is supplied with anti-tipping cover device.
- Electrical components are certified with ENEC Mark for power supply of 230V 50Hz.
- European Standards: EN 60598/1
- Maximum mounting height: 15 mt.





### SMART VP

- Output ratio: cut-off.
- Optic group with thermal toughened flat glass.
- Wind exposed surface =  $0,0870 \text{ m}^2$ .

### SMART VB

- Output ratio: semi cut-off.
- Optic group with thermal toughened curved glass.
- Wind exposed surface =  $0,0980 \text{ m}^2$ .

### LAMPS

	ST (SAP-T) - E27 50-70W - E40 100-150W
	MT (JM-T) - E27 70W - E40 100-150W
	MT (JM) - G12 70-150W
	COSMO-WHITE PGZ12 45-60-90-140W

### COLOUR

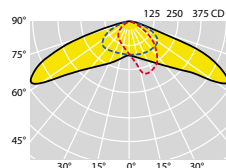


Silver (Twin colours on request)

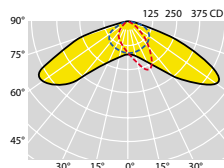
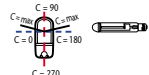
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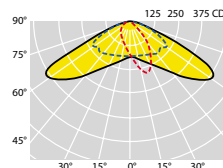
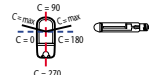
Smart VP



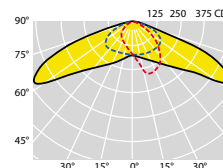
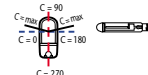
ST (SAP-T) 70W E27  
POS. B-3-A C max=25°



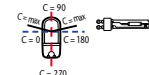
ST (SAP-T) 100W E40  
POS. B-4-A C max=25°



ST (SAP-T) 150W E40  
POS. X-4-A C max=20°



Cosmo White 140W PGZ12  
POS. C-3-A C max=25°



## Product codes

### SMART VP - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
44000	ST (SAP-T) 50W	ST (SAP-T) 50W	7.44	1	36	0.047
44001*	ST (SAP-T) 70W	ST (SAP-T) 70W	7.74	1	36	0.047
44002	MT (JM-T) -ST (SAP-T) 100W	MT (JM-T) -ST (SAP-T) 100W	7.89	1	36	0.047
44003	MT (JM-T) -ST (SAP-T) 150W	MT (JM-T) -ST (SAP-T) 150W	8.71	1	36	0.047
44005	MT (JM-T) 70W	MT (JM-T) 70W	7.74	1	36	0.047
44015	MT (JM-T) 70W - G12	MT (JM-T) 70W - G12	7.74	1	36	0.047
44016	MT (JM-T) 150W - G12	MT (JM-T) 150W - G12	8.61	1	36	0.047
44030	Cosmo-white PGZ12 45W	Cosmo-white PGZ12 45W	6.97	1	36	0.047
44031	Cosmo-white PGZ12 60W	Cosmo-white PGZ12 60W	6.97	1	36	0.047
44032	Cosmo-white PGZ12 90W	Cosmo-white PGZ12 90W	6.97	1	36	0.047
44033	Cosmo-white PGZ12 140W	Cosmo-white PGZ12 140W	6.97	1	36	0.047
44081	Cosmo-white PGZ12 60W - DIMM. 6H.	Cosmo-white PGZ12 60W - DIMM. 6H.	6.97	1	36	0.047
44082	Cosmo-white PGZ12 90W - DIMM. 6H.	Cosmo-white PGZ12 90W - DIMM. 6H.	6.97	1	36	0.047
44083	Cosmo-white PGZ12 140W - DIMM. 6H.	Cosmo-white PGZ12 140W - DIMM. 6H.	6.97	1	36	0.047

\* With ignitor

### SMART VP - CL II

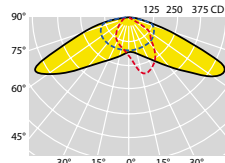
CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
44100	ST (SAP-T) 50W	ST (SAP-T) 50W	7.44	1	36	0.047
44101*	ST (SAP-T) 70W	ST (SAP-T) 70W	7.74	1	36	0.047
44102	MT (JM-T) -ST (SAP-T) 100W	MT (JM-T) -ST (SAP-T) 100W	7.89	1	36	0.047
44103	MT (JM-T) -ST (SAP-T) 150W	MT (JM-T) -ST (SAP-T) 150W	8.71	1	36	0.047
44105	MT (JM-T) 70W	MT (JM-T) 70W	7.74	1	36	0.047
44115	MT (JM-T) 70W - G12	MT (JM-T) 70W - G12	7.74	1	36	0.047
44116	MT (JM-T) 150W - G12	MT (JM-T) 150W - G12	8.61	1	36	0.047
44130	Cosmo-white PGZ12 45W	Cosmo-white PGZ12 45W	6.97	1	36	0.047
44131	Cosmo-white PGZ12 60W	Cosmo-white PGZ12 60W	6.97	1	36	0.047
44132	Cosmo-white PGZ12 90W	Cosmo-white PGZ12 90W	6.97	1	36	0.047
44133	Cosmo-white PGZ12 140W	Cosmo-white PGZ12 140W	6.97	1	36	0.047
44181	Cosmo-white PGZ12 60W - DIMM. 6H.	Cosmo-white PGZ12 60W - DIMM. 6H.	6.97	1	36	0.047
44182	Cosmo-white PGZ12 90W - DIMM. 6H.	Cosmo-white PGZ12 90W - DIMM. 6H.	6.97	1	36	0.047
44183	Cosmo-white PGZ12 140W - DIMM. 6H.	Cosmo-white PGZ12 140W - DIMM. 6H.	6.97	1	36	0.047

\* With ignitor

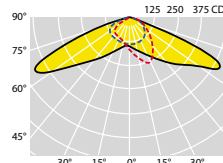
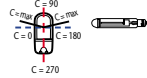
## Photometric data



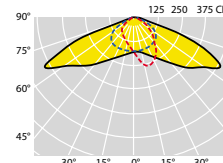
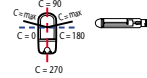
Smart VB



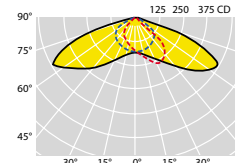
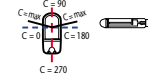
ST (SAP-T) 70W E27  
POS. B-3-A C max=25°



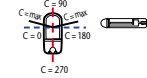
ST (SAP-T) 100W E40  
POS. A-4-A C max=25°



ST (SAP-T) 100W E40  
POS. B-4-A C max=25°



ST (SAP-T) 150W E40  
POS. A-4-A C max=30°



## Product codes

### SMART VB - CL I

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
44200	<input type="checkbox"/> CR	ST (SAP-T) 50W	7.64	1	36	0.047
44201*	<input type="checkbox"/> CR	ST (SAP-T) 70W	7.94	1	36	0.047
44202	<input type="checkbox"/> CR	MT (JM-T) -ST (SAP-T) 100W	8.09	1	36	0.047
44203	<input type="checkbox"/> CR	MT (JM-T) -ST (SAP-T) 150W	8.91	1	36	0.047
44205	<input type="checkbox"/> CR	MT (JM-T) 70W	7.94	1	36	0.047
44215	<input type="checkbox"/> CR	MT (JM-T) 70W - G12	7.94	1	36	0.047
44216	<input type="checkbox"/> CR	MT (JM-T) 150W - G12	8.81	1	36	0.047
44230	<input type="checkbox"/> CR	Cosmo-white PGZ12 45W	7.17	1	36	0.047
44231	<input type="checkbox"/> CR	Cosmo-white PGZ12 60W	7.17	1	36	0.047
44232	<input type="checkbox"/> CR	Cosmo-white PGZ12 90W	7.17	1	36	0.047
44233	<input type="checkbox"/> CR	Cosmo-white PGZ12 140W	7.17	1	36	0.047

\* With ignitor

### SMART VB - CL II

CODE	DESCRIPTION	LAMP TYPE	WEIGHT (KG)	PACKING (PCS)	PALLET (PCS)	VOLUME
44300	<input type="checkbox"/> CR	ST (SAP-T) 50W	7.64	1	36	0.047
44301*	<input type="checkbox"/> CR	ST (SAP-T) 70W	7.94	1	36	0.047
44302	<input type="checkbox"/> CR	MT (JM-T) -ST (SAP-T) 100W	8.09	1	36	0.047
44303	<input type="checkbox"/> CR	MT (JM-T) -ST (SAP-T) 150W	8.91	1	36	0.047
44305	<input type="checkbox"/> CR	MT (JM-T) 70W	7.94	1	36	0.047
44315	<input type="checkbox"/> CR	MT (JM-T) 70W - G12	7.94	1	36	0.047
44316	<input type="checkbox"/> CR	MT (JM-T) 150W - G12	8.81	1	36	0.047
44330	<input type="checkbox"/> CR	Cosmo-white PGZ12 45W	7.17	1	36	0.047
44331	<input type="checkbox"/> CR	Cosmo-white PGZ12 60W	7.17	1	36	0.047
44332	<input type="checkbox"/> CR	Cosmo-white PGZ12 90W	7.17	1	36	0.047
44333	<input type="checkbox"/> CR	Cosmo-white PGZ12 140W	7.17	1	36	0.047

\* With ignitor



## Accessories and spare parts



**60026**  
Wall bracket electro welded hot-dip galvanized



**60030**  
Modular wall bracket galvanized

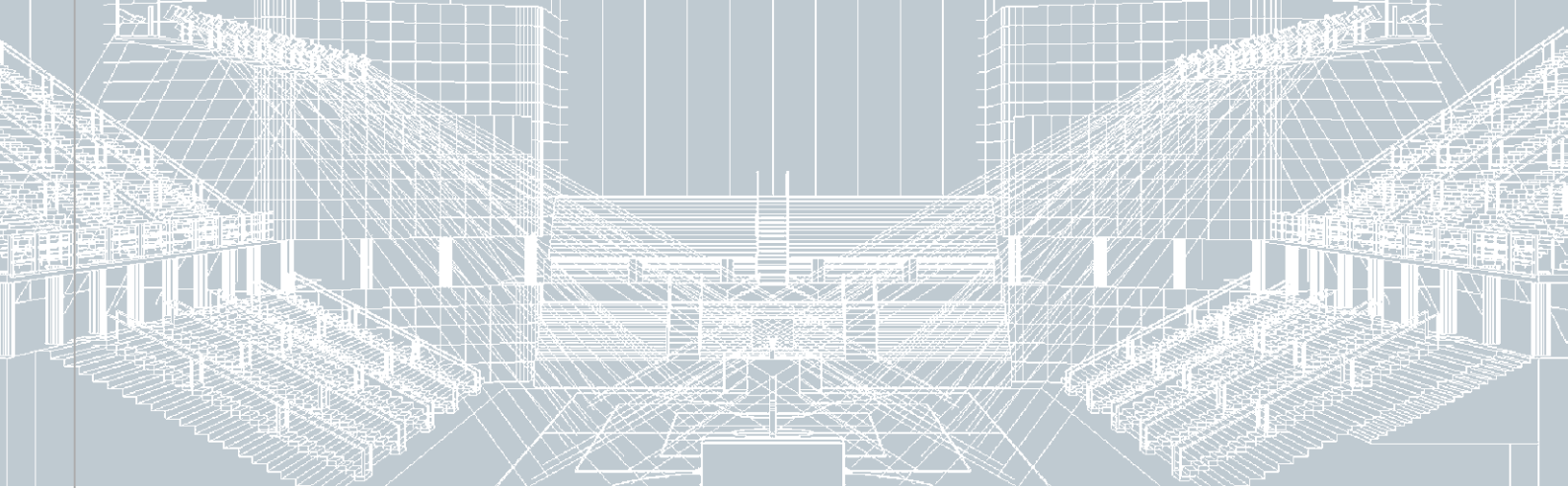


**60063**  
Corner bracket electro welded galvanized



**60031**  
Modular corner bracket galvanized

CODE	DESCRIPTION	WEIGHT (KG)	PACKING (PCS)	COLOURS	VOLUME
12035	Glass - Smart VP	0.67			
12036	Curved glass - Smart VB	0.95			
60026	Wall bracket electro welded hot-dip galvanized Ø 60	1.27	6	Hot galvanized	0.00257
60030	Modular wall bracket galvanized Ø 60	1.05	4	Hot galvanized	0.00160
60063	Corner bracket electro welded galvanized Ø 60	2.60	4	Hot galvanized	0.00835
60031	Modular corner bracket galvanized Ø 60	1.90	3	Hot galvanized	0.00210
60402	Top entry pole accessory Ø mm. 76	0.09	1		
16099	Osram lamp ST 50W Super				
04413	Osram lamp ST 70W E27 SUPER				
02676	Osram lamp ST 100W E40 SUPER				
12337	Osram lamp ST 150W E40 SUPER				
16100	Osram lamp MT 70W 3000K				
16101	Osram lamp MT 100W 3000K				
07828	Philips lamp MT 150W 2800K				
08821	Lamp MT 70W G12 3000K				
07649	Ceramic discharge tube lamp G12 JM 150W 3000K				
12401	Venture lamp ST 70W E27 SUPER				
12402	Venture lamp ST 100W E40 SUPER				
12403	Venture lamp ST 150W E40 SUPER				
13406	Cosmo-White lamp PGZ12 45W 2815K				
13407	Cosmo-White lamp PGZ12 60W 2760K				
13408	Cosmo-White lamp PGZ12 90W 2870K				
13409	Cosmo-White lamp PGZ12 140W 2860K				



## REGULATIONS FOR THE ELECTRICAL SAFETY

Our lighting devices comply with the following technical regulations:

### EN 60598-1

Lighting devices

#### “General prescriptions and tests”

It provides specifications for the general prescriptions for the lighting devices embodying the electrical lighting sources that are able to work with supply tension up to 1000V.

The prescriptions and the relevant tests of this regulation deal with: classification, marking, mechanical and electrical building.

The projectors and the high bays comply with this regulation as well as with the technical regulation.

### EN 60598-2-5

Lighting devices

#### “Particular prescriptions for the projectors”

It provides specifications for the prescriptions of the floodlights that must be used with incandescence lamps, fluorescence tubular lamps and other discharge lamps, feeded with a supply tension not higher than 1000V.

Our floodlights comply with the en 60598-1 regulation as well as with the technical regulation.

### EN 60598-2-3

Lighting devices

#### “Particular prescriptions for street lighting devices”

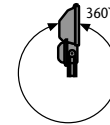
It provides specifications for the street lighting devices that must be used with incandescence lamps, fluorescence lamps and other discharge lamps, feeded with a supply tension not higher than 1000V.

#### Functioning position allowed for the devices

For the correct functioning of some projectors it is necessary to take into account, when installing, their inclination as regards the horizontal axis.

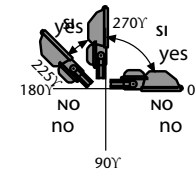
This is due to the position of the luminous source or of the power supply electrical units, inside the lighting body.

In the pages of the products contained in this catalogue there is a description of the allowed and not-allowed installation positions according to the power and to the insulation class (I° and II° Class) by means of schemes as the ones here below:



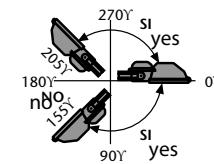
Functioning position

In this case the projector can be installed with an inclination edge from 0° to 360°. All the functioning positions are allowed.



Functioning position  
250W CL II

In this case the projector can be installed with an inclination edge from 0° to 225°.



Functioning position  
400W

In this case it is possible to install the projector with inclination edges between 205° and 155°.

## Protection classes

The reference work for this classification is IEC publication 529, but account must also be taken of Standard CEI EN 60598-1.

Specifically, the test of protection against penetration of dust, solid bodies and water specified in the current Standard are not all identical to

those in IEC publication 529, because of the technical characteristics of lighting luminaires.

### PROTECTION DEGREES INDICATED BY THE FIRST CHARACTERISTIC DIGIT

FIRST CH. DIGIT	BRIEF DESCRIPTION	PROTECTION DEGREE OBJECTS THAT MUST NOT PENETRATE THE CASING
0	Not protected	No special protection
1	Protected from solid	A large surface of the human body, such as a hand, for example (but no protection bodies of over 50 mm against voluntary access). Solid bodies of diameter over 50 mm.
2	Protected from solid bodies of over 12 mm	A finger or similar objects not over 80 mm length. Solid bodies of diameter over 12 mm.
3	Protected from solid bodies of over 2,5 mm	Tools, wires etc. thicker than 2,5 mm. Solid bodies of diameter over 2,5 mm.
4	Protected from solid bodies of over 1 mm	Wires, tapes etc. thicker than 1 mm. Solid bodies of diameter over 1 mm.
5	Protected against dust	Penetration of dust is not totally prevented, however dust cannot enter in amounts that would prejudice the proper functioning of the assembly.
6	Totally protected against dust	No penetration of dust.














# Technical norms and notes

## PROTECTION DEGREES INDICATED BY THE SECOND CHARACTERISTIC DIGIT

FIRST CH. DIGIT	BRIEF DESCRIPTION	PROTECTION DEGREE OBJECTS THAT MUST NOT PENETRATE THE CASING
0	Not protected	No special protection.
1	Protected against	Drops of water (falling vertically) must not produce harmful effects teady dripping
2	Protected against falling water to a maximum 15°	Drops of water (falling vertically) must not produce harmful effects when the casing is inclined at 15° to the vertical.
3	Protected against rain	Water falling as rain in a direction making an angle of no more 60° with the vertical must not produce harmful effects.
4	Protected against sprays	Water sprayed on the casing from whatever direction must not produce harmful effects.
5	Protected against water jets	Water sprayed on the casing from a nozzle from whatever direction must not produce harmful effects.
6	Protected against waves	Water from sea waves or powerful jets must not penetrate the casing in harmful quantities.
7	Water-tight against	It must not be possible for water to penetrate the casing in harmful quantities on immersionimmersion in water in specified conditions of pressure and duration.
8	Water-tight against immersion	The luminaire is suitable for use permanently submerged in water in the conditions specified by the manufacturer. Note: This normally means that the luminaire is absolutely water-tight, but with some types of luminaires it may mean that there is water penetration but that this is not harmful.

## Lamps

### LAMP TYPES

LAMP TYPE	ME	MT	MT
M Metal halide lamp	 ME	 MT	 MT
	E 27/E 40	G 12	E 27/E 40
	 MD	 MT	 MC
	RX7s	PGZ 12	E 27
	 MD	 MD	
S High pressure sodium lamp	CAVO	Fc2	
	 SE	 ST	 ST
	E 27/E 40	PG 12	E 27/E 40
		 SD	 SD
		RX7s	Fc2

### LIST OF ABBREVIATIONS

M (JM) Metal halide lamp	ME with elliptical bulb, diffuse coating MT tubular clear MD double ended, clear MC with elliptical bulb, diffuse coating
S (SAP) High pressure sodium lamp	SE with elliptical bulb ST tubular clear SD double ended LS single ended

# Lamps technical data

## METAL HALIDE LAMPS TYPE M

TYPE	POWER. W	LAMP. COUR. A	LUM. FLUX LM.	BURNER	COL. TEMPER. K	COLOUR INDEX Ra	CAPACITOR µF	SOCKET	FUNCT. POSITION
MT	70	0,93	7.200	CERAMIC	3.000	≥ 80	12,5	E27	ANY
MT	100	1,18	10.600	CERAMIC	3.000	≥ 80	14	E40	ANY
MT	150	1,8	16.500	CERAMIC	2.800	87	20	E40	ANY
MT	1.000 (1)	8,6	85.000	QUARTZ	7.250	81	85	E40	p30
MT	1.000 (2)	8,25	85.000	QUARTZ	4.300	57	70	E40	p20
MT	2.000 (3)	8,9	200.000	QUARTZ	4.300	60	37	E40	p30
MT	2.000 (3)	10,1	180.000	QUARTZ	7.450	83	60	E40	p30
MT	2.000 (4)	9,1	210.000	QUARTZ	3.800	65	40	E40	p20
MT	2.000 (5)	9,6	245.000	QUARTZ	4.550	63	37	E40	p60
MT	45	0,48	4.950	CERAMIC	2.815	59	-	PGZ12	ANY
MT	60	0,64	7.200	CERAMIC	2.760	62	-	PGZ12	ANY
MT	90	0,97	10.800	CERAMIC	2.870	60	-	PGZ12	ANY
MT	140	1,49	16.500	CERAMIC	2.860	56	-	PGZ12	ANY
MT	210 (2)	2,1	23.000	CERAMIC	4.120	92	-	PGZ18	ANY
MT	210 (2)	2,1	24.150	CERAMIC	2.950	90	-	PGZ18	ANY
MT	315 (2)	3,15	35.500	CERAMIC	4.200	93	-	PGZ18	ANY
MT	315 (2)	3,15	38.700	CERAMIC	3.100	90	-	PGZ18	ANY
MD	70	0,95	7.000	CERAMIC	3.000	88	12,5	RX7s	p45
MD	70	0,94	6.700	CERAMIC	4.200	94	12,5	RX7s	p45
MD	150	1,8	12.000	CERAMIC	3.200	70	20	RX7s-24	p45
MD	150	1,8	12.800	CERAMIC	4.200	80	20	RX7s-24	p45
MD	1000 (1)	9,6	90.000	QUARTZ	6.100	85	85	CAVO	P15
MD	1000 (1)	9,7	90.000	QUARTZ	4.400	90	85	CAVO	p30
MD	1000 (2)	9,3	100.000	QUARTZ	4.200	80	100	CAVO	p5
MD	1000 (2)	9,3	90.000	QUARTZ	5.600	90	100	CAVO	p5
MD	2000 (1) SA	11,4	210.000	QUARTZ	6.100	83	60	CAVO	p15
MD	2000 (1) SA	11,3	215.000	QUARTZ	4.400	90	60	CAVO	p15
MD	2000 (1) SA	12,2	230.000	QUARTZ	6.200	83	70	CAVO	p15
MD	2000 (1) LA	10,4	230.000	QUARTZ	4.100	65	60	CAVO	p15
MD	2000 (2) SA	11,8	220.000	QUARTZ	5.600	90	60	CAVO	p15
MD	2000 (2) LA	10,3	190.000	QUARTZ	5.600	90	60	CAVO	p5
MD	2000 (2) LA	9,6	220.000	QUARTZ	4.200	80	60	CAVO	p5

(1) Osram lamp

(2) Philips lamp

(3) Osram lamp with incorporated ignitor; does not require external ignitor

(4) Philips lamp, voltage supply 400V

(5) Osram lamp with external ignitor, voltage supply 400V

SA short arc lamp

LA long arc lamp



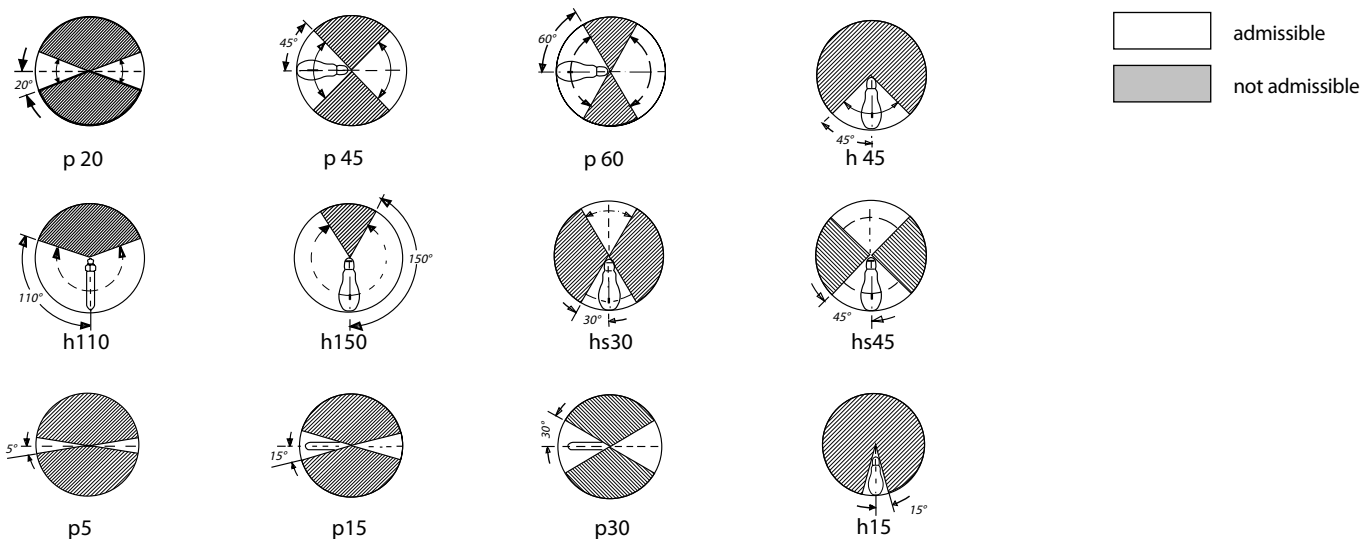
# Lamps technical data

## HIGH PRESSURE SODIUM LAMPS TYPE S

TYPE	POWER. W	LAMP. COUR. A	LUM. FLUX LM.	COL. TEMPER. K	COLOUR INDEX Ra	CAPACITOR $\mu$ F	SOCKET	FUNCT. POSITION
ST	50	0,75	4.200	2.000	$\leq 25$	10	E27	ANY
ST	70	0,97	6.600	2.000	$\leq 25$	12,5	E27	ANY
ST	100	1,2	10.700	2.000	$\leq 25$	14	E40	ANY
ST	150	1,8	17.500	2.000	$\leq 25$	20	E40	ANY
ST	250	2,95	33.200	2.000	$\leq 25$	30	E40	ANY
ST	400	4,52	56.500	2.000	$\leq 25$	50	E40	ANY
ST	600	6,06	90.000	2.000	$\leq 25$	65	E40	ANY
ST	1000	10,6	130.000	2.000	$\leq 25$	100	E40	ANY
SE	50 (1)	0,75	4.000	2.000	$\leq 25$	10	E27	ANY
SE	70 (1)	0,98	6.300	2.000	$\leq 25$	12,5	E27	ANY
SE	100	1,2	10.400	2.000	$\leq 25$	14	E40	ANY
SE	150	1,8	17.000	2.000	$\leq 25$	20	E40	ANY
SE	250	2,95	31.600	2.000	$\leq 25$	30	E40	ANY
SE	400	4,42	56.500	2.000	$\leq 25$	50	E40	ANY
SD	70	0,98	6.600	2.000	$\leq 25$	12,5	RX7s	p45
SD	150	1,8	15.000	2.000	$\leq 25$	20	RX7s-24	p45
SD	250	3	28.000	2.000	$\leq 25$	30	Fc2	p45
SD	400	4,4	49.000	2.000	$\leq 25$	50	Fc2	p45

(1) With external ignitor










## FUNCTIONING POSITIONS



## NOTICE

When the lamp has reached its end-life or in case of damage lamp, it is necessary the immediate replacement. Otherwise, the continuous discharges generated by the ignitor can cause the out of order of the fixture due to overheating. To avoid these inconveniences, we suggest you to plan the lamps' scheduled changes.

# Lamps technical data

ILCOS	LAMP	POWER (W)	SOCKET	OSRAM TYPE	PHILIPS TYPE	
<b>Metal halide - Ceramic burner</b>						
MT		35	G12	HCI-T 35/W...	CDM-T 35W/...	
		70		HCI-T 70/W...	CDM-T 70W/...	
		150		HCI-T 150/W...	CDM-T 150W/...	
		250		HCI-T 250/W...	CDM-T 250W/...	
MT		70	E27	HCI-TT 70/830WDL PB	CDO-TT 70W/828	
		100	E40	HCI-TT 100/830WDL PB	CDO-TT 100W/828	
		150		HCI-TT 150/830WDL PB	CDO-TT 150W/828	
		250		HCI-TT 250/830WDL PB	CDO-TT 250W/828	
MD		70	RX7s	HCI-TS 70W/...	CDM - TD 70W/...	
		150		HCI-TS 150W/...	CDM - TD 150W/...	
<b>Metal halide - Quartz burner</b>						
MT		1000		HQI-T 1000W/D	-	
		1000		-	HPI-T PRO 1000	
		2000		HQI-T 2000W/D/I	-	
		2000		-	HPI-T PRO 2000/380V	
		2000		HQI-T 2000W/N	-	
		2000		HQI-T 2000W/N/E/SUPER	-	
MD		1000	CAVO	HQI-TS 1000W/NDL/S	-	
		1000	CAVO	HQI-TS 1000W/D/S	-	
		1000	CAVO	-	MHN-LA 1000W 230V/842	
		1000	CAVO	-	MHN-LA 1000W 230V/956	
		2000	CAVO	HQI-TS 2000W/D/S	MHN-SB 2000W/956	
		2000	CAVO	HQI-TS 2000W/N/L	-	
		2000	CAVO	-	MHN-LA 2000W 400V/842	
		2000	CAVO	-	MHN-LA 2000W 400V/956	
<b>High pressure sodium</b>						
ST		50	E27	NAV-T 50W SUPER 4Y	SON T PIA PLUS 50W	
		70		NAV-T 70W SUPER 4Y	SON T PIA PLUS 70W	
		100		E40	NAV-T 100W SUPER 4Y	SON T PIA PLUS 100W
		150			NAV-T 150W SUPER 4Y	SON T PIA PLUS 150W
		250		NAV-T 250W SUPER 4Y	SON T PIA PLUS 250W	
		400		NAV-T 400W SUPER 4Y	SON T PIA PLUS 400W	
		600		NAV-T 600W SUPER 4Y	SON T PIA PLUS 600W	
		1000		NAV-T 1000W SUPER 4Y	SON T PIA PLUS 1000W	
SE		50	E27	NAV-E 50W SUPER 4Y	-	
70			NAV-E 70W SUPER 4Y	SON PIA PLUS 70W		
SE		100	E40	NAV-E 100W SUPER 4Y	SON PIA PLUS 100W	
		150		NAV-E 150W SUPER 4Y	SON PIA PLUS 150W	
		250		NAV-E 250W SUPER 4Y	SON PIA PLUS 250W	
		400		NAV-E 400W SUPER 4Y	SON PIA PLUS 400	
SD		70	RX7s	NAV-TS 70W SUPER 4Y	-	
		150		NAV-TS 150W SUPER 4Y	-	

# Recommended lux levels

The following tables are an extract of the European Norms EN 12464 "Lighting of work places". Part1: "Indoor works places".

In addition to the lighting values recommended for different kind of activities, the norm lays down the limit of troublesome glare UGR and the gen-

eral colour rendering index of the lamp to be used. The maximum value is 100 and reduces by decreasing of the rendering colour output quality.

INTERIOR, TASK OR ACTIVITY TYPE	EM lx	UGRL -	RA -	NOTE
<b>TRAFFIC ZONE</b>				
Circulations areas and corridors	100	28	40	1) Illuminance at floor level. 2) $R_a$ and UGR similar to adjacent areas. 3) 150 lx if there are vehicles on the route. 4) The lighting of exits and entrances shall provide a transition zone to avoid sudden changes in illuminance between inside and outside by day or night. 5) Care should be taken to avoid glare to drivers and pedestrians.
Stairs, escalators, travelators	100	25	40	
Loading ramps/bays	100	25	40	
<b>STORE ROOMS, COLD STORES</b>				
Store and stockrooms	100	25	60	200 lx if continuously occupied.
Dispatch packing handling areas	300	25	60	
<b>STORAGE RACK AREAS</b>				
Gangways: unmanned	20	-	40	Illuminance at floor level.
Gangways: manned	150	22	60	Illuminance at floor level.
Control station	150	22	80	
<b>AGRICULTURE</b>				
Loading and operating goods, handling equipment and machinery	200	25	80	
Building for livestock	50	-	40	
Sick animal pens	200	25	80	
Feed preparations, dairy, utensil washing	200	25	60	
<b>CEMENT, CEMENT GOODS, CONCRETE, BRICKS</b>				
Drying	50	28	20	Safety colours shall be recognizable.
Preparation of materials, work on kilns and mixes	200	28	40	
General machine work	300	25	80	
Rough forms	300	25	80	
<b>CERAMICS, TILES, GLASS, GLASSWARE</b>				
Drying	50	28	20	Safety colours shall be recognizable.
Preparation, general machine work	300	25	80	
Enamelling, rolling, pressing, shaping simple parts, glazing, glass bowling	300	25	80	
Grinding, engraving, glass polishing, shaping precision parts, manufacture of glass instruments	750	19	80	
Grinding of optical glass, crystal, hand grinding and engraving	750	16	80	
Precision work e.g. decorative grinding, hand painting	1,000	16	90	$4000K \leq T_{CP} \leq 6500K$
Manufacture of synthetic precious	1,500	16	90	$4000K \leq T_{CP} \leq 6500K$
<b>CHEMICAL, PLASTICS AND RUBBER INDUSTRY</b>				
Remote-operated processing installations	50	-	20	Safety colours shall be recognizable.
Processing installations with limited manual intervention	150	28	40	
Constantly manned work places in processing installations	300	25	80	
Precision measuring rooms, laboratories	500	19	80	
Pharmaceutical production	500	22	80	
Tyre production	500	22	80	
Colour inspection	1,000	16	90	$4000K \leq T_{CP} \leq 6500K$
Cutting, finishing, inspection	750	19	80	
<b>ELECTRICAL INDUSTRY</b>				
Cable and wire manufacture	300	25	80	
Winding:				
- large coils	300	25	80	
- medium coils	500	22	80	
- small coil	750	19	80	
Impregnation coils	300	25	80	
Galvanising	300	25	80	
Assembly work:				
- rough e.g. large transformers	300	25	80	
- medium e.g. switchboards	500	22	80	
- fine e.g. telephones	750	19	80	
- precision e.g. measuring	1,000	16	80	
Electronic workshops, testing, adjusting	1,500	16	80	

# Recommended lux levels

INTERIOR, TASK OR ACTIVITY TYPE	EM lx	UGRL -	RA -	NOTE
<b>FOOD STUFFS AND LUXURY FOOD INDUSTRY</b>				
Work places and zones in:	200	25	80	
- breweries, malting floor				
- for washing, barrel filling, cleanig, sieving, peeling				
- for drying and fermenting raw tobacco, fermentation cellar				
- posti di lavoro e zone di lavoro in zuccherifici				
- Sorting and washing of products, milling, mixing, packing	300	25	80	
Work places and critical zones in slaughter houses, butchers, dairies mills, on filtering floor in sugar refineries	500	25	80	
Cutting and sorting of fruit and vegetables	300	25	80	
Manufacture of delicatessen foods, kitchen work, manufacture of cigars and cigarettes	500	22	80	
Inspection of glasses and bottles, product control, trimming, sorting, decoration	500	22	80	
Laboratories	500	19	80	
Colour inspection	1,000	16	90	4000K ≤ T <sub>CP</sub> ≤ 6500K
<b>FOUNDRIES AND METAL CASTING</b>				
Man-size underfloor tunnels, cellars, etc...	50	-	20	Safety colours shall be recognizable.
Platforms	100	25	40	
Sand preparations	200	25	80	
Dressing room	200	25	80	
Work places at cupola and mixer	200	25	80	
Casting bay	200	25	80	
Shake out areas	200	25	80	
Machine moulding	200	25	80	
Hand and core moulding	300	25	80	
Die casting	300	25	80	
Model building	500	22	80	
<b>METAL WORKING AND PROCESSING</b>				
Open die forging	200	25	80	
Drop forging	300	25	80	
Welding	300	25	80	
Rough and average machining: tolerance ≥ 0,1 mm	300	22	80	
Precision machining, grinding: tolerance < 0,1mm	500	19	80	
Scribing, inspections	750	19	80	
Wire anpipe drawing shops, cold forming	300	25	80	
Plate machining: thickness ≥ 5 mm	200	25	80	
Sheet metalwork: thickness < 5 mm	300	22	80	
Tool making, cutting equipment manufacture	750	19	80	
Assembly:				
- rough	200	25	80	
- medium	300	25	80	
- fine	500	22	80	
- precision	750	19	80	
Galvanising	300	25	80	
Surface preparation and pinting	750	25	80	
Tool, template and jig making, precision mechanics, micromechanics	1,000	19	80	
<b>ROLLING MILLS, IRON AND STEEL WORKS</b>				
Production plants without manual operation	50	-	20	Safety colours shall be recognizable.
Production plants with occasional manual operation	150	28	40	
Production plants with continuous manual operation	200	25	80	
Slab store	50	-	20	Safety colours shall be recognizable.
Furnaces	200	25	20	Safety colours shall be recognizable.
Mill train, coiler, shear line	300	25	40	
Control platforms, control panels	300	22	80	
Test, measurement and inspections	500	22	80	
Underfloor man-sized tunnels, belt sections, cellars, etc...	50	-	20	Safety colours shall be recognizable.

# Recommended lux levels

INTERIOR, TASK OR ACTIVITY TYPE	EM lx	UGRL -	RA -	NOTE
<b>TEXTILE MANUFACTURE AND PROCESSING</b>				
Work places and zones in baths, bale opening	200	25	60	
Carding, washing, ironing, deving machine work, drawing, combing, sizing, card cutting, respinning, jute and hemp spinning	300	22	80	
Spinning, plying, reeling, winding	500	22	80	Prevent stroboscopic effects.
Warping, weaving, braiding, knitting	500	22	80	Prevent stroboscopic effects.
Sewing, fine knitting, taking up stitches	750	22	80	
Manual design, drawing patterns	750	22	90	$4000K \leq T_{CP} \leq 6500K$
Finishing, dyeing	500	22	80	
Drying room	100	28	60	
Automatic fabric printing	500	25	80	
Burling, picking, trimming	1,000	19	80	
Colour inspection, fabric control	1,000	16	90	$4000K \leq T_{CP} \leq 6500K$
Invisible mending	1,500	19	90	$4000K \leq T_{CP} \leq 6500K$
Hat manufacturing	500	22	80	
<b>VEHICLE CONSTRUCTION</b>				
Body work and assembly	500	22	80	
Painting, spraying chamber, polishing chamber	750	22	80	
Painting, touch-up, inspection	1,000	19	90	$4000K \leq T_{CP} \leq 6500K$
Upholstery manufacture (manned)	1,000	19	80	
Final inspection	1,000	19	80	
<b>WOOD WORKING AND PROCESSING</b>				
Automatic processing e.g. drying, plywood manufacturing	50	28	40	
Steam pits	150	28	40	
Saw frame	300	25	60	Prevent stroboscopic effects.
Work at joiner's bench, gluing, assembly	300	25	80	
Polishing, painting, fancy joinery	750	22	80	
Work on wood working machine e.g. turning, fluting, dressing, rebating, grooving, cutting, saeing, sinking	500	19	80	Prevent stroboscopic effects.
Selection of veneer woods	750	22	90	$4000K \leq T_{CP} \leq 6500K$
Marquetry, inlay work	750	22	90	$4000K \leq T_{CP} \leq 6500K$
Quality control, inspection	1,000	19	90	$4000K \leq T_{CP} \leq 6500K$
<b>RETAIL PREMISES</b>				
Sales area	300	22	80	
Till area	500	19	80	
Wrapper table	500	19	80	
<b>TRADE FAIRS, EXHIBITION HALLS</b>				
General lighting	300	22	80	
<b>PUBLIC CAR PARK (INDOOR)</b>				
In/out ramps (during the day)	300	25	40	1) Illuminance at floor level. 2) Safety colours shall be recognisable.
In/out ramps (at night)	75	25	40	1) Illuminance at floor level. 2) Safety colours shall be recognisable.
Traffic lanes	75	25	40	1) Illuminance at floor level. 2) Safety colours shall be recognisable.
Parkink areas	75	-	40	1) Illuminance at floor level. 2) Safety colours shall be recognisable. 3) A high vertical illuminance increases recognition of peoples faces and therefore the feeling of safety.
Ticket offices	300	19	80	1) Avoid reflections in the windows. 2) Prevent glare from outside.

# Recommended lux levels

INTERIOR, TASK OR ACTIVITY TYPE	EM lx	UGRL -	RA -	NOTE
<b>AIRPORTS</b>				
Arrival and departures halls, baggage claim areas	200	22	80	
Connecting areas, escalators, travolators	150	22	80	
Information desks, check-in desks	500	19	80	For jobs with display screen equipment, pls see section 4.9 of the standard.
Customs and passport control desks	500	19	80	Vertical illuminance is important.
Waiting areas	200	22	80	
Luggage store rooms	200	25	80	
Security check areas	300	19	80	For jobs with display screen equipment, pls see section 4.9 of the standard.
Air traffic control tower	500	16	80	1) Lighting should be dimmable. 2) For jobs with display screen equipment, pls see section 4.9 of the standard. 3) Day-light glare must be avoided. 4) Avoid reflections in windows, especially at nighttime.
Testing and repair hangars	500	22	80	
Engine test areas	500	22	80	
Measuring areas in hangars	500	22	80	
<b>RAILWAY INSTALLATIONS</b>				
Covered platforms and passenger subways (underpasses)	50	28	40	Illuminance at floor level.
Ticket halls and concourse	200	28	40	
Ticket and luggage offices and counters	300	19	80	
Waiting rooms	200	22	80	

## Contents

TABLE B - REFLECTANCE FACTORS OF SURFACES COLOURS AND MATERIALS FOR WHITE LIGHT

COLOUR	REFLECTANCE FACTOR %	MATERIALS	REFLECTANCE FACTOR %
Black	3 - 7	Dark wood	10 - 25
Dark blue	5 - 15	Dark bricks	15 - 25
Dark brown	10 - 20	Granite	15 - 25
Dark red	10 - 20	Pale bricks	30 - 40
Dark green	10 - 20	Clear wood	30 - 50
Pale brown	30 - 40	Opaque aluminium	55 - 60
Pale red	30 - 50	Burnished steel	55 - 65
Pale blue	40 - 55	White marble	60 - 70
Pink	45 - 55	Anodised bright	-
Pale green	45 - 65	Alluminium	80 - 85
Cream, pale light	50 - 75	Mirror, silver-plated glass	80 - 90

### DEPRECIATION FACTORS DUE TO THE DUSTY OF LUMINAIRES, LAMPS AGEING

Luminaires with **semidirect** lighting emission (more than 15% upward) without louvre or cross baffle.

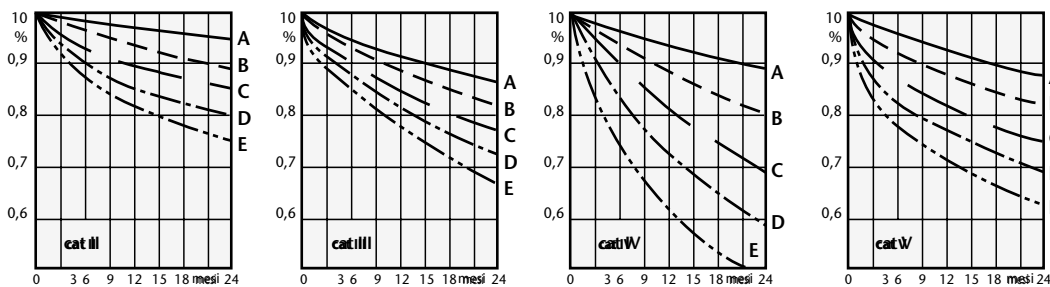
Luminaires with **semidirect** lighting emission (less than 15% upward) without louvre or cross baffle.

Luminaire with **direct** lighting emission without louvre or cross baffle.

Luminaires with **semidirect or direct** lighting emission with diffuser (acrylic, polycarbonate, glass).

Fluorescent lamps ageing relative to the operating hours.

TABLE C



A = very clean, B = clean, C = semi-dirty, D = dirty, E = very dirty

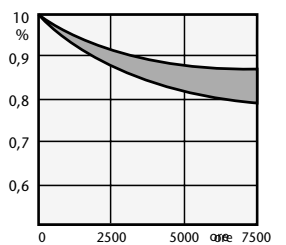
In order to always maintain efficient the lighting systems, it's necessary to plan maintenance operations on the luminaires, referring to the graphics of C table.

A careful cleaning of protection glasses and of the optics, lamp replacement on life limit, are necessary.

D table is only indicative: for more detailed

information concerning the reduction of the luminous flux according to the working hours and the average life, please refer to the technical documentation of lamp manufacturers.

TABLE D



# Corrosive agents

CHEMICAL COMPOUND	METHACRYLATE	POLYCARBONATE	POLYAMIDE	ALUMINIUM	STAINLESS STEEL
Acetone	▲	●	●	●	●
Acetic acid ≤10%	●	●	▲	●	●
Acetic acid ≤ 30%	●	●	▲	●	▲
Arsenic acid ≤ 20%	●	●		▲	●
Bromic acid	▲	▲	▲	▲	●
Citric acid ≤ 20%	●	●	●	●	●
Hydrochloric acid ≤ 20%	●	●	▲	▲	▲
Chromic acid	●	●	●	●	●
Formic acid ≤ 30%	●	●	●	▲	●
Nitric acid ≤ 20%	●	●	▲	▲	▲
Sulphuric acid ≤ 30%	●	●	▲	▲	▲
Sulphuric acid ≤ 50%	●	●	▲	▲	▲
Hydrogen Dioxide ≤ 40%	▲	●	▲	●	●
Ethyl alcohol	▲	●	●	●	●
Isopropyl alcohol	●	▲	●	●	●
Aniline	▲	▲	●	●	●
Ammonia ≤ 25%	●	▲	●	●	●
Gosoline	●	●	●	●	●
Premium grade fuel	●	▲	▲	●	●
Benzol	▲	▲	●	●	●
Alcoholic drinks	●	●	●	●	●
Bromine	▲	●		●	●
White lime	●	●	▲	▲	●
Diesel fuel	●	●	●	●	●
Ketone	▲	▲		●	●
Marine climate	●	●	●	●	●
Chlorine (vapours)	▲	●	▲	●	●
Chloroform	▲	●	●	●	●
Liquid Chlorine (vapours)	▲	▲		●	▲
Calcium chloride	●	●	●	●	●
Ferric chloride	●	●	●	●	●
Methyl chloride	▲	▲	▲	●	●
Hexane	●	●	●	●	●
Ether	▲	▲	●	●	●
Ethyl ether	●	▲	●	●	●
Phenols	▲	▲	▲	●	●
Glycerol	●	●	●	●	●
Hydrocarbons	●	●		●	●
Methanol	▲	▲	●	●	●
Mineral oils	●	▲	●	●	●
Silicon oil	●	●	●	●	●
Diesel oil	●	●	●	●	●
Oil and food fats	●	●	●	●	●
Carbon monoxide	●	●	●	●	●
Ozone	●	●	▲	●	●
Potassium permanganate	●	●	●	●	●
PVC with plasticizers	▲			●	●
Caustic soda ≤ 2%	●	▲	▲	▲	●
Caustic soda ≤ 10%	●	▲	▲	▲	●
Watery zinc sulphate	●	●	●	●	●
Aluminium sulphate	●	●	●	●	●
Copper sulphate	●	●	●	●	●
Carbon tetrachloride	▲	▲	●	●	●
Toluene	▲	●	●	●	●
Trichloroethylene	▲	▲	●	●	●
Xylene	▲	▲	●	●	●

## SYMBOLS LEGEND

- ▲ Non resistant
- Partially resistant
- Resistant

The chemical products shown in the table are only a small part of the ones could be present during installations; the concentrations shown are purely as an indication.

By choosing the lighting fittings, it's necessary to check the compatibility between material components and installation environment, taking into

consideration that alterations in compatibility between material and chemical product can rise depending upon concentration, humidity and temperature.

### Maintenance.

For the efficiency of the lighting fixtures, it's

essential to plan regular maintenance operations. All internal parts, optics, housing and grills must be cleaned regularly. Clean with soap water or a much diluted solution of common detergents. Avoid all solvent type products.

# Notions of lighting technology

Light is a physical phenomenon, a form of energy in electromagnetic waves. Electromagnetic radiation is characterized by two physical quantities: wavelength, represented by the Greek letter  $\lambda$ , and frequency. Radiation perceptible to the human visual organ

is limited to a very restricted range: from 380 nm (ultraviolet limit) to 780 nm (infrared limit) and human beings perceive colours according to the wavelength of the light. The human eye responds differently according to the wavelengths of the radiation and it has

been shown that in daylight (photopic vision) its greatest at wavelength 555 nm (yellow-green). A visibility factor has thus been determined for each wavelength. The curves applicable in photopic and scotopic conditions are shown in figure 3.

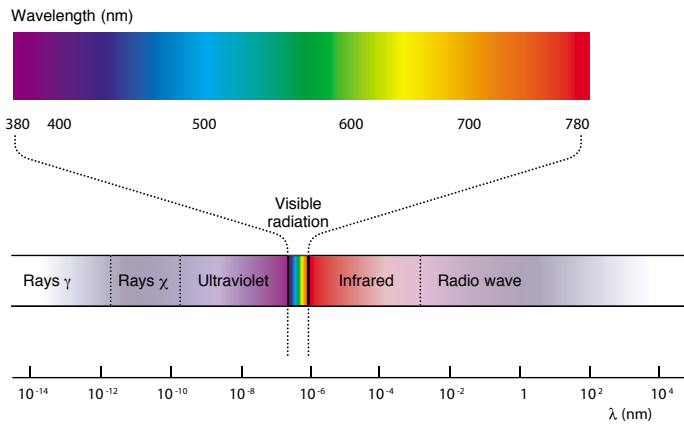


Fig. 1 - Electromagnetic spectrum

COLOUR TONALITIES	WAVELENGTH (NM)	FREQUENCIES (HZX 1012)
Violet	< 425	> 705
Indigo	425÷486	705÷617
Blue	486÷493	617÷608
Blue-green	493÷510	608÷588
Green	510÷552	588÷543
Green-yellow	552÷573	543÷523
Yellow	573÷587	523÷511
Orange	587÷645	511÷465
Red	> 645	< 465

Fig. 2 - Wavelengths and frequencies for the main colour tonalities

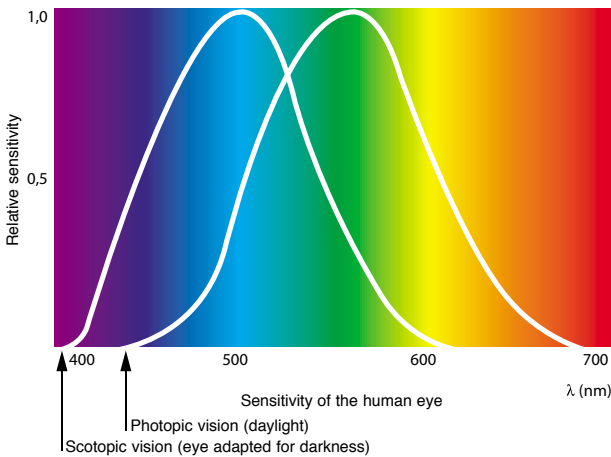


Fig. 3

## PHOTOMETRIC QUANTITIES

### Luminous flux

The luminous flux generated by a given light source is defined as the quantity of light energy by it in unit times.

The luminous flux expresses the power in terms of light emission, confirming the energy nature of light.

$$\Phi = km \int_{380 \text{ nm}}^{780 \text{ nm}} \Phi_{\lambda} V(\lambda) \delta\lambda$$

### Luminous intensity

In studying light beams produced by sources, it is of particular importance to determine what part of the flux is propagated in a given direction. The luminous intensity corresponds to the quantity

of luminous flux per unit of solid angle in some given direction. The unit of measurement is the candle (cd).

$$I = \frac{d\Phi}{d\Omega}$$

### Illuminance

Illuminance, represented by the letter E, is the ratio between the luminous flux reaching a certain

surface and the area of the surface. The unit of measurement is the Lux (lx).

$$E = \frac{d\Phi}{dA_R}$$

### Luminance

Is the luminous intensity in a given direction per m<sup>2</sup> of apparent surface of a light source or of an illuminated surface. In photometry the quantity

used is the luminance, indicated by the letter L and the corresponding unit of measurement is the candle per m<sup>2</sup> (cd/m<sup>2</sup>) also denominated nit. (nt).

$$L = \frac{dI}{dA \cos\theta}$$



# Representation and method of calculation

## PHOTOMETRIC CURVES

To display the light distribution of a light source, a laboratory measurement is made of the photometric solid, which can be defined as the whole of the measurement of luminous intensity in every direction.

Sectioning the photometric solid on one or more planes, one obtains the photometric curves, the

values of which in candles are generally based on 1.000 lm.

In the technical documentation of a lighting appliance, the photometric curves are generally supplied for two vertical planes at right angle of each other, passing through the optical centre of the luminaire.

For indoor luminaires and for street lighting, the C- $\gamma$  measurement system is used, and the photometric curves are represented in polar coordinates.

For floodlights the B- $\beta$  measurement system is used and the photometric curves are represented by means of a cartesian diagram.

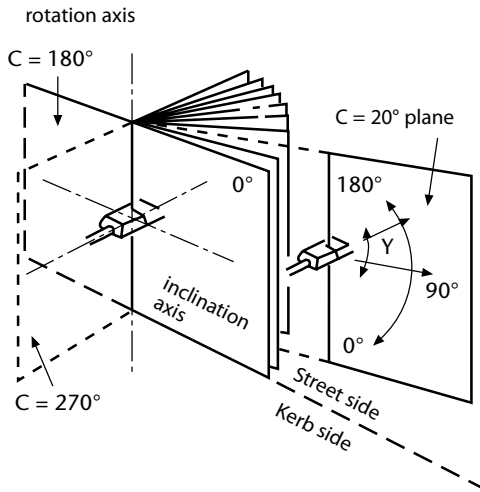


Fig. 4 - Measurement system C- $\gamma$

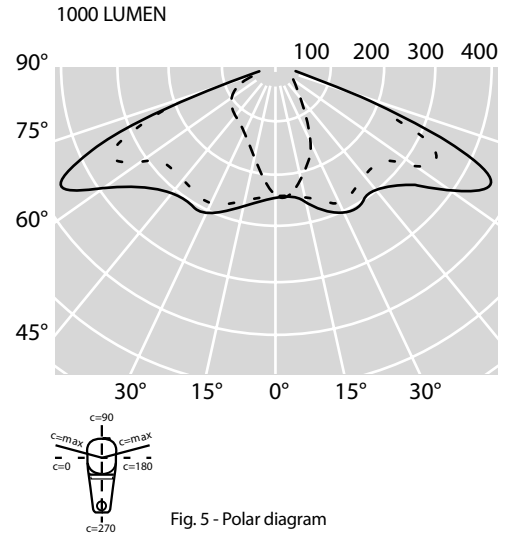


Fig. 5 - Polar diagram

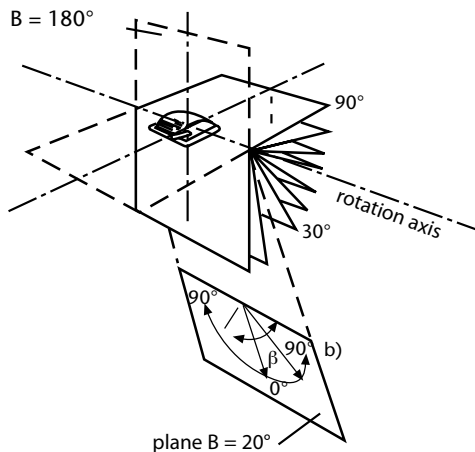


Fig. 6 - Measurement system B- $\beta$

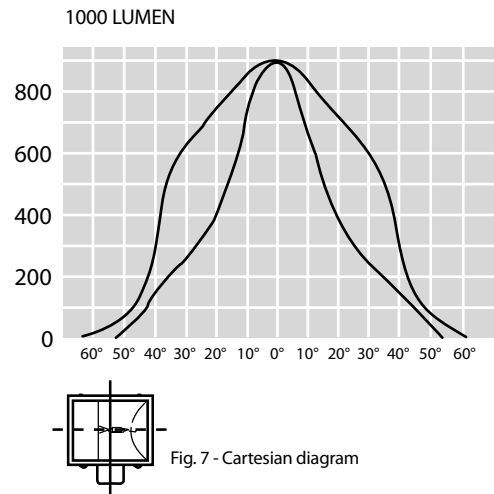


Fig. 7 - Cartesian diagram

## ISOLUX DIAGRAM

These are generally used to rapidly determine the illuminance of a road and connect the points on a plane with the same illuminance.

The values shown on the curves refer to an luminaire installed at a height of m. 1 for each klumen (1.000 lm).

The width of the road and the poles spacing are put according to the installation height of the fittings (H).

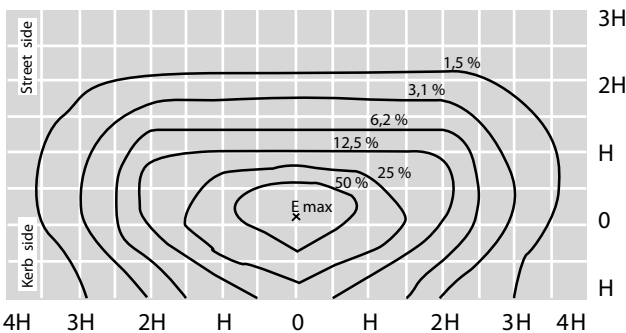


Fig. 8 - Isolux diagram

# Representation and method of calculation

## FROM INTENSITY TO ILLUMINANCE POINT BY POINT METHOD

It is possible to determine the horizontal illuminance of a point on a plane by relating the value in candles of the photometric curve in the direction of the point with the following equation:

$$E_A = \frac{I_A \times K_{lum} \times \cos^3 \alpha}{h^2}$$

$E_A$  = illuminance in Lux at a given point.  
 $I_A$  = intensity in candles at the point in 1.000 lm.

$\cos^3 \alpha$  = cube of the cosine of the angle between the vertical of the luminaire and the point in question.  
 $h^2$  = square of the distance between the light source and the plane that includes the point for which the illuminance is calculated.

## Notions of lighting technology

### FROM ILLUMINANCE TO LUMINANCE

Knowing the illuminance of a given surface with the characteristics of a perfectly uniform diffuse reflector according to Lambert's law, it is possible to calculate the luminance by the following equation:

$$L = \frac{\rho E}{\pi}$$

In reality it is only rarely that one encounters surfaces with uniform diffusion.

In all other cases the uniform reflection coefficient  $r$  is replaced by the luminance factor  $b$  and hence:

$$L = \frac{\beta E}{\pi}$$

### RECOMMENDATION FOR ROAD LIGHTING

Statistical data shown how good lighting is essential for providing users security is guaranteed on such roads.

The parameters that must be considered for a right lighting public road project are as follows:

- Widely luminance level providing driver to recognize in advance quickly any obstacles on the carriageway. Average acceptable value are between 0,5 and 2,0 cd/m<sup>2</sup>.
- An even distribution of illumination, which allows drivers to identify objects at any point on the road surface. 4 main variables must be taken into consideration:

- $\bar{L}$  = average luminance;
  - $U_o$  = the ratio between minimum luminance and average luminance of the entire roadway ( $U_o = L_{min}/L_{ave}$ );
  - $U_l$  = longitudinal uniformity of luminance, which is the ratio between minimum luminance and maximum luminance, measured along the middle of each lane;
  - $R_{EI}$  lighting contiguity.
- c) Reduction of the lighting dazzling by light sources that they may caused a diminution acuity and visual field.  
 For evaluate the dazzling value in a project, the

norms described and determinate the dazzle value as fatiguing glare index  $f_{TI}$ .  
 According to the norms, the right limits are mentioned in the following table 1b.

These standards are considered in the following tables 1a and 1b that define respectively the criteria conditions of traffic and each class lighting categories.

Both tables are an extract of the Italian Norm UNI 11248 "Lighting street. Lighting category selection" and of the rule UNI EN 13201-2. Lighting street 2 part: Performance requirements.

### PROSPETTO 1A

#### CLASSIFICATION OF THE ROAD TRAFFIC TYPES

Road class	Type of road description	Speed limits (Km/h)	Lighting categories
A <sup>1</sup>	Extraurban motorways	130-150	M1
	Urban motorways	130	
A <sup>2</sup>	Main road to motorways	70-90	M2
	Main road to urban motorways	50	
B	Main highways	110	M2
	Main road to extraurban highways	70-90	M3
C	Secondary highways (type C1 and C2) <sup>1</sup>	70-90	M2
	Secondary highways	50	M3
	Secondary highways with particular limits	70-90	M2
D	Urban throughways <sup>2</sup>	70	M2
		50	
E	Inter-neighbourhood urban streets	50	M3
F	Extraurban local streets (type F1 and F2) <sup>1</sup>	70-90	M2
	Local extraurban streets	50	M4
		30	C4/P2
	Local extraurban streets	50	M4
	Local urban streets: historical center, islands, zone 30	30	C3/P1
	Local urban streets: other situations	30	C4/P2
	Local urban streets: pedestrian areas	5	C4/P2
	Local interzonal streets	50	M3
Fbis	Bike lanes <sup>3</sup>	Not declared	P2
	Particular destination streets <sup>1</sup>	30	

Table 1A shows the classification of each roadways of which the prescription of the Table 1B can be obtained, are valid to the maximum hourly traffic flows estimated for the relevant roadway class. If the hourly traffic routes rates are less than the value expectation, e.g. at night, safety conditions

created for all road users allow it, it is possible during the operation to reduce the minimum value of maintained average luminance, shown in Table 1B, according to the following criteria:  
 - traffic rate 50% lower than the maximum value: lighting category index reduced by 1.

- traffic rate 25% lower than the maximum value: lighting category index reduced by 2.  
 In case you use lamps with chromatic colour index Ra equal or major of 60, the lighting designer may decide to reduce the lighting category index by 1.

### TABLE 1B

#### M CATEGORIES LIGHTING PRESCRIPTIONS ACCORDING TO EN 13201-2:2015

Class	Luminance of the road surface of the carriageway for the dry condition			Disability glare $f_{TI}$ max %	Lighting of surroundings $R_{EI}$ min
	$\bar{L}$ min maintained cd/m <sup>2</sup>	$U_o$ min	$U_l$ min		
M1	2,0	0,4	0,70	10	0,35
M2	1,5	0,4	0,70	10	0,35
M3	1,0	0,4	0,60	15	0,30
M4	0,75	0,4	0,60	15	0,30
M5	0,5	0,35	0,40	15	0,30
M6	0,3	0,35	0,40	20	0,30

- $U_o$  = Lmin/Lmed ratio between min and average luminance across the entire roadway
- $U_l$  = Lmin/Lmax ratio between min and max luminance across the centre line of each lane
- $f_{TI}$  = fatiguing glare index

<sup>1</sup> According to the November 5 2001 Ministerial Decree N. 6792

<sup>2</sup> For main roads servicing urban throughways, once the lighting category is defined for the main road, the lighting category with light performance immediately lower or comparable must be applied.

<sup>3</sup> According to Italian Law n° 214 of August 1 2003

# Representation and method of calculation

## RECOMMENDATIONS TO REDUCE LIGHT POLLUTION

The standards norm UNI 10819 prescribes the requirement for external lighting installations, to limit the upwards waste light beams from artificial light sources and any limitation night-time glow of the sky.

The standards applies only to newly completed installations.

It does not apply to installations underpasses, galleries, and advertising panels completed by own lighting installations.

Besides, it does not apply to areas of the landscape subject to the specific local regulations.

The norm is given more other information according the distance between astronomical observations, the ratio upper hemisphere flux as well as on the reflected flux emitted by lighting sources.

## LIGHTING INSTALLATION ARE CLASSIFIED AS FOLLOWS

Type A: Installations where safety is a priority, for example the illumination of public parks.

Type B: Installations for sport facilities, shopping and recreational centres and private parks.

Type C: Installations for Monumental and environmental interest.

Type D: Advertising installation.

Type E: Temporary ornamental installations (Christmas lights).

The installations type A can be provided a settlement time following the prescription are suitable for.

The temporary type E installations means are functionally switching on not more than yearly 45 days.

## LIGHTING ZONES ARE CLASSIFIED AS FOLLOWS

Zone 1: high protection area with limited illumination (Astronomical observer of international relevance). Radius from observation centre  $R = 5$  km.

Zone 2: protected area around zone 1 or around national observatories. Radius observation centre  $R = 5/10/15$  km depending the importance of the centre.

Zone 3: national territory not classified in zones 1 and 2.

The types of fixtures intended for each system are defined by the Urban Lighting Plan of Municipality which it establishes the maximum  $R_n$  value for each of the value in the whole municipality territory as set down in table or in the municipality regulations are not exceeded.

In case of ULP of Municipality are never been intended, the value  $R_n$  are as follows.

### MAXIMUM VALUES OF $R_n$ IN %

Type of installations	Zone 1	Zone 2	Zone 3
A,B,C,D	1	5	10
E	Not permitted	permitted at ordinary timetable	permitted

(Average ratio of upward emission)

## LIGHTING ZONES ARE CLASSIFIED AS FOLLOWS

Some Italian regions have passed Laws in which the percentage values permitted for the luminous flux emitted upwards towards the sky are in some cases seriously much prohibited than UNI 10819.

Due the fact the Italian Norms are still involving on the theme of light pollution, you consider the Technical Staff at your disposal.

### MAXIMUM VALUES OF $R_n$ IN %

Type of installations	Zone 1	Zone 2	Zone 3
A, Streetlight	1	3	3
A, Not streetlight, B, C, D	1	9	23

(in absence of ULP of Municipality)

# Lighting engineering software

## Fael - Lite

Fael-Lite is an application which has been developed for determining illumination and luminance values in internal, external and street contexts.

It is a 32 and 64-bit programme which runs on the WINDOWS 95 and 98 platform and can operate in 2D or 3D environments of all shapes and sizes including circular areas and locations.

The extremely attractive format alongside the implementation of the standard WINDOWS 95 menu system makes this application a very useful tool for planners, installers, and end-users.

The programme is capable of determining hori-

zontal and vertical illuminations, vertical illuminations in the direction of the camera, semicylindricals, luminance, and glare indexes, all in line with the most recent UNI (Italian Standards Institute) and CEI recommendations.

For internal environments, the application can determine and automatically position lamps according to the level of illumination desired and with consideration for reflections between walls, the floor and the ceiling.

The results can be previewed in a graphical format as isolux curves and three-dimensional isolux. Functionality is provided for the man-

agement of tower racks for external projectors by means of which it is possible to duplicate the equipment according to axes of symmetry which can be determined.

The programme interfaces with the external catalogue from which it is possible to obtain technical information on the lamps such as: design features, photographs, descriptions, information, photometric curves. At the printing stage, it is possible to choose a different language from that used during the planning stage.

For further information, please visit the web site: [www.faelluce.com](http://www.faelluce.com)

# Useful information on power factor correction capacitors

A capacitor working at the maximum power supply voltage and at the operating temperature  $T_c$  declared by the manufacturer, has a life of 30,000 hours, as required by the standards EN 61048 and EN 61049. The capacitors during their operation are subjected to voltage and temperature changes compared to their nominal values, due to environmental conditions, type of installation, temporary or permanent abnormalities of the power

supply network. A power supply voltage higher than the nominal 10% or an exceed temperature of 10°C as declared by the manufacturer, can halve the service life of the capacitor. It is recommended to never exceed the temperature limits of the capacitor, sizing, with special care the cabinets and keep the voltage variation below 10%. Getting old, the capacity of the capacitor decreases due to the degeneration of the metallization of the film that

constitutes the capacitor itself, thereby diminishing the  $\cos \phi$  of the electrical installation. To avoid unjustified increases in power and to maintain the efficiency of the system, it is recommended to perform a planned replacement of the capacitors after and no later than 6 years after the entry into service of the lighting fixtures. In extremely harsh and particular conditions, it is possible to foresee the use of reinforced capacitors.

# Examples of lighting calculation



## TENNIS FIELDS APPLICATION

Floodlight Type	LIGHTMASTER COMPACT DOUBLE ENDED	LIGHTMASTER MAX DOUBLE ENDED
Used lamp	<b>JM-TS SA</b>	<b>JM-TS LA</b>
Power (W)	1000W	2000W
Luminous flux	90.000	230.000
Overall maintenance factor	0,80	0,80
<b>Pole characteristics</b>		
Installation height (m)	12	15
Pole position	Behind the corners	Behind the corners
Number of poles	4	4
Number of floodlight per pole	3	3
Total number of floodlight	12	12
Total power installed* (kW)	13	25,2
Used optics	N°12 asy rectangular intensive	N°12 asy rectangular intensive
<b>Geometry of the playing field</b>		
Length (m)	36	36
Width (m)	18	18
<b>Lighting level</b>		
Average, Em (Lux)	514	1009
Uniformity Emin/Em	0,80	0,80
Uniformity Emin/Emax	0,60	0,63
Max glare (GR)	35	35
Light pollution (Rn)	0,00%	0,00%
In conformity to standard	EN 12193 CL I	ATP TOURNAMENT

\* ballast losses included  
<sup>1</sup> high pressure sodium ballast  
 SA = short arc  
 LA = long arc



LM COMPACT



LM MAX



Tennis Club Monza - Italy

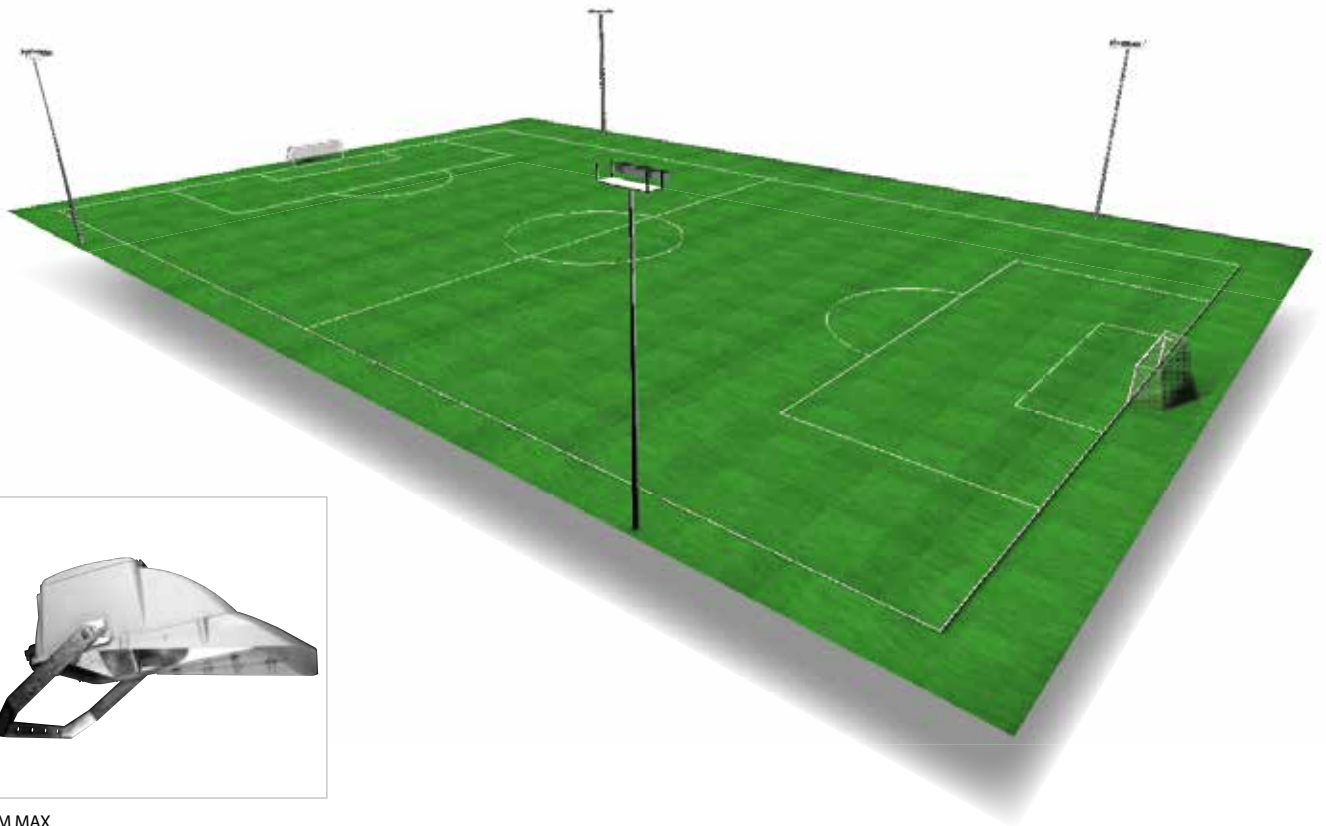
# Examples of lighting calculation



## FOOTBALL FIELDS APPLICATION

FLOODLIGHT TYPE	LIGHTMASTER MAX E40	LIGHTMASTER MAX DOUBLE ENDED	LIGHTMASTER MAX DOUBLE ENDED
Used lamp	<b>JM-E40</b>	<b>JM-TS LA</b>	<b>JM-TS LA</b>
Power (W)	2000W	2000W	2000W
Luminous flux	210.000	230.000	230.000
Overall maintenance factor	0,80	0,80	0,80
<b>Highmasts characteristics</b>			
Installation height (m)	20	20	20
Highmasts position	Lateral	Lateral	Lateral
Number of highmasts	4	4	4
Number of floodlight each highmast	4	3	4
Total number of floodlights	16	12	16
Total power installed* (kW)	33,6	25,2	33,6
Used optics	N°16 asy rectangular intensive	N°12 asy rectangular intensive	N°16 asy rectangular intensive
<b>Geometry of the playing field</b>			
Length (m)	105	105	105
Width (m)	60	60	60
<b>Results</b>			
Average luminance, Em (Lux)	190	163	218
Uniformity Emin/Em	0,74	0,70	0,71
Uniformity Emin/Emax	0,50	0,50	0,50
Max glare (GR)	42	43	44
Light pollution (Rn)	0,00%	0,00%	0,00%

\* ballast losses included  
LA = long arc



LM MAX

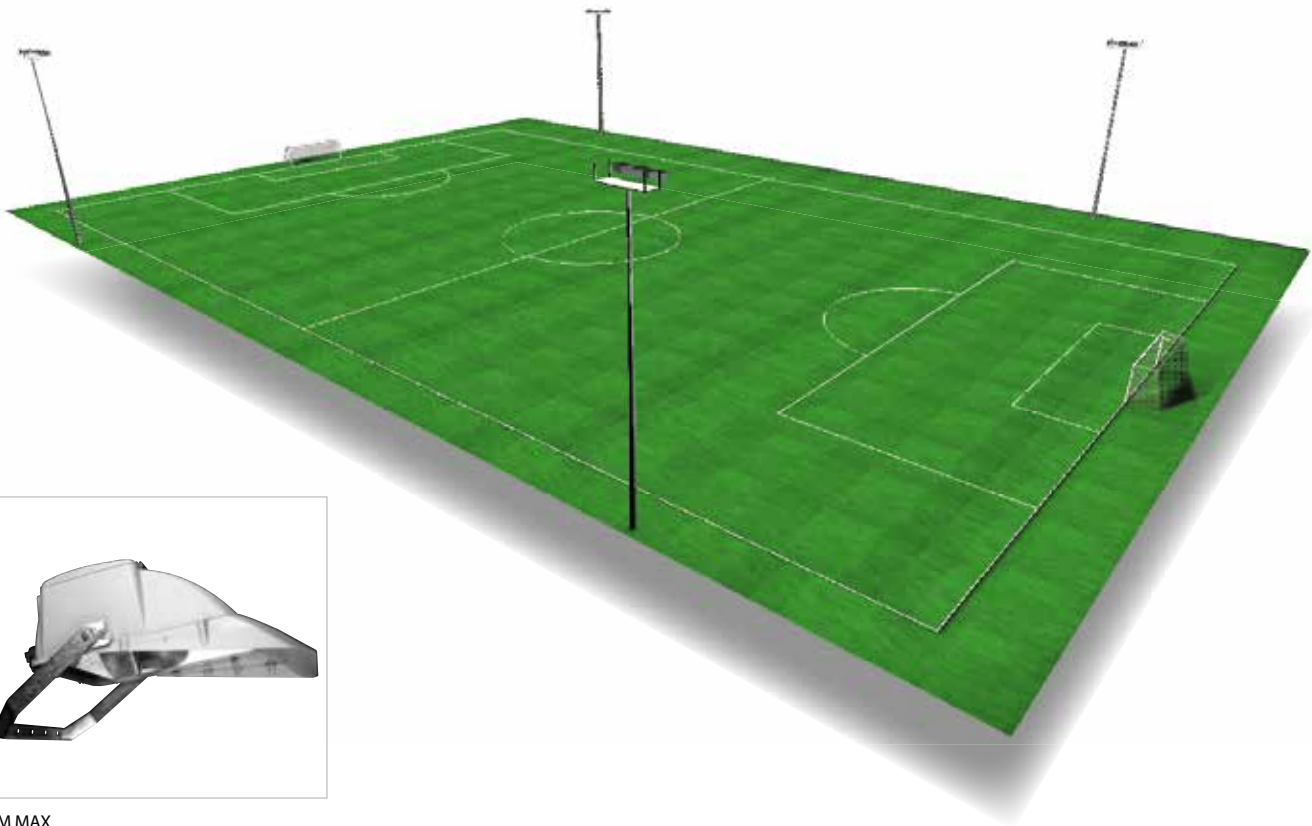
# Examples of lighting calculation



## FOOTBALL FIELDS APPLICATION

FLOODLIGHT TYPE	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA
Used lamp	2000W	2000W	2000W	2000W
Power (W)	230.000	230.000	230.000	230.000
Luminous flux	0,80	0,80	0,80	0,80
Overall maintenance factor	<b>Highmasts characteristics</b>			
Installation height (m)	18	18	18	20
Highmasts position	Lateral	Lateral	Lateral	Lateral
Number of highmasts	4	4	4	4
Number of floodlight each highmast	5	7	9	14
Total number of floodlights	20	28	36	56
Total power installed* (kW)	42,0	58,8	75,6	117,6
Used optics	N°8 asy rectangular intensive N°12 rotational paraellissoide	N°4 rettangolari intensive N°24 rotational paraellissoide	N°20 asy rectangular intensive N°16 rotational paraellissoide	N°4 asy rectangular intensive N°52 rotational paraellissoide
<b>Geometry of the playing field</b>				
Length (m)	105	105	105	105
Width (m)	60	60	60	60
<b>Results</b>				
Average luminance, Em (Lux)	301	375	507	753
Uniformity Emin/Em	0,71	0,74	0,74	0,72
Uniformity Emin/Emax	0,50	0,51	0,53	0,57
Max glare (GR)	44	45	45	44
Light pollution (Rn)	0,00%	0,00%	0,00%	0,00%

\* ballast losses included  
LA = long arc



LM MAX

# Examples of lighting calculation



## FOOTBALL FIELDS APPLICATION

FLOODLIGHT TYPE	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA	LIGHTMASTER MAX DOUBLE ENDED JM-TS LA
Used lamp	2000W	2000W	2000W
Power (W)	230.000	230.000	230.000
Luminous flux	0,80	0,80	0,80
Overall maintenance factor	<b>Highmasts characteristics</b>		
Installation height (m)	15	15	18
Highmasts position	Lateral	Lateral	Lateral
Number of highmasts	6	6	6
Number of floodlight each highmast	2/3	3/4	5/8
Total number of floodlights	14	20	36
Total power installed* (kW)	29,4	42,0	75,6
Used optics	N°10 asy rectangular intensive N°4 asy rectangular wide beam	N°8 asy rectangular intensive N°12 rotational paraellisoide	N°8 asy rectangular intensive N°28 rotational paraellisoide
<b>Geometry of the playing field</b>			
Length (m)	105	105	105
Width (m)	65	65	65
<b>Results</b>			
Average luminance, Em (Lux)	212	301	501
Uniformity Emin/Em	0,71	0,70	0,74
Uniformity Emin/Emax	0,40	0,43	0,54
Max glare (GR)	49	47	45
Light pollution (Rn)	0,00%	0,00%	0,00%

\* ballast losses included  
LA = long arc



LM MAX



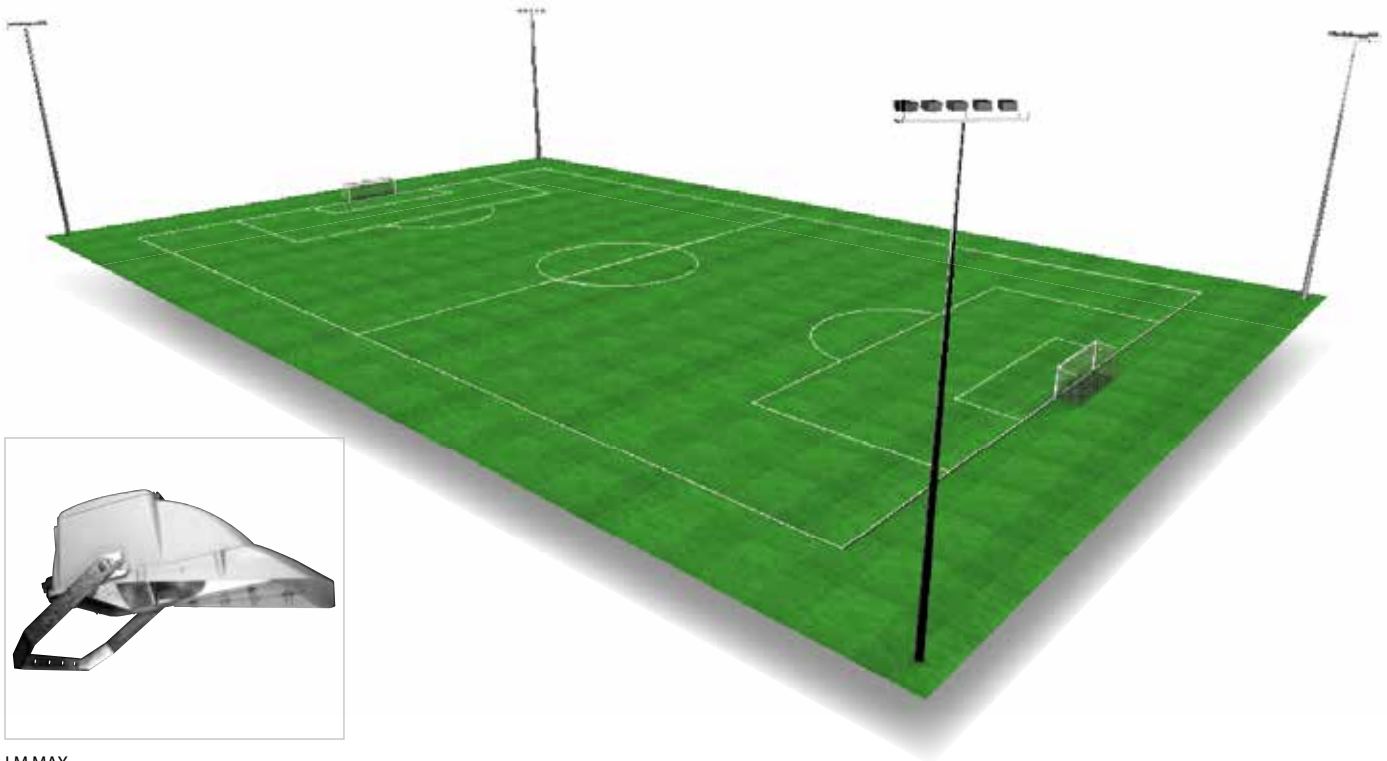
# Examples of lighting calculation



## FOOTBALL FIELDS APPLICATION

FLOODLIGHT TYPE	LIGHTMASTER MAX DOUBLE ENDED	LIGHTMASTER MAX DOUBLE ENDED	LIGHTMASTER MAX DOUBLE ENDED
Used lamp	JM-TS LA	JM-TS LA	JM-TS LA
Power (W)	2000W	2000W	2000W
Luminous flux	230.000	230.000	230.000
Overall maintenance factor	0,80	0,80	0,80
<b>Highmasts characteristics</b>			
Installation height (m)	20	25	18
Highmasts position	Behind the corners	Behind the corners	Behind the corners
Number of highmasts	4	4	4
Number of floodlight each highmast	7	11	17
Total number of floodlights	28	44	68
Total power installed* (kW)	58,8	92,4	142,8
Used optics	N°12 rotational paraellisoide	N°8 asy rectangular intensive N°36 rotational paraellisoide	N°4 asy rectangular intensive N°64 rotational paraellisoide
<b>Geometry of the playing field</b>			
Length (m)	105	105	105
Width (m)	65	65	65
<b>Results</b>			
Average luminance, Em (Lux)	320	506	763
Uniformity Emin/Em	0,80	0,77	0,81
Uniformity Emin/Emax	0,55	0,67	0,71
Max glare (GR)	48	46	45
Light pollution (Rn)	0,00%	0,00%	0,00%

\* ballast losses included  
LA = long arc



LM MAX

# Examples of lighting calculation



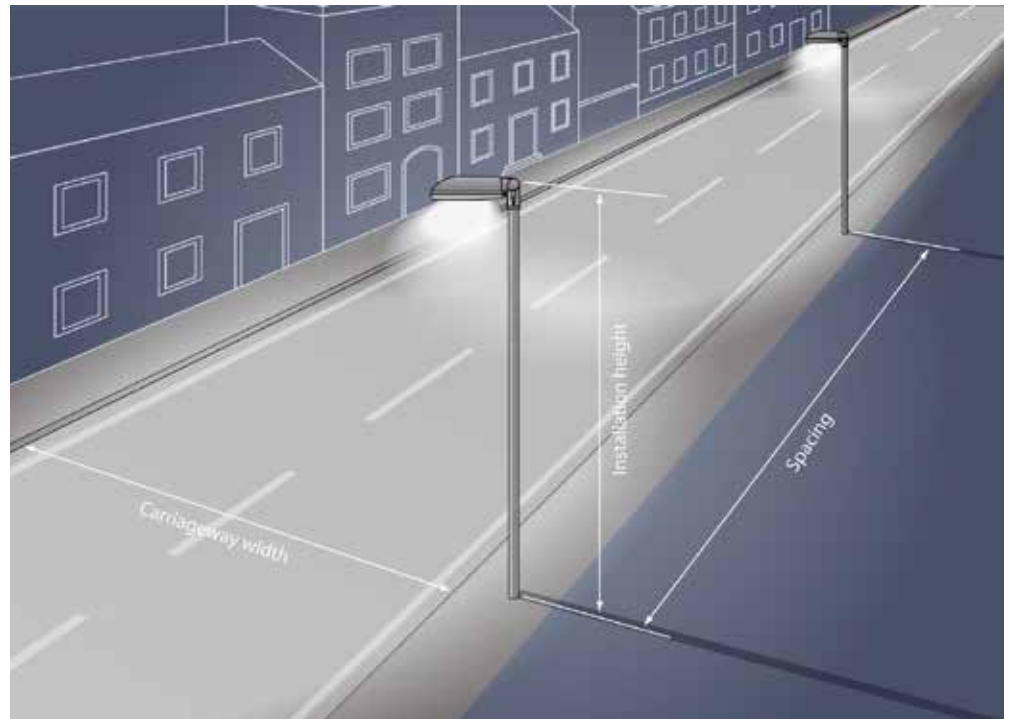
## ROAD LIGHTING

STREET LIGHTING CATEGORIES, IN ACCORDANCE WITH THE TECHNICAL REGULATION EN 13201-2*	M5	M4	M3
<b>Streetlight Type</b>	<b>SMART-VP 50</b>	<b>SMART-VP 70</b>	<b>SMART-VP 100</b>
Used lamp	<b>SAP</b>	<b>SAP</b>	<b>SAP</b>
Power (W)	50W	70W	100W
Luminous flux	4.200	6.600	10.700
Overall maintenance factor	0,80	0,80	0,80
<b>Pole characteristics</b>			
Installation height (m)	6	6	7
Extension arm lenght (m)	1	1	1
Streetlight center of gravity position with respect to the edge of the carriageway (m)	0	1	0
Tilting angle (tilt - °)	0°	0°	0°
Streetlight position	1 row righthand	1 row righthand	1 row righthand
Poles distance (m)	23	24	24
<b>Carriageway characteristics</b>			
Surface type	Asphalt CIE C2		
Reflectance of the road surface (Qo)	0,07		
Number of carriageways	1	1	1
Number of lanes	2	2	2
Carriageway width (m)	6	6	7
Median width (m)	-	-	-
<b>Results</b>			
Average luminance, Lm (cd/sqm)	0,54	0,89	1,00
General uniformity, Uo, Lmin/Lm	0,48	0,51	0,58
Longitudinal uniformity, UL	0,58	0,63	0,69
Glare, Threshold Increment, TI	8,00	10,00	8,00
Surround Ratio (Sr)	0,34	0,38	0,45

\* For the categories explanation, please refer to page 196 of the catalogue



SMARTVP



# Examples of lighting calculation



## ROAD LIGHTING

STREET LIGHTING CATEGORIES, IN ACCORDANCE WITH THE TECHNICAL REGULATION EN 13201-2\*

	M3	M2	M1	M1
<b>Streetlight Type</b>	<b>SMART-VP 150</b>	<b>SMART-VP 150</b>	<b>ITINERA-VP 250</b>	<b>ITINERA-VP 400</b>
Used lamp	<b>SAP</b>	<b>SAP</b>	<b>SAP</b>	<b>SAP</b>
Power (W)	150W	150W	250W	400W
Luminous flux	17.500	17.500	33.200	56.500
Overall maintenance factor	0,80	0,80	0,80	0,80
<b>Pole characteristics</b>				
Installation height (m)	9	9	12	14
Extension arm length (m)	0	0	1	2
Streetlight center of gravity position with respect to the edge of the carriageway (m)	-1	-0,5	0	1,5
Tilting angle (tilt - °)	0°	0°	0°	0°
Streetlight position	1 row righthand	1 central row each carriageway	1 central row each carriageway	1 central row each carriageway
Poles distance (m)	31	30	42	49
<b>Carriageway characteristics</b>				
Surface type	Asphalt CIE C2			
Reflectance of the road surface (Qo)	0,07			
Number of carriageways	1	2	2	2
Number of lanes	2	2	2	3
Carriageway width (m)	8	8	9	12
Median width (m)	-	2	2	2
<b>Results</b>				
Average luminance, Lm (cd/sqm)	1,04	1,55	2,17	2,56
General uniformity, Uo, Lmin/Lm	0,50	0,53	0,45	0,42
Longitudinal uniformity, UL	0,69	0,77	0,71	0,73
Glare, Threshold Increment, TI	6,00	6,00	7,00	10,00
Surround Ratio (Sr)	0,49	0,52	0,52	0,58

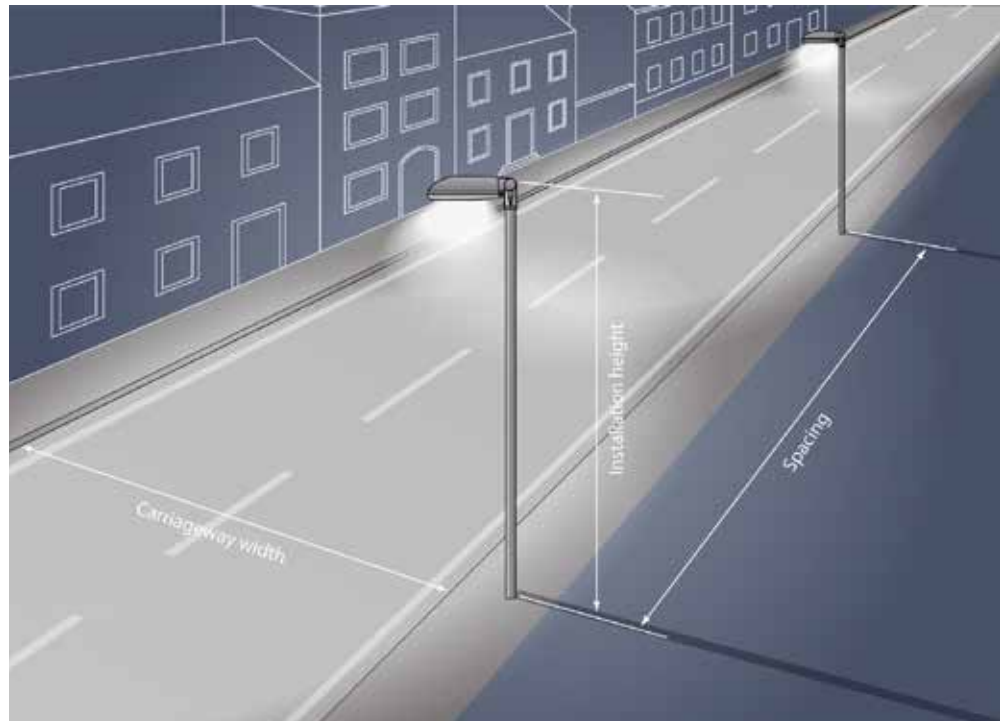
\* For the categories explanation, please refer to page 196 of the catalogue



SMART VP



ITINERA VP



# Paichadze National Stadium Tbilisi, Georgia



Homologation UEFA - FIFA  
Football field dimensions: 105x68 m.  
Spectators: 55000  
N° 198 Floodlights type: LIGHTMASTER ONE 2000W  
HF Lamp of 200000 Lumen  
Circular optic with R1-R2-R3-R4 beam  
Installation height: 33 m - under coverage

**Average horizontal illuminance:**  
Football field: 1750 Lux  
Uniformity U1: 0.81  
Uniformity U2: 0.91

**Average vertical illuminance "Main TVCamera":**  
Football field: 1930 Lux  
Uniformity U1: 0.70  
Uniformity U2: 0.82



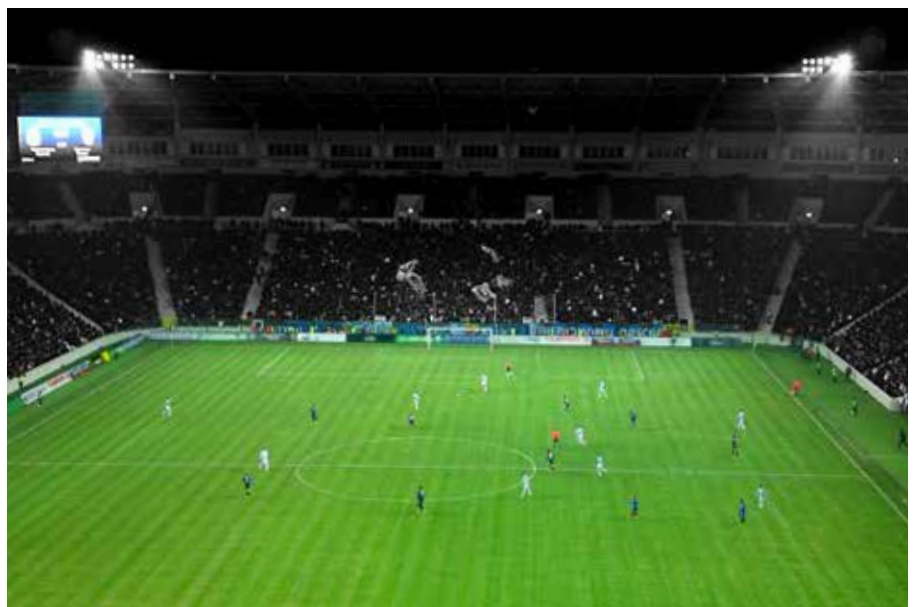
# Chernomorec Stadium Odessa, Ukraine



Homologation UEFA  
Field dimensions: 105x68 m.  
Spectators: 34164  
N° 188 Floodlights type: LIGHTMASTER ONE 2000W  
Circular optic with R1-R2-R3-R4-R5-R6-R7 beam  
Installation height: 31,5 m - under coverage

**Average horizontal illuminance:**  
Football field: 1833 Lux  
Uniformity U1: 0.83  
Uniformity U2: 0.90

**Average vertical illuminance "Main TVCamera":**  
Football field: 1512 Lux  
Uniformity U1: 0.58  
Uniformity U2: 0.78



# Hong Kong Stadium, Hong Kong



Homologation FIFA

Football field dimensions: 105x68 m.

Rugby field dimensions: 120x70 m.

Spectators: 40000

N° 320 Floodlights type: LIGHTMASTER ONE 2000W

HF Lamp of 230000 Lumen

Circular optic with R1-R2-R3 beam

Installation height: 31,5 m - on walkways under coverage

**Average horizontal illuminance:**

Football field: 3200 Lux

Uniformity U1: 0.81

Uniformity U2: 0.87

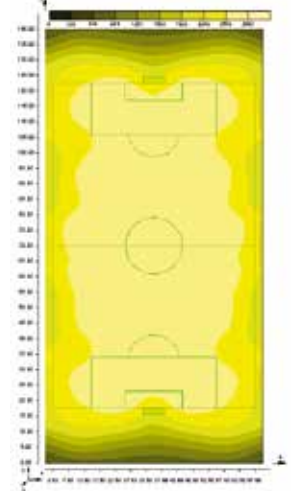
**Average vertical illuminance "Main TV Camera":**

Football field: 2700 Lux

Uniformity U1: 0.64

Uniformity U2: 0.79

Note : The project respect the parameters of the standard FIFA - Class V °.



# Merida Metropolitan Olympic Stadium, Venezuela



Homologation FIFA - CONMEBOL

Field dimensions: 110x70 m.

Spectators : 43000N° 288

Floodlights type: LIGHTMASTER 2000

Circular optic with R2-R3-R4-R5 beam

Installation height: 37 m.

**Average horizontal illuminance:**

Football field: 1750 Lux

Uniformity U1: 0.81

Uniformity U2: 0.88

Athletic race track: 1300 Lux

Uniformity U1: 0.67

Uniformity U2: 0.81

**Illuminance vertical average "Main TV Camera":**

Football field: 1600 Lux

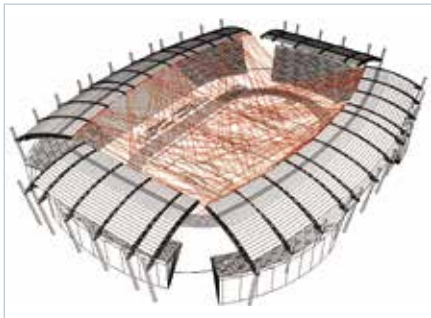
Uniformity U1: 0.62

Uniformity U2: 0.79

Athletic race track : 1040 Lux

Uniformity U1: 0.62

Uniformity U2: 0.78



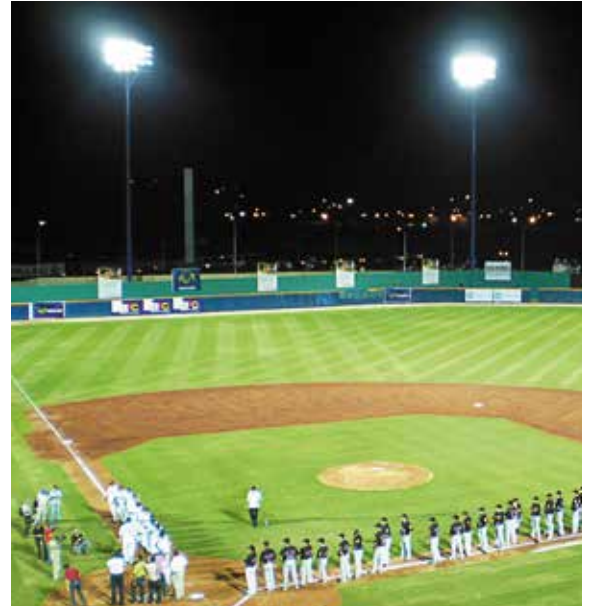
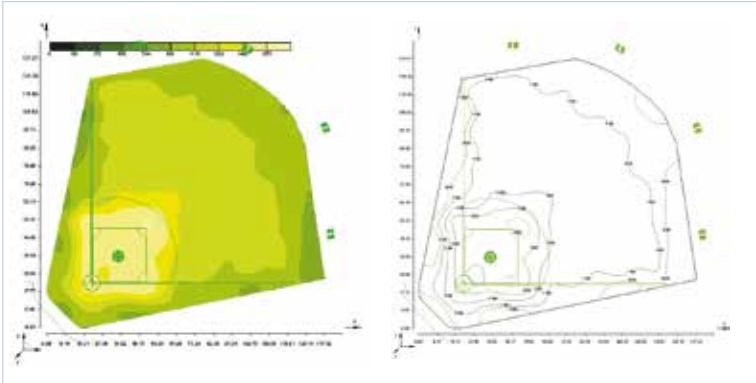
# Baseball stadium "Guatamare"- Porlamar - Venezuela



Homologation LVBP  
 Football field dimensions: 145x145 m.  
 Spectators: 12000  
 N° 198 Floodlights type: LIGHTMASTER 2000W  
 Circular optic with R2-R3-R4-R5-R6 beam  
 Installation type : 8 highmast of 35 m. height.

**Average horizontal illuminance:**  
 Infield : 1580 Lux  
 Outfield : 1140 Lux

**Average vertical illuminance "Main TV Camera":**  
 Infield : 2020 Lux  
 Outfield : 830 Lux



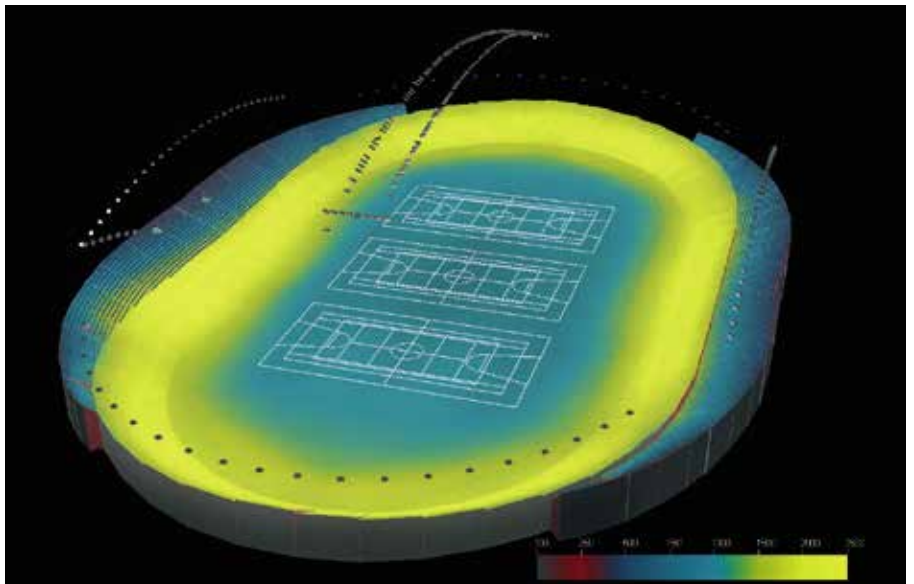
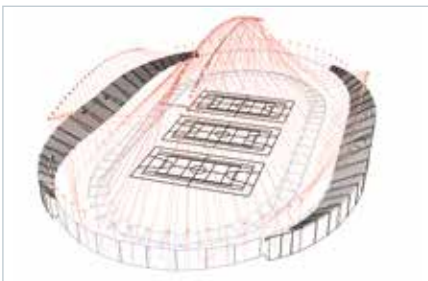
# BGZ Velodrome Arena "Pruszkow", Poland



Homologation UCI - Union Cycliste Internationale  
 Total race length : 250 m.  
 Spectators: 3000  
 N° 201 Floodlights type: LIGHTMASTER 1000  
 Circular optic with C2-C3-C4-C5 beam  
 Installation height: from 9 m. to 28 m.

**Average horizontal illuminance:**  
 Race : 3100 Lux  
 Uniformity U1 : 0.85  
 Uniformity U2 : 0.91  
 Photofinish : 4000 Lux

**Illuminance vertical average "Main TV Camera":**  
 Race : 1900 Lux  
 Uniformity U1 : 0.83  
 Uniformity U2 : 0.90  
 Photofinish : 2200 Lux



# Racetrack I PINI, Italy



Homologation U.N.I.R.E.

Total race length: 1400 m. X 27mt of width

Spectators: 10000

N° 350 Floodlights type: LIGHTMASTER ONE 2000W

Lamp of 200000 Lumen

Circular optic with C2-C3-C4-C5-C6 beam

Installation type: 23 highmast of 25 m. height.

**Average horizontal illuminance:**

Home stretch: 650 Lux

Curves: 600 Lux

Back stretch: 400 Lux

Photofinish: 700 Lux

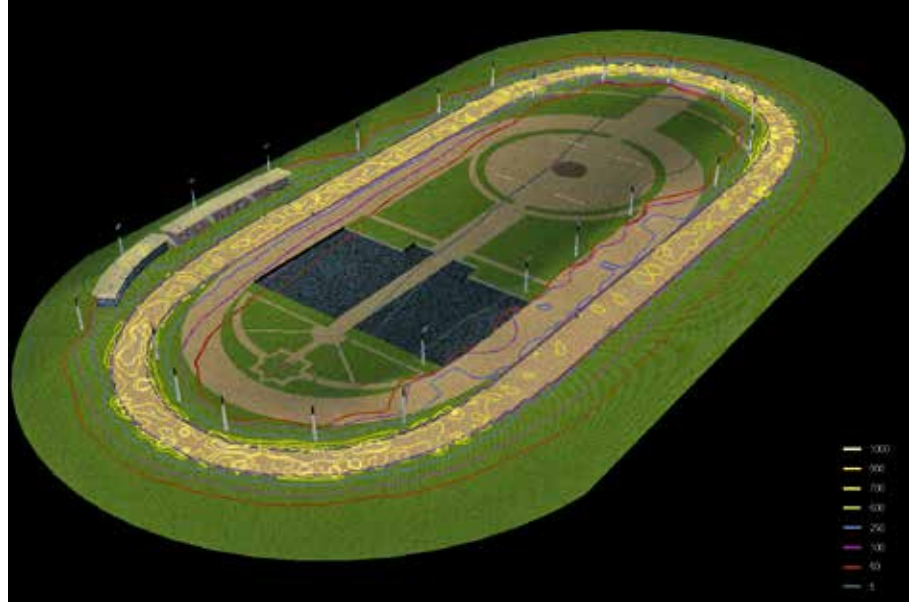
**Average vertical illuminance:**

Home stretch: 1000 Lux

Curves: 800 Lux

Back stretch: 800 Lux

Photofinish: 1200 Lux



# Sports Hall Louis II De Monaco, France



Homologation FIBA Level 2

Field dimension: 28 x 15 m.

N° 40 Floodlights type: LIGHTMASTER MAX

Lamp of 1000W double ended metal halide

Optic: Asy - Intensive

Installation height: 10 m.

**Average horizontal illuminance:**

Basket field : 1700 Lux

Uniformity U1 : 0.78

Uniformity U2 : 0.88

**Average vertical illuminance "Main TV Camera":**

Basket field : 1420 Lux

Uniformity U1 : 0.63

Uniformity U2 : 0.75



# Al Ain "Palm Sport Resort" Golf Course



9 Racing use holes and 9 Training use holes  
N° 498 Floodlights type: LIGHTMASTER ONE 2000W  
Lamp of 200000 Lumen  
Circular optic with R2-R3-R4-R5-R6-R7-R9 beam  
Installation type: 53 highmast of 25 m. height.

**Average horizontal illuminance:**  
Tea & Green : 250 Lux

**Average vertical illuminance:**  
Total Area : 200 Lux



# Poliedro de Caracas - Venezuela



Homologation FIBA LEVEL I  
Area dimension: 34 mt x 20 mt  
Spectators: 13500  
N° 76 Floodlights type: LIGHTMASTER ONE 2000W  
Lamp: HQI-TS 2000/D/S  
Circular optic with R5, R6, R7, R9 beam  
Installation type: 8 modules of 22,5 mt height

**Average horizontal illuminance:**  
5104 Lux  
Uniformity U1: 0.77  
Uniformity U2: 0.84

**Average vertical illuminance "Main TV Camera":**  
3214 Lux  
Uniformity U1: 0.73  
Uniformity U2: 0.83





# Senegal International Airport, Senegal



N° 529 Floodlights type: LIGHTMASTER 1000W  
Lamp of 90000 Lumen  
Optics: Asy - Intensive  
Installation height: 71 highmast of 25 m.,  
from 20 m. to 25 m. height.

**Average horizontal illuminance:**  
> 40 Lux

**Average vertical illuminance:**  
Total Area: 200 Lux

Note:  
The project respect ICAO international standard.



# Codes & Pages

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00475	30-61-67-83	12403	124-131	40782	123	44302	130
00878	30-37-43-61-67-83-84	12404	124	40783	123	44303	130
02676	124-131	12405	124	40785	123	44305	130
02955	30-37-43-61-67	12874	124	41800	122	44315	130
04192	30-77	13110	30-37-43-50	41801	122	44316	130
04413	124-131	13111	30-37-43-50	41802	122	44330	130
04644	30-61-67-83-84	13406	131	41803	122	44331	130
05144	84	13407	131	41805	122	44332	130
05145	84	13408	131	41850	122	44333	130
05146	30-77-84	13409	131	41851	122	50494	81
05769	83	13966	50	41852	122	50495	81
06660	30-61-67-83	13967	30-61-67	41853	122	50497	81
06700	30-61-67	14047	100	41855	122	50498	81
06891	30-77	14342	30-37-43-50-77	44000	129	50530	93-94
06900	30-77	14846	30	44001	129	50570	81
06901	30-37-43-50-77	15679	30-77	44002	129	50571	81
07130	30-37-43-50-77-84	16099	131	44003	129	50602	75
07131	30-77	16100	124-131	44005	129	50603	75
07649	131	16101	131	44015	129	50611	76
07798	83	16547	30	44016	129	50612	82
07826	30-61-67-83	17768	37	44030	129	50613	82
07828	131	17769	37	44031	129	50614	82
08107	113	25401	100	44032	129	50615	82
08129	107	25402	94-100	44033	129	50618	76
08821	131	30518	93	44081	129	50619	76
09095	113	30608	93	44082	129	50622	82
09096	107	32001	99	44083	129	50623	82
09097	113	32002	99	44100	129	50624	82
09098	107	32042	99	44101	129	50625	82
09229	50	32116	99	44102	129	50626	82
09263	61	32117	99	44103	129	50627	82
09568	30-61-67-84	32142	99	44105	129	50640	82
09569	30-37-43-61-67-83-84	33030	99-100	44115	129	50641	82
09719	124	40700	121	44116	129	50693	81
09727	124	40701	121	44130	129	50694	81
10235	50	40702	121	44131	129	50698	82
10236	50	40703	121	44132	129	50699	82
10239	30-50	40704	121	44133	129	50704	82
10240	30-37-43-50	40705	121	44181	129	50705	82
10292	30-37-43-61-67	40720	123	44182	129	50904	105
10293	30-37-43-61-67	40721	123	44183	129	50924	111
10294	30-61-67	40722	123	44200	130	50944	106
10295	30-61-67	40723	123	44201	130	50954	112
10783	124	40725	123	44202	130	52501	111
10819	37	40747	121	44203	130	52504	112
11365	94	40750	121	44205	130	52600	105
11624	77	40751	121	44215	130	52603	106
12035	131	40752	121	44216	130	52840	81
12036	131	40753	121	44230	130	52841	81
12051	124	40754	121	44231	130	52842	81
12144	37	40755	121	44232	130	52843	81
12337	124-131	40756	121	44233	130	52845	81
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60031	124-131	60391	85	70126	49	70711	56
60050	77-83	60392	30-77	70127	49	70717	56
60051	77	60401	30-37-50-77	70128	49	70750	55
60060	77	60402	131	70129	49	70751	55
60063	124-131	60403	67	70201	48	70757	55
60092	77-83	60404	85	70204	48	70758	55
60093	83	60405	67	70207	48	70761	56
60101	107-113	60406	85	70211	48	70767	56
60137	61	60409	85	70214	48	70771	56
60147	85	60410	37-43	70217	48	70777	56
60214	84	60412	37-43	70221	49	70781	57
60218	94	60414	37-43	70222	49	70782	57
60222	113	60428	37	70223	49	70783	57
60226	113	60447	85	70226	49	70784	57
60231	94	60451	30	70227	49	70785	57
60232	94	60455	30-50-67	70228	49	70792	57
60234	94	60460	100	70251	49	70793	57
60235	94-100	60462	100	70252	49	70794	57
60237	94-100	60464	100	70253	49	70795	57
60238	94-100	60468	100	70256	49	70820	60
60239	94-100	70001	47	70257	49	70821	60
60240	94-100	70002	47	70258	49	70822	60
60242	94-100	70004	47	70501	55	70825	59
60244	94-100	70005	47	70502	55	70826	59
60246	94-100	70007	47	70507	55	70827	59
60247	43	70008	47	70508	55	70830	60
60254	107	70011	47	70511	55	70831	60
60261	113	70012	47	70512	55	70832	60
60267	107	70014	47	70517	55	70833	59
60271	107	70015	47	70518	55	70834	59
60280	107-113	70017	47	70531	56	70835	59
60281	107-113	70018	47	70537	56	70836	59
60282	107-113	70031	48	70541	56	70837	59
60285	50	70034	48	70547	56	70838	60
60286	50-67	70037	48	70561	57	70839	60
60287	50	70038	48	70562	57	73001	29
60288	50-67	70041	48	70563	57	73002	29
60289	50	70044	48	70564	57	73005	29
60290	61	70047	48	70565	57	73006	29
60291	61	70048	48	70572	57	73021	23
60292	61	70051	49	70573	57	73022	23
60293	61	70052	49	70574	57	73023	23
60294	61	70053	49	70575	57	73035	24
60303	85	70054	49	70581	57	73036	24
60304	85	70055	49	70582	57	73037	24
60306	85	70056	49	70583	57	73041	29
60309	85	70057	49	70584	57	73042	29
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73101	29	73502	29	74602	48	75235	36
73102	29	73506	29	74611	48	75236	36
73105	29	73521	25	74612	48	75237	36
73106	29	73522	25	74651	48	75238	36
73121	23	73523	25	74652	48	75239	36
73122	23	73535	26	74671	48	75281	36
73123	23	73536	26	74672	48	75282	36
73135	24	73537	26	75031	36	75283	36
73136	24	73541	29	75032	36	75284	36
73137	24	73542	29	75033	36	75285	36
73141	29	73546	29	75034	36	75286	36
73142	29	73561	25	75035	36	75287	36
73143	29	73562	25	75036	36	75288	36
73161	23	73563	25	75037	36	75289	36
73162	23	73575	26	75038	36	75481	42
73163	23	73576	26	75039	36	75482	42
73175	24	73577	26	75081	36	75483	42
73176	24	73901	27	75082	36	75484	42
73177	24	73902	27	75083	36	75485	42
73401	29	73911	27	75084	36	75486	42
73402	29	73912	27	75085	36	75487	42
73406	29	74001	65	75086	36	75488	42
73421	25	74002	65	75087	36	75489	42
73422	25	74003	65	75088	36	75681	42
73423	25	74021	65	75089	36	75682	42
73435	26	74022	65	75111	36	75683	42
73436	26	74023	65	75112	36	75684	42
73437	26	74051	65	75113	36	75685	42
73441	29	74052	65	75114	36	75686	42
73442	29	74053	65	75115	36	75687	42
73446	29	74071	65	75116	36	75688	42
73461	25	74072	65	75117	36	75689	42
73462	25	74073	65	75118	36		
73463	25	74401	66	75119	36		



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