# Hulla

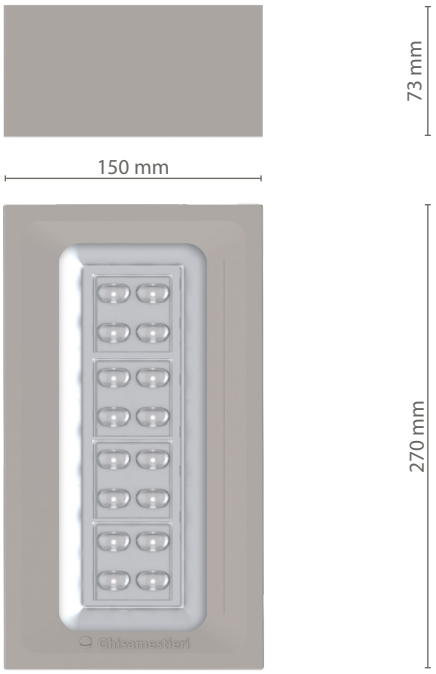
Product code: HMC

Ghisamestieri
the green way of light



## Available versions

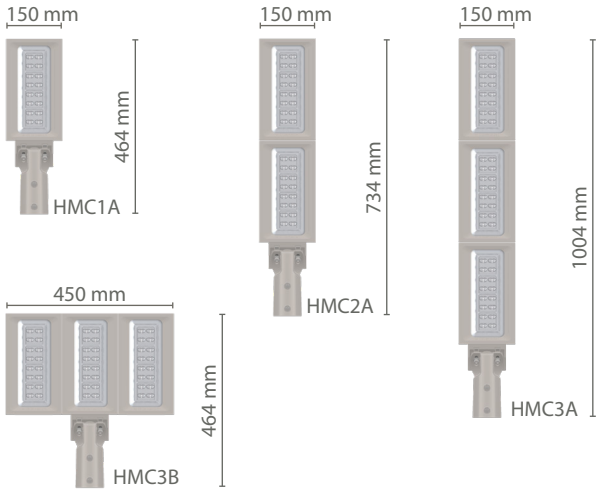
**Compact**
No openable fixture:
equipped with outgoing cable
and fast connector IP68.




Scale: 1:5

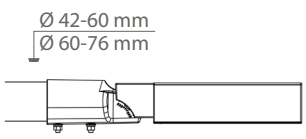
| Max. weight | CXS |
|---|---|
| 4,0 Kg | Lateral: 0,02 m² \|Pian: 0,04 m² |

## Module combining



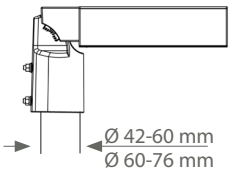

## Fixing type

Side




Adjustable with 5° step +5° 0° -15°

Pole-top




Adjustable with 5° step +15° 0°

## Standard

EN 60598-1, EN 60598-2-3, EN 62471, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3

## Conformity | protection

**Conformity**

**Salt spray test**
ISO 9227
8000 hr

**Vibration test passed**
IEC 60068-2-6

**Insulation classes**

**Protection classes**
IP 66 IK 08

**Photobiological safety**
Classe 0
Exempt group
IEC/TR62778

## Plus

CUTOFF | OPTICAL FLEXIBILITY | LOW GLARE | IPEA MIN A++

## Lighting fixture features

### General features

| | |
|---|---|
| **Power source:** | 220-240V \| 50/60Hz \| tolerance +/-10% \| other voltages on request |
| **Current supply:** | 525mA \| 700 mA ($P_{max}$[3 modules]= 105 W) |
| **Power Factor \| THD:** | ≥0.95 \| <10 % (At full load) |
| **Expected life (Ta=25°):** | > 100.000 h \| L90B10 \| @700mA |
| **Operational temperature (Ta):** | $T_{min}$= -40°C $T_{max}$= +55°C \| 700 mA |
| **Storage temperature:** | -40°C/+80°C |
| **Overcharge protection:** | Impulse whitstand up to 10kV CM/DM |
| **Standard functions:** (Details pag.4) | Current fixed \| Virtual midnight \| 1-10V \| CLO |

### Materials

| | |
|---|---|
| **Lighting fixture:** | Die cast aluminium \| EN1706 |
| | Extruded aluminium \| EN573-3 |
| **Optical system:** | Nano-optics in PMMA |
| | Plastic reflecor metallic painted |
| **Screen:** | Ultraclear tempered glass \| Th. 4mm |
| **Gaskets:** | Silicon |
| **Cable gland:** | Polyamide PA66 \| PG16 \| Ø 14mm MAX \| IP 68 |
| **Screws and bolts:** | AISI 304 stainless steel |
| **Fixture color:** | Light grey Ghisamestieri® |

## Led features

| | |
|---|---|
| **LED data 4.000 K - 700mA:** | 340 lm/LED \| 180 lm/W \| 25°C [Tj] \| ≤ 3 step macadam |
| **Colour temperature:** | 3.000 K \| 4.000 K \| 5.700 K \| CRI ≥ 70 |
| **"Flip chip LED" technology:** | Hight performance and hight quality LED equipped with gold electrode; hight protection against corrosion and color shifting. |

## Optional

| | |
|---|---|
| **Overcharge protection:** | *optional - SPD with warning LED* |
| | CLASS 1 \| CLASS 2 |
| | 10kV / 10kA CM/DM |
| **Optional functions:** (Details pag.4) | DALI-DALI2 |

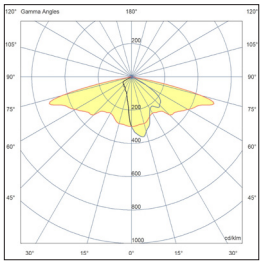
# Hulla

## Available optical system



### PEDESTRIAN PATHS\\
***OPTIC TYPES 2***

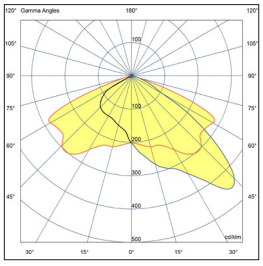
**TYPE 2A**



**Asymmetrical light,** designed to suit streets and pedestrian or cycle paths.

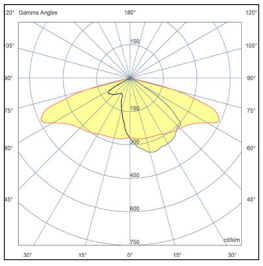
### URBAN AND SUBURBAN STREETS, SQUARES, PARKING LOTS AND ROUNDABOUTS\\
***OPTIC TYPES 3***

**TYPE 3A**



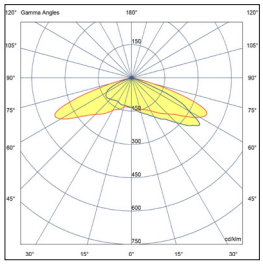
**Asymmetrical light,** designed to suit streets and road wet surface.

**TYPE 3B**



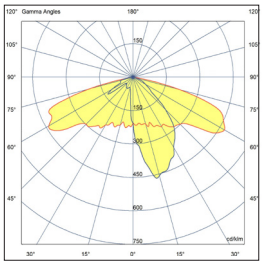
**Asymmetrical light,** designed to suit suburban and urban streets.

**TYPE 3C**



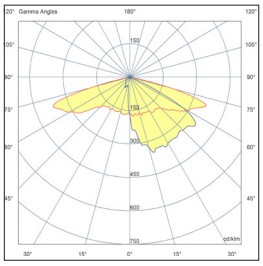
**Asymmetrical light,** designed to suit very large streets, parking lots and roundabouts.

**TYPE 3D**



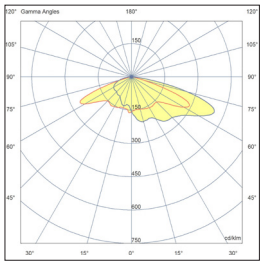
**Asymmetrical light,** designed to suit streets and pedestrian paths.

**TYPE 3E**



**Asymmetrical light,** designed to suit very large streets, parking lots and roundabouts.

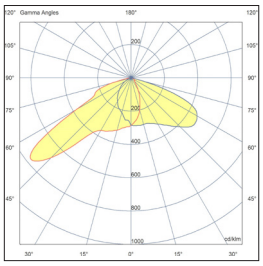
**TYPE 3F**



**Asymmetrical light,** designed to suit very large streets and road with a low installation of the lighting fixture, parking lots and roundabouts.

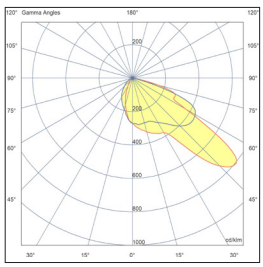
### PEDESTRIAN CROSSINGS\\
***OPTIC TYPES 4***

**TYPE 4A**



**Asymmetrical light,** designed to suite installation to pedestrian crossings.

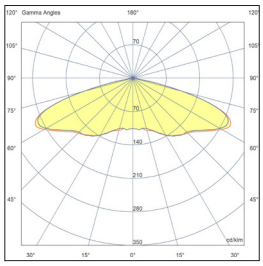
**TYPE 4B**



**Asymmetrical light,** designed to suite installation to pedestrian crossings.

### PARKS AND SQUARES\\
***OPTIC TYPES 5***

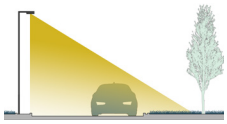
**TYPE 5A**



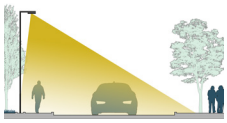
**Symmetrical light,** designed to be installed in parks, squares,parking lots and other large surfaces.

### APPLICATION EXAMPLES\\

TYPE 2A | TYPE 3D

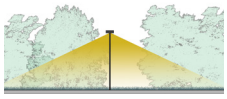


TYPE 2A | TYPE 3D

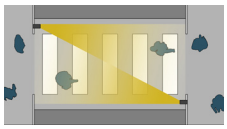


TYPE 3A | TYPE 3B

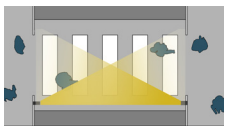
TYPE 3C | TYPE 3E | TYPE 3F



TYPE 5A



TYPE 4A | TYPE 4B



TYPE 4A + TYPE 4B

# Hulla

## Photometric data



The LED modules nominal data refers only to the LED light sources in a standard version, with 4000 K color temperature, color rendering index CRI 70 min. and a junction temperature tj of 25°C. The LED nominal data are extrapolated from the manufacturer documentations.

The lighting fixture measured data refers to GHISAMESTIERI products in a standard version, with 4000 K color temperature, optica type <<Ottica>> and an ambient temperature ta of 25 °C.
Ghisamestieri offers the possibility of driving the device with custom currents (•).
To obtain luminous fluxes and efficiencies of the lighting fixture in case of optic type and/or color temperature and/or color rendering index different from the standard use the conversion factors shown in the tables.

### LED modules nominal data (4000 K | CRI 70 min.| tj=25°)

| LED code | I [mA] | Luminous flux [lm] | Power [W] | Efficiency [lm/W] |
|---|---|---|---|---|
| GL04 | 525 | 4255 | 23,0 | 185 |
| | 700 | 5394 | 31,0 | 174 |
| GL08 | 525 | 8510 | 46,0 | 185 |
| | 700 | 10788 | 62,0 | 174 |
| GL12 | 525 | 12765 | 69,0 | 185 |
| | 700 | 16008 | 92,0 | 174 |

### Lighting fixture measured data (4000 K | OTTICA 3B | ta=25°)

| Order code: | (•) I [mA] | Luminous flux [lm] | Power [W] | Efficiency [lm/W] |
|---|---|---|---|---|
| HMC1A_GL04 | 525 | 3652 | 27,0 | 135 |
| | 700 (max) | 4723 | 36,0 | 131 |
| HMC2A_GL08 | 525 | 7354 | 52,5 | 140 |
| | 700 (max) | 9511 | 70,0 | 136 |
| HMC3A_GL12 / HMC3B_GL12 | 525 | 11031 | 77,0 | 143 |
| | 700 (max) | 14267 | 103,0 | 139 |

**OPTIC CONVERSION FACTOR LUMINOUS FLUX**

| Optic type | Flux multiplier |
|---|---|
| 1A (*) | 1,00 |
| 2A (*) | 0,99 |
| 3A \| 3C \| 3D \| 3E \| 3F | 0,99 |
| 4A \| 4B | 0,98 |
| 5A (*) | 1,01 |

**Tk CONVERSION FACTOR LUMINOUS FLUX**

| Tk [K] | Flux multiplier |
|---|---|
| 2.200 (**) | 0,70 |
| 3.000 | 0,94 |
| 5.700 | 1,01 |

**CRI CONVERSION FACTOR LUMINOUS FLUX**

| CRI (color render index) | Flux multiplier |
|---|---|
| 70 | 1,00 |
| 80 | 0,93 |

(*) See pag.2 to check the optic type availability.
(**) See pag.1 to check the colour temperatureb availability.

# Functions

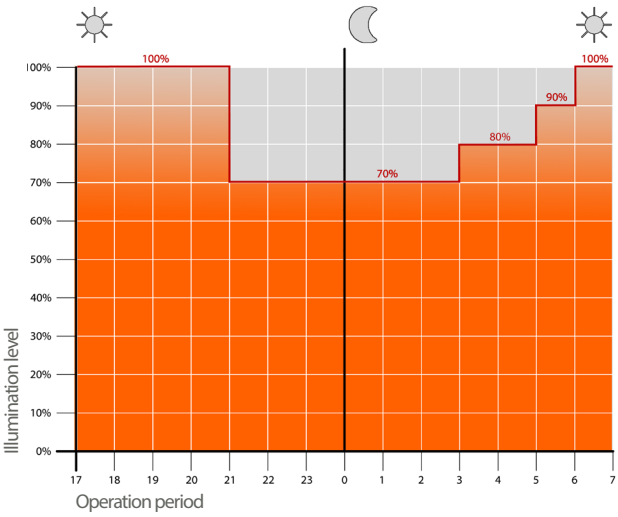
## Standard functions

**Fixed Output**
The lighting fixture is set to use a fixed current among the standard ones indicated in the tables on page 3. It is possible to set other currents on customer request (custom).

**Virtual midnight | Automatic lighting control**
The driver is programmed to automatically switch the light On or Off based on the time of the day ensuring high energy saving.
The maximum output is usually set during the first and last hours of operation that statistically are proven to have higher traffic, it will then decrease during the middle hours when there is less traffic. The system is able to automatically regulate itself, identifying the average between the instant it turns on and turns off. This is called "virtual midnight" and is the reference point for reducing the light emission based on the desired profile. The output will automatically adapt to the length of the night throughout the year.

**1-10V | Flux control by analogic control**
It is possible to adjust the amount of luminous output by means of an analog input signal that has a minimum level of 1V and maximum of 10V. The device is fitted with L-N-1 / 10V cable connection.

**CLO | Costant lumen output**
Considering LED performance deteriorates with use and time, it may be compensated by using a lower than maximum flux output and maintaining it constant in time by progressively increasing the current. In this case maintenance and management costs of the systems are considerably lower.

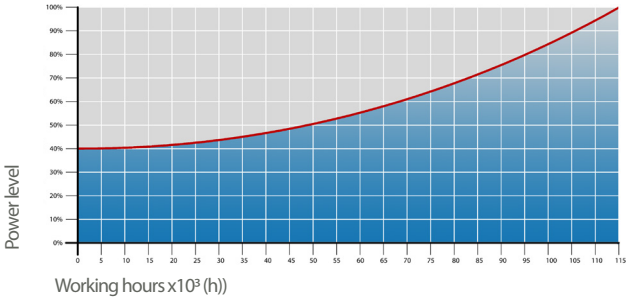



**Example of 4-step adjustment with virtual midnight**

## Optional functions

**DALI - DALI2 | Controllo e programmazione digitale**
On request, the lighting body can be supplied with a DALI interface. The DALI system allows a lighting system to be controlled by providing control and diagnostic functions.

**DALI SENSOR**
With the DALI SENSOR interface it is possible to manage the functions of the DALI - DALI2 protocol. In addition, there is a low voltage AUX switch to manage remote control systems and external sensors in a Smart City perspective.




**CLO | Costant lumen output**

# Protection cycles

Ghisamestieri works with cast iron, steel and aluminum. The materials are selected and processed to maximize performance and quality.

## GALVANIZED STEEL

### Protection of galvanized steel surfaces for poles

The protection of galvanized steel elements is achieved by following steps:

- Micro sandblasting;
- First epoxy layer application followed by:
Wilting > Drying > Cooling;
- Acrylic glaze layer application followed by:
Wilting > Drying > Cooling;
- Packing at least after 24-hour-drying at room temperature.

### Protection of galvanized steel surfaces for brackets and pastorals

The protection of the galvanized steel elements is achieved thanks to:

- Micro sandblasting;
- Phosphoric pickling bath at a ph level ranging from 1.5 to 3;
- Rinsing with demineralised water;
- First powder layer application;
- Kiln firing;
- Application of a final powder layer;
- Kiln roasting of the final powder layer at 180°;
- Cooling.

## CAST IRON

### Protection of cast iron surfaces for bases

The protection of cast iron elements is achieved by the following treatments:

- Surface micro shotblasting;
- Mono-component dip galvanizing followed by:
Wilting > Drying > Cooling;
- Epoxy micaceous primer application followed by:
Wilting > Drying > Cooling;
- Acrylic enamel application followed by:
Wilting > Drying > Cooling;
- Packing at least after 24-hour-drying at room temperature.

## DIE-CAST ALUMINIUM

### Protection of die-cast aluminium surfaces for lighting fixtures, tops, collars, brackets and pastorals

Brackets, pastoral, and die-cast accessories undergo a cycle of powder painting which creates a barrier against the corrosion of metal parts. Moreover this barrier makes the finished product comply with design specifications in terms of surface roughness, color and reflectance. The cycle consists of the following steps:

- Micro sandblasting;
- Hot pickling bath in a zinc-based phosphodegreasing solution;
- Specific process for the preparation of surfaces before painting;
- Washing with water;
- Rinsing with demineralised water and subsequent drying;
- First bowder layer application followed by kiln baking at 180°;
- Final powder layer application using a High Durability product and final kiln roasting at 180°C.

**Salt spray test | FLORIDA TEST**

The top quality of such treatments is confirmed by salt spray tests performed in accordance with standard ISO 9227:2017 Neutral Salt Spray test (NSS).
The test was carried out for 8.000 hours at 35 °C and demostrated through the report test released.

**Ghisamestieri the green way of light s.r.l**

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