

## HIGH TEMPERATURE CANOPY LUMINAIRE

## Manta HT



Shown: Manta HT Surface, 14,400 lm, diffuse borosilicate front.

CE IP69K IK08 Class II Ta -45 ... +120 °C

C5 ISO 9223 90-305 VAC silicone cable 5 m

borosilicate option 192 lm/W recess and surface

5-year warranty to +120 °C

14,400 lumens at 75 watts and an ambient temperature of +120 °C, in the same 380 × 380 mm panel. The ceiling luminaire for hot covered spaces: oven roofs, drying chambers and process canopies.

LUMINOUS FLUX

**14,400** lm

POWER

**75** W

EFFICACY

**192** lm/W

AMBIENT

**+120** °C

INGRESS

**IP69K**

PANEL

**380 × 380**  
mm

Values apply at 6500 K, at the stated ambient temperature, including driver consumption. Bi-colour and amber are not available on the high temperature versions.

## WHY IT IS SPECIFIED

**192 lm per watt at +120 °C.** A high temperature luminaire normally costs efficacy because the usual approach is to derate a standard product. The Manta HT keeps most of the efficiency that makes the standard Manta what it is.

**A flat panel in a hot ceiling.** In an oven roof there is no depth available and no access from above. The recessed version is 20 mm deep and the panel is the whole luminaire.

**Silicone cable to the driver.** The driver sits outside the hot zone and is connected with 5 m of heat resistant silicone cable, so the only component in the heat is the one that can take it.

## WHERE IT IS USED

Oven and kiln roofs

Drying chambers and curing tunnels

Bakery and food process ovens

Paint lines and powder coating booths

Heat treatment and annealing chambers

Climate and test chambers

Sterilisation and autoclave rooms

Process canopies and extraction hoods

Foundry and melt shop covered walkways

Boiler house ceilings

Covered areas above hot process equipment

## VERSIONS

|                   | Recess HT      | Surface HT     |
|-------------------|----------------|----------------|
| Article base code | MNHT02         | MNHT01         |
| Luminous flux     | 14,400 lm      | 14,400 lm      |
| Power             | 75 W           | 75 W           |
| Efficacy          | 192 lm/W       | 192 lm/W       |
| Depth             | 20 mm          | 95 mm          |
| Weight            | 3.9 kg         | 4.9 kg         |
| Ambient           | -45 to +120 °C | -45 to +120 °C |

HT optics are not possible on the Manta: the housing is too shallow to carry one, so both high temperature versions are 120° very wide. For high temperature with optics, see the **Linear HT**, the **Barracuda HT** or the **Orca HT**.

# The HT system

Engineered as a system for heat, not as a luminaire that tolerates it.

Standard industrial LED luminaires are specified to roughly +50 °C ambient. Above that the driver electronics fail first: in virtually every failure of LED lighting in a hot environment, the driver is the weak link. Every installation in the HT line therefore consists of two parts. The heat resistant luminaire sits in the hot zone and the driver sits outside it, supplied bare as standard or built into a DRB driver box, joined by heat resistant silicone cable. Nothing that fails at temperature is left in the heat.

**+120 °C**

continuous, with full warranty

**+130 °C**

short peaks permitted

**5 m**

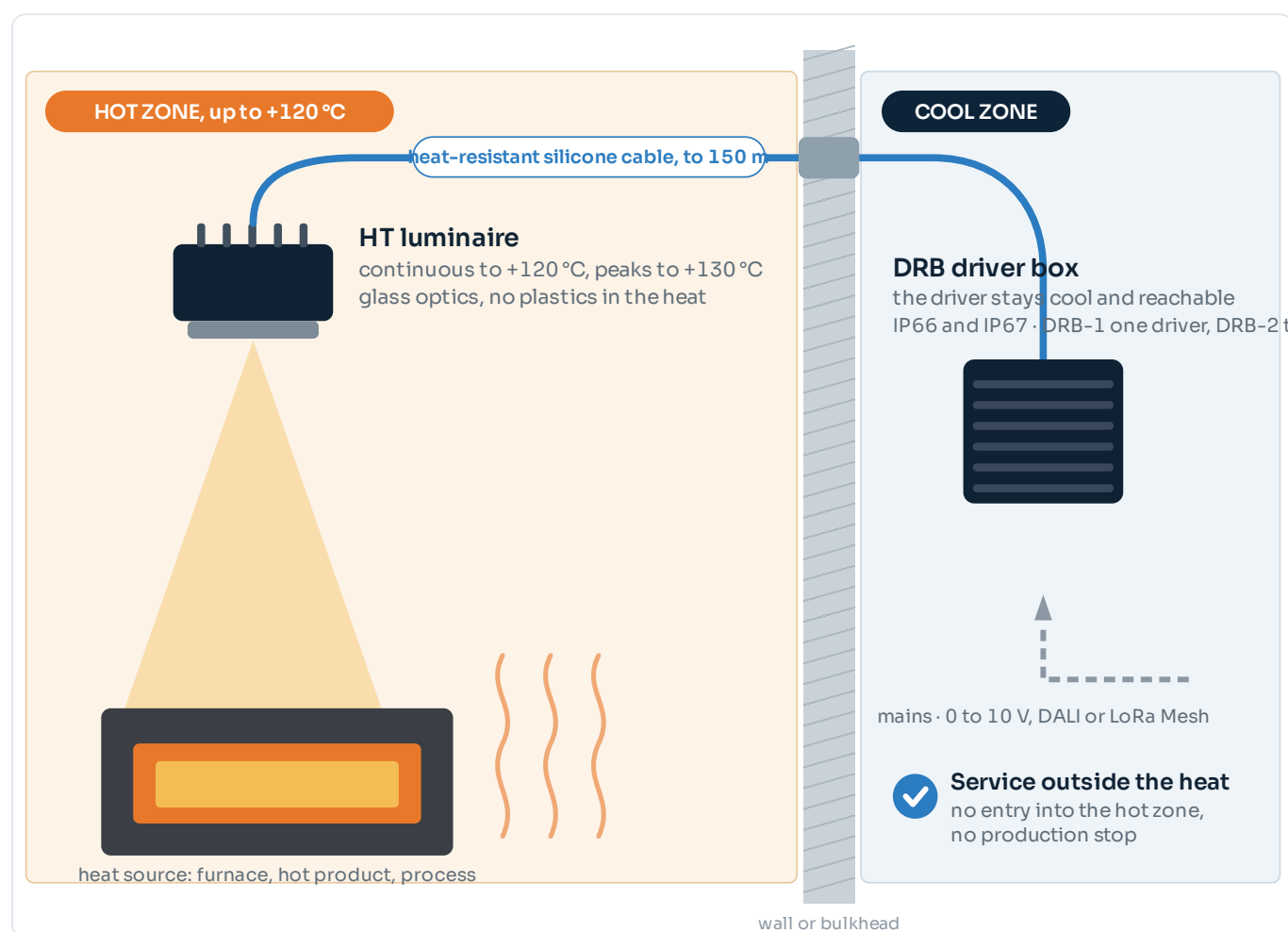
heat-resistant silicone cable

**130,000 h**

driver life at Tc 50 °C

**IP67**

remote driver and DRB box



The HT system: the luminaire in the heat, the driver outside it.

## BUILT-IN SELF-PROTECTION

The luminaire protects itself with internal temperature feedback. As the internal temperature rises it dims back automatically, and on overheating it switches itself off. That feedback runs through the four core supply of every luminaire: two cores of 2.5 mm<sup>2</sup> for power and two of 0.5 mm<sup>2</sup> for temperature control. It is the reason the cable specification has four cores rather than two.

**Above +130 °C, or unsure about the thermal load?** Our engineers calculate the thermal load per mounting position and design the complete system, including the driver location, cable route and DRB selection. Photometric values are measured at a +50 °C reference ambient. HT luminaires are not ATEX certified.

## Light output and optics

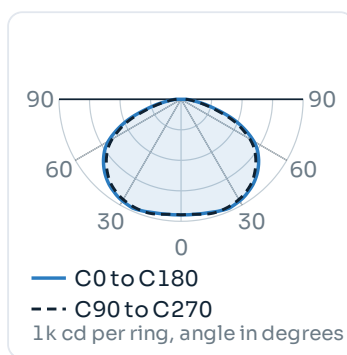
Values apply at Ta 25 °C, including driver consumption. The luminous flux is maintained across the full ambient range; what changes with temperature is the LED service life, stated as a ladder in the colour table.

### BEAM CHARACTERISTICS

| Version       | Distribution               | Beam angle<br>50 % of peak | Field angle<br>10 % of peak | Typical use                                                           |
|---------------|----------------------------|----------------------------|-----------------------------|-----------------------------------------------------------------------|
| Both versions | No optics, very wide       | 136°                       | 168°                        | A hot ceiling directly above the work:<br>oven roofs, chambers, hoods |
| HT optics     | Not available on the Manta | –                          | –                           | See the Linear HT, the Barracuda HT or the Orca HT                    |

HT optics of 20°, 40° and 60° exist for the Orca, the Barracuda and the Linear only. On the Manta, the Snapper and the Goby the housing is too small or too shallow to carry one, so those versions are supplied as 120° very wide. In a chamber or under a hood that is what is wanted anyway, because the luminaire sits directly above the work.

### LIGHT DISTRIBUTION



### OBTRUSIVE LIGHT

|                     |                                                |
|---------------------|------------------------------------------------|
| ULOR at 0° tilt     | <b>0 %</b>                                     |
| Colour temperatures | 6500 K, 4000 K and 2700 K                      |
| Bi-colour           | Not available on the high temperature versions |

Nothing is emitted above the horizontal at 0° tilt. That is the figure a permitting authority asks for when a site borders a residential area or a protected zone, and it is the starting point for any assessment against NEN-EN 12464-2 and the NSVV guidance on obtrusive light. Where the site condition demands a cut off optic rather than a controlled floodlight, see the DarkLight range.

### COLOUR AND CONSISTENCY

|                     |                                                                                        |
|---------------------|----------------------------------------------------------------------------------------|
| Colour temperatures | 6500 K, 4000 K, 2700 K                                                                 |
| Bi-colour           | Not available on the high temperature versions                                         |
| Colour rendering    | Ra > 70 standard, optionally 80 or 90                                                  |
| Colour consistency  | MacAdam step 3 or better                                                               |
| LED service life    | TM-21 L90B05, see the temperature ladder below                                         |
| Ladder              | > 360,000 h at 50 °C ·<br>103,000 h at 85 °C · 71,700 h at 105 °C · 51,400 h at 120 °C |

# Full specification

All values apply to the standard configuration at 25 °C ambient, including lens losses and driver consumption. A hyphen means the entry does not apply to that version.

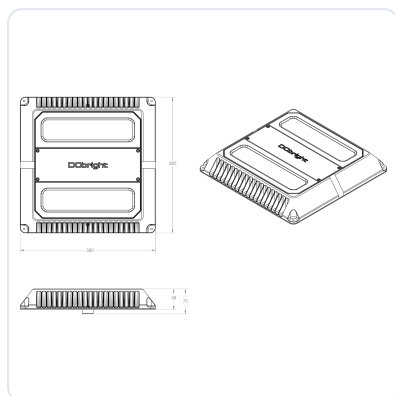
|                           | Recess HT                                                                                         | Surface HT        |
|---------------------------|---------------------------------------------------------------------------------------------------|-------------------|
| PERFORMANCE               |                                                                                                   |                   |
| Luminous flux             | 14,400 lm                                                                                         | 14,400 lm         |
| Power consumption         | 75 W                                                                                              | 75 W              |
| Efficacy                  | 192 lm/W                                                                                          | 192 lm/W          |
| Beam                      | 120° very wide                                                                                    |                   |
| ELECTRICAL AND DRIVER     |                                                                                                   |                   |
| Supply voltage range      | 90–305 VAC, 50/60 Hz                                                                              |                   |
| Current draw              | 0.63 A at 120 V · 0.34 to 0.27 A at 220 to 277 V                                                  |                   |
| Power factor at full load | > 0.9 at 70 to 100 % load                                                                         |                   |
| Surge protection          | 6 kV line to line, 10 kV line to earth (IEC 61000–4–5)                                            |                   |
| Dimming                   | 0–10 V, PWM, DALI–2, or over NFC                                                                  |                   |
| Driver                    | BLD120, mounted outside the hot zone                                                              |                   |
| Driver ambient            | The driver box must sit in an ambient of at most +50 °C                                           |                   |
| Driver life               | ≥ 100,000 h at Tc 75 °C, MTBF ≥ 320,000 h                                                         |                   |
| CONSTRUCTION              |                                                                                                   |                   |
| Housing                   | Cast aluminium, less than 0.08 % copper                                                           |                   |
| Surface finish            | Conversion layer plus 2-layer titanium-based e-coating                                            |                   |
| Bracket                   | Fixed bracket, aluminium, less than 0.08 % copper                                                 |                   |
| Front                     | Diffuse chemically hardened glass, or diffuse borosilicate, IK08                                  |                   |
| Protection class          | Class II                                                                                          |                   |
| Ingress protection        | IP66, IP67, IP68 and IP69K, resistant to steam and high pressure cleaning                         |                   |
| Impact resistance         | IK08 (IEC 62262)                                                                                  |                   |
| Corrosion class           | C5 industrial and marine (ISO 9223)                                                               |                   |
| DURABILITY AND DIMENSIONS |                                                                                                   |                   |
| Ambient temperature       | –45 to +120 °C                                                                                    |                   |
| LED service life          | TM–21 L90B05: > 360,000 h at 50 °C · 103,000 h at 85 °C · 71,700 h at 105 °C · 51,400 h at 120 °C |                   |
| Cable and termination     | SiHF–OB silicone, 4 cores (2 × 2.5 mm² + 2 × 0.5 mm²), 5.0 m                                      |                   |
| Dimensions                | 380 × 380 × 20 mm                                                                                 | 380 × 380 × 95 mm |
| Weight                    | 3.9 kg                                                                                            | 4.9 kg            |
| Colour temperatures       | 6500 K, 4000 K, 2700 K                                                                            |                   |
| Warranty                  | 5 years on the complete luminaire up to +120 °C                                                   |                   |

The driver box is mounted outside the hot zone and is connected with heat resistant silicone cable. The LED life ladder applies to every high temperature luminaire in the range and is stated in the colour table rather than as a footnote.

# Mechanics, mounting and driver

All drawings are to scale and dimensioned in millimetres. The driver is a separate item and is mounted outside the hot zone.

## PANEL AND MOUNTING DEPTHS



|            |                                                             |
|------------|-------------------------------------------------------------|
| Panel      | 380 × 380 mm, both versions                                 |
| Recess HT  | 20 mm deep, 3.9 kg                                          |
| Surface HT | 95 mm deep, 4.9 kg                                          |
| Bracket    | Fixed, aluminium                                            |
| Front      | Diffuse diffuse borosilicate for food industry applications |
| Optics     | Not possible on this housing                                |

## MOUNTING AND ACCESSORIES

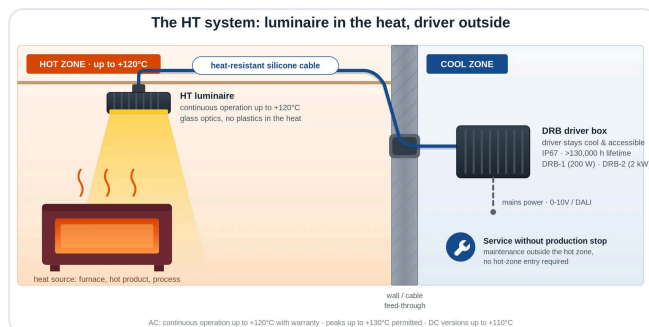
|                          |                                                                  |
|--------------------------|------------------------------------------------------------------|
| Fixed bracket            | Aluminium, supplied as standard                                  |
| DRB-1 driver box         | Housing for the driver, outside the hot zone                     |
| Borosilicate front       | Diffuse, where the glass sees radiant heat                       |
| Silicone cable           | 5.0 m as standard, longer on request                             |
| Linear alternative       | Linear HT, for a run along a tunnel rather than a panel above it |
| Point source alternative | Goby HT, Snapper HT, Barracuda HT or Orca HT                     |

## DRB-1 DRIVER BOX



|                    |                                                                    |
|--------------------|--------------------------------------------------------------------|
| Use                | Housing for the driver, outside the hot zone                       |
| DRB-1              | One driver up to 320 W. 276 × 194 × 86.5 mm, 4.2 kg, IP66 and IP67 |
| Ingress protection | IP66 and IP67                                                      |
| Ambient            | +50 °C maximum                                                     |

## LUMINAIRE AND DRIVER



|                      |                                      |
|----------------------|--------------------------------------|
| In the hot zone      | The panel only                       |
| Outside the hot zone | The BLD120 driver                    |
| Between them         | Heat resistant silicone cable, 5.0 m |
| Driver ambient       | +50 °C maximum                       |
| Longer runs          | On request                           |

## REMOTE DRIVER

|                  |                                              |
|------------------|----------------------------------------------|
| Type             | BLD120, 90–305 VAC or 127–420 VDC            |
| Position         | Outside the hot zone, ambient +50 °C maximum |
| Case temperature | Tc –40 to +90 °C                             |
| Lifetime         | ≥ 100,000 h at Tc 75 °C                      |
| MTBF             | ≥ 320,000 h at 75 °C case                    |
| Size and weight  | 161 × 68 × 33.5 mm, 800 g                    |

Heat is what kills a driver, not the LED. On the standard Manta the driver sits inside the panel; on the HT version it moves out of the hot zone entirely. That is the whole difference between the two.

# Ordering, standards and documents

## ORDER CODE

Example **MNHT01-65K**

Manta HT Surface, 6500 K

|                        |                                                                 |
|------------------------|-----------------------------------------------------------------|
| <b>MNHT02 · MNHT01</b> | Recess HT · Surface HT                                          |
| <b>65K · 40K · 27K</b> | 6500 K · 4000 K · 2700 K                                        |
| <b>BORO</b>            | Diffuse borosilicate front instead of chemically hardened glass |
| <b>Beam</b>            | 120° very wide, no optic suffix                                 |
| <b>Cable</b>           | 5.0 m silicone as standard, longer on request                   |

Bi-colour and amber are not available on the high temperature versions. Cable length beyond 5.0 m, driver placement and the diffuse borosilicate front are confirmed at order.

## COMBINATIONS

|                         |                              |
|-------------------------|------------------------------|
| Borosilicate front      | Both versions                |
| Recess in a hot ceiling | Standard                     |
| DALI-2 and NFC          | Standard                     |
| Bi-colour or amber      | Not available                |
| HT optics               | Not possible on this housing |
| Surface Extended in HT  | Not available                |

## STANDARDS AND VERIFICATION

| Subject                   | Standard                                                    | Verification     |
|---------------------------|-------------------------------------------------------------|------------------|
| Luminaire safety          | IEC/EN 60598-1, -2-5                                        | In-house test    |
| EMC emission and immunity | EN 55015, EN 61547 · IEC 60533 marine, bridge and open deck | TÜV              |
| Ingress                   | IEC 60529 and ISO 20653. IP66, IP67, IP68, IP69K            | In-house test    |
| Impact and vibration      | IEC 62262 IK08 · IEC 60068-2-6 at 6 G                       | In-house test    |
| Shock and corrosion       | IEC 60068-2-27 · ISO 9223 class C5, industrial and marine   | In-house test    |
| Photometry                | IES LM-79, IES files per optic                              | In-house test    |
| Substances                | RoHS, REACH                                                 | Self-declaration |

### BEFORE YOU ORDER

|                                                                     |                                                |                                                                |
|---------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------|
| A sample luminaire to hang before you commit to a project quantity. | Five years warranty on the complete luminaire. | A DIALux calculation from our engineers, on your site drawing. |
|---------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------|



### PRODUCT PAGE

IES files and revision history, DXF and STEP on request, and project references.  
[jelproducts.nl/en/products/manta-canopy-light](http://jelproducts.nl/en/products/manta-canopy-light)

### WHERE IT EARNS ITS PLACE

In an oven roof, a drying chamber or an extraction hood there is no depth for a luminaire and no access from above once the plant is running. The Manta HT is a 20 mm panel that sits in that ceiling permanently, at 192 lumens per watt, with the only heat sensitive component mounted where a technician can reach it.

**Notes.** Values are for the standard configuration. The warranty follows the operating temperature: five years to +120 °C on AC and to +110 °C on DC. The LED life ladder in the colour table is the same for every high temperature luminaire in the range. North American models on request. The JEL range is not ATEX or Ex certified.