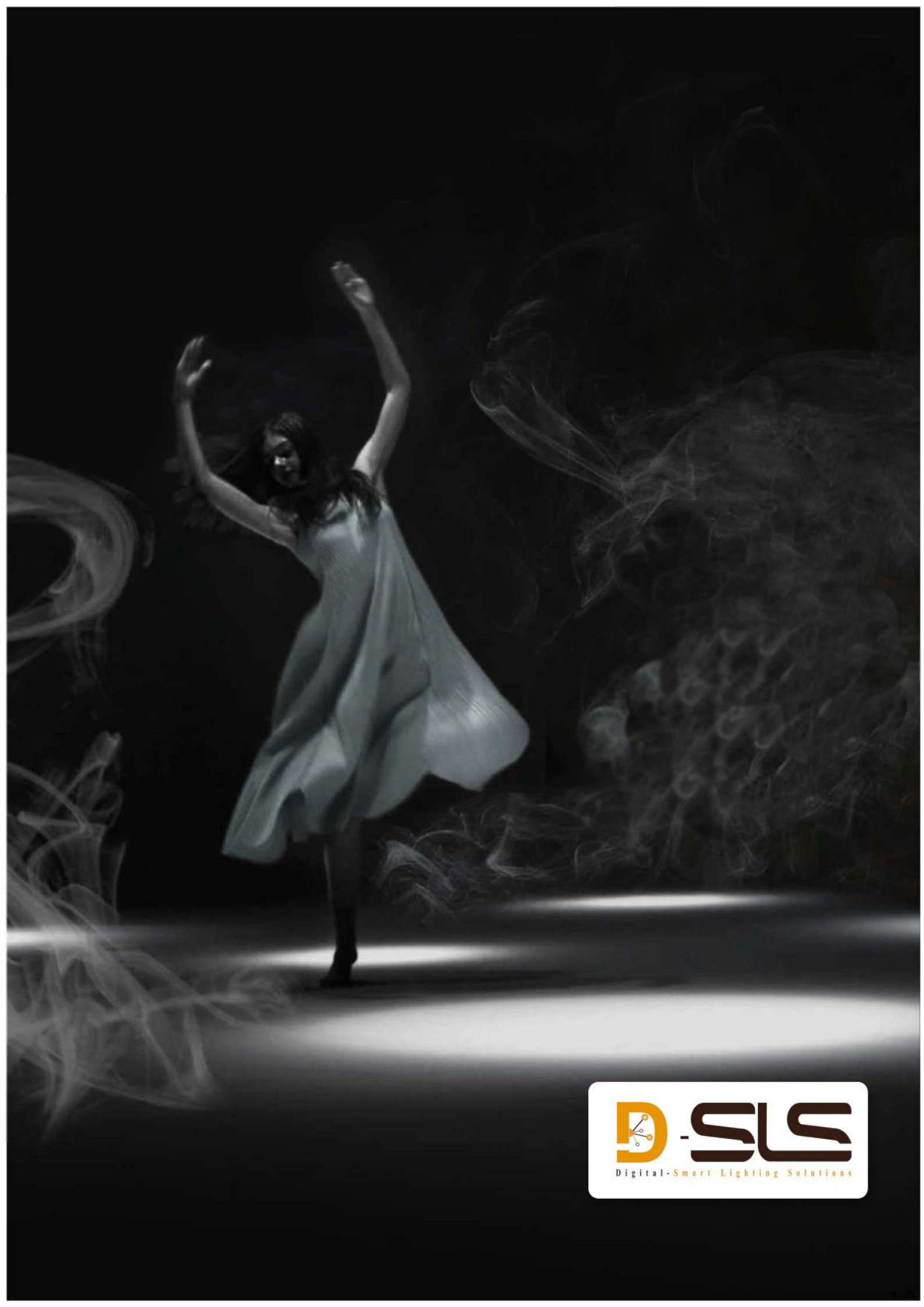




OVERVIEW · LOTUS LED ROAD LUMINAIRE

20 → 250 W range · three sizes, one optical, electronic and remote-management platform



45 000 lm

maximum luminaire flux · 250 W

180 lm/W

luminaire efficacy · T_q 25 °C

ULOR 0 %

no light to the sky · class G*6

DALI-2 · D4i

programmable driver · NFC

100 000 h

L90B10 · IES TM-21

7 ans

warranty · 10 years optional

LOTUS 1 open — LUSO 7070 LED module, plug-in driver and Zhaga Book 18 · 20 socket

One platform for every road

The **LOTUS** covers 20 to 250 W with three body sizes and a single architecture. Its indirect inter-reflection **MIRO-SILVER** optics (reflectance $\rho \geq 98\%$, EN 10204 3.1 material certificate) in a “dark-light” architecture — recessed source, not visible beyond 70° — reach an optical efficiency of $\geq 95\%$ with **ULOR 0 %**, class G*6 and TI $\leq 10\%$. Ceramic **LUSO 7070** LED chip (245 lm/W at 1 W) underdriven at 700 mA — 180 lm/W at the luminaire —, **DALI-2 / D4i** driver programmable by NFC, integrated **10 kV / 10 kA SPD** and **Zhaga Book 18 · 20** socket ready for the LiDAR node: an **ENEC**-certified road luminaire, fully repairable on site.



Urban & extra-urban roads

Classes M, C and P (UNI 11248 / EN 13201) — wide roads, wet carriageways, motorway interchanges and very narrow urban streets.



Cycle & pedestrian paths

Reinforced pedestrian crossings, soft-mobility paths, car parks — A / B / C photometries and CCT from 1800 to 5000 K.



Sensitive & dark-sky areas

ULOR 0 %, class G*6 and warm CCTs: compatible with IDA protected areas, observatories and migration corridors.

LOTUS · NEW ON-BOARD TECHNOLOGIES

Indirect inter-reflection reflector, LiDAR node, D4i · DALI-2 · Thread

Indirect reflector (inter-reflection) — efficiency $\geq 98\%$



Satin-aluminium reflector optics, the LED is never seen directly: reflected light, anti-glare, no PMMA lens. Optical efficiency $\geq 98\%$, ULOR 0 %, road asymmetric distribution. One-piece LED matrix removable by screws.

New technologies used



LiDAR node
presence detection, counting, Zhaga D4i socket underneath



Static detection
heart-rate sensor — presence without movement



Thread mesh network
IPv6, self-healing, TALQ 2.7.1



Tunable white
1800 → 6500 K controlled via D4i + DT8



Certified interfaces



THREAD

TALQ 2.7.1

ZHAGA BOOK 18

NFC

LOTUS — the connected functions



TUNABLE WHITE



LIDAR AI



MESH NETWORK



SECURE VPN



SELF-HEALING OTA



AI ANTI-THEFT

PRODUCT ARCHITECTURE · SIX KEY POINTS

A fully serviceable luminaire: everything is replaced on site, without special tools



LOTUS 3
20 – 50 W



LOTUS 2
60 – 110 W



LOTUS 1
120 – 250 W

LOTUS 3 · LOTUS 2 · LOTUS 1 — same optics, LED module and driver plate accessible without tools

1

MIRO-SILVER optics

Indirect reflector $\rho \geq 98\%$ · AR glass $\tau_v > 98\%$ · ULOR 0 % , class G*6

2

Zhaga Book 18 · 20 socket

LiDAR node clip-on at any time, without opening the luminaire

3

Plug-in driver

Tool-free replacement · built-in 10 kV / 10 kA SPD · NFC programmable

4

Ø33 – 76 mm mounting

Post-top or side-entry Ø60 mm · tilt $\pm 20^\circ$

5

Tool-free opening

Die-cast aluminium latches · quick maintenance from the bucket

6

LUSSO 7070 LED module

Removable / replaceable · ceramic 700 mA · L90B10 $\geq 100,000$ h

LOTUS 3

20 – 50 W

LOTUS 2

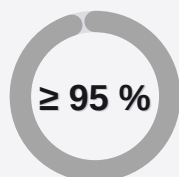
60 – 110 W

LOTUS 1

120 – 250 W

Same optical, electronic and remote-management platform across the whole range.

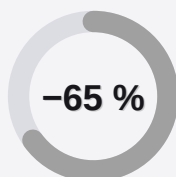
PERFORMANCE & SAVINGS · DASHBOARD



optical efficiency



driver efficiency



energy (LiDAR)

TUNABLE WHITE — CCT RANGE



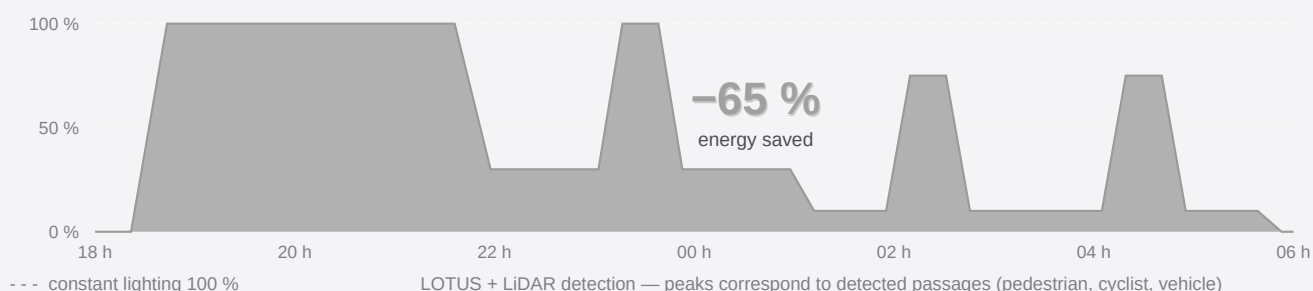
2200 K WARM

COOL 6500 K

D4i + DT8 control — CRI 70 · 80 · 90 · 99, MacAdam < 3 SDCM

Fixed CCTs: 1800 · 2700 · 3000 · 4000 · 5000 K

ADAPTIVE LiDAR DIMMING — TYPICAL NIGHT PROFILE



ANNUAL CONSUMPTION PER LIGHT POINT — 4,200 h/year · €0.25/kWh

HPS 250 W (existing) **1 155 kWh/an · 289 €**

LOTUS 80 W **336 kWh/an · 84 € -71 %**

LOTUS 80 W + LidarMesh **144 kWh/an · 36 € -88 %**

Assumptions: HPS 250 W (275 W system, ballast included) replaced by a LOTUS 80 W exceeding the required EN 13201 levels.

< 2,5 ans
payback*

-252 kg
CO2 avoided per point per year

zéro
relamping — L90B10 ≥ 100,000 h

100 %
remotely controllable (TALQ 2.7.1)

* Based on the above energy price, avoided relamping and an indicative investment of €550 per point — excluding installation; accurate figures on study.

STRENGTHS · 8 REASONS TO CHOOSE THE D-SLS-14

“Dark-light” indirect reflector



Indirect (inter-reflection) aluminium reflector $\rho \geq 98\%$ (ISO 7668 / DIN 5036-3, EN 10204 3.1 material certificate), recessed source not visible beyond 70° : optical efficiency $\geq 95\%$, ULOR 0 %, class G*6, TI $\leq 10\%$.

Tool-free maintenance



Cover opening on die-cast aluminium latches, removable wiring plate, plug-in driver and LED module: every intervention is done from the bucket, without removal.

Zhaga Book 18 LED module



Removable, site-replaceable module, LEDs underdriven at 700 mA — 170 lm/W source at T_j 85°C , $\geq 100,000$ h L90B10 (TM-21).

NFC-programmable driver



DALI-2 and Zhaga-certified **D4i**: wireless adjustable output current (AOC), dim-to-off < 0.5 W, 3 timer modes, OLC compensation, 24 V DC auxiliary.

Ready for remote management



Zhaga Book 18 · 20 socket fitted as standard: the LiDAR node and the **LidarMesh CMS** platform can be added later, without opening or removing the luminaire.

Full protection



10 kV / 10 kA type II SPD with end-of-life indicator, **IP67**, **IK09** overall, class II or I, stainless-steel IP68 cable gland.

Three sizes, one platform



LOTUS 3 (20 – 50 W), LOTUS 2 (60 – 110 W) et LOTUS 1 (120 – 250 W) partagent optique, driver, embase Zhaga et accessoires — un seul stock de pièces pour tout le parc.

7-year warranty · ENEC certified



Extension to **10 years** (W10 option). ENEC certificate **HN 69290740** (TÜV Rheinland) and TÜV SÜD attestation — repairable luminaire, ecodesign-compliant.

COMPONENTS · HOUSING, WIRING, LED MATRIX, DRIVER

Modern design: easy to install and maintain — LOTUS 3 photos, platform shared by the three sizes

Housing & connection



LED matrix and cut-off connector on opening



IP67 double-lock mains connector



Pressure-equalising valve — hydrophobic membrane

Wiring & connection



2 x 1.5 mm² cable, ≥ 300 mm, exiting through the arm



Toggle latch — smooth cover, internal fins



Screw terminal block, 2 x 5 poles — removable wiring plate

Programmable driver & Zhaga socket



DALI-2 / D4i driver, NFC without power



Driver compartment — removable wiring plate



Zhaga D4i socket underneath — LiDAR node or sensor

MATERIALS & CONSTRUCTION

LED module	Removable / replaceable — Zhaga Book 18 standard · Zhaga Book 18 · 20 sensor socket fitted as standard
Housing / cover	Die-cast aluminium (UNI EN 1706) — outdoor-grade polyester powder coating, UV-resistant
Reflector	High-reflectance MIRO-SILVER aluminium $\rho \geq 98\%$ (ISO 7668 / DIN 5036-3) — anti-iridescence textured surface, sealed optical chamber, EN 10204 3.1 material certificate per batch
Closing latches	Die-cast aluminium, stainless-steel spring — tool-free opening
Optical block	Indirect treated-aluminium reflector — reflectance $\geq 98\%$, sealed optical chamber
Front glass	5 mm extra-clear toughened flat glass, anti-reflective — transmission $> 97\%$ · AR glass screen
Ingress protection	EPDM gasket (luminaire) · silicone reserved for external cable connectors · M20 $\times$ 1.5 stainless steel IP68 gland
Finish	Colour to choice (RAL range) — optional C5 marine anti-corrosion treatment (MAR)
Driver	ENEC-certified DALI-2 / D4i programmable electronics — plug-in, tool-free



A fully serviceable luminaire

Tool-free opening cover, removable wiring plate, plug-in driver and LED module: every wear part is replaced on site, from the bucket, without removing the luminaire or returning it to the workshop.

Components



Light sources and electronics from world-class suppliers, integrated and qualified by D-SLS. LED LM-80 files and driver datasheets available on request.

TECHNICAL SPECIFICATIONS · MECHANICAL & OPTICAL

Applications	Public lighting — extra-urban roads, urban roads, cycle and pedestrian paths, wide roads and wet carriageways, motorway interchanges, pedestrian crossings · classes M, C and P (UNI 11248 / EN 13201)
Optical block	Indirect (inter-reflection) satin-aluminium MIRO-SILVER reflector — total reflectance $\rho \geq 98\%$ (ISO 7668 / DIN 5036-3), anti-iridescence textured surface, EN 10204 type 3.1 material certificate · “dark-light” architecture: recessed source, not visible beyond 70°
Optical efficiency	$\geq 95\%$ — ULOR 0 % (0 cd/klm at $\geq 90^\circ$), class G*6, TI $\leq 10\%$
Front glass	5 mm extra-clear toughened flat glass, double-sided anti-reflective — $\tau_v > 98\%$ (EN 410)
Photobiological safety	EN 62471 — EXEMPT group · automatic power disconnection when the cover is opened
Insulation class	EU: class II or class I US: class 1
Ingress protection	IP 67 (IEC 60529 — temporary immersion 30 min / 1 m) · IK 09 overall (IEC 62262)
Pressure equalisation	Stainless steel pressure equalisation valve with hydrophobic membrane — lets air and water vapour through, never liquid water or dust: no internal condensation, no thermal pumping · ingress protection fully preserved
Tilt	Post-top: 0°, +5°, +10°, +15°, +20° · Side-entry: 0°, -5°, -10°, -15°, -20°
Mounting	Side-entry or post-top Ø60 mm — Ø33 ÷ Ø60 mm (M33 option) and Ø60 ÷ Ø76 mm (M76 option) adapters · top fixing
Exposed area	Side: 0.05 m² · Plan: 0.18 m² · SCx: 0.04 m² (LOTUS 1)
Dimensions	LOTUS 1: length 922 mm · width 362 mm · head 289 mm — LOTUS 2 / 3 drawings on request
Weight	5 kg → 15 kg depending on size and configuration
Wiring	Removable wiring plate — tool-free opening and maintenance · M20 × 1.5 stainless-steel IP68 cable gland
Temperatures	Operation: -40 °C / +50 °C (ta 50 °C attested) · Storage: -40 °C / +80 °C
Colour temperatures	1800 K · 2700 K · 3000 K · 4000 K · 5000 K · Tunable White 2200 – 6500 K (TW option)
IRC	70 (standard) · 80 · 90 · 99
MacAdam ellipse	< 3 SDCM (standard)
LED	Ceramic LUSSO 7070 matrix — 240 lm/W (source), Rth 1 °C/W, 12 V configuration underdriven at 700 mA

CE

ENEC

RoHS

IP66

IK09

Class II

DALI-2

D4i

Zhaga Book 18



Standards framework

Reference standards: EN IEC 60598-1:2021/A11:2022, EN 60598-2-3, EN 62493, EN 62471, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3, EN 13201, IEEE 1789 — ENEC-certified driver (EN 61347-1 / EN 61347-2-13). Published references correspond to the types of ENEC certificate HN 69290740.

CERTIFICATIONS & STANDARDS



ENEC certificate no. HN 69290740

Certification body	TÜV Rheinland InterCert Kft. (MEEI, Budapest)
Standards	EN IEC 60598-1:2021 + EN 60598-2-3
Certificate holder	D-SLS SRL — Via Bocchetto 6, 20123 Milan (MI), Italy
Types covered	D-SLS-a-b-cd families — series 14 (LOTUS road), all wattages from 20 to 250 W
Certified parameters	AC 220 – 240 V · class II · ta 50 °C · IP66 (certificate in force)

A copy of the certificate and the test report accompany every quotation.



Additional testing

- **IP67** — IEC 60529 (dust · immersion 30 min / 1 m)
- **IK09** — IEC 62262 (impact resistance, 10 J)
- **EN 62471** — photobiological safety RG0
- **EN 61000-4-5** — surge immunity 10 kV / 6 kV
- **CEM** — EN 55015 · EN 61547 · EN 61000-3-2 / -3-3
- **LM-80 / TM-21** — lifetime ≥ 100,000 h L90B10

Standards framework

Luminaire safety

EN IEC 60598-1 · EN 60598-2-3 · EN 60598-2-5

Photobiology

EN 62471

Electromagnetic compatibility

EN 55015 · EN 61547 · EN 61000-3-2 · EN 61000-3-3 · EN 61000-4-5

Protection

EN 60529 (IP) · EN 62262 (IK)

Application

EN 13201 (road lighting) · UNI 11248 (classes M, C, P) · CIE 150 (obtrusive light)

Control & interoperability

IEC 62386 (DALI-2 · D4i) · Zhaga Book 18 · TALQ 2.7.1

Lifetime

IES LM-80 · IES TM-21 · IES LM-79 · UNI EN 13032-1

European directives

2014/35/EU (low voltage) · 2014/30/EU (EMC) · 2011/65/EU (RoHS)

CE

ENEC

RoHS

IP66

IK09

Class II

DALI-2

D4i

Zhaga Book 18



Compliance documentation

The parameters above are those recorded in the ENEC certificate in force; the product characteristics on the preceding pages correspond to the current commercial definition of the luminaire. Published product references correspond to the types listed in the ENEC certificate. CE marking under directives 2014/35/EU, 2014/30/EU and 2011/65/EU; EU declaration of conformity, ENEC certificate, IP / IK reports and photometric files are attached to every tender file.


www.d-sls.it

[WhatsApp direct](#)

sa@d-sls.com

Certificates, test reports and photometric files on request.

TYPE TESTS & ROBUSTNESS

TYPE TESTS

Temperature rise	ta 50 °C — EN 60598-1 cl. 12: driver tc and LED module tp, values corrected to the reference ambient.
Ingress protection	IP 67 — IEC 60529 (dust · temporary immersion 30 min / 1 m).
Mechanical impact	Full IK 09 — IEC 62262 (10 joules), on the assembled luminaire.
Vibrations	IEC 60068-2-6 — road mounting, post-top and bracket.
Surges	10 kV / 10 kA — EN 61000-4-5; replaceable type II SPD with end-of-life indicator — optional external 20 kV SPD.
Photometry	EN 13032 / LM-79 — LDT and IES files per reference and per CCT; LM-79 reports with the series optic: in progress.
Long-term output	LM-80 + TM-21 — L90B10 ≥ 100 000 h.
Corrosion	ISO 9227 salt spray — 500 h on coating and fasteners.

ROBUST PRODUCT — CONSTRUCTION CHOICES

Body / cover	Die-cast aluminium EN AC-47100 to UNI EN 1706 — EN 10204 type 3.1 material certificate.
Coating	Exterior-grade polyester powder coating: thickness ≥ 70 µm (ISO 2360), class 0 adhesion (ISO 2409), 500 h salt spray (ISO 9227), UV resistance.
Reflector	High-reflectance aluminium ρ ≥ 98 % (ISO 7668 / DIN 5036-3), anti-iridescence structured surface, sealed optical chamber.
Front glass	5 mm flat extra-clear tempered glass: EN 12150-1, EN 14179 heat-soak test, double-sided anti-reflective treatment (EN 410).
Closure	Die-cast aluminium latches + stainless steel springs — A2 stainless fasteners, tool-free opening.
Wiring	Removable wiring plate, plug-in connectors — driver and SPD replacement without tools.
Pressure equalisation valve	Stainless steel valve with hydrophobic membrane — equalises internal pressure through every day / night cycle without affecting sealing; replaceable without opening the luminaire.

Repairability

The luminaire is designed to be **repairable on site**: LED module, driver and SPD are replaced individually, without removing the luminaire or using special tools. This architecture meets the circular-economy requirements of European ecodesign and extends the useful life of the installation well beyond the warranty.

ta 50 °C

certified ambient temperature

10 J

IK09 on assembled luminaire

500 h

ISO 9227 salt spray

10 kV / 10 kA

surge immunity

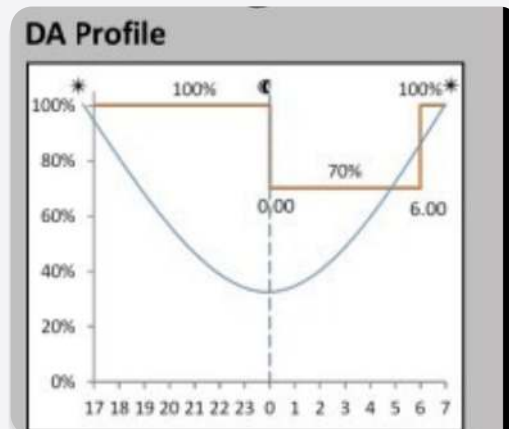
ELECTRICAL SPECIFICATIONS · PROGRAMMABLE DRIVER

Supply voltage	90 – 305 V AC · 50 / 60 Hz (± 10 % tolerance — other voltages and tolerances on request)
LED current	350 – 1,000 mA — wirelessly adjustable via NFC (AOC: programmable output current)
Power factor	> 0.95 (full load – PLM) > 0.98 (full load – F, DA, DAC)
Efficiency	> 94 %
Interfaces	DALI-2 · Zhaga-certified D4i · NFC · PWM · 0 – 10 V
Auxiliary supply	24 V DC / 125 mA / 3 W always on (12 V DC with option A12) · integrated 16 V DC bus (DALI-2)
Surge protection	Integrated type II 10 kV / 10 kA SPD — 10 kV common mode / 6 kV differential mode — LED indicator and thermal fuse: load disconnection at end of life · external 20 kV SPD (option SP20)
Lifetime	$\geq 100\,000$ h L90B10 · $\geq 100\,000$ h L90 (IES TM-21)
Warranty	7 years (10 years with option W10)

Built-in smart functions

- **Dim-to-off** — smart board stand-by < 0.5 W
- **3 timer modes** (Timer setup) — scheduled consumption reduction
- **OLC** Output Lumen Compensation — constant output over lifetime
- **OTP** — NTC in driver and LED array, programmable thresholds
- Thermal sensing and LED module protection
- End-of-life indicator · output light compensation
- **F** (fixed) · **DA** (stand-alone dimming) · **DAC** (stand-alone + control) modes
- Astronomical clock and calendar profiles (option LD)

DA profile — stand-alone dimming



Example of an NFC-programmed profile: 100 % at dusk, reduced to 70 % from midnight to 6 a.m., back to 100 % before dawn — no control wiring, matched to the actual power curve (blue).

REMOTE MANAGEMENT · LidarMesh CMS & D-SLS LiDAR NODE (OPTION LD)

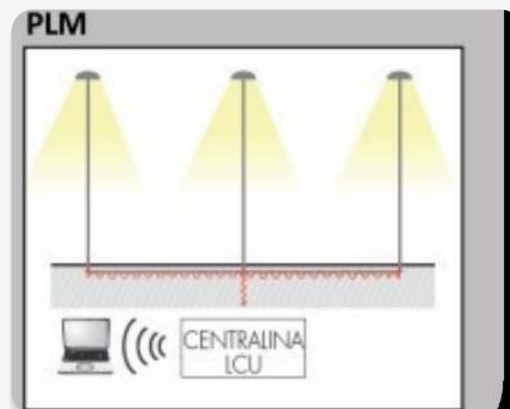
D-SLS smart node — Zhaga Book 18 / D4i

- **LiDAR presence detection** — pedestrians, cyclists, vehicles: on-demand switching and dimming
- **GPS positioning** · astronomical clock · calendar
- **D4i interface**: the node powers, meters and controls the driver (energy, diagnostics)
- **Thread** mesh network (IPv6) · **TALQ 2.7.1** gateway · LoRaWAN 3 – 15 km · HD-PLC 0 – 10 km
- **Peripherals**: surveillance camera, audio / video, environmental sensors, Internet access
- **Dynamic DMX / Art-Net** lighting for façades and ceremonies

Protocols:

D4i DALI-2 TALQ 2.7.1 Thread LoRaWAN
HD-PLC PWM 0 – 10 V DMX Art-Net

HD-PLC architecture — power line carrier



Communication over the existing power cable to the LCU controller — no additional network to deploy on the poles.



LidarMesh CMS — D-SLS remote management platform (D-SLS Cloud Infrastructure)

- GIS mapping of light points and cabinets
- Alarms and diagnostics: driver, SPD, temperature, voltage
- Predictive maintenance and work order management
- Dimming scenarios by zone, calendar and detection
- D4i energy metering, reports and export
- Open TALQ 2.7.1 API — interoperable with third-party CMS

Role-based secure access, European hosting on the D-SLS Cloud Infrastructure — control from smartphone, tablet or supervision desk.



Street scenario — four levels, zero intervention

100 %
Evening

from sunset to 11 p.m. — full level to EN 13201

50 %
Quiet night

calendar-scheduled reduction

20 %
Stand-by

empty road — instant ramp-up on LiDAR detection

0 %
Dawn

astronomical switch-off, driver < 0.5 W

Implementation

The LiDAR node fits onto the luminaire's Zhaga Book 18 socket — in the factory or as a retrofit on an existing installation, without opening the luminaire. The D4i driver powers it and reports energy consumption, operating hours and diagnostics. Every luminaire becomes an individually metered and controlled point of the LidarMesh CMS platform.

NETWORK, UPDATES & SUPERVISION · OPTION LD

Functions of the LidarMesh CMS platform and the D-SLS LiDAR node — optional, not included in the standard supply.

MESH NETWORK & CONNECTIVITY

Architecture	Every luminaire is an identical TALQ 2.7.1 gateway — exposed TALQ API, DALI D4i functions, IPv6 addressing.
Mesh network	Self-organising, self-healing mesh — sized for more than 10,000 nodes: if a node fails, traffic routes around it automatically.
Internet access	At the client's choice: WiFi, 4G/LTE, Ethernet or fibre — a single link serves a whole segment, with immediate failover.
Network frugality	A single download per segment: updates propagate node to node across the mesh.
Stand-alone mode	Full offline operation: lighting, DALI dimming, LiDAR detection, astronomical calendar (RTC + GPS) and local log — synchronisation resumes when the network returns.
Network security	End-to-end encrypted link (WireGuard, ChaCha20-Poly1305) to the platform.

REMOTE UPDATES (OTA) — SELF-HEALING

Principle	Firmware update of the whole fleet remotely, with no site visit — A/B dual partition: a healthy version always remains available.
Probation	Each new version must prove correct operation (network, DALI, supervision) within 10 minutes — otherwise it rolls back automatically to the previous version.
Rollback guards	Hardware watchdog, reboot loop, loss of network or routing, silent DALI, memory anomaly — each guard triggers the rollback.
Canary deployment	In controlled waves 1 % → 10 % → 50 % → 100 % of the fleet — automatic stop and operator alert on any rollback.
OTA security	Images signed and verified by a hardware secure element before flashing — secure boot, encrypted memory, SHA-256 integrity check, anti-rollback.

SUPERVISION & AI COPILOT

Dashboard	GPS map of every luminaire · status, consumption, alarms and history in real time · one-click DALI configuration.
AI copilot	Plain-language incident diagnosis, deployment recommendations and automatic campaign report.
Predictive maintenance	Alert before LED module / driver / SPD failure — optional sensors: light level, temperature, air quality, noise.
Energy budget	Ceiling set by the operator and never exceeded: self-regulation if spending drifts, per-luminaire tracking, savings and CO2 report.

LOTUS — the six connected functions



LidarMesh CMS · D-SLS PROPRIETARY REMOTE MANAGEMENT PLATFORM

D-SLS proprietary cloud platform — no dependency on any third-party supplier.

Every luminaire is a TALQ 2.7.1 gateway. The fleet is managed from a browser with no software to install: multi-user access with differentiated permissions, open API, cloud or on-premise deployment on request.

INTELLIGENT MESH NETWORK

Technology	Self-organising, self-healing mesh — more than 10,000 nodes per network
Protocols	IPv6 SLAAC · Thread · TALQ 2.7.1 · DALI-2 D4i + DT8
Security	End-to-end encrypted tunnel · secure boot · signed firmware
Connectivity	WiFi · 4G/LTE · Ethernet · fibre — one link per segment

ENERGY BUDGET & SOLAR

Energy budget	Ceiling in euros or kWh set by the operator — never exceeded: real-time self-regulation, luminaire by luminaire
Solar integration	Monitoring of photovoltaic production, storage and grid injection — adaptive control based on weather and reserve
Savings report	Dashboard of kWh saved / CO2 avoided / euros billed — automatic monthly report
Dynamic tariffs	Lighting programme adapted to the grid tariff (off-peak / peak hours)

TALQ 2.7.1 INTEROPERABILITY

TALQ standard	TALQ 2.7.1 API exposed on every node — compatible with any TALQ-certified third-party CMS
DALI D4i functions	The 8 mandatory D4i functions (Part 102/103/251/252/253/304/306/351) + diagnostics
Calendars	Real astronomical calendars (GPS sunrise / sunset + RTC) · scenarios · manual override
Independence	The operator remains the owner of its data · CSV / JSON export · portability to any other TALQ CMS

ACCESS & SERVICE

Client access	Multi-browser web interface · iOS and Android mobile app
Multi-site	Multi-municipality and multi-district management · rights delegation · full traceability of operations
Hosting	D-SLS Cloud Infrastructure (European Union) · 99.9 % availability · 24/7 technical support

Stand-alone mode — no Internet

The fleet stays controllable without a connection: lighting, DALI dimming, LiDAR detection, astronomical calendar and local log all work offline. Synchronisation with the platform resumes automatically when the network returns — no permanent connection is required for day-to-day operation.

10 000+

nodes per mesh network

99,9 %

platform availability

24/7

technical support

0

software to install

OPTIONS · COMBINABLE ORDER CODES

LD LidarMesh remote management



D4i LiDAR node on Zhaga Book 18 · 20 socket: presence detection, GPS, astronomical clock, TALQ 2.7.1 gateway, access to the LidarMesh CMS platform.

M33 / M76 Ø adapters



Ø33 – Ø60 mm and Ø60 – Ø76 mm mounting adapters — reuse of the existing stock of poles and brackets.

SP20 external 20 kV SPD



External surge protector in cascade with the built-in 10 kV / 10 kA SPD — areas with high lightning activity, overhead networks.

W10 10-year warranty



Extends the standard warranty from 7 to 10 years, subject to project registration and compliant operating conditions.

MAR C5 marine anti-corrosion



Reinforced surface treatment for marine or industrial atmospheres (ISO 12944 C5), stainless steel fasteners.

RAL Choice of colour



Custom RAL shade — municipality marking and co-branding on request.

TW Tunable white



Dynamic white 2200 – 6500 K controlled via D4i + DT8 — circadian and event scenarios.

A12 12 V DC auxiliary



12 V DC auxiliary output replacing the standard 24 V DC — powering sensors and third-party nodes.

CAP Expandable sensors



Air quality, noise, weather — add-on modules on the LiDAR node, data reported to LidarMesh CMS.

S3 CRI 80 · 90 · 99 · 3 SDCM



Colour rendering above the CRI 70 standard and tighter colour binning — enhancement of historic buildings.

Ordering

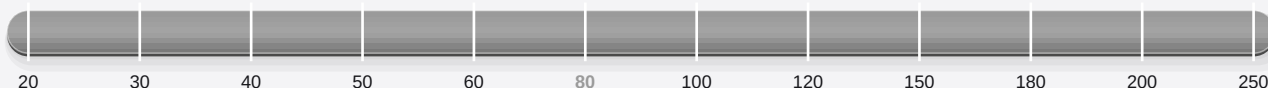
All options can be combined and are stated at the end of the reference, in the order of the coding table — e.g.

D-SLS-14-100-80A-740-LD-SP20-W10. Mechanical options are delivered fitted; the LD option is installed and configured at the factory or added later on the Zhaga Book 18 · 20 socket, without opening the luminaire.

RANGE & DIMENSIONS

12 certified wattages — 20 to 250 W

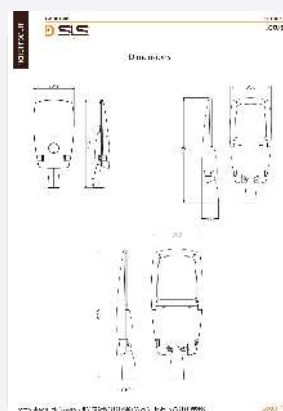
réf. 80 W



Three sizes — LOTUS 3 (20 – 50 W) · LOTUS 2 (60 – 110 W) · LOTUS 1 (120 – 250 W): same optics, same driver, same socket
Order reference: D-SLS-14-{size}-{wattage}{photometry}-{CCT/CRI}-{options} — see Coding page

Main dimensions

LOTUS 1	length 922 mm · width 362 mm · head 289 mm
LOTUS 2	detailed dimensioned drawing on request
LOTUS 3	detailed dimensioned drawing on request
Mounting	post-top or side-entry Ø60 mm — Ø33 – 60 / Ø60 – 76 adapters · tilt $\pm 20^\circ$
Weight	range: 5 → 15 kg depending on model and configuration
Exposed area	side 0.05 m ² · plan 0.18 m ² · SCx 0.04 m ² (LOTUS 1)



LOTUS 1 dimensioned drawing — dimensions in mm

Three footprints, one platform



LOTUS 3
20 – 50 W



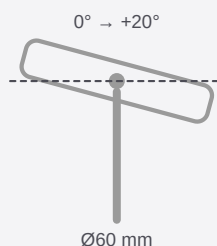
LOTUS 2
60 – 110 W



LOTUS 1
120 – 250 W

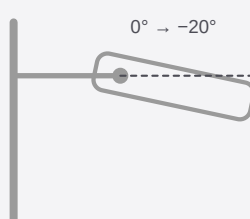
Profiles at relative scale — LOTUS 1 drawing above, LOTUS 2 and 3 drawings on request.

Post top Ø60 mm



Tilts 0°, +5°, +10°, +15°, +20° — stainless-steel screw fixing to the spigot, wiring via removable plate.

Side-entry bracket



Tilts 0°, -5°, -10°, -15°, -20° — reuse of existing brackets during a refurbishment.

Ø33 – Ø76 adapters



Ø33 · Ø60 · Ø76 mm

M33 (Ø33 – 60 mm) and M76 (Ø60 – 76 mm) options — compatibility with the existing pole stock.

THE THREE MODELS · DIMENSIONS

LOTUS 3 · LOTUS 2 · LOTUS 1 — same optical, electronic and remote-management platform, three footprints



LOTUS 3

20 – 50 W

Length	621 mm
Width	287 mm
Height	118 mm
Weight	≈ 5 kg
Mounting Ø60 mm · post-top / side-entry	



LOTUS 2

60 – 110 W

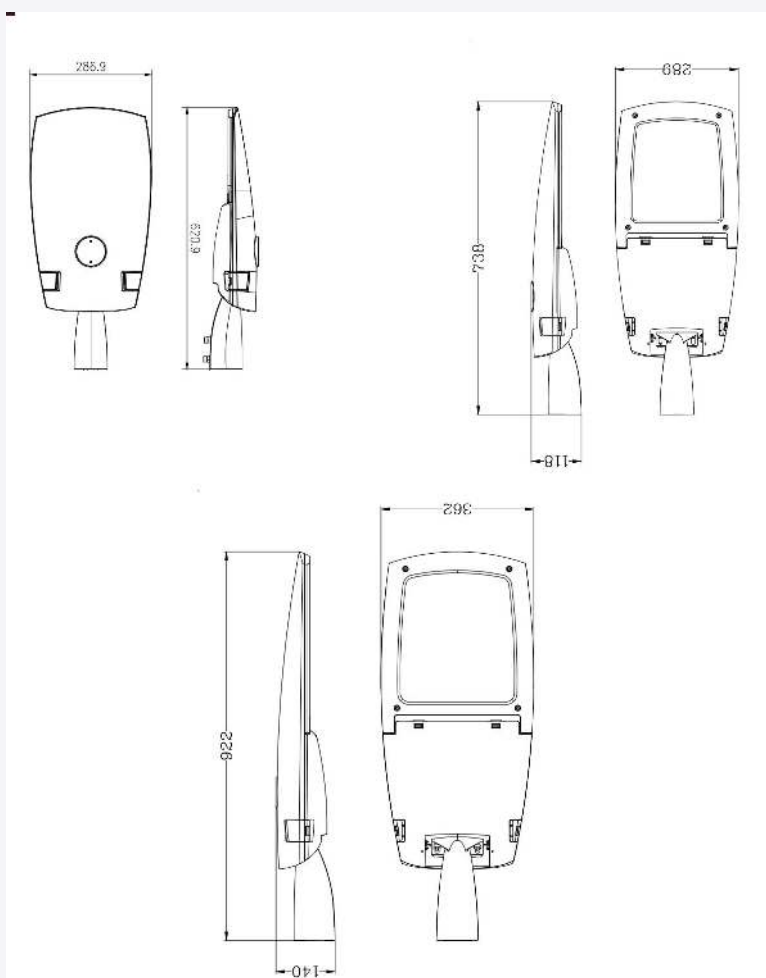
Length	738 mm
Width	289 mm
Height	118 mm
Weight	≈ 9 kg
Mounting Ø60 mm · post-top / side-entry	



LOTUS 1

120 – 250 W

Length	922 mm
Width	362 mm
Height	140 mm
Weight	≈ 15 kg
Mounting Ø60 mm · post-top / side-entry	



LOTUS 3 (621 × 287), LOTUS 2 (738 × 289) and LOTUS 1 (922 × 362) dimensioned drawings — dimensions in mm, Ø60 mm arm included

APPLICATIONS & CASE STUDY



Roads & extra-urban

Classes M and C (EN 13201) — wide roads, wet carriageways, interchanges: A / B / C photometries, pole spacing kept in refurbishment.



Urban & soft mobility

Class P — cycle paths, pedestrian routes, squares and car parks: CCT 3000 K, CRI 80, ULOR 0 % to protect façades.



Sensitive areas

Parks, surroundings of reserves and observatories: CCT 1800 – 2700 K, LiDAR dimming, scheduled reduction during migration periods.

CASE STUDY — TYPICAL MUNICIPALITY: 10,000 HPS 250 W LIGHT POINTS TO REPLACE (indicative example)

–88 %

energy with LiDAR detection

10,1 GWh

saved per year across the stock

2 527 500 €

of bill avoided every year

Existing stock — HPS 250 W

- 10,000 points · 275 W system per point
- 11,550,000 kWh/year · €2,887,500 bill
- Relamping every 3 to 4 years from the bucket
- Orange sky, high ULOR, no dimming
- No remote metering or diagnostics

LOTUS 80 W solution

- 10 000 × D-SLS-14-100-80A-740
- 1,440,000 kWh/year · €360,000 with LidarMesh
- Zero relamping — L90B10 ≥ 100,000 h
- ULOR 0 %, class G*6 — sky preserved
- D4i metering per point, monthly report

CUMULATIVE SAVINGS — LOTUS + LidarMesh vs HPS 250 W (in €)

Année 1 **2 527 500 €**

Année 5 **12 637 500 €**

Année 10 **25 275 000 €**

Energy only — excluding avoided relamping. Indicative investment ≈ €5,500,000 (luminaires + nodes + platform), excluding installation: payback < 2.5 years · –2,520 t CO2 per year

Assumptions: 4,200 h/year · €0.25/kWh · 0.25 kg CO2/kWh — the LOTUS 80 W exceeds the EN 13201 levels required when replacing an HPS 250 W. DIALux / Relux study on request

THE D-SLS-14 & THE ENVIRONMENT

Responsible public lighting — respectful of biodiversity, the night sky and neighbours

Light the road — and nothing else.

Every technical choice — optics, spectrum, control — aims to reduce intrusive light and the impact on wildlife: CE marking, (EU) 2019/2020 ecodesign, photobiological group RG0, zero UVA radiation.

INTRUSIVE LIGHT & NEIGHBOURS

Asymmetric optics	Recessed-source architecture, not visible beyond 70°: the flux is directed to the carriageway, not to neighbouring windows or gardens.
Flux to the sky	Dark-light architecture: ULOR 0 % (0 cd/klm at $\geq 90^\circ$) — no light above the horizontal, compatible with IDA protected areas and observatories.
Environmental zones	Sizing to CIE 150 and EN 13201 (zones E1 to E4): façade luminance, glare and upward flux verified in the DIALux study.
Scheduled switch-off	Astronomical switch-off and dimming, scenarios per district: no street stays lit at full power when it is empty.

NOCTURNAL WILDLIFE

Adapted spectrum	1800 K and 2700 K versions: warm wavelengths attract far fewer insects than cool white sources or discharge lamps.
Zéro UV	LEDs emit no UVA / UVB radiation — insects are not attracted to the source, even at close range.
LiDAR dimming	Lighting on demand: with no presence, intensity drops to 10 – 30 %, limiting the attraction effect and preserving night-flight cycles.
Migratory birds	Ground-directed beam and warm CCTs: remote scheduled reduction during peak migration nights (March – May, Sept. – Nov.).
Logarithmic dimming	Smooth 0.1 – 100 % transitions compliant with EN 62386 — no flash or abrupt gradient disturbing the navigation of insects and bats.

ECODESIGN & LIFE CYCLE

EU ecodesign	Compliant with regulation (EU) 2019/2020: $P_{stLM} \leq 1$ · $SVM \leq 0.4$ · sources and drivers replaceable without tools.
Longévité	L90B10 $\geq 100,000$ h — almost 25 years at 4,200 h/year: no relamping, zero lamp waste, zero mercury contamination.
CO2 évité	Replacing 2,000 HPS 150 W luminaires with 50 W D-SLS-14 and LidarMesh: about 312 t of CO2 avoided per year.

RG0

photobiological group — EN 62471

0 UVA

no ultraviolet radiation

1800 K

warm “wildlife” spectrum option

References & project study

References: CIE 150 (obtrusive light limitation) · EN 13201 and UNI 11248 (lighting classes) · (EU) 2019/2020 ecodesign regulation · International Dark-Sky Association · BirdLife International and LPO for migration corridors. Intrusive-light study supplied with each project.

PHOTOMETRY · “DARK-LIGHT” INDIRECT REFLECTOR

MIRO-SILVER indirect reflector (inter-reflection) — efficiency $\geq 98\%$, ULOR 0 %

The source is recessed and not visible beyond 70°: the flux is redirected to the carriageway by a high-reflectance aluminium reflector ($\rho \geq 98\%$, ISO 7668 / DIN 5036-3) with an anti-iridescence textured surface, then passes through a double-sided anti-reflective toughened glass ($t_v > 98\%$). No light is emitted above the horizontal: ULOR 0 % (0 cd/klm at $\geq 90^\circ$), class G*6, TI $\leq 10\%$.

A

Road asymmetric

standard — classes M and C

B

Wide asymmetric

wide carriageways, junctions

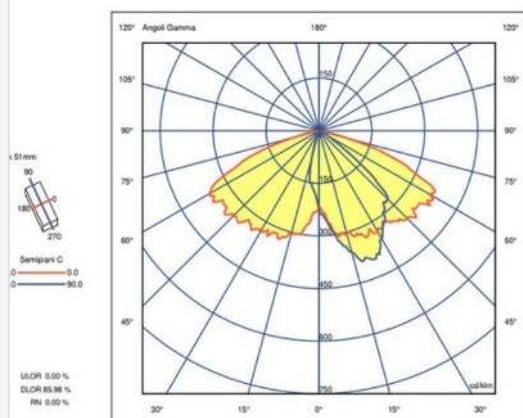
C

Pedestrian / cycle

class P, soft-mobility paths

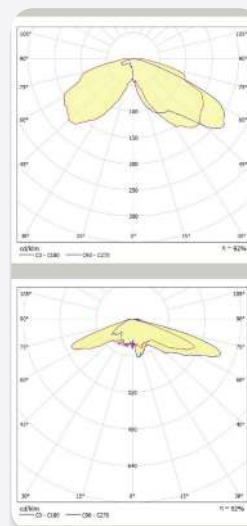
Polar curve — optic A

Photométrie



Intensity diagram (cd/klm) measured with the production optics: beam projected onto the carriageway, sharp cut-off at 70°, no flux above the horizontal.

C0 – C180 / C90 – C270 distributions



Comparison of the range's photometries, measured to UNI EN 13032-1 and IES LM-79-08 with reflector and AR screen fitted.

Measurement conditions

Data measured in accordance with **UNI EN 13032-1** and **IES LM-79-08**. The following tables give, for each wattage, the luminaire flux and efficacy at **T_q = 25 °C** (laboratory) and at **t_a = 50 °C** (service ambient). Calculation chain: LUSO 7070 source 153 lm/W at operating current (700 mA, ≈ 8 W/LED; 240 lm/W at 1 W) $\times$ optical efficiency $\geq 95\%$ $\times$ driver $\geq 94\%$; tolerance $\pm 7\%$. **LDT / IES** files per reference and per CCT, LM-79 reports with production optics on request.

 $\geq 95\%$

optical efficiency

ULOR 0 %

class G*6 · TI $\leq 10\%$
EXEMPT

photobiological group EN 62471

PHOTOMETRIC TABLES · 5000 K & 4000 K · CRI 70

REFERENCE	POWER*	EFFICACY	OUTPUT*	POWER*	EFFICACY	OUTPUT*
	W · Tq 25 °C	lm/W · Tq 25 °C	lm · Tq 25 °C	W · ta 50 °C	lm/W · ta 50 °C	lm · ta 50 °C
5000 K · CRI 70 · Vin 230 V AC · F / DA / DAC modes · Rev. 08/2026				Tq 25 °C: laboratory ta 50 °C: operating ambient		
D-SLS-14-40-20A	20	185	3 700	20	178	3 560
D-SLS-14-40-30A	30	185	5 550	30	178	5 340
D-SLS-14-50-40A	40	185	7 400	40	178	7 120
D-SLS-14-50-50A	50	185	9 250	50	178	8 900
D-SLS-14-50-60A	60	185	11 100	60	178	10 680
D-SLS-14-100-80A	80	185	14 800	80	178	14 240
D-SLS-14-100-100A	100	185	18 500	100	178	17 800
D-SLS-14-200-120A	120	185	22 200	120	178	21 360
D-SLS-14-200-150A	150	185	27 750	150	178	26 700
D-SLS-14-200-180A	180	185	33 300	180	178	32 040
D-SLS-14-200-200A	200	185	37 000	200	178	35 600
D-SLS-14-250-250A	250	185	46 250	250	178	44 500

REFERENCE	POWER*	EFFICACY	OUTPUT*	POWER*	EFFICACY	OUTPUT*
	W · Tq 25 °C	lm/W · Tq 25 °C	lm · Tq 25 °C	W · ta 50 °C	lm/W · ta 50 °C	lm · ta 50 °C
4000 K · CRI 70 · Vin 230 V AC · F / DA / DAC modes · Rev. 08/2026				Tq 25 °C: laboratory ta 50 °C: operating ambient		
D-SLS-14-40-20A	20	180	3 600	20	173	3 460
D-SLS-14-40-30A	30	180	5 400	30	173	5 190
D-SLS-14-50-40A	40	180	7 200	40	173	6 920
D-SLS-14-50-50A	50	180	9 000	50	173	8 650
D-SLS-14-50-60A	60	180	10 800	60	173	10 380
D-SLS-14-100-80A	80	180	14 400	80	173	13 840
D-SLS-14-100-100A	100	180	18 000	100	173	17 300
D-SLS-14-200-120A	120	180	21 600	120	173	20 760
D-SLS-14-200-150A	150	180	27 000	150	173	25 950
D-SLS-14-200-180A	180	180	32 400	180	173	31 140
D-SLS-14-200-200A	200	180	36 000	200	173	34 600
D-SLS-14-250-250A	250	180	45 000	250	173	43 250

* Power and output measured at Vin = 230 V AC, F / DA / DAC modes, CRI 70. Order CCT/CRI codes: **750** and **740**. Respective efficacies: 185 / 180 lm/W at Tq 25 °C and 178 / 173 lm/W at ta 50 °C. The highlighted row is the 80 W reference configuration. Other CRI values (80, 90, 99) and Tunable White: output on request — figures derive from the source × optic × driver chain, tolerance ± 7 %.

PHOTOMETRIC TABLES · 3000 K & 2700 K · CRI 70

REFERENCE	POWER*	EFFICACY	OUTPUT*	POWER*	EFFICACY	OUTPUT*
	W · Tq 25 °C	lm/W · Tq 25 °C	lm · Tq 25 °C	W · ta 50 °C	lm/W · ta 50 °C	lm · ta 50 °C
3000 K · CRI 70 · Vin 230 V AC · F / DA / DAC modes · Rev. 08/2026				Tq 25 °C: laboratory ta 50 °C: operating ambient		
D-SLS-14-40-20A	20	175	3 500	20	168	3 360
D-SLS-14-40-30A	30	175	5 250	30	168	5 040
D-SLS-14-50-40A	40	175	7 000	40	168	6 720
D-SLS-14-50-50A	50	175	8 750	50	168	8 400
D-SLS-14-50-60A	60	175	10 500	60	168	10 080
D-SLS-14-100-80A	80	175	14 000	80	168	13 440
D-SLS-14-100-100A	100	175	17 500	100	168	16 800
D-SLS-14-200-120A	120	175	21 000	120	168	20 160
D-SLS-14-200-150A	150	175	26 250	150	168	25 200
D-SLS-14-200-180A	180	175	31 500	180	168	30 240
D-SLS-14-200-200A	200	175	35 000	200	168	33 600
D-SLS-14-250-250A	250	175	43 750	250	168	42 000

REFERENCE	POWER*	EFFICACY	OUTPUT*	POWER*	EFFICACY	OUTPUT*
	W · Tq 25 °C	lm/W · Tq 25 °C	lm · Tq 25 °C	W · ta 50 °C	lm/W · ta 50 °C	lm · ta 50 °C
2700 K · CRI 70 · Vin 230 V AC · F / DA / DAC modes · Rev. 08/2026				Tq 25 °C: laboratory ta 50 °C: operating ambient		
D-SLS-14-40-20A	20	145	2 900	20	139	2 780
D-SLS-14-40-30A	30	145	4 350	30	139	4 170
D-SLS-14-50-40A	40	145	5 800	40	139	5 560
D-SLS-14-50-50A	50	145	7 250	50	139	6 950
D-SLS-14-50-60A	60	145	8 700	60	139	8 340
D-SLS-14-100-80A	80	145	11 600	80	139	11 120
D-SLS-14-100-100A	100	145	14 500	100	139	13 900
D-SLS-14-200-120A	120	145	17 400	120	139	16 680
D-SLS-14-200-150A	150	145	21 750	150	139	20 850
D-SLS-14-200-180A	180	145	26 100	180	139	25 020
D-SLS-14-200-200A	200	145	29 000	200	139	27 800
D-SLS-14-250-250A	250	145	36 250	250	139	34 750

* Power and output measured at Vin = 230 V AC, F / DA / DAC modes, CRI 70. Order CCT/CRI codes: **730** and **727**. Respective efficacies: 175 / 145 lm/W at Tq 25 °C and 168 / 139 lm/W at ta 50 °C. The highlighted row is the 80 W reference configuration. Other CRI values (80, 90, 99) and Tunable White: output on request — figures derive from the source × optic × driver chain, tolerance ± 7 %.

PHOTOMETRIC TABLE 1800 K & REPLACEMENT EQUIVALENTS

REFERENCE	POWER*	EFFICACY	OUTPUT*	POWER*	EFFICACY	OUTPUT*
	W · Tq 25 °C	lm/W · Tq 25 °C	lm · Tq 25 °C	W · ta 50 °C	lm/W · ta 50 °C	lm · ta 50 °C
1800 K · CRI 70 · Vin 230 V AC · F / DA / DAC modes · Rev. 08/2026				Tq 25 °C: laboratory ta 50 °C: operating ambient		
D-SLS-14-40-20A	20	140	2 800	20	134	2 680
D-SLS-14-40-30A	30	140	4 200	30	134	4 020
D-SLS-14-50-40A	40	140	5 600	40	134	5 360
D-SLS-14-50-50A	50	140	7 000	50	134	6 700
D-SLS-14-50-60A	60	140	8 400	60	134	8 040
D-SLS-14-100-80A	80	140	11 200	80	134	10 720
D-SLS-14-100-100A	100	140	14 000	100	134	13 400
D-SLS-14-200-120A	120	140	16 800	120	134	16 080
D-SLS-14-200-150A	150	140	21 000	150	134	20 100
D-SLS-14-200-180A	180	140	25 200	180	134	24 120
D-SLS-14-200-200A	200	140	28 000	200	134	26 800
D-SLS-14-250-250A	250	140	35 000	250	134	33 500

REPLACEMENT EQUIVALENTS — DISCHARGE LAMPS → D-SLS-14

Existing lamp	System power	Equivalent LOTUS	Luminaire output (4000 K)	Energy saving
80 W mercury-vapour lamp	90 W	D-SLS-14-40-30A	5 400 lm	−67 %
SHP 70 W	84 W	D-SLS-14-50-40A	7 200 lm	−52 %
SHP 100 W	115 W	D-SLS-14-50-50A	9 000 lm	−57 %
SHP 150 W	170 W	D-SLS-14-50-60A	10 800 lm	−65 %
SHP 250 W	275 W	D-SLS-14-100-80A	14 400 lm	−71 %
Metal halide 250 W	280 W	D-SLS-14-100-100A	18 000 lm	−64 %
SHP 400 W	430 W	D-SLS-14-200-150A	27 000 lm	−65 %

Indicative equivalents at unchanged illuminance level (EN 13201) — to be confirmed by a DIALux / Relux study accounting for road geometry, mounting height and the maintenance factor adopted.

* Luminaire power and output measured at Vin = 230 V AC, F / DA / DAC modes, CRI 70. Order CCT/CRI code: **718**. Efficacy of 140 lm/W at Tq 25 °C and 134 lm/W at ta 50 °C. The highlighted row is the 80 W reference configuration. Other CRI values (80, 90, 99) and Tunable White: output on request.

ORDER CODING · BUILDING A PRODUCT REFERENCE

Reference structure



Example: D-SLS-14-100-80A-740-LD = 80 W LOTUS 2, photometry A, 4000 K / CRI 70, with LidarMesh remote-management node.

Model & size

ENEC-certified type **D-SLS-a-b-cd** — a = series (14: LOTUS road), b = size, c = wattage, d = photometry A / B / C.

Sizes: **40 · 50** (LOTUS 3) · **100** (LOTUS 2) · **200 · 250** (LOTUS 1).

Power

Certified types: 20 · 30 · 40 · 50 · 60 · 80 · 100 · 120 · 150 · 180 · 200 · 250 W

(ENEC certificate HN 69290740)

Luminaire power at $V_{in} = 230 \text{ V AC } (\pm 5 \%)$.

CCT · IRC

718 · 727 · 730 · 740 · 750 | 827 · 830 · 840 | 927 · 930 · 940

First digit = CRI / 10, next two = CCT / 100 — e.g. 940 = 4000 K / CRI 90

TW = Tunable White 2200 – 6500 K (D4i + DT8)

Options

LD LiDAR node · **SP20** external 20 kV SPD · **W10** 10-year warranty · **MAR** C5 anti-corrosion · **A12** 12 V auxiliary · **M33** / **M76** Ø adapters · **TW** Tunable White · **RALxxxx** colour

Options can be combined, added in this order at the end of the reference.

Reference examples

D-SLS-14-100-80A-740-LD-SP20 80 W · 4000 K · photometry A · LiDAR node · external 20 kV SPD.

D-SLS-14-40-30A-727-MAR 30 W · 2700 K · photometry A · C5 marine treatment.

D-SLS-14-250-250A-TW-LD-W10 250 W · Tunable White 2200 – 6500 K · LiDAR node · 10-year warranty.

Quotations & purchase orders

Each reference fully describes the configuration — to be copied as is on quotations, purchase orders and price schedules.

WARRANTY & SERVICES

7-year warranty



Standard **7-year** warranty on the complete luminaire — LED module, optic, driver and SPD — for a compliant installation and an ambient operating temperature $\leq 50\text{ }^{\circ}\text{C}$.

10-year extension (W10)



On project registration at commissioning: warranty extended to **10 years**, covering lumen maintenance (L90) and spare-part availability.

Lighting studies



DIALux / Relux photometric study to EN 13201 / UNI 11248, LDT / IES files, LED LM-80 reports and calculation notes for tender files (LM-79 reports in progress).

Factory configuration



LED current (NFC), DA / DAC dimming profiles, DALI-2 addresses, OTP thresholds and D4i parameters set in the factory to the project sheet — luminaires ready to install.

LidarMesh commissioning



Integration of light points into **LidarMesh CMS**, scenario creation, operator training and remote support.

Spare parts & after-sales



Zhaga Book 18 LED modules, drivers, glasses and gaskets available throughout the warranty period — on-site replacement without special tools.

Sales & technical contact

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