

Product identification card

Phileo PRO



* arianna
light looking forward







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light looking for ward



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light looking forward

* * * * *



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Phileo Pro:

the family of reflective lighting fixtures designed for street lighting



Ideal for both new roads and the replacement of existing systems, Phileo Pro combines **low costs, high-quality materials and energy savings**, all in compliance with current regulations.



Innovative, compact and dynamic design



Innovative, compact and dynamic design



Increased energy performance



Upgrade in the choice of materials and improvement of technical specifications

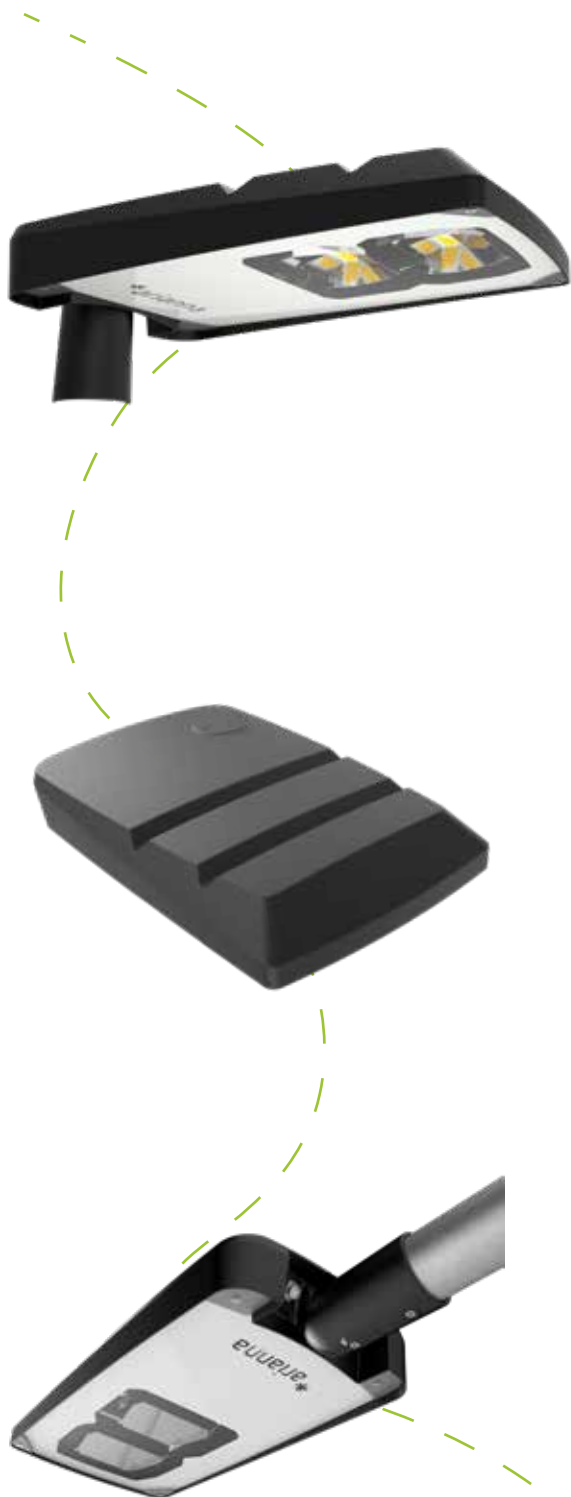
Design

by Studio Dario Martini

— *Industrial Designer Phileo Pro*



It follows the concept of the upper profile of Phileo, configuring a fusion of 3 volumes, which correspond to the functional blocks of the device.



new face

It combines style with functional requirements, in a versatile and contemporary product, in the name of innovation.

total reflection

The body of the Phileo Pro develops around the technological heart of the fully reflective LED elements, arranged in line on the front of the device.

compact and dynamic design

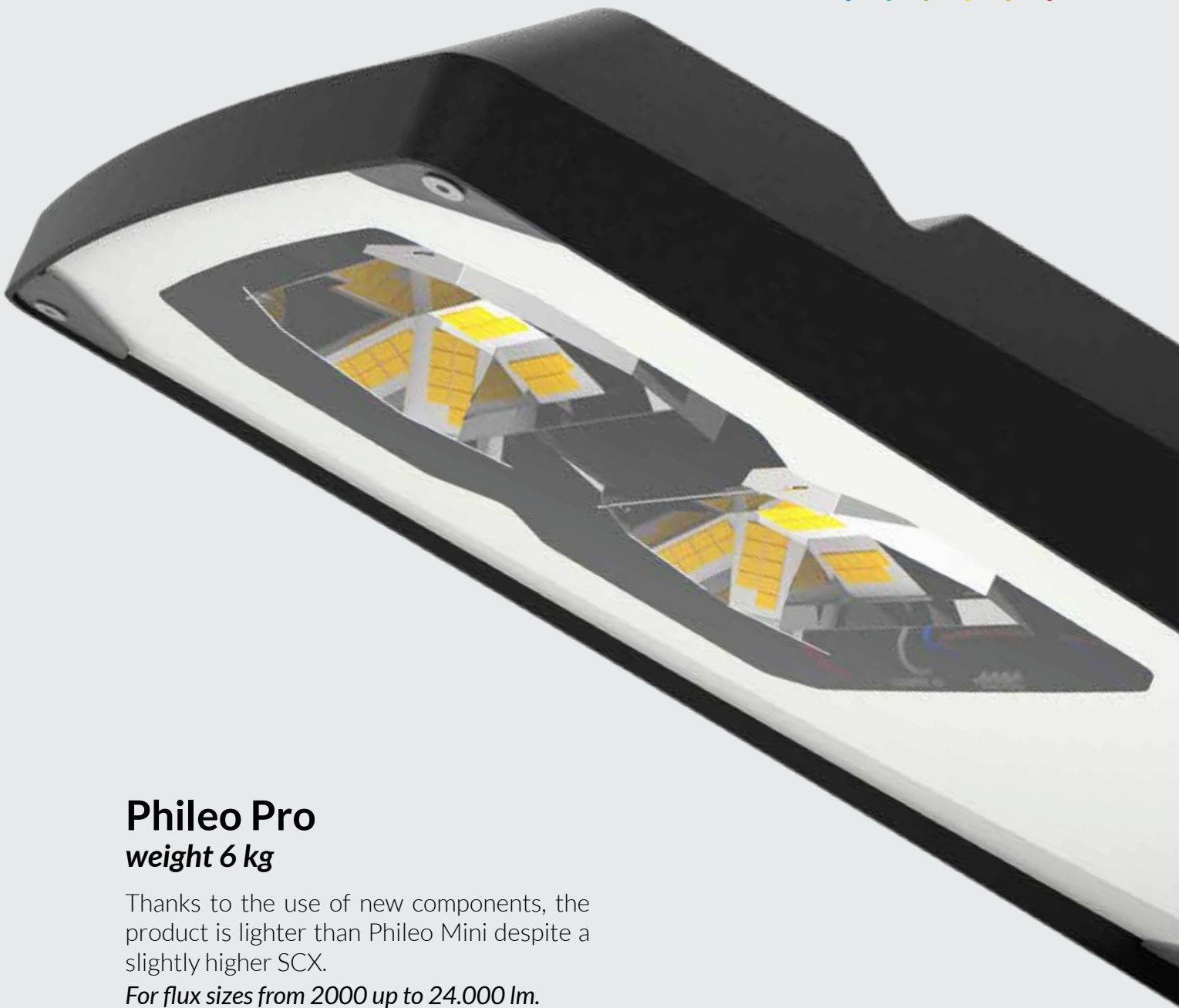
The surfaces of the upper part meet the essential lines of the lower part, creating a compact, yet dynamic combination.

upper wave profile

Its wave profile disperses heat through its surface and increases the convection of air from below to carry the heat away to the outside.

anthracite grey finish

RAL 7016 is the colour chosen for the standard range, with a view to creating a renewal in the Phileo mdi family.

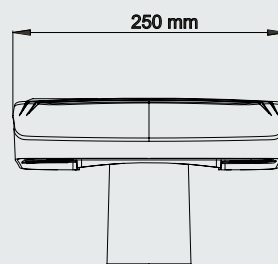
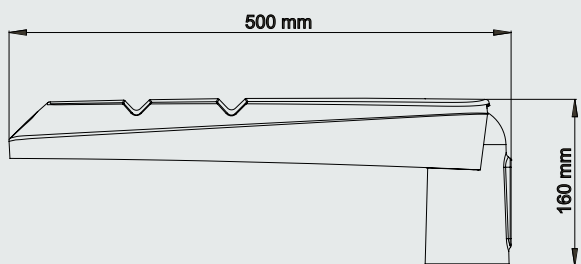


Phileo Pro

weight 6 kg

Thanks to the use of new components, the product is lighter than Phileo Mini despite a slightly higher SCX.

For flux sizes from 2000 up to 24.000 lm.



Petrarca: efficiency

The opportunity for more sustainable lighting



With Arianna, efficiency is not limited to the light source alone, but rather is amplified by series of technological details that **increase savings**.

optics

made from anodised aluminium with PVD coating and **reflector reinforced** with pure silver, 98% reflectivity.

extra-transparent glass

to maximise light transmittance.

high power LEDs

resistant to corrosion from aggressive atmospheres up to 170 lm/W.

Careful optical design, high-quality materials, advanced LED sources, efficiency and reliability tested to the **highest levels** in the street lighting sector, ensure considerable savings in terms of design, installation and operation.

Thanks to all the measures implemented by the Research & Development department, **PHILEO PRO** is positioned in the highest class both in the **IPEA** (Appliance Efficiency Parameterised Index) and **IPEI** (System Efficiency Parameterised Index) classification.

very high system efficiency

from 141 up to 154 lm/W

Thanks to the use of latest generation **Power LEDs** and a series of measures that result in the highest levels of efficiency. Low power supply current from 250 to 500 mA: it brings significant benefits to the device in terms of system **efficiency and lifetime**.

An+	$IPEA^* \geq 1,10 - (0,10 \times n)$
A++	$1,30 \leq IPEA^* < 1,40$
A+	$1,20 \leq IPEA^* < 1,30$
A	$1,10 \leq IPEA^* < 1,20$
B	$1,00 \leq IPEA^* < 1,10$
C	$0,85 \leq IPEA^* < 1,00$
D	$0,70 \leq IPEA^* < 0,85$
E	$0,55 \leq IPEA^* < 0,70$
F	$0,40 \leq IPEA^* < 0,55$
G	$IPEA^* < 0,40$

Service environment temperature up to 50°C

From A10+ to A3+

Minimum requirement CAM:
 ≥ C by 2019,
 ≥ B by 2024,
 ≥ A from 2025

Technology

and sustainable development



For Arianna, **sustainability** takes concrete form in the creation of **quality products** that respect the resources of the environment and the future of people. A principle that has always inspired the design of all products.



Certified production



Arianna's philosophy is to identify all its products with the ENEC* mark (European Norms Electrical Certification), so as to guarantee conformity to the harmonised European standards. All Arianna products are also compliant with the European standards that regulate the lighting sector.



The products identified with this quality mark meet the European electrical and photobiological safety standards



All the Arianna products are manufactured in compliance with the directives of the European Community



Arianna products are manufactured in compliance with the European standards that limit the use of hazardous substances in electrical and electronic products



The products marked with this logo have passed all the energy and safety certification phases envisaged for export to Saudi Arabia and have the related IECEE certificate provided by SASO



The production and control processes are certified according to ISO 9001:2015 and ISO 14001:2015

Tested safety

Endurance durability



The **choice of components** and raw materials used in Arianna is followed very carefully with a view to ensuring long product life. The maintenance or replacement of lighting fixtures involves high management costs and unnecessary CO₂ emissions.

Arianna guarantees **maximum quality** and efficiency tested to optimise the energy saving and durability of the products.

materials and processes

- **Aluminium body:** this must guarantee high protection against the elements, humidity and vandalism, and have a high heat dissipation capacity.
- **Adhesives and gaskets** subjected to tightness testing after thermal ageing cycles.
- **Power supplies certified** and validated for outdoor use.
- **Material** used for the reflectors **tested** internally for corrosion protection

LEDs

Arianna only uses LEDs that are **corrosion-resistant** in aggressive atmospheres (CO, Na₂O, SO₂, NaCl) and with high resistance to electrostatic discharges. LED working current is much lower than rated current.

The **quality of the materials** is verified in companies according to ISO 9001 certified processes, such as: functional testing on 100% of the production of LED boards; verification of the welds of the LEDs through X-RAY control.

Highest test-proof quality

Endurance durability



In addition to the tests required by the EU directives, Petrarca has undergone other complementary tests:

Vibration test

The appliance is certified according to IEC 60068-2-64 which certifies it as being immune to vibrations



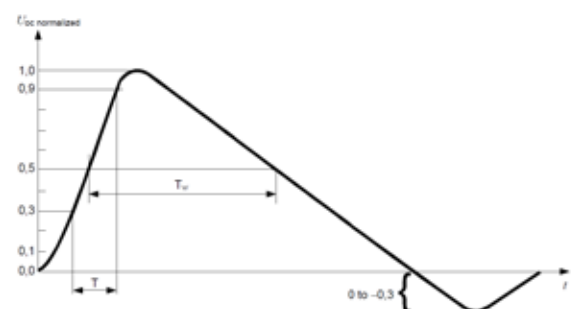
Salt mist

EN46100 die-cast aluminium with 13-phase painting cycle chosen for Petrarca to guarantee it high protection against atmospheric agents

Surge Immunity

Petrarca has a surge protection level that is above average; up to 10 kV can be reached in common and differential mode. The following are used:

- A device capable of distributing the energy of the discharge between the power supply and the LED module
- Insulating thermal pad, with 6kV breakdown voltage
- Insulation distances oversized with respect to the minimum required by law



Arianna spa declares that it has carried out the required approval tests at third party accredited laboratories and that it is subject to the UNI EN ISO 9001:2015 quality system.

Phileo Pro



Die-cast aluminum EN47100, which with the 13-phase painting cycle, guarantees high protection against atmospheric agents

Anodised aluminium reflectors coated with a layer of pure silver, which ensures a **reflectivity of 98%**

Space for **ZHAGA** preparation in the upper profile

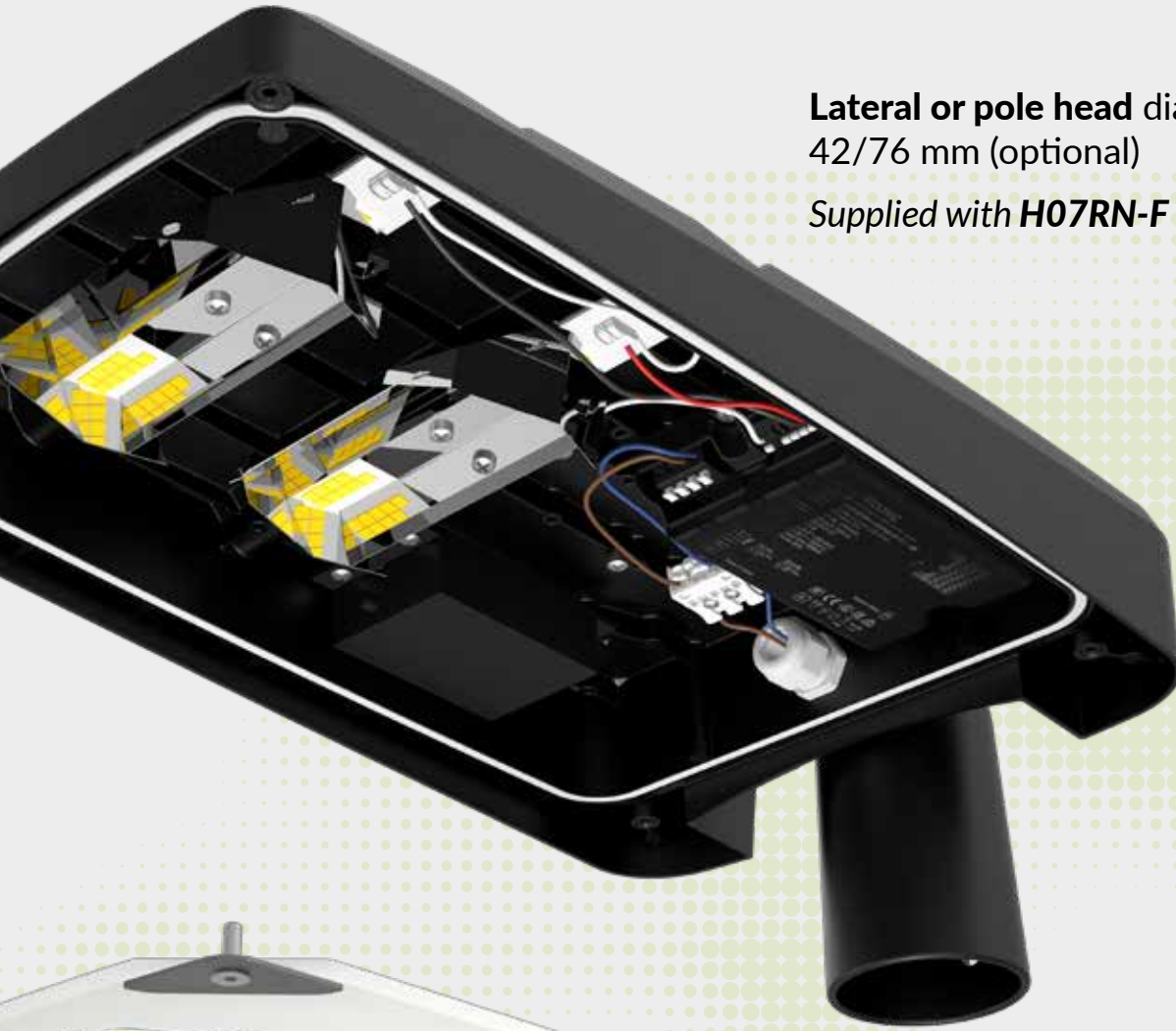


Glass tempered extra clear 5 mm, shock protection IK09



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light looking forward



Lateral or pole head diameter 60 mm
42/76 mm (optional)

Supplied with **H07RN-F 2x1.5 mm² cable**



Unique visual comfort

Patented optics: light useful for uniformity and visual comfort

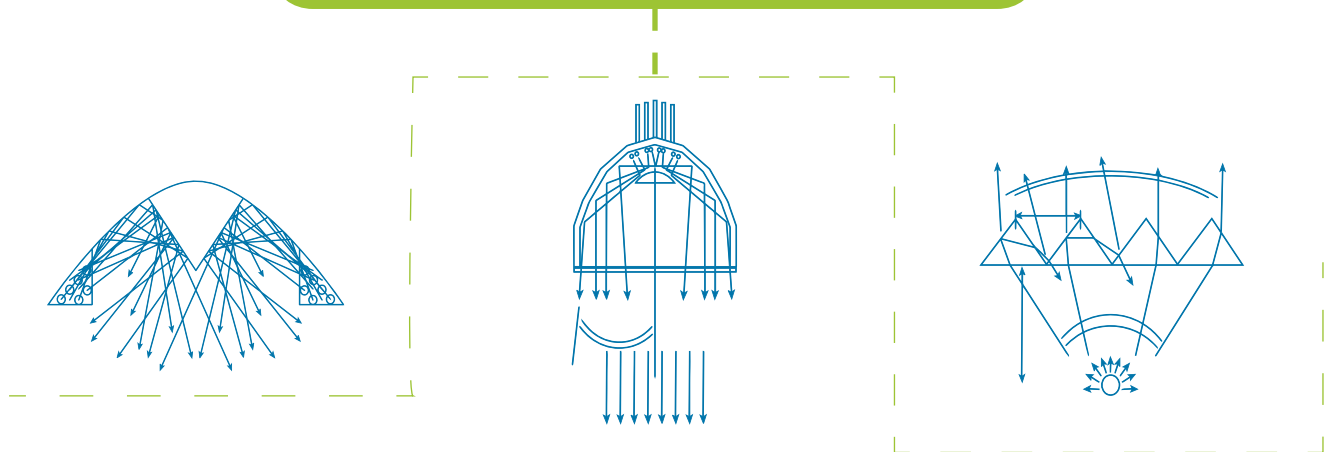


In order to further optimise energy consumption, **patented reflective optics** have been applied to the lighting fixtures of the Petrarca family, which can significantly reduce glare and guarantee high energy savings.

The optics are interchangeable in anodised aluminium covered with an extremely reflective silver layer (98%).

Three international patents that change light: the total reflection patent, filed in 2008 uses a reflector inside the luminaire that collects the rays of LED light and focuses them onto the ground uniformly. The LEDs are thus concealed from view, significantly **reducing glare**.

Visual comfort and energy savings are the most tangible results of the total reflection system



Optical design

The reflectors, capable of managing the LED sources, are designed internally. The continuous collaboration between the departments allows us to identify the best photometry for each project, capable of limiting consumption as far as possible and thereby avoiding waste. Illuminate only where needed, without shadowy areas.

Heat dissipation

The unique style



Innovative solution for **easy maintenance** and replacement of individual parts. Wave profile at the top with a large cast aluminum surface for heat dispersion through its mass and to assist convection of air from below that carries the heat outside.



Phileo Pro



Phileo Pro

Thanks to the software used to **study the heat flows**, a large cast aluminium surface has been designed, capable of dispersing through its mass and of promoting the convection of the air from below, conveying the heat outwardly.

Arianna services

the answer to your lighting requirements



evaluation of the existing system

Arianna offers its customers a professional preliminary inspection to promptly evaluate the existing system (ENERGY AUDIT).

a choice of the highest performing tested product

the LED and the materials chosen for the construction of the street lighting bodies guarantee durability of the system. Precise reliability tests confirm the quality of the components chosen and guarantee long-lasting products capable of minimising maintenance costs.

economic evaluation of the project

after the preliminary analysis and the precise project, Arianna is able to formulate the best technical-commercial and environmental offer, calculating the return on investment (Payback), and the saving of CO2 emissions.

precise planning

each element is studied in detail to ensure that the final installation offers high performance, in compliance with the sector standards and respecting the light pollution laws. The lighting calculations are aimed at illuminating only where it is needed to avoid wasting energy.

maximise savings

thanks to the quality of the extremely efficient and effective products and the innovative remote-control systems, Arianna is able to offer the most advantageous solution for its customers in terms of energy savings and environmental sustainability.

post installation assistance

Arianna is also able to offer a complete technical test of post-work lighting technology verification according to the UNI standards.



Post installation
assistance



Maximise savings and an
economic evaluation of
the project



A choice of the highest
performing tested product



Precise planning



Evaluation of the existing
system



**The path
to savings**

The unique solution

for any urban context



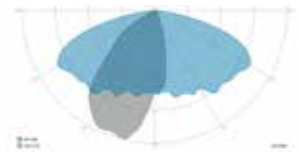
The optical effectiveness contributed by the reflectors, combined with the high lm/W efficiency of Phileo Pro, allow reaching of the highest levels of IPEI



Pedestrian and cycle path

Road configuration	Single runway 4 mt
Width	4
Pole height	5
Distance between poles	25
Position poles	0
Lighting category	P

Phileo Pro
13 W - 2000 LM
Optic W1
IPEI A5+



Country road

Road configuration	Single carriageway 5,5 mt
Width	5,5
Pole height	7
Distance between poles	35
Position poles	0
Lighting category	M5

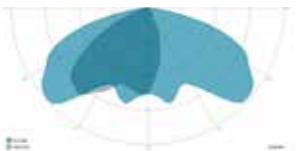
Phileo Pro
20 W - 3000 LM
Optic E1
IPEI A4+



City street

Road configuration	Carriageway 6 mt; parking 2,5 mt; 2 sidewalk 1mt
Width	10,5
Pole height	8
Distance between poles	32
Position poles	0,5
Lighting category	M4 - P3

Phileo Pro
41 W - 6000 LM
Optic L2
IPEI A3+



Highway

Road configuration	Carriageway 8 mt; centerline 3 mt; 2 carriageway 8 mt
Width	4
Pole height	5
Distance between poles	25
Position poles	0
Lighting category	P

Phileo Pro
55 W - 8000 LM
Optic E1
IPEI A4+



Flexible, adaptable, efficient

Phileo provides light, security and harmony in every context and with maximum energy sustainability.

Phileo Pro: street lighting

The new generation of light



Phileo Pro is a LED **street lighting luminaire** with an innovative design, continuing the Phileo tradition.

The **innovations devised and patented** by Arianna on reflected light systems ensure top performance with a new concept in versatility.

greater attention

to safety and
energy saving

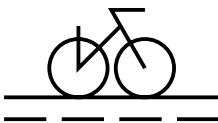
formats and solutions

designed for all urban contexts, with **maximum efficiency** in small and large spaces

one single technological lighting solution

for a multitude of situations

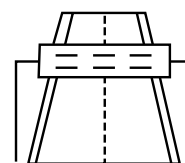
country road



pedestrian and
cycle path



city street



highway

Strenghts

Technological evolution



optical system

of Phileo Pro consists of reflectors that exploit the Total Reflection patent to ensure maximum visual comfort.



anodised aluminium reflectors

coated with a layer of pure silver guarantee 98% reflectivity, maximising the performance of the LEDs and visual comfort, ensured by the total reflection system.



impact resistance

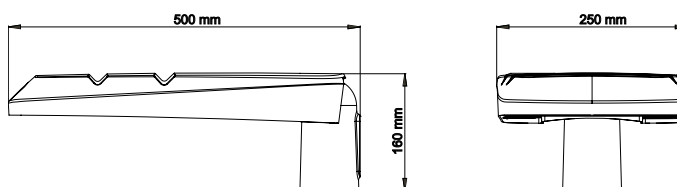
is enhanced in all models, achieving IK09 rating, thanks to the extra-clear 5 mm tempered glass, guaranteeing an extremely robust and safe fixture.

Phileo Pro

Technical data sheet



Mechanical features	
Body	Die-cast aluminium EN 47100
Total weight	6 Kg
Exposed wind area	0,02 m ² - 0,04 m ² - 0,13 m ²
Ingress protection	IP66
Shock protection	IK09
Painting	Polyester powder paint thickness: 80 µm resistant to 1000 hours in salt spray (2500 on request)
Gasket	Silicone based gasket
Color	Anthracite gray RAL 7016 (other colors on request)
Diffuser	Glass tempered extra clear 5 mm
External screws	A2 stainless steel
External cable diameter	Max 12 mm
Mounting	Lateral or pole head diameter 60 mm; 42/76 mm (optional)
Inclination	Pole head -15°÷ +25°; outreach -15°÷ +5°



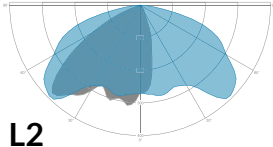
LED module feature	
Color temperature	4000 K (2200/2700/3000 K optional)
Color rendering index	> 70 (80 optional)
LED modules' luminous efficiency with optical system @CRI70 4000K* Tc85°C/I=700mA	155 lm/W
LED modules' luminous efficiency without optical system @CRI70 4000K* Tc85°C/I=700mA	177 lm/W
LEDs' chromatic positioning	McAdam's step ≤ 5
Lifetime L80B10	> 150.000 hours (25°C T amb)
Lifetime L90B10	> 110.000 hours (25°C T amb)
Optical system	Reflection optics

Driver feature	
Power factor (full-load)	> 0,9
Lifetime	> 100.000 hours
Power supply failure rate for 50,000 hours	< 10%
Supply connection	H07RN-F Class II: 2x1.5 Class I: 3x1.5

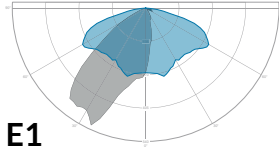
Product features	
Voltage	220 ÷ 240 V ac
Frequency	50/60 Hz
Electrical safety class	I - II
Control options	P=Standard Night Cycle max 4 levels (standard version) F=Fixed without dimming D=DALI 1=1-10V Z=ZHAGA/D4i 24V T=TLC conveyed waves R=TLC radio waves
Constant Lumen Output (CLO)	Up to 800 mA
Night - time dimming	Profile settable on a maximum of 4 levels
Service environment temperature	-30° ÷ +50°C
Storage room temperature	-40° ÷ +80°C
Driving current	Up to 500 mA
Certifications	CE, RoHS, EN60598-1, EN60598-2-3 ENEC
System efficiency	Up to 159 lm/W
Surge protection	10 kV comm - 6 kV diff
Light intensity for angles ≥ 90°	≤ 0,49 cd/Klm

available optics

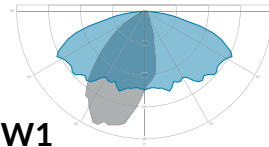
Luminous intensity classes G2



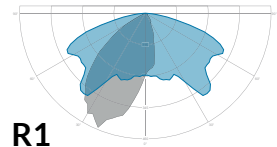
Luminous intensity classes G2



Luminous intensity classes G2



Luminous intensity classes G4



The **total reflection optical system**, which maximizes the luminous flux efficacy and minimizes waste, combined with a luminaire very high efficiency lm/W, allows to guarantee a **high index of energy performance** of the plant (IPEI) for all urban contexts.

** L2, E1, W1, R1

CODE	REFLECTORS	FLUX (lm)	POWER (W)	EFFICIENCY (lm/W)	IPEA
PHP00A0PI00**A12P	1	2025	13	157	A10+
PHP00B0PI00**A12P	1	3030	20	151	A9+
PHP00B3PI00**A12P	1	4001	27	148	A10+
PHP00B6PI00**A18P	1	5010	32	156	A10+
PHP00C0PI00**A18P	1	6030	40	150	A9+
PHP00C5PI00**A24P	2	7100	46	156	A10+
PHP00D0PI00**A24P	2	8100	53	152	A9+
PHP00E0PI00**A36P	2	10010	63	159	A10+
PHP00F0PI00**A36P	2	12040	78	154	A9+
PHP00G0PI00**A36P	2	13460	90	149	A6+
PHP00G1PI00**A36P	2	14670	100	147	A6+
PHP00G4PI00**A36P	2	16700	115	145	A6+
PHP00H0PI00**A36P	2	18700	132	142	A4+
PHP00I0PI00**A36P	2	20500	148	138	A4+
PHP00J0PI00**A36P	2	22400	167	134	A3+
PHP00K0PI00**A36P	2	24000	184	131	A++

Flux data refers to devices with CRI 70 and 4000 K (740).

To get different combinations of CRI and CCT multiply the luminous flux by the following conversion factors K:

- 730 = 0,95
- 840 = 0,91
- 830 = 0,87
- 727 = 0,93
- 722 - 827 = 0,83
- 822 = 0,76

EXAMPLE: PHILEO PRO pole version 18 LED, anthracite, 6000 lm – 3000K CRI 80, optic W1 and Zhaga																	
COD.	P	H	P	0	0	C	0	Z	W	0	0	W	1	A	1	8	P
POS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
POSITIONS 1, 2, 3	FAMILY PREFIX						PHP	Phileo Pro									
POSITIONS 4, 5, 6, 7	FLUX						00A0	2000 lm									
							00B0	3000 lm									
							00B3	4000 lm									
							00B6	5000 lm									
							00C0	6000 lm									
							00C5	7000 lm									
							00D0	8000 lm									
							00E0	10000 lm									
							00F0	12000 lm									
							00G0	13000 lm									
							00G1	14500 lm									
							00G4	16500 lm									
							00H0	18500 lm									
							00I0	20500 lm									
00J0	22500 lm																
POSITION 8	POWER SUPPLY PROGRAM						00K0	24000 lm									
							P	Programmable night dimming									
							F	Fixed									
							N	7 poles Nema									
							D	DALI									
							1	1 – 10 V									
							Z	Zhaga/D4i 24V									
							T	TLC PLC									
POSITION 9	CCT + CRI						R	TLC Radio									
							M	2200K – CRI 70									
							N	2200K – CRI 80									
							P	2700K – CRI 70									
							Q	2700K – CRI 80									
							H	3000K – CRI 70									
							W	3000K – CRI 80									
							I	4000K – CRI 70									
							L	4000K – CRI 80									
							POSITIONS 10, 11, 12, 13	OPTICS						00E1	Optic E1		
00L2	Optic L2																
00R1	Optic R1																
00W1	Optic W1																
POSITION 14	COLOUR						A	Anthracite									
POSITIONS 15, 16	NB. OF LED (12,18,24,36)						12	12 + 36 LED									
POSITION 17	FIXING MODE/APPLICATION						P	Pole Class II									
							Y	Pole Class I									

EXAMPLE: PHILEO PRO pole version 18 LED, anthracite, 6000 lm – 3000K CRI 80, optic W1 and Zhaga																	
COD.	P	H	P	0	0	C	0	Z	W	0	0	W	1	A	1	8	P
POS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

The resulting code is: **PHP00C0ZW00W1A18P**

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light looking forward



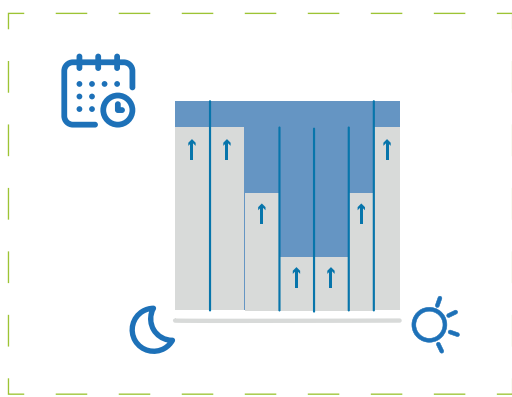
Smart Lighting

Remote control for your city by Arianna



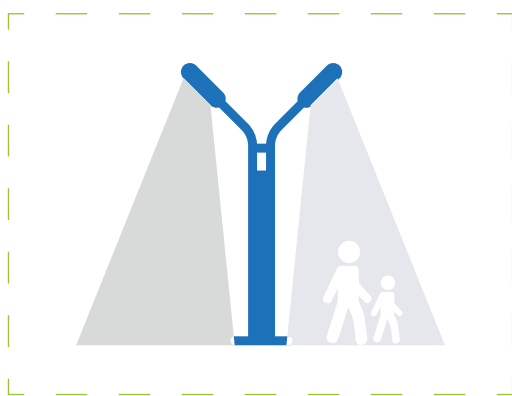
The LED is a source that is ideally suited to being controlled and dimmed with a view to optimising consumption in the sense of **economic savings** but also of **environmental sustainability**.

The Arianna remote control proposals allow:



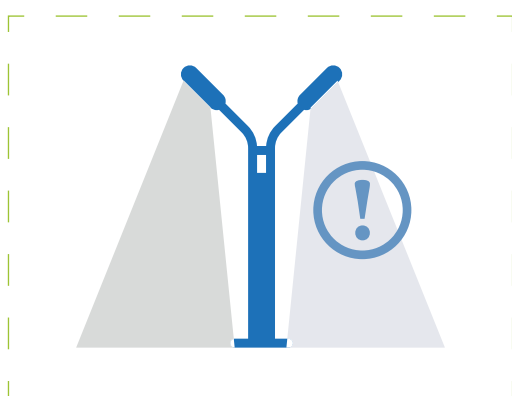
Adjustment of appliances

On off, point point or for groups based on the calendar or at predefined times.



Adjustment of light intensity

It is based on the progress of traffic thanks to a system capable of detecting the movement of vehicles or pedestrians to control energy wastage.



Remote anomaly detection

Line failures, exceptional consumption or problems of the individual floodlight (remote measurement and remote diagnosis) are reported, minimising the cost of maintaining the system.

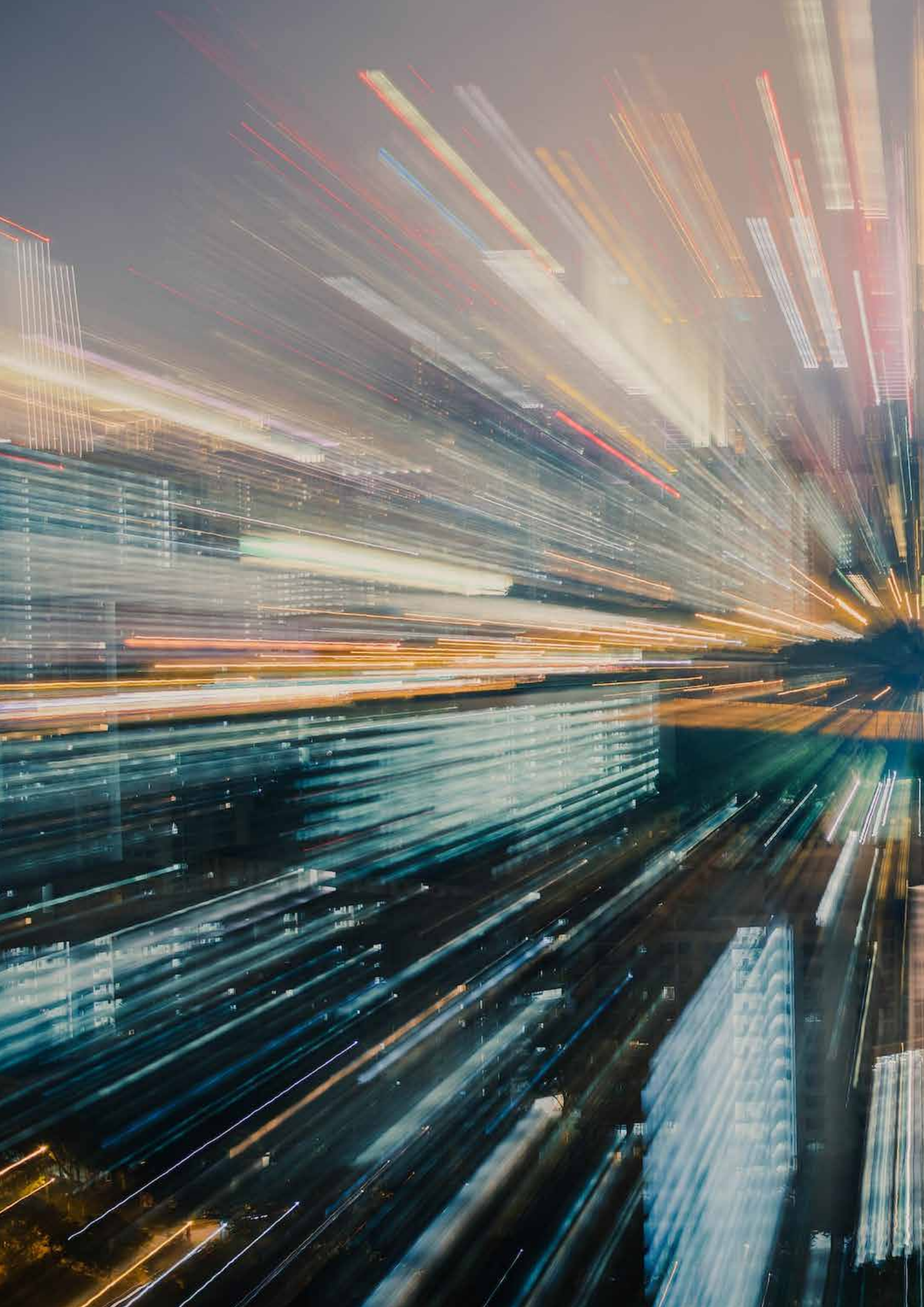
Our controlled street lighting solutions allow **energy savings of up to 80%**. In the central hours of the night where the traffic flow is reduced, the brightness can be reduced, for example, to 20% of the total. Alternatively, the floodlights can be controlled via a predefined dimming program.

This also implies a **significant reduction of CO₂** emissions and a **containment of light pollution** which together offer a healthier and more sustainable environment for recipients.



Future Proof

The product can be supplied with ZHAGA / D4i or NEMA interface in order to be compatible with all future **external control technologies**.





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light looking for ward



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light looking forward



Internationalisation

In-house production

Custom design

Energy saving

Where there is uniform, localised lighting, visual comfort, safety and urban quality of life, there is a project by Arianna

Who we are: Arianna



Arianna is a company, founded in 2009, specialized in the design and production of LED lighting fixtures that exploit the international patent on total reflection.

Arianna has grown since 2009 and boasts the same majority shareholders as CAREL, a multinational specialized in electronics for air conditioning and refrigeration. CAREL represents an opportunity for Arianna in terms of industrial know-how, a sister company that shares values and objectives for common growth.

Research and development are strongly directed to environmental protection, safety and the quality of the urban environment. Arianna directly follows all the phases of the production process of the lighting fixtures: from the conception, to the realization, to the marketing, to the assistance in the maintenance.

Arianna works with a structure of great experience and specialization in lighting calculations: each lighting element is studied in detail for a performing installation.

Thanks to an organizational structure constantly projected towards innovation, and the development of integrated logistics with international partners, Arianna supplies **high quality lighting**, even in the most complex contexts, through innovative technological solutions with low environmental impact and without commitment of maintenance.

Energy saving is an indispensable value for Arianna. Thanks to the exclusive total reflection patents, the modularity of the optics, their specific applicability to lighting projects, and the optimization of LED technology, Arianna lighting systems significantly reduce consumption, light pollution and dispersion.





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