

public
solar
lighting



SPIRIT
solar lighting



our vision

Our aim is to contribute to a sustainable future by efficient use of energy, while maintaining the sense of safety and/or ambience of an enlightened environment.

We value our customer's independency and having a certain extend of freedom in light design. Thinking of the grid's future function, we believe that the common centralized electricity grid should not be the obvious choice for public lighting. Especially for non-urban locations, where the grid besides for lighting is redundant. All without compromising aesthetics. The SPIRIT product line is a clever designed, innovative off-grid lighting solution - ready for a sustainable future.

Technology enables: During daytime, sunlight is converted into electric energy by solar panels. The energy is stored in a battery, which is the energy source for the highly efficient LED luminaire at night. This robust stand-alone outdoor lighting solution is designed for a sustainable future, in both rural and urban areas.

sunlight empowers

in pursuing our customer's independence & sustainability by ensuring sight for safety



SPIRIT is dedicated to full sustainability:

**a clever holistic design
results in a fair
total costs of ownership.**



our lighting columns

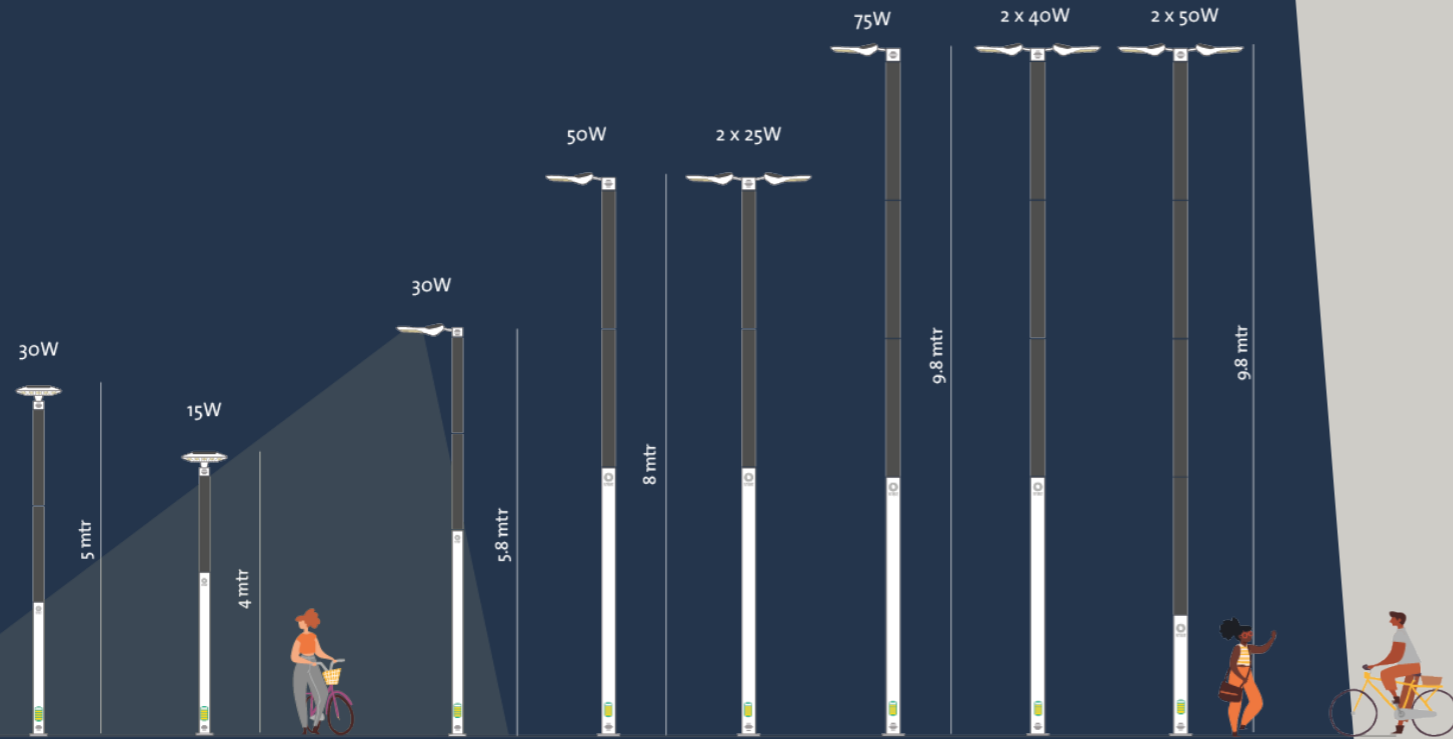
“Solar mast,” commonly referred to in the realm of public solar energy lighting, is elegantly re-defined by SPIRIT as “lighting columns.” These are not mere fixtures but robust, powerful, and high-quality elements designed to illuminate public spaces with an innovative edge.

SPIRIT’s lighting columns are built on three foundational pillars:

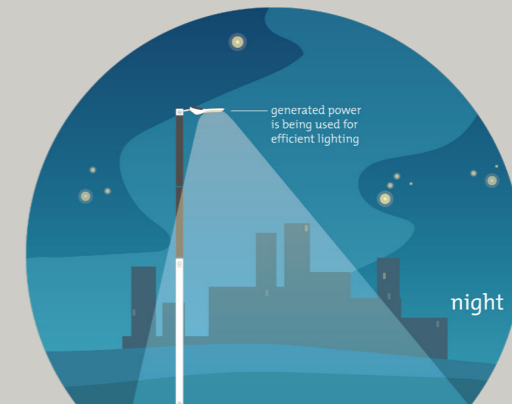
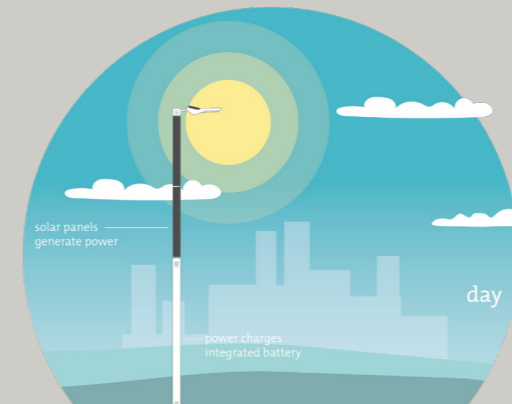
- **Off-grid efficiency** Our columns require no electrical grid connection, embodying true autonomy in energy usage.
- **Sustainable design** Powered by solar energy, our columns are crafted from durable materials with longevity in mind, ensuring a sustainable lighting solution.
- **Reliability through technology** We harness a blend of proven technology and intelligent software, making our lighting columns a beacon of reliability.

The unique vertical arrangement of solar panels on all four sides of the column not only enhances energy capture but also significantly reduces dirt accumulation and optimally leverages the sun’s seasonal angles. This meticulously harvested energy fuels the column through a high-capacity, durable battery pack, ensuring night-long illumination. At the heart of our columns is a SPIRIT-developed control unit. This sophisticated device boasts a remarkable 95% efficiency rate, predicts the length of the night with precision (utilizing GPS and an astronomical clock), and smartly selects the optimal lighting program to guarantee consistent illumination throughout the night, optimized for energy use and lighting effectiveness.

line-up of public lighting



During daytime energy is being generated and stored, during night the stored energy is being used for lighting.



how it works

Solar lighting harnesses the natural cycle of day and night, and the SPIRIT product line epitomizes autonomy and sustainability for the future we all envision. Our innovative square columns are equipped with solar panels on all four sides, utilizing photovoltaic technology to transform sunlight into electricity. This energy is then efficiently and safely stored in an integrated battery, ensuring that our efficient LED lights can illuminate the surroundings throughout the night, regardless of the weather conditions.

Designed as a robust stand-alone solution, SPIRIT's lighting systems offer a dependable and eco-friendly lighting experience suitable for both rural and urban settings.

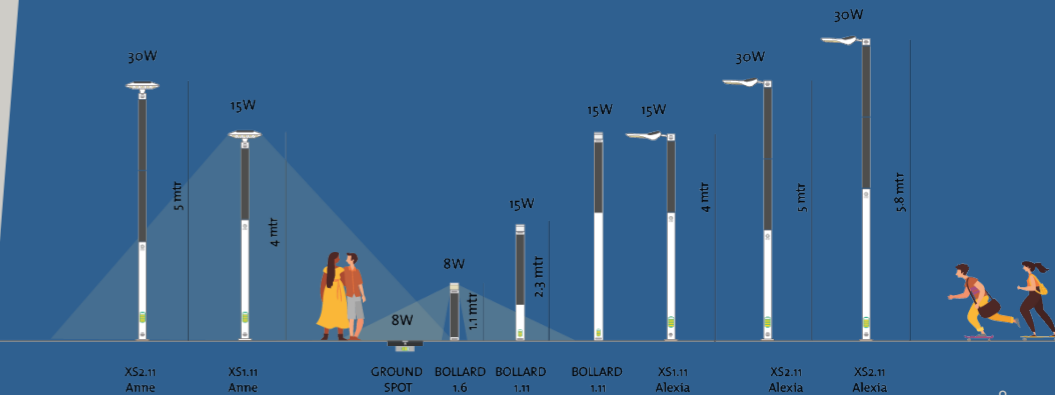
datasheet public lighting

	XS1.11 4m	XS2.11 5m	XS2.11 5.8m	S2.12 8m	S3.12 10m	S4.12 10m
construction						
height	4 m	5 m	5.8 m	8 m	10 m	10 m
rectangular column dim	150x150 mm	150x150 mm	150x150 mm	200x200 mm	200x200 mm	200x200 mm
material & finishing	European quality steel (type S235/S355), hot-dipped galvanized. Optional: durable powder coating. All exterior mounting elements and locks are stainless steel (AISI 316/A4)					
installation	Mounted on in-ground steel foundation tube, or other foundation (anchor template available). Wind speed resistance: 130 km/h. Optional: 160 km/h.					
lifetime expectancy	40 years, produced in accordance to NEN-EN 1090 EXC.2					
energy use						
LED-luminaire	On-top Anne (only for XS-types) or side Alexia. For more details on luminaires, see page 11-12.					
max. power (depending on location)	up to 15W	up to 30W	up to 30W	up to 50W	up to 75W	up to 100W
system voltage	24V DC	24V DC	24V DC	24V DC	24V DC	24V DC
lifetime expectancy	15 years					
energy production						
solar panels	High-quality monocrystalline silicon solar cells (IK08)					
max. capacity	128 Wp	256 Wp	256 Wp	456 Wp	684 Wp	912 Wp
lifetime expectancy	20 years - 80% performance					
energy storage						
battery technology	LiFePo ₄					
min. capacity	450 Wh	900 Wh	900 Wh	1350 Wh	1800 Wh	2700 Wh
lifetime expectancy	10 years at operation temperature 25°C in battery at dept of discharge (DoD) 50%					
energy management						
control unit autonomy	Up to 3 days standard					
smart charging	Via maximum power point tracking (MPPT) on four sides separately and temperature compensating charge technology					
efficiency	Up to 95%					
monitoring	Decentral datalogging, history available on request via bluetooth low-energy or optionally via LoRa					
autonomous control	Contains intelligence for operation: on/off based on GPS + astronomical calender combined with embedded program, standard dimming protocol for prolonging autonomy (no LMS/BMS needed)					
remote communication	Optional via LoRa, via secure protocol					
IP rating control unit	IP67 rating for connectors; all electronics are encapsulated in resin mixture					
lifetime expectancy	10 years					

line up of ambient lighting

Public lighting plays a crucial role in enhancing visibility and safety on the roads after sunset. However, ambient lighting serves a different, equally important purpose: it enriches the ambiance and shapes the perception of individuals in both public and private spaces. Beyond our public lighting solutions, SPIRIT introduces an exclusive range of ambient lighting products.

Our ambient lighting portfolio includes two distinctive models, XS1.11 and XS2.11, both available with luminaires Anne or Alexia, complemented by three styles of bollards, as well as a versatile ground spot. Whether for public squares, park walkways, or private landscapes, our ambient lighting range offers the perfect fusion of functionality and design flair, catering to the discerning needs of modern urban planning.



magic orchestrated in 24h

It almost resembles magic - achieving harmony between daylight and darkness. To manage this delicate equilibrium, we've crafted the SPIRIT control unit. This sophisticated device orchestrates the entire cycle of solar energy capture and nighttime illumination, seamlessly balancing power generation with lighting needs.

Cycle stage **Midnight**

The light is on. The SPIRIT control unit ensures the light remains on throughout the night, adjusting energy usage to maintain illumination based on various factors.

Cycle stage **Sunrise**

Here comes the sun. The SPIRIT control unit has determined by GPS and astronomical data the length of the night and so the amount of energy needed. At the moment of sunrise, the battery is emptied up to 50% for preserverance and ready to be recharged.

Cycle stage **Morning**

Morning sunlight is converted to solar energy (DC), stored in a LiFePO4 battery (DC) through a bulk stage process. The control unit employs multi-power-point tracking technology, optimizing charging from four separate panel strings to one battery set.

Cycle stage **Afternoon**

By afternoon, the battery nears full capacity, shifting to absorption charging, then to float charging, maximizing sunlight utilization for complete charging.

Cycle stage **Sunset**

Prior to sunset, the control unit assesses the battery's level and the forthcoming night's duration, selecting the optimal lighting mode

to ensure illumination throughout the night.

Cycle stage **Evening**

As evening falls, the specifically designed Alexia or Anne luminaire lights up, remaining on until sunrise. A dimming profile might be applied, based on the chosen settings and the day's energy harvest, fulfilling the core promise of sustained illumination.: **keeping the light on.**



the SPIRIT control unit

As mentioned, the SPIRIT control unit is the system's brain, aiming to:

- Regulate the most efficient power generation (MPPT) on four sides of the column separately.
- Regulate the luminaire to be on and off.
- Regulate the energy balance by planning the power to be used to keep the light on the whole night, based on available energy and forecast of the night length and the seasonal forecast.
- Regulate the preserverance of the system, e.g. protection for high heat or preserve deep discharge to prolongue the lifetime of electronics and battery.



100% off-grid



100% independent



100% self-operating



starting a project

It all starts with a plan. Initiating a project inherently involves meticulous planning, and the optimal starting point for selecting your lighting fixtures is crafting a comprehensive lighting design. This process, grounded in the specific optics of the luminaires, allows for the precise calculation of column spacing to fulfill the project's unique requirements, whether that's achieving specific candela per square meter, lux levels, or uniformity. In this way we determine the columns that your project needs. We assert that our luminaires not only excel in photometric studies but also in execution.

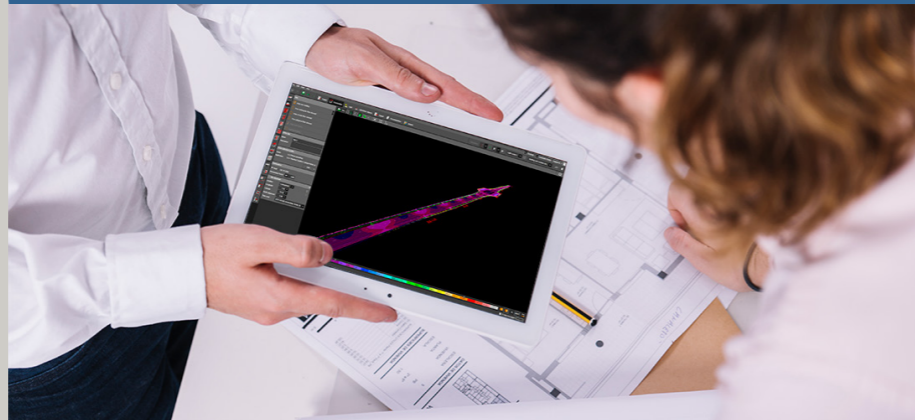
At the core of any lighting design is the luminaire itself. At SPIRIT, we've carefully chosen the finest luminaires for integration with our columns: the SPIRIT Anne and the SPIRIT Alexia, ensuring an unmatched blend of performance and aesthetic appeal.

light by Anne or Alexia

For the SPIRIT solar lighting columns, we have choice in two types of fixtures - both LED and 24V DC: Anne or Alexia.

The SPIRIT Anne is an excellent choice for illumination of parks. This square luminaire with gentle lines in the design, is available in 15W (2100 lumen) and 30W (3750 lumen). In combination with the column, this demonstrates a playful though modern classic look and feel.

For functional lighting, we propose the SPIRIT Alexia. The design language of both fits to the design of the minimalistic column. Both with the finest optics for the best result on the surface. The 48LED SPIRIT Alexia has a friendly appearance though edgy design and is available in 15W (2475 lumen), 25W (4125 lumen), 30W (4950 lumen), 40W (6400 lumen), 50W (7750 lumen) and 75W (11250 lumen).

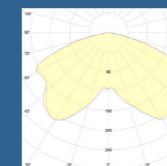


SPIRIT Anne

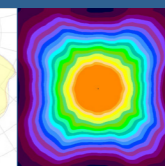


SPIRIT Alexia

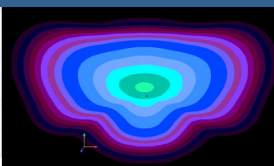
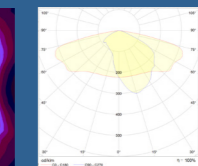
	Anne	Alexia
power output = lumen output	15W = 2100 lumen 30W = 3750 lumen	15W = 2475 lumen 25W = 4125 lumen 30W = 4950 lumen 40W = 6400 lumen 50W = 7750 lumen 75W = 11250 lumen
Voltage	24V DC	
Colour temperature rendering index	4000K standard >70	≤30W 4000K 50W 5700K >70
Dimmable PCB	1-10V 10-100% on-board	1-10V 10-100% on-board/cassette
Type	Cree 205 lm/W	
Lumen maintenance life L70	100,000 hours @T _{amb} <30°C 50,000 hours @T _{amb} <55°C	
Installation	On-top spigot-fit to SPIRIT column XS-type	Spigot-fit to SPIRIT column XS-and S-type
Plug-and-play	With cable connectors IP66	
Operating temperature	-20°C +55°C	
IP rating	IP66	
IK rating housing IK rating glass	IK10 IK08	
Housing material	Die-cast aluminium LM6-quality, non-corrosive RAL 9010 (Pure white)	
On-top cassette material	PC RAL 2100 (Noir)	
Lens material efficiency	PMMA PC 90%	PMMA Glass Energy Vision 3 92%
Length x width x height weight	590 x 590 x 200 mm 11kg	600 x 290 x 100 mm 7.5kg



ANNE Optics for square/plaza



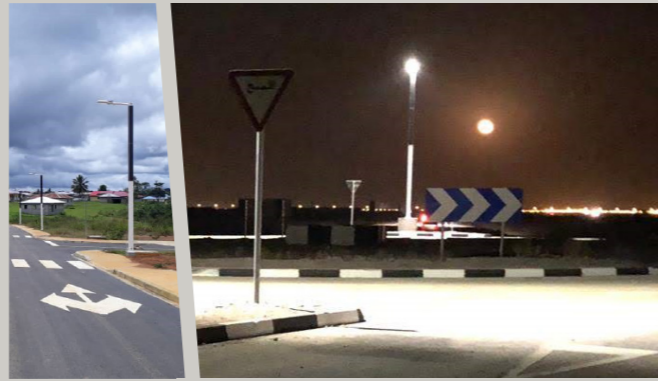
ALEXIA Optics for road lighting and residential areas



installation & maintenance

For installation, we always are in contact with the contractor or installer which is responsible for the project's end-result. Mostly, installation and commissioning is done by the contractor or installer self. The SPIRIT systems are designed for plug-and-play installation. The basis of the mast may differ to the client's requirements or desires. After erecting the column, the system can be electronically activated by plugging the connectors. The control unit ensures itself to automatically start by defining the location and so actuates the correct lighting program. By using the SPIRIT supervisor app you can check the configuration.

As far as maintenance, we advise to inspect the columns visually on regular basis, for example once in 3 years minimum for failure, damage or contamination. Technical performance monitoring is accessible through the SPIRIT Supervisor app. Cleaning frequency varies with the desired appearance standards; we recommend evaluating the need every three years. Routine cleaning of solar panels and column structures can be performed with just clean water, no detergents needed. Based on our experience, rainwater typically suffices to keep solar panels clean, ensuring they operate efficiently according to specifications.



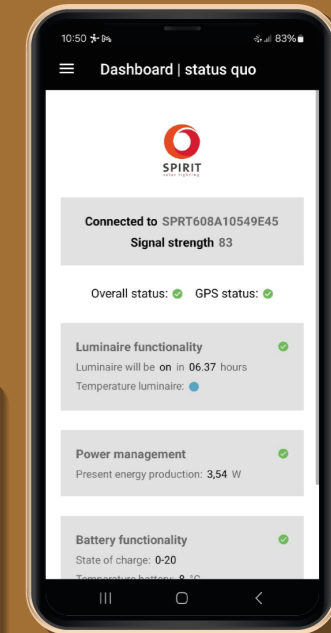
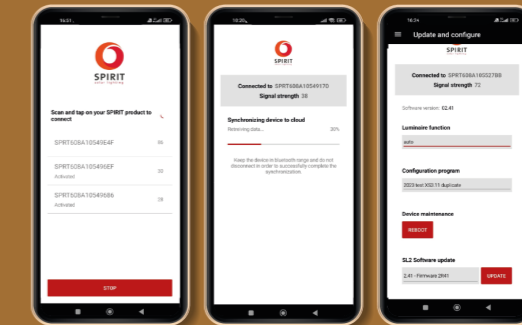
monitoring your installation

Beyond visual inspections, system performance and execution can also be monitored through the SPIRIT supervisor app and the centralized SPIRIT Control Room.

All is accessible to customers and made available upon installation. Through the app, data can be viewed on the device or sent in more depth to the central SPIRIT control room platform. There, diagnoses can be made for any

potential non-performance issues.

Additionally, in the SPIRIT control room, insights can be gained and commands can be sent if the columns are connected via LoRa through a private gateway or a LoRa network.



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