BEKA Schréder

Experts in lightability™

SOLARFLOOD

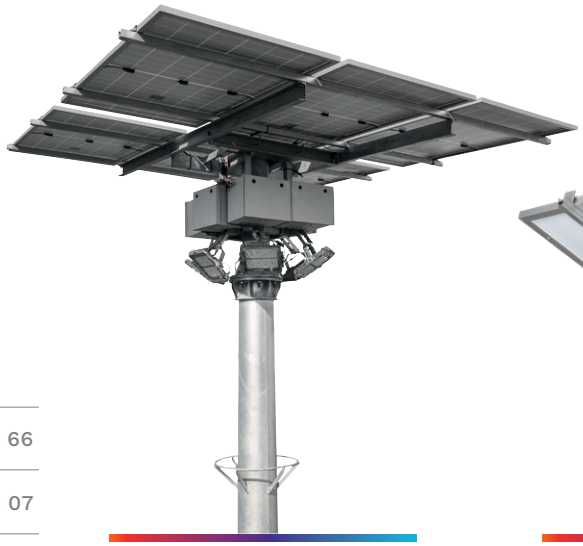
LED solar lighting highmast solution

LENSO FLEX® 4

SOLARFLOOD

IP 66

IK 07



Fixed mast layout

Single unit

Ring mast layout

The solar lighting highmast solution for all area applications

Our solar lighting highmast solution for outdoor open area and rural applications provides a high performing, robust option for off-grid solar lighting requirements.

The SOLARFLOOD provides a reliable lighting solution with a high Ingress Protection level (IP 66) that withstands high ambient temperatures. The SOLARFLOOD is a sustainable off-grid performer with a superior lumen/watt ratio.

Our high-performing optics allow for mounting of up to 20m, providing high-quality light where it is needed.

The photovoltaic energy conversion is optimized by highly efficient Monocrystalline solar module technology. This, in conjunction with our Maximum Power Point Tracking (MPPT) charging system and our lithium energy storage technology, provides a state-of-the-art quality system, offering the required system autonomy and providing a long-lasting solution to operate in harsh environmental conditions.

OFF-GRID AREAS | HIGHMAST LIGHTING | CAR PARKS | SQUARES & PEDESTRIAN AREAS | SECURITY LIGHTING

Key advantages

- Designed and manufactured in South Africa
- Specifically engineered for various geographical locations in Africa
- It has sufficient autonomy to cater for up to two continuous overcast or rainy days, to continue its reliable night operation at an average 11-hour period
- Long life lithium (LifePO4) energy storage technology, offering up to 8 years battery lifetime
- Designed to withstand wind speeds of up to 144km/h and highly corrosion resistant
- Using latest photometric light distributions and highest efficient LED technology to provide maximum light levels and spacing between masts
- Circular economy 3-star rating
- Warranty up to 5 years
  (Terms and conditions apply)

Characteristics

GENERAL INFORMATION	
Recommended installation height	Up to 20m
Components included	Solar module Energy storage enclosure Energy storage unit Charge controller Luminaire
Autonomy days	2 days
System operating voltage	12V DC
Geographical location	Designed and optimised for various locations
Weight (kg)	55kg (excludes pole)
Wind speed rating	144km/h
Aerodynamic resistance (CxS)	At 5° panel rake angle, including the side mounted energy storage enclosure: 0.312m² (side) 0.411m² (front)

MATERIAL	
Energy storage enclosure	Corrosion-free glass-reinforced polymer (GRP)
Brackets and fixation clamps	Hot-dipped galvanised mild steel
Solar module fixation	Extruded aluminium
Solar module	Extruded aluminium
	Tempered glass
Pole	Hot-dipped galvanised graded steel
	GRP Pole - single unit (optional)

SOLAR MODULE	
Technology / Rated lifetime	Monocrystalline 120 cell module: 25 years / 80%
Peak rated wattage	330-350W
Robustness	Hail and corrosion resistant

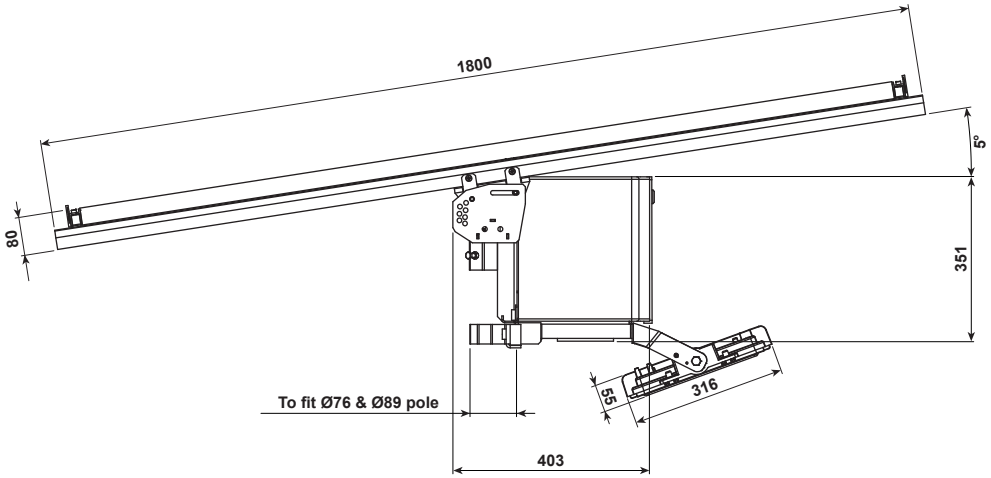
ENERGY STORAGE	
Technology / Expected lifetime	Lithium: 5-8 years
Weight per unit	Lithium: 13.6kg
Maintenance free	Yes

CHARGE CONTROLLER	
Charge algorithm	Maximum Power Point Tracking (MPPT)
Rated lifetime	20 years
Integrated data logger	Yes: Up to 30 days
Integrated dawn/dusk switch	Yes

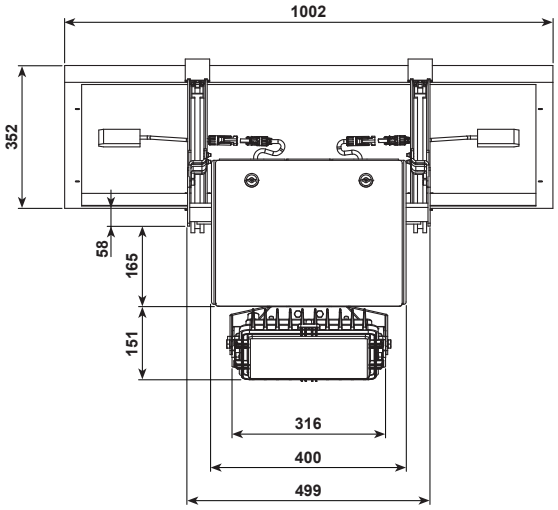
LUMINAIRE	
Housing and finish	
Housing	Marine grade high-pressure die-cast aluminium (EN 1706 AC-44300)
Protector	High-impact clear glass
	High-impact polycarbonate (optional)
Housing finish	Unpainted aluminium
Tightness level	IP 66
Impact resistance	IK 07
	Polycarbonate: IK 10
Optical information	
LED colour temperature	4000K (Neutral white 740)
	5700K (Cool white 757) (optional)
Colour rendering index (CRI)	≥ 70 (Neutral white 740)
	≥ 70 (Cool white 757) (optional)
Operating conditions	
Operating temperature range (Ta)	-40°C up to +45°C
Lifetime of the LEDs @ tq 25°C	
For all versions	100,000h - L95B10

Dimensions in mm

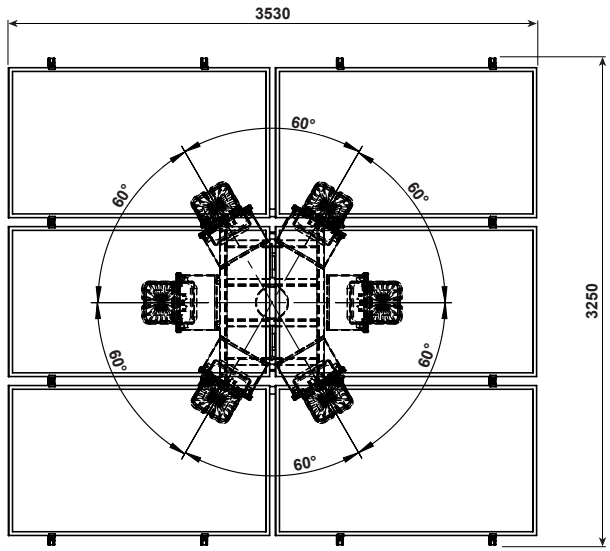
Side view



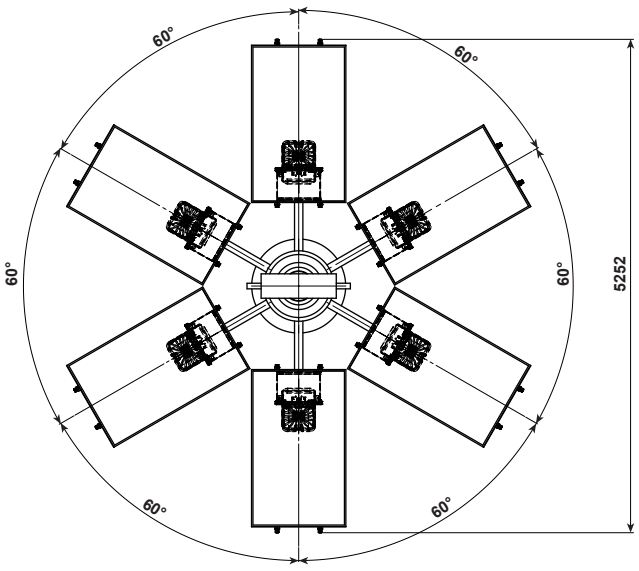
Front view



Fixed mast layout - Top view



Ring mast layout - Top view



Performance

Luminaire	Number of LEDs	Driver Current 100% (mA)	Nominal flux (lm) (*)	Power consumption (W)	Nominal efficacy (lm/W)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Photometry (**)
			Typical	Typical	Typical	Typical	Typical	
SOLARFLOOD	80	900	10244	53	195	8502	162	
	80	1120	12544	65	192	10411	159	
SOLARFLOOD PREMIUM (***)	160	1128	14786	65	227	13137	202	LENSO FLEX® 4
	160	1384	17638	80	220	15626	195	
	160	1712	21256	100	213	18832	188	

Tolerance on LED flux is ± 7% and on total luminaire power ± 5%

(*) The nominal flux is an indicative LED flux @ Ts 85°C based on LED manufacturer's data. The real flux output of the luminaire depends on environmental conditions (e.g. temperature and pollution) and the optical efficiency of luminaire. The type of LED used is subject to change due to the ongoing rapid progress taking place in LED technology.

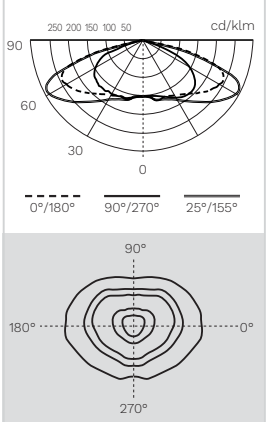
(**) Custom combinations of lenses/optics to suit the project are available on request.

(***) SOLARFLOOD PREMIUM options can only be used with the FIXED MAST solution

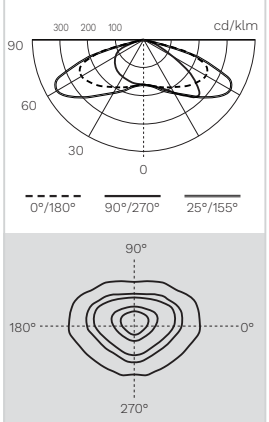
Light Distribution

Custom combinations of lenses/optics to suit the project are available on request.

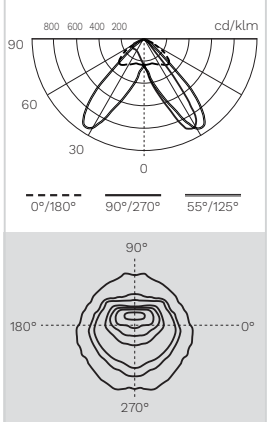
LENSO FLEX® 4 5304 optic(1)



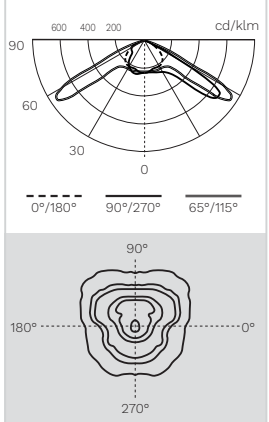
LENSO FLEX® 4 5304-W optic(1)



LENSO FLEX® 4 5356 optic(2)



LENSO FLEX® 4 5366 optic(2)

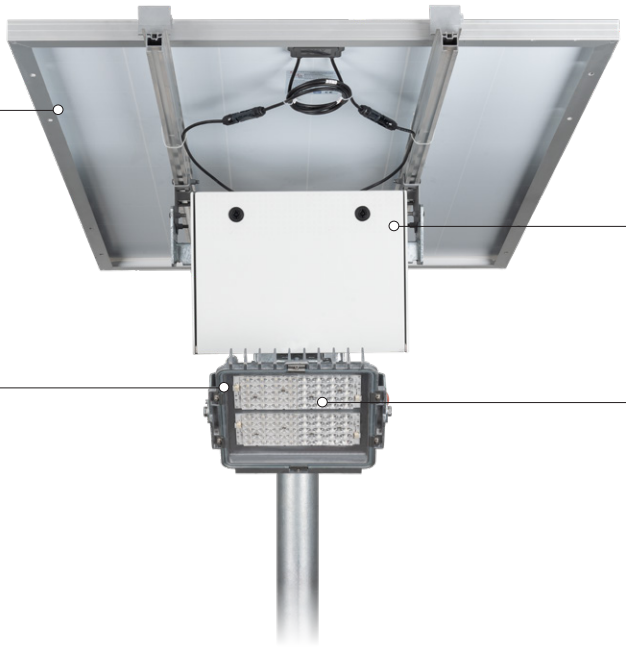


(1) Best suited for single pole area lighting
(2) Best suited for highmast lighting

Key Features

Highly efficient Monocrystalline solar module technology to maximise solar energy conversion

Corrosion-resistant marine grade high-pressure die-cast aluminium housing (EN 1706 AC-44300)



Corrosion-resistant energy storage enclosure (IP 65)

High luminaire efficacy (up to 202lm/W)

Corrosion-resistant hot-dipped galvanised spigot assembly

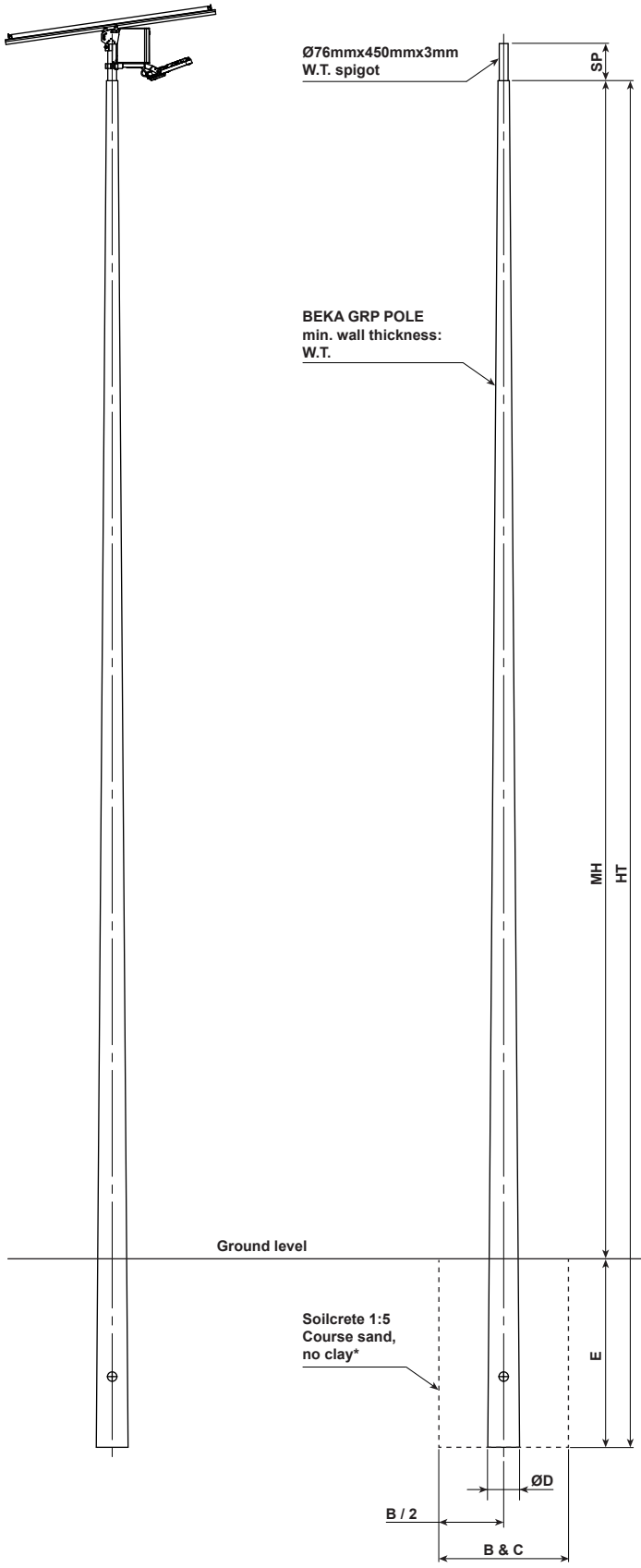
Adjustable solar module inclination angle optimised for various geographical locations

Corrosion-resistant GRP energy storage enclosure with optional key locking door

Luminaire is adjustable from 0° to +70°

GRP Pole Option

Aerodynamic resistance:
0.312m² (side)
0.411m² (front)



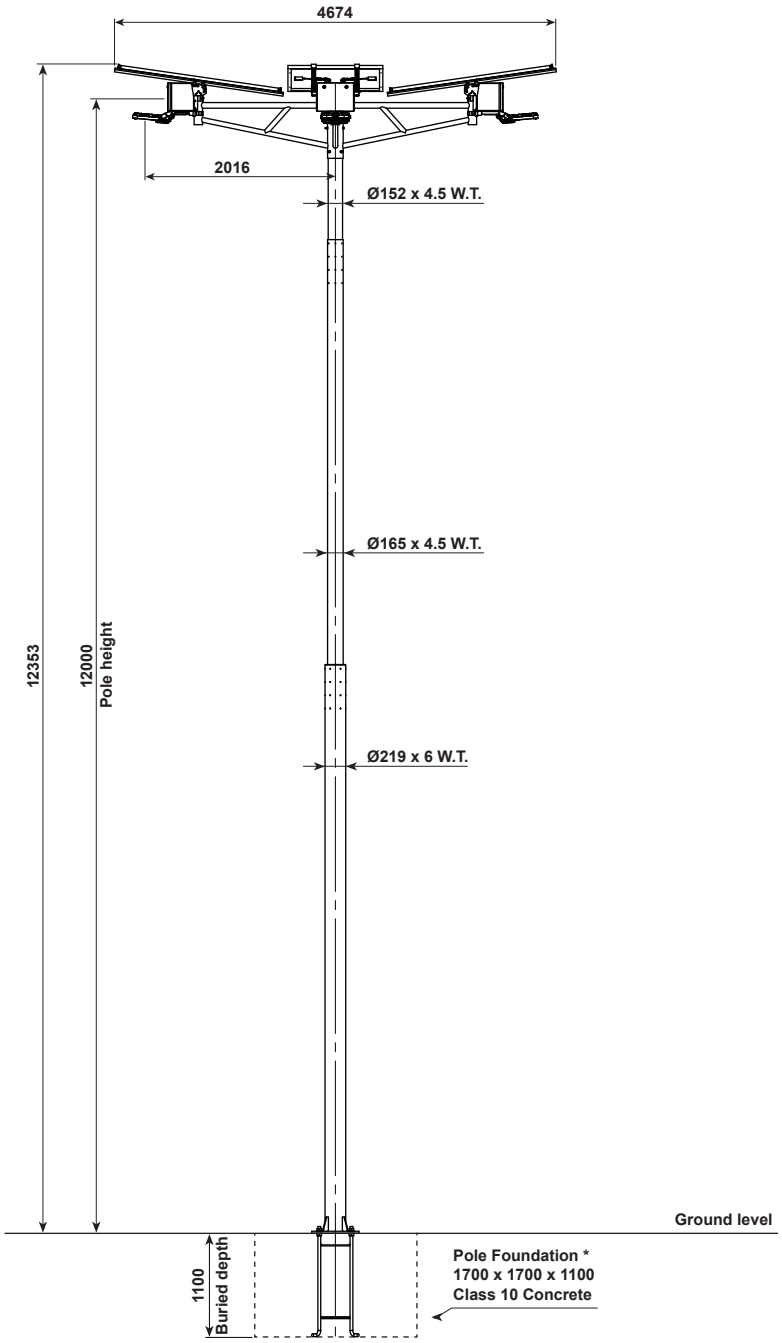
MH (m)	HT (m)	E (m)	D (mm)	W.T. (mm)	Strengthening (%)	SP (mm)	B&C (m)
6	7	1.0	192	8	35	315	1.0
8	9.2	1.2	220	8	35	315	1.25
10	11.6	1.6	250	10	65	315	1.25
12	14	2.0	340	10	65	315	1.4

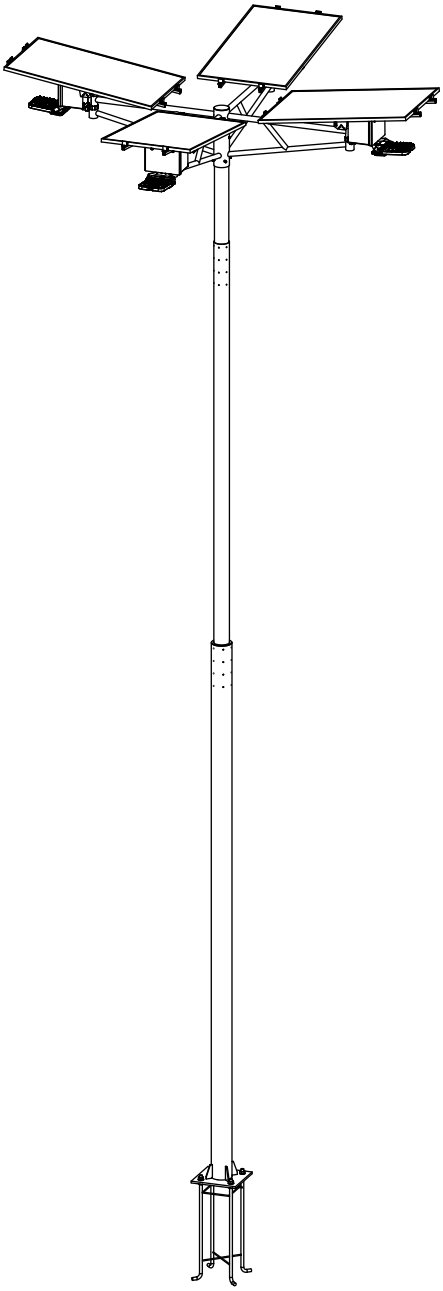
NOTE:
Certified according to SANS 10225 Class B Terrain Category 2 (open areas) at 100m AMSL, for up to 45m/s wind speed

* Please note: Only indicative, dependent on soil condition. After evaluating site conditions, please contact certified structural engineer.

4-Way Assembly on 12m Surface-Mount Pole (optional)

Surface mount



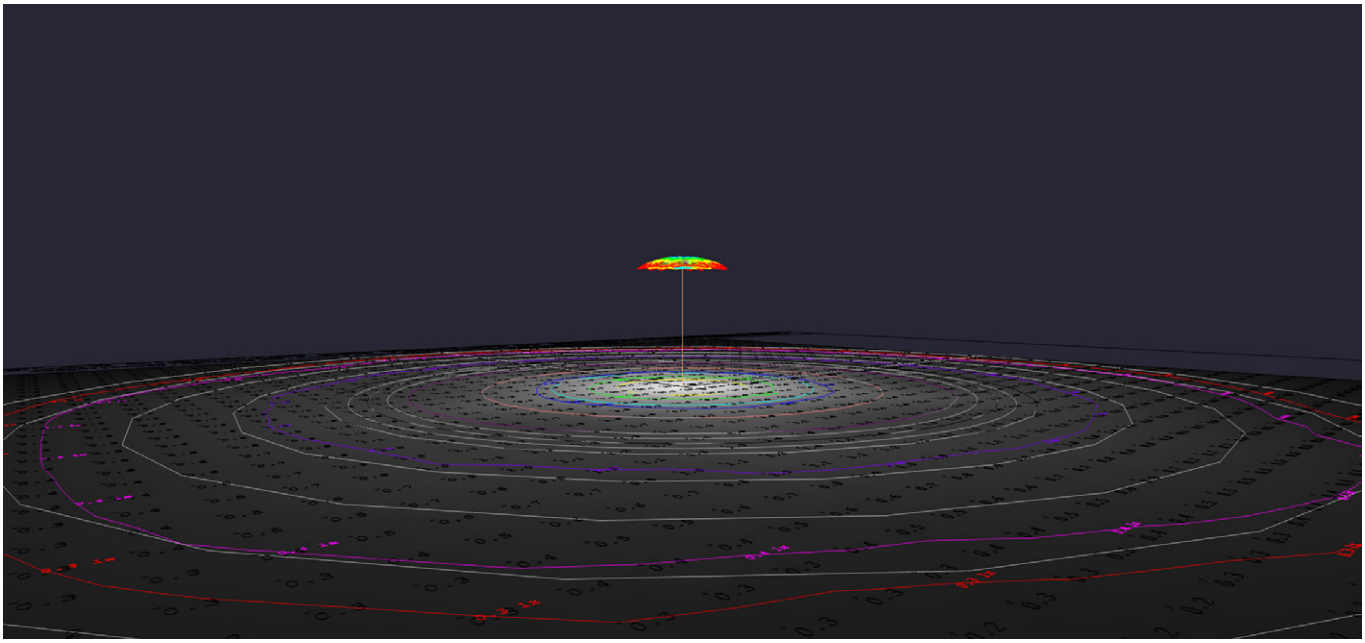


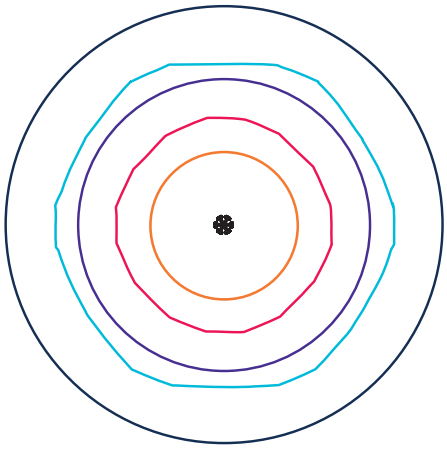
* Please note: Only indicative, dependent on soil condition. After evaluating site conditions, please contact certified structural engineer.

Case Study:
Solar Highmast Strategic Lighting for Rural Areas

Specifications

Number of solar units per highmast: 6
Pole height: 20m





Design Results	SOLARFLOOD		SOLARFLOOD PREMIUM		
	53W	65W	65W	80W	100W
20m*	16.47lx	19.43lx	30.1lx	36.48lx	43.96lx
40m*	9.88lx	11.65lx	20.12lx	24.27lx	29.25lx
60m*	6.41lx	7.55lx	15.14lx	18.27lx	22.02lx
80m*	4.23lx	4.97lx	10.61lx	12.71lx	15.32lx
100m*	3.18lx	3.75lx	7.5lx	8.97lx	10.81lx

*Diameter

Please note: Results are related to geographical location.
Above calculations are for demonstration purposes, please contact us for full design results.

Technical Definitions

Energy storage option

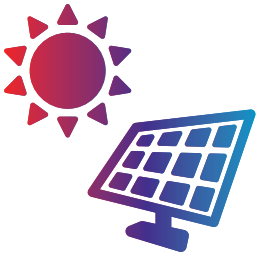
Lithium-ion

Lithium-ion based battery packs have the added advantage that they have a higher power density than lead, which means they have more available power for the same mass of a lead battery. This advantage, combined with the longer life expectancy and higher rate of depth of discharge (DOD), offering an attractive option for solar lighting applications, resulting in a longer lifetime. All Lithium-ion energy storage packs have an integrated Battery Management System (BMS) which monitors the health, charging and discharging of the energy storage pack. This safeguards the cells so that they are not over charged or discharged, maximising their lifetime.

Battery pack operating temperature: -20°C to +60°C

Please note: Energy storage units require special storage. Please consult us for more information.

Solar module



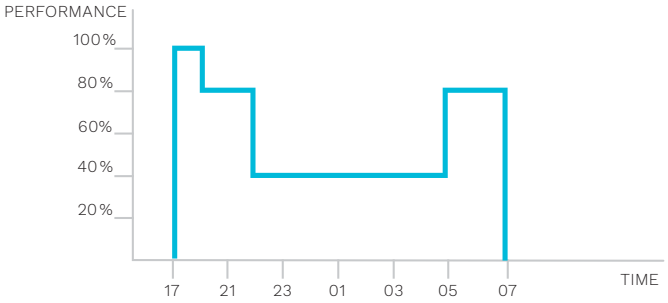
The solar panels are ISO and TÜV certified and carry a 10-year product warranty. Hail-resistant and corrosion-proof. Rated outputs on the panels are 90% minimum for the first 10 years and 80% minimum after 25 years. Panel outputs are designed to cater for all annual environmental conditions.

Charge controller

The MPPT charge controllers can harvest up to 30% more energy in clouded sky conditions compared to PWM charge controllers. The charge controllers have a load output connection that can be programmed to switch the luminaires off when the energy storage voltage drops to critical levels. This allows for the energy storage units to be protected from over discharge. The charge controllers have integrated temperature sensors that can compensate for thermal environmental changes when charging the energy storage units. The charge controllers use a 3-step charging process with all three charge levels programmable depending on the energy storage selected. We offer a 5-year warranty.

Optidim

Intelligent luminaire drivers are programmed if required in the factory with complex dimming profiles. Up to 6 combinations of time intervals and light levels are possible. This feature does not require any extra wiring. The period between switching on and switching off is used to activate the preset dimming profile.



Autonomy Days

Autonomy Days refers to the number of nights/cycles a luminaire will continue to work without receiving a charge/being charged from the solar panel, due to adverse weather conditions.. The number of autonomy days is aligned to the energy storage unit's depth of discharge resulting in sufficient capacity after a night/cycle.

North West province, South Africa

Configuration Matrix

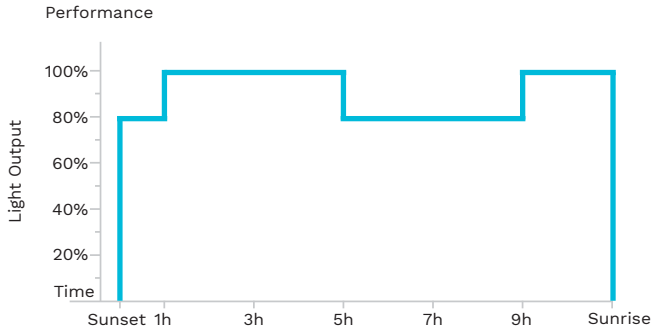
Please note: Custom solutions could be considered and are subject to design approval at the time of the project.

		SOLARFLOOD		SOLARFLOOD PREMIUM				
		53W	65W	65W	65W	80W	80W	100W
Solar module rated at 25°C		330W	330W	330W	330W	330W	330W	330W
Optidim		2	5	5	2	5	-	5
Energy storage technology		100Ah	100Ah	100Ah	150Ah	150Ah	150Ah	150Ah
Autonomy days		2	2	2	2	2	2	2
Geographical location								
Angola	Huambo	✓	✓	✓	✓	-	✓	✓
	Luanda	✓	✓	✓	✓	-	✓	✓
Botswana	Gaborone	✓	✓	✓	✓	-	✓	✓
	Shakawe	✓	✓	✓	✓	-	✓	✓
DRC	Kinshasa	✓	✓	✓	✓	✓	-	-
	Lumbumbashi	✓	✓	✓	✓	-	✓	✓
eSwatini	Mbabane	✓	✓	✓	✓	✓	-	-
Ivory Coast	Abidjan	✓	✓	✓	✓	-	-	-
Kenya	Nairobi	✓	✓	✓	✓	✓	✓	✓
Malawi	Lilongwe	✓	✓	✓	✓	-	✓	✓
Mauritius	Agalea	✓	✓	✓	✓	-	✓	✓
Mozambique	Maputo	✓	✓	✓	✓	✓	-	-
	Pemba	✓	✓	✓	✓	-	✓	✓
Namibia	Tsumeb	✓	✓	✓	✓	-	✓	✓
	Windhoek	✓	✓	✓	✓	-	✓	✓
Nigeria	Lagos	✓	✓	✓	✓	✓	-	-
	Kaduna	✓	✓	✓	✓	-	✓	✓
Senegal	Dakar	✓	✓	✓	✓	-	✓	✓
South Africa	Cape Town	✓	- (*)	✓	✓	✓	-	-
	Durban	✓	- (*)	✓	✓	✓	-	-
	Gqeberha	✓	- (*)	✓	✓	✓	-	-
	Kuruman	✓	✓	✓	✓	-	✓	✓
	Pretoria	✓	✓	✓	✓	-	✓	✓
	Thabazimbi	✓	✓	✓	✓	-	✓	✓
Tanzania	Dar Es Salaam	✓	✓	✓	✓	-	✓	✓
Zambia	Lusaka	✓	✓	✓	✓	-	✓	✓

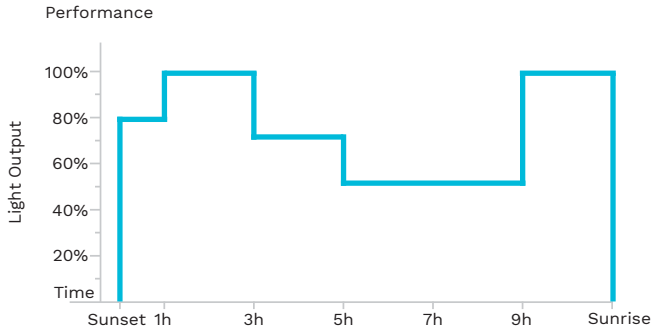
(*) Only available with Fixed Mast Layout solution

Optidim Profile

2 Power Consumption: 90% average

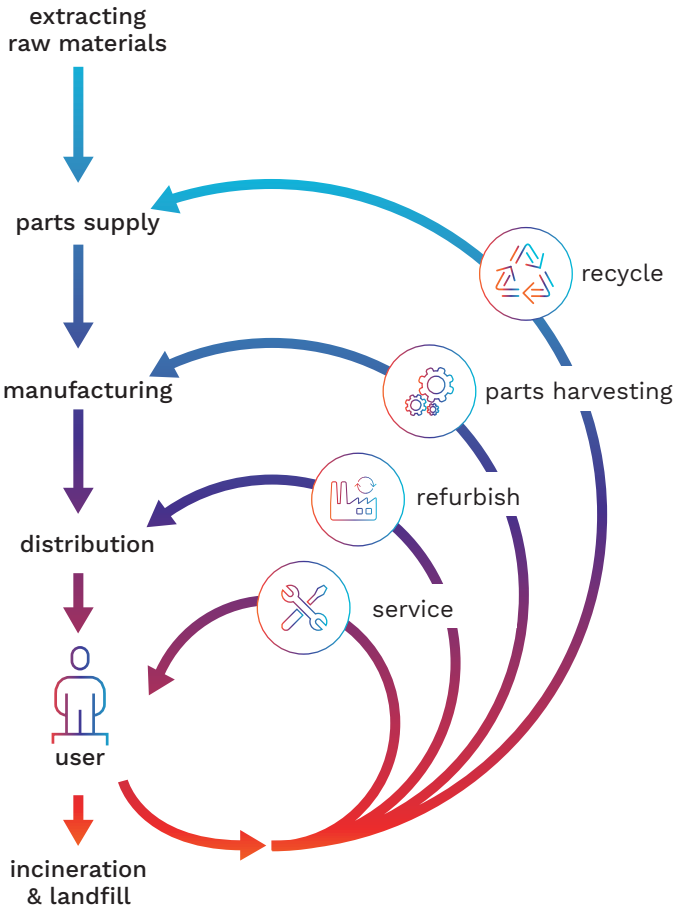


5 Power Consumption: 75% average



CIRCLELIGHT

Circularity concept



SOLARFLOOD

Circularity focuses on reducing the environmental burden by valorising the flow of all materials.

It is mainly defined in opposition to the traditional linear economy: take, make and dispose. In a circular economy, products are part of a value network where they will be used for as long as possible.

Then, depending on their characteristics, they can be reused, refurbished, upgraded or recycled.

BEKA Schréder takes circular economy into account, right from the offset. Before we start to design our products, we incorporate it into their DNA.

After a careful analysis of the potential circularity of our luminaires, we decided to introduce a “circular lighting” product label. This label acts as a circular indicator for our customers.

It clearly designates products that are optimised for circular economy through 12 objective criteria.

Circular highlights:

- Equipped with a completely replaceable LED engine
- Materials with a high rate of recyclability
- Not connected to the mains grid

Star rating:

It was designed to be cost-efficient

It was built to last but not with circular economy requirements

It was developed to meet most of circular economy requirements

It was developed to fully meet circular economy requirements

BEKA Schréder

Experts in lightability™

SABS ISO 9001

www.beka-schreder.co.za

Designed and manufactured by BEKA Schréder (Pty) Ltd

LOCALLY manufactured

2023-10