

BEKA SOLAR

LED solar lighting solution



LOCALLY
manufactured

BEKA SOLAR



Up to
IP 66
Up to
IK 10

Standard: Streetlight version



Optional: Median version



Optional: Post top version

The most customizable solar solution for road and urban applications

Our solar street light for outdoor residential and public applications gives you a full customizable option to suit all your off-grid solar lighting requirements.

The BEKA SOLAR, combined with either the ZIYA or KAZELLE luminaires, provides a reliable lighting solution with a high Ingress Protection level that withstands high ambient temperatures and vandalism. These luminaires are a sustainable off-grid performer with a superior lumen/watt ratio.

The photovoltaic energy conversion is optimized by efficient Polycrystalline solar module technology to maximise solar energy. 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 any of our very challenging African environmental conditions.

The BEKA SOLAR offers a renewable lighting solution to operate in any of our very challenging African environmental conditions.

Key advantages

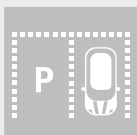
- Designed and manufactured in South Africa
- Designed to operate daily with an output of 11 hours to incorporate appropriate dimming profiles according to your needs and application, with optional movement sensor where applicable
- It has sufficient autonomy to cater for up to three continuous overcast or rainy days, to continue its reliable night operation
- Theft and vandal resistant
- Specifically engineered for all geographical locations in Africa
- Long life lithium (LifePO4) energy storage technology, offering up to 8 years battery lifetime
- Circular economy 3-star rating
- Warranty up to 5 years
(Terms and conditions apply)



OFF-GRID
AREAS



URBAN &
RESIDENTIAL
STREETS &
ROADS



CAR PARKS



SQUARES &
PEDESTRIAN
AREAS



BIKE &
PEDESTRIAN
PATHS



SECURITY
LIGHTING

Characteristics

GENERAL INFORMATION

Recommended installation height	Up to 10m
Components included	Solar module Energy storage enclosure Energy storage unit Charge controller Luminaire
Autonomy days	2-3 days
System operating voltage	12V DC
Geographical location	Designed and optimised for various locations
Weight	Up to 100kg (excludes pole)
Wind speed rating	144km/h
Aerodynamic resistance (CxS)	1.18m ² at 40° panel rake angle, including the side mounted energy storage enclosure

MATERIAL

Energy storage enclosure	Standard version: Glass re-inforced fibre Median version: Mild steel, e-coated (special automotive anti-corrosive marine grade dip process coating) and epoxy powder coated energy storage enclosure with linear low-density polyethylene (LLDPE) cover
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

SOLAR MODULE

Technology / Rated lifetime	Polycrystalline photovoltaic module: 25 years / 80%
Peak rated wattage	160-350W
Robustness	Hail and corrosion resistant

ENERGY STORAGE

Technology / Expected lifetime	Lithium: 5-7 years
Weight per unit	Lithium: 6-14kg
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	ZIYA-E:	UV-stabilised, calcium-filled Polypropylene
	ZIYA-1:	Marine grade aluminium (EN 1706 AC-44300)
	KAZELLE:	Top cover - Acrylonitrile styrene acrylate (ASA) / Spigot - Marine grade high-pressure die-cast aluminium (EN 1706 AC-44300)
Protector	ZIYA:	High-impact polycarbonate
	KAZELLE:	High-impact acrylic Polycarbonate (optional)
Housing finish	ZIYA-E:	Polypropylene (light grey)
	ZIYA-1:	Unpainted aluminium
	KAZELLE:	Black (RAL 9017), Textured finish
Tightness level	ZIYA:	IP 65
	KAZELLE:	IP 66
Impact resistance	ZIYA:	IK 10
	KAZELLE:	High-impact acrylic - IK 08 Polycarbonate - IK 10

Optical information

LED colour temperature	All:	4000K (Neutral white 740)
	KAZELLE:	3000K (Warm white 730) (optional)
Colour rendering index (CRI)	All:	≥ 70 (Neutral white 740)
	KAZELLE:	≥ 70 (Warm white 730) (optional)
Upward Light Output Ratio (ULOR)	ZIYA:	≤ 1.5%
	KAZELLE:	≤ 1%

Operating conditions

Operating temperature range (Ta)	ZIYA-E:	-20°C up to +35°C ^(*)
	ZIYA-1:	-20°C up to +40°C ^(*)
	KAZELLE:	-20°C up to +40°C

^(*) Depending on the luminaire inclination and driving current. For more details, please contact us.

Lifetime of the LEDs @ tq 25°C

For all versions	ZIYA:	50,000h - L70B10
	KAZELLE:	50,000h - L80B10

Performance



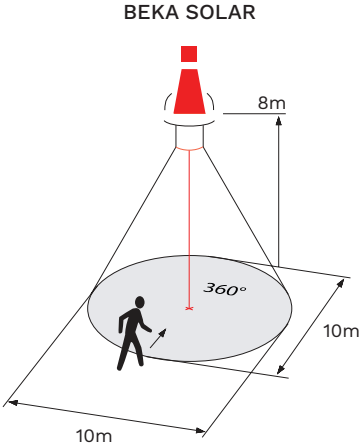
Luminaire	Number of LEDs	Current (mA)	Nominal flux (lm) ^(*)	Power consumption (W)	Nominal efficacy (lm/W)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Photometry ^(**)
			Typical	Typical	Typical	Typical	Typical	
ZIYA-E	40	600	4650	30	155	3810	127	5312 5313 5315
ZIYA-1	40	700	5340	36	148	4485	125	5312 5313 5315
	80	500	8060	53	152	6790	127	
	80	700	10680	72	148	9056	125	
KAZELLE	120	750	6398	36	180	5054	142	2900 4010

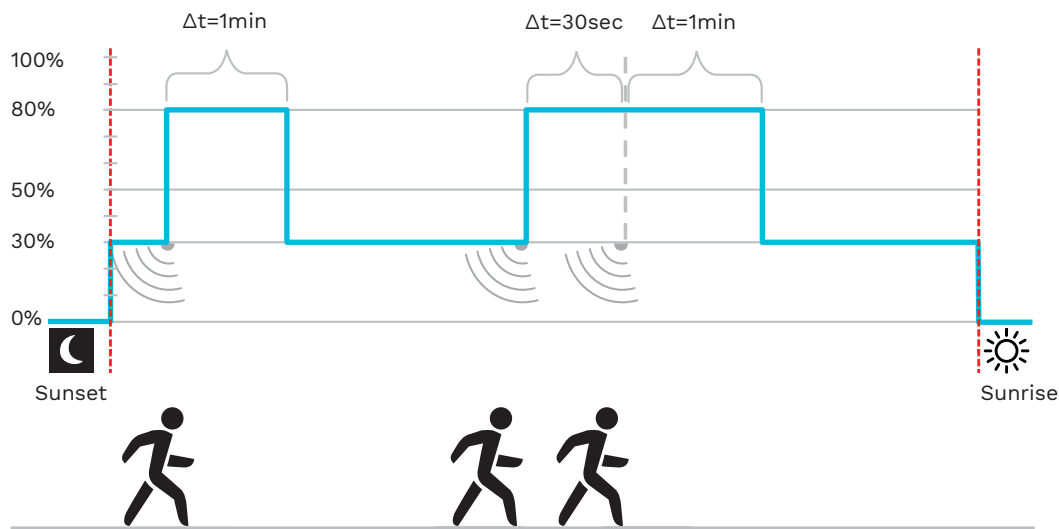
Tolerance on LED flux is ± 7% and on total luminaire power ± 5%

^(*) 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.

Integrated Motion Sensor (optional)





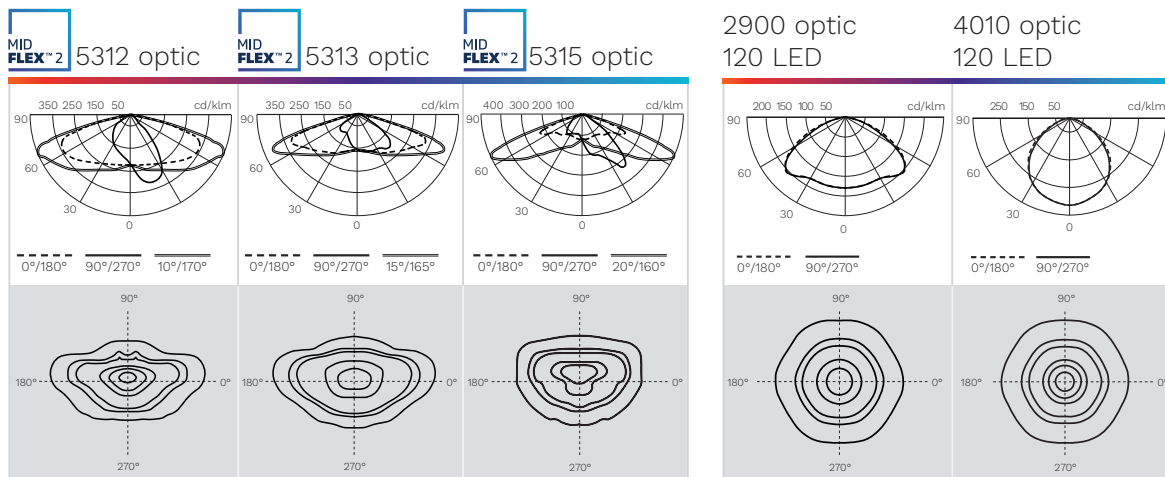
Upon presence detection the light ramps up to 80% light output.

If no presence is detected, the light output reduces back to its dim profile output. If, however, another presence has been detected within the 1 minute time frame, the light output will remain at 80% for another minute.

This will not apply when the dimming profile is above 80%.

This feature offers the best economical solution whilst still maintaining high-performance lighting during times of operation.

Light Distributions



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

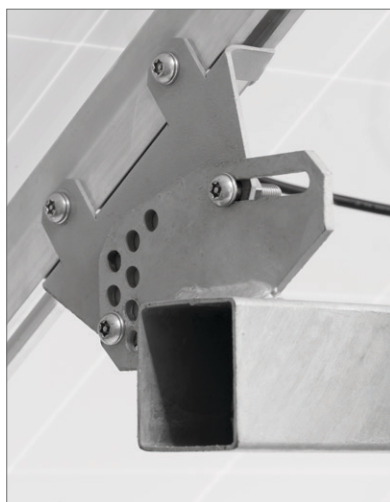
Key Features



Fully integrated solar system, including solar module, energy storage enclosure, luminaire and pole.



Robust and theft-resistant IP 66 energy storage enclosure design. Easily accessible by means of a special key.



Adjustable solar module inclination angle optimised for various geographical locations.



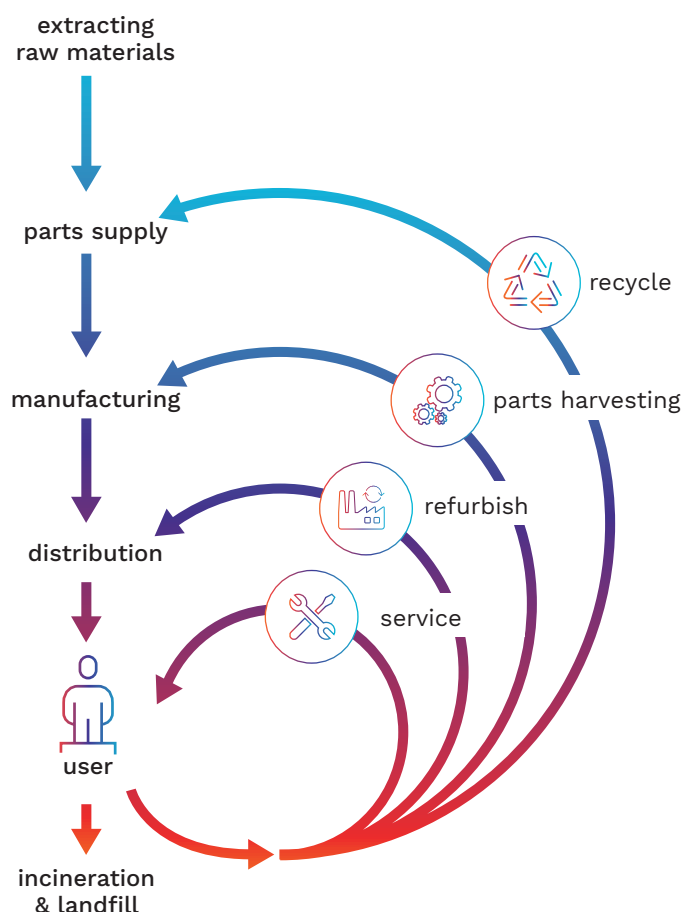
Highly efficient, performing and robust (IK10) LED street light luminaire (up to 72W - 125lm/W)



Highly efficient Polycrystalline solar module technology to maximise solar energy conversion



Circularity concept



BEKA SOLAR

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 Schröder 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

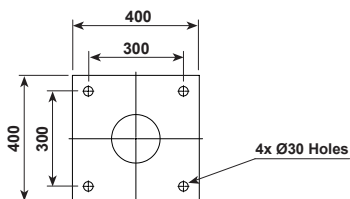


It was developed to fully meet circular economy requirements

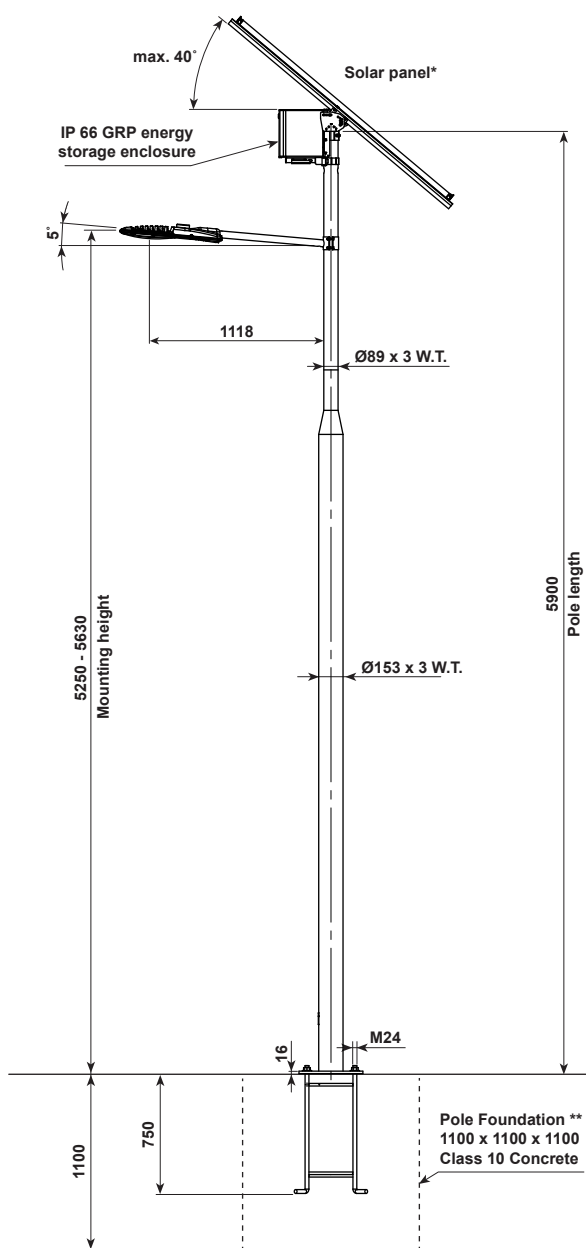
Dimensions in mm

Surface mount

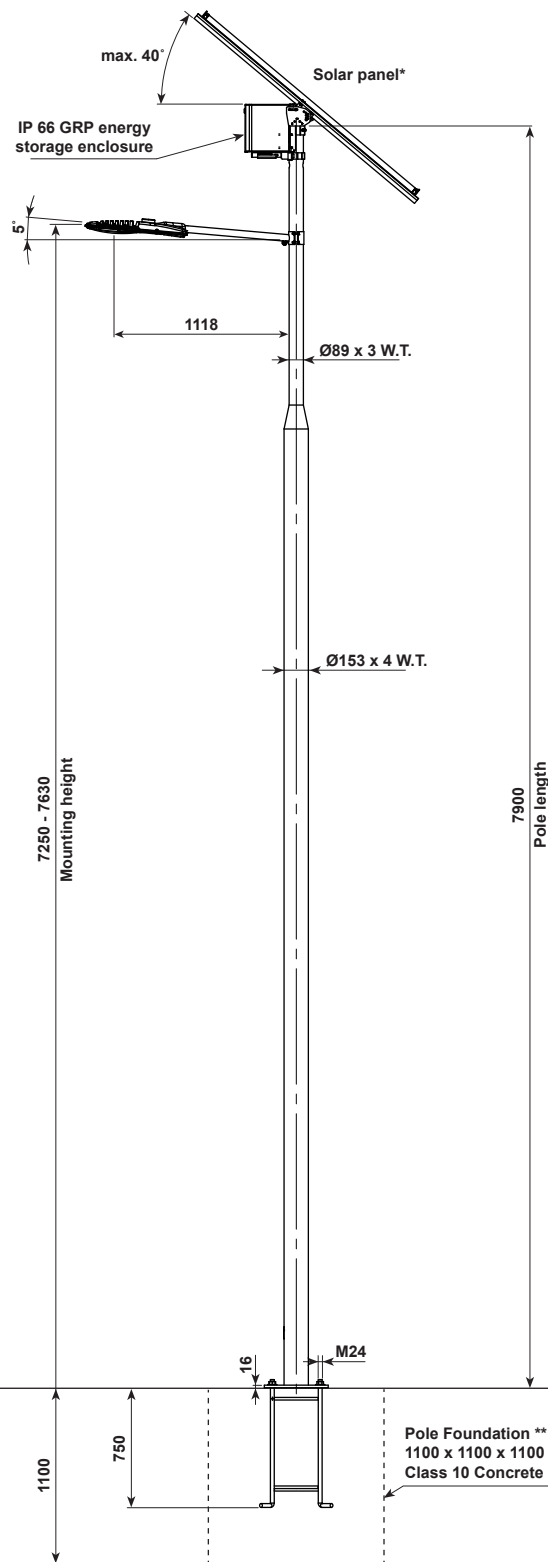
Base plate



6m surface mount solar pole



8m surface mount solar pole



Please note:

*Solar panel size varies according to different power requirements due to geographical locations.

*Solar panel is raked at an angle suited to the specified geographical latitude.

*Solar panel maximum 1640mmx990mm; surface area 1.624m²

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

6m buried solar pole



max. 40°

Solar panel*

IP 66 GRP energy storage enclosure

5

1118

Ø89 x 3 W.T.

Ø153 x 4 W.T.

7250 - 7630

Mounting height

2000

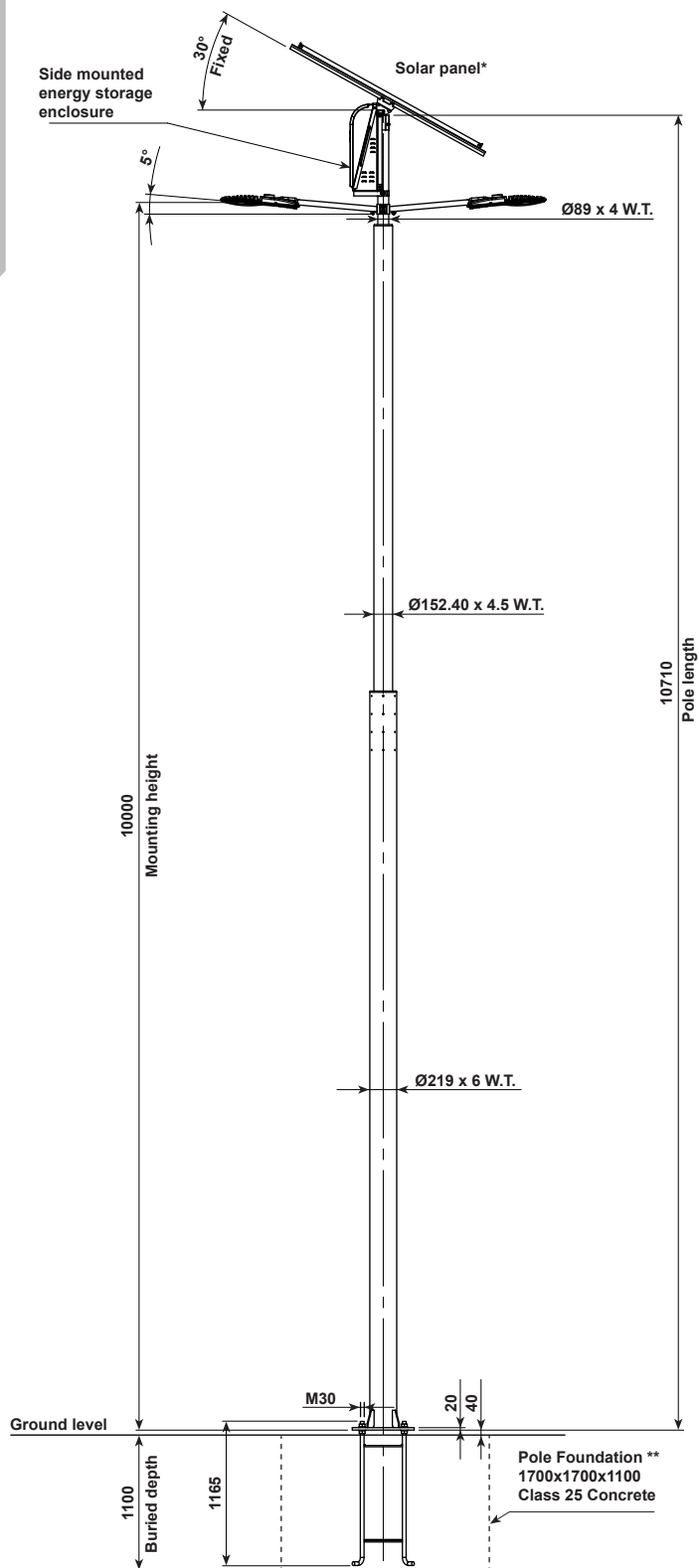
Buried depth

Pole length 9900

Pole Foundation **
1000 x 1000 x 2000
Soilcrete 1:10

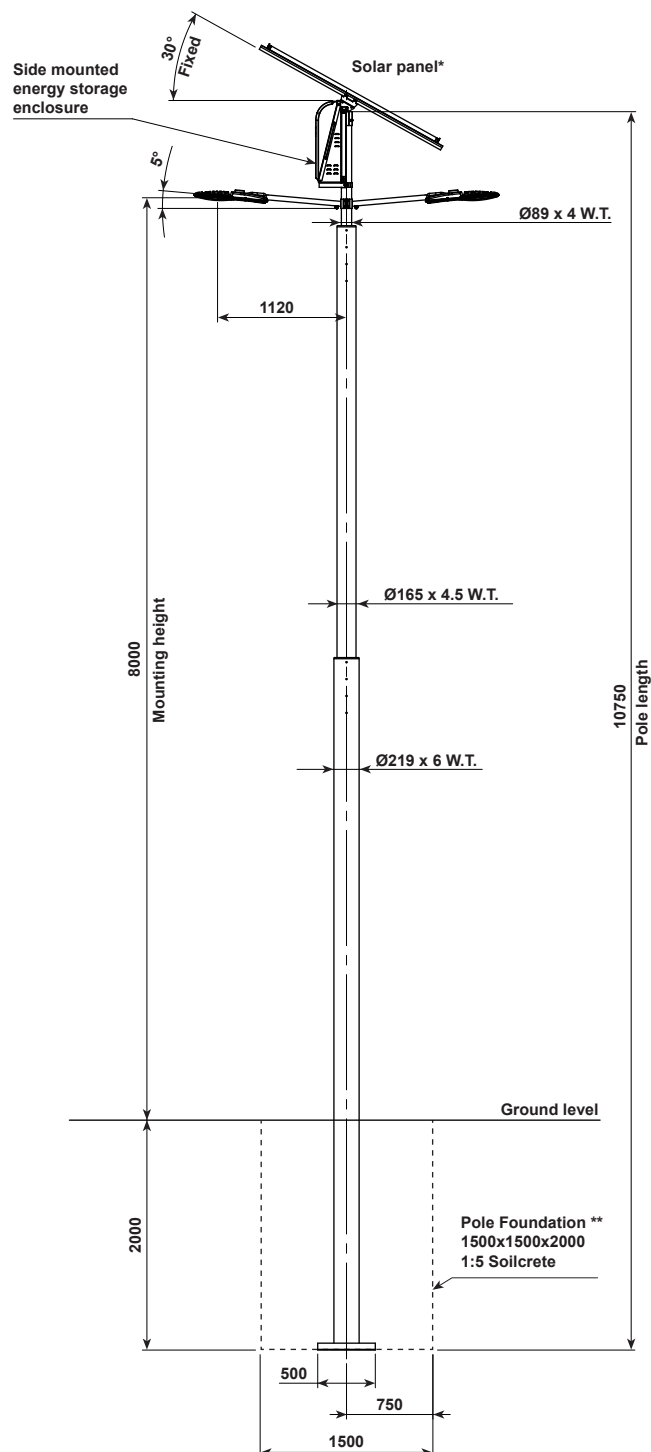
Surface mount

Up to 10m surface mount solar pole



Buried

8m buried solar pole



Please note:

*Solar panel size varies according to different power requirements due to geographical locations.

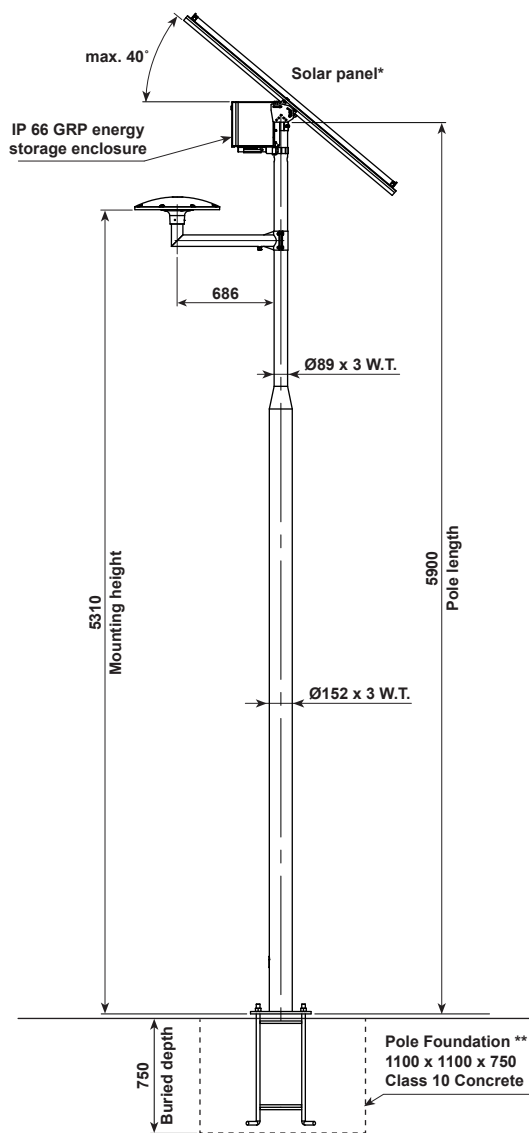
*Solar panel is raked at an angle suited to the specified geographical latitude.

*Solar panel maximum 1640mmx990mm; surface area 1.624m²

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

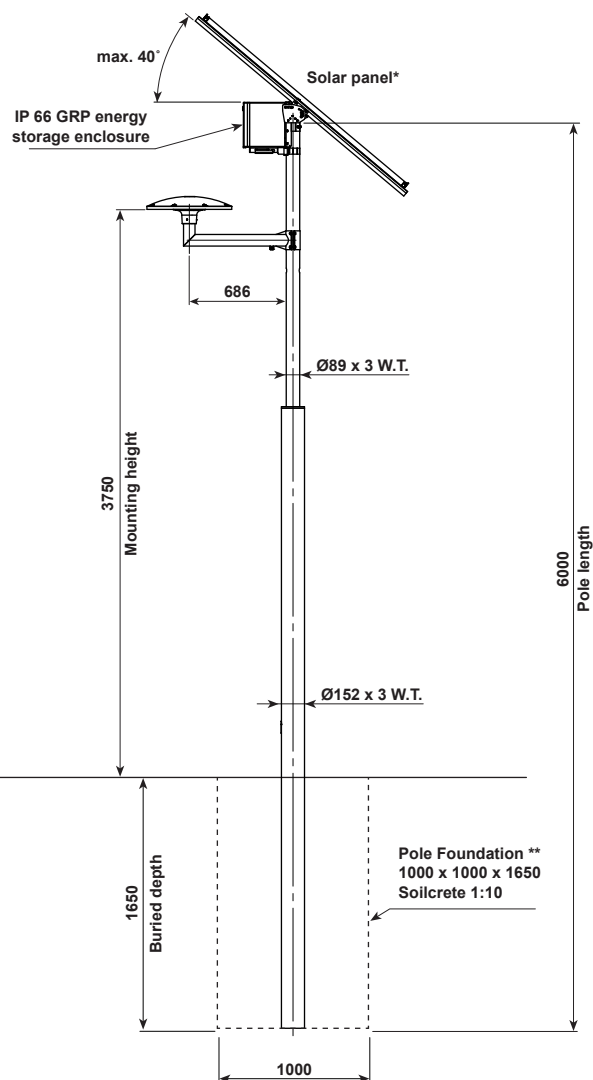
Surface mount

Up to 5m surface mount solar pole



Buried

3.6m buried solar pole



Technical Definitions

Energy storage options



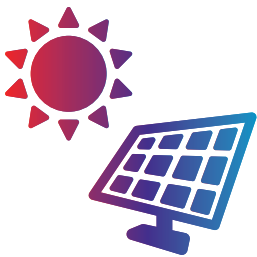
Lithium-ion

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 battery lifetime. Our renowned Tier 1 branded cells ensure the highest quality product. In addition, all Lithium-ion battery packs have an integrated Battery Management System (BMS) which monitors the health, charging and discharging of the battery pack. This safeguards the cells so that they are not over charged or discharged, maximising their lifetime.

Battery pack operating temperature: -20°C to +50°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

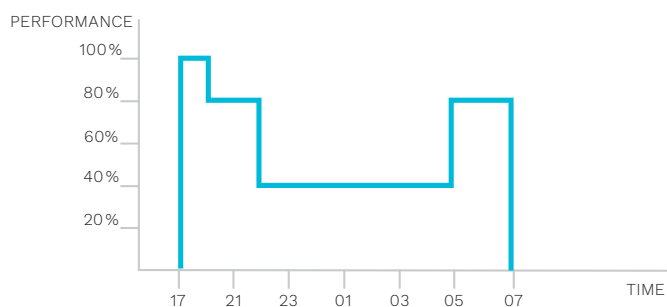


The MPPT charge controllers can harvest up to 30% more energy in clouded sky conditions compared to PWM charge controllers. The charge controllers have a load output connection that can be programmed to switch the luminaires off when the energy storage voltage drops to critical levels. This allows for 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.







Postmasburg, Northern Cape province

Configuration Matrix

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

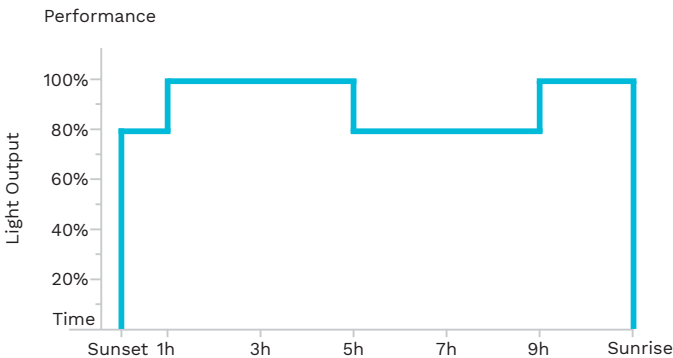
		ZIYA-E 4650lm 30W		ZIYA-1 5340lm 36W	
Solar module rated at 25°C		160W		160W	
Optidim		4	100% light output	7	2
Energy storage technologies		 50Ah	 100Ah	 50Ah	 100Ah
Autonomy days		2	3	2	3
Geographical location					
Angola	Huambo	✓	✓	✓	✓
	Luanda	✓	✓	✓	✓
Botswana	Gaborone	✓	✓	✓	✓
	Shakawe	✓	✓	✓	✓
DRC	Lumbumbashi	✓	✓	✓	✓
	Kinshasa	✓	✓	✓	-
eSwatini	Mbabane	✓	✓	✓	-
Ivory Coast	Abidjan	✓	✓	✓	-
Kenya	Nairobi	✓	✓	✓	✓
Malawi	Lilongwe	✓	✓	✓	✓
Mauritius	Agalea	✓	✓	✓	✓
Mozambique	Pemba	✓	✓	✓	✓
	Maputo	✓	✓	✓	✓
Namibia	Windhoek	✓	✓	✓	✓
	Tsumeb	✓	✓	✓	✓
Nigeria	Kaduna	✓	✓	✓	✓
	Lagos	✓	✓	✓	-
Senegal	Dakar	✓	✓	✓	-
South Africa	Cape Town	✓	✓	✓	-
	Durban	✓	✓	✓	✓
	Gqeberha	✓	✓	✓	✓
	Kuruman	✓	✓	✓	✓
	Pretoria	✓	✓	✓	✓
	Thabazimbi	✓	✓	✓	✓
Tanzania	Dar Es Salaam	✓	✓	✓	✓
Zambia	Lusaka	✓	✓	✓	✓

		ZIYA-1 8060lm 53W	ZIYA-1 10680lm 72W	KAZELLE 6398lm 36W	
Solar module rated at 25°C		330W	330W	160W	
Optidim		2	7	7	2
Energy storage technologies		100Ah	100Ah	50Ah	100Ah
Autonomy days		2	2	2	3
Geographical location					
Angola	Huambo	✓	✓	✓	✓
	Luanda	✓	✓	✓	✓
Botswana	Gaborone	✓	✓	✓	✓
	Shakawe	✓	✓	✓	✓
DRC	Lumbumbashi	✓	✓	✓	✓
	Kinshasa	✓	✓	✓	-
eSwatini	Mbabane	-	✓	✓	-
Ivory Coast	Abidjan	-	✓	✓	-
Kenya	Nairobi	✓	✓	✓	✓
Malawi	Lilongwe	✓	✓	✓	✓
Mauritius	Agalea	✓	✓	✓	✓
Mozambique	Pemba	✓	✓	✓	✓
	Maputo	✓	✓	✓	✓
Namibia	Windhoek	✓	✓	✓	✓
	Tsumeb	✓	✓	✓	✓
Nigeria	Kaduna	✓	✓	✓	✓
	Lagos	✓	✓	✓	-
Senegal	Dakar	-	✓	✓	-
South Africa	Cape Town	✓	✓	✓	-
	Durban	✓	✓	✓	✓
	Gqeberha	✓	✓	✓	✓
	Kuruman	✓	✓	✓	✓
	Pretoria	✓	✓	✓	✓
	Thabazimbi	✓	✓	✓	✓
Tanzania	Dar Es Salaam	✓	✓	✓	✓
Zambia	Lusaka	✓	✓	✓	✓

Optidim Profiles

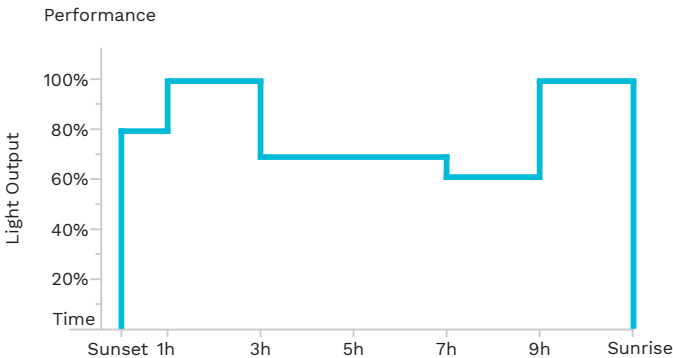
2

Power Consumption: 90% average



4

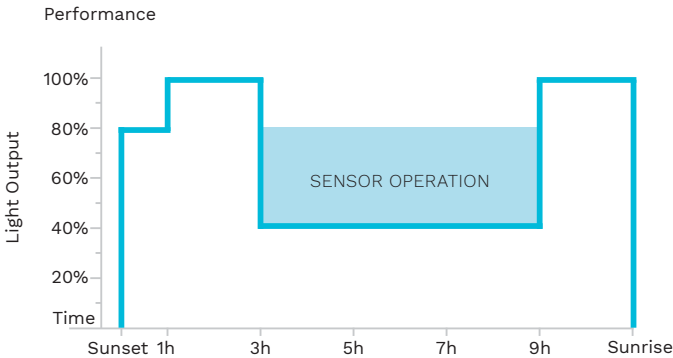
Power Consumption: 80% average



7

Power Consumption: 65% average

Please note: Sensor dim profile not available for 72W versions



BEKA Schröder

Experts in lightability™

SABS
ISO 9001



www.beka-schreder.co.za

Designed and manufactured by BEKA Schröder (Pty) Ltd



2023-10

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