ZGSM
SAVE ENERGY FOR TOMORROW

ZGSM
SOLAR

LED Solar Lighting Solution

PV-Kmini

ZGSM **SOLAR**

Standard Version

Optional A

Optional B

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.

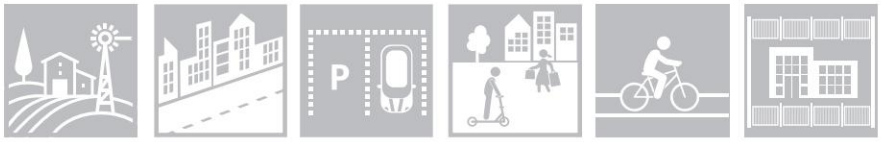
The ZGSM SOLAR, combined with either the Kmini or Kmini2 luminaires, provides a reliable lighting solution with a high Ingress Protection level that withstands high ambient temperatures and vandalism. These luminaires are a sustainable off-grid performer with a superior lumen/ watt ratio.

The photovoltaic energy conversion is optimized by efficient Monocrystalline 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 environmental conditions.

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

Key Advantages

- Designed to operate daily with an output of 12 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 3-5 continuous overcast or rainy days, to continue its reliable night operation.
- Adopting MPPT intelligent controller, the charging efficiency is up to 96%.
- High-efficiency monocrystalline silicon solar panels with a conversion efficiency of 23%.
- Long life lithium (LifePO4) energy storage technology, offering up to 8 years battery lifetime.
- 10-period programmable load power/ time control.



OFF-GRID AREAS | URBAN & RESIDENTIAL STREETS & ROADS | CAR PARKS | SQUARES & PEDESTRIAN AREAS | BIKE & PEDESTRIAN PATHS | SECURITY LIGHTING

Characteristics

GENERAL INFORMATION	
Recommended installation height	5 to 12m
Components included	Monocrystalline Solar Panel Energy storage with enclosure Charge controller Street Luminaire Pole/Bracket/Arm (on request) Cables (on request)
Autonomy days	5-7 days
System operating voltage	12/24V DC
Geographical location	Designed and optimised for locations with sunshine greater than 5 hours
Wind speed rating	126 km/hr
Working Time	Factory Default 4hrs-100% | 4hrs-30% | 4hrs-70%

SOLAR PANEL	
Technology / Rated lifetime	Monocrystalline Solar Panel: 25 years / 80%
Peak rated wattage	50-400W
Robustness	Hail and corrosion resistant
Material	Extruded aluminium Tempered glass

ENERGY STORAGE	
Technology / Expected lifetime	Lithium Battery / 8 years
Capacity	230WH-1843WH
Maintenance free	Yes
Working Temperature	-10°C up to +60°C
Material	LiFePO4 Extruded aluminium

CHARGE CONTROLLER	
Charge algorithm	Maximum Power Point Tracking (MPPT)
Rated lifetime	12 years
Optional Function	IoT Remote Communication
Integrated dawn/dusk switch	Yes
Material	Extruded aluminium

STREET LUMINAIRE	
Electrical Data	
LED	Lumileds
Optics	Type II
Standard Deviation of Color Matching	<5 SDCM
CRI	Ra>70 (Default) / Ra>80
CCT	3000K, 4000K, 5000K, 5700K
Housing	High pressure die-cast aluminium
Cover	UV-resistant Polycarbonate
Housing finish	Gray
Impact resistance	IK10
Type of protection	IP66
Upward Light Output Ratio (ULOR)	0
Operating temperature range (Ta)	-40°C up to +50°C 10% ~ 90%RH
Lifespan L70 at 25 °C	100,000h

POLE/BRACKET/ARM (ON REQUEST)	
Brackets for Solar Panels	Hot-dipped galvanised mild steel
Arm for Street Luminaire	Hot-dipped galvanised mild steel
Pole	Hot-dipped galvanised graded steel
Anchor Bolts	Hot-dipped galvanised graded steel

SCREWS/CABLES (ON REQUEST)	
Screws	304 stainless steel screws
Cables	2x1.5m² with plug

Key Features

Overview

Fully integrated solar system, including solar panel, energy storage (Lithium Battery) with enclosure, luminaire and pole

Street Luminaire

Highly efficient, performing and robust (IK10) LED street light luminaire (up to160lm/W)

Solar Module

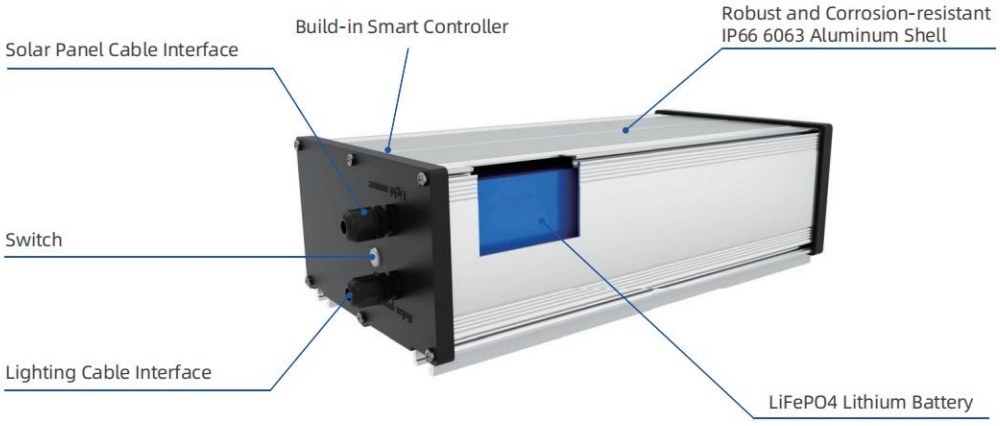
Highly efficient monocrystalline solar panel technology to maximise solar energy conversion

Integrated Lithium Battery and Controller Unit

Utilize a high-quality, 100% new Lithium Iron Phosphate (LiFePO4) battery, featuring a built-in controller that stabilizes voltage and limits current. This controller intelligently monitors the battery voltage and effectively protects the lithium battery pack from damage due to excessively high or low output voltage. It thereby prolongs the battery's life. The system has a simple structure yet delivers high performance. It is stable and easy to maintain.

MPPT Smart Controller

Lithium Battery Cell



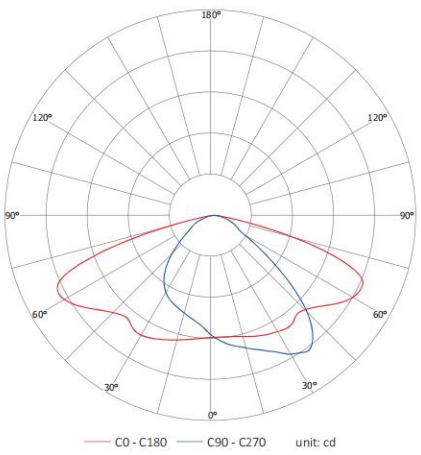
Performance

Luminaire	Photo	Model No	Power consumption (W)	3030 Version		5050 Version	
				Luminaire efficacy (lm/W)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Luminaire output flux (lm)
Kmini		ZGSM-LD20Kmini	20	146	2920	154	3080
		ZGSM-LD20Kmini+	20	156	3120	160	3200
		ZGSM-LD30Kmini	30	140	4200	154	4620
		ZGSM-LD30Kmini+	30	151	4530	--	--
		ZGSM-LD40Kmini	40	140	5600	150	6000
		ZGSM-LD40Kmini+	40	147	5880	--	--
		ZGSM-LD50Kmini	50	142	7100	150	7500
Kmini2		ZGSM-LD60Kmini2	60	140	8400	153	9180
		ZGSM-LD60Kmini2+	60	153	9180	163	9780
		ZGSM-LD70Kmini2	70	135	9450	150	10500
		ZGSM-LD70Kmini2+	70	153	10710	160	11200
		ZGSM-LD80Kmini2	80	144	11520	156	12480
		ZGSM-LD80Kmini2+	80	153	12240	160	12800
		ZGSM-LD90Kmini2	90	140	12600	153	13770
		ZGSM-LD90Kmini2+	90	150	13500	157	14130
		ZGSM-LD100Kmini2	100	137	13700	150	15000
		ZGSM-LD100Kmini2+	100	146	14600	154	15400
		ZGSM-LD120Kmini2	120	140	16800	152	18240
		ZGSM-LD150Kmini2	150	130	19500	140	21000

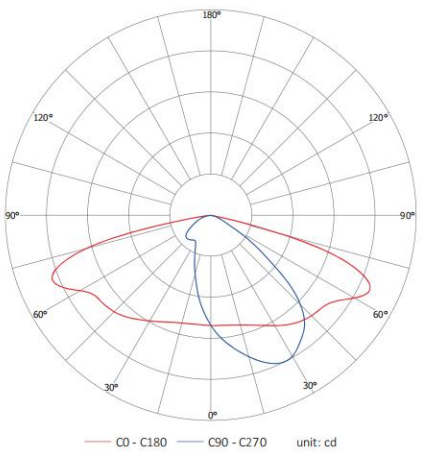
-The above values are calculated for products with a CCT greater than 4000K and a CRI of 70. For products with a CCT of less than 4000K, or a CRI greater than 75, the values are approximately 5% lower than those stated above.
-The above values displayed are subject to a ±5% tolerance.

Light Distributions

3030 Version TYPE II



5050 Version TYPE II BLS



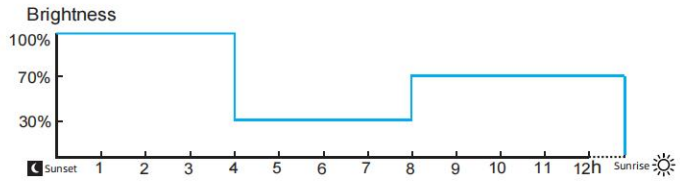
Configuration Matrix

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

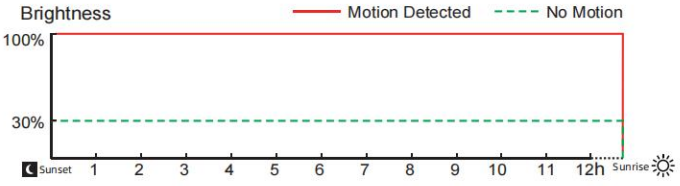
STREET LUMINAIRE 	Optidim	Autonomy days	Sunshine	Lithium Battery	Solar Panels
20W	1	5-7 days	5 hours	18AH/12.8V	50W/18V
30W	1	5-7 days	5 hours	30AH/12.8V	80W/18V
40W	1	5-7 days	5 hours	42AH/12.8V	100W/18V
50W	1	5-7 days	5 hours	54AH/12.8V	130W/18V
60W	1	5-7 days	5 hours	30AH/25.6V	160W/36V
	2	5-7 days	5 hours	48AH/12.8V	120W/18V
70W	1	5-7 days	5 hours	36AH/25.6V	100W/36V*2
	2	5-7 days	5 hours	54AH/12.8V	150W/36V
80W	1	5-7 days	5 hours	42AH/25.6V	100W/36V*2
	2	5-7 days	5 hours	60AH/12.8V	160W/36V
90W	1	5-7 days	5 hours	42AH/25.6V	120W/36V*2
	2	5-7 days	5 hours	36AH/25.6V	100W/36V*2
100W	1	5-7 days	5 hours	48AH/25.6V	130W/36V*2
	2	5-7 days	5 hours	36AH/25.6V	100W/36V*2
120W	1	5-7 days	5 hours	60AH/25.6V	150W/36V*2
	2	5-7 days	5 hours	42AH/25.6V	120W/36V*2
150W	1	5-7 days	5 hours	72AH/25.6V	200W/36V*2
	2	5-7 days	5 hours	54AH/25.6V	160W/36V*2

Optidim Profiles

1 Combination setting of Light Control + Time Control
Power Consumption: 67% average

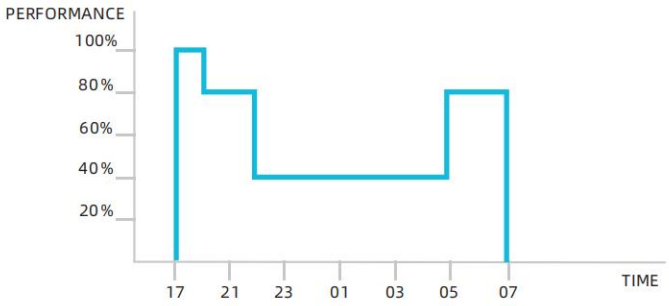


2 Combination setting of Light Control + Sensor Control
Power Consumption: 50% average



Optidim

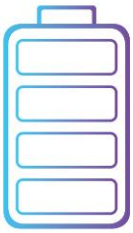
Intelligent luminaire drivers are programmed if required in the factory with complex dimming profiles. Up to 6 combinations of time intervals and light levels are possible. This feature does not require any extra wiring. The period between switching on and switching off is used to activate the preset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

Energy Storage



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.
Battery pack operating temperature: -10°C to +60°C

Solar Module

Monocrystalline Solar Panel

Monocrystalline silicon solar panels excel in solar street lighting with up to 23% efficiency, high heat resistance, and over 25 years of durability, ensuring consistent performance in various climates with minimal upkeep. Their effectiveness in low-light conditions also ensures reliable lighting, making them ideal for efficient and sustainable street lighting systems.

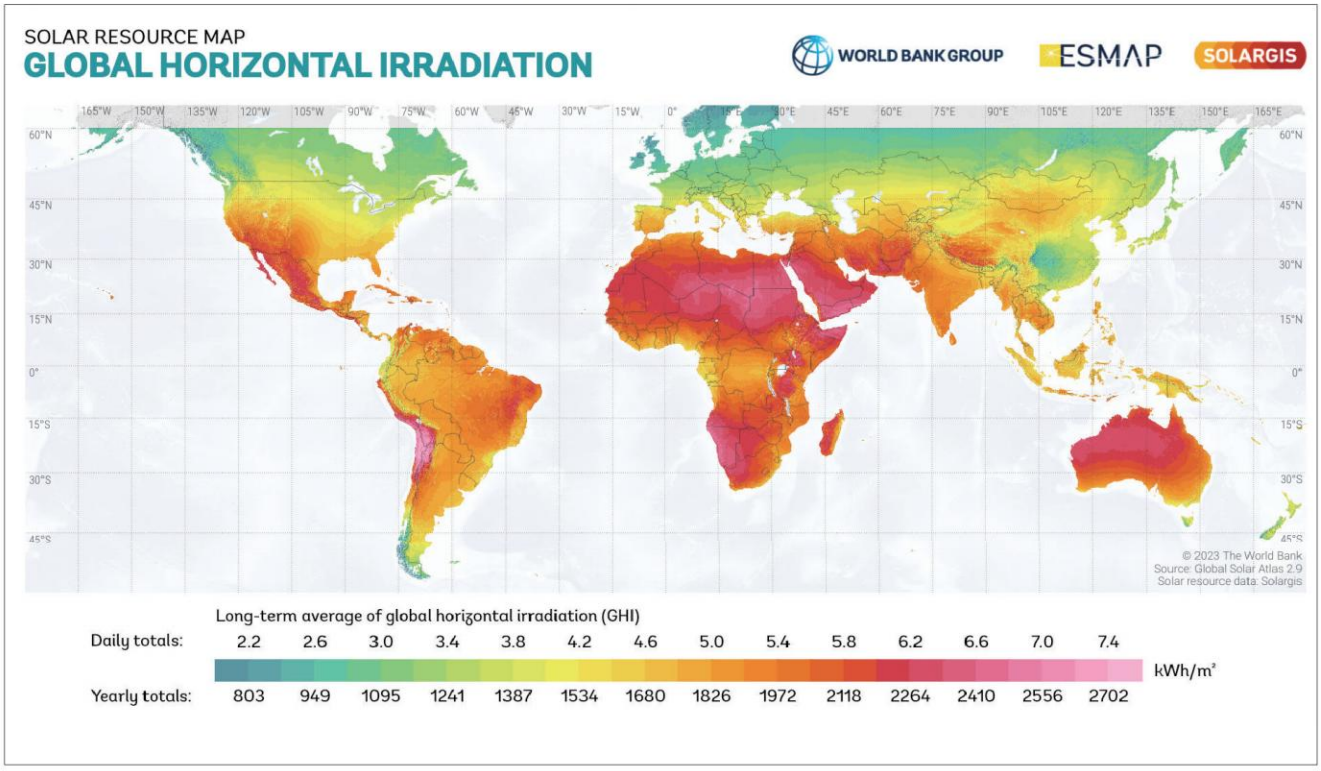
Solar Controller

MPPT Charge Controller

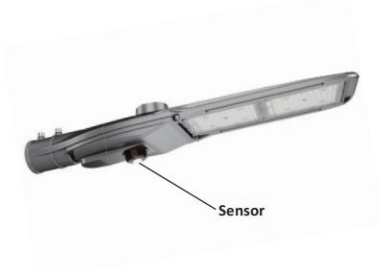
Using MovingTrack MPPT maximum power tracking technology, the tracking efficiency is higher and faster. Compared with PWM charge controller, MPPT charge controller can collect 30% more energy under cloudy conditions. A variety of intelligent power modes are available for choice, with load power adjustable automatically according to the battery level. Battery charge and discharge high and low temperature protection, with operating temperature settable. Multiple protections such as battery/PV reverse polarity protection, LED short-circuit/open-circuit/limited. Full aluminum housing, IP67 waterproof rating, applicable to a variety of harsh environments. Infrared wireless communication, allowing for setting/reading parameters , reading status, etc.

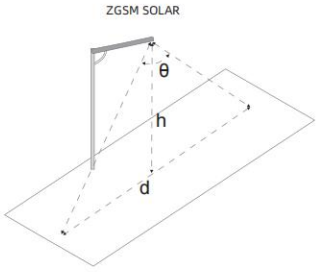
Solar Energy

Solar panel and battery sizing for solar street lights is determined by local daily sunlight hours. Our standard configurations are designed for areas with an average of 5 hours of sunlight per day. Check the world solar irradiance map to gauge sunlight in your area and contact us for a customized solar street light solution.



Integrated Motion/PIR Sensor (optional on 60-150W)





Inductive Type	θ (Angle)	h (Height of Lamp)	d (Inductive Width)
PIR Sensor	60°	6~8m	6~10m
Motion Sensor	65°	6~10m	7~10m

POLE on Request

Technical Information

Pole Size				Arm			Base Plate					Anchor Bolts			Pole Foundation		
H	d1	d2	T1	L	d3	∠	L1	L2	T2	K	Q1	L3	M	Q2	W1	W2	L4
5000	65	120	3.0	800	60	12°	250	177	10	20x42	4pcs	500	ϕ16	4pcs	500	500	600
6000	65	130	3.0	800	60	12°	280	198	12	20x42	4pcs	500	ϕ16	4pcs	560	560	600
7000	65	140	3.0	1000	60	12°	280	198	12	20x42	4pcs	500	ϕ16	4pcs	560	560	600
8000	75	165	3.0	1000	60	12°	320	226	14	24x50	4pcs	900	ϕ20	4pcs	640	640	1000
9000	75	175	3.5	1200	60	12°	320	226	16	24x50	4pcs	900	ϕ20	4pcs	640	640	1000
10000	75	185	4.0	1200	60	12°	320	226	16	26x54	4pcs	1100	ϕ22	4pcs	640	640	1200
12000	90	220	4.0	1500	60	12°	400	300	20	28x58	4pcs	1100	ϕ24	4pcs	800	800	1200

Abbreviations and Notes

Abbreviations

Pole Size
1. All dimensions are in mm
2. H = Overall height of pole
3. d1 = Top diameter of pole
4. d2 = Bottom diameter of pole
5. T1 = Shaft Wall Thickness of pole

Arm
6. L = Arm length
7. d3 = Diameter of arm
8. ∠ = Arm tilt angle

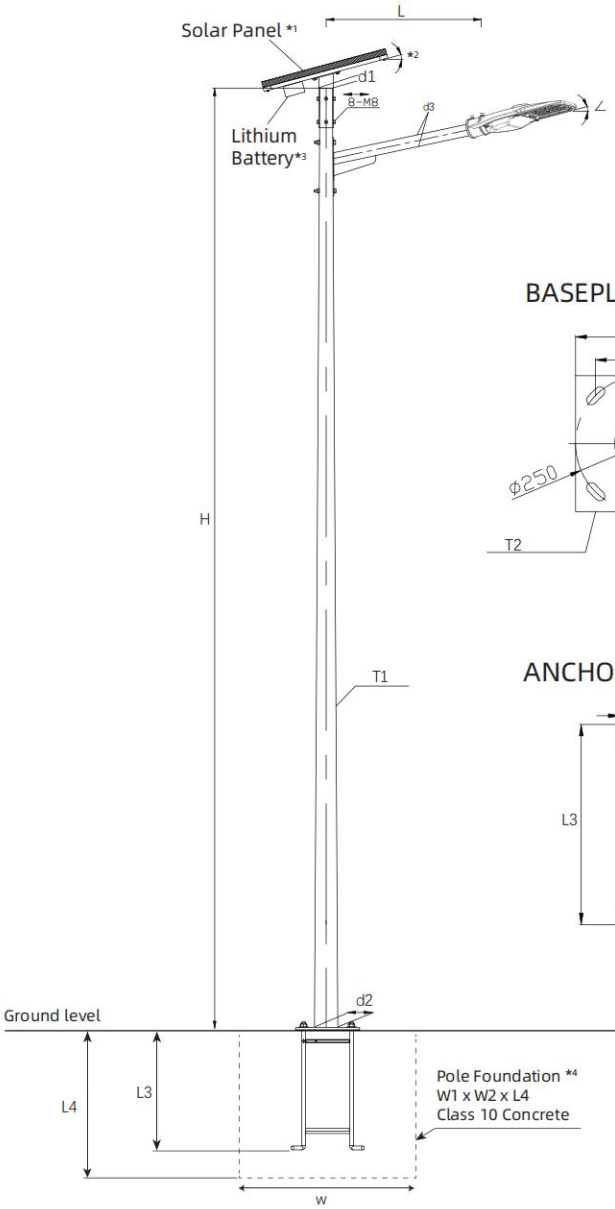
Base Plate
9. L1 = Dimension of base plate
10. L2 = Distance between holes
11. T2 = Plate Thickness
12. K = Hole Size
13. Q1 = No. of holes

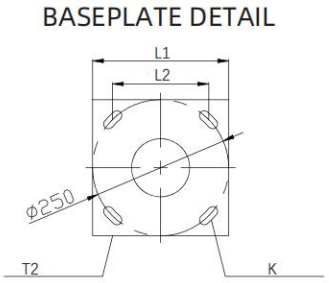
Anchor Bolts
14. L3 = Bolt height
15. M = Bolt diameter
16. Q2 = No. of bolts required/Pole.

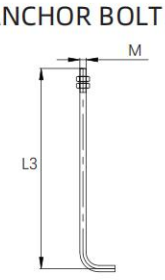
Pole Foundation
17. L4 = Deep of pole foundation
18. W1 = length of pole foundation
19. W2 = Width of pole foundation

Notes
20. Materials: Q235
21. Finish: Hot dip galvanized + Plastic spray
22. Maximum wind speed 126 Km/Hr

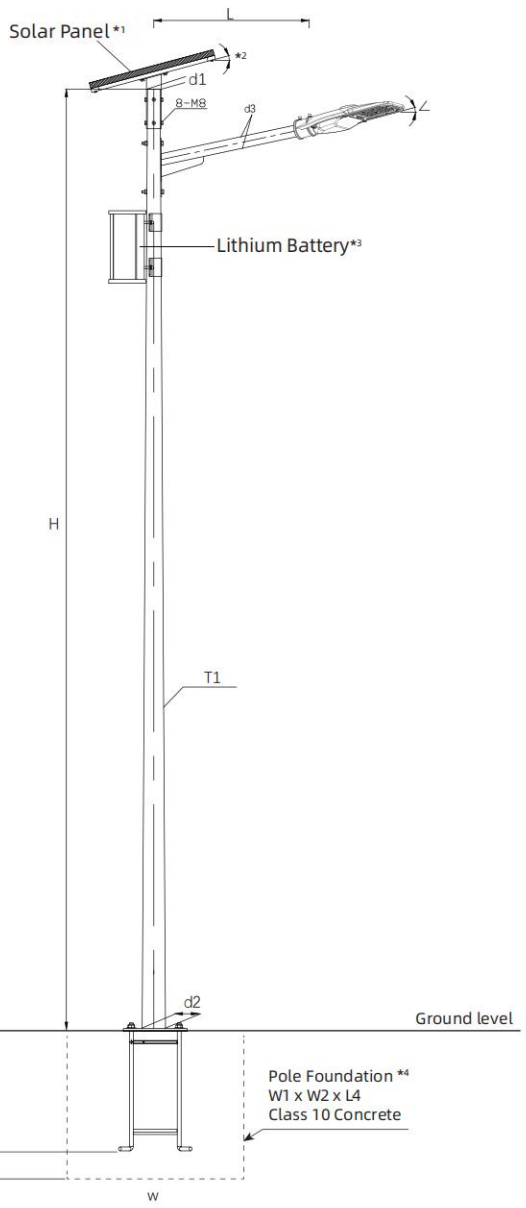
Standard Version







Optional B



Please note:

*1 Solar panel size varies according to different power requirements due to geographical locations.
*2 The angle of inclination for solar panels is determined based on the geographic latitude of the installation site.
*3 Depending on the autonomy days required, the size of the lithium battery will vary according to different power consumption needs.
*4 Only indicative, dependent on soil condition. After evaluating site conditions, please contact certified structural engineer.