

# ZGSM SOLAR

All in One Street Light Solution

## PV7



# ZGSM SOLAR



All-in-One Version



All-in-Two Version Available

## Integrated Designed Solar Solutions 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.

ZGSM SOLAR combined with LED 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.

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

## Key Advantages

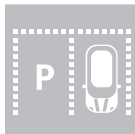
- All in one design.
- Microwave and human body induction control, realize intelligent power saving mode.
- Adopting MPPT intelligent controller, the charging efficiency is up to 96%.
- High-efficiency monocrystalline silicon solar panels with a conversion efficiency of 23%.
- Intelligent battery management, prolong the service life of lithium battery.
- Intelligent power mode, power adjustable automatically according to the battery level.
- 10-period programmable load power/ time control.
- Extensible to IoT remote communication monitoring function.



OFF-GRID AREAS



URBAN & RESIDENTIAL STREETS & ROADS



CAR PARKS



SQUARES & PEDESTRIAN AREAS



BIKE & PEDESTRIAN PATHS



SECURITY LIGHTING

# Characteristics

## STREET LUMINAIRE

LIGHT FIXTURE	
LED	Customized high-efficiency LEDs
Optics	Type II, Type III, Type V
CRI	Ra>70 (Default) / Ra>80
CCT	2200-6500K
Housing	Extruded and stretched aluminum
Cover	UV-resistant Polycarbonate
Housing finish	Black (RAL9005)
Type of protection	IP66
Pole diameter	70-76mm (suggestion)
Working Environment (Ta)	-15°C up to +70°C 10% ~ 90%RH
Lifespan L70 at 25 °C	100,000h
Mounting Type	Post Top

## ENERGY STORAGE

Technology / Expected lifetime	Lithium Battery / 8 years
Capacity	1536WH-2304WH
Maintenance free	Yes
Material	LiFePO4

## CHARGE CONTROLLER

Charge algorithm	Maximum Power Point Tracking (MPPT)
Rated lifetime	12 years
Optional Function	IoT Remote Communication
Daylight Sensor	Yes
Material	Extruded aluminium
Working Mode	Motion / PIR Sensor / Timer

## SOLAR PANEL

Technology / Rated lifetime	Monocrystalline Solar Panel: 25 years / 80%
Peak rated wattage	160-240W(others on request)
Robustness	Hail and corrosion resistant
Material	Extruded aluminium Tempered glass

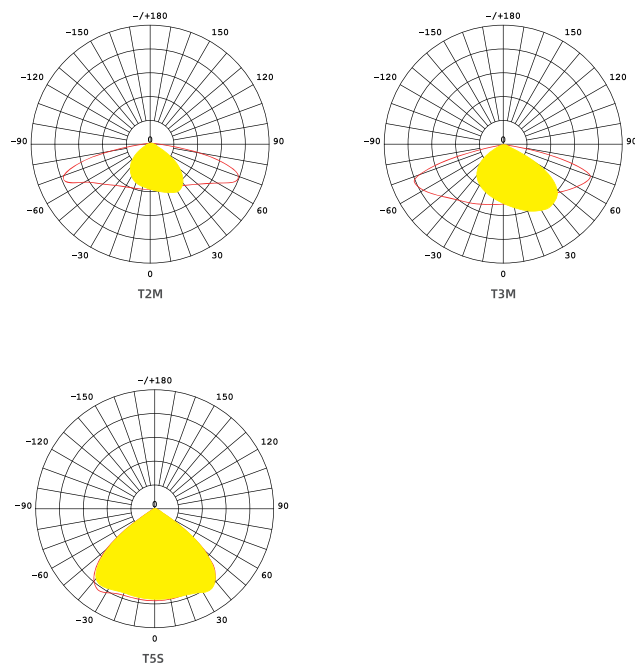
## GENERAL INFORMATION

Recommended installation height	5 to 12m (sensor is not available over 10m)
Components included	LED module, monocrystalline solar panel, lithium battery with build-in charge controller are all integrated in one unit  Pole (on request)
Autonomy days	5-7 days
System voltage	24V DC
Geographical location	Designed and optimised for locations with sunshine greater than 4 hours
Wind speed rating	126 km/hr
Working Mode	Factory Default  Motion detected - 100% brightness, no motion detected - 20% brightness

## POLE (ON REQUEST)

Poles	Hot-dipped galvanised graded steel
Anchor Bolts	Hot-dipped galvanised graded steel

## LIGHT DISTRIBUTIONS



# Key Features

## Overview

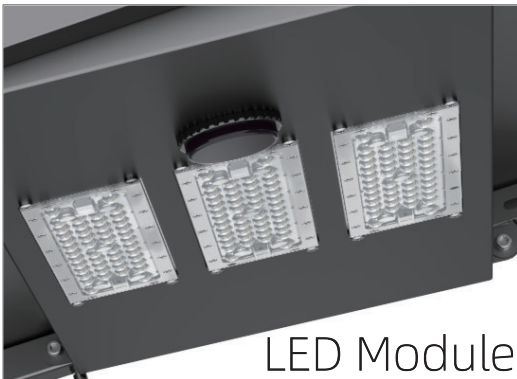


Fully integrated solar system, includes solar panel, LED module, lithium battery and solar controller all in one unit

## Solar Module



Highly efficient monocrystalline solar panel technology to maximise solar energy conversion



## LED Module

Highly efficient, performing and robust (IK10) LED modules with efficiency up to 200lm/W

## Energy Storage and Others

Male /Female IP68 cable connector makes the luminaire waterproof and easy to replace



Integrated Motion/PIR Sensor

Module Adjustable Angle 0-5-10-15°

LiFePO4 Lithium Battery



Robust and Corrosion-resistant IP66 6063 Aluminum Shell

MPPT Smart Controller



Fitter is made of Q235 steel, with a default tilt angle of 15° (custom angles available)

# Performance / Configuration Matrix

Photo	Model				 Autonomy days	 Sunshine	 Lithium Battery	 Solar Panels
		Power	Efficiency	Lumen				
	ZGSM-PV7-80	80W	200 LM/W	16000 LM	5-7 days	4 hours	60AH/25.6V	160W/36V
	ZGSM-PV7-90	90W	200 LM/W	18000 LM	5-7 days	4 hours	66AH/25.6V	180W/36V
	ZGSM-PV7-100	100W	200LM/W	20000 LM	5-7 days	4 hours	78AH/25.6V	200W/36V
	ZGSM-PV7-120	120W	200LM/W	24000 LM	5-7 days	4 hours	90AH/25.6V	240W/36V

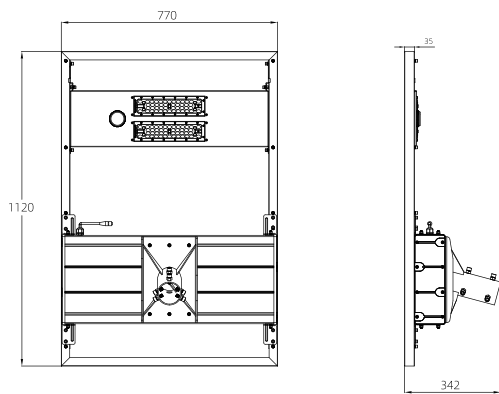
-The above values are calculated for products with a CCT greater than 4000K and a CRI of 70. For products with a CCT of less than 4000K, or a CRI greater than 75, the values are approximately 5% lower than those stated above, and the above values displayed are subject to a ±5% tolerance.  
 -Custom solutions could be considered and are subject to design approval at the time of the project.

## Packing Information

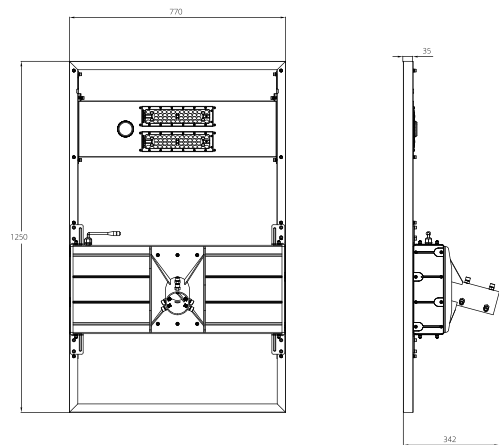
Model	Part	Net Weight	Gross Weight	Pack Type	Carton Size	Package for Main Body	Package for Fitter
PV7-80	Main Body	-	-	1 unit/ctn	-		
	Fitter	-	-	1 unit/ctn	-		
PV7-90	Main Body	-	-	1 unit/ctn	-		
	Fitter	-	-	1 unit/ctn	-		
PV7-100	Main Body	-	-	1 unit/ctn	-		
	Fitter	-	-	1 unit/ctn	-		
PV7-120	Main Body	-	-	1 unit/ctn	-		
	Fitter	-	-	1 unit/ctn	-		

-Note: For sample packing, add 20mm to each dimension (length, width, and height) of the solar panel cartons with wooden frame.  
 -The above data is for reference only, the actual order packaging may be different, please consult ZGSM team to finalize the packaging data.

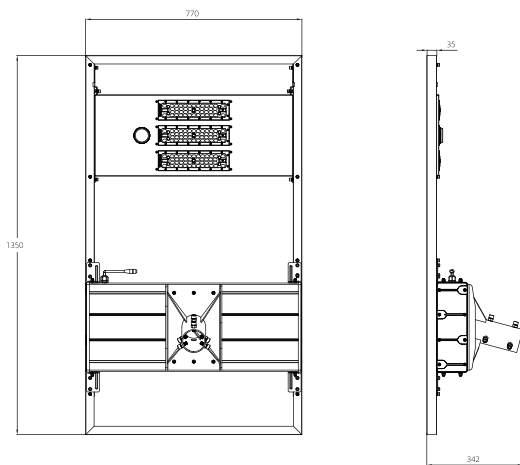
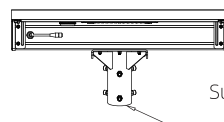
# Dimensions



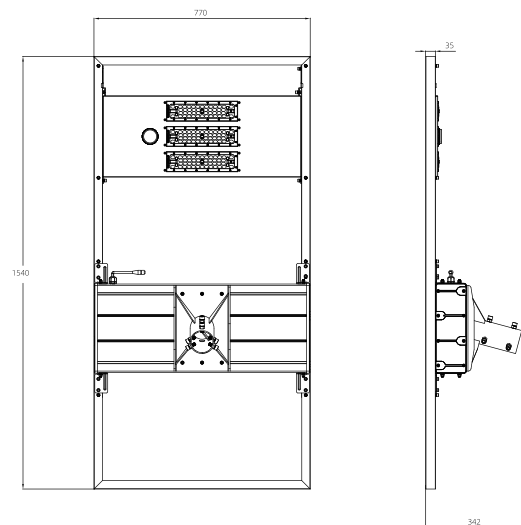
PV7-80



PV7-90



PV7-100



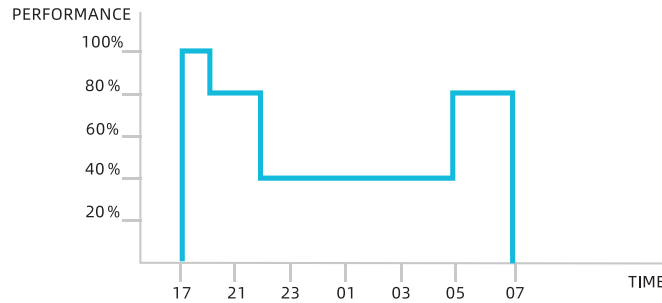
PV7-120

Product dimension: mm

## 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.

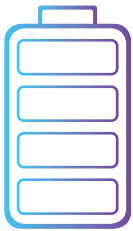


## Autonomy Days



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

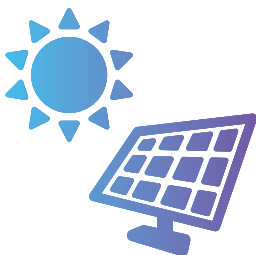


### Lithium-ion

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:  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$

## Solar Module

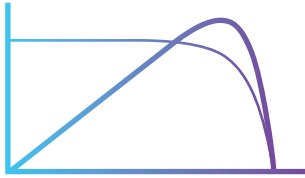


### Monocrystalline Solar Panel

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

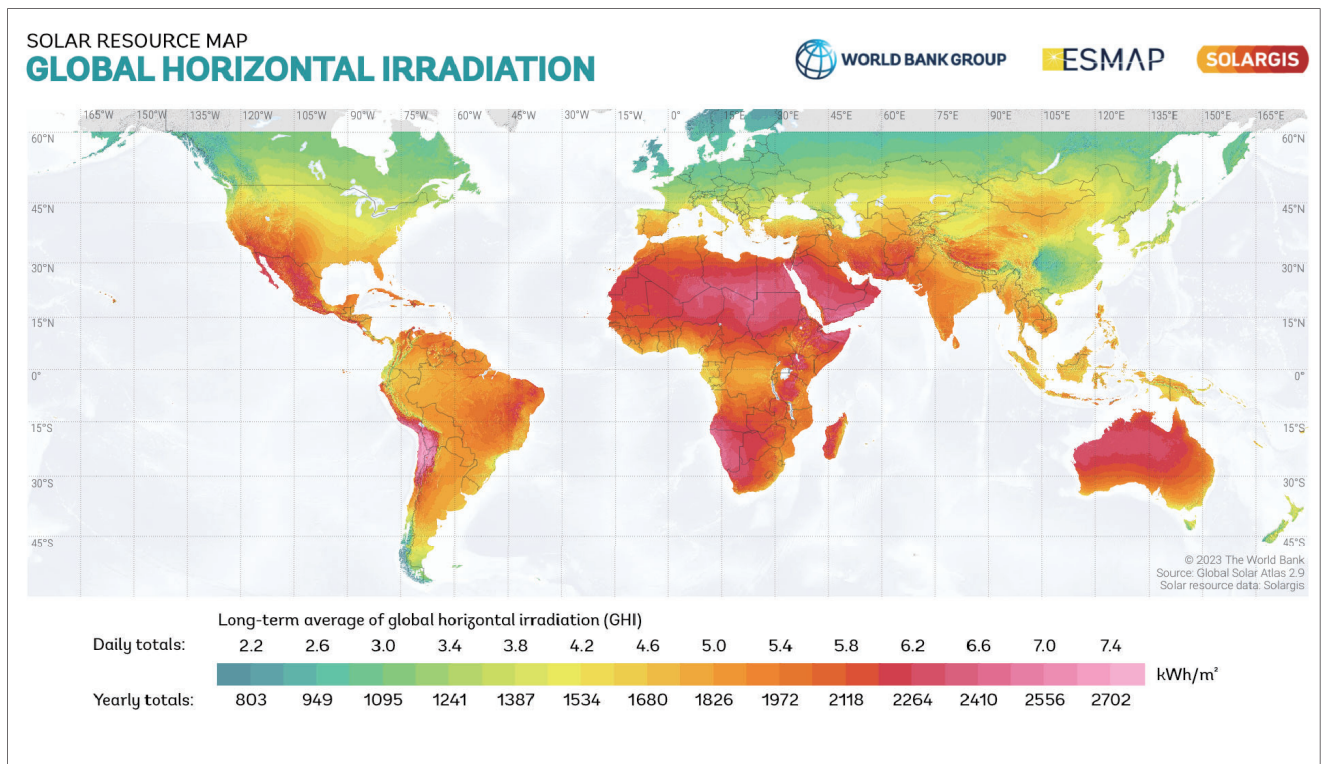
## MPPT Charge Controller



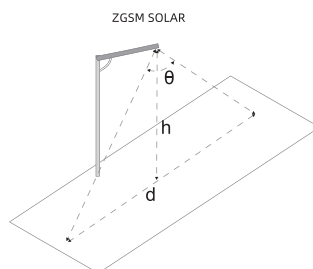
Using MovingTrack MPPT maximum power tracking technology, the tracking efficiency is higher and faster. Compared with PWM charge controller, MPPT charge controller can collect 30% more energy under cloudy conditions. A variety of intelligent power modes are available for choice, with load power adjustable 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



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



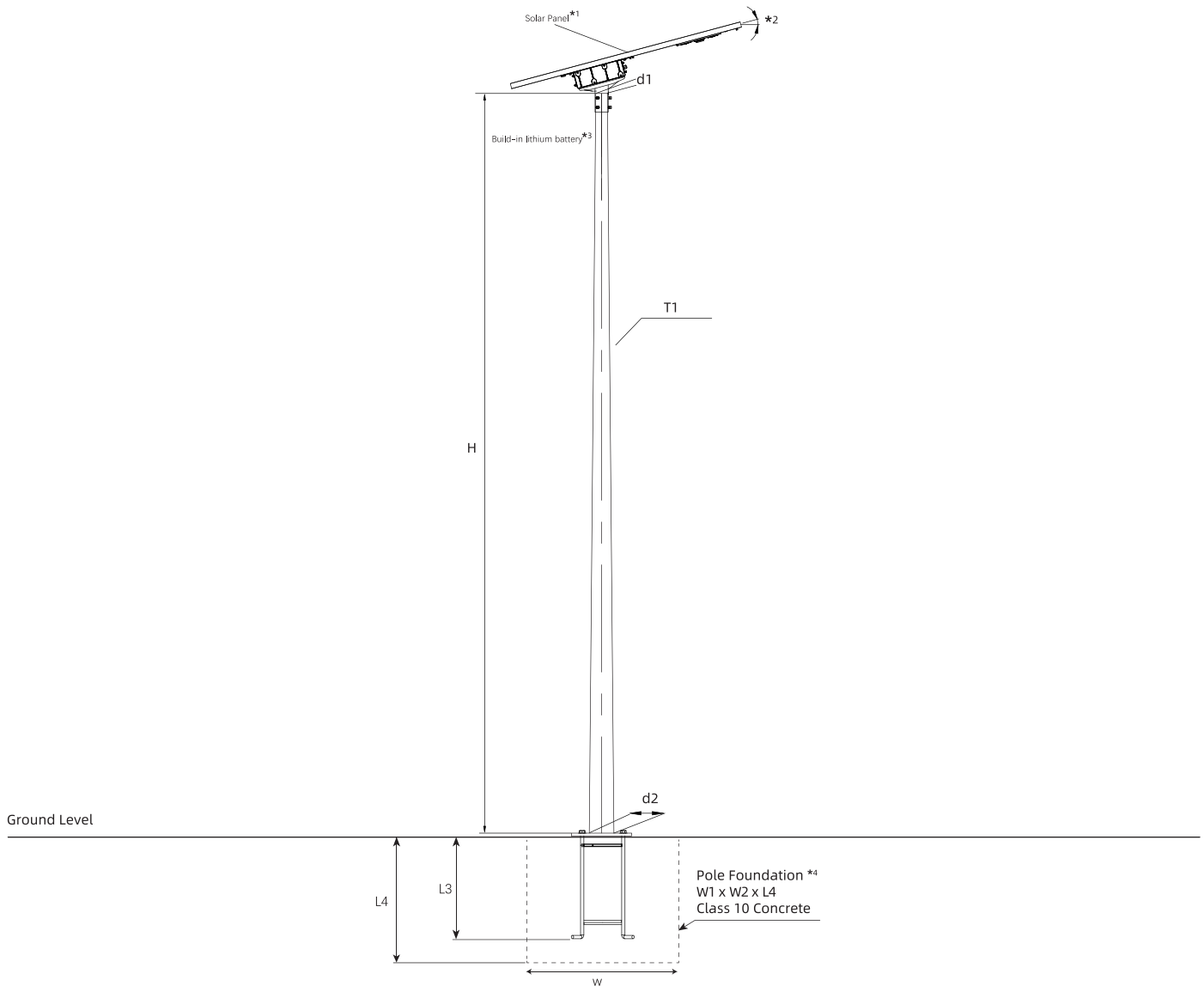
# Pole on Request

## Technical Information

Pole Size				Base Plate					Anchor Bolts			Pole Foundation		
H	d1	d2	T1	L1	L2	T2	K	Q1	L3	M	Q2	W1	W2	L4
5000	76	130	3.0	250	177	10	20x42	4pcs	500	φ16	4pcs	500	500	600
6000	76	140	3.0	280	198	12	20x42	4pcs	500	φ16	4pcs	560	560	600
7000	76	150	3.0	280	198	12	20x42	4pcs	500	φ16	4pcs	560	560	600
8000	76	164	3.0	320	226	16	20x50	4pcs	900	φ16	4pcs	640	640	600
9000	76	175	3.5	320	226	16	24x50	4pcs	900	φ20	4pcs	640	640	1000
10000	76	186	3.5	320	226	16	24x50	4pcs	900	φ20	4pcs	640	640	1000
12000	76	210	4.0	400	300	20	28x58	4pcs	1100	φ22	4pcs	800	800	1200

## Abbreviations and Notes

Abbreviations	
<b>Pole Size</b>	<b>Pole Foundation</b>
1. All dimensions are in mm	17. L4 = Deep of pole foundation
2. H = Overall height of pole	18. W1 = length of pole foundation
3. d1 = Top diameter of pole	19. W2 = Width of pole foundation
4. d2 = Bottom diameter of pole	
5. T1 = Shaft Wall Thickness of pole	
<b>Base Plate</b>	<b>Notes</b>
9. L1 = Dimension of base plate	20. Materials: Q235
10. L2 = Distance between holes	21. Finish: Hot dip galvanized + Plastic spray
11. T2 = Plate Thickness	22. Maximum wind speed 126 Km/Hr
12. K = Hole Size	
13. Q1 = No. of holes	
<b>Anchor Bolts</b>	
14. L3 = Bolt height	
15. M = Bolt diameter	
16. Q2 = No. of bolts required/Pole.	



**Please note:**

- \*1 Solar panel size varies according to different power requirements due to geographical locations.
- \*2 The factory default angle for the solar panel is 15°, but it can be customized based on the installation latitude for optimal performance.
- \*3 Depending on the autonomy days required, the capacity 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.