ZGSM
SAVE ENERGY FOR TOMORROW

ZGSM
SOLAR

All in Two Street Light Solution

PV7-Leaf

ZGSM **SOLAR**

All-in-Two Version

All-in-One 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.

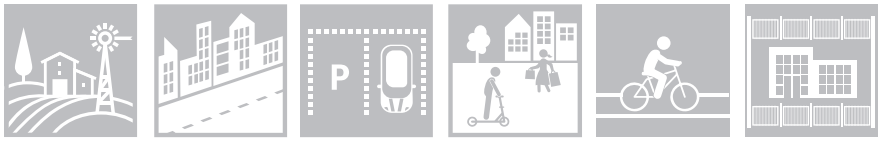
ZGSM SOLAR combined with LED luminaires, provides a reliable lighting solution with a high Ingress Protection level that withstands high ambient temperatures and vandalism. These luminaires are a sustainable off-grid performer with a superior lumen/ watt ratio.

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 Two 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

GENERAL INFORMATION

Recommended installation height	5 to 12m (sensor is not availble over 10m)
Components included	Street luminaire,
	Monocrystalline solar panel with build-in lithium battery and charge controller
	Pole/Bracket/Arm (on request)
Autonomy days	5-7 days
System voltage	12/24V DC
Geographical location	Designed and optimised for locations
	with sunshine greater than 4.5 hours
Wind speed rating	126 km/hr
Working mode	Factory Default- Timer Dimming
	2 hrs at 100% brightness
	6 hrs at 30% brightness
	Rest time at 100% brightness

STREET LUMINAIRE

LED	LUMILEDS or others on request
Optics	Type II, Type III
CRI	Ra>70 (default) / Ra>80
CCT	1800-6500K
Housing	High pressure die-cast aluminium
Cover	UV-resistant polycarbonate
Housing finish	Gray (RAL9007)
Impact resistance	IK09/ IK10
Type of protection	IP66
Upward light output ratio (ULOR)	0
Working Environment	-40°C ~ +50°C
	10%～90%RH
Lifespan L70 at 25 °C	100,000h
Pole diameter	48-60mm (suggestion)

INTEGRATED POWER GENERATION, STORAGE AND CONTROL UNIT

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

ENERGY STORAGE

Technology / Expected lifetime	Lithium battery / 8 years
Capacity	1228WH-2304WH
Maintenance free	Yes
Working temperature	-10°C up to +60°C
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 (Default)

CABLES/CONNECTORS

Cables(standard)	2.5m 2x1.5m² cable with male plug on one end and another with bare end
Connectors(optional)	IP68 waterproof 2 cores

POLE /BRACKET /ARM (ON REQUEST)

Brackets for solar panels	Hot-dipped galvanised mild steel
Arm for street luminaire	Hot-dipped galvanised mild steel
Poles	Hot-dipped galvanised graded steel
Anchor bolts	Hot-dipped galvanised graded steel

Key Features

Overview

Fully integrated solar system, includes luminaire, solar panel (build in lithium battery and solar controller) and pole

Highly efficient monocrystalline solar panel technology to maximise solar energy conversion

Street Luminaire

Series Leaf

You can also choose the following street lights

Series Nova

Series Kmini/Kmini2

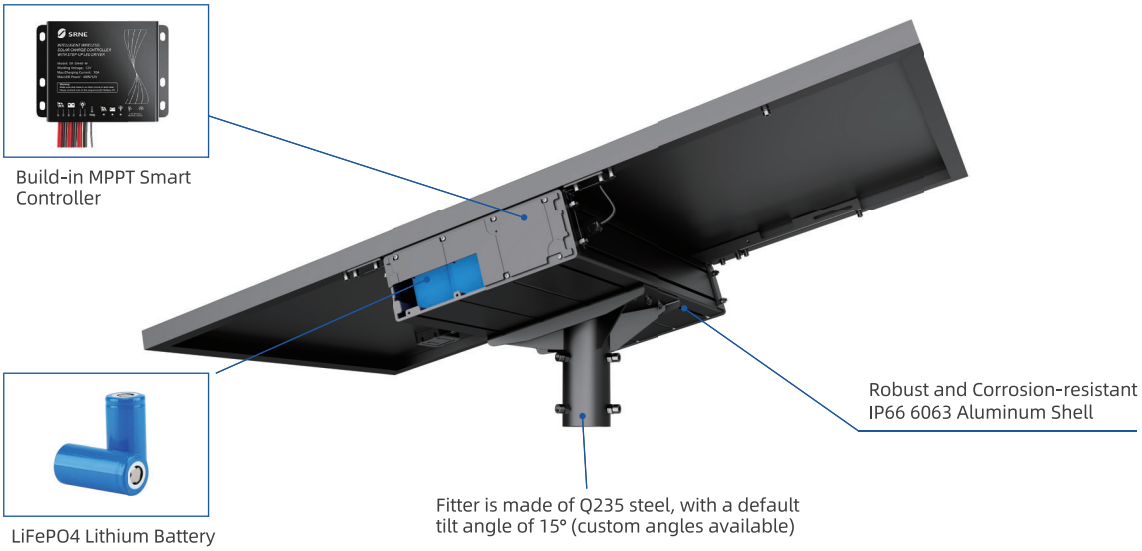
Series Rifle

Series Falcon

Highly efficient, performing and robust LED street light luminaire (up to180 lm/W)

Integrated Solar Panel , Lithium Battery and Controller Unit

The solar panel frame is integrated with the lithium battery pack housing, utilize a high-quality, 100% new Lithium Iron Phosphate (LiFePO4) battery, featuring a built-in MPPT 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 install and maintain.



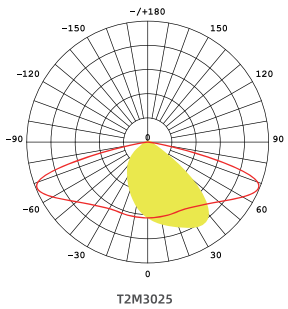
Luminaire Performance

Model	Model No	Power consumption (W)	3030 Version		5050 Version		Ultra Version (Only valid for CCT 4000K)	
			Luminaire efficacy (lm/W)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Luminaire output flux (lm)
S 	ZGSM-ST22-40S	40	155	6200	165	6600	190	7600
	ZGSM-ST22-40S*	40	170	6800	175	7000	195	7800
	ZGSM-ST22-50S	50	155	7750	165	8250	189	9450
	ZGSM-ST22-50S*	60	165	8250	175	8750	194	9700
	ZGSM-ST22-60S	60	155	9300	165	9900	190	11400
	ZGSM-ST22-80S	80	155	12400	165	13200	186	14880
M 	ZGSM-ST22-90M	90	160	14400	175	15750	192	17280
	ZGSM-ST22-90M*	90	175	15750	180	16200	199	17910
	ZGSM-ST22-100M	100	160	16000	175	17500	195	19500
	ZGSM-ST22-100M*	100	175	17500	180	18000	199	19900
	ZGSM-ST22-120M	120	160	19200	175	21000	195	23400

-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.

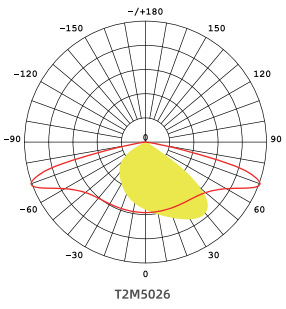
Light Distributions

3030 Version



T2M3025

5050 Version



T2M5026

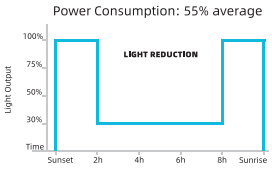
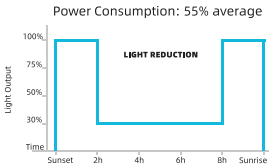
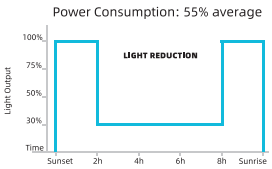
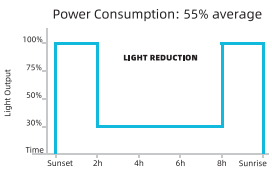
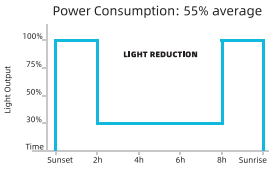
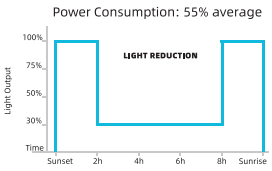
Packing Information

Model	Part	Net Weight	Gross Weight	Pack Type	Carton Size
ZGSM-PV7-U1-T	Solar Panel	12.2kgs	13.5kgs	1 unit/ctn	1170x90x830mm
	Battery	20.2kgs	21.2kgs	1 unit/ctn	825x400x170mm
	Fitter	4.6kgs	5kgs	1 unit/ctn	325x220x230mm
ZGSM-PV7-U2-T	Solar Panel	13.2kgs	14.5kgs	1 unit/ctn	1300x90x830mm
	Battery	21.5kgs	22.5kgs	1 unit/ctn	825x400x170mm
	Fitter	4.6kgs	5kgs	1 unit/ctn	325x220x230mm
ZGSM-PV7-U3-T	Solar Panel	17.5kgs	19.0kgs	1 unit/ctn	1400x90x830mm
	Battery	23.8kgs	24.8kgs	1 unit/ctn	825x400x170mm
	Fitter	4.6kgs	5kgs	1 unit/ctn	325x220x230mm
ZGSM-PV7-U4-T	Solar Panel	19.0kgs	20.5kgs	1 unit/ctn	1590x90x830mm
	Battery	26.7kgs	27.7kgs	1 unit/ctn	825x400x170mm
	Fitter	4.6kgs	5kgs	1 unit/ctn	325x220x230mm

Package for Solar Panel	Package for Battery	Package for Fitter
		
 Plywood frame in samples shipment	 UN Cartons in both samples and batches shipment	 Cartons in samples shipment
 Plywood Pallet in small batches shipment	OR	 Plywood Box in small batches shipment

-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.
-Refer to the luminaire datasheet for luminaire packaging information.

Configuration Matrix of Main Body

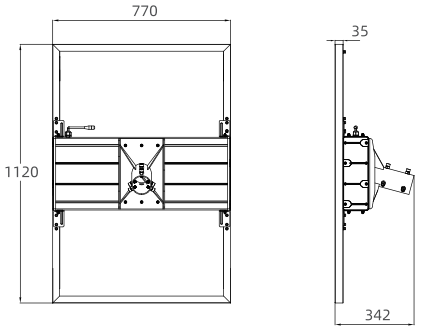
Photo of Main Body	Model	Load Power	Lithium Battery	Solar Panels	Autonomy days	Sunshine	Optidim Profiles
	ZGSM-PV7-U1-T	40W	48AH/25.6V	160W/36V	5-7 days*1	2.5 hours	
		60W	54AH/25.6V	160W/36V	5-7 days*1	3.8 hours	
		80W	60AH/25.6V	160W/36V	5-7 days*1	4.5 hours	
	ZGSM-PV7-U2-T	90W	66AH/25.6V	180W/36V	5-7 days*1	4.5 hours	
	ZGSM-PV7-U3-T	100W	78AH/25.6V	200W/36V	5-7 days*1	4.5 hours	
	ZGSM-PV7-U4-T	120W	90AH/25.6V	240W/36V	5-7 days*1	4.5 hours	

*1 Autonomy days are calculated based on the controller turning on the intelligent power mode.

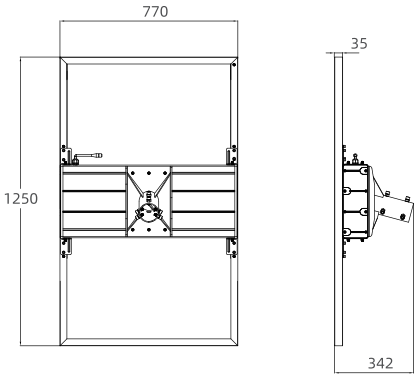
Dimensions

Product dimension: mm

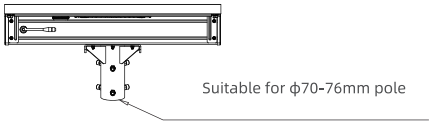
Main Body

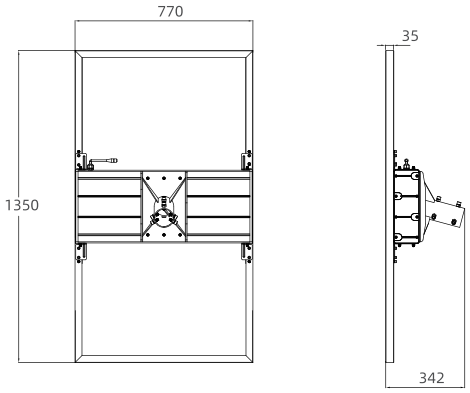


ZGSM-PV7-U1-T

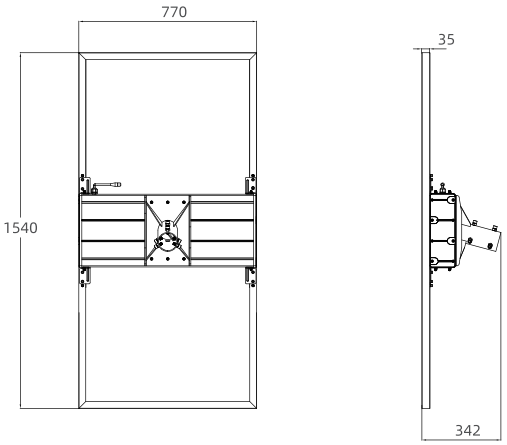


ZGSM-PV7-U2-T



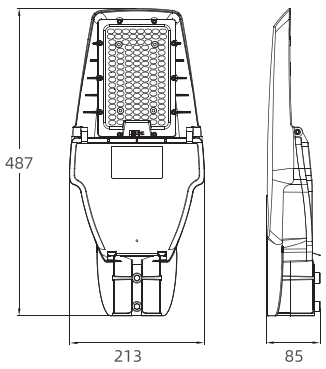


ZGSM-PV7-U3-T

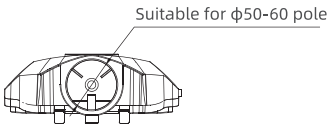


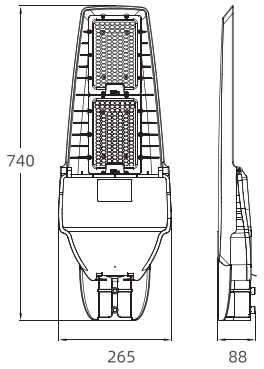
ZGSM-PV7-U4-T

Luminaire



Version S



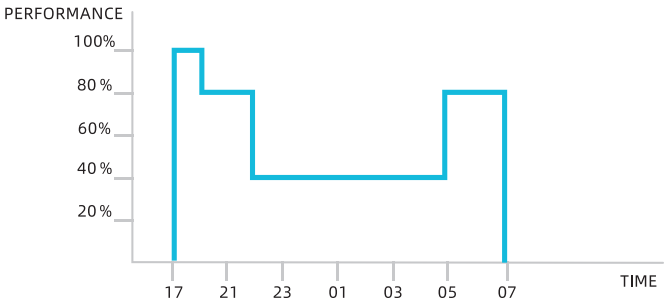


Version M

Technical Definitions

Optidim

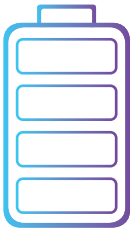
Intelligent luminaire drivers are programmed if required in the factory with complex dimming profiles. Up to 6 combinations of time intervals and light levels are possible. This feature does not require any extra wiring. The period between switching on and switching off is used to activate the preset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

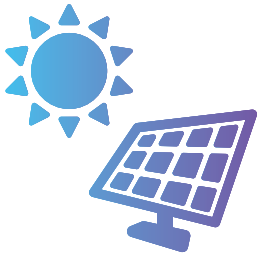
Energy Storage



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

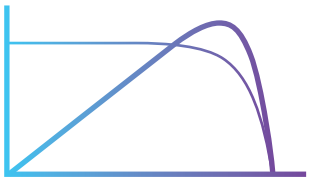
Solar Module



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

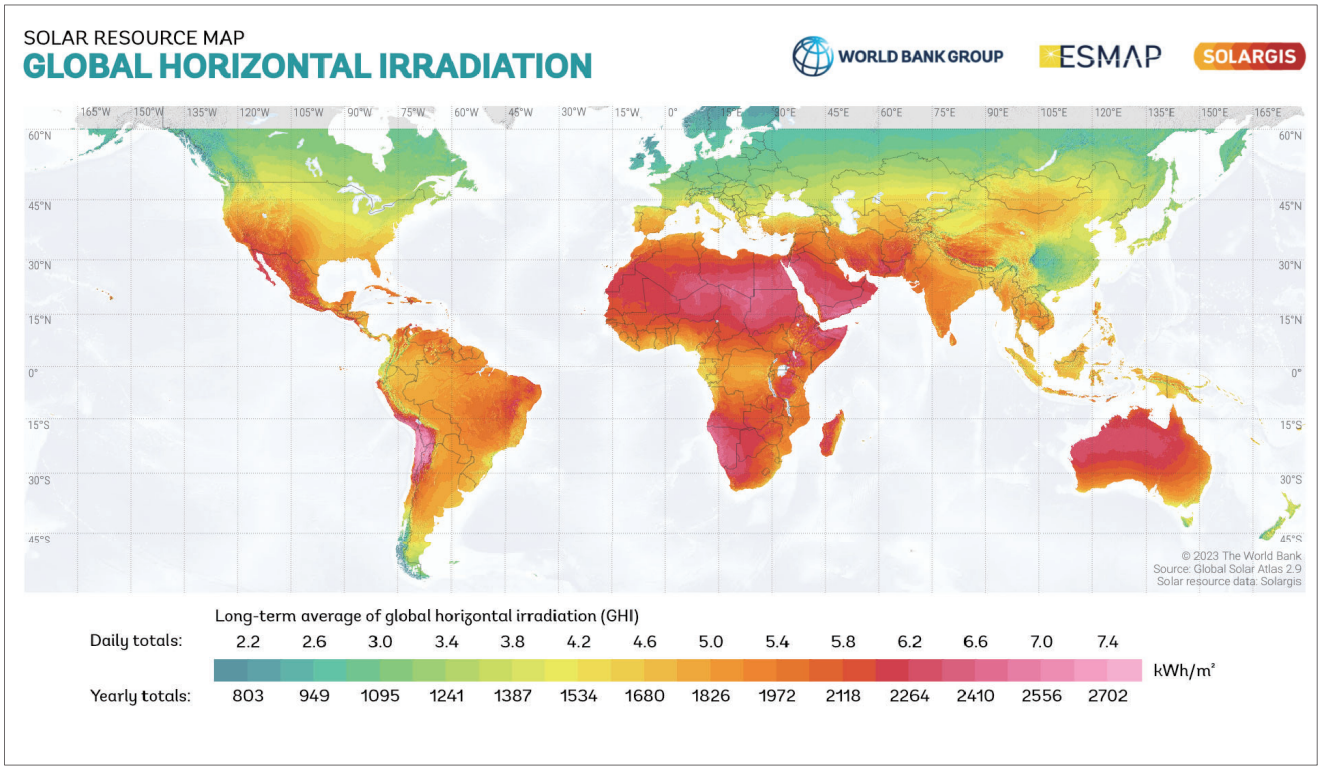


MPPT Charge Controller

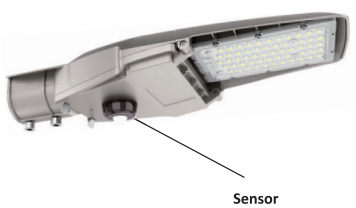
Using MovingTrack MPPT maximum power tracking technology, the tracking efficiency is higher and faster. Compared with PWM charge controller, MPPT charge controller can collect 30% more energy under cloudy conditions. A variety of intelligent power modes are available for choice, with load power adjustable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

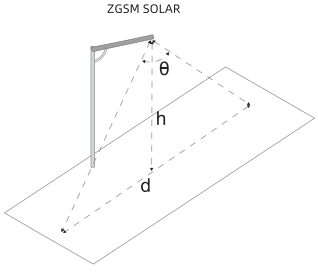
Solar Energy

Solar panel and battery sizing for solar street lights are 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)





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

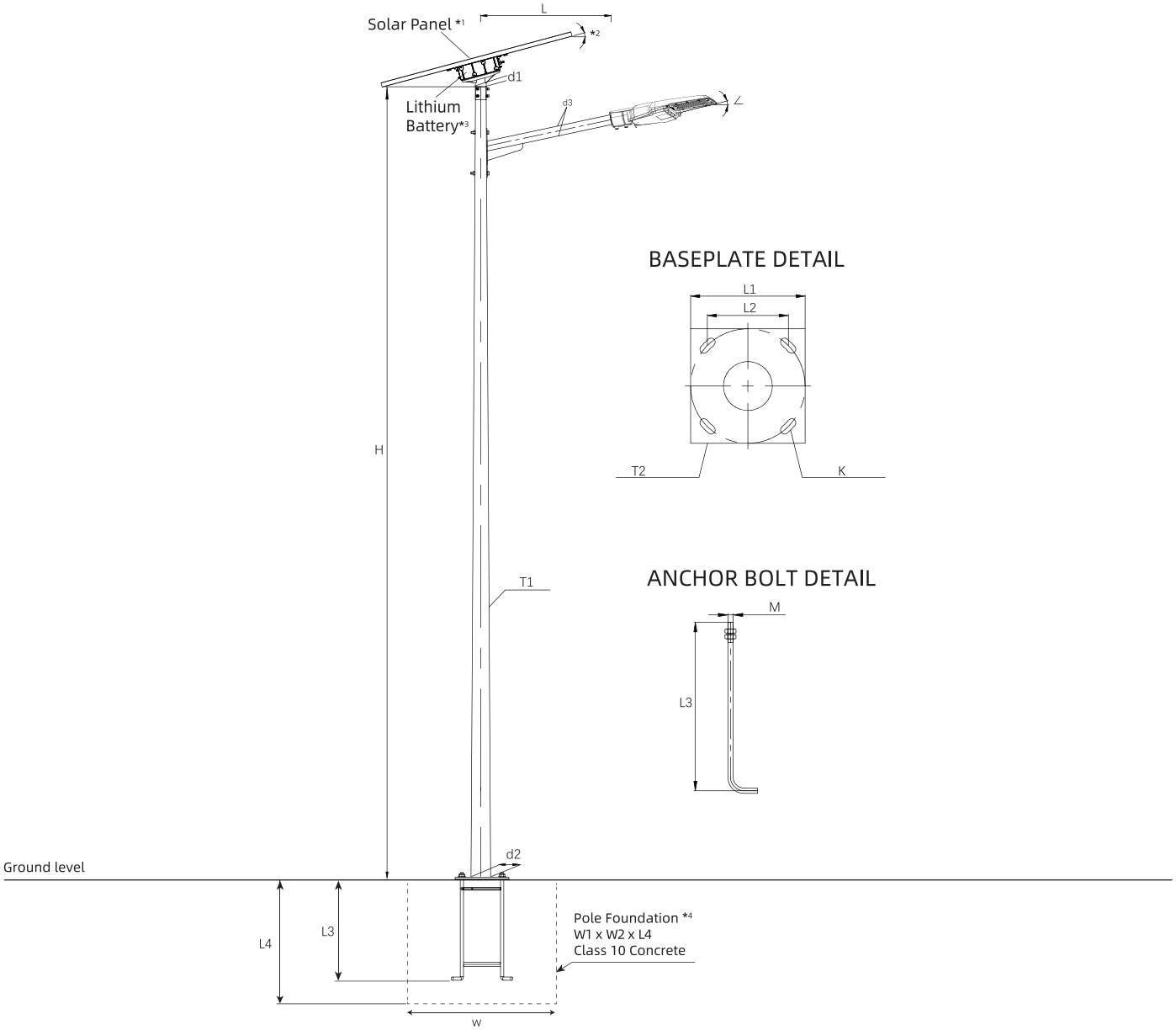
Arm
6. L = Arm length
7. d3 = Diameter of arm
8. ∠ = Arm tilt angle

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



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.