ULTRALAN®

SOLAR & BATTERY POWERED POE SWITCH

Renewable Energy PoE Switch

User Manual

SG05P+1SFP-65WS

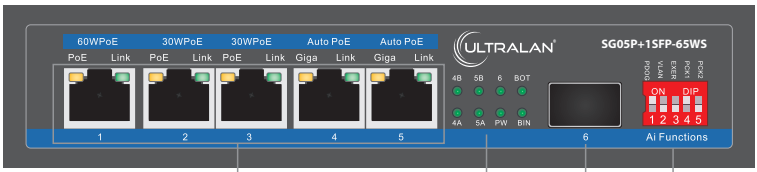
Product introduction

The SG05P+1SFP-65WS is an unmanaged 5 Port 10/100/1000M PoE+1SFP Solar & Battery powered POE switch integrating solar power generation, intelligent POE power supply and full-automatic charge and discharge control. It is a great solution for reliably powering both 802.3af/at and passive POE devices in remote areas where there is either no grid power source (off grid) or the grid power source is unreliable.

Product function

- It supports full-automatic charging and discharging function, with a maximum charging current of 5A
- The advanced PWM intelligent charging system greatly improves the efficiency of photovoltaic power generation
- It supports two battery types: lead-acid battery and lithium battery. There are 6 built-in battery specifications, and the maximum capacity is 50AH
- Support 12V / 24V (maximum 400W) solar panel input
- Using independent intelligent PSE power supply chip
- Port 1 support 802.3af/at POE+ 60W
- Port 2-3 support 802.3af/at
- Port 4-5 support 802.3af/at & Passive POE (auto detect)
- Support POE power supply output with total power up to 65W
- Adopt Realtek's latest intelligent network CPU

Product display and description



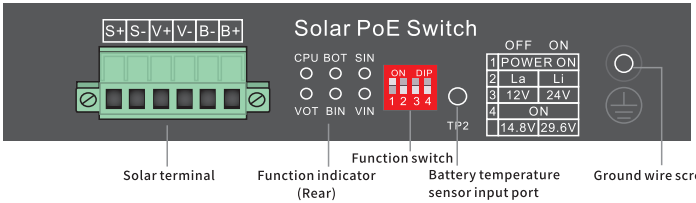
PoE port | Function indicator (front) | SFP optical port | Function switch

PDOG：PoE watchdog switch;
VLAN：Port isolation
EXER: Long distance PoE switch;
PCK1 ON: 4-port forced 24V power supply mode;
PCK1 OFF: 4-port AUTO 24V / 48V;
PCK2 ON：5-port forced 24V power supply mode;
PCK2 OFF：5-port AUTO 24V / 48V;

Indicator definition

Front indicator		State	Description
Power indicator:PW		on	Power on
		off	Power off
PoE port indicator	Orange(PoE)	on	PoE on
		off	PoE off or connected device is not a PoE device
	Green(Link)	on	Network Link
		off	Network down
Optical port : 6		on	Optical network Link
		off	Optical network down

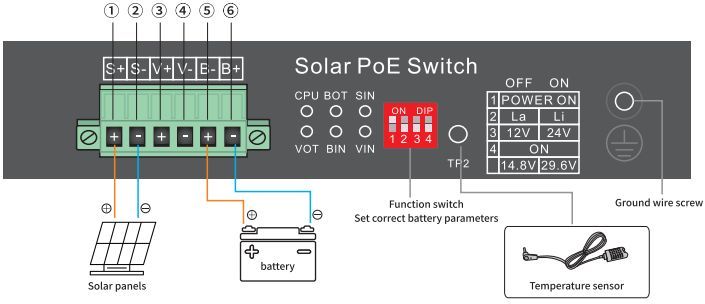
Function indicator (front)	State	Description	Function indicator (front)	State	Description
4B:Port 4 24V PoE	on	24V PoE on	5B:Port524VPoE	on	24V PoE on
	off	24V PoE off		off	24V PoE off
4A:Port 4 48V PoE	on	48V PoE on	SA:Port548V output	on	48V PoE on
	off	48V PoE off		off	48V PoE off
BOT:Discharge indicator	Always on	Battery discharge > 15%	BIN:Charging indicator	Always on	Charging and power <98%
	Always off	End of battery discharge or no discharge		Always off	End of battery charging or no charging
	Blink	1 / 2S flashing, power < 15%		Blink	It is about to be fully charged, and the power is = 98%
BOT and BIN lights are off at the same time and the equipment works normally: charging has been completed					



Indicator definition

Function indicator (rear)	State	Description	Function indicator (front)	State	Description
CPU:System operation indicator	on	System crash	SIN:Solarenergy input indicator	on	The solar energy input is normal
	off	The system did not start successfully		off	Solar energy not input
	Blink	1/ 2S indicates that the battery is normal 1/4S Indicates battery failure		Blink	1/2S flash indicates that the solar energy is in delayed charglng, and the time is 10 minutes. 1/4S flashing indicates that the Solar energy input voltage is wrong and the charging is stopped.
VOT:PoE voltage OK indicator	on	PoE voltage is normal	BIN:Charging indicator	Always on	Charging and power <98%
	off	PoE voltage abnormality		Always off	End of battery charging or no charging
				Blink	When the battery is charged or not charged,it will be fully charged, and the power is= 98%
BOT:Discharge indicator	Always on	Battery discharge >15%	VIS: DC input indicator	on	DC input normal
	Always off	End of battery discharge or no discharge		off	DC not input
	Blink	1 / 2S flashing, power < 15%		Blink	DC input voltage error, stop charging
BOT and BIN lights are off at the same time and the equipment works normally: charging has been completed					

Indicator definition



1. S+solar cathode
2. S- solar negative electrode
3. V+ DC positive pole
4. V- DC negative electrode
5. B+ Battery positive
6. B- Battery negative electrode

Function switch	Description
1	Equipment power switch
2	Battery type switch
3	Battery voltage switch
4	Lithium iron phosphate switch

Battery type selection			
Switch 2	Switch 3	Switch 4	
OFF	OFF	-	12V lead acid battery
OFF	ON	-	24V lead acid battery
ON	OFF	OFF	12.6V lithium battery pack
ON	OFF	ON	14.8V lithium iron phosphate battery pack
ON	ON	OFF	25.2V lithium battery pack
ON	ON	ON	29.6V lithium iron phosphate battery pack

Warning: Power off the Switch before DIP Switch setting

Reference instructions for supporting battery and solar panel

1. 12V 100W solar panel + 12V 15AH lithium battery. When the sunlight is good, the charging time is about 6.6 hours and the runtime is 6 hours (30W load) and 3 hours (60W) load respectively.
2. 12V 100W solar panel+ 12V 15AH lead-acid battery. When the sunlight is good, the charging time is about 6.6 hours and the runtime is 6 hours (30W load) and 3 hours (60W) load respectively.
3. 24V 250W solar panel + 25.2V 15AH lithium battery. When the sunlight is good, the charging time is about 6.6 hours and runtime is 12 hours (30W load), 6 hours (60W load)
4. 24V 250W solar panel +24 15AH lead-acid battery. When the sunlight is good, the charging time is about 6.6 hours and runtime is 12 hours (30W load), 6 hours (60W load)

❶

12V 100W solar panel + 12V 15AH lithium battery. When the sunlight is good, the charging time is about 6.6 hours and the runtime is 6 hours (30W load) and 3 hours (60W) load respectively.

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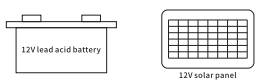

12V 100W solar panel+ 12V 15AH lead-acid battery. When the sunlight is good, the charging time is about 6.6 hours and the runtime is 6 hours (30W load) and 3 hours (60W) load respectively.

Note: the maximum reference open circuit voltage is 32V and the working voltage is 18.5V
(please configure the solar panel power according to the actual conditions)

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24V 250W solar panel + 25.2V 15AH lithium battery. When the sunlight is good, the charging time is about 6.6 hours and runtime is 12 hours (30W load), 6 hours (60W load).

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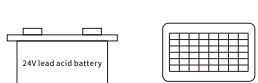


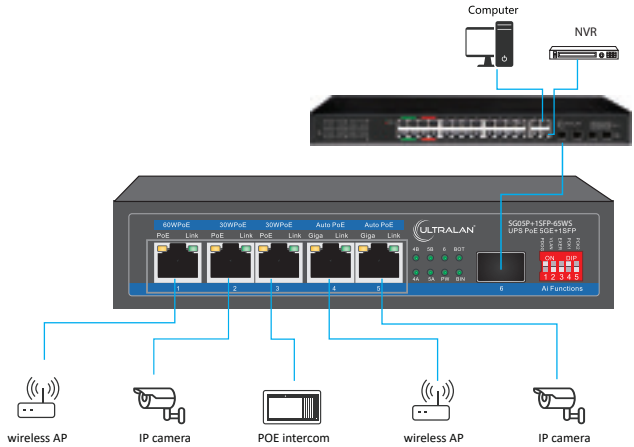
24V 250W solar panel +24 15AH lead-acid battery. When the sunlight is good, the charging time is about 6.6 hours and runtime is 12 hours (30W load), 6 hours (60W load).

Note: the maximum reference open circuit voltage is 45V and the working voltage is 37V
(please configure the solar panel power according to the actual conditions)

Charging time reference formula== battery ampere hour ah (solar panel short-circuit current a * 0.55) = charging hours
Discharge time reference formula == (battery rated voltage * battery ampere hour ah) battery capacity watt hour/ actual discharge power

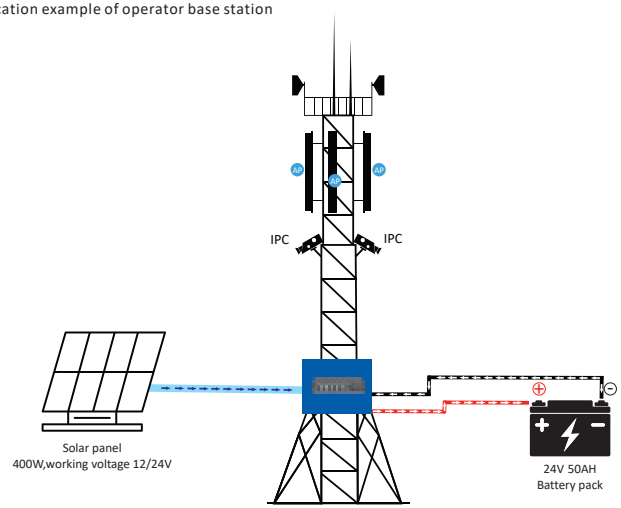
The above calculation results are only used as a reference for selection and installation and may vary from installation to installation depending on external factors such as load, weather, sunlight, and other factors.

Product application
Schematic diagram of switch connection



Scene diagram

Application example of operator base station



Technical parameter

Model	SG05P+1SFP-65WS
Product name	1 optical 5 electric solar PoE switch
Fixed port	1*10/100/1000Base-TX 60W PoE port(Data/Power) 2*10/100/1000Base-TX30W PoE ports(Data/power) 2* 10/100/1000Base-TX AuTo 24V/48V PoE ports(Data/power) 1*1000M SFP
PoE port	Port 1 supports IEEE802.3 af/at/PoE++/BT, the maximum output power of the port is 60W 2-3 ports support IEEE 802.3af/at, and the maximum output power of the port is 30W 4-5 ports adopt automatic PoE port, which can supply power for 48Vor 24V equipment, and the maximum output power of the port is 25W
PoE total power	65W Max
Switch function switch	PDOG : PoE watchdog switch : VLAN : Port isolation : EXER : long distance PoE switch PCK1 ON 4-port forced 24V power supply mode PCK1 OFF 4-port AUTO 24V / 48V PCK2 ON : 5-port forced 24V power supply mode PCK2 OFF : 5-port AUTO 24V / 48V
Controller function switch	1: Equipment power switch; 2: Battery type switch; 3: Battery voltage switch; 4: Lithium iron phosphate switch
Network protocol	IEEE802.3 IEEE802.3i 10BASE-T IEEE802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE802.3x IEEE802.3z 1000BASE-X IEEE 802.3af/at/PoE++/BT
Standards of power supply	Comply with IEEE802.3af/at/Po E++/BT international standard
Network port characteristics	10 / 100 / 1000baset(x)automatic detection, full/ half duplex MDI/MDI-X adaptive
Forwarding mode	Store and forward (full line speed)
Backplane bandwidth	12Gbps(non blocking)
Packet forwarding rate	8.64Mpps
MAC address table	2K
Packet forwarding cache	2.5M
Twisted pair transmission	10BASE-T: Cat3,4,5 UTP(=250 meter) 100BASE-TX: Cats or later UTP(150 meter) 1000BASE-TX: Cat6 or later UTP(150 meter)
Transmission speed	Ethernet 10 Mbps half duplex, 20 MBps full duplex Fast Ethernet 100 Mbps half duplex, 200 Mbps full duplex Gigabit Ethernet 2000 Mbps full duplex
Power supply pin	60W:12,45+;36,78- 48V power supply:12+36-; 24V power supply:45+78-
Power input	Support 12V solar panel input(open circuit voltage= 32V)/ with 12V battery; Support 24V solar panel input (open circuit voltage =45V) /with 24V battery; Compatible with DC input, 12V battery pack: DC input range DC15-26V, maximum input power 240W; Compatible with DC input, 24V battery pack: DC input range DC30-26V, maximum input power 240W; 12V(open circuit voltage= 32V)/24V(open circuit voltage =45V)solar panel, maximum input power 400W
Charging function	Integrated automatic charging and discharging Integrated battery protection function Integrated lithium battery automatic activation system Integrated low cilpacity start protection system
Battery type	12V / 2-4V lead-acid battery, maximum capacity 50AH, maximum charging current 5A 12.6V/25.2V lithium battery, maximum capacity 50AH, maximum charging current 5A 14.8V/29.6V lead-acid battery, maximum capacity 50AH, maximum charging current 5A
LED indicator	PW: power indicator; Bin: battery charging indicator; BOT: battery discharge indicator; 6:optical port connection indicator; 4A-5A: 4-5 port 48V PoE connection indicator; 4B-5B: 4-5 port 24V PoE connection indicator CPU: system operation indicator; Vout: PoE voltage normal indicator; Sin: solar energy in put indicator; Vin: no definition
Operatingtemperature / Humidity	-20 -+ 65° C; 10%-90% RH no condensation
Storage temperature/ Humidity	-40 -+ 70°C; 5%-90% RH no condensation
Product size/package size (L*W*H)	158mm*142mm*35mm 300mm*175mm*100mm
Net weight/ gross weight(kg)	0. 72kg/1.2kg(This product does not include solar panels, batteries and power adapters)
Installation mode	Wall mounted/ rack mounted(optional)
Lightning protection/ protection grade	Port lightning protection: 3KV 8 / 20us; Protection grade: Ip30
Safety regulation certification	3C; CE mark,commercial; CE/LVD EN60950; FCC Part 15 ClassB; ROHS;
Warranty period	Whole device for 1 year (Accessories not included)

Parameters of power generation controller

Battery type	Lead acid battery		Lithium battery		Lithium iron phosphate battery	
Battery voltage	12V	24V	12.6V	25.2V	14.8V	29.6V
Charging mode	PWM(current and voltage limiting constant current -voltage limiting - Pressure and current limiting-- floating charge)		PWM (current and voltage limiting constant current constant voltage)			
Consumable supplement function	Support					
Consumable detection voltage	<12.6V	<24.8V	<12.2V	<24.4V	<14.2V	<28.8V
Rated charging current	5A					
Float current	50mA~1000mA					
Float time	3 hours					
Charging stop	Arrival float timing		Rated voltage and simultaneous charging current < 30mA			
Rated discharge current	6.5A	3.6A	8.5A	4A	6.5A	4A
PoE output voltage	48~56V					
PoE output power	Maximum 65W					
Compatible DC input	12V battery pack: DC input range DC15-26V, maximum input power240W; 24V battery pack: DC input range DC30-36V, maximum input power240W					
Photovoltaic open circuit voltage	32V	45V	32V	45V	32V	45V
Photovoltaic input	400W max					
Maximum charging voltage	14.7V	29.6V	12.6V	25.2V	14.8V	29.6V
Floating charge voltage	13.7V	27.4V	-	-	-	-
Discharge cut-off voltage	10.1V	20.2V	9V	18V	10.2V	20.4V
Overtemperature protection	Support automatic shutdown when the main board is over temperature and automatic shutdown when the battery is over temperature (optional)					
Input protection	Overcurrent, overvoltage, delayed start and anti connection protection					
Output function	Overcurrent, overvoltage and short circuit					
Indicator light	System normal operation indicator, battery lamp, input normal indicator, charge discharge indicator and multi-functional composite fault indicator					
Working temperature	-20℃~+65℃					

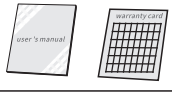
Matters needing attention

1. Please read the operation manual carefully before use. Improper operation may cause damage to this and other devices.
2. Don't use in places near a fire source.
3. Don't put the product into water or wet the built-in machine components.
4. Don't short circuit the positive and negative poles of the battery interface with metal conductors
5. Don't disassemble or unravel the internal parts of the product as this may void the product warranty.

What's in the box

Switch

User manual and warranty card



Rack mount kit