



Wi-Tek L2 Solar Powered PoE Switch Solar System WEB User Manual

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www.wireless-tek.com

About This Document

This topic describes how to configuration the L2 solar powered PoE Switch, including solar system parameter description and setting in application. This section uses the WI-PMS306GF-UPS-I (V1.38) as an example, there are some differences between the device and version. Please refer to the actual situation.

The intended audience provides a reference for network design.

History

Updates in V1.0 (2024-10-12)

The first release.

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1. Solar Powered PoE solution

Wi-Tek Solar Powered PoE Switch Serial is designed for CCTV surveillance and wireless network. Based on its green energy, it can be charged by the inexhaustible and natural source of energy - solar power. It can conserve green energy economically and power the remote IP cameras and wireless AP, especially used for expansive applications where high voltage electricity is difficult to cover, such as dams, forests, deserts, national parks, and highways.

- Built-in MPPT (Maximum Power Point Tracking) Controller: The MPPT (Maximum Power Point Tracker) controller can detect the voltage of the solar panel in real time, track the highest power, and convert the high voltage DC output of the solar panel to the low voltage required for effective charging, so that the system can charge the battery at the maximum power. It is the brain of the photovoltaic system which coordinates with solar panels, batteries and loads in the solar photovoltaic system.
- Zero-Carbon, Green and Stable Power Supply: During the day, solar energy can power the communication system and charge the battery, and at night, the battery uses the excess electricity generated by solar energy during the day to power the communication system, which builds a zero-carbon, green and stable communication system without any external energy.
- Easy and Intelligent Photovoltaic Power and Battery Status Monitoring: The dashboard in WEB makes it easy to monitor real-time solar power and battery status.

Build a zero-carbon communication system, develop clean and digitalized energy for a brighter, greener future.



2. Solar System on the WEB

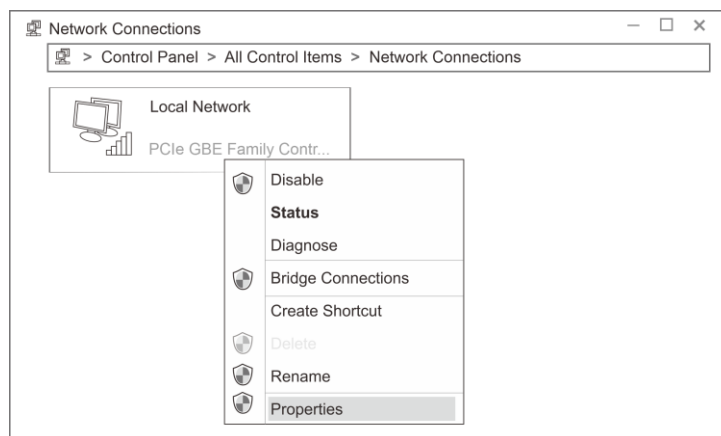
2.1 Login in Solar System on the WEB

WEB browsing session login Before you start a Web browsing session, you need to confirm:

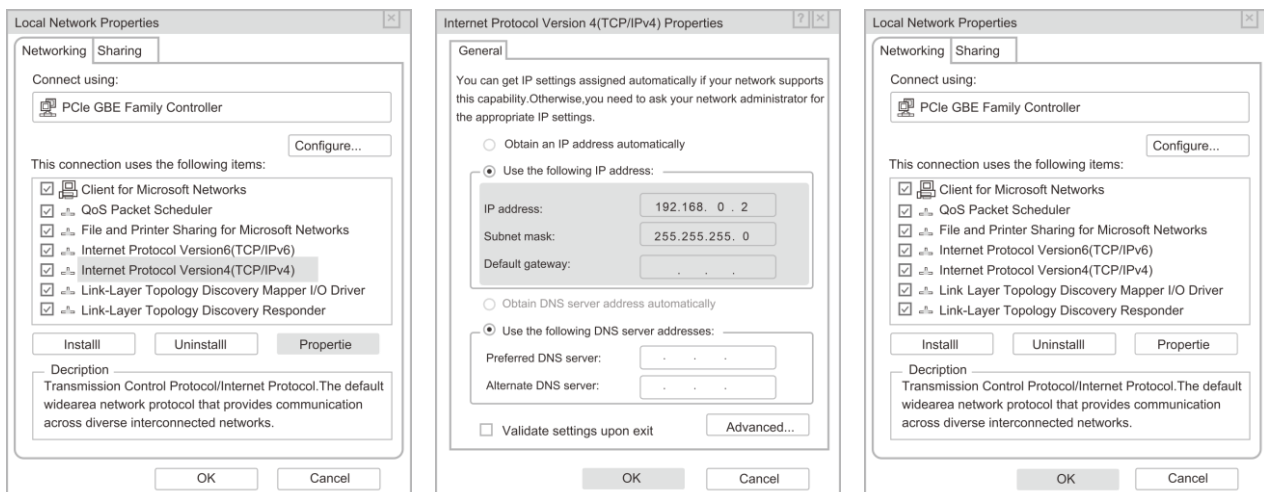
- IP has been configured on the switch. By default, the interface IP address of the switch's VLAN1 is 192.168.0.1. The subnet mask is 255.255.255.0.
- Use a network cable to connect the Ethernet port of PC and the Ethernet port of the switch, and the PC has been configured to ping the management IP address of the switch.

Operation steps (take Windows 10 as sample):

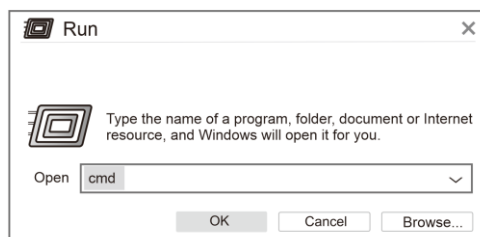
- Click <Settings> to enter the <Settings> menu, select <network & Internet>, and select <change adapter options> in <status> items. Right click your connected "network connection" icon, select <Properties> window pops out.



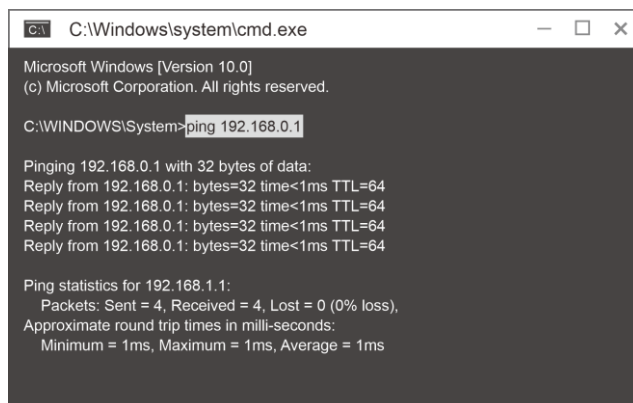
- Select <Internet protocol version 4(TCP/IPv4)>, click <properties> button, enter "Internet Protocol Version 4(TCP/IPv4) Properties" window. Select the option "Use the following IP address", input IP address (use arbitrary value between 192.168.0.2 ~ 192.168.0.254, besides 192.168.0.1) and the subnet mask (255.255.255.0). Click <OK> to save the configuration. And Click <OK> to finish the configuration.



- Right click <Start> button and select <Run>, type in "CMD" and click <OK> popping out the dialog.



- Type in "ping 192.168.1.200", and press enter. If there is reply displaying in the pop out dialog, that means network connection succeed, otherwise please check if the network connection is correct.



```
C:\Windows\system\cmd.exe
Microsoft Windows [Version 10.0]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\System>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

After the completion of the above steps, the user in the browser's address bar enters the address of the switch and press Enter to enter the switch Web login page, when multi-user management is not enabled, the user login to the Web when the need for anonymous user (admin) password verification, only enter the correct password to access the Web, anonymous user password default to admin.

2.1.1 View Solar System Parameters

Solar Configuration					
Battery Type	Battery Capacity	Installed Solar Power	Max Charging Current	Max Discharge Power	Hardware Version
Custom Lead	600WH	0W	15A	120W	HSUN V1.38
Wide Voltage Charging	System Temperature	Battery Temperature	Booster Status	AC Fan Status	System Fan Status
Off	39°C	Unconnected	Normal	Close	Close
Sun Voltage	Sun Current	Sun Power	Working Status	Battery Voltage	Charging Current
18.37V	1.27A	23.33W		12.28V	1.30A
AC-DC Voltage	AC-DC Current	AC-DC Power	Sync Charging	Battery Level	Charge&Discharge Time
0.00V	0.00A	0.00W		54%	0H:0M
SUN Status	AC-DC Status	Battery Status	Output Voltage of Controller	Output Current of Controller	Load Power
Input	Unconnected	Normal	50.23V	0.15A	7.53W

Parameter	Description
Battery Type	<p>Warning: Different types of batteries have different charging voltages, cut-off voltages and charging methods. Select the corresponding battery type to avoid damage to the battery and security risks.</p> <p>Current battery type configured by DIP switch or WEB</p> <p>12V Lead: 12V Lead-acid battery, the default charge voltage is 14.4V, float charge voltage is 13.7V, discharge cut-off voltage is 10.2V.</p> <p>24V Lead: 12V Lead-acid battery, the default charge voltage is 28.8V, float charge voltage is 27.4V, discharge cut-off voltage is 20.4V.</p> <p>12.6V Lithium: Nominal 11.1V Lithium battery, the default charge voltage is 12.6V, discharge cut-off voltage is 9V.</p> <p>25.2V Lithium: Nominal 22.2V Lithium battery, the default charge voltage is 25.2V, discharge cut-off voltage is 18V.</p> <p>14.8V Lithium: Nominal 12.8V LiFePO4 battery, the default charge voltage is 14.6V, discharge cut-off voltage is 10.2V.</p> <p>29.6V Lithium: Nominal 25.6V LiFePO4 battery, the default charge voltage is 29.2V, discharge cut-off voltage is 20.4V.</p> <p>Custom Lead: User-defined Lead-acid battery type, the charge voltage, float charge voltage and discharge cut-off voltage are set in the < Solar controller configuration > page.</p> <p>Custom Lithium: User-defined Lithium or LiFePO4 battery type, the charge voltage and discharge cut-off voltage are set in the < Solar controller configuration > page.</p>
Battery Capacity	<p>User-defined parameter, set in the < Solar controller configuration > page.</p> <p>When this parameter is set, the estimated discharge time and estimated charge time are calculated more accurately.</p>
Installed Solar Power	<p>User-defined parameter, set in the < Solar controller configuration > page.</p> <p>When this parameter is set, the estimated discharge time and estimated charge time are calculated more accurately.</p>
Max Charging Current	<p>User-defined parameter, set in the < Solar controller configuration > page.</p> <p>Warning: This value is the maximum current value for the Switch to charge the battery. The maximum value can be set by referring to the specifications of the model used or QIG and the acceptable value marked in the battery specifications. Please set the appropriate charging current value to avoid damaging the battery.</p> <p>At the same time, if you use DC for charging, please consider the maximum power supply of the DC input to avoid damaging the DC power supply.</p>

	<p>For example, if a 12.8V LiFePO4 battery (assume that the minimum charging voltage is 10V) is charged using a 24V 5A power supply, the maximum current that can charge the battery is $24V * 5A / 10V = 12A$, it is recommend to set the battery charging current under 12A to protect the DC power, or change to a more powerful DC power supply for greater battery charging current.</p> <p>For default values, see the rated charging current parameters in the specifications of the corresponding model. For example, the default max charging current values of WI-PMS306GF-UPS-I is 15A.</p>
Max Discharge Power	Maximum load power of the switch.
Hardware Version	The version of the MPPT controller in the switch (not the version of the switch).
Wide Voltage Charging	<p>ON/OFF, set in the < Solar controller configuration > page.</p> <p>Enable this feature for higher tracking efficiency when charging a 12V battery system using a solar panel compliant with a 24V battery system. For example, if you use a 36V working voltage solar panel to charge a 12V battery, it is recommend to enable this function, if you use a 18V working voltage solar panel to charge a 12V battery or a 36V solar panel with a 24V battery, DO NOT enable this function.</p>
System Temperature	The temperature of the MPPT controller.
Battery Temperature	<p>The temperature of an additional temperature sensor for external connection.</p> <p>Usually the external temperature sense will be close to the battery to monitor the temperature of the battery, which can be combined with the battery overtemperature protection function.</p>
Booster Status	The booster output status of the MPPT controller. If the status is abnormal, the switch works abnormally.
AC Fan Status	The status of the AC power fans. This parameter is applicable only to models that contain AC power fans.
System Fan Status	The status of the system fans. This parameter is applicable only to models that contain fans.
Sun Voltage	The current operating voltage of the solar panel.
Sun Current	The current operating current of the solar panel.
Sun Power	The current operating power of the solar panel.
AC-DC Voltage	The current operating voltage of the AC-DC.
AC-DC Current	The current operating current of the AC-DC.
AC-DC Power	The current operating power of the AC-DC.
Working Status	<p>The working status of the MPPT controller.</p> <p>Sync charging: solar or AC-DC is charging for battery and power the load at the same time.</p> <p>End of charge: the battery is full charged, solar or AC-DC power the load. The battery is bypass at this status.</p> <p>Sync discharging: solar or AC-DC and the battery power the load at the same time.</p> <p>Discharge: The battery is discharging to supply power to the load.</p> <p>End of discharge: the battery is cut-off and stop discharging.</p> <p>No battery: no battery is detected in the system.</p>

Battery Voltage	The current operating voltage of the battery. In the charging status, this parameter is the charging voltage of the battery.
Charging Current	The current charging current of the battery. There is no value in the discharging status.
Battery Level	The current battery capacity percentage.
Charge & Discharge Time	The estimated time from charge to full charge is displayed when charging, or the estimated time from discharge to empty power is displayed when discharging.
SUN Status	Unconnected/ Input, Displays the connection status of solar power.
AC-DC Status	Unconnected/ Input, Displays the connection status of AC-DC.
Battery Status	Displays the connection status of battery.
Output Voltage of Controller	The current output voltage of the MPPT controller.
Output Current of Controller	The current output current of the MPPT controller.
Load Power	The current load power of the MPPT controller, this includes the power of the switch and PoE load, not the load power of the MPPT controller itself.

2.1.2 Configure the Solar System

Solar controller configuration

Battery configuration	Auto	
Battery type	12V lead acid battery	
Charging voltage(V)	14.4	(9.00-31.00)
Protection voltage(V)	10.2	(<Charging voltage&>7.00)
Floating CHG voltage(V)	13.7	(<Charging voltage&>Protection voltage)
Battery Capacity(WH)	600	(65-15000)
Charging Current(A)	15	(1-20)
Wide voltage CHG	Off	
Working voltage of Solar(V)	18.44	(>Charging voltage&<57.00)
Installed power of Solar (W)	0	(30-10000)
Lithium battery start protection(%)	25	(5-50)
Battery protection TM(°C)	100	(60-120)

Parameter	Description
Battery configuration	<p>Current battery type configured by WEB, after being configured in non-auto mode on the WEB, the DIP on the hardware is disabled.</p> <p>Auto: the battery type is set by the hardware DIP switch. Custom configuration: the battery type is set by the WEB.</p>
Battery Type	<p>Warning: Different types of batteries have different charging voltages, cut-off voltages and charging methods. Select the corresponding battery type to avoid damage to the battery and security risks.</p> <p>12V Lead: 12V Lead-acid battery, the default charge voltage is 14.4V, float charge voltage is 13.7V, discharge cut-off voltage is 10.2V. 24V Lead: 12V Lead-acid battery, the default charge voltage is 28.8V, float charge voltage is 27.4V, discharge cut-off voltage is 20.4V. 12.6V Lithium: Nominal 11.1V Lithium battery, the default charge voltage is 12.6V, discharge cut-off voltage is 9V. 25.2V Lithium: Nominal 22.2V Lithium battery, the default charge voltage is 25.2V, discharge cut-off voltage is 18V. 14.8V Lithium: Nominal 12.8V LiFePO4 battery, the default charge voltage is 14.6V, discharge cut-off voltage is 10.2V. 29.6V Lithium: Nominal 25.6V LiFePO4 battery, the default charge voltage is 29.2V, discharge cut-off voltage is 20.4V.</p> <p>If the above built-in types do not meet the parameters given in the battery specification, you can choose to customize battery type to set the voltage parameters that meet the battery specification.</p> <p>Custom Lead: User-defined Lead-acid battery type, the charge voltage, float charge voltage and discharge cut-off voltage are set in the < Solar controller configuration > page.</p>

	Custom Lithium: User-defined Lithium or LiFePO4 battery type, the charge voltage and discharge cut-off voltage are set in the < Solar controller configuration > page.
Charging voltage(V)	The charging voltage of the battery. Set parameters within the range allowed by the battery to avoid battery damage.
Protection voltage(V)	The cut-off voltage of the battery. When the system detects that the battery is discharged below this voltage, it will stop supplying power to the load, and the switch will enter a very low power sleep mode to avoid deep battery over-discharge. The switch works properly only when solar or AC-DC power supplies charge batteries to the discharge voltage.
Floating CHG voltage(V)	Battery floating charge voltage. This parameter is available only for lead-acid batteries. When the lead-acid battery is nearly full, it will enter a floating state of low voltage and small current.
Battery Capacity (WH)	When this parameter is set, the estimated discharge time and estimated charge time are calculated more accurately. Generally, the capacity of the battery (Wh) = Nominal Voltage(V)* Capacity (Ah), for example, the capacity of a 12.8V 50Ah battery is 12.8V * 50Ah = 640Wh. Alternatively, you can refer to the battery datasheet for the exact capacity.
Charging Current(A)	Warning: This value is the maximum current value for the Switch to charge the battery. The maximum value can be set by referring to the specifications of the model used or QIG and the acceptable value marked in the battery specifications. Please set the appropriate charging current value to avoid damaging the battery. At the same time, if you use DC for charging, please consider the maximum power supply of the DC input to avoid damaging the DC power supply. For example, if a 12.8V LiFePO4 battery (assume that the minimum charging voltage is 10V) is charged using a 24V 5A power supply, the maximum current that can charge the battery is $24V * 5A / 10V = 12A$, it is recommend to set the battery charging current under 12A to protect the DC power, or change to a more powerful DC power supply for greater battery charging current.
Wide voltage CHG	Enable this feature for higher tracking efficiency when charging a 12V battery system using a solar panel compliant with a 24V battery system. For example, if you use a 36V working voltage solar panel to charge a 12V battery, it is recommend to enable this function, if you use a 18V working voltage solar panel to charge a 12V battery or a 36V solar panel with a 24V battery, DO NOT enable this function.
Working voltage of Solar(V)	Set accurate solar operating voltage for higher tracking efficiency.
Lithium battery start protection (%)	The starting protection power of the lithium & LiFePO4 battery will not power the load when it is lower than the power. If your battery is too large, the solar panel is too small, or you want the entire CCTV system to work as long as possible, you can try to reduce this parameter. Setting the appropriate parameters can protect the battery and avoid the state of starting and shutting down after less power.
Battery protection TM (°C)	Set the temperature protection value of the battery by referring to the maximum operating temperature in the battery specification to avoid damage to the battery. Warning: Connect an additional external temperature sensor to the battery to obtain the temperature of the battery. When the temperature of the sensor exceeds the set temperature, the

	charging and discharging will stop to protect the battery temperature from continuing to rise and cause safety hazards.
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If there is need to configure more switch functions, such as VLAN and MSTP, refer to the General WEB and CLI manual.