WS24400（24600）H Wind-Solar Controller / Wind-Solar Street Light Controller

Appearance

Controller

Dumper

Wind-Solar Controller Features

- SCM intelligent Control, precise control.
- Over-discharge protection double lower limit setting: two load path have different lower limit protection point, connecting base on load essentiality. (Single load path or street light mode do not apply this feature)
- Over-load indicates, over-load automatic disconnect, shortage lock up feature: indicate when over-load current over rate value, but do not disconnect; disconnect when serious over-loading. Recover from over-load, press reset button to recover power supply. If load has shortage, its load circuit will disconnect immediately, indicator light will be on, alarm can not be reset, disconnect battery to reset.
- Lightning-proof feature: lightning-proof feature on solar input terminal.
- Heat compensate feature, -5mV/□ each unit.（if with 12V battery, -30mV/□ each unit）.
- Temperature sensor: auto-detect sensor damaged or disconnect and charge as when 25□ parameters.
- Protection when Solar panel incorrect connection, battery incorrect connection, over-charge, over-discharge, over-load, load shortage etc.

Wind-Solar Light Controller Additional feature

When street light controller mode, load can only be street light.

- Weak light on: Automatic on/off when dark/dawn. Light off when daylight even timer is not by the moment.
- Second time light on: Automatically save previous dawn time, then light on one hour before dawn.
- Short term light change filtering, e.g. lightning, short term covering etc.
- Light on will be 16 seconds delay when first time connect.
- Single street light controller, light on time can be set between 1 to 14 hours.
- Dual-street light controller, different working time schedule can be set. First time set both light on at the same time, second time set one off and one on, i.e. one light will be on for the total time of first and second time set, another light is only lighted within first time set.
- If battery voltage is not enough, light will not on when dark. However, if voltage can be raised to normal level before timer off by wind generator, light will be on automatically and obey original settings.

Attentions when Install and Use

- Install at position where rain water can not reach with good ventilation.
- Use vertical installation.
- Make sure correct polarity connection on battery, load and solar panel.
- Do not breach rate power or current when connecting load.
- Must use dumper from the same package as controller!
- Cables connecting dumper/controller set must not thinner than 6 square millimeter.
- Dumper shall be installed as far as possible from controller.
- If install units inside the street light pole, use installation accessories in the package, dumper must be installed higher than controller.
- Keep cables as far as possible from dumper.
- Do not cover dumper and no inflammable or explosive goods around!
- When strong wind, high temperature is around dumper, please select suitable location and installation!
- Keep controller and dumper at good ventilation state.
- Check controller and dumper work state at regular intervals.
- Installation bracket can be used facing both side, or it can be adjusted before order according to installation site condition.
- If temperature compensation feature is required, please attach temperature sensor firmly to batteries.

Installation Procedures

1. First check and make sure controller specifications match with voltage and power of wind motor, solar panel and batteries;
2. Set DIP switch according to needs for mode and timing.（see DIP switch setting）。
3. Connect dumper to controller, cable shall be not thinner than 6 square millimeter.
4. Check battery set voltage and ensure its polarity.
5. Connect batteries to controller.
6. Connect applicable DC load or lights (Ensure polarity!). Now DC load should be able to work or light shall be on in 16 seconds.
7. Connect wind motor to controller. (Installation when wind motor is not spinning is suggested)
8. Check solar panel voltage. (Solar panel open circuit voltage value can be 1.4 times higher than nominal value)
9. Connect solar panel to controller (ensure polarity!). Now light shall turn off automatically.
10. When using dual-street light mode, connect shorter working term light to the first route and connect longer working term light to the second route. (Connect to second route when single light mode.)
11. When using standard mode, connect secondary load to the first route and connect primary load to the second route.

Inspection Methods

1. Solar charge inspection: when daylight, "▰" indicator on controller light or flash, measure current shall be on cable between solar panel and controller (Current value varies when illumination and battery capacity change).
2. Wind charge inspection: when windy, wind motor spins, "F"indicator on controller light when wind motor voltage is higher than battery voltage, measure current shall be on cable between wind motor and controller (Current value varies when wind force and battery capacity change)
3. Street light mode light sensitive switch inspection: first measure batteries voltage, ensure it is higher than 'over-discharge recover voltage', disconnect a cable between controller and solar panel, street light shall be on after 16 seconds, then inspection complete, connect the cable back on.
4. Controller mode load output feature inspection: first measure DC voltage on batteries, ensure it is higher than 'over-discharge recover voltage', there shall be output voltage on load output terminal (Ensure DC load polarity).

Frequently asked questions and solutions

1. No charging, no dump, no load output:

   Open controller top cover, check controller DC fuse. If it melted, polarity of batteries and solar panel should be checked first, replace a fuse with same specification after polarity correctness ensured.
2. Charging but no load output:

   If overloaded, indicator "1" or "2" shall be on, recovery button can not cancel "", please check for serious overload or shortage. After serious overload/shortage solved, disconnect a cable on batteries and connect again (do not do this when strong wind).

   If overload indicator is not light, please check batteries voltage and ensure it is at standard working voltage range, if it is lower, no action shall be taken and load output will work when batteries charged to above recover voltage.
3. Wind motor not spinning:

   When windy condition and other wind motors spin, if the motor spins very slow, please check and ensure its tail vane is at the right direction. If so, try disconnecting a cable on dumper, if motor spins again then dumper controlling part is broken and needs to be replaced.
4. Charging voltage is too high:

   When battery voltage is 10% higher than over-charging protection voltage, if there is still current measured between solar panel/wind motor and batteries. Then charging controlling part may be damaged and needs to be replaced.
5. Light sensitive control or timer does not work:

   Please check DIP switch.
6. Spark when connecting batteries:

   Check batteries polarity and open top cover to check fuse.
7. Street light on longer than setting time at night:

   During daylight is longer than night time, light on time may be longer than preset time (normally about one hour), both light on at same time regarding dual light mode. This condition normally is when night light on time setting is too long, light on time at night is the same as second time light on time in the morning, actual light on time is equal to configured night light on time coincidence with dawn second time light on time, it is not a failure.
8. Street light mode light on in daylight:

   Light on in daylight, automatically off after a short time, normally happens when first time install or solar panel cables have poor contact, disconnect a cable between batteries and controller and reconnect to reset CPU. Or, take no action till next day it shall be self recovered. Regarding light on in daylight for long time and can not recover from above methods, the controller may be damaged and needs to be replaced.
9. Protection point and recovering point parameter is very different from specification:

   Regarding controllers top cover have been opened, its protection point and

recovering point parameter is very different from specification. Please check and ensure recovery button, "", is not pressed by cover, if so, put back cover making sure the button is not pressed.

10. Controller have load output but light is not on:

Controller have load output when not connecting light, but protected when connecting lights: check light connection polarity (including light inner connection). To recover disconnect and reconnect a cable on battery.

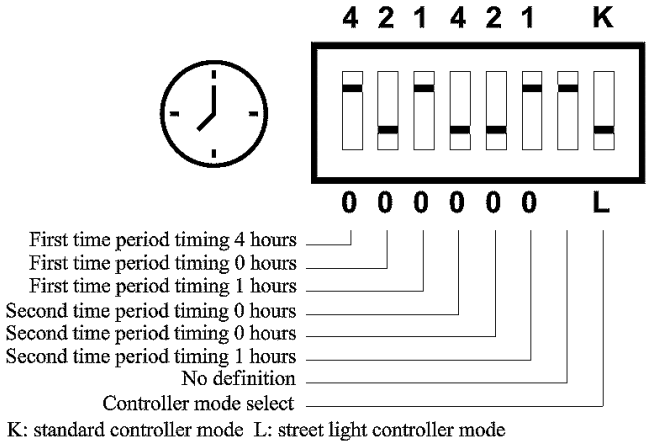
NOTE: if failure discovered, please check DIP switch. If failure remains, please contact manufacturer.

● Buttons and Indicators

Symbol	Definition	Light	Flash	Off
	Recovery button	1. After battery low voltage protection, battery voltage does not reach over-discharge recovery point, but already higher than lower limit, press this button to cancel second route low voltage protection state. 2. When slight overload happens, press this button to cancel overload lockdown.		
1	First route overload indicate	First route serious overload, protected	First route slight overload, load still attached	First route current comply with rate value
2	Second route overload indicate	Second route serious overload, protected	second route slight overload, load still attached	Second route current comply with rate value
	Low voltage indicate	Battery over-discharge, low voltage protection	——	Battery voltage normal
	Working indicate Solar charging indicate	Controller working	Solar charging	——
	Dump indicate	——	Battery full Start dumping	Not dumping
	Wind charging indicate	Wind motor charging voltage is higher than battery voltage, charging battery		Not charging

● DIP switch settings

- ✧ Each time period is the sum of 3 digit switch time settings.
- ✧ Single light mode (only second route), light on time is the sum of two time settings.
- ✧ Second route light has 14 hours time at maximum, first route light has 7 hours time at maximum.
- ✧ Time setting starts counting from dark.
- ✧ 6 digits at front set to “0” is manufacture debug mode. Therefore do not set the 6 digits to “0”.
- ✧ When standard controller mode, timer is not necessary, but leave at least one digit from front 6 digits not on “0”.



Street light mode: The first light on 5h（the first time period），the second light on 6h（the first time period + the second time period）。

NOTE: single output controller only second route has output, please ensure connecting to the second route.

Specification

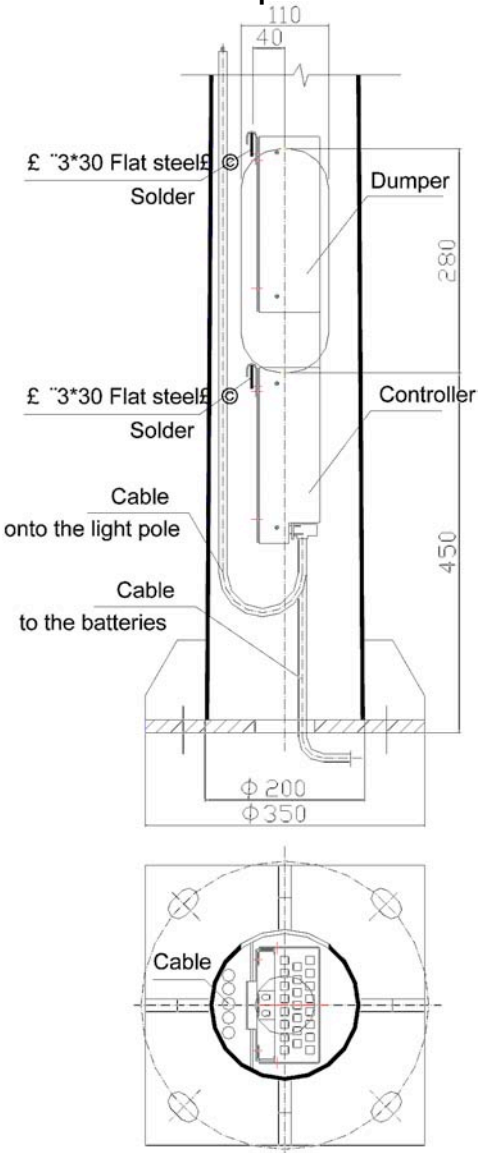
Name	Wind-solar controller	Wind-solar street light controller
Working mode	Standard controller（K）	Street light controller（L）
Applicable batteries	**Valve Regulated Lead-Acid Battery**	
Controller working mode	PWM	
Applicable wind motor power	400W (12m/S),600W(12m/S)	
System voltage	12V/24V	
Applicable solar panel current	10A	
Over charge protection voltage	14.1-14.5V/28.2-29.0V	
Over discharge protection voltage (lower limit)	Single load (second route) lower limit: 10.8±0.3V/21.6±0.6V Dual load: First route lower limit: 11.3±0.3V /22.6±0.6V Second route lower limit: 10.8±0.3V/21.6±0.6V	10.8±0.3V /21.6±0.6 V
Over discharge recover voltage	13.2-13.5V/26.4-27V	
DC load routes	Single/dual optional (confirm when order)	
Each route load maximum current	10A	
Empty load consumption	≤1%	
Charging loop voltage drop	≤5%	
Temperature compensation	Optional feature -5 mv/ºC (single) (confirm when	
Installation structure	Wall hanging Al case, inside light pole	
Size	Maximum size: W180, H220, D80 Installation parameters: see later figures	
Working environment	-30□- +50□	
weight	Controller: 2Kg	Dumper: 1.6Kg

NOTE: 1. Must use dumper from the same package as controller!

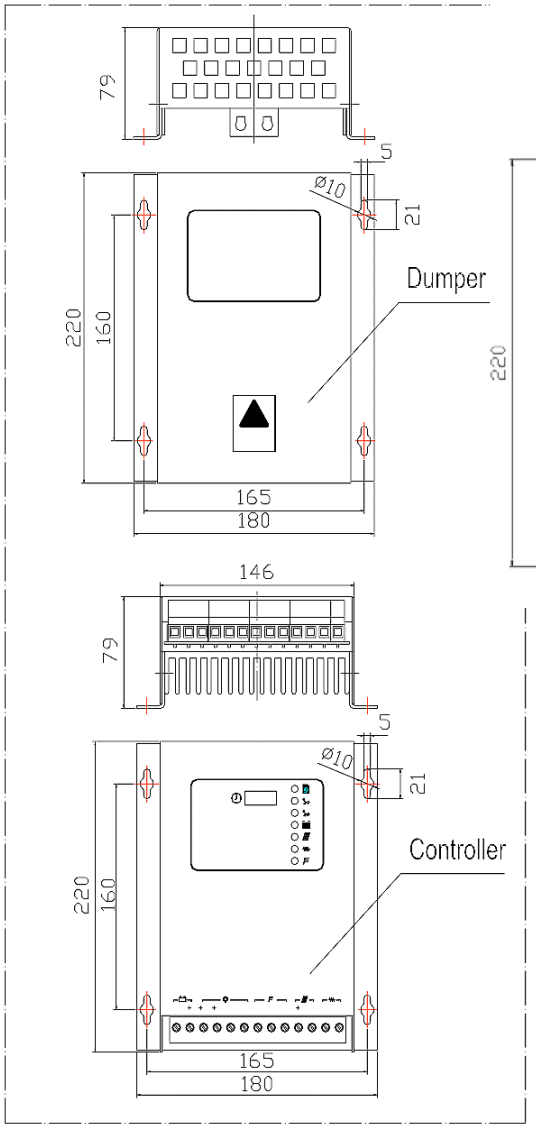
2. When ordering, provide wind motor rate power and other its characteristic information.

3. Confirm installation bracket direction when ordering.

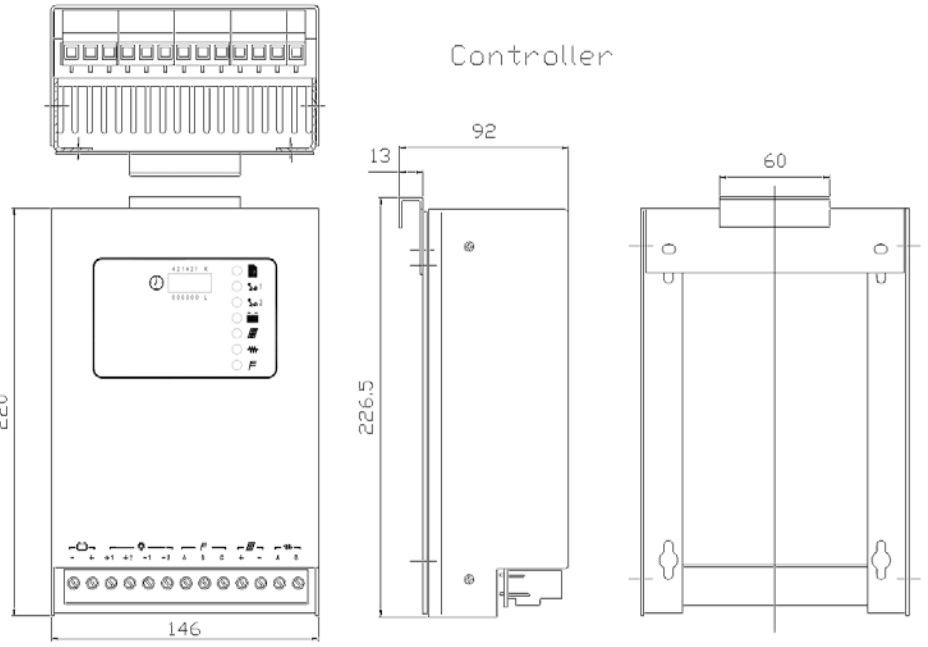
- **Installation parameters reference**



Installation inside a light pole（reference）



Wall hanging installation and parameters



Parameters for installation inside a light pole

在路灯杆内的安装尺寸