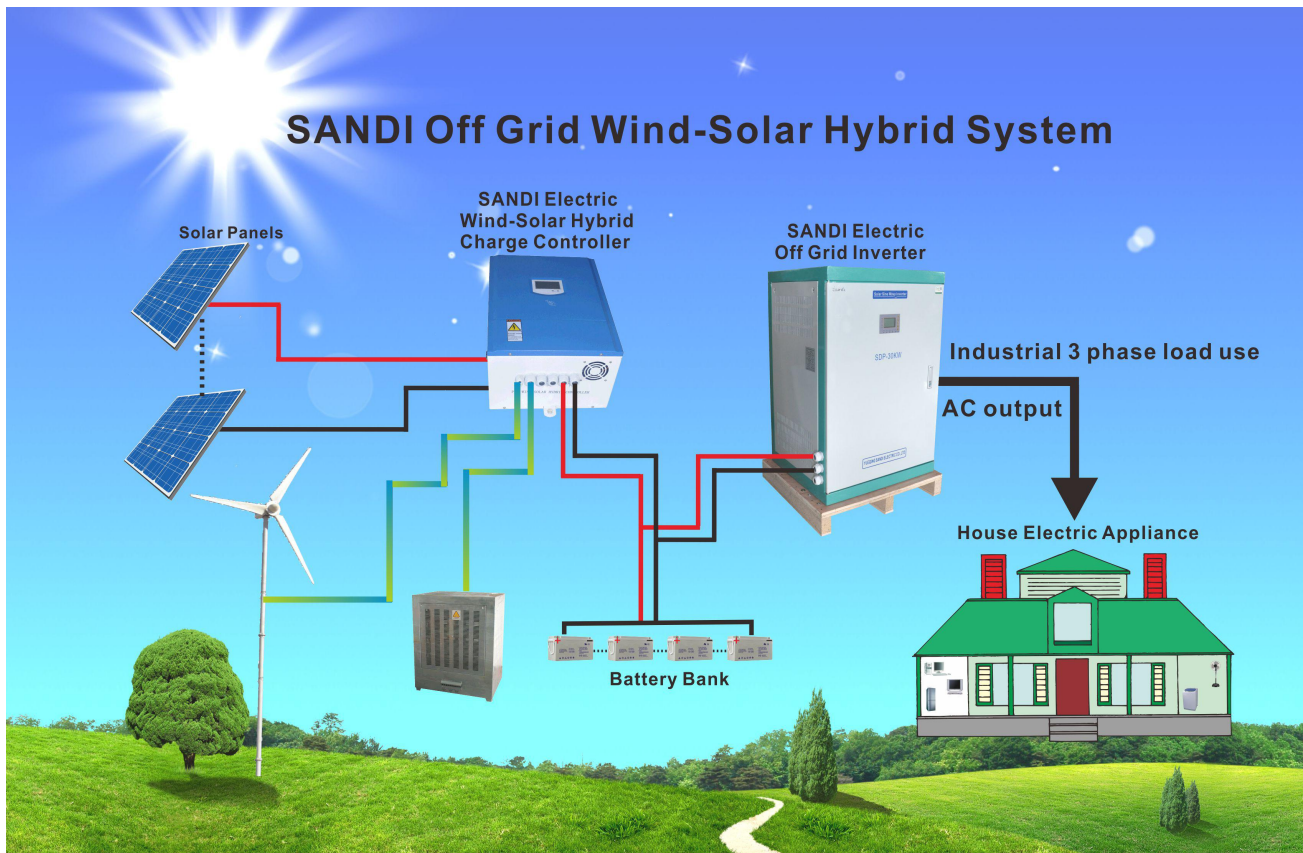


## Off-Grid Wind Solar Hybrid Controller



### Product Characteristics

- ◆ The big screen LCD display. Clearly present the working status of the wind turbine, solar panel, battery and controller. (Wind turbine voltage, current, power display ;solar voltage, current, power display, battery charging current, voltage, charging power, power display.)
- ◆ Two sets of control systems: PWM constant voltage system and three-phase dump load system.
- ◆ PWM constant voltage control is 120% of the rated power of the wind turbine. In case exceeding of PWM's capacity, the three-phase dump load will automatically start immediately to ensure safe running of the overall wind turbine system.
- ◆ When the battery disconnect or damage, the three-phase dump load will start automatically to avoid the wind turbine idling and runaway accident.
- ◆ When the strong or super-strong wind conditions PWM control to ensure battery charged by the wind turbine with constant voltage and current.

- ◆ The protection function of battery: polarity reverse protection, disconnection and damage protection.
- ◆ Over-charging protection of the battery: When the battery is full (the battery voltage getting 125% of the rated voltage), the controller will carry out three-phase dump load automatically to stop charging the battery.
- ◆ Auto recharging of battery: When the battery voltage reduces to 108% of the rated voltage, it stops three-phase dump load to recharge battery automatically.
- ◆ For the different wind turbine type, the controller can be equipped with mechanical yawing, furred empennage, mechanical or hydraulic, pneumatic, electric magnetic and other brake functions.
- ◆ The inside of the controller is equipped with surge arrester. Contain the over voltage into the wind turbine under the bearable voltage of the equipment or system. On the other way, to conduct the strong lightening current into the earth directly to avoid any damage of equipment.
- ◆ The controller is equipped with manual three-phase dump load switch. To using this switch, the wind turbine will carry out three-phase dump load forcibly.
- ◆ Optional communication Mode: RS232、RS485、GPRS、USB、RJ45 ect, Can monitor multiple devices running.



Controller



Dump load

## Technical Parameters

### SWS-1.3KW Series

Type	1KW-12V	1KW-24Vdc	1KW-48Vdc
Wind turbine rated power	1KW	1KW	1KW
Wind turbine max. power	2KW	2KW	2KW
Solar panel power	300Wp	300Wp	300Wp
Battery	12Vdc	24Vdc	48Vdc
Function	Rectifier, charge, control		
Display mode	LCD		
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current		
PWM constant pressure voltage	>14Vdc	>29Vdc	>58Vdc
3-phase load voltage of the wind turbine	15±1Vdc	30±1Vdc	60±1Vdc
Recovery charging voltage of the wind turbine	13.5±1Vdc	27±1Vdc	54±1Vdc
Solar controller stop charging voltage	15±1Vdc	29±1Vdc	58±1Vdc
Solar restore charge voltage	<14Vdc	<29Vdc	<58Vdc
Low-voltage of the battery	10±1Vdc	20±1Vdc	40±1Vdc
Self-provided connecting wire of the battery	>16 mm <sup>2</sup>	>8mm <sup>2</sup>	>6mm <sup>2</sup>
PWM fuse	100A	63A	25A
Solar fuse	40A	16A	10A
Charging fuse	125A	63A	32A
Work environment temperature	-30-60°C		
Relative humidity	< 90% No condensation		
Noise (1m)	< 40dB		
Degree of protection	IP20 (Indoor)		
Cooling method	Forced air cooling		
*Communication interface (optional)	RS485/USB/GPRS/Ethernet		
*Temperature compensation (optional)	-4mv/°C/2V, -35°C~+80°C, Accuracy: ± 1°C		
Size of the controller (mm)	480*360*240	480*360*230	480*360*230
Weight of the controller	23 Kg	12Kg	11Kg
Size of the dump load (mm)	290*250*130	290*250*130	290*250*130
Weight of the dump load	4.5Kg	4.5 Kg	4.5 Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.

**SWS-2.6KW Series**

Type	2KW-24Vdc	2KW-48Vdc	2KW-96Vdc
Wind turbine rated power	2KW	2KW	2KW
Wind turbine max. power	4KW	4KW	4KW
Solar panel power	600Wp	600Wp	600Wp
Battery	24Vdc	48Vdc	96Vdc
Function	Rectifier, charge, control		
Display mode	LCD		
Display content	Wind turbine voltage, wind turbine current, Wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current		
PWM constant pressure voltage	>29Vdc	>58Vdc	>116Vdc
3-phase load voltage of the wind turbine	30±1Vdc	60±1Vdc	120±2Vdc
Recovery charging voltage of the wind turbine	27±1Vdc	54±1Vdc	108±2Vdc
Solar controller stop charging voltage	29±1Vdc	58±1Vdc	116±2Vdc
Solar restore charge voltage	<29Vdc	<58Vdc	<116Vdc
Low-voltage of the battery	20±1Vdc	40±1Vdc	80±2Vdc
Self-provided connecting wire of the battery	>20mm <sup>2</sup>	>10mm <sup>2</sup>	>24mm <sup>2</sup>
PWM fuse	100A	50A	20A
Solar fuse	40A	20A	10A
Charging fuse	125A	63A	32A
Work environment temperature	-30-60°C		
Relative humidity	< 90% No condensation		
Noise (1m)	< 40dB		
Degree of protection	IP20 (Indoor)		
Cooling method	Forced air cooling		
*Communication interface (optional)	RS485/USB/GPRS/Ethernet		
*Temperature compensation (optional)	-4mv/°C/2V, -35°C~+80°C, Accuracy: ± 1°C		
Size of the controller (mm)	480*360*240	480*360*130	480*360*130
Weight of the controller	23 Kg	16 Kg	16 Kg
Size of the dump load (mm)	395*300*125	395*300*125	395*300*125
Weight of the dump load	6.5 Kg	6.5 Kg	6.5Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.

**SWS-2.6KW Series**

Type	2KW-120Vdc	2KW-220Vdc
Wind turbine rated power	2KW	2KW
Wind turbine max. power	4KW	4KW
Solar panel power	600Wp	600Wp
Battery	120Vdc	220Vdc
Function	Rectifier, charge, control	
Display mode	LCD	
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current	
PWM constant pressure voltage	>145Vdc	>260Vdc
3-phase load voltage of the wind turbine	150±2Vdc	270±2Vdc
Recovery charging voltage of the wind turbine	138±2Vdc	245±2Vdc
Solar controller stop charging voltage	150±2Vdc	265±2Vdc
Solar restore charge voltage	<145Vdc	<260Vdc
Low-voltage of the battery	100±2Vdc	180±2Vdc
Self-provided connecting wire of the battery	>4mm <sup>2</sup>	>2.5mm <sup>2</sup>
PWM fuse	20A	10A
Solar fuse	10A	6A
Charging fuse	32A	16A
Work environment temperature	-30-60°C	
Relative humidity	< 90% No condensation	
Noise (1m)	< 40dB	
Degree of protection	IP20 (Indoor)	
Cooling method	Forced air cooling	
*Communication interface (optional)	RS485/USB/GPRS/Ethernet	
*Temperature compensation (optional)	-4mv/°C/2V, -35°C~+80°C, Accuracy: ± 1°C	
Size of the controller (mm)	480*360*130	480*360*240
Weight of the controller	16 Kg	23 Kg
Size of the dump load (mm)	395*300*130	395*300*130
Weight of the dump load	6 Kg	6 Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.

**SWS-3.6KW Series**

Type	SWS3KW-24Vdc	SWS3KW-48Vdc	SWS3KW-96Vdc
Wind turbine rated power	3KW	3KW	3KW
Wind turbine max. power	6KW	6KW	6KW
Solar panel power	900W	900W	900W
Battery	24Vdc	48Vdc	96Vdc
Function	Rectifier,charge, control		
Display mode	LCD		
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current		
PWM constant pressure voltage	>29Vdc	>58Vdc	>116Vdc
3-phase load voltage of the wind turbine	30±1Vdc	60±1Vdc	120±2Vdc
Recovery charging voltage of the wind turbine	27±1Vdc	54±1Vdc	108±2Vdc
Solar controller stop charging voltage	30±1Vdc	60±1Vdc	120±2Vdc
Solar restore charge voltage	<29Vdc	<58Vdc	<116Vdc
Low-voltage of the battery	20±1Vdc	40±1Vdc	80±2Vdc
Self-provided connecting wire of the battery	>30mm <sup>2</sup>	>12mm <sup>2</sup>	>6mm <sup>2</sup>
PWM fuse	125A	63A	25A
Solar fuse	40A	25A	16A
Charging fuse	160A	100A	50A
Work environment temperature	-30-60°C		
Relative humidity	<90% No condensation		
Noise (1m)	<40dB		
Degree of protection	IP20 (Indoor)		
Cooling method	Forced air cooling		
*Communication interface (optional)	RS485/USB/GPRS/Ethernet		
*Temperature compensation (optional)	-4mv/°C/2V,-35°C~+80°C, Accuracy: ±1°C		
Size of the controller (mm)	655*480*320	480*360*240	480*360*240
Weight of the controller	27Kg	23Kg	23Kg
Size of the dump load (mm)	410*370*130	410*370*130	410*370*130
Weight of the dump load	8Kg	8Kg	8Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.

**SWS-3.6KW Series**

Type	SWS3KW-120Vdc	SWS3KW-220Vdc
Wind turbine rated power	3KW	3KW
Wind turbine max. power	6KW	6KW
Solar panel power	900W	900W
Battery	120Vdc	220Vdc
Function	Rectifier, charge, control	
Display mode	LCD	
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current	
PWM constant pressure voltage	>145Vdc	>260Vdc
3-phase load voltage of the wind turbine	150±2Vdc	270±2Vdc
Recovery charging voltage of the wind turbine	138±2Vdc	245±2Vdc
Solar controller stop charging voltage	150±2Vdc	265±2Vdc
Solar restore charge voltage	<140Vdc	<250Vdc
Low-voltage of the battery	100±2Vdc	180±2Vdc
Self-provided connecting wire of the battery	>4mm <sup>2</sup>	>2.5mm <sup>2</sup>
PWM fuse	25A	10A
Solar fuse	10A	6A
Charging fuse	40A	20A
Work environment temperature	-30-60°C	
Relative humidity	<90% No condensation	
Noise (1m)	<40dB	
Degree of protection	IP20 (Indoor)	
Cooling method	Forced air cooling	
*Communication interface (optional)	RS485/USB/GPRS/Ethernet	
*Temperature compensation (optional)	-4mv/°C/2V, -35°C~+80°C, Accuracy: ±1°C	
Size of the controller (mm)	480*360*240	480*360*240
Weight of the controller	21Kg	21Kg
Size of the dump load (mm)	410*370*130	410*370*130
Weight of the dump load	8Kg	8Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.

**SWS-6.5KW Series**

Type	SWS6.5KW-48Vdc	SWS6.5KW-120Vdc	SWS6.5KW-240Vdc
Wind turbine rated power	5KW	5KW	5KW
Wind turbine max. power	10KW	10KW	10KW
Solar panel power	1.5KW	1.5KW	1.5KW
Battery	48Vdc	120Vdc	240Vdc
Function	Rectifier,charge, control		
Display mode	LCD		
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current		
PWM constant pressure voltage	>58Vdc	>145Vdc	>290Vdc
3-phase load voltage of the wind turbine	60±1Vdc	150±2Vdc	300±5Vdc
Wind turbine recovery charging voltage	54±1Vdc	135±2Vdc	280±5Vdc
Solar controller stop charging voltage	60±1Vdc	150±2Vdc	300±5Vdc
Solar restore charge voltage	<54Vdc	<145Vdc	<290Vdc
Low-voltage of the battery	40±1Vdc	100±2Vdc	200±5Vdc
Self-provided connecting wire of the battery	>20mm <sup>2</sup>	>10mm <sup>2</sup>	>6mm <sup>2</sup>
PWM fuse	125A	63A	40A
Solar fuse	32A	16A	10A
Charging fuse	160A	63A	32A
Work environment temperature	-30-60°C		
Relative humidity	<90% No condensation		
Noise (1m)	<40dB		
Degree of protection	IP20 (Indoor)		
Cooling method	Forced air cooling		
*Communication interface (optional)	RS485/USB/GPRS/Ethernet		
*Temperature compensation (optional)	-4mv/°C/2V,-35°C~+80°C, Accuracy:±1°C		
Size of the controller (mm)	560*400*245	480*360*240	480*360*240
Weight of the controller	26Kg	21Kg	21Kg
Size of the dump load (mm)	660*510*450	660*510*450	660*510*450
Weight of the dump load	31Kg	31Kg	31Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.



**SWS-13KW Series**

Type	13KW-120Vdc	13KW-220Vdc	13KW-240Vdc
Wind turbine rated power	10KW	10KW	10KW
Wind turbine max. power	20KW	20KW	20KW
Solar panel power	3KW	3KW	3KW
Battery	120Vdc	220V	240V
Function	Rectifier,charge, control		
Display mode	LCD		
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current		
PWM constant pressure voltage	>145Vdc	>260Vdc	>290Vdc
3-phase load voltage of the wind turbine	150±2Vdc	270±2Vdc	300±5Vdc
Recovery charging voltage of the wind turbine	135±2Vdc	245±2Vdc	280±5Vdc
Solar controller stop charging voltage	150±2Vdc	265±2Vdc	300±5Vdc
Solar restore charge voltage	135±2Vdc	<250Vdc	<290Vdc
Low-voltage of the battery	100±2Vdc	180±2Vdc	200±5Vdc
Self-provided connecting wire of the battery	>12mm <sup>2</sup>	>18mm <sup>2</sup>	>12mm <sup>2</sup>
PWM fuse	100A	63A	63A
Solar fuse	40A	25A	20A
Charging fuse	160A	100A	80A
Work environment temperature	-30-60°C		
Relative humidity	<90% No condensation		
Noise (1m)	<40dB		
Degree of protection	IP20 (Indoor)		
Cooling method	Forced air cooling		
*Communication interface (optional)	RS485/USB/GPRS/Ethernet		
*Temperature compensation (optional)	-4mv/°C/2V,-35°C~+80°C, Accuracy: ±1°C		
Size of the controller (mm)	560*400*245	560*400*245	560*400*245
Weight of the controller	26Kg	26Kg	26Kg
Size of the dump load (mm)	760*510*430	760*510*430	760*510*430
Weight of the dump load	34 Kg	34 Kg	34 Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.
3. Size of the controller by blue meaning wall hanging case.

**SWS-32KW-80KW Series**

Type	SWS26KW-420Vdc	SWS39KW-420Vdc	SWS65KW-420Vdc
Wind turbine rated power	20KW	30KW	50KW
Wind turbine max. power	40KW	50KW	80KW
Solar panel power	6KW	9KW	15KW
Battery	420Vdc	420Vdc	420Vdc
Function	Rectifier, charge, control		
Display mode	LCD		
Display content	Wind turbine voltage, wind turbine current, wind turbine power, solar panel voltage, solar panel current, solar panel power, battery voltage, charge current		
PWM constant pressure voltage	>507Vdc	>507Vdc	>507Vdc
3-phase load 1 voltage of the wind turbine	520±5Vdc	520±5Vdc	515±5Vdc
3-phase load 2 voltage of the wind turbine	525±5Vdc	525±5Vdc	520±5Vdc
3-phase load 3 voltage of the wind turbine	-----	-----	525±5Vdc
Recovery charging voltage of the wind turbine	475±5Vdc	475±5Vdc	475±5Vdc
Solar controller stop charging voltage	520±5Vdc	520±5Vdc	520±5Vdc
Solar restore charge voltage	<507Vdc	<507Vdc	<507Vdc
Low-voltage of the battery	350±5Vdc	350±5Vdc	350±5Vdc
Self-provided connecting wire of the 3-phase dump load	>6mm <sup>2</sup>	>10mm <sup>2</sup>	>16mm <sup>2</sup>
Self-provided connecting wire of the battery	>12mm <sup>2</sup>	>20mm <sup>2</sup>	>30mm <sup>2</sup>
PWM fuse	63A	80A	100A
Solar fuse	25A	32A	63A
Charging fuse	100A	125A	160A
Work environment temperature	-30-60°C		
Relative humidity	<90% No condensation		
Noise (1m)	<40dB		
Degree of protection	IP20 (Indoor)		
Cooling method	Forced air cooling		
*Communication interface (optional)	RS485/USB/GPRS/Ethernet		
*Temperature compensation (optional)	-4mv/°C/2V, -35°C~+80°C, Accuracy: ±1°C		
Size of the controller (mm)	500*500*900	500*500*900	690*590*1300
Weight of the controller	50 Kg	60 Kg	120Kg
Size of the dump load (mm)	690*450*1000	690*450*1000	690*450*1000
Weight of the dump load	77Kg	120 Kg	160 Kg

\*Above parameter only for reference

1. Could be custom made to user specifications.
2. Could have solar power control subject to user demand.