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# SOLAR PUMP CONTROLLER

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Products are continuously updated and parameters are just for reference.

www.saj-electric.com



Over **17** years  
Industry Experience



**254**  
Effective IP Rights



**80+**  
Worldwide Business Footprints



**6**  
Key Marketing Zones

Established in 2005, SAJ is a national high-tech enterprise focusing on motor drive and control technology, renewable energy conversion, transmission, and storage solutions. The company adheres to the concept of being technology-driven and service-leading, with the vision of becoming the world's leading provider of digital energy management services for green buildings.

The company provides professional distributed solar inverters, energy storage solar inverters, general-purpose VFD solutions, smart water pump inverters, solar water pump solutions, and smart control solutions, providing fully digital one-stop energy management solutions for residential, commercial, and industrial.

The company implements a localized service strategy, over the past 17 years, SAJ has accumulated strong technology and industry experience. SAJ's products are exported to more than 80 countries and regions, with international service outlets in Belgium, the Netherlands, Italy, Poland, Australia, India, Brazil, etc., Which helps global customers to use clean energy and reduce carbon emissions.



# LET THE "SUNSHINE" BE THE PORTER OF WATER

## Solar Pump Controller System Working Modes

### 1 PV INPUT MODE

Photovoltaic input refers to only photovoltaic dc source power supply.

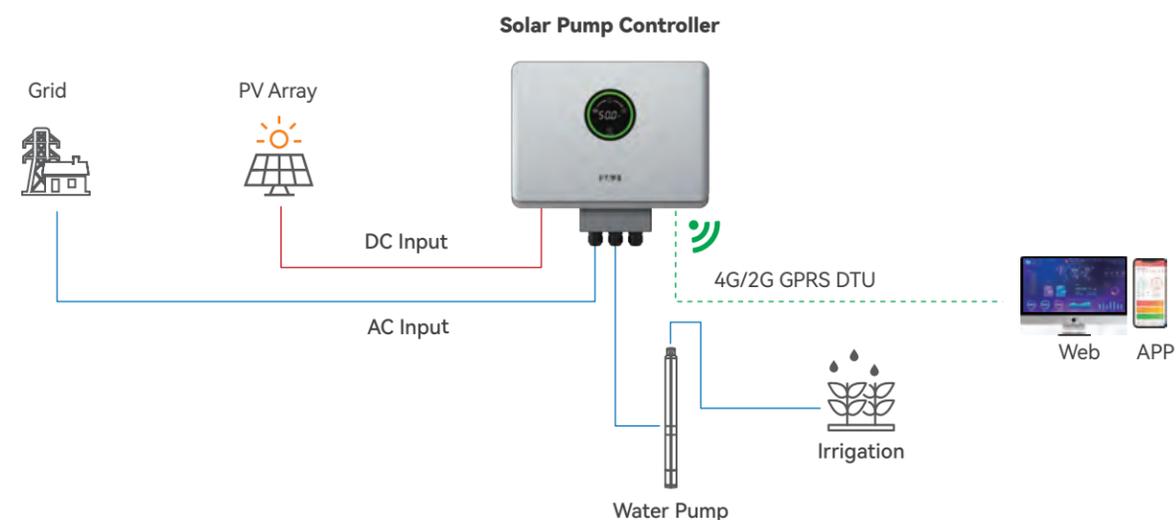
### 2 PV PRIORITY MODE

Which means that when ac and dc are connected at the same time, the pv will be used first, and the ac will be automatically connected when the pv power is insufficient.

### 3 POWER PRIORITY MODE

When ac and dc are connected at the same time, real-time power complementation ensures maximum power output.

THE SOLAR WATER PUMP CONTROLLER IS MAINLY USED IN SOLAR IRRIGATION AND SOLAR WATER CONSERVANCY PROJECTS. IT REALIZE THAT THE AC FROM THE GENERATOR OR THE GRID TO COMPENSATES THE SOLAR POWER,WHICH ALSO CALL HYBRID INPUT. AND NOT ONLY SOLVE THE PROBLEM OF WATER USE IN REMOTE AREAS, BUT ALSO HELP ACHIEVE THE GOAL OF CARBON NEUTRALIZATION AND CARBON PEAK.



# PDS51

## SOLAR PUMP CONTROLLER



PDS51-2S2R2-E | PDS51-4T2R2-E | PDS51-4T004-E  
 PDS51-4T5R5-E | PDS51-4T7R5-E | PDS51-4T011-E

 Floating display  
stylish appearance

 Intelligent hybrid  
compensation

 Support multiple-pump  
linked function

**SVC** Applicable to various  
types of motors

**IP65** Can be installed in both  
indoor & outdoor

**4G** Support 4G/2G  
remote monitoring

Model	PDS51-2S2R2-E	PDS51-4T2R2-E	PDS51-4T004-E	PDS51-4T5R5-E	PDS51-4T7R5-E	PDS51-4T011-E
<b>DC Input</b>						
Max. Input Voltage [V]	450					900
Start Voltage [V]	100					220
Min. Input Voltage [V]	70					200
MPPT Voltage Range [V]	200-400					400-750
Recommended Input Working Voltage [V]	330					560
Num. of DC Input [MC4 Connection]	1			2		
Booster Function	Standard			/		
<b>AC Input</b>						
Input Voltage [V]	1PH 150-230					3PH 280-480
Input Frequency [Hz]						50/60
<b>AC Output</b>						
Output Power [kW]	2.2	2.2	4	5.5	7.5	11
Rated Current [A]	9.6	5.1	9	13	17	25
Output Voltage [V]	3PH 0-220					3PH 0-380
Output Frequency [Hz]						0-50/60
<b>Control Performance</b>						
Control Mode						V/F, SVC
Supported Motor Type						Asynchronous and Synchronous
Overload Capability						150% of rated current:60 seconds; 180% of rated current:1 seconds
<b>Protection</b>						
Undervoltage Protection						Integrated
Overvoltage Protection						Integrated
Overload Protection						Integrated
Short-circuit Protection						Integrated
Overheat Protection						Integrated
Lack of Water Protection						Integrated
Surge Protection						Integrated
<b>General Data</b>						
Ingress Protection Degree						IP65
Cooling Mode						Natural Convection
External Interface						External LED Keypad
Communication Interface						4G/2G GPRS DTU
Ambient Operating Temperature						-20°C ~ 60°C (>45°C, rated power will be derated for 1% by every additional 1°C)
Operation Altitude						recommend <3000m (the rated power will be decreased for 1% by every additional 100m when the altitude is ≥ 2000m)
Dimension [H*W*D] [mm]	295*96*180.5			315*430*186		
Weight [kg]	9.1			12		
Standard Warranty [Month]						36
Certification Standards						CE

Notes: 1. Total power of PV arrays can be 1.2~1.6 times of power of water pump as per irradiation conditions in different countries and areas.  
 2. Inductor is suggested to be added to the solar pumping system if the distance between solar pump controller and water pump is over 50m.

# PDS33

## SOLAR PUMP CONTROLLER



PDS33-2S2R2 | PDS33-4T2R2 | PDS33-4T004  
 PDS33-4T5R5 | PDS33-4T7R5 | PDS33-4T011  
 PDS33-4T015 | PDS33-4T18R5

Up to 99.8% MPPT efficiency

AM PMSM single phase,  
Multi types of pumps

Automatic start and stop

Multi pump protection

Automatic hybrid compensation

Zero programming

Model	PDS33-2S2R2	PDS33-4T2R2	PDS33-4T004	PDS33-4T5R5	PDS33-4T7R5	PDS33-4T011	PDS33-4T015	PDS33-4T18R5	
<b>DC Input</b>									
Max. Input Voltage [V]	400							800	
Start Voltage [V]	180							350	
Min. Input Voltage [V]	150							220	
MPPT Voltage Range [V]	275~380							500~750	
Recommended Input Working Voltage [V]	330							560	
Recommended PV Array Power [kW]	2.7~3.5	2.7~3.5	4.8~6.4	6.6~8.8	9~12	13.2~17.6	18~24	22.2~29.6	
<b>AC Input</b>									
Input Voltage [V]	220 (±15%)							380(±15%)	
Input Frequency [Hz]							50/60		
<b>AC Output</b>									
Output Power [kW]	2.2	2.2	6	5.5	7.5	11	15	18.5	
Rated Current [A]	9.6	5.1	9	13	17	25	32	37	
Output Voltage [V]	3PH 0~220							3PH 0~380	
Output Frequency [Hz]							0~50/60		
<b>Control Performance</b>									
Control Mode							V/F, SVC		
Overload Capability							150% of rated current: 60 seconds; 180% of rated current: 1 seconds		
<b>Protection</b>									
Undervoltage Protection							Integrated		
Overvoltage Protection							Integrated		
Overload Protection							Integrated		
Short-circuit Protection							Integrated		
Overheat Protection							Integrated		
Lack of Water Protection							Integrated		
Surge Protection							Integrated		
<b>General Data</b>									
Ingress Protection Degree							IP20		
Cooling Mode							Air cooling		
Communication Interface							RS485 communication interface		
Ambient Operating Temperature							-20°C ~ 60°C (>45°C, rated power will be derated for 1% by every additional 1°C)		
Operation Altitude							Ecommend <3000m (the rated power will be decreased for 1% by every additional 100m when the altitude is ≥ 2000m)		
Physical Dimension [H*W*D] [mm]	187*88*138	207*100*147	247*130*167	360*182*197		385*219*197			
Weight [kg]	1.4	1.7	2.6	2.7	7.05	7.15	10.35		
Standard Warranty [Month]							18		
Certification Standards							CE		

Note: Total power of PV arrays can be 1.2~1.6 times of power of water pump as per irradiation conditions in different countries and areas.

# PDS33

## SOLAR PUMP CONTROLLER



PDS33-4T022 | PDS33-4T030 | PDS33-4037  
 PDS33-4T045 | PDS33-4T055 | PDS33-4T075  
 PDS33-4T093 | PDS33-4T110

 Up to 99.8% MPPT efficiency

 AM PMSM single phase,  
Multi types of pumps

 Automatic start and stop

 Multi pump protection

 Automatic hybrid compensation

 Zero programming

Model	PDS33-4T022	PDS33-4T030	PDS33-4T037	PDS33-4T045	PDS33-4T055	PDS33-4T075	PDS33-4T093	PDS33-4T110
<b>DC Input</b>								
Max. Input Voltage [V]	800							
Start Voltage [V]	350							
Min. Input Voltage [V]	220							
MPPT Voltage Range [V]	500~750							
Recommended Input Working Voltage [V]	560							
Recommended PV Array Power [kW]	26.4~35.2	36~48	44~59.2	54~72	66~88	90~120	112~149	132~176
<b>AC Input</b>								
Input Voltage [V]	380(±15%)							
Input Frequency [Hz]	50/60							
<b>AC Output</b>								
Output Power [kW]	22	30	37	45	55	75	93	110
Rated Current [A]	45	60	75	91	112	150	176	210
Output Voltage [V]	3PH 0-380							
Output Frequency [Hz]	0-50/60							
<b>Control Performance</b>								
Control Mode	V/F, SVC							
Overload Capability	150% of rated current: 60 seconds; 180% of rated current: 1 seconds							
<b>Protection</b>								
Undervoltage Protection	Integrated							
Overvoltage Protection	Integrated							
Overload Protection	Integrated							
Short-circuit Protection	Integrated							
Overheat Protection	Integrated							
Lack of Water Protection	Integrated							
Surge Protection	Integrated							
<b>General Data</b>								
Ingress Protection Degree	IP20							
Cooling Mode	Air cooling							
Communication Interface	RS485 communication interface							
Ambient Operating Temperature	-20°C ~ 60°C (>45°C, rated power will be derated for 1% by every additional 1°C)							
Operation Altitude	Ecommend <3000m (the rated power will be decreased for 1% by every additional 100m when the altitude is ≥ 2000m)							
Physical Dimension [H*W*D] [mm]	360*219*197	442*256*228	543*310*280	580*358*328				
Weight [kg]	10.45	13.5	13.8	22.3	22.7	38.93	39.45	40.07
Standard Warranty [Month]	18							
Certification Standards	CE							

Note: Inductor is suggested to be added to the solar pumping system if the distance between solar pump controller and water pump is over 50m.

# PDS33

## SOLAR PUMP CONTROLLER



PDS33-4T132 | PDS33-4T160  
PDS33-4T185 | PDS33-4T200

 Up to 99.8% MPPT efficiency

 AM PMSM single phase,  
Multi types of pumps

 Automatic start and stop

 Multi pump protection

 Automatic hybrid compensation

 Zero programming

Model	PDS33-4T132	PDS33-4T160	PDS33-4T185	PDS33-4T200
<b>DC Input</b>				
Max. Input Voltage [V]	800			
Start Voltage [V]	350			
Min. Input Voltage [V]	220			
MPPT Voltage Range [V]	500~750			
Recommended Input Working Voltage [V]	560			
Recommended PV Array Power [kW]	158~211	192~256	222~296	240~320
<b>AC Input</b>				
Input Voltage [V]	380(±15%)			
Input Frequency [Hz]	50/60			
<b>AC Output</b>				
Output Power [kW]	132	160	185	200
Rated Current [A]	253	304	340	377
Output Voltage [V]	3PH 0-380			
Output Frequency [Hz]	0-50/60			
<b>Control Performance</b>				
Control Mode	V/F, SVC			
Overload Capability	150% of rated current: 60 seconds; 180% of rated current: 1 seconds			
<b>Protection</b>				
Undervoltage Protection	Integrated			
Overvoltage Protection	Integrated			
Overload Protection	Integrated			
Short-circuit Protection	Integrated			
Overheat Protection	Integrated			
Lack of Water Protection	Integrated			
Surge Protection	Integrated			
<b>General Data</b>				
Ingress Protection Degree	IP20			
Cooling Mode	Air cooling			
Communication Interface	RS485 communication interface			
Ambient Operating Temperature	-20°C ~ 60°C (>45°C, rated power will be derated for 1% by every additional 1°C)			
Operation Altitude	Ecommend <3000m (the rated power will be decreased for 1% by every additional 100m when the altitude is ≥ 2000m)			
Physical Dimension [H*W*D] [mm]	1199*502*355			1570*600*408
Weight [kg]	87.68	88.42	88.9	179.8
Standard Warranty [Month]	18			
Certification Standards	CE			

Note: Inductor is suggested to be added to the solar pumping system if the distance between solar pump controller and water pump is over 50m.

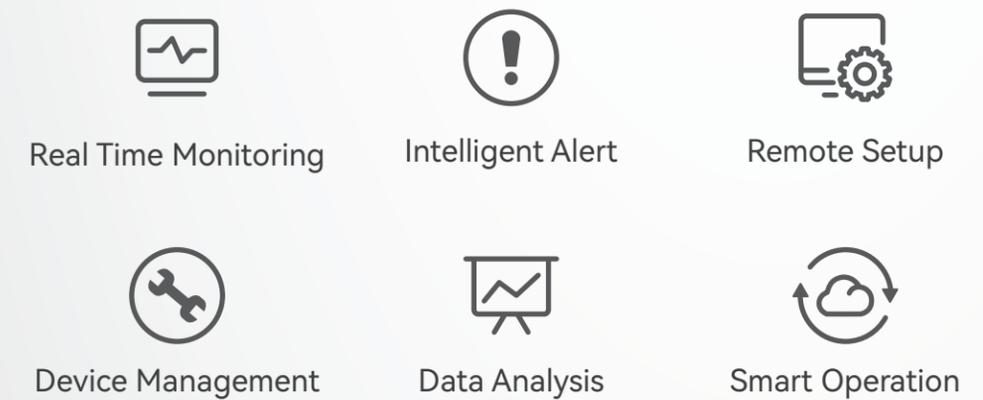
# DATA COLLECTOR



eSolar 4G | DTU-G100-4G

Model	eSolar 4G	DTU-G100-4G
<b>General Parameters</b>		
Connecting Inverters No. [Pcs]	1	1
Inverter Communication Port	USB	RS485
Communication	4G	4G
Operating Frequency	LTE-TDD, LTE-FDD	LTE-TDD, LTE-FDD
Data Collection Interval [min]	1~30 (Optional), 10 (Standard)	1~30 (Optional), 10 (Standard)
Firmware Update Method	Serial Port/ Remote	Serial Port/ Remote
Access Data Method	Integrated Webpage/ Remote Sever	Integrated Webpage/ Remote Sever
Display	LED	LED
<b>Electrical Parameters</b>		
Input Voltage	DC 5~7V (±5%)	DC 24V (±5%)
Static Consumption [W]	< 0.25	< 0.25
Max. Instant Consumption [W]	< 18	< 18
<b>Environment</b>		
Operating Temperature Range	-25°C~+75°C	-25°C~+60°C
Storage Temperature Range	-40°C~+90°C	-30°C~+70°C
Dimensions [H*W*D][mm]	125*53*31	84.4*36*65.5
Weight [g]	87	600
Ingress Protection	IP65	IP20
<b>Others</b>		
Mounting Method	Plug-in	Rail
Warranty [Year]	2	2

## eSolar Pump O&M Platform



# SOLAR PUMPING SOLUTION



**315kW** Controllers: 4\*PDS33-4T075 + 4\*PDS33-4T18R5  
Location: Sichuan Province, China



**246kW** Controllers: 2\*PDS33-4T075 + 2\*PDS33-4T015  
Location: Sichuan Province, China



**145kW** Controllers: 3\*PDS33-4T037 + 1\*PDS33-4T015  
Location: Sichuan Province, China



**143kW** Controllers: 3\*PDS33-4T030 + 1\*PDS33-4T015  
Location: Sichuan Province, China



**4.8kW** Controller: 1\*PDS51-4T2R2-E  
Location: Shanxi Province, China



**160kW** Controllers: 4\*PDS33-4T037  
Location: Sichuan Province, China



**98kW** Controllers: 2\*PDS33-4T037  
Location: Yunnan Province, China



**95kW** Controllers: 2\*PDS33-4T037  
Location: Sichuan Province, China



**18.9kW** Controllers: 3\*PDS51-4T004-E  
Location: Inner Mongolia, China

# GLOBAL STRUCTURE

**2** Manufacturing Bases

**80+**

Worldwide Business Footprints

**6** Key Marketing Zones

