

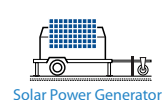
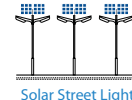
## Overview

The controller could charge battery and discharge automatically for off-grid photovoltaic (PV) systems. The charging process has been optimized for long battery life and improved system performance. The comprehensive self-diagnostics and extensive electronic protection can prevent damage against incorrect wiring or system faults.



## Features

- 32 bit MCU with high speed and high performance
- 12 bit A/D high-precision sampling to ensure accuracy
- Excellent EMC design
- Nominal system voltage automatic recognition or user-defined working voltage
- High efficient Series mode PWM charging, increase the battery lifetime and improve the solar system performance
- Use MOSFET as electronic switch, without any mechanical switch
- Wide feasibility and, recognize day or night automatically
- Graphical dot-matrix LCD and 4 buttons combinations as HMI (human-machine interface) for full menu and easy operation
- Humanized design of browser interface to facilitate the operations
- All of control parameters could be set and modified
- Several load control methods are supported to convenient for different demand
- Support 4 charging preprogram options: Sealed, Gel, Flooded and User-defined
- Adopt temperature compensation and update charging and discharging parameters automatically to improve the battery lifetime
- With the feature of input filter, the voltage spike could be restrained effectively
- Actual Power Display and record function make convenience to check the datum every day, every month and every year
- RS-485 ports via the open standard Modbus protocol are supported for long-distance communication and communication compatibility
- Standard RJ45 interface is used to connect to remote display unit (MT50) or PC software to monitor the actual data or modify parameters
- New SOC method could calculate the battery capacity accurately
- Electronic protection: Overheating, over discharging, overload, and short circuit
- Reverse protection: any combination of solar module and battery



## Technical specifications

Model	VS1024BN	VS2024BN	VS3024BN	VS4524BN	VS6024BN
<b>Electrical Parameters</b>					
Nominal System Voltage	12/24VDC Auto				
Maximum Battery Voltage	32V				
Maximum PV Voltage	48V				
Rated Charge Current	10A	20A	30A	45A	60A
Rated Discharge Current	10A	20A	30A	45A	60A
Charge Circuit Voltage Drop	≤0.69V				
Discharge Circuit Voltage Drop	≤0.17V				
Max. PV open circuit voltage	12V/24V 50V; 12/24/36/48V 96V				
Equalize Charging Voltage ※	Sealed: 14.6V, Flooded: 14.8V, User-defined: 9~17V				
Boost Charging Voltage ※	Gel: 14.2V, Sealed: 14.4V, Flooded: 14.6V, User-defined: 9~17V				
Float Charging Voltage ※	Gel /Sealed /Flooded: 13.8V, User-defined: 9~17V				
Low Voltage Reconnect Voltage ※	Gel /Sealed /Flooded: 12.6V, User-defined: 9~17V				
Low Voltage Disconnect Voltage ※	Gel /Sealed /Flooded: 11.1V, User-defined: 9~17V				
Self-consumption	≤15mA@12v; ≤13mA@24v				
Communication	RS485 / RJ45 interface				
Remote temperature sensor interface	2ERJ—3.81				
Ground	Negative to the ground				
<b>Environmental parameters</b>					
LCD temperature	-20℃~ +70℃				
Working temperature	-25℃~ +55℃				
Humidity range	≤95%(N.C.)				
Enclosure	IP30				
<b>Mechanical parameters</b>					
Terminal	4mm <sup>2</sup>	10mm <sup>2</sup>	16mm <sup>2</sup>	35mm <sup>2</sup>	35mm <sup>2</sup>
Net weight	0.3kg	0.4kg	0.7kg	0.8kg	1.3kg

Model	VS2048BN	VS3048BN	VS4548BN	VS6048BN
<b>Electrical Parameters</b>				
Nominal System Voltage	12/24/36/48VDC Auto			
Maximum Battery Voltage	64V			
Maximum PV Voltage	96V			
Rated Charge Current	20A	30A	45A	60A
Rated Discharge Current	20A	30A	45A	60A
Charge Circuit Voltage Drop	≤0.53V			
Discharge Circuit Voltage Drop	≤0.16V			
Max. PV open circuit voltage	12V/24V 50V; 12/24/36/48V 96V			
Equalize Charging Voltage ※	Sealed: 14.6V, Flooded: 14.8V, User-defined: 9~17V			
Boost Charging Voltage ※	Gel: 14.2V, Sealed: 14.4V, Flooded: 14.6V, User-defined: 9~17V			
Float Charging Voltage ※	Gel /Sealed /Flooded: 13.8V, User-defined: 9~17V			
Low Voltage Reconnect Voltage ※	Gel /Sealed /Flooded: 12.6V, User-defined: 9~17V			
Low Voltage Disconnect Voltage ※	Gel /Sealed /Flooded: 11.1V, User-defined: 9~17V			
Self-consumption	≤15mA@12v; ≤10mA@24v; ≤9mA@36v; ≤8mA@48v;			
Communication	RS485 / RJ45 interface			
Remote temperature sensor interface	2ERJ—3.81			
Ground	Negative to the ground			
<b>Environmental parameters</b>				
LCD temperature	-20°C~ +70°C			
Working temperature	-25°C~ +55°C			
Humidity range	≤95%(N.C.)			
Enclosure	IP30			
<b>Mechanical parameters</b>				
Terminal	16mm <sup>2</sup>	35mm <sup>2</sup>	35mm <sup>2</sup>	35mm <sup>2</sup>
Net weight	0.7kg	0.8kg	1.2kg	1.6kg

※ Above the parameters are in 12V system at 25°C, twice in 24Vsystem, triple in 36V system and quadruple in 48V system.