R series solar charger inverter 1000W to 6000W

User’s Manual

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Figures of unit:

Model: R series	***1000W/2000W/3000W/4000W/5000W6000W***	
Line mode specifications:		
Input voltage waveform	Sinusoidal (utility or generator)	
Nominal input voltage	230VAC	
Low line disconnect	184VAC±4%	154VAC±4%
Low line re-connect	194VAC±4%	164VAC±4%
High line disconnect	253VAC±4%	
High line re-connect	243VAC±4%	
Max AC input voltage	270Vrms	
Nominal input frequency	50Hz/60Hz (auto detection)	
Low line frequency re-connect	58±0.3Hz for 60Hz; 48±0.3Hz for 50Hz;	
Low line frequency disconnect	57±0.3Hz for 60Hz; 47±0.3Hz for 50Hz;	
High line frequency re-connect	64±0.3Hz for 60Hz; 54±0.3Hz for 50Hz;	
High line frequency disconnect	65±0.3Hz for 60Hz; 55±0.3Hz for 50Hz;	
Output voltage waveform	As same as input waveform	
Over-load protection (SMPS load)	Circuit breaker	
Output short circuit protection	Circuit breaker	
Efficiency (line mode)	>95%	
Transfer switch rating	30 amp or 40 amp	
Transfer time (AC to DC)	8ms (typical)	
Transfer time (DC to AC)	6ms (typical)	
Pass through without battery	Yes	
Max bypass overload current	35 amp or 45 amp: alarm	

Invert mode specifications:

Model: R series	***1000W/2000W/3000W/4000W/5000W/6000W***
Output voltage waveform	Sine wave
Rated output power (VA)	1000/2000/3000/4000/5000/6000
Rated output power (W)	1000/2000/3000/4000/5000/6000
Power factor	0~1.0
Nominal output voltage (V)	230VAC
Nominal output frequency (Hz)	50Hz ± 0.3Hz
Auto tracking main frequency (Hz)	Yes (following main first connection) 50Hz @48-54Hz 60Hz @58-64Hz
Output voltage regulation	±10% rms
Nominal efficiency	>80%
Over-load protection (SMPS load)	(110%<load<125%) ±10%: fault (shutdown output) after 15 minutes; (125%<load<150%) ±10%: fault (shutdown output) after 60s; Load>150% ±10%: fault (shutdown output) after 20s
Surge rating (10s)	3000/6000/9000/12000/15000/18000VA
Capable of starting electric motor	2HP
Output short circuit protection	Current limit (fault after 1s)
Bypass breaker size	40Amp
Nominal DC input voltage	12V/24V/48VDC
Min DC start voltage	10/20/40VDC
Low battery alarm	10.5V/21.0V42.0VDC ± 0.15VDCx1/2/4
Low DC input shut-down	10.0V/20.0V40.0VDC
High DC input alarm & fault	16.0V/32.0V/64.0VDC
High DC input recovery	15.5V/31.0V/62.0VDC ± 0.15VDCx1/2/4
Power saver	Load ≦25W (Enabled on “P/S auto” setting of remote control)

AC charge mode specifications:

Model: R series	***1000W/2000W/3000W/4000W/5000W/6000W***
Nominal input voltage	230VAC
Input voltage range	194/164~243VAC
Nominal output voltage	According to the battery type
Nominal charge current	35Amp (adjustable)
Charge current regulation	± 5ADC
Battery initial voltage	0 –15.7 VDC (can operate with 0V battery)
Charger short circuit protection	Circuit breaker
Breaker size	40A
Over charge protection	Bat. V ≥15V/30V/60VDC beeps 0.5s every 1s & fault after 60s

Solar charge controller specification：

The following lists the electrical specifications.

Table 1 Electrical specifications @ 25℃

Rated voltage	12V	24V	48V
Rated charge current	40A		
Rated output current	15A		
Self consumption	At idle < 10Ma		
Bulk charge	14.5V(default)	29.0V(default)	58.0V(default)
Floating charge①	13.5V(default)	27.0V(default)	54.0V(default)
Equalization charge①	14.0V(default)	28.0V(default)	56.0V(default)
Over charge disconnection	14.8V	29.6V	59.2V
Over charge recovery	13.6V	27.2V	54.4V
Over discharge disconnection①	10.8 V(default)	21.6V(default)	43.2V(default)
Over discharge reconnection	12.3V	24.6V	49.2V
Temperature compensation①	-13.2mV/℃	-26.4mV/℃	-52.8mV/℃
Ambient temperature	0-40℃(full load) 40－60℃(derating)		
Terminal size (fine/single wire)	#8AWG		

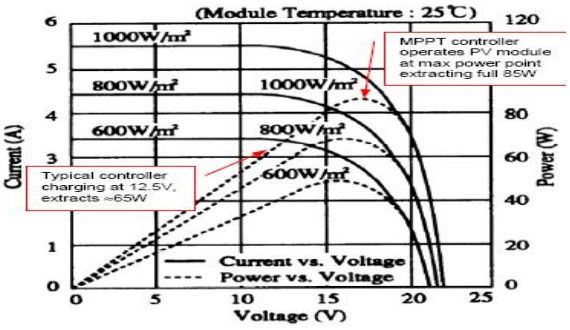
Note:

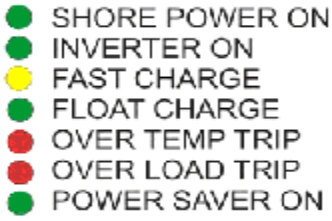
①The optional battery temperature sensor automatically adjusts the charging process of the controller according to the type of the battery is selected by user through battery type selector. With the battery temperature sensor installed, the controller will increase or decrease the battery charging voltage depending on the temperature of the battery to optimize the charge to the battery and maintain optional performance of the battery.

Maximum power point tracking (MPPT) function

Maximum power point tracking, frequently referred to as MPPT, is an electronic system that operates the photovoltaic (PV) modules in a manner that allows the modules to produce all the power they are capable of.

The PV-seeker charge controller is a microprocessor-based system designed to implement the MPPT. And it can increase charge current up to 30% or more compared to traditional charge controllers (see figure 1).



Indicator	
	
SHORE POWER ON	GREEN LED lighting on AC mode
INVERTER ON	GREEN LED lighting on inverter mode
FAST CHARGE	Yellow LED lighting on fast charging mode
FLOAT CHARGE	GREEN LED lighting on float charging mode
OVER TEMP TRIP	RED LED lighting on over temperature
OVER LOAD TRIP	RED LED lighting on over load
POWER SAVER ON	GREEN LED lighting on power saver mode (power saver load ≦25W)
Remark：Detail indicator setting refers Appendix 1.	

Remote control		
LED	Battery charger (shore power on)	GREEN LED lighting on battery charger mode
	Inverter (inverter power on)	GREEN LED lighting on inverter mode
	Alarm (check alarms on box)	RED LED lighting on alarm
Switch	Power saver auto	Power on with saver mode (power saver ≦25W)
	Unit off	Power totally off
	Power saver off	Power on without saver mode
Audible alarm		
Battery voltage low	Inverter green LED lighting, and the buzzer beep 0.5s every 5s.	
Battery voltage high	Inverter green LED lighting, and the buzzer beep 0.5s every 1s, and fault after 60s.	
Invert mode over-load	110%<load<125%, no audible alarm in 14 minutes, beeps 0.5s every 1s in 15th minute, and fault after 15 minutes. 125%<load<150%, beeps 0.5s every 1s, and fault after 60s. Load>150%, beeps 0.5s every 1s, and fault after 20s.	
Over temperature	Heat sink temp. ≥105℃, over temp red LED lighting, beeps 0.5s every 1s;	
Remark：Detail alarm setting refers Appendix 1.		
Protection		
Over temperature protection	Heat sink temp. ≥105℃, fault (shutdown output) after 30 seconds	
Back-feed protection	Yes	
Fault recovery	By restart the machine	
Fan operation		

Fan operation

Variable speed fan operation is required in invert and charge mode. This is to be implemented in such a way as to ensure high reliability and safe unit and component operating temperatures in an operating ambient temperature up to 50°C.

- Speed to be controlled in a smooth manner as a function of internal temperature and/or current.
- Fan should not start/stop suddenly.
- Fan should run at minimum speed needed to cool unit.
- Fan noise level target <60dB.

The fan logic as below:

Condition	Enter condition	Leave condition	Speed
Heat sink temperature	T ≤ 60℃	T > 65℃	OFF
	65℃≤ T<85 ℃	T ≤ 60℃ or T ≥ 85℃	50%
	T > 85℃	T ≤ 80℃	100%
Charge current	I ≤ 15%	I ≥ 20%	OFF
	20%< I ≤ 50% Max	I≤ 15%or I ≥ 50%Max	50%
	I > 50% Max	I ≤ 40%Max	100%
Load% (Invert mode)	Load < 30%	Load ≥ 30%	OFF
	30% ≤ Load < 50%	Load ≤ 20% or Load ≥ 50%	50%
	Load ≥ 50%	Load ≤ 40%	100%

General specifications	
Safety certification	CE(EN62040-1)
EMC classification	EN62040-2, C2
Operating temperature range	0°C to 40°C
Storage temperature	-15ºC ～ 60ºC
Operation humidity	5% to 95%
Audible noise	60dB max
Cooling	Forced air, variable speed fan
Size	1000/2000/3000 model: 442*218*179 mm3
	4000/5000/6000 model: 598*218*179 mm3

Appendix:

Indicator and Buzzer setting

Status	Item	Indicator on top cover							LED on remote control			Buzzer
		SHORE POWER ON	INVERTER ON	FAST CHARGE	FLOAT CHARGE	OVER TEMP TRIP	OVER LOAD TRIP	POWER SAVER ON	BATTERY CHARGER	INVERTER	Alarm	
Line mode	CC	√	×	√	×	×	×	×	√	×	×	×
	CV	√	×	√, blink	×	×	×	×	√	×	×	×
	Float	√	×	×	√	×	×	×	√	×	×	×
	Standby	√	×	×	×	×	×	×	×	×	×	×
Invert mode	Inverter on	×	√	×	×	×	×	×	×	√	×	×
	Power saver	×	×	×	×	×	×	√	×	×	×	×
Alarm mode	Battery low	×	√	×	×	×	×	×	×	√	√	Beep 0.5s every 5s
	Battery high	×	√	×	×	×	×	×	×	√	√	Beep 0.5s every 1s
	Overload on invert mode	×	√	×	×	×	√	×	×	√	√	Refer to “Audible alarm”
	Over temp on invert mode	×	√	×	×	√	×	×	×	√	√	Beep 0.5s every 1s
	Over temp on line mode	√	×	√	×	√	×	×	√	×	√	Beep 0.5s every 1s
	Over charge	√	×	√	×	×	×	×	√	×	√	Beep 0.5s every 1s
Fault mode	Fan lock	×	×	×	×	×	×	×	×	×	×	Beep continuous
	Battery high	×	√	×	×	×	×	×	×	√	×	Beep continuous
	Inverter mode overload	×	×	×	×	×	√	×	×	×	×	Beep continuous
	Over temp	×	×	×	×	√	×	×	×	×	×	Beep continuous
	Over charge	×	×	√	×	×	×	×	√	×	×	Beep continuous
	Back feed short	×	×	×	×	×	×	×	×	×	X	Beep continuous

Remark: √ shows the indicator on. × shows the indicator off. √, blink shows the indicator blinking about 0.5s on and 0.5s off.