



Technical Data: SNT15K101

- 15kW bidirectional Power Unit for EV Charging-Stations
- 304...456Vac III-phase Input Range
- Active Power Correction ≥ 0.99
- 200...500Vdc Output Voltage (adjustable)
- N+1 Redundancy, Current Sharing Function
- OVP (Over Voltage Protection)
- OCP (Over Current Protection)
- SCP (Short Circuit Protection)
- -40...+60°C Operation Temperature

With two types of operating mode:

It's charge mode when in forward direction operating, charging the battery pack or supplying DC Voltage for load via AC (grid power).

It's discharge mode when in reverse direction operating, converting and supplying the voltage of battery pack or DC Voltage source for grid power.



Main Specifications

AC-DC				
Input voltage range	Output voltage range	Input current	Output current	Max output power
304-456Vac	200-500Vdc	0-30A	0-30A	15KW
DC-AC				
Input voltage range	Output voltage range	Input current	Output current	Output power
200-500Vdc	304-456Vac	0-30A	0-30A	15KW



Environmental Conditions

No.	Item	Technical requirements	Unit	Remarks
1	Rated operating temperature	-40—+60	° C	50°C—60°C derating by 50% in linear way
2	Storage temperature	-40—+70	° C	
3	Relative humidity	Operating	%	40°C±2°C
		Storage		
4	Altitude	0—2000	m	
5	Cooling mode	Forced air cooling		With fan

Remark: During 50°C~60°C, module auto linear power derating.

Electrical Characteristics

1.AC-DC				
(1) Input characteristics				
number	item	Technical requirement	unit	remark
1.1.1	Rated input voltage	380	Vac	
	Input voltage range	304—456		
1.1.2	frequency	50/60	Hz	
1.1.3	frequency	45—65	Hz	
1.1.4	Power factor	≥0.99	—	Rated input and output
1.1.5	Max input current	30	A	
1.1.6	Input inrush current	Less than 150% of rated input current	—	
(2) Output characteristic				
1.2.1	Rated output voltage	500	Vdc	
1.2.2	Output voltage range	200—500	Vdc	Continually adjustable with controlling software
1.2.3	Output current range	0—30	A	
1.2.4	Max output power	15000	W	
1.2.5	Output ripple and noise	≤±1%Vo	Vp-p	Oscilloscope bandwidth 20MHz, probe paralleled with 10u+104 E-capacitor
1.2.6	overshoot	≤±5	%	



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1.2.7	Dynamic response	overshoot	$\Delta V: \leq \pm 5$	%	25%—50%—25% or 50%—75%—50% load change
		Recovering time	$\Delta t: \leq 100$	mS	
1.2.8	Combined regulation		$\leq \pm 1$	%	
1.2.9	Load regulation		$\leq \pm 1$	%	
(3) protections					
1.3.1	input under voltage protecting point		294—304	Vac	Auto recovering, tested with 5A load
1.3.2	Input under voltage recovering point		304—314	Vac	
1.3.3	Input over voltage protecting point		456—466	Vac	Auto recovering, tested with 5A load
1.3.4	Input over voltage recovering point		446—456	Vac	
1.3.5	Output undervoltage protection		190-200	Vdc	
1.3.6	Output overvoltage protection		505-515	Vdc	
1.3.7	Output over current protection		Yes, auto recoverable	—	
1.3.8	Short circuit protection		Endure long time short circuit, auto recoverable		
2. DC-AC					
(1) input characteristic					
number	item	Technical requirement	unit	remark	
2.1.1	Rated input voltage	500	Vdc		
	Input voltage range	200—500			
2.1.2	Max input current	30	A		
2.1.3	Max input power	15000	W		
(2) output characteristic					
2.2.1	Rated output voltage	380	Vac		
2.2.2	Output current range	0—30	A		
(4) protections					
2.3.1	Input under voltage protecting point	190-200	Vdc	After the recovering from the faulty, the module will come into stand by mode	
2.3.2	input over voltage protecting point	505-515	Vdc	After the recovering from the faulty, the module will come into stand by mode	
2.3.3	Output under vpltage protection	294—304	Vac	Auto recoverable	
2.3.4	output undervoltage recovering	304—314	Vac		



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2.3.5	Output overvoltage protection	456—466	Vac	Auto recoverable
2.3.6	Output overvoltage recovering	446—456	Vac	
3. other features				
number	item	Technical requirement	unit	remark
3.1	AC side current harmonic	≤3	%	Rated input, rated output
3.2	efficiency	≥93	%	Rated input, rated output
3.3	Soft start time	3-8	S	
3.4	Over temperature protection	>60	°C	Auto recoverable when temperature drop to 60°C or below

Other Requirement

No.	Item	Technical requirements	Remarks
1	Acoustics noise	≤65dB	A-weighted, test distance is 1 meter
2	Smell requirement	Can't generate peculiar smell and unhealthy smell	
3	Failure isolation	If the PSU fails, it can detach from the system safely.	
4	Environment protection requirement	Meet 2002/95/EC; No cadmium, hydrid and fluorid ; polymer materials should be specially labeled; can't send out organic compound; no asbestos; the package material should be recoverable.	



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Safety & EMC

No.	Item	Criteria	Remarks	
1	Dialectical strength	Input-output	3535Vdc/10mA/ 1min	
		Input-ground	3535Vdc/10mA/ 1min	
		Output-ground	3535Vdc/10mA/ 1min	
2	Isolation resistance	Input-output	≥10MΩ@1000Vdc	
		Input-ground	≥10MΩ@1000Vdc	
		Output-ground	≥10MΩ@1000Vdc	
3	Ground resistance	<0.1Ω	50A/4min	
4	Touch current (Input-ground)	≤3.5mA	502Vac/60Hz	
5	EMC	CE	CLASS A	
		RE	CLASS A	
		EFT	LEVEL 3 criteria B	IEC61000-4-4
		SURGE	LEVEL 4 criteria C differential mode ±2KV, common mode ±4KV.	IEC61000-4-5
		DIP	Drop to 70% UT, duration 10ms, at angle of 0°,45°,90°,135°,180°,225°,270°,315°, meeting class B. Drop to 40% UT, duration 100ms, at angle of 0°,45°,90°,135°,180°,225°,270°,315°, meeting class C. Drop to 0% UT, duration 5000ms, at angle of 0°,45°,90°,135°,180°,225°,270°,315°, meeting class C.	IEC61000-4-11
		ESD	For the frame which would be touched by human in the normal operation: contact discharge +/-6KV; air discharge +/-8KV standard B.	IEC61000-4-2
			For the frame which would be touched by human in the normal operation, contact discharge +/-8KV; air discharge +/-15KV standard R.	
		CS	LEVEL 3 criteria A	IEC61000-4-6
		RS	LEVEL 3 criteria A	IEC61000-4-3
		Voltage wave and flicker	Pst≤1.0 P1t≤0.65; dc≤3%; dmax≤4%; The time of d(t) ≥ 3% is no more than 200ms.	IEC61000-3-3
Harmonic current	CLASS A	IEC 61000-3-2 [6]		



Logical function and signal

No.	Item	Technical Requirements
1	Operation (green)	Charge mode, charge green light on when module in normal operation.
2	Operation (green)	Discharge mode, discharge green light on when module in normal operation.
3	Communication (yellow)	Yellow light flash when communication with upper computer.
4	Alarm (red)	The red light flashes when input over/under voltage, AC default phase, temperature derating, output short circuit and the power supply internal working is abnormal.
5	Fault (red)	Red light on for long time when output over current, output over voltage, over temperature protection, fan fault and power supply internal working is abnormal.

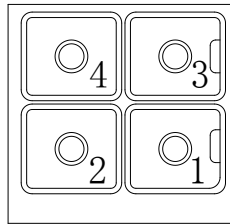
Mechanical Characteristics and Connector Definition

1. Dimensions (Unit:mm)

Length×Width×Height = (440.7) mm×(276)mm×(84)mm(Not including connector depth, max)

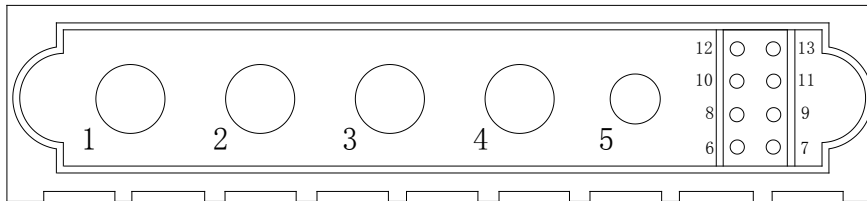


2. input connector pin definition (P/N: CZ36B-4T, manufacturer: Jonhon)



1	Input phase A
2	NC
3	Input phase B
4	Input phase C

3. output connector pin definition (P/N: CZ36E-13TA004, manufacturer: Jonhon)



1	OUT-
2	NC
3	OUT+
4	NC
5	CHGND
6	CANH_B
7	CANGND_B
8	NC
9	NC
10	NC
11	CANL
12	CANGND
13	CANH

Reliability

MTBF \geq 250Khour ; testing condition: 25°C, rated input and full load output



Quoted Standards

GB 3873-83 communication equipment general specification of product packaging
GB 4943.1-2011 information technology equipment safety
GB 191-2000 packaging storage and transportation icon logo
GB 7260-87 uninterrupted power supply equipment
GB/T 13722-92 Technical requirements and test methods for mobile communication power supply
GB/T 2423.1-2001 environmental testing for electric and electronic products - Part second: Test methods - Test A: low temperature
GB/T 2423.2-2001 environmental testing for electric and electronic products part second: test method test B: high temperature
GB/T 2423.3-1993 Ca: basic environmental testing procedures for electric and electronic products constant damp heat test method
GB/T 2423.5-1995 environmental testing for electric and electronic products - Part second: Test methods - Test Ea and guidance: shock
GB/T 2423.9-2001 electrical and electronic products environmental test second parts: test method test Cb: equipment constant damp heat
GB/T 2423.10-1995 environmental testing for electric and electronic products - Part second: Test methods - Test Fc and guidance: vibration (sinusoidal)
GB/T 2423.16-1999 environmental testing for electric and electronic products - Part second: Test methods - Test J and guidance: long
GB/T 2423.17-1993 Ka: basic environmental testing procedures for electric and electronic products salt spray test method
GB/T 2681-81 Conductor color in electrical equipment
GB/T 2829-2002 cycle count sampling procedures and tables (applied to the test of the stability of the process)
GB/T 2828.1-2003 count sampling inspection procedures first parts: according to the reception quality limit (AQL) of the sample by batch test sampling plan
GB/T 14508-93 grade road freight transport machinery and environmental conditions
YD/T 777-1999 Inverter for communication
YD/T 983-1998 Limits and measurement methods of electromagnetic compatibility for communication power supply equipment
YD/T 282-2000 General test method for reliability of communication equipment
IEC 62109-1:2010 Safety of power conversion equipment for photovoltaic power systems - Part 1: General requirements
IEC 62109-2:2011 Safety of power conversion equipment for photovoltaic power systems - Part second: Particular requirements for Inverters
IEC 62116-2011 Test method for grid connected photovoltaic inverter based on isolated island protection measures
AS4777.2-2002 Adopt inverter grid connected energy systems - Part second: requirements for Inverters