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BLUM Germany GmbH, Adolf Kolping Str. 32, 86381 Krumbach

Technical Data: SNT15k100

- 15kW Power Unit for EV Charging-Stations
- 323…437Vac III-phase Input Range
- Active Power Correction ≥0.99
- 200…750Vdc Output Voltage (adjustable)
- N+1 Redundancy, Current Sharing
- OVP (Over Voltage Protection)
- OCP (Over Current Protection)
- SCP (Short Circuit Protection)
- -40…+60°C Operation Temperature

Main Specifications

Rated power	Input voltage range	Output voltage range	Output current range	Ripple(p-p) （Rated Load, Width Limited 20MHz）
15KW	323~437Vac	200~750Vdc	0~25A	≤±0.5%Vo

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Electrical Characteristics

No.	Item		Technical Requirement	Unit	Remark
1. Input Characteristics					
1.1	Rated input voltage		380	Vac	
	AC Input voltage range		323~437Vac		
1.2	AC input grid frequency range		45—65	Hz	
1.3	AC input rated frequency		50/60	Hz	
1.4	PFC		≥0.99		Rated input, rated load
1.5	Max input current		＜30	A	
1.6	Inrush current		Not exceeding the Max. stable 150% of input peak current	-	
2. Output Characteristics					
2.1	Output voltage range adjustable		200—750	Vdc	Adjusted by the monitoring unit (testing condition: half load)
2.2	Rated output voltage		750	Vdc	Rated input
2.3	Output current range		0—25	A	
2.4	Efficiency		≥95	%	Rated input, half load output
2.5	Ripple and noise		≤±0.5%Vo	mVp-p	Width 20MHz. Parallel with 10u+104 Capacitor
2.6	Starting up output delay		3-18	S	Rated input voltage starting up till output voltage rise to setting point
2.7	Turn on/off overshoot amplitude		≤±5		
2.8	Dynamic response	Overshoot range	△V：≤±5	%	Load change at 25%—50%—25% or 50%—75%—50%, jumping rate is 0.1A/us; and the jumping period is 4ms;
		Recovery time	△t: ≤200	μS	
2.9	Combined regulation		≤±0.5	%	
2.10	Source effect		≤±0.1	%	
2.11	Load regulation		≤±0.5	%	

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2.12	Current sharing imbalance	≤±5	%	Rated AC input range , 50～100% load
2.13	Input current harmonic	≤5	%	Rated input, rated load
2.14	Temperature coefficient	≤±0.02	%/℃	
3. Protection Characteristics				
3.1	Input under voltage protection point	295-315	Vac	Can auto recovery, test with 5A load.
3.2	Input under voltage recovery point	305-320	Vac	
3.3	Input over voltage protection	450-465	Vac	Can auto recover, test with 5A load.
3.4	Input over voltage recovery point	440-455	Vac	
3.5	Input over current protection	—	—	Protected by system, The AC input L and N wire have fuse
3.6	Output over voltage protection point	Vout+50	Vdc	1. add the voltage within the range of output over voltage protection to the external module, then the module can operate normally
3.7	Output over current protection point	The over current protection is available, Can auto recover	—	
3.8	Short circuit protection	Withstand long time short circuit without damage and auto recover.		
3.9	Over temperature protection	＞60	℃	Auto-recoverable when temperature is less than 60℃

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Environmental Conditions

No.	Items		Technical Specifications	Unit	Remarks
1	Operating Temperature		-40 — +60	℃	+50~ +60℃ derating 20% in linearity.
2	Storage Temperature		-40 — +70	℃	
3	Relative Humidity	Operation	≤90	%	40℃±2℃
		Storage	≤95		
4	Altitude		≤4000	m	It should be derated used according to the rules of GB/T 3859.2 when it exceed 4000m.
5	Cooling		Forced cooling, Draw air from the front and exhausts heat from the behind and this module has temperature-sensing timing function.		
Remarks: when it's 50℃—60℃, the module power derating, the derating mode is module auto linear derating.					

Other Requirement

No.	Item	Requirement	Remark
1	Acoustics noise	≤55dB	A-weighted，test distance is 1 meter
2	Smell requirement	Can't generate peculiar smell and unhealthy smell	
3	Hot swap	The rectifier meet the hot swap requirement	
4	Failure isolation	The rectifier module can be separated from the system after it's failure.	
5	Environmental requirement	Meet 2002/95/EC	

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Safety & EMC

No.	Item		Criterions	Remark
1	Dialectical strength	Input-output	3535Vdc/10mA/ 1min	No flashover, no breakdown.
		Input-ground	3535Vac/10mA/ 1min	
		Output-ground	2121Vdc/10mA/ 1min	
2	Isolation resistance	Input-output	≥10MΩ@1000Vdc	Under normal air pressure，humidity 90%，
		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 B Input meet difference 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 shell which would be touched by human in the normal operation: contact discharge +/-6KV；air discharge+/-8KV standard B.	IEC61000-4-2
			For the shell which would be touched by human in the normal operation, contact discharge+/-8KV；air contact +/-15KV standard R.	
		CS	LEVEL 3 criteria A	IEC61000-4-6
		RS	LEVEL 3 criteria A	IEC61000-4-3
		Voltage fluctuation 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

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		Current harmonic	CLASS A	IEC 61000-3-2 [6]
6	Anti Lightning		The AC input terminal can endure surge current wave of 5kA、8/20μS , 5 times each for positive and negative， time cycle 1 minute.（refer to standard：YD 5098-2001）。The module must pass anti-lighting test in power on condition and power off condition.	

Performance criterion:

Criterion A:
Performance is normal when meet the technical requirements.

Criterion B（DIP test criterion）:
The performance that can recover automatically when function degrade or lost temporarily

Criterion B (other test criterion except DIP) :
The performance that can recover automatically when function degrade or lost temporarily. But in the test, the output voltage must be kept in normal range.

Criterion C：
Auto-recover for short time function interruption allowable, long time of function interruption and recovery by hand script unallowable.

Criterion R：
Any components damage except protection components unallowable, the testing pieces' performance can recover when replaces the damaged protection components.

Logical function and signal

No.	Item	Technique requirement
1	Input mode indication	Indication light on the front board(green)：The light is off when commercial electricity is unavailable (no AC input), output unavailable, otherwise the light is on.
2	Protection indication	Indication light of alarm(yellow)： Temperature alarm（environment temperature exceed 50℃ till over-temperature off）; Dormancy off (Only the protection indicator of the module is on when dormancy off, the module will not report alarm) remote turn off.
3	Rectifier failure indication	light on when there is unrecoverable failure occurs： the light is on when overvoltage output、no output、fan failure、over temperature protection，otherwise the light is off.
4	LED display	Switch on the front panel LED display output voltage; Switch closure LED display output current.

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Current sharing performance

The rectifiers in the system should be available in parallel operation, and can be load-sharing in proportion (when 50%-100% load rated output current), the degree of unbalance should be not more than ±5% of rated output current.

The system will still be in normal operation when the single rectifier module is failure. The abnormal rectifier module can be replaced when the system is under normal operation.

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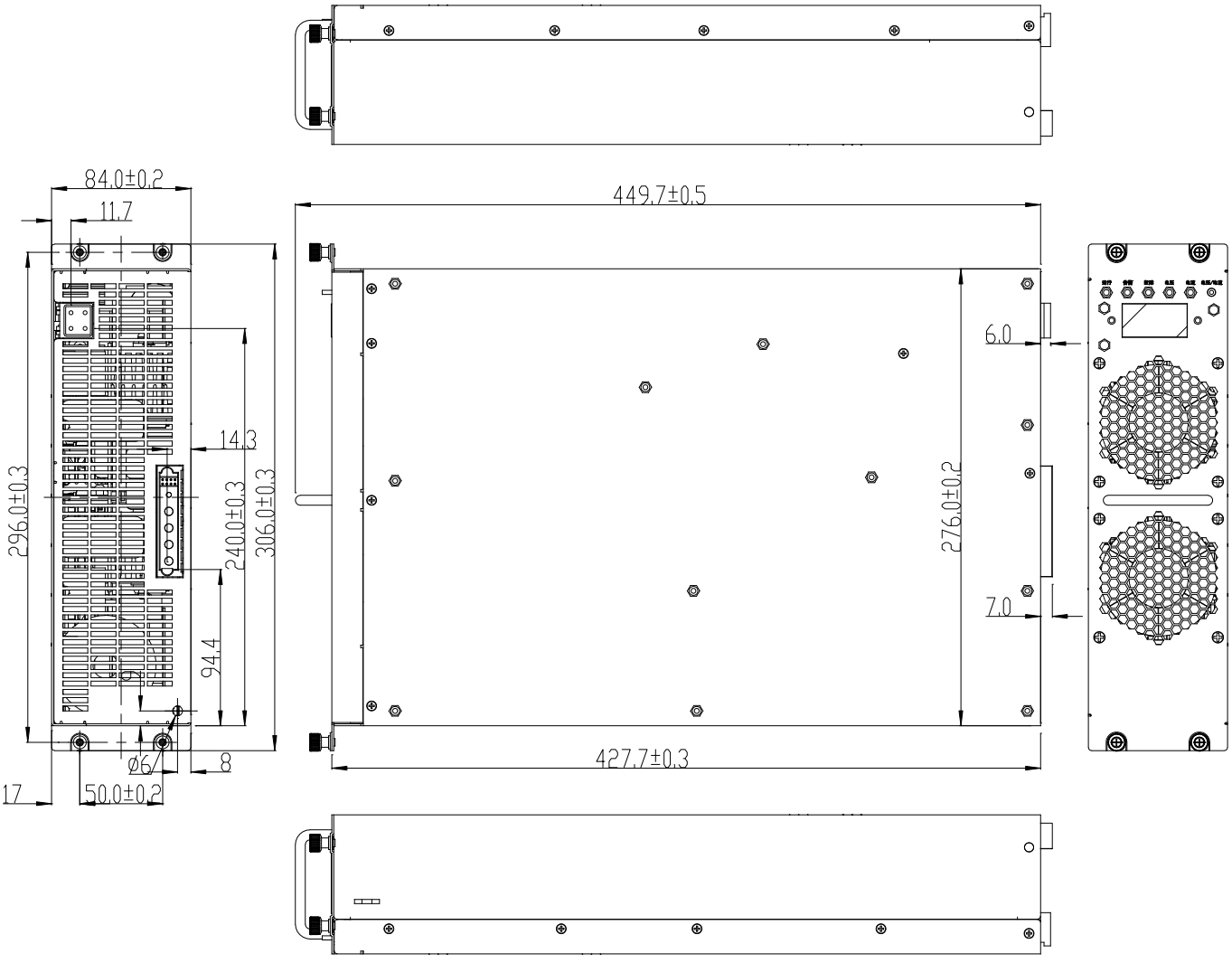
Mechanical Characteristics and Connector Definition

Outline dimension: LxWxH = 427.7±0.5mm × 276±0.5mm × 84±0.5mm (Not including connector depth ,max)



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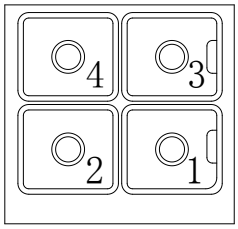
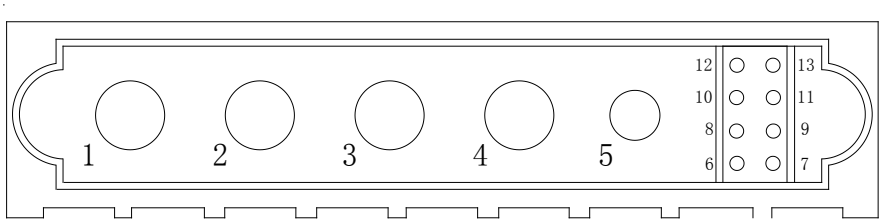
Input connector PIN definition



1	PSU AC input	Input phase A
2	PSU protected ground	CHGND
3	PSU AC input	Input phase B
4	PSU AC input	Input phase C

Output connector PIN definition



1	PSU output negative	OUT-
2	NC	
3	PSU output positive	OUT+
4	NC	
5	NC	
6	PSU address ground	AGND
7	PSU address wire 2	D2
8	NC	
9	PSU address wire 1	D1
10	NC	
11	PSU communication wire	CANL
12	PSU communication ground	CANGND
13	PSU communication wire	CANH

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Others

No.	Item	Criterions	Remark
1	Placement	Vertical	
2	Connection to ground	Through Mechanical case, front plane, consolidate screw and rack.	
4	Weight	About 11Kg	

Package, Transportation & Storage

Package

There are product name, model, logo of manufacturer, safety approval, manufacturing date on the package box, and manual of specifications and packing list in the package box as following:

Transportation

Suitable for transportation by truck, ship, and plane. The products should be shielded by tent from sunshine, and loaded and unloaded carefully.

Storage

Products should be stored in package box when it is not used. And warehouse temperature should be -40℃—85℃ with relative humidity 10％—90％. In the warehouse, there should not be harmful gas, inflammable, explosive products, corrosive chemical products, or strong mechanical vibration. Shock and strong magnetic field affection not allowed. The package box should at least 20cm height above the ground, and 50cm away from wall, thermal source or vent. Under this requirement, product has 2 years of storage period, and should be rechecked when over 2 years.

Remarks

Dangerous power output , keep safe space when in operation !

High Temperature Alarm Label

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Quoted Standards

GB/T 2423.1-2001 Environmental testing for electric and electronic products—Part 2：Test methods—Tests A：Cold
GB/T 2423.2-2001 Environmental testing for electric and electronic products—Part 2：Test methods—Tests B：Dry heat
GB/T 2423.3-1993 Basic environmental testing procedures for electric and electronic products Test Ca：Damp heat, steady state
GB/T 2423.4.1993 Basic environmental testing procedures for electric and electronic products Test Db：Damp heat, cyclic
GB/T 2423.5-1995 Environmental testing for electric and electronic products—Part 2：Test methods —Tests Ea and guidance：Shock
GB/T 2423.6-1995 Environmental testing for electric and electronic products—Part 2：Test methods —Tests Ea and guidance：Bump
GB/T 2423.8-1995 Environmental testing for electric and electronic products—Part 2：Test methods —Tests Ed and guidance：Free drop
GB/T 2423.10-1995 Environmental testing for electric and electronic products—Part 2：Test methods —Tests Fc and guidance：Vibration（Sinusoidal）
GB/T 2423.11-1997 Environmental testing for electric and electronic products—Part 2：Test methods —Tests Fd and guidance：Random vibration wide band—General requirements
GB/T 2423.22-2002 Environmental testing for electric and electronic products—Part 2：Test methods —Tests N：Change of temperature
GB/T 14508-93 Mechanical environmental conditions existing in the cargo transportation by classed highway
EN55022：1998 Information technology equipment—Radio disturbance characteristics—Limits and methods of measurement
EN55024：1998 Information technology equipment—Immunity characteristics—Limits and methods of measurement
CEI IEC 61000-4-2 2001 Electromagnetic compatibility—Testing and measurement techniques—Electrostatic discharge immunity test
CEI IEC 61000-4-3 2002 Electromagnetic compatibility—Testing and measurement techniques—Radiated, radio frequency, electromagnetic field immunity test
CEI IEC 61000-4-4 1998 Electromagnetic compatibility—Testing and measurement techniques—Electrical fast transient/burst immunity test
CEI IEC 61000-4-5 1999 Electromagnetic compatibility—Testing and measurement techniques—Surge immunity test
CEI IEC 61000-4-6 2001 Electromagnetic compatibility—Testing and measurement techniques—Immunity to conducted disturbances, induced by radio-frequency fields
CEI IEC 61000-4-8 1993 Electromagnetic compatibility—Testing and measurement techniques—Power frequency magnetic field immunity test
CEI IEC 61000-4-11 1994 Electromagnetic compatibility—Testing and measurement techniques—Voltage dips short interruptions and voltage variations immunity test
CEI IEC 61000-4-29 2000 Electromagnetic compatibility—Testing and measurement techniques—Voltage dips short interruptions and voltage variations on DC input port immunity test
IEC 61000-3-2 2001 Electromagnetic compatibility—Limits for harmonic current emissions （equipment input current≤16A per phase）
IEC 61000-3-3 1995 Electromagnetic compatibility—Limitation of voltage fluctuations and flicker in low voltage supply systems for equipment with rated current≤16A
GB4943-2001 Safety of information technology equipment
YD/T 282-2000 General reliability test methods for communication equipment
GB/T 13722-92 Performance requirements and testing methods for power supplies used in the mobile communication
YD/T 732-95 Methods of measurement for DC-DC converter used in communications
YD/T 731-2002 High Frequency Switch-mode Rectifier for Telecommunication