AC/DC 800WCRPS REDUNDANT POWER SUPPLY

LMS800-P12B-2H

MORNSUN®

RoHS

GB4943.1 EN 62368-1 Report BS EN 62368-1 Report

FEATURES

- Operating ambient temperature range: -5℃ to +50℃
- PMBus / I2C communication function
- Over-current / short-circuit /over-voltage protection, fan-fault protection
- ATX multiplexed output
- Safety according to UL/EN/IEC62368, GB4943
- It can be used with 800W modular power supply
- 5 years warranty

LMS800-P12B-2H is a CRPS frame power supply for the server. It supports AC & HVDC wide voltage range input, meets the requirements of module power supply 1+1 parallel, and supports module power hot swap. With PMBus / I2C communication function, it can support online monitoring of input / output voltage / current. The power supply is equipped with a fan for heat dissipation,with a suction heat dissipation mode,and the fan adopts an automatic speed regulation design.EMC and safety specifications meet the standards of UL/EN/IEC62368 and GB4943, it is widely applied in the server field.

Selection Guide*

Certification	Part No.*	Rated input voltage	Fan Operation Type	Output Power *(W)	Output*	Output current*(A)		Max. Capacitive Load(μF)
						Min.	Max.	
EN CCC	LMS800-P12B-2H	100-240VAC 240VDC	Forward airflow, from DC to AC	800	+12V	1	65	25000
					+5V	0.5	25	5000
					+3.3V	0.8	25	5000
					-12V	0	0.5	350
					+5VSB	0	3	350

Note:1.*This product is a redundant frame power supply, which can be combined with our 185mm CRPS server power supply to form a redundant power supply system (can be used with our LMS800-P12B). The physical picture is for reference only;
2.*The combined output power of +5V and +3.3V shall not exceed 200W, The continuous total max output power is 800W;
3.*The main output ports are include +12V,+5V, +3.3V and -12V.The Aux output port is +5VSB;
4.*Pin16 (green PS-ON signal) of the P1 terminal of the output cable is short-circuited GND, and the main channel can have output, otherwise there is no output.

Input Specifications

Item	Operating Conditions			Min.	Typ.	Max.	Unit
Input Voltage Range	AC input			90	115/230	264	VAC
	DC input			180	240	320	VDC
Frequency	AC input			47	50/60	63	Hz
Efficiency*	TA=25℃, 1+0	Vin: 230VAC/50Hz	20% load	87	--	--	%
			50% load	90	--	--	
			100% load	87	--	--	
Input Current	V_{in}=100Vac/60Hz P_{out}=800W			--	--	10	A
	V_{in}=200Vac/50Hz P_{out}=800W			--	--	5	
Inrush Current	V_{in}=264Vac/50Hz P_{out}=800W		Cold start	--	30	--	
Earth Leakage Current	Vin=264Vac fin=50Hz			--	--	3.5	mA
Power Factor*	Io=10% Load		230Vac/50Hz 1+0	0.92	--	--	--
	Io=20% Load			0.98	--	--	
	Io=50% Load			0.99	--	--	
	Io=100% Load			0.99	--	--	

Note:1.*The efficiency and power Factor are tested under 1+0 conditions, and the load needs to be configured according to the 80 PLUS spec.

Output Specifications

Steady State Output Voltage Range	Output	Output voltage（V）						
		Min.	Typ.	Max.	Tolerance			
	+12V	11.60	12.20	12.80	±5%			
	+5V	4.75	5.00	5.25	±5%			
	+3.3V	3.14	3.30	3.47	±5%			
	-12V	-10.08	-12.00	-13.20	±10%			
	+5VSB	4.75	5.00	5.25	±5%			
Dynamic	Output	Output voltage（V）			Base load	Step Load	A/us)	Cap(uF)
		Min.	Typ.	Max.				
	+12V	11.60	--	12.80	2A~40%	60% Load	0.5	2200
	+5V	4.75	--	5.25	3A~70%	30% Load	0.25	2200
	+3.3V	3.14	--	3.47	3A~70%	30% Load	0.25	2200
	-12V	-10.08	--	-13.20	0~0.25A	0.25A	0.25	100
	+5VSB	4.75	--	5.25	0~2A	1A	0.25	22
Ripple & Noise*	Output	Max.						
	+12V	120mV						
	+5V	60mV						
	+3.3V	50mV						
	-12V	120mV						
	+5VSB	50mV						
Output current	Output	Output current（A）						
		Min.	Typ.	Max.	Remark			
	+12V	1	--	65	1.+5V and +3.3V combined output power≦ 200W 2.Rated output power ≦ 800W			
	+5V	0.5	--	25				
	+3.3V	0.8	--	25				
	-12V	0	--	0.5				
	+5VSB	0	--	3				
Hold-up Time	Main outputs				≧12ms			

Note：1.*The "Tip and barrel method" is used for ripple and noise test, +3.3Vand+5Voutputs parallel 100uF electrolytic capacitor, coaxial cable in parallel with 10uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Server Power Test Specifications for specific information.

Protective Characteristics*

Over-voltage protection*	Output	Over Voltage Protection（V）			Remark
		Min.	Typ.	Max.	
	+12V	13.2	--	15	Main outputs will shut down and latch off, +5VSB output is normal
	+5V	5.74	--	7	
	+3.3V	3.76	--	4.7	
	-12V	-13.3	--	-16.5	
	+5VSB	5.74	--	7	All outputs will shut down, self-recovery
Over-current Protection*	Output	Over Current Protection（A）			Remark
		Min.	Typ.	Max.	
	+12V	67	--	75	The main outputs shut down and latch off after 20s, +5VSB output is normal
	+12V	75	--	95	Main outputs will shut down and latch off, +5VSB output is normal
	+5V	33	--	55	
	+3.3V	33	--	45	
	+5VSB	5.5	--	7.5	All outputs will shut down, self-recovery
Short-circuit	Output	Remark			

Protection*	+12V	Main outputs will shut down and latch off, +5VSB output is normal
	+5V	
	+3.3V	
	-12V	
	+5VSB	All outputs will shut down, self-recovery

Note:1.*1+1 parallel modules work normally, the output over power protection point is 920 to 1200W, and the main output is latch off;
2.*The OCP, OVP and SCP of +12V are determined by the OCP, OVP and SCP of the module power supply .For details, refer to the module power supply specification.

Buzzer Alarms*

Module power supply Status		Module LED Status*	Buzzer*
1+0 or 0+1	No AC power	OFF	/
	PSU standby state AC present / Only +5VSB on （PSON is high or floating）	Blink Green	/
	Power supply failure lead to main output off（PSON is low）	Amber or Blink Green	/
	Power output normal	Green	/
1+1	Dual modules parallel, one module power output normal, another failure (PSON is low) .	Failure module: Amber Normal module: Green	Alarm
	Dual modules parallel, Power supply failure lead to main output off (PSON is low) .	Amber or Blink Green	/
	Dual modules parallel, turn on AC power of only one module to work (PSON is low) (first power on).	Without AC power: Amber With AC power: Green	Alarm
	Both modules power output normal.	Green	/

Note: 1.*The LED Indicator refers to the module power indicator adapted by our company, for reference;
2.*It is normal for the buzzer to ring briefly when main power on or power off;
3.*When the buzzer alarms, you can press the RESET switch to eliminate the alarm sound.

Data Online Reading and Monitoring*

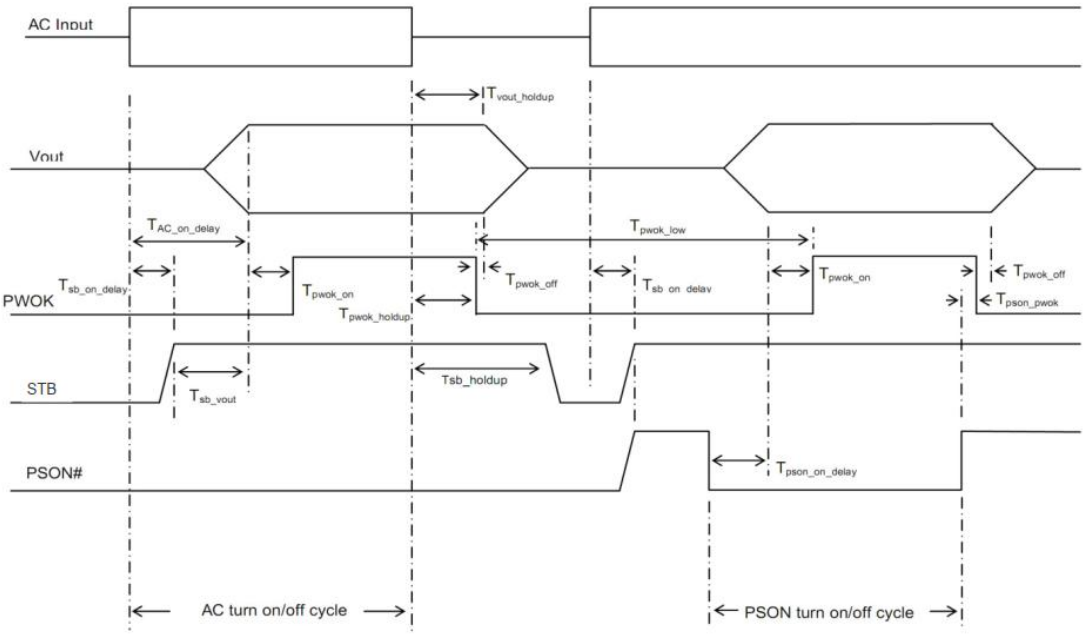
Output loading*	Main Output Accuracy Range		
	＜10%	10%-30%	30%-100%
Output Voltage*	±5%	±3%	±3%
Output Current*	NA	±10%	±5%

Note: 1.*The +12V accuracy is the accuracy of the module power supply +12V output. For details, see the module power supply specification;
2.*-12V output current accuracy is ±0.15A @ >10% load;
3.*The 100% load is the maximum current of each output, such as the current accuracy of +5V is NA at ＜10% load (<2.5A), and ±10% at 10~30% load (2.5A~7.5A);
4.*Before address shift/After address shift : the upper module (near the nameplate) is 58H/B0h, the lower module is 59H/B2h, and the frame power supply is 60H/C0h.

Timing

Item	Description	Min.	Max.	Unit
Tvout_rise	Time for Main output (except -12V) to rise from 0 to within regulation limits	5	70	ms
T-12V_rise	Time for -12V to rise from 0 to within regulation limits	--	25	ms
T5VSB_rise	Time for +5VSB to rise from 0 to within regulation limits	--	25	ms
Tsb_on_delay	Time from AC power on to +5VSB being within regulation limits	--	1500	ms
T ac_on_delay	Time from AC power on to Main output being within regulation limits	--	2500	ms
Tvout_holdup	Time from AC power off to +12V output reaching at 10.8V	12	--	ms
Tpwok_holdup	Time from AC power off to PWOK signal decreasing	11	--	ms
Tpson_on_delay	Time from high to low of PSON# signal to Main output voltages being within regulation limits.	5	470	ms
T pson_pwok	Time from low to high of PSON# signal to PWOK signal becoming low-level	--	65	ms
Tpwok_on	Delay from output voltages within regulation limits to PWOK becoming high-level at turn on	100	500	ms
T pwok_off	Time from PWOK signal becoming low-level to +12V output dropping to 10.8V	1	--	ms
Tpwok_low	Time from PWOK signal becoming low-level to when the PWOK signal increases through the PSON switch or AC restart	100	--	ms
Tsb_vout	Time from +5VSB being in regulation to Main output being in regulation	50	2000	ms

Timing Diagram



General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Test	Input - ⏚	Electric strength test for 1min., leakage current <5mA		1500	--	--	VAC
	Input - Output*	Electric strength test for 1min., leakage current <10mA		3000	--	--	
Insulation Resistance	Input - ⏚	Ambient temperature: 25 ± 5℃ Relative humidity: < 95%RH, no condensation Test voltage: 500VDC		50	--	--	MΩ
	Input - Output						
Operating Temperature				-5	--	50	℃
Storage Temperature				-40	--	70	
Operating Humidity		Non-condensing		5	--	90	%RH
Storage Humidity				5	--	95	
Operating Altitude				--	--	5000	m
Storage Altitude				--	--	15200	
Hot swap		1, 0.5m/s≤speed≤1m/s, the backplane voltage cannot exceed the dynamic specification during hot-plug process. 2, Add dynamic cap load of at the output.	+12V	11.60	12.20	12.80	V
			+5V	4.75	5.00	5.25	
			+3.3V	3.14	3.30	3.47	
			-12V	-10.08	-12.00	-13.20	
			+5VSB	4.75	5.00	5.25	
Safety Standards				GB4943.1, safety approved & EN62368-1, BS EN62368-1(Report) Design refer to UL/EN/IEC62368-1			
MTBF		Rated input, 100% efficiency load @ 25℃ Evaluated by Telcordia SR-332		≧250,000 h			
Communication Method		PMBus / I2C					
Warranty		5 years					

Note: 1.*Input-Output isolation voltage refer to PCBA only.And all the output GND pins of the frame power supply are connected to the metal case,⏚.

Mechanical Specifications*

Case Material	Metal (SGCC)
Dimensions*	77.00mm x 225.00mm x 84.00mm (W x D x H)
Weight*	1065 (Typ.)
Cooling Method	Forced-air cooling

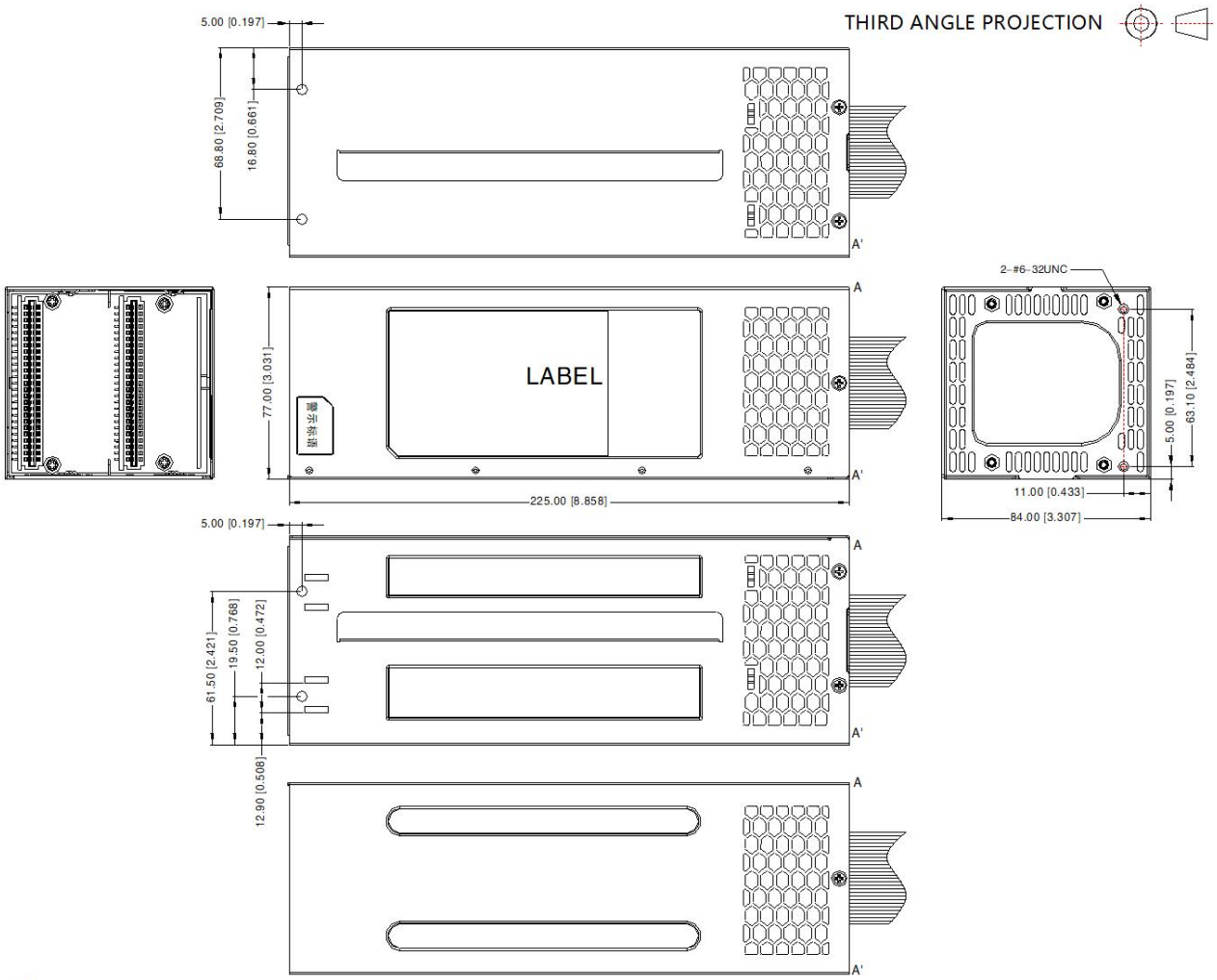
Note:1.*Product dimensions do not include out wires;
2.*Weight does not include module power supply;
3.*Tips:Module power supply built-in fan, not air.

Output Cable Definition

Cable Terminal	Pin No.	Wire Color	Definition	Cable Terminal	Pin No.	Wire Color	Definition
P1	1	Orange	+3.3V	P1	13a&13b	Orange	+3.3V
	2	Orange	+3.3V		14	Blue	-12V
	3a&3b	Black	GND		15	Black	GND
	4a&4b	Red	+5V		16	Green	PS-ON
	5	Black	GND		17	Black	GND
	6	Red	+5V		18	Black	GND
	7	Black	GND		19	Black	GND
	8	Gray	PG		20	--	--
	9	Purple	+5VSB		21	Red	+5V
	10a&10b	Yellow	+12V		22	Red	+5V
	11	Yellow	+12V		23	Red	+5V
	12	Orange	+3.3V		24	Black	GND
P2	1	Black	GND	P3	1	Black	GND
	2	Black	GND		2	Black	GND
	3	Black	GND		3	Black	GND
	4	Black	GND		4	Black	GND
	5	Yellow/Black	+12V		5	Yellow	+12V
	6	Yellow/Black	+12V		6	Yellow	+12V
	7	Yellow/Black	+12V		7	Yellow	+12V
	8	Yellow/Black	+12V		8	Yellow	+12V
P4~P9	1	Orange	+3.3V	--	--	--	--
	2	Black	GND	--	--	--	--
	3	Red	+5V	--	--	--	--
	4	Black	GND	--	--	--	--
	5	Yellow	+12V	--	--	--	--
P10~P15	1	Yellow	+12V	--	--	--	--
	2	Black	GND	--	--	--	--
	3	Black	GND	--	--	--	--
	4	Red	+5V	--	--	--	--
P16	1	Green/White	SCL	--	--	--	--
	2	Yellow/White	SDA	--	--	--	--
	3	Orange/White	Alert	--	--	--	--
	4	Black/White	GND	--	--	--	--
	5	--	--	--	--	--	--
P17	1	Black	GND	--	--	--	--
	2	Yellow	Reset	--	--	--	--

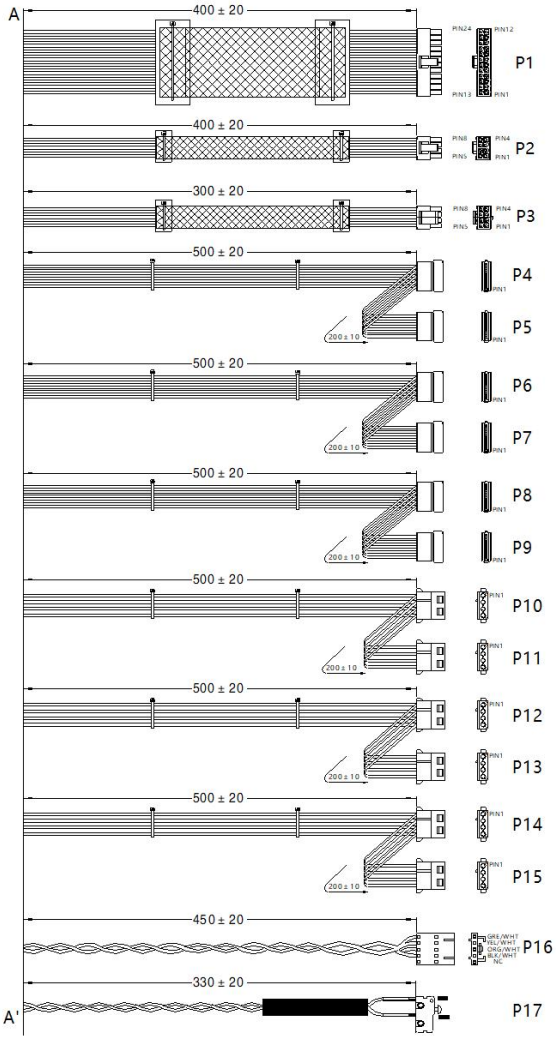
Note: The product is equipped with a built-in cooling fan, Keep the air intake clear of Debris, If the environment cannot meet this requirement, a fanless model is recommended.

Dimensions and Recommended Layout



Note:
Unit: mm[inch]
General tolerances: ± 0.50[± 0.02]

Output Cable



Output cable:

CON	PIN	WIRE COLOR	OUT PUT	WIRE SPECIFICATION	Housing/Terminal
P1	1	ORANGE	+3.3V	UL 1007 18AWG 80°C 300V	Housing: WST P24-I42002 Terminal: WST I42002PS-2 OR EQ
	2	ORANGE	+3.3V		
	3a	BLACK	GND		
	3b	BLACK	GND	UL 1007 22AWG 80°C 300V	
	4a	RED	+5V	UL 1007 18AWG 80°C 300V	
	4b	RED	+5V	UL 1007 22AWG 80°C 300V	
	5	BLACK	GND	UL 1007 18AWG 80°C 300V	
	6	RED	+5V		
	7	BLACK	GND		
	8	GRAY	PG	UL 1007 22AWG 80°C 300V	
	9	PURPLE	+5V SB	UL 1007 18AWG 80°C 300V	
	10a	YELLOW	+12V		
	10b	YELLOW	+12V	UL 1007 22AWG 80°C 300V	
	11	YELLOW	+12V	UL 1007 18AWG 80°C 300V	
	12	ORANGE	+3.3V		
	13a	ORANGE	+3.3V		
	13b	ORANGE	+3.3V	UL 1007 22AWG 80°C 300V	
	14	BLUE	-12V		
	15	BLACK	GND	UL 1007 18AWG 80°C 300V	
	16	GREEN	PS-ON	UL 1007 22AWG 80°C 300V	
	17	BLACK	GND	UL 1007 18AWG 80°C 300V	
	18	BLACK	GND		
	19	BLACK	GND		
	20				
	21	RED	+5V	UL 1007 18AWG 80°C 300V	
	22	RED	+5V		
	23	RED	+5V		
	24	BLACK	GND		
P2	1	BLACK	GND	UL 1007 18AWG 80°C 300V	Housing: WST P4-I42002 Terminal: WST I42002PS-2 OR EQ
	2	BLACK	GND		
	3	BLACK	GND		
	4	BLACK	GND		
	5	YEL/BLK	+12V		
	6	YEL/BLK	+12V		
	7	YEL/BLK	+12V		
	8	YEL/BLK	+12V		
P3	1	BLACK	GND	UL 1007 18AWG 80°C 300V	Housing: WST P4-I42002 K3,K4 Terminal: WST I42002PS-2 OR EQ
	2	BLACK	GND		
	3	BLACK	GND		
	4	BLACK	GND		
	5	YELLOW	+12V		
	6	YELLOW	+12V		
	7	YELLOW	+12V		
	8	YELLOW	+12V		
P4 | P9	1	ORANGE	+3.3V	UL 1007 18AWG 80°C 300V	Housing: WST P5-I12707 Terminal: WST I12707PS-2# WST I12707PS-2#(M) OR EQ
	2	BLACK	GND		
	3	RED	+5V		
	4	BLACK	GND		
	5	YELLOW	+12V		
P10 | P15	1	YELLOW	+12V	UL 1007 18AWG 80°C 300V	Housing: WST P4-A10202 Terminal: WST A10204PS-2 WST A10209PS-2 OR EQ
	2	BLACK	GND		
	3	BLACK	GND		
	4	RED	+5V		
P16	1	GRE/WHT	SCL	UL 1007 28AWG 80°C 300V	Housing: WST P5-AI25402 Terminal: WST I25402PS-2 OR EQ
	2	YEL/WHT	SDA		
	3	ORG/WHT	Alert		
	4	BLK/WHT	GND		
	5	NC	NC		
P17	1	BLACK	GND	UL 1007 26AWG 80°C 300V	Button: BD KW02 OR EQ
	2	YELLOW	RESET		

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220775;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity <75%RH with nominal input voltage and rated output load;
3. The room temperature derating of 1℃/300m is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
6. Products are related to laws and regulations: see "Features";
7. The out case needs to be connected to PE (⏚)of system when the terminal equipment in operating;
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
9. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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