Product Specifications

Product name: **AC-DC power supply**

Product No. : **PWR-480-AC**

Version : **V0.1**

Version	Date	Document update record:	Verified by
V0.0	9/5/2017	Basic function, no IIC function	Zang Hengyong
V0.1	6/25/2019	Complementary structure diagram	Zang Hengyong

Shanghai Baud Data Communication Co., LTD Shanghai Buad Data Communication Co,.Ltd	DESCRIPTION: (Specifications)
	Model No.: **PWR-480-AC**

DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
6/25/2019					0.1

Table of Contents

DESCRIPTION:
(Specifications)

Model No.:
PWR-480-AC

DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
6/25/2019					0.1

1. Electrical performance

1.1	1. Input Characteristics			
No.	Item	Technical requirements	Unit	Notes
1.1.1	Rated input voltage	220	Vac	
1.1.2	Range of the input voltage	90- 264	Vac	
1.1.3	AC input voltage frequency	47- 63	Hz	Typical value 50/60Hz
1.1.4	Enable impulse current	≤100	A	Vin=240Vac,cold start
1.1.5	Maximum input current	≤10	A	Vin= 90Vac
1.1.6	Efficiency	≥ 75%		Rated input, rated load
1.1.7	PF value	≥0.90		Rated input, rated load
1.1.8	input no-load consumption	≤20	W	Rated input, rated load

1.2	Output characteristics:				
No.	Item	Technical requirements		Unit	Notes
1.2.1	Output rated voltage	12(main power)	12 (standby)	Vdc	
1.2.2	Range of the input voltage	11.6- 12.7	11.6- 12.7	Vdc	
1.2.3	Input rated current	38	2	A	
1.2.4	Output minimum current	0	0	A	
1.2.5	Load regulation rate	± 5%			
1.2.6	Linear regulation rate	±1%			
1.2.7	Startup Transmission Latency Time	≤3		S	Rated input, rated load
1.2.8	Rise time	≤50		mS	Rated input, rated load
1.2.9	Output lasting time	≧10		mS	Rated input, rated load
1.2.10	Output ripple wave and noise	≤200		mVp-p	limited bandwidth 20MHz,the load end with 104 ceramic capacitor and 10μF Electrolytic Capacitor
1.2.11	Change of no-load voltage△V	≤0.1		V	
1.2.12	Machine Start-up/Shut-down Overshoot	± 10%			
1.2.13	Dynamic response: Overshoot amplitude	± 10%			30%—90%—30%load change, frequency≤1K
	Dynamic response: recovery time	△ t ≤ 200		3	

1.3	Protection characteristics					
No.	Item	Technical requirements			Unit	Notes
1.3.1	Output current-limit protection	Protection point	12VO	≤45	A	Hiccup restart-up mode. The power module automatically resumes to the normal after trouble-shooting.
			12VSB	≤3.5	A	
1.3.2	Output over-voltage protection	Protection point	≧14		V	Hiccup restart-up mode. The power module automatically resumes to the normal after trouble-shooting.
1.3.3	Over-temperature protection	Protection point	≧105		℃	fan blocking test, resumes to the normal after trouble-shooting.
1.3.4	Output Short Circuit Protection	Short circuit protection mode is hiccup restart-up mode. The power module automatically resumes to the normal after short circuit trouble-shooting.				

2.Insulation and Security Specifications

No.	Item		Standards (Test conditions)	Notes
2.1	Dielectric strength	input and output	2000Vac/10mA/1min	no flashover, no breakdown
		Input and Ground	2000Vac/10mA/1min	
		Output and Ground	500Vdc/5mA/1min	
2.2	Insulated resistance	input and output	≥50MΩ@500Vdc	typical value (constant temperature and constant humidity)
		Input and Ground	≥50MΩ@500Vdc	
		Output and Ground	≥50MΩ@500Vdc	
2.3	insulation resistance steady-state damp heat test	input and output	≥2MΩ@500Vdc	temperature:+40℃±2℃ humidity:93%±3%
		Input and Ground	≥2MΩ@500Vdc	
2.4	Safety certifications	The design conforms to the safety standards: EN60950andGB4943 .		

3. Electro Magnetic Compatibility(EMC)

No.	Item	Standards (Test conditions)
3.1	Conducted Emission(CE)	EN55022 CLASSA (power supply system indicator)
3.2	Radiated Emission(RE)	EN55022 CLASSA (power supply system indicator)
3.3	ESD (Electrostatic Discharge Immunity)	the chassis of the device, when hands can touch in normal operation:IEC61000-4-2; contact discharge±6KV; air discharge ±8KV evidence A; ±8KV evidence A;(power on when test)

		the chassis of the device, when hands can touch in normal operation:IEC61000-4-2;contact discharge±8KV；air discharge ±10KV evidence A;(power on when test)
		Signal interface inner conductor:IEC61000-4-2;contact discharge±2KV evidence B；(power on when test)
3.4	Conduction immunity	IEC61000-4-6 LEVEL3 evidence A(system)
3.5	Radiation immunity	IEC61000-4-3 LEVEL3 evidence A(system)
3.6	Electrical fast transient burst	IEC61000-4-4 LEVEL3 evidence A(system)
3.7	surge	IEC61000-4-5 LEVEL4 evidence A(system)(common mode) 4KV，difference mode 2KV）
3.8	DIP IEC61000-4-11	IEC61000-4-11 drops to 70%U，lasting time: 100ms,drops to 0%U，lasting time: 10ms,phase 0° ，45°,90°,135°,180°,225°,270°,315° all satisfy evidence A
3.9	Harmonic current	IEC61000-3-2（6） CLASSA

4.Applicable Environment

No.	Item	Technical Indexes	Unit	Notes
4.1	operating temperature	-10- +45	℃	Typical value 25℃
4.2	Storage temperature	-20- +70	℃	Typical value 25℃
4.3	operating humidity	20 ~90% (frostless)		
4.4	Storage humidity	10 ~95% (frostless)		
4.5	altitude	≤3000	M	normal work
4.6	heating method	air-cooling		

5. Environment Test and Reliability Requirements

No.	Item	Technical Indexes	Notes
5.1.1	work in the high-temperature	+45℃ 8hrs	Standard
5.1.2	work in the normal-temperature	+25℃ 8hrs	Standard
5.1.3	work in the low-temperature	-10℃ 8hrs	Standard
5.1.4	high-temperature storage	+70℃ 24hrs	Standard
5.1.5	low-temperature storage	-20℃ 24hrs	Standard
5.1.6	high-low temperature circular test		Standard

DESCRIPTION:
(Specifications)

Model No.:
PWR-480-AC

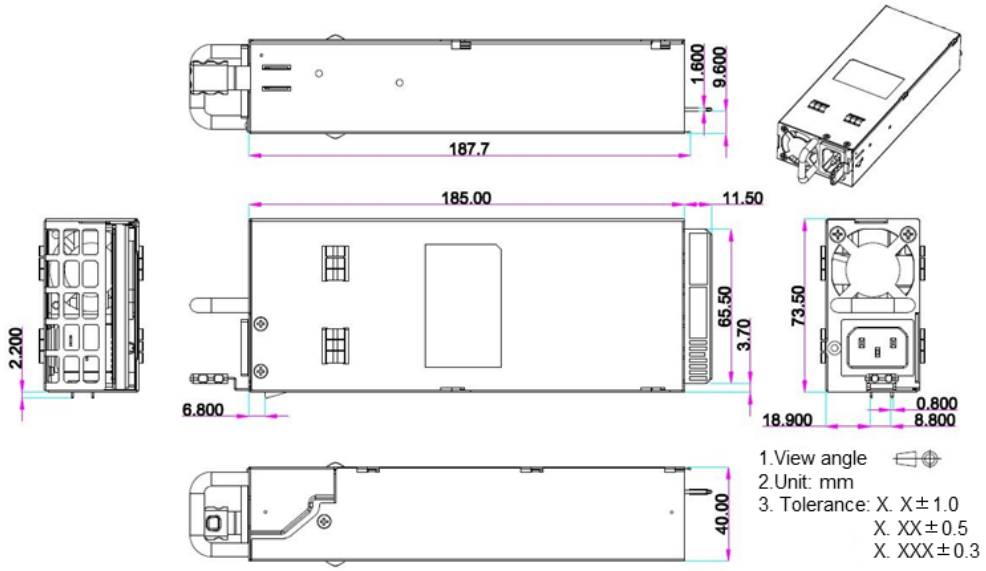
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
6/25/2019					0.1

5.1.7	MTBF	30000h	25℃, rated input, rated load
5.1.8	Vibration test	2-9HZ 7MM、9-200HZ 2g、200-500HZ 1.5g 5*10cir	Standard
5.1.9	impulse test	The test duration is 11ms,the peak acceleration is 300m/s2 20 times.	Standard

6. Mechanical Structure

No.	Item	Technical requirements	Unit	Notes
6.1	Dimensions(D×W×H)(mm)	185 * 75 * 40 ±0.5(L*W*H)	mm	(L*W*H)
6.2	installation Dimensions mm (W×D×H)	See Figure 1		
6.3	Definition of the output connector	See Figure 1		
6.4	fabrication processing	PCB and the insulating strip of the bottom shell pad		
6.5	Package	anti-static bubble big		

6.1 Dimensions mm (W×D×H)



7.Other requirements

No.	Item	Technical requirements	Unit	Notes

DESCRIPTION:
(Specifications)

Model No.:
PWR-480-AC

DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
6/25/2019					0.1

7.1	Acoustic noise	≤60	dB	keep away from 1 meter away
7.2	heating method	The module with fan in an ventilation way		It requires evaluation of system heat design.
7.3	Hot swap	supports hot swap, the output terminal should avoid“spark phenomenon”		
7.4	inefficiency isolation	Set isolation of the output power module, and the power module will not affect work of the power supply.		
7.5	average-flow capacity	Keep the output current of each power module (redundancy power supply) working in balance, avoiding the unreliabilty of the distribution of the power module.		

8.Attached Drawings and Tables

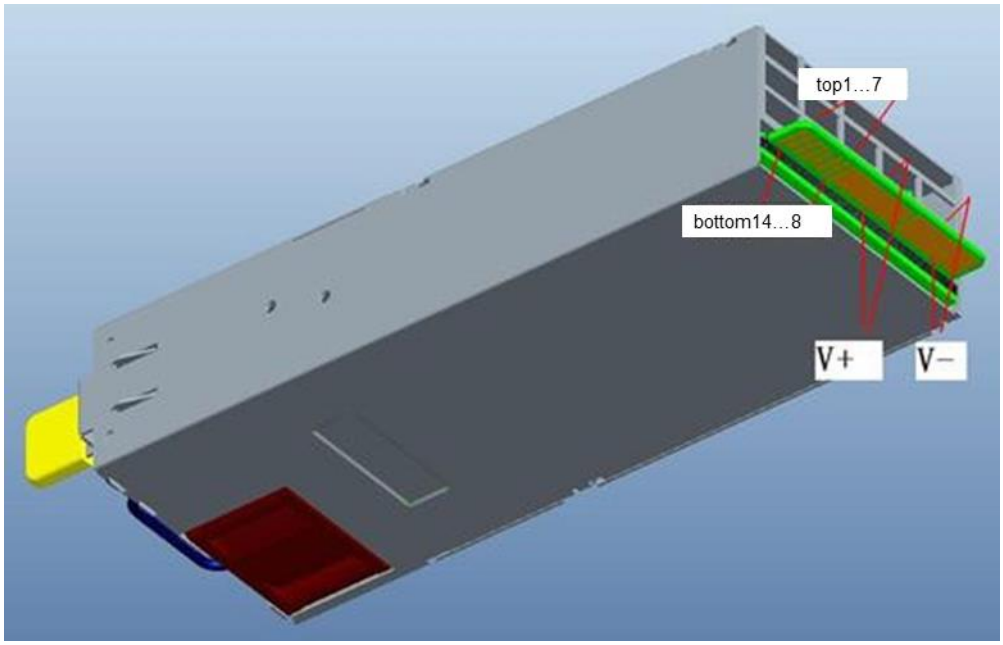
Table **1** Definition of connector pin

Output connector functions

Pin No	**Designation**	
1	Power Good	When 12Vthe main power is putput normally,pin1outputs one TTLhigh electrical level3.3V(±5%). When short circuit, over-current, over-voltage occurs,pin1 outputs one TTL low electrical lever(0V).
2	Remote_P	12V remote complementary(positive).
3	Remote_N	12V remote complementary(negative).
4	AC_OK	When the AC power inputs normally,pin4 outputs one TTL high electrical level 3.3V(±5%). When undervoltage, default phase, over-voltage occurs,pin4 outputs one TTL low electrical level(0V).
5	PS_ON	power on-off control signal Only when dragging the pin to TTL low electrical level (0V), the power supply can be enabled. Hanging in the air or set on the TTL high electrical level 3.3V(±5%), the device will not be started up.
6	NC	
7	NC	
8	Model_AD/DC	Indicator of power type TTL high electrical level 3.3V(±5%)is AC module,TTL low electrical level(0V)is DC module.
9	PS_SEAT	Connect the inner PS_SEATof the power module and the GND. The insert power supply must provide PRESENTthe short circuit to the ground.
10	12VSB	12V standby positive.

11	12VSB_Return	12V standby negative.
12	Current Share	main power current sharing signal
13	NC	
14	NC	

Table of connector pin sequence:



Monitoring, alarm function and interface

No.	Item	Characteristics
1	Output normal signal(PG)	Output normal signal(PG): normal:output high electrical level: (the voltage is higher than 2.4V, current>2mA). fault:output low electrical level Connect with pull-up resistor output low electrical level (<0.5V, current<4mA)
2	PS_ON	Remote on/off: (PS_ON: The pin works when connecting to the low level power supply externally, and does not work when it floats.)
3	Power Supply Present Test (PS_SEAT)	Connect the inner PRESENT of the power module and the GND . The insert power supply must provide PRESENT the short circuit to the ground.

4	AC (or DC) power module identify number (Input type (AC or DC))	Identify the type of the power supply module, whether it is DC or AC power supply module TTL high electrical level 3.3V(±6%)is AC module,TTL low electrical level(0V)is DC module.

LED indicator function

green (always on)	The main power output voltage, current, temperature, and AC voltage are in the normal range.
orange (flicker)	input undervoltage, over-voltage protection, over-voltage protection fan default Over-temperature protection
green and orange (alternatively flicker)	over-current protection, short circuit, self-recovery

9.Product Characteristics and Pictures

Product Characteristics

The power supply is an input AC/DC power module of the whole range, which is characterized by over-temperature,over-voltage, over-current, short-circuit, average current and hot-swap, working stability and high-reliability.The output voltage is 12VDC and the rated output current is 38A.

Product picture (material product):

				DESCRIPTION: (Specifications)	
THESE SPECIFICATION ARE THE PROPERTY OF SHANGHAI BAUD DATA COMMUNICATION CO., LTD AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.				Model No.: **PWR-480-AC**	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
6/25/2019					0.1

10. Components Checklist

No.	Material name	Brand name	Specification Model:	Main Technical Specifications	Bit No.
1	Electrolytic Capacitor	NIPPON	KMW 450V/330uF	105° hrs=2000 ripple current=1430mA Φ30*30mm	C14
		RUBYCON	YXJ 25V / 1000uF	105° hrs=10000 ripple current=1400mA Φ10*20mm	C53 C27 C24
			YXJ 25V /220uF	105° hrs=7000 ripple current=400mA Φ6.3*11mm	C45 C150
	solid-state capacitor	CAPXON	PS405 25V /470uF	105° hrs=10000 ripple current=4900mA Φ10*12.5mm	C37 C23
2	Integrated circuit	ON	NCP1252A	encapsulated SOP-8	U8
		Infineon	E3PCS01G	encapsulated DSO-14	U7
		OB	OB2273	encapsulated SOT23-6	U9
		IRF	IR1167A	encapsulated SO-8	U4
		TI	UC3907	encapsulated SOP-16	U22
3	MOS tube	Infineon	IPW60R099CP	VDS=650V ID=31A RDS=99mΩ TJ=-55°- 150° encapsulated TO-220	Q1
			34NE7N3	VDS=75V ID=100A RDS=.34mΩ TJ=-55°- 150° encapsulated TO-220	Q2 Q4
		JCS	JCS18N50FH	VDS=500V ID=18A RDS=0.27Ω TJ=-55°- 150° encapsulated TO-220MF	Q17 Q16
		ST	STP10NK70ZFP	VDS=700V ID=8.6A RDS=0.85Ω TJ=-55°- 150° encapsulated TO-220FP	Q5
4	transformer	XDH	LT00831V00	model EE19/27 inductance value 600uH	T1
	inductance		LT00838V03	model PQ32/30 inductance value 5mH	T3
		Changshen	LL408V02	Model High Flux (58071) inductance value 450uH	L4
			LL407V01	Model High Flux (58071) inductance value 4.5uH	L3

DESCRIPTION:
(Specifications)

Model No.:
PWR-480-AC

DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
6/25/2019					0.1

5	Bridge rectifiers diode	Tianjin Zhonghuan	GBU15A//800V	encapsulated GBU,current 15A,voltage 800v	BRGD1
		CREE	C3D06060	encapsulated TO-220-2P,current 6A,voltage 600v	D1
		DIODES	MBR20150CT	encapsulated TO-220,current 20A,voltage 150v	D21
6	safety capacitor	STE	0.68UF/275V	material mental polypropylene screen, temperature 85°	C6 C7
	safety capacitor	STE	2.2NF/400V	material Y5V temperature +22%~ - 82% voltage 400v	,C1 C2 C47 C46
8	protective tube	XC	10A/250V	glass 5*20 slow break	F1 F2