

1kW Fan cooled

AC-DC power supplies 

The SHP1000 AC-DC power supply provides up to 1.2kW of output power, it is fan cooled via integral multi voltage level fan which is load dependent.

The unit comprises of a main output with voltages from 12 to 48VDC and a 5VDC 1A standby supply which can be utilised with the signals and control features of the unit to provide detection of loss of AC input and remote On/Off control.

Multiple units can be used in parallel via the current share facility, providing higher power solutions. Low earth leakage current, and conducted EMC compliance to Class B also simplify higher power system design.



Features

- ▶ 1.2kW high line 1kW low line fan cooled
- ▶ 241.0 x 150.0mm (9.5" x 5.9") footprint, 61.0mm profile
- ▶ Regulated single outputs 12 to 48VDC
- ▶ Input range 80 to 264VAC
- ▶ Rugged construction
- ▶ Variable fan speed for noise reduction
- ▶ AC OK, remote On/Off and active current share
- ▶ Screw terminals
- ▶ 5VDC 1A standby
- ▶ -20°C to +70°C operation
- ▶ 3 year warranty

Applications



Dimensions

241 x 150 x 61mm (9.5" x 5.9" x 2.4")

Documentation

For further information click the link or scan the code

→ xppower.com



Models & ratings

Model number	Output voltage V1	Output current V1		Standby supply V3	Output power	
		<180VAC	>180VAC		<180VAC	>180VAC
SHP1000PS12	12VDC	83.0A		5V/1.0A	1000W	
SHP1000PS15	15VDC	67.0A		5V/1.0A	1010W	
SHP1000PS24	24VDC	42.0A	50.0A	5V/1.0A	1013W	1200W
SHP1000PS28	28VDC	36.0A	43.0A	5V/1.0A	1013W	1200W
SHP1000PS36	36VDC	28.0A	34.0A	5V/1.0A	1013W	1200W
SHP1000PS48	48VDC	21.5A	25.0A	5V/1.0A	1013W	1200W

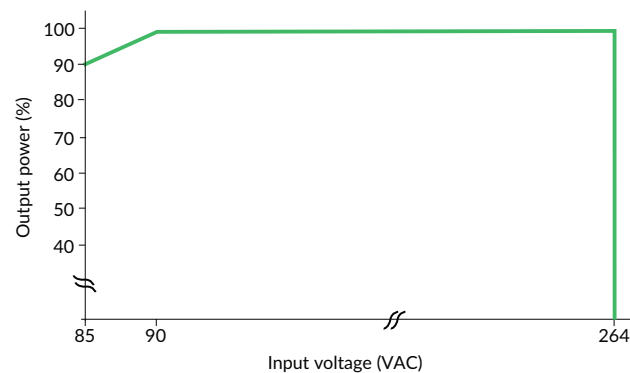


Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage	85	115/230	264	VAC	Derate output power 10% <90VAC, see Fig. 1
Input frequency	47	50/60	63	Hz	Agency approval, 47-63Hz
Power factor	0.9				
Input current - no load		0.35/0.5		A	115/230 VAC
Input current - full load		10.9/5.1		A	115/230 VAC
Inrush current			60	A	230VAC cold start, +25°C
Earth leakage current		0.3/0.5	0.75	mA	115/230VAC/50Hz (Typ.), 264VAC/60Hz (Max.)
Input protection	T20A / 250V internal fuse in both lines				

Input derating curve

Figure 1



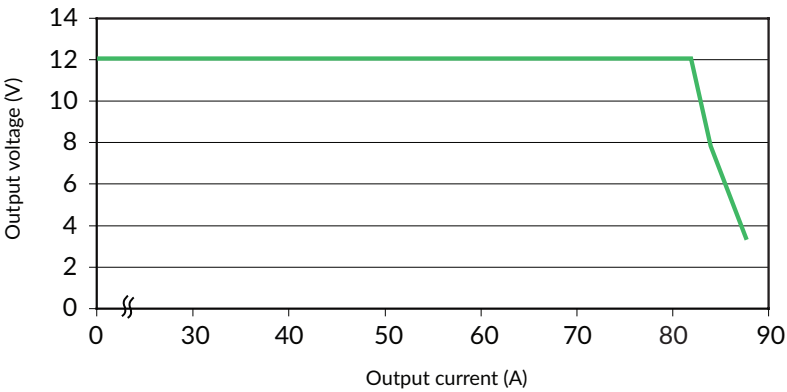
Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage - V1	12		48	VDC	See models and ratings table
Initial set accuracy		±1		%	V1, 50% load, 115/230VAC
		±5			V3, 50% load, 115/230VAC
Output voltage adjustment			±10	%	V1 only. See Mechanical Details
Minimum load	No minimum load required				
Start up delay		0.5		s	230VAC full load
Hold up time	20			ms	
Drift			±0.2	%	After 20 min warm up
Line regulation			±0.5	%	
Load regulation			±1	%	V1, 0-100% load
			±5		V3, 0-100% load
Transient response			4	%	V1, recovery within 1% in less than 500µs for a 50-75% and 75-50% load step
Ripple & noise			1	% pk-pk	V1, 20MHz bandwidth
Overvoltage protection	115		145	%	Vnom DC. Output 1 only, recycle input to reset
Overtemperature protection	Auto reset				
Overload protection	110		140	% I nom	Output 1 only, auto reset. See fig 2.
Short circuit protection	Protects unit from overtemperature. Auto recovery, hiccup mode				
Temperature coefficient			0.05	%/°C	

Output

Output overload characteristic

Figure 2
Typical V1 overload characteristic
(SHP1000PS12 shown)



General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		85		%	See Fig. 3 & 4
Isolation: input to output input to ground output to ground	3000			VAC	
	1500			VAC	
	500			VDC	
Switching frequency		70		kHz	PFC converter
		200			Main converter
		130			Standby
Power density			0.543 (8.9)	W/cm³ (W/in³)	
Mean time between failure	216		275	khrs	MIL-HDBK-217F, +25°C GB.
Weight			2.08 (4.6)	kg (lb)	See Mechanical Details

Efficiency graphs

Efficiency vs load

Figure 3
SHP1000PS12

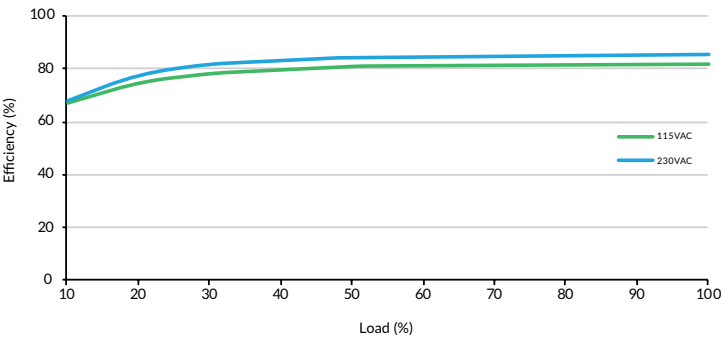
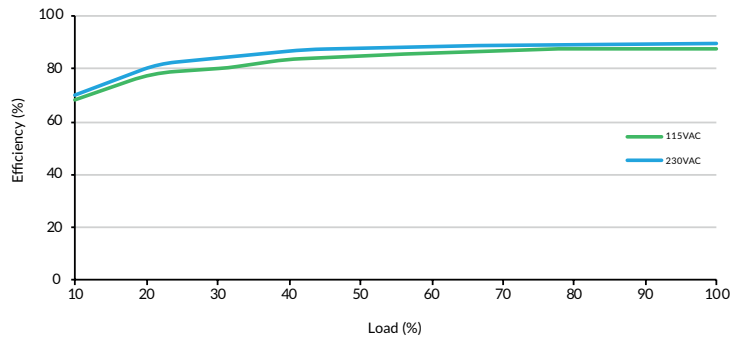


Figure 4
SHP1000PS48



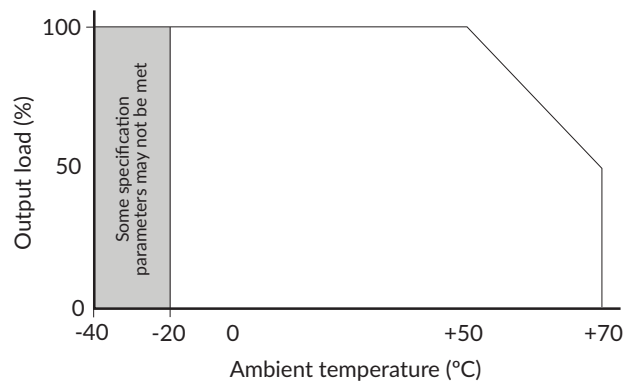


Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+70	°C	See derating curve, fig. 5
Storage temperature	-40		+85	°C	
Cooling	2 x integral variable speed fans load dependant. See fig 6				
Operating humidity	5		95	%RH	Non-condensing
Operating altitude			3000	m	
Shock	3 x 30g/11ms shocks in both +ve & -ve directions along the 3 orthogonal axis, total 18 shocks				
Vibration	Single axis 10-500 Hz at 2g x 10 sweeps				

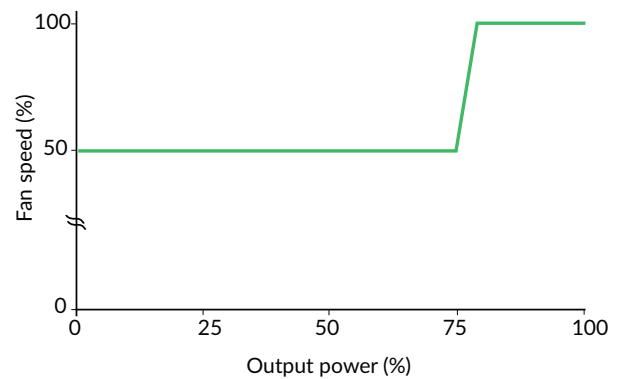
Temperature derating

Figure 5



Fan speed control

Figure 6



EMC: emissions

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class B	
Radiated	EN55032	Class A	
Voltage fluctuations	EN61000-3-3		

EMC: immunity

Phenomenon	Standard	Test level	Criteria	Notes & conditions
Low voltage PSU EMC	EN61204-3	High severity level	as below	
Harmonic current	EN61000-3-2	Class A		For loads $\geq 10\%$
		Class C		
ESD	EN61000-4-2	3	A	
Radiated	EN61000-4-3	3	A	
EFT/Burst	EN61000-4-4	3	A	
Surge	EN61000-4-5	Installation class 3	A	
Conducted	EN61000-4-6	3	A	
Dips and interruptions	EN61000-4-11	Dip 20% 5000ms	A	
		Dip 30% 500ms	A	
		Dip 60% 200ms	B	
		Dip 100% 5000ms	B	
	SEMI F47			Compliant

Safety approvals

Certification	Standard	Notes & conditions
CB	IEC60950-1:2005 Ed 2 / IEC62368-1:2014	Information technology
UL	UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14	Information technology
TUV	EN62368-1:2014/A11:2017	Information technology
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

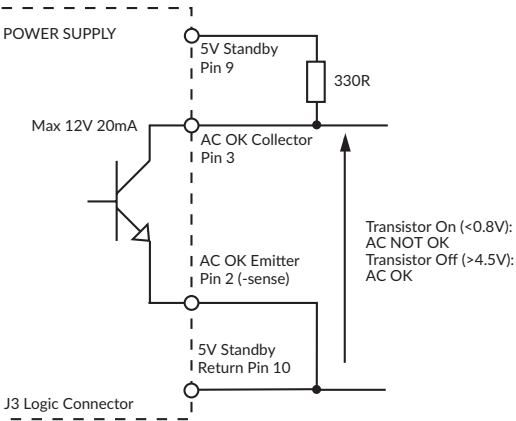
Equipment protection class	Standard	Notes & conditions
Class I	IEC60950-1:2005 Ed 2 / IEC62368-1:2014	See safety agency conditions of acceptability for details

Signals & controls

	Function
Remote sense	Compensates for 0.5V total voltage drop
AC OK/Power fail	Open collector referenced to negative sense, transistor normally off when AC is good (see fig. 7 & 10) AC OK: Provides ≥5ms warning of loss of output from AC failure
Remote On/Off (Inhibit/Enable)	Uncommitted isolated optocoupler diode, powered diode inhibits both V1 & V2 (fan supply) (see fig.8 & 11)
Current share	When more than one unit (with the same output voltage) is used in parallel to increase output current, the current share pins 5/6 of one unit should be connected to pins 5/6 of the other unit(s). This will force the current to share between the outputs. Similarly pins 2/4 of each unit should also be connected as a ground reference. Units share current within 10% of each other at full load. See fig 9
Standby supply V3	Isolated 5V/1.0A supply, always present when AC supplied

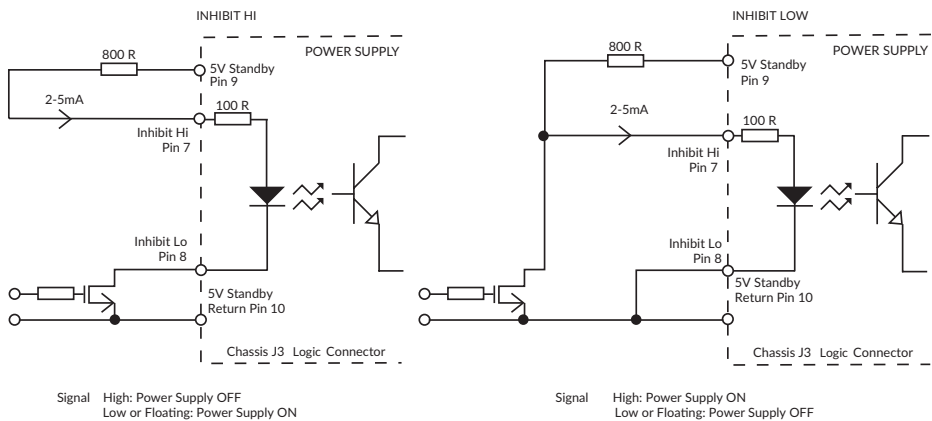
AC OK/Power fail

Figure 7



Remote On/Off (Inhibit)

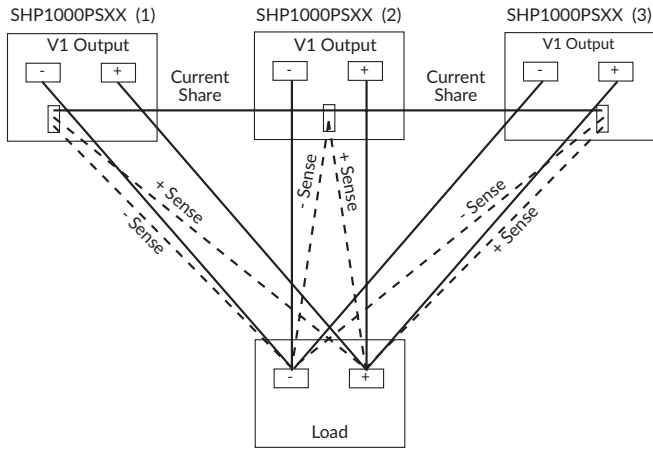
Figure 8



Signals & controls

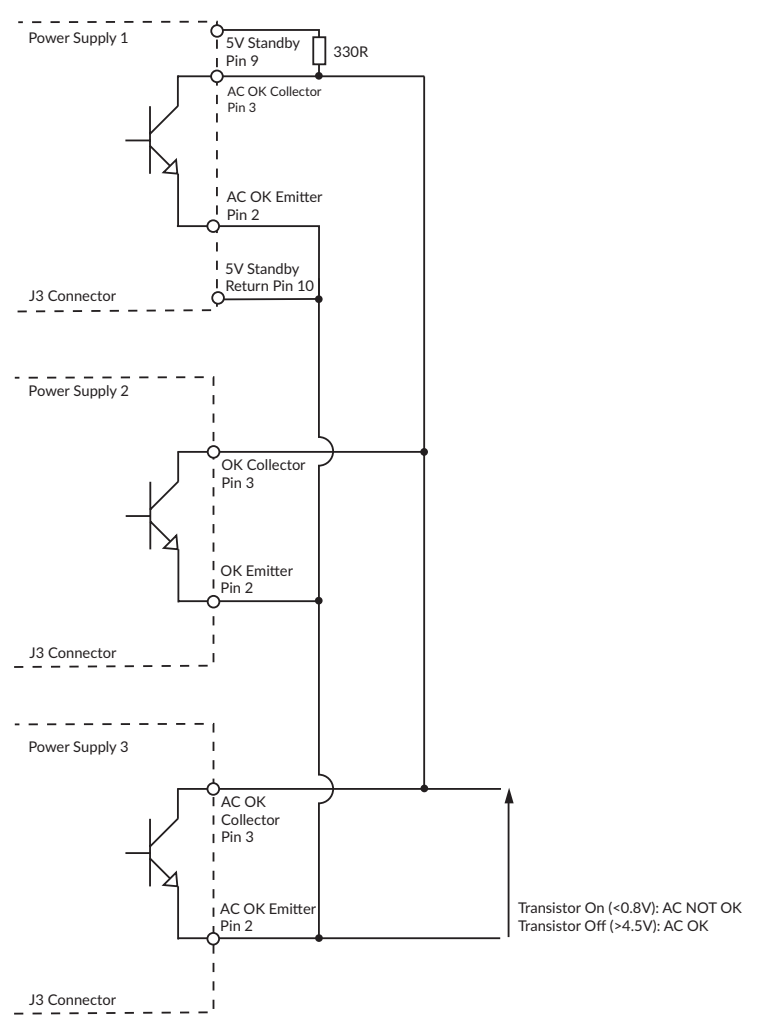
Parallel load & current share connection example

Figure 9



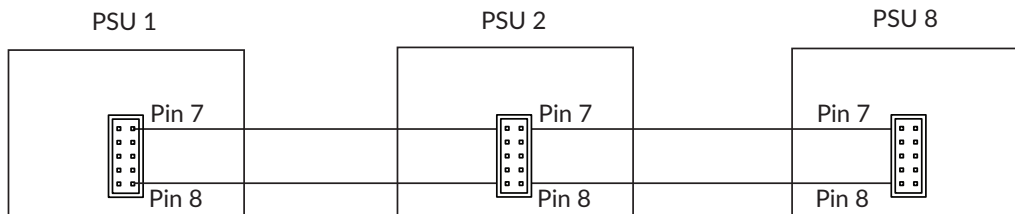
Parallel AC OK Connection

Figure 10



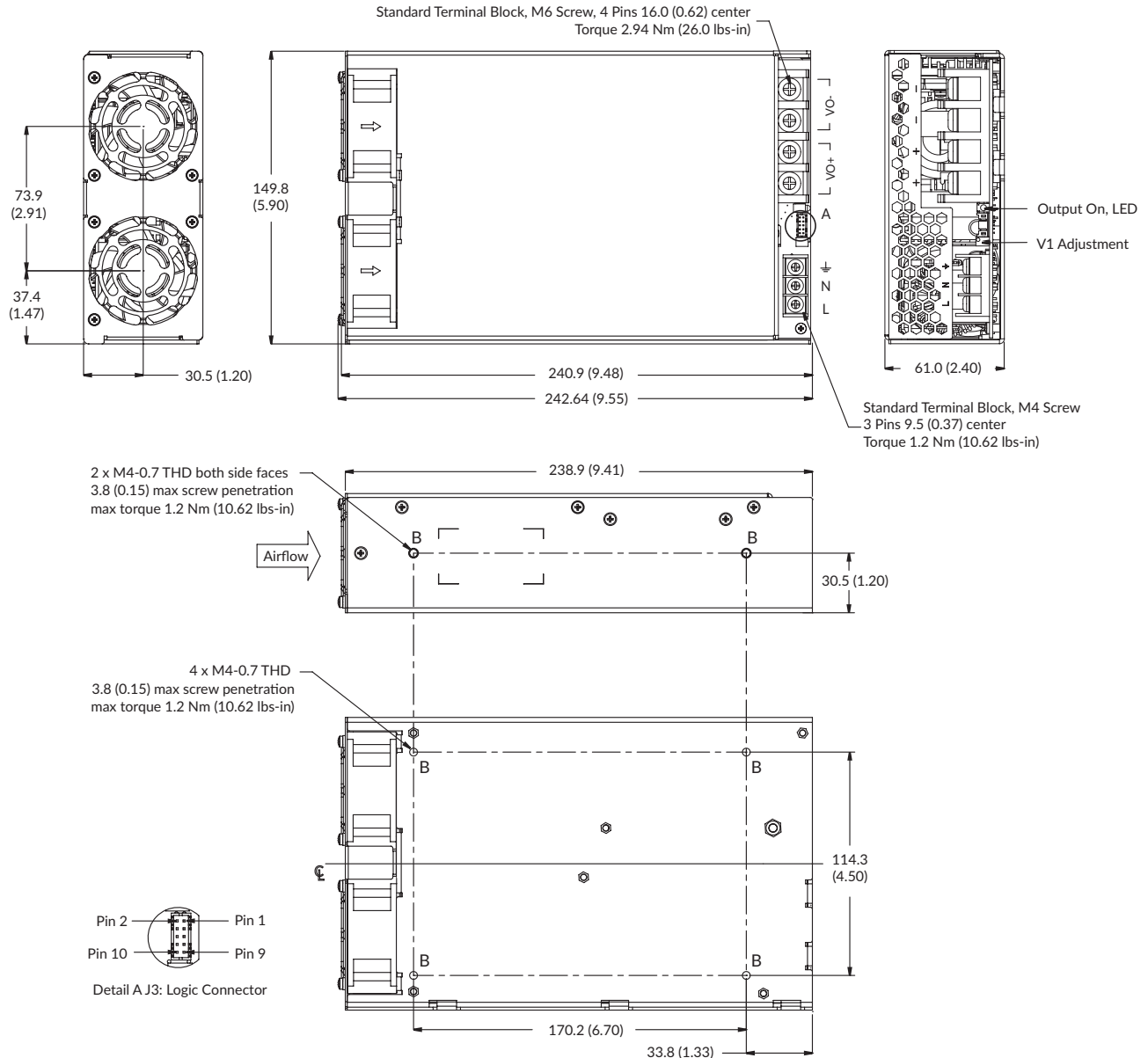
Parallel remote inhibit connection

Figure 11



Open or TTL high = PSU On
Short circuit or TTL Low = PSU Off

Mechanical details



J3 logic connector (JST B10B-PHDSS)			
Pin	Description	Pin	Description
1	+ Sense	6	Current share
2	- Sense	7	+ Inhibit
3	AC OK/Power fail	8	- Inhibit
4	- Sense	9	+5V standby
5	Current share	10	-5V standby

Notes:

1. Dimensions shown in mm (inches).
2. Weight: 2.08kg (4.6lb).
3. J3 Mating plug: JST part no. PHDR-10VS, contact: 26-22 AWG JST part no. SPHD001T-P0.5.