MHP1000 series

1kW Fan cooled

AC-DC power supplies

The MHP1000 AC-DC power supply provides up to 1.2kW of output power in three mechanical packages to provide installation flexibility in a range of medical applications.

The unit comprises of a main output with voltages from 12V to 48VDC and a 5VDC 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 used in parallel via the current share facility, providing higher power solutions. Inherently low earth leakage current, and conducted EMC compliance to Class B also simplify higher power system design.

Features

- 1kW fan cooled/1.2kW highline operation
- 240.9 x 149.8mm footprint, 61.0mm profile
- Regulated single outputs 12V to 48VDC
- Input range 85 to 264VAC
- Medical safety approvals
- 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

Healthcare

Industrial electronics

Semiconductor manufacturing

Technology

Dimensions

242.64 x 149.80 x 61.00mm (9,55” x 5,90” x 2,40”)

Models & ratings

Model number	Output Voltage V1	Output Current V1		Standby Supply V2	Output Power	
		<180VAC	>180VAC		<180VAC	>180VAC
MHP1000PS12	12VDC	83.0A		5VDC 1.0A	1001W	
MHP1000PS15	15VDC	67.0A		5VDC 1.0A	1010W	
MHP1000PS24	24VDC	42.0A	50.0A	5VDC 1.0A	1013W	1200W
MHP1000PS28	28VDC	36.0A	43.0A	5VDC 1.0A	1013W	1200W
MHP1000PS36	36VDC	28.0A	34.0A	5VDC 1.0A	1013W	1200W
MHP1000PS48	48VDC	21.0A	25.0A	5VDC 1.0A	1013W	1200W

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Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage	85		264	VAC	Derate output power 10% <90VAC
Input frequency	47		63	Hz	
Power factor		>0.9			EN61000-3-2 class A compliant
Input current		0.35/0.5		A	No load, 115/230 VAC
		10.9/5.3			Full load, 115/230 VAC
Inrush current			60	A	264VAC
Earth leakage current		75/140	250	μA	115/230 VAC/50 Hz (Typ.), 264 VAC/60 Hz (Max.)
Input protection	T20A/250V internal fuse in line and neutral				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	12		48	VDC	
Output voltage trim			±10	%	V1 only, see mechanical details
Initial set accuracy		±1		%	V1, 50% load, 115/230 VAC
		±5			V2, 50% load, 115/230 VAC
Minimum load	0			A	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	%	90-264VAC
Load regulation		±1		%	V1
		±5			V2
Transient response			4	%	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, recycle input to reset
Overtemperature protection	Protects unit from overtemperature. Auto reset.				
Overload protection	110		140	% I nom	Output 1 only, auto reset..
Temperature coefficient			0.02	%/℃	
Short circuit protection	Auto recovery, hiccup mode				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		84		%	
Isolation: Input to output	4000			VAC	2 x MOPP
Input to ground	1500			VAC	1 x MOPP
Output to ground	500			VDC	
Switching frequency		70		kHz	PFC
		200			Main converter
		130			Standby
Power density			22.6 (8.9)	W/cm³ (W/in³)	
MTBF		260		khrs	MIL-HDBK-217F at 25°C, GB
Weight		2.08 (4.6)		kg (lbs)	

MHP1000 series

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-20		+70	°C	Derate linearly from +50°C at 2.5%/°C to 50% load at +70°C
Low temperature start up	-40			°C	Some specification parameters maybe exceeded until after 20 minutes warm up period.
Storage temperature	-40		+85	°C	
Cooling	2 x integral variable speed fans load dependant				
Humidity	5		95	%RH	Non-condensing
Operating altitude			3000	m	
Shock	3 x 30 g/11 ms shocks in both +ve & -ve directions along the 3 orthogonal axis, total 18 shocks.				
Vibration	Single axis 10-500Hz at 2g x 10 sweeps				

EMC: emissions

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55011/EN55032	Class B	
Radiated	EN55011/EN55032	Class A	
Voltage flicker	EN61000-3-3		

EMC: immunity

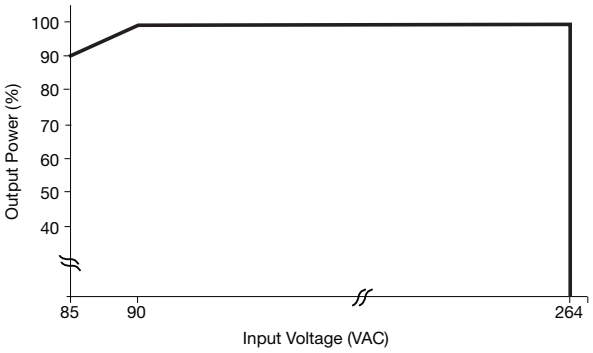
Phenomenon	Standard	Test level	Criteria	Notes & conditions
Low voltage PSU EMC	EN61204-3	High severity level		
Harmonic Current	EN61000-3-2	Class A		
ESD	EN61000-4-2	3	A	
Radiated immunity	EN61000-4-3	3	A	
EFT/Burst	EN61000-4-4	3	A	
Surge	EN61000-4-5	Installation class 3	A	
Conducted	EN61000-4-6	3	A	
Dips and interruptions	EN60601-1-2	30%, 500ms	A	
		60%, 100ms	A	
		100%, 10ms	A	
		>95%, 5000ms	B	
	EN61000-4-11	30%, 10ms	A	
		60%, 100ms	B	
		100%, 5000ms	B	

Safety approvals

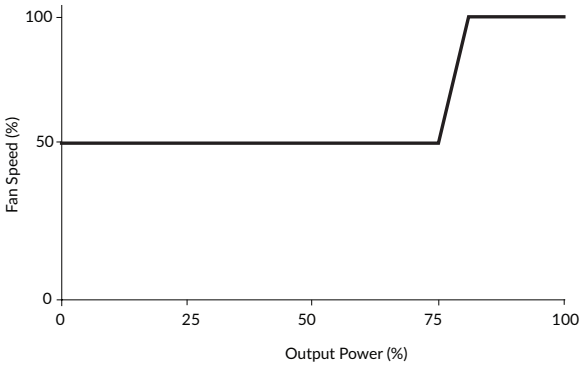
Certification	Safety standard	Notes & conditions
CB report	IEC60601-1	Including risk management
UL	CSA 22.2 No.60601-1, ANSI/AAMI ES60601-1	
EN	EN60601-1	Including risk management
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Derating curves

Thermal Derating Curve

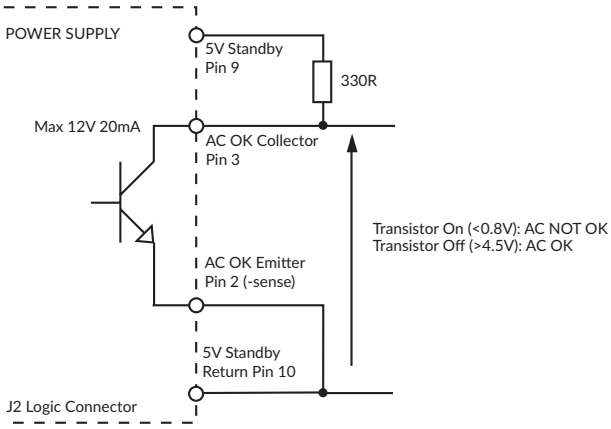


Fan Speed Control

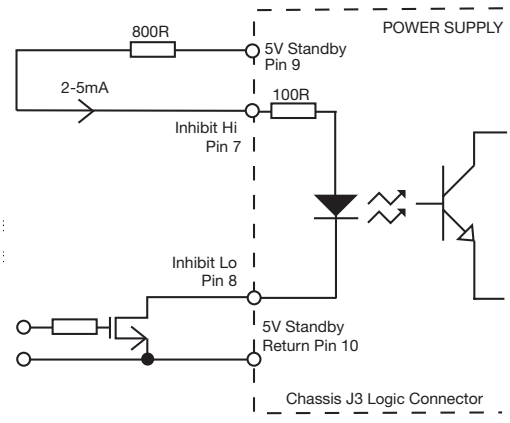


Signals & controls

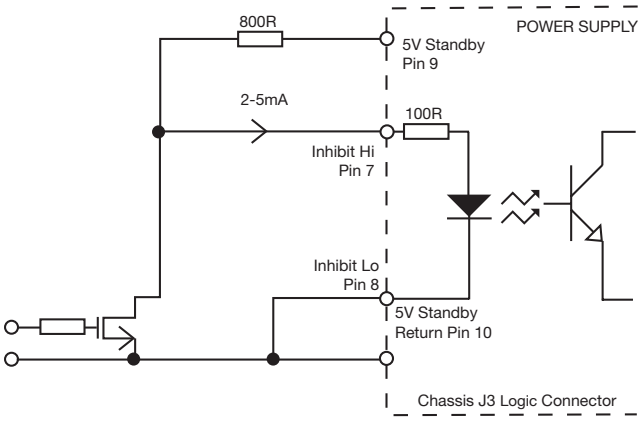
AC OK/Power Fail



Remote On/Off (Inhibit)



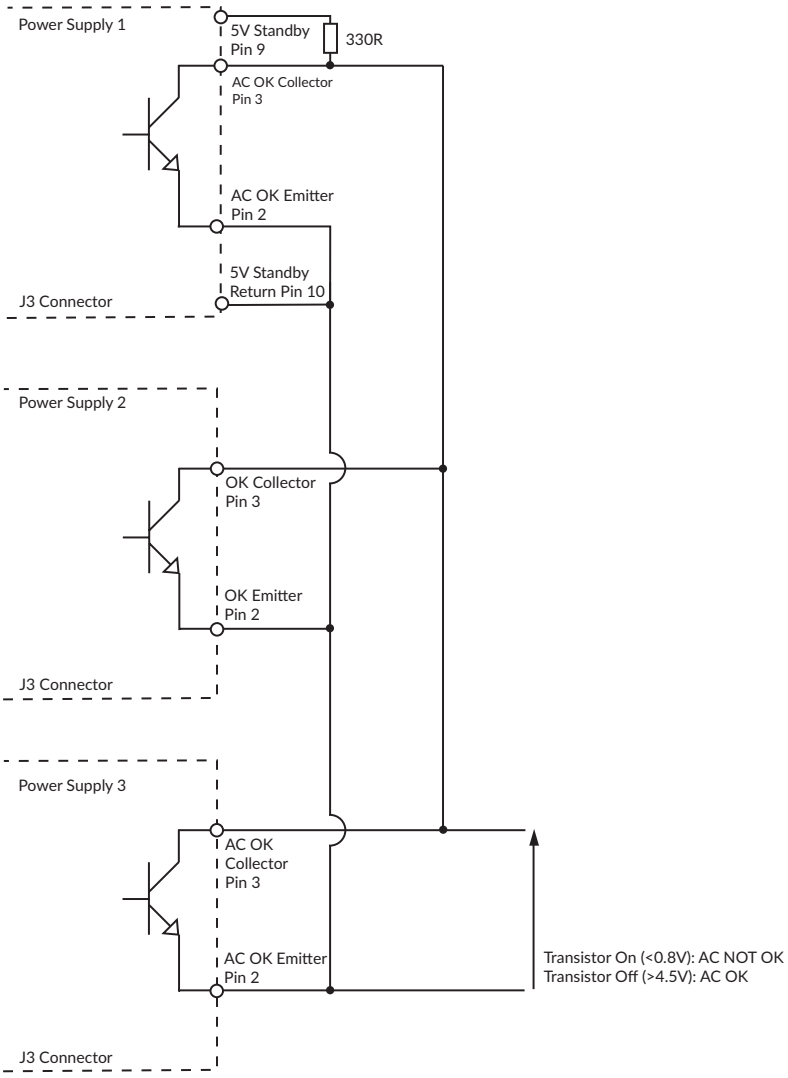
Signal High: Power Supply OFF
Low or Floating: Power Supply ON



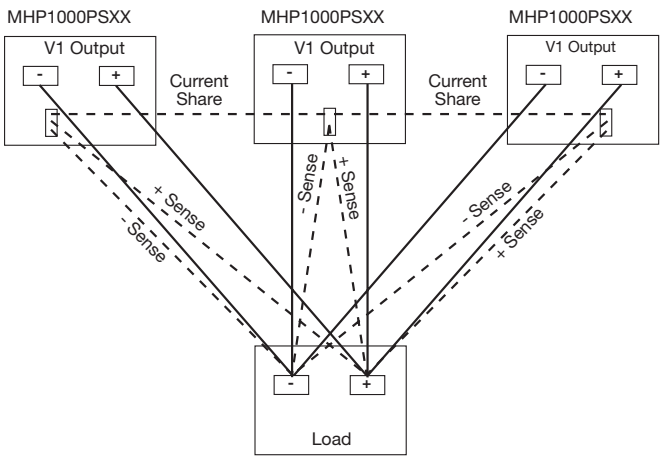
Signal High: Power Supply ON
Low or Floating: Power Supply OFF

Signals & controls

Parallel AC OK Connection

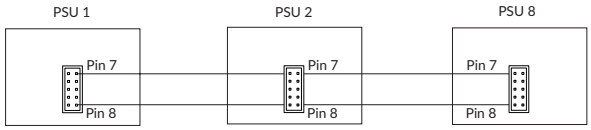


Parallel Load & Current Share Connections



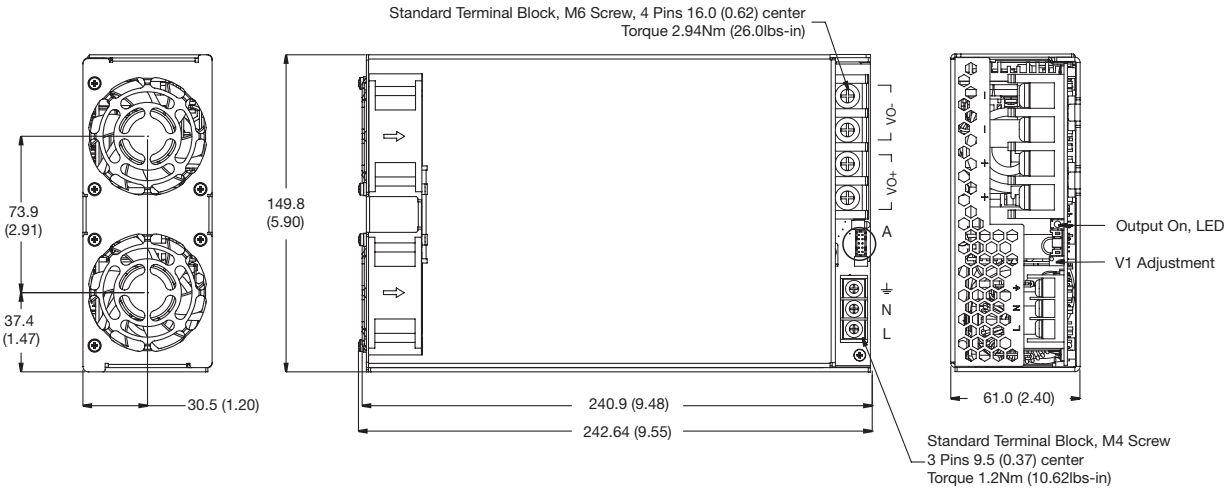
Signals & controls

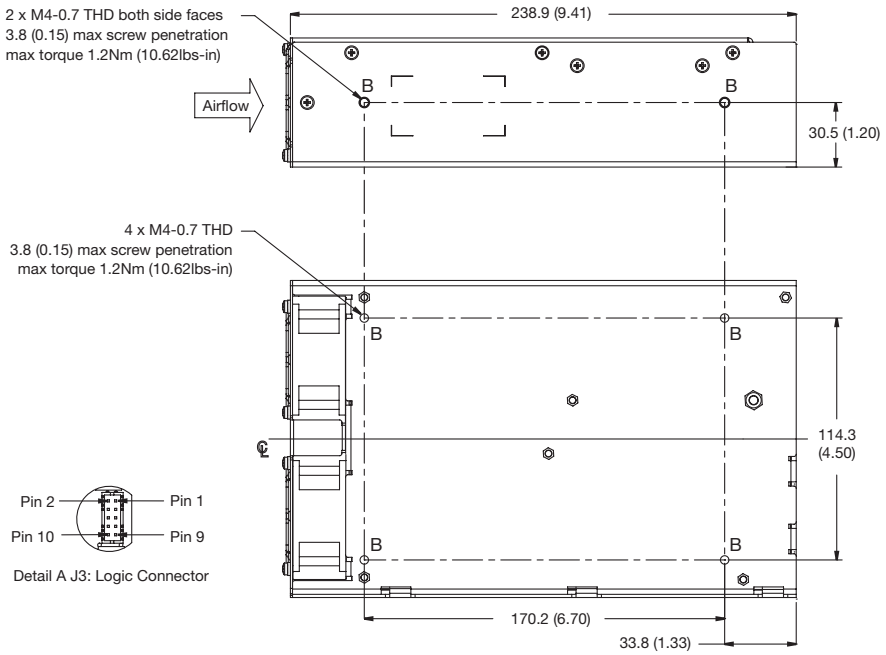
Parallel Remote Inhibit Connection



Refer to the Remote ON/OFF Inhibit diagram above. TTL voltage levels may vary dependent on type of use.

Mechanical details





J3 Logic Connector (JST B10B-PHDSS)	
Pin	**Function**
1	+Sense
2	-Sense
3	AC OK/Power Fail
4	-Sense
5	Current Share
6	Current Share
7	+Inhibit
8	-Inhibit
9	+5V Standby
10	-5V Standby

Notes:

1. Dimensions shown in mm (inches).
2. Weight: 2.08kg (4.6lbs).
3. J3 Mating plug: JST part no. PHDR-10VS, contact: 26-22 AWG JST part no. SPHD-001T-P0.5.

Specification subject to change without notice