1500 Watts
HPU1K5 Series

- Medical Safety Approvals (–M Versions)
- Variable Fan Speed To Reduce Audible Noise
- –20 °C to +70 °C Operation
- AC OK, DC OK, Inhibit & 5 V Standby Supply
- Fault & Overtemperature Signals
- SEMI F47 Compliant
- 3 Year Warranty

Specification

Input

Input Voltage	• 85-264 VAC, see derating curve
Input Frequency	• 47-63 Hz
Input Current	• 13 A/6.5 A typical at 115/230 VAC
Inrush Current	• 35 A maximum at 264 VAC
Power Factor	• >0.9
Earth Leakage Current	• 1.1 mA max at 264 VAC 60Hz, <300 µA max at 264 VAC (-M version)
Input Protection	• Internal T20 A/250 VAC fuse in line and neutral

Output

Output Voltage	• See model table
Output Voltage Trim	• Via potentiometer or external voltage, see model tables
Initial Set Accuracy	• ±1% of nominal with 50% load
Minimum Load	• No minimum load required
Line Regulation	• ±0.5% maximum
Load Regulation	• V1: ±0.5%, V2: ±5%
Start Up Delay	• 1 s typical
Over/Undershoot	• 0.5% typical
Transient Response	• 4% deviation, recovery to within 2% in 500 µs for 50-75-50% load change
Ripple & Noise	• 24-48 V models: 1% max pk-pk 12 V models: 2% max pk-pk V Standby: 3% max pk-pk, 20 MHz bandwidth
Overvoltage Protection	• 115-140% of V1 nominal, recycle input AC to reset
Overtemperature Protection	• Protects the unit against overtemperature. Auto restart
Overcurrent Protection	• 110 - 140% V1, V Standby power limited
Short Circuit Protection	• Continuous, trip and restart (hiccup mode)
Temperature Coefficient	• 0.02%/°C (after 20 minute warm up)
Remote Sense	• Compensates for 0.5 V total drop
Current Share	• Share upto 8 units maximum, units share current within 10% of each other at full load.

General

Efficiency	• 90% typical
Isolation	• 4000 VAC Input to Output 2 x MOPP, 1500 VAC Input to Ground 1 x MOPP 500 VDC Output to Ground
Switching Frequency	• 70 kHz (PFC), 130 kHz (main converter) typical
Power Density	• 18 W/in^3
Signals	• AC OK, DC OK, Inhibit, Fault (see Signals page)
MTBF	• 470 kHrs to Telecordia SR-332 at 25 °C, GB

Environmental

Operating Temperature	• -20 °C to +70 °C, derate linearly from +50 °C at 2.5 %/°C to 50% load at +70°C
Cooling	• Internal load dependant variable speed fans
Operating Humidity	• 95% RH, non-condensing
Storage Temperature	• -40 °C to +85 °C
Operating Altitude	• 3000 m
Shock	• ±3 shocks in each axis (total 18 shocks) 30 g 11 ms (half sine). Compliant with EN60068-2-27.
Vibration	• 2 g 10-500 Hz 10 sweeps. Compliant with EN60068-2-6.

EMC & Safety

Emissions	• EN55011 level A conducted & radiated, EN55032 level A conducted & radiated
Immunity	• Compliant with EN61204-3:2000 high severity levels
Harmonic Currents	• EN61000-3-2 class A, EN61000-3-2 class C for loads ≥10%
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3, Perf Criteria A
Radiated Immunity	• EN61000-4-3, level 3, Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3, Perf Criteria A
Surge	• EN61000-4-5, installation class 3 Perf Criteria A, SEMI F47
Conducted Immunity	• EN61000-4-6, level 3, Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B, EN60601-1-2, 30% 500 ms, 60% 100 ms, 100% 10 ms, 100% 5000 ms, Perf Criteria A, A, A, B
Safety Approvals	• EN60601-1, ANSI/AAMI ES60601-1, CSA22.2 No.60601-1 per cUL, Including Risk Management M Versions, IEC60950-1:2005 Ed 2 / IEC62368-1:2014 UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14, EN62368-1:2014/A11:2017, CE & UKCA meets all applicable directives & legislation.

Models and Ratings

HPU1K5 XP

Output Power[1]	Output Voltage V1	Voltage Adj V1	Output Current V1		Standby Supply V2	Model Number
			<180 VAC	>180 VAC		
1200 W	12.0 VDC	11-14 V	100 A	100 A	5 V/1 A	HPU1K5PS12
1500 W	24.0 VDC	22-28 V	50 A	63 A	5 V/1 A	HPU1K5PS24
1500 W	48.0 VDC	45-52 V	25 A	31 A	5 V/1 A	HPU1K5PS48

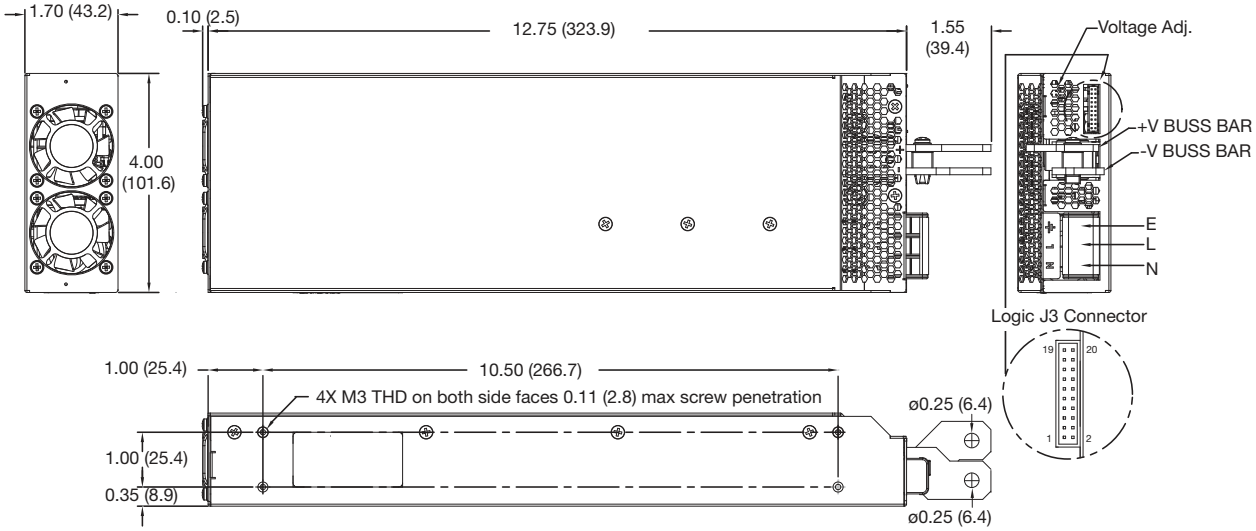
Notes

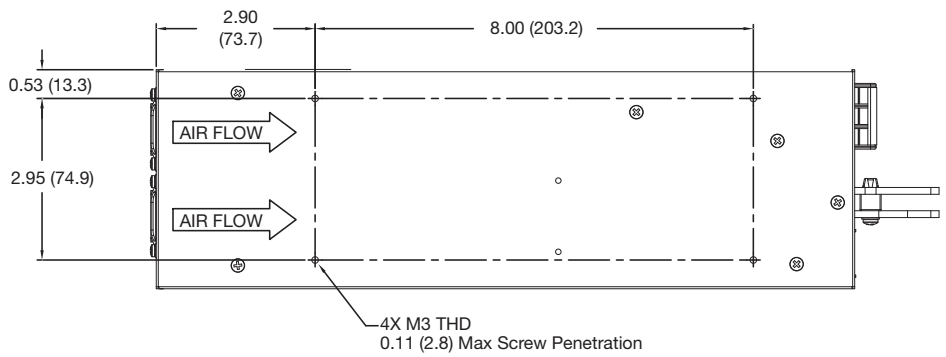
1. See derating curves.

2. For medical version, add suffix '-M' to model number.

Mechanical Details

3D MODELS AVAILABLE ONLINE





Logic Connector: J3, JST, PN S20B-PHDSS (LF) SN)					
Pin	Function	Pin	Function	Pin	Function
1	+ Sense	8	NC	15	DC OK
2	+ Sense	9	Inhibit	16	NC
3	- Sense	10	NC	17	Signal GND
4	- Sense	11	Fault	18	NC
5	Current Share	12	NC	19	5 V Standby Rtn (V2)
6	Current Share	13	AC OK	20	5 V Standby (V2)
7	V Trim	14	NC		

Mates with JST PN PHDR-20VS, Crimp contacts JST PN SPHD-00IT-P0.5

Notes

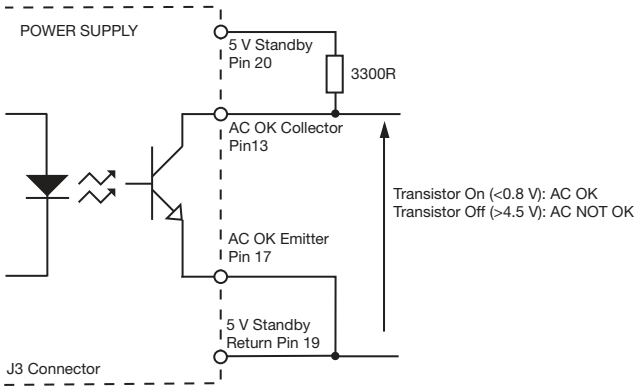
1. All dimensions are in inches (mm).

2. Weight 5.2 lb (2.35 kg)

AC OK/Power Fail

AC OK is an isolated signal providing a minimum of 3 ms warning of loss of output regulation. The signal is fully isolated and the collector and emitter must be connected externally.

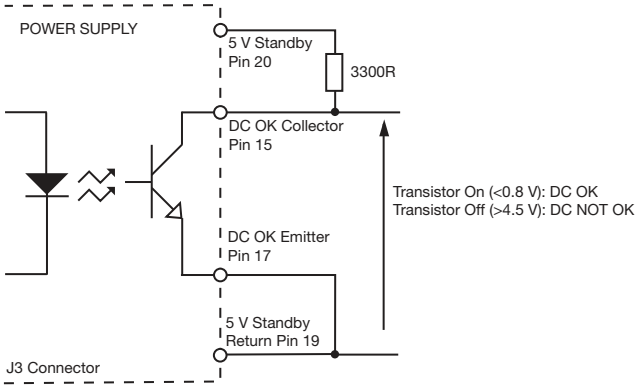
Maximum sink current 2 mA, maximum voltage 20 V.



DC OK

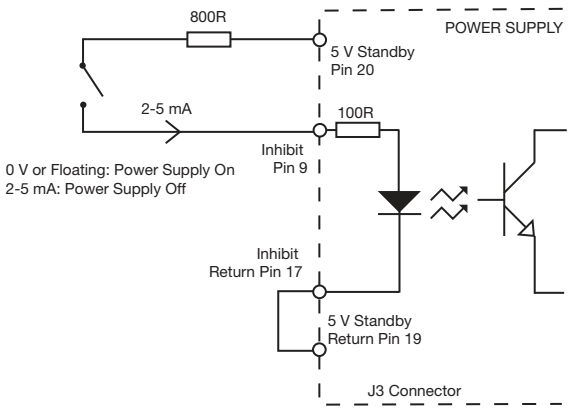
DC OK is an isolated signal providing warning that the output voltage has fallen below 90% of nominal. The signal is fully isolated and the collector and emitter must be connected externally.

Maximum sink current 2 mA, maximum voltage 20 V.



Inhibit

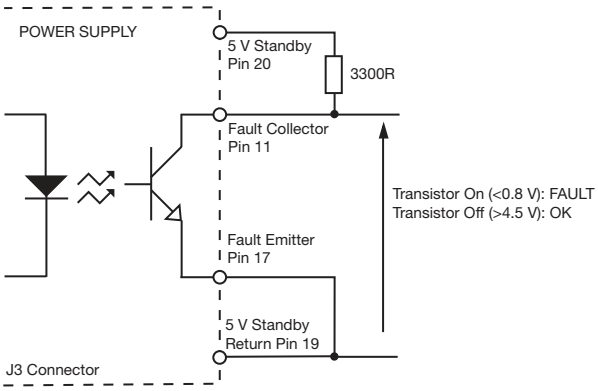
Inhibit is an isolated control signal which can turn the power supply and fans off by supplying 2 to 5 mA into the pin.



Fault

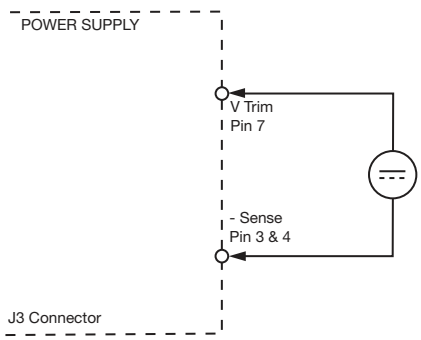
Fault is an isolated signal providing warning of either Power Fail or DC fail. The signal is fully isolated and the collector and emitter must be connected externally.

Maximum sink current 2 mA, maximum voltage 20 V.



V Program

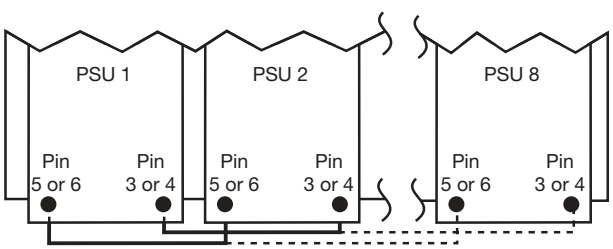
V Program allows remote voltage adjustment within the range ±10%



V Program	V Output
0 V	-10%
5 V	+10%
Open Circuit	Factory Set Voltage

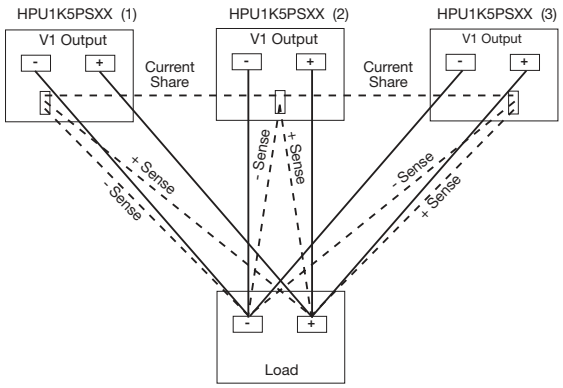
Current Share

Connecting pins 5 or 6 and 3 or 4 of like voltage units (8 maximum) will force the current to share between the outputs. Units share current within 10% of each other at full load. Derate output to 90% of total combined load.

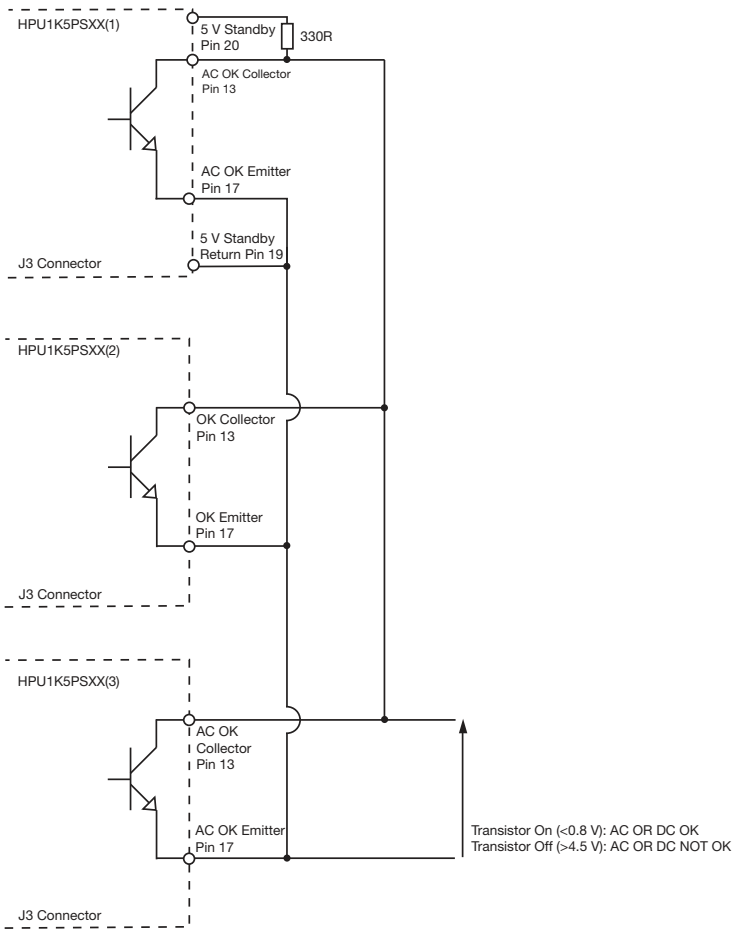


Signals

Parallel Load & Current Share Connections

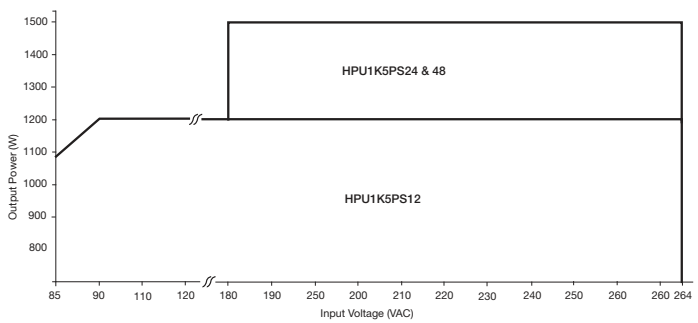


Parallel AC OK Connection
(DC OK follows same format)



Derating Curves

Input Derating Curve



Thermal Derating Curve