

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, 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 |

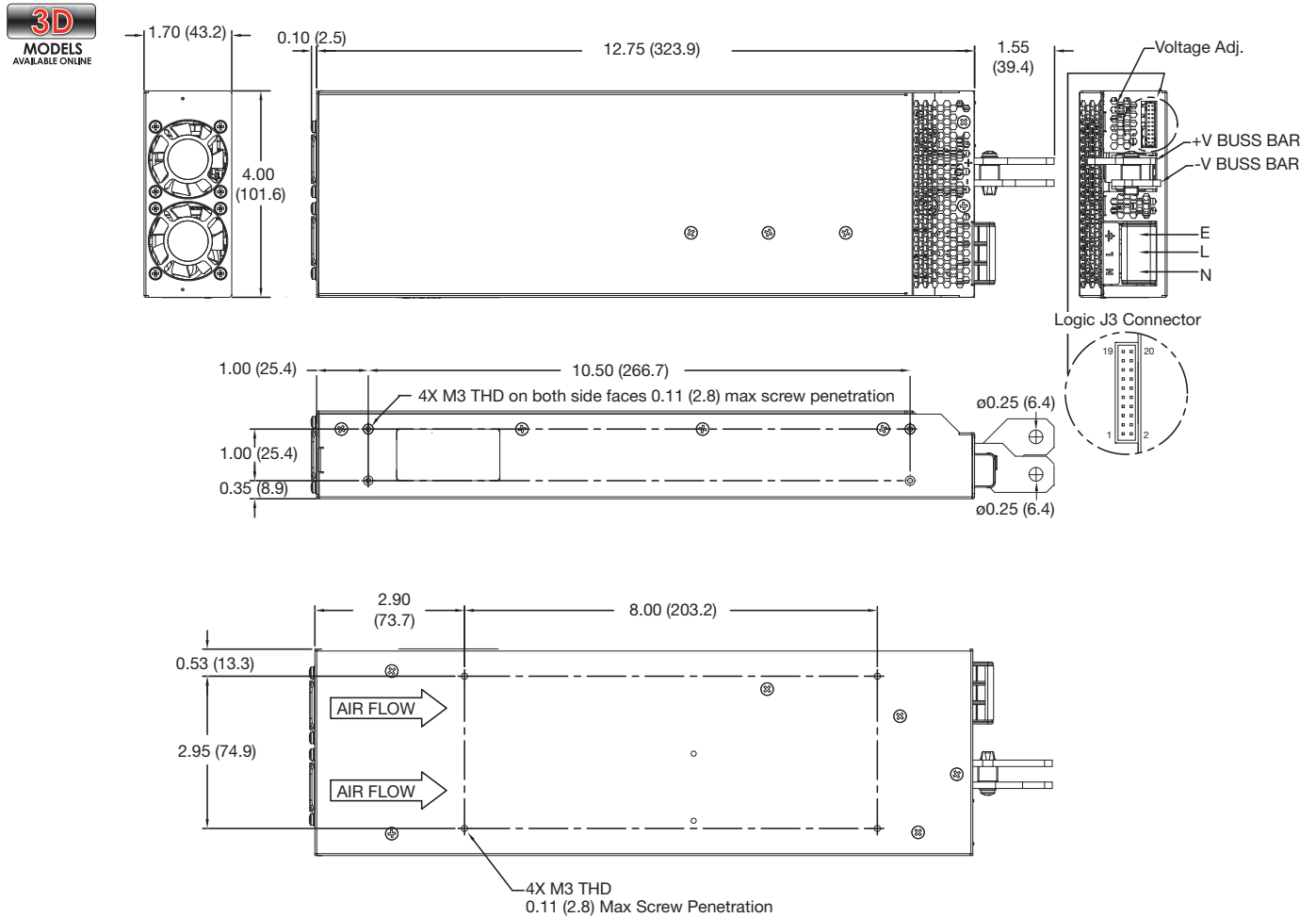
| Output Power ⁽¹⁾ | Output Voltage V1 | Voltage Adj V1 | Output Current V1 | | Standby Supply V2 | Model Number |
|-----------------------------|-------------------|----------------|-------------------|----------|-------------------|--------------|
| | | | <180 VAC | >180 VAC | | |
| 1200 W | 12.0 VDC | 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



| 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

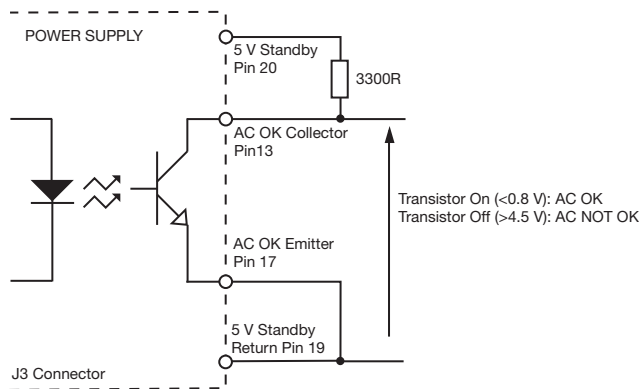
1. All dimensions are in inches (mm).

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.

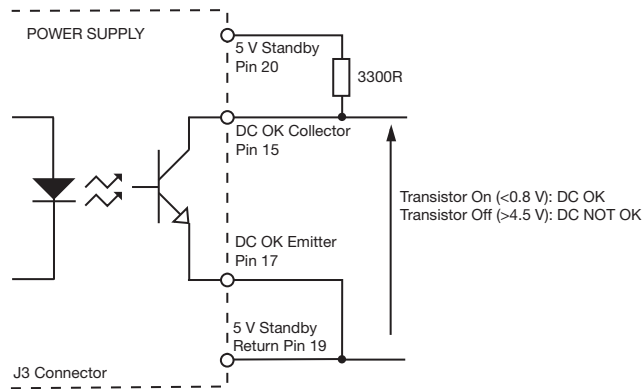
Maximum sink current 2 mA, maximum voltage 20 V.



DC OK

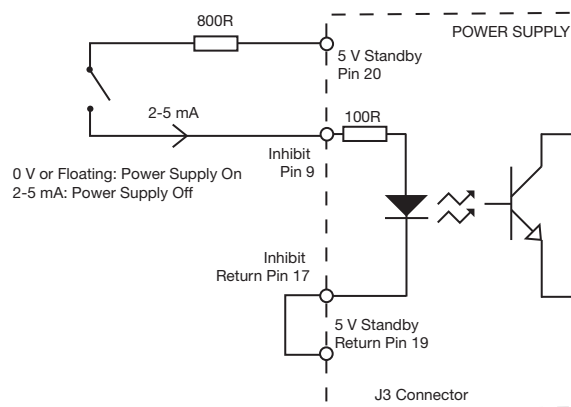
DC OK is an isolated signal providing warning that the output voltage has fallen below 90% of nominal. The signal is fully isolated and the collector and emitter must be connected externally.

Maximum sink current 2 mA, maximum voltage 20 V.



Inhibit

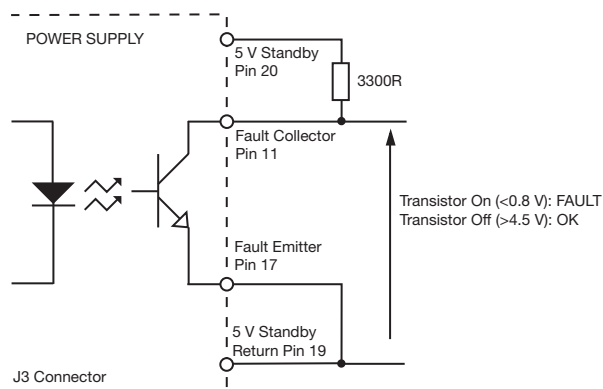
Inhibit is an isolated control signal which can turn the power supply and fans off by supplying 2 to 5 mA into the pin.



Fault

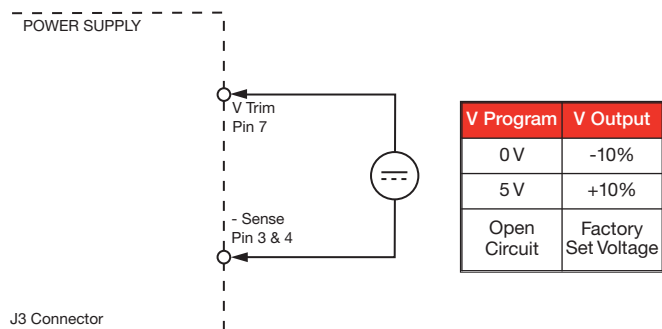
Fault is an isolated signal providing warning of either Power Fail or DC fail. The signal is fully isolated and the collector and emitter must be connected externally.

Maximum sink current 2 mA, maximum voltage 20 V.



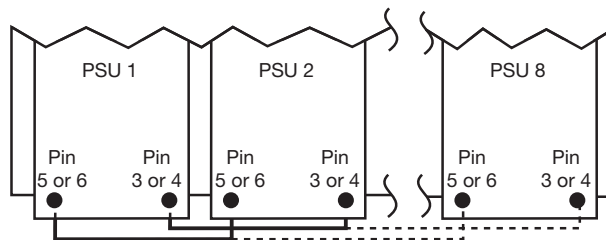
V Program

V Program allows remote voltage adjustment within the range $\pm 10\%$

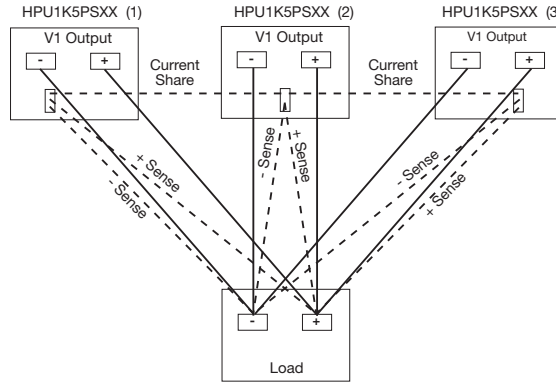


Current Share

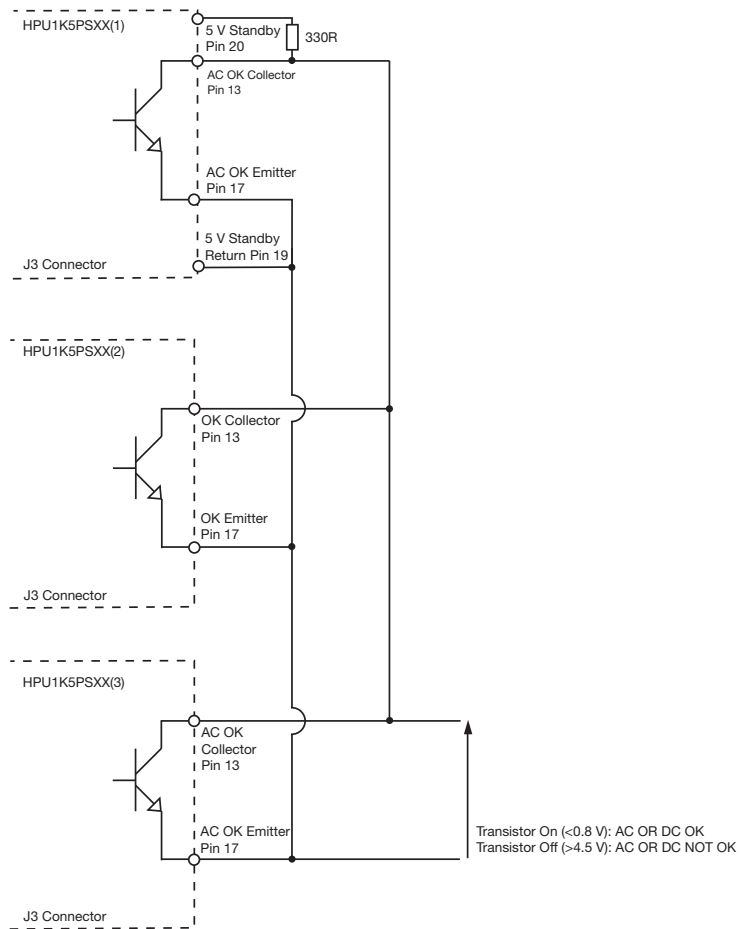
Connecting pins 5 or 6 and 3 or 4 of like voltage units (8 maximum) will force the current to share between the outputs. Units share current within 10% of each other at full load. Derate output to 90% of total combined load.



Parallel Load & Current Share Connections

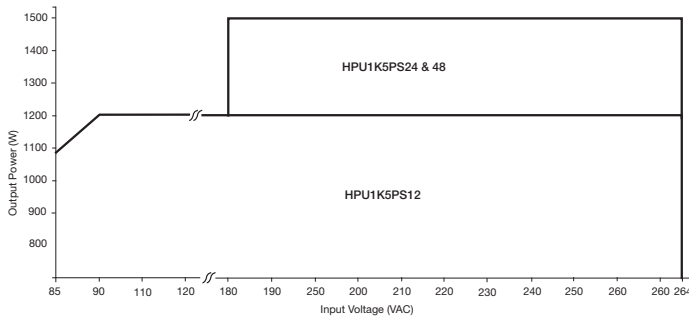


Parallel AC OK Connection
(DC OK follows same format)



Derating Curves

Input Derating Curve



Thermal Derating Curve

