



HP6 Multi-Output AC-DC Front End



RACK-HP600

#### HP6 and RACK-HP600 Features

- Compact 1U design
- N+1 redundancy with hot plug capability
- Up to four individually regulated outputs
- I<sup>2</sup>C interface with interrupt capability
- Hot swap with low insertion/extraction force connector
- Power factor corrected
- No minimum load required
- 5 V @ 1 A standby output
- Single-wire current sharing
- Self-contained ORing Diodes
- Current limit and over-voltage protection
- Full power up to 50° C
- TUV, cTUVus & CB report
- 600 watts per module
- Ac input with PFC

#### Description

The HP6 provides up to 600 Watts total output power with one to four outputs ranging from 0.8 to 12 Volts. HP600 RACKS offer hot-plug capability for up to 1200 Watts total at low line (2 +1) or 1800 Watts total at high line. Three separate multi output power supplies are internally paralleled and will automatically current share for load distribution. Hot-swap modules can be replaced with no system downtime.

| HP6 Front End Models           | V1    |      | V2    |      | V3    |      | V4    |      |
|--------------------------------|-------|------|-------|------|-------|------|-------|------|
|                                | Volts | Amps | Volts | Amps | Volts | Amps | Volts | Amps |
| HP6-X8X8D2D-O                  | X     | 80   | X     | 80   | 12    | 20   | -12   | 3    |
| HP6-X4X8D4D-O                  | X     | 40   | X     | 80   | 12    | 40   | -12   | 3    |
| HP6-X8X4D4D-O                  | X     | 80   | X     | 40   | 12    | 40   | -12   | 3    |
| HP6-X8X4D2D-O                  | X     | 80   | X     | 40   | 12    | 20   | -12   | 3    |
| HP6-X4X8D2D-O                  | X     | 40   | X     | 80   | 12    | 20   | -12   | 3    |
| HP6-X4X4D4D-O                  | X     | 40   | X     | 40   | 12    | 40   | -12   | 3    |
| <b>RACK-HP600 Designations</b> |       |      |       |      |       |      |       |      |
| RACK-HP600                     | X     | 240  | X     | 120  | 12    | 120  | -12   | 9    |

Output Voltage X = A (2.0V); B (3.3V); C (5V); T (2.5V); V (1.8V); W (1.5V); X (1.2V); Y (1V); Z (0.8V)  
Options O = B (I<sup>2</sup>C); M (Output power good – TTL high); N (Power fail – TTL high); R (Reverse airflow)  
Please contact Power-One for additional model combinations.

### **Input Specifications**

**Input voltage range:** 85 to 264 Vac, 47 to 63 Hz  
**Power Factor:** 0.99 at full load and nominal line  
**Inrush Current:** 40 A peak hot and cold start  
**Input Protection:** Internal 15 A line fuse

### **Output Specifications**

**Output Power:** 600 W maximum  
**Overshoot/Undershoot:** Less than 1% at turn-on or turn-off. Less than 3% for 50% to 100% load step.  
**Start-Up Time:** Less than 2 seconds  
**Efficiency:** 78% typical measured at full load, nominal input  
**Hold-up Time:** 20 ms minimum at full load and low line  
**Single Wire Current Share (V1, V2 and +12V):** 10% full load rating.  
**Load Regulation:** 0.5% with remote sense, 2% without  
**Line Regulation:** 0.1% over entire operating range  
**Cross Regulation:** Less than 0.5%  
**Minimum Load:** No minimum load required  
**Overcurrent Protection:** All outputs set to 115-135% of full rated load with automatic recovery  
**Overtemperature Protection:** Automatic shutdown with auto recovery.  
**Remote Sense:** Compensates for voltage drop of up to 0.5 V to the load (V1, V2, and +12V). Shorted sense lead protection.  
**Overvoltage Protection:** All outputs set at 115%-135% of nominal. Reset by cycling input power.  
**Output Noise and Ripple:** PARD: 1% or 50 mV p-p, whichever is greater, measured at 20 Mhz bandwidth.

### **Mechanical Specifications**

**Size:** 1.6" H x 5" W x 11.5" D  
**Input Connector:** Front panel IEC  
**Output Connector:** FCI power blade  
**MTBF:** 250,000 hours calculated at 25 °C, Bellcore Standard  
**Warranty:** Two years from date of shipment, standard product only.

Specifications are subject to change without prior notice.

### **Signals and Controls**

**LED Output Good Indicator:** Front panel green LED indicates power supply is good; amber indicates fault.  
**LED AC Good Indicator:** Front panel green LED indicates Ac input voltage is present and above minimum level.  
**Output Good Signal\*:** TTL compatible signal, normally high. Goes low when power supply is out of specified range.  
**Power Fail Signal\*:** TTL compatible signal, normally high (indicating Vin is present and above minimum level).  
**Enable\*:** Normally TTL High, drive low to enable.  
\*All interface signals are TTL compatible

### **I<sup>2</sup>C Interface**

#### **Event Driven Messages:**

- Notification of fan speed abnormality
- Output voltage under specified 'good' range
- Output voltage over specified 'good' range (software OVP)
- Temperature abnormalities

#### **Sensor Device Commands:**

- Get voltage readings
- Get temperature readings
- Get fan speed readings

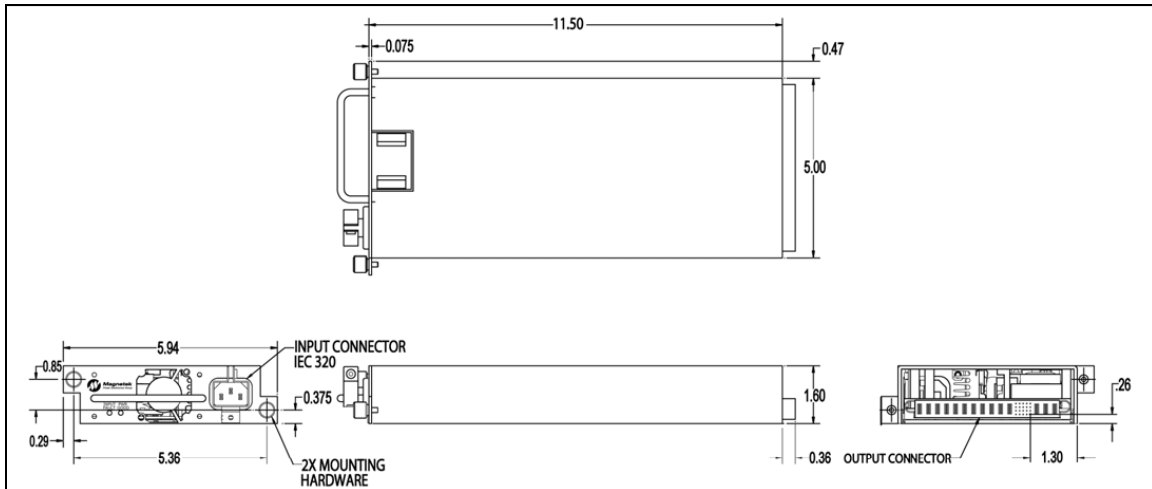
#### **FRU (Field Replaceable Unit) Information Storage:**

- Manufacturer's name
- Product name
- Product part/model number
- Product version/revision
- Product serial number

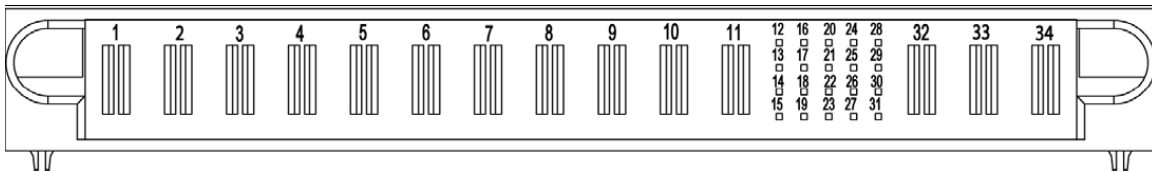
### **Safety & Environmental**

**Operating Temperature:** 0 to 50°C  
**Storage Temperature:** -40°C to +85°C  
**Operating Humidity:** Maximum 95% RH non-condensing  
**Operating Altitude:** 10,000 feet  
**Non-operating Altitude:** 40,000 feet  
**Temperature Coefficient:** 0.02% per °C within rated load  
**Safety Agency Compliance:** TUV, cTUVus & CB report  
**EMI:** Meets EN55022, Class B  
**Harmonic Suppression:** Meets EN6100-3-2  
**Input Transient Protection:**  
Electrostatic Discharge: EN61000-4-2, Criteria B  
Radiated, Radio-Frequency, Electromagnetic Field: EN61000-4-3, Criteria A  
Electrical Fast Transients/Burst: EN61000-4-4, Criteria B  
Voltage Fluctuations and Flickers: EN61000-3-3, Criteria B  
Surge Test: EN61000-4-5, Criteria B  
Conducted Immunity: EN61000-4-6, Criteria A  
**Dielectric Withstand:**  
Input-to-ground: 2200 Vdc  
Input-to-output: 4300 Vdc  
Output-to-case: 25 Vdc  
**Ac Leakage Current:** 1.2mA maximum at 240 Vac, 50 Hz

## HP6 Outline Drawings and Dimensions



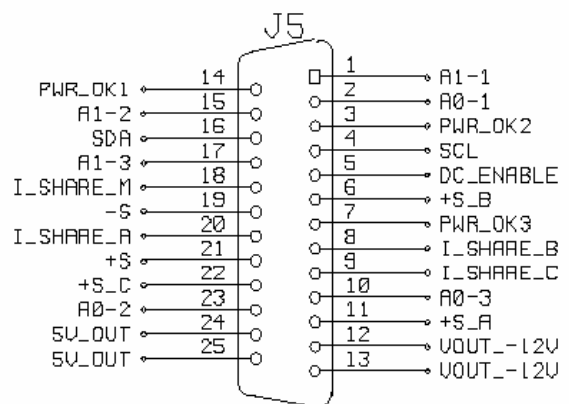
## HP6 Connector Pin Descriptions



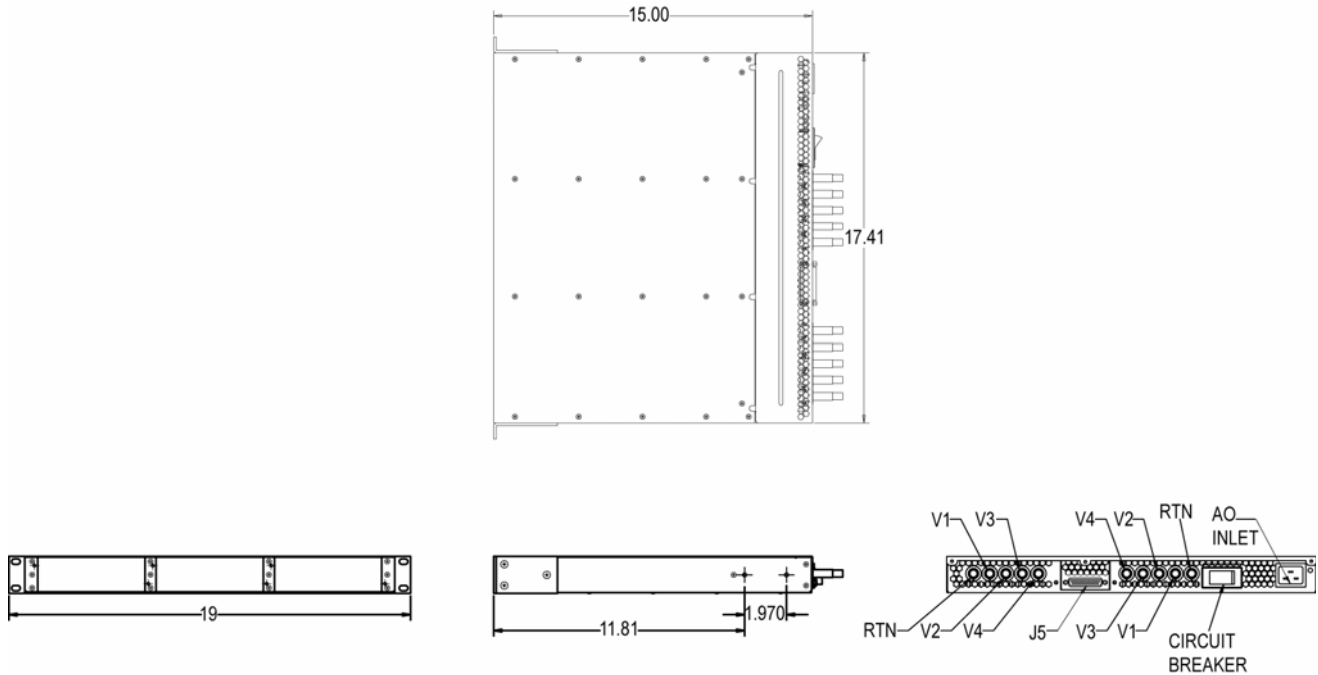
## HP6 PIN Numbers and Signal Names

|                     |                     |
|---------------------|---------------------|
| 1 Ground            | 18 Share V2         |
| 2 Ground            | 19 +Sense V2        |
| 3 V2 Output         | 20 SDA              |
| 4 V2 Output         | 21 SCL              |
| 5 V2 Output         | 22 Share V3         |
| 6 Ground            | 23 Power Fail OK    |
| 7 Ground            | 24 5V Standby       |
| 8 Ground            | 25 5V Standby       |
| 9 V1 Output         | 26 +Sense V3        |
| 10 V1 Output        | 27 Power OK         |
| 11 V1 Output        | 28 Present          |
| 12 Dc Enable        | 29 A0               |
| 13 A1               | 30 Interrupt        |
| 14 -Sense           | 31 Share V1         |
| 15 +Sense V1        | 32 Ground           |
| 16 V4 Output (-12V) | 33 V3 Output (+12V) |
| 17 V4 Output (-12V) | 34 V3 Output (+12V) |

## HP6 J5 Connector Detail



## RACK-HP600 Outline Drawings and Dimensions



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