



## UNIVERSAL AC INPUT HARMONIC CORRECTION AC-DC HOT-SWAP CompactPCI QUAD OUTPUT 175 WATTS CURRENT SHARING SWITCHING POWER SUPPLIES HAC175P & HAC175D SERIES



### FEATURES:

- 175W IN 3U X 8HP EUROCARD PACKAGE
- UNIVERSAL AC INPUT WITH PFC
- INTERNAL OR-ING DIODES FOR N+1 REDUNDANCY
- HOT-SWAPPABLE
- DROOP CURRENT SHARING
- EMI MEET EN 55022 / FCC CLASS A
- CE MARKING COMPLIANCE
- FULLY COMPLIANT WITH PICMG

### SPECIFICATION

#### INPUT SPECIFICATION

**Input Voltage:** Typ. 90-264Vac with PFC.  
**Power Factor Correction:** Meet Harmonic Correction IEC 61000-3-2. Power Factor typ. 0.98.  
**Input Connector:** PCIH47M400A1 for HAC175P.  
 DIN41612 M24/8 for HAC175D.  
**Input Frequency:** 47-63Hz.  
**Inrush Current:** < 30A @ 230Vac by adding thermistor.  
**Input Current:**  
 2.2A @115Vac/1.1A @230Vac for HAC175D.  
 2.4A @115Vac/1.2A @230Vac for HAC175P.  
**Dielectric Withstand:** Meet IEC 60950-1 regulation.  
**EMI:** Meet EN 55022 / FCC Class A.  
**Hold-up Time:** 5mS @115V & 230Vac after power fail signal.  
**Remote ON/OFF:** Available at [INH#] & [EN#] pins.  
**Power Fail Signal:** Available at [FAL#] pin.  
**Status LED:** <Green> means valid input voltage.  
 <Amber> means a critical fault.  
**Thermal Protection:** Installed NTC for thermal sensor at [DEG#] pin.  
**Earth Leakage:** Less than 0.5mA @230Vac.

#### OUTPUT SPECIFICATION

**Output Voltage:** See Ratings Chart.  
**Output Current:** See Ratings Chart.  
**Output Wattage:** Typ. 175W continuous.  
**Output Connector:** PCIH47M400A1 for HAC175P.  
 DIN41612 M24/8 for HAC175D.  
**Line Regulation:** Typ. 0.5%.  
**Load Regulation:** VO1 & VO2 typ.  $\pm 1.0\%$ .  
 VO3 & VO4 typ.  $\pm 2.0\%$ .  
**Noise & Ripple:** Typ. 1% peak-peak or 50mV, whichever is greater.  
**OVP:** Built-in at VO1 & VO2.  
**Adjustability:** Available at VO1 & VO2. VO3 factory set.  
**Remote Sensing:** Available at VO1 & VO2.  
**Hot-Swap:** Available.  
**N+1 Redundancy:** Installed with OR-ing diodes for N+1 redundancy operation.  
**Current Sharing:** Droop current sharing at all output.  
**Power OK Signal:** Available for VO1 & VO2.  
**Over Current Protection (OCP):** Installed in all outputs.  
**Overload Protection (OLP):**  
 Fully protected against output overload and short circuit.  
 Consult factory for special OLP setting.

#### GENERAL SPECIFICATION

**Efficiency:** Typ. 75-78%.  
**Switching Frequency:** 100 KHz.  
**Circuit Topology:** Half-bridge circuit.  
**Transient Response:** Typ. 1.0mS for a 25% load change.  
**Safety Standard:** IEC 60950-1/UL 60950-1 Class I.  
**Construction:** Eurocard 3U x 8HP x 160mm  
 CompactPCI format. Front Panel with either  
 Ordinary handle or Extractor handle.

**Operating Temperature:** 0 to +50°C at full load with specified air flow.  
 Derates linearly to 50% at +70°C.  
**Storage Temperature:** -40°C to +85°C.  
**Temperature Coefficient:** Typ.  $\pm 0.02\%$  /°C.  
**Cooling:** At least 20cfm (600lfm) airflow is required to deliver full rating load.  
**Power Density:** 3.2 Watts /Cubic Inch.

Note: Due to requests in market and advances in technology, specifications subject to change without notification.



For the details of safety approval, please consult the factory.

# OUTPUT VOLTAGE / CURRENT RATINGS CHART

## QUAD OUTPUT

| MODEL NO.      | MAIN +VO1 @★#⊙ |      |       |      | AUX. +VO2 ▲★#⊙@ |       |      | AUX. +VO3▲#⊙(@) |        |      |      | AUX. -VO4 ●#⊙ |       |      |      |
|----------------|----------------|------|-------|------|-----------------|-------|------|-----------------|--------|------|------|---------------|-------|------|------|
|                | Min.           | Typ. | Volt. | Max. | Typ.            | Volt. | Max. | Typ.            | Volt.  | Max. | Peak | Typ.          | Volt. | Max. | Peak |
| HAC175P-490(E) | 0.0A           | 20A  | +5V   | 35A  | 10A             | +3.3V | 20A  | 3.0A            | +12V # | 5.0A | 6A   | 0.5A          | -12V  | 1.0A | 1.0A |
| HAC175P-490(O) | 0.0A           | 20A  | +5V   | 35A  | 10A             | +3.3V | 20A  | 3.0A            | +12V # | 5.0A | 6A   | 0.5A          | -12V  | 1.0A | 1.0A |
| HAC175D-490(O) | 0.0A           | 20A  | +5V   | 35A  | 10A             | +3.3V | 20A  | 3.0A            | +12V   | 5.0A | 6A   | 0.5A          | -12V  | 1.0A | 1.0A |

Symbol: "★" OVP built-in. "@" Adjustable. "(@)" Adjustable factory set.. "#" Remote sensing. "=" Droop Load Sharing. "⊙" Installed with Or-ing diode.

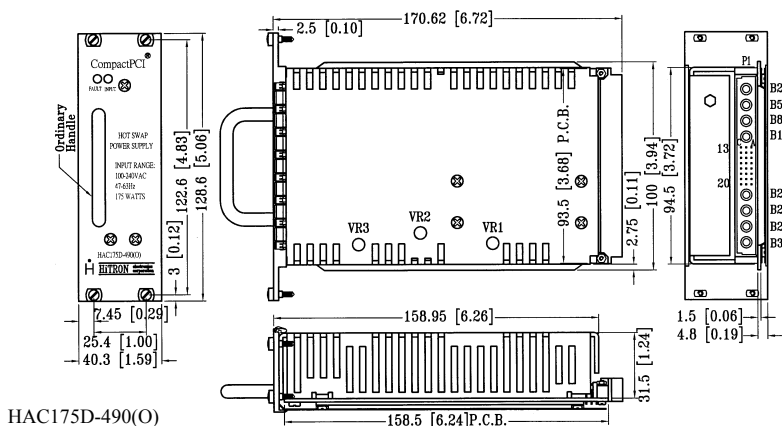
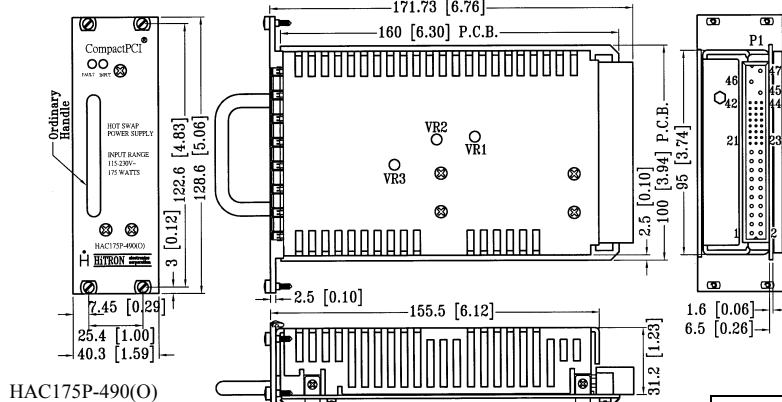
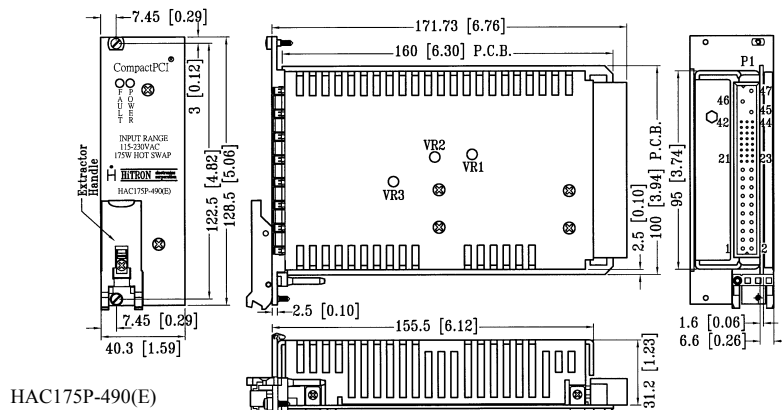
"▲" Magnetic Amplifier. "●" Installed with Post Regulator.

Remark: Peak load less than 60sec. with duty cycle <10%.

Max. load is the continuous operating load of each rail. But the max. load of each rail can't be drawn from all outputs at the same time.

## MECHANICAL DIMENSIONS: MM [INCHES]

WEIGHT: 666.0g (23.5 Oz.)



## INPUT & OUTPUT CONNECTORS PIN ASSIGNMENT

| ASSIGNMENT | PIN NO.                            |
|------------|------------------------------------|
| AC-L       | 47                                 |
| AC-N       | 46                                 |
| AC-GND     | 45                                 |
| VO1        | 1,2,3,4                            |
| VO1 S +    | 30                                 |
| VO1 S -    | 34                                 |
| VO2        | 13, 14, 15, 16, 17, 18.            |
| VO2 S+     | 33                                 |
| VO3        | 20                                 |
| VO3 S+     | 36                                 |
| VO4        | 21                                 |
| DC COM     | 5, 6, 7, 8, 9, 10, 11, 12, 19, 24. |
| EN#        | 27                                 |
| DEG #      | 38                                 |
| INH #      | 39                                 |
| FAL #      | 42                                 |

Mating connector: PCIH47F400A1

## INPUT & OUTPUT CONNECTORS PIN ASSIGNMENT

| ASSIGNMENT | PIN NO.              |
|------------|----------------------|
| AC-L       | B2                   |
| AC-N       | B5                   |
| AC-GND     | B11                  |
| VO1        | B22                  |
| VO1 S +    | A17                  |
| VO1 S -    | A16                  |
| VO2        | B13,14,15,16, 17,18. |
| VO2 S+     | A18                  |
| VO3        | B19                  |
| VO4        | B20                  |
| DC COM     | B25                  |
| EN#        | C13                  |
| DEG #      | C14                  |
| INH #      | A14                  |
| FAL #      | C15                  |

Mating connector: DIN 41612 M24/8-F

HAC175P

HAC175D