

## Universal AC Input Harmonic Correction AC-DC 6U Pentad Output 1000 Watts VPX Switching Power Supplies HAV1000 Series



### Features

- VITA 62 Compliant 6U 8HP or 10HP
- VPX Power Supply
- Wide Operating Temperature Range of -40°C to +85 °C
- Internal Or-Ing Diodes for N+1 Redundancy
- Active Current Sharing
- EMI meet EN 55032 / Class A
- PMBus Interface for Status & Control
- Using 125°C Long Life Solid Capacitors



### Specification

#### Input

<b>Input Voltage</b>	Typical 90-264VAC
<b>Input Frequency</b>	47-63Hz
<b>Input Current</b>	7.3A at 115VAC 5.2A at 230VAC
<b>Inrush Current</b>	37.2A(peak) at 230VAC 10Arms at 230VAC
<b>Power Factor</b>	Typical 0.975 at 230VAC
<b>Input Connector</b>	Tyco 6450843-6
<b>Earth Leakage Current</b>	Typical 1.1mA at 230VAC
<b>No-load Power</b>	Typical 21 Watt at 115/230VAC

#### Output

<b>Output Connector</b>	Tyco 6450849-6
<b>Line Regulation</b>	Typical 0.5%
<b>Load Regulation</b>	V1/V2/V3 typical $\pm 1.5\%$ V4/V5 typical $\pm 5\%$
<b>Total Regulation</b>	V1/V2/V3 typical $\pm 2\%$ V4/V5 typical $\pm 5\%$
<b>Noise &amp; Ripple</b>	Typical 1.5% peak to peak
<b>Remote Sense</b>	Available at V1,V2 & V3
<b>Adjustability</b>	Available at V1,V2 & V3
<b>Current Sharing</b>	Available at V1, V2 & V3

#### Protection

<b>Over Voltage</b>	Built-in at all outputs
<b>Over Current</b>	Built-in
<b>Over Load</b>	Typical 110-150% maximum load fully protected against output
<b>Over Temperature</b>	Installed NTC and thermostat
<b>Hold-up Time</b>	6.2-7.3mS at 115VAC 2.3-2.8mS at 230VAC

#### General

<b>Efficiency</b>	Typical 89% at 230VAC
<b>Switching Frequency</b>	67-100KHz
<b>Dielectric Withstand</b>	Meet IEC62368-1 regulation
<b>Circuit Topology</b>	ZVS Half-bridge circuit
<b>Transient Response</b>	Peak transient < 600 mV & recovers within 3mS after 50% load-change
<b>Remote ON/OFF</b>	Available
<b>Power Fail Signal</b>	Available
<b>Power OK Signal</b>	Available
<b>DC OK Signal</b>	Available
<b>N+1 Redundancy</b>	internal OR-ing diodes
<b>Power Density</b>	5.7-8.3Watts/ Cubic Inch
<b>PMBus</b>	Built-in
<b>Conformal Coating</b>	Available
<b>Environmental</b>	
<b>Operating Temperature</b>	-40 °C to +80 °C with de-rating
<b>Storage Temperature</b>	-45 °C to +90 °C
<b>Cooling</b>	800LFM moving air
<b>Humidity</b>	Operating : 5-90 % (non-condensing) Storage: 0-95% (non-condensing)

#### Safety/EMC

<b>Emissions</b> (conducted)	EN55032 / FCC Class A
<b>Harmonic Current</b>	IEC 61000-3-2
<b>Safety Standard</b>	IEC 62368-1 Class I
<b>CE Standard</b>	Meet Level 3 Criteria A
<b>Vibration</b>	Six degree-of-freedom random 10Hz-2000Hz, 10G

#### Notes:

- (1) All measurement are at nominal input, full load and +25°C unless otherwise specifications.
- (2) Due to requests in market and advances in technology, specifications subject to change without notification.
- (3) A warm-up time 10 minutes is required after cold start at temperature from -40°C to +0°C.
- (4) Tantalum capacitors connected to system is suggested for bettering Ripple & Noise against operating temperature from -40°C to +0°C.
- (5) 125°C OS-CON Long-life Solid capacitors are installed in secondary circuits.

## Output voltage & current rating chart

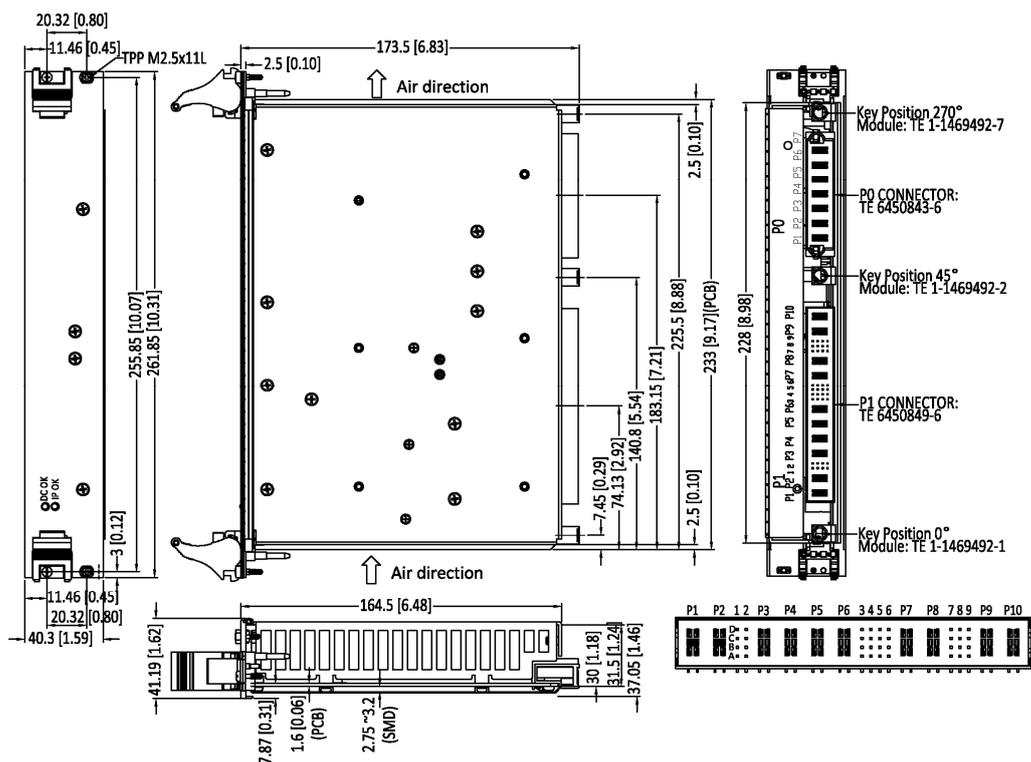
### Pentad Output

Model No.	Volt.	Volt.	Min.	Typ.	Max.	Peak
HAV1000-P120EDII-8HP	V1	+12VDC	0.5A	40A/57A	70A	75A
	V2	+5VDC	0.5A	19A/27A	30A	30A
	V3	+3.3VDC	1.0A	12A/18A	20A	20A
	V4	+12VDC	0.1A	1A/1.5A	2A	2A
	V5	-12VDC	0.1A	1A/1.5A	2A	2A
HAV1000-P120EDII-10HP	V1	+12VDC	0.5A	44A/63A	70A	75A
	V2	+5VDC	0.5A	21A/30A	30A	30A
	V3	+3.3VDC	1.0A	14A/20A	20A	20A
	V4	+12VDC	0.1A	1A/1.5A	2A	2A
	V5	-12VDC	0.1A	1A/1.5A	2A	2A

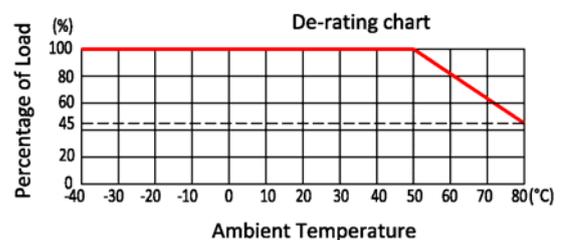
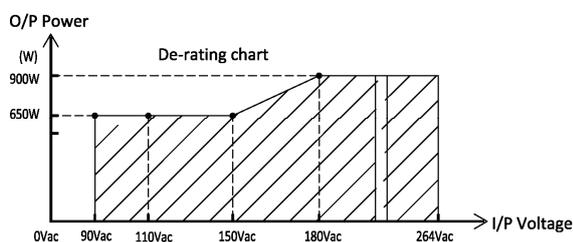
Notes: (1) For 8HP version, the Max. Output power is <=650W at 90-180VAC and 900Watt at 180-264VAC.  
 (2) For 10HP version, the Max. Output power is <=703W at 90-180VAC and 1008Watt at 180-264VAC.  
 (3) Minimum load is strongly required when PSUs in parallel.

### Mechanical Dimensions (All dimensions are in mm[inch])

#### HAV1000-P120EDII-8HP

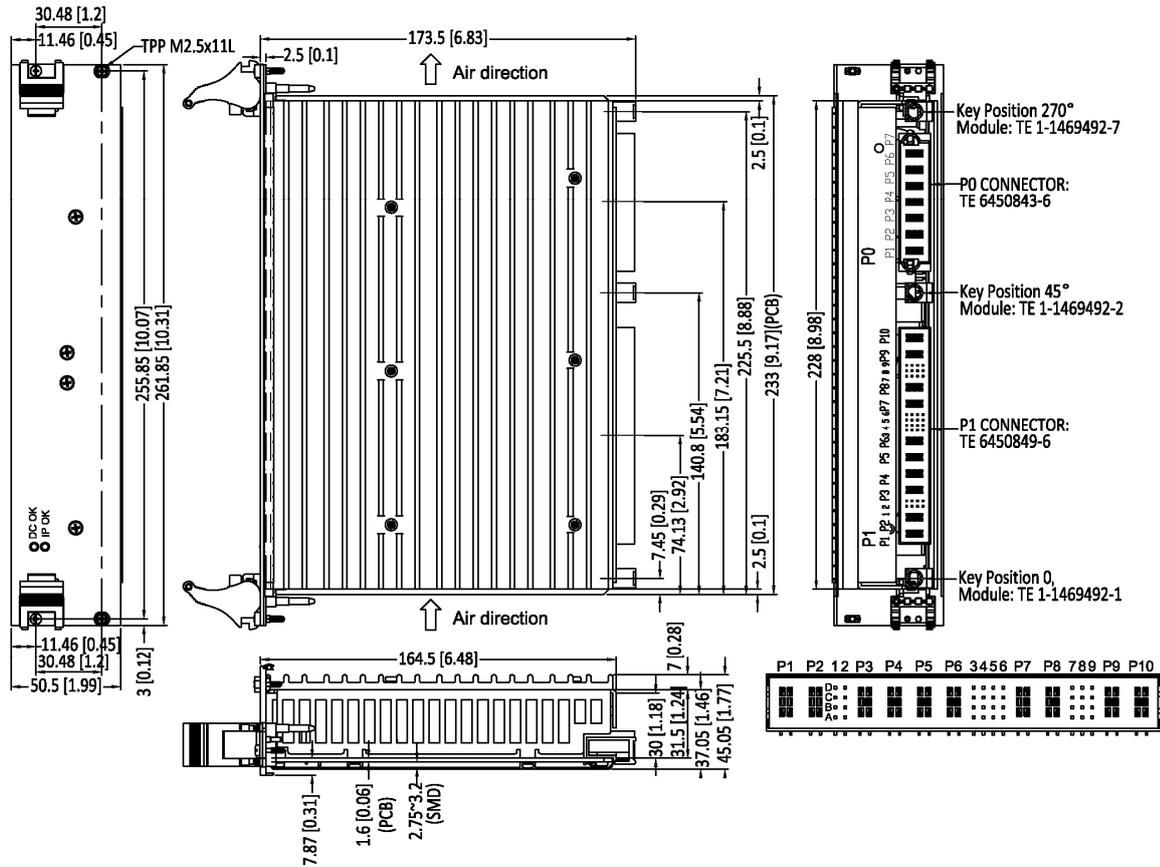


### Derating Chart

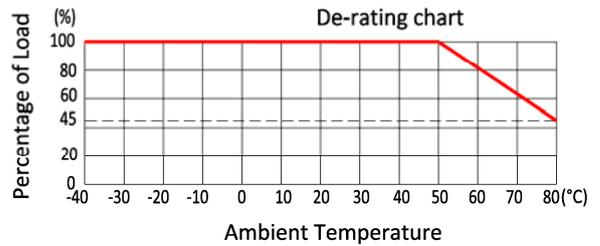
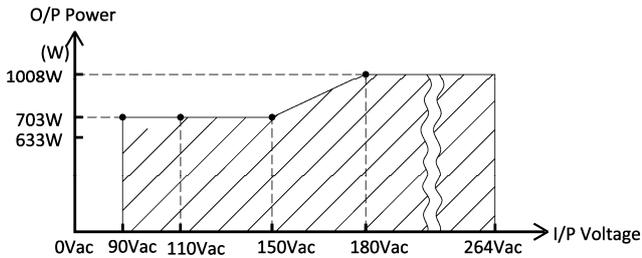


# Mechanical Dimensions (All dimensions are in mm[inch])

HAV1000-P120EDII-10HP



## Derating Chart



## Pin assignment

P0			P1																			
P0-P7	P0-P4	P0-P1	P1	P2	D1	D2	P3	P4	P5	P6	D3	D4	D5	D6	P7	P8	D7	D8	D9	P9	P10	
L	N	G	COM	VO3 3.3V Aux.	PS_RNT C1 V3 +S B1 V3 -S A1 V3 CS	EN C2 INH B2 FAL A2 N/A	COM	COM	VO2 P03 +5V	VO2 P03 +5V	N/A C3 N/A B3 VO4 +12V A3 PSU_R NT	A0 C4 A1 B4 A2 A4 Alert	SDA C5 SCL B5 SDA A5 SCL	SYS RST C6 VO5 -12V B6 N/A A6 N/A	COM	COM	COM	DEG. C7 V2 CS B7 N/A A7 V1 CS	DEG. C8 V2 -S B8 N/A A8 V1 -S	I/P_ok C9 V2 +S B9 N/A A9 V1 +S	VO1 P02 +12V	VO1 P01 +12V