High Voltage UACHV Series

Power Factor Corrected
250 Watts, Up to 300 VDC Output
Hi Reliability, Isolated, Regulated
AC-DC Converter

250 Watts, Up to 300 VDC Output
Universal Input Voltage: 85 to 265 VAC
Power Factor Corrected, 0.99 (50 - 100% Full Load)
Space Saving Design: One module replaces two
Special Output Voltages Available
Regulated Output Voltage
Made in the USA, Fully Encapsulated
Meets EN/IEC 61000-3-2 Requirements

For 3 Phase AC Input Models
Consult Factory:
1-800-431-1064
info@picoelectronics.com

Also Available:
800 Hz Operation

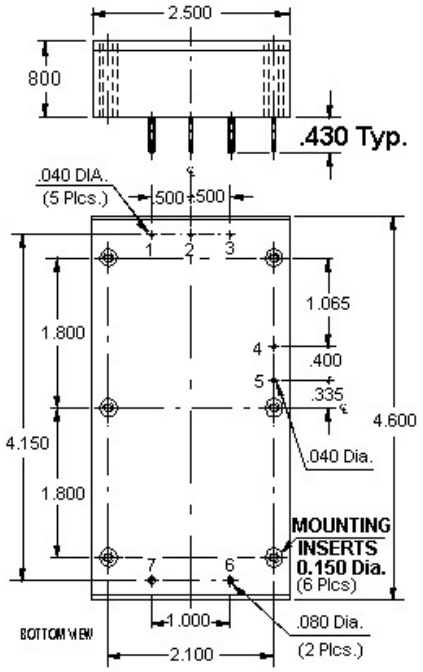
Environmental Screening

Typical Features/Electrical Characteristics
AC Line Input Voltage: 85 to 265 VAC, 47-440 Hz (Derate output power below 95VAC to 200 W maximum).
Output Power: 250 watts, 85 - 95 VAC input 200 Watts maximum
Output Voltage Ripple: 250 - 500 mV, See chart
Operating Temperature: 0 to 85° C, case temperature. See application notes for proper thermal considerations. **Available with -20°C and -40°C Operating Temperature Range - Consult Factory)**
Isolation
• From Input to DC Output: 4242 VDC
From Input or DC output to Case: 2121 VDC
From AC Input to Auxiliary 380 VDC Output: Non-Isolated
Capacitor Requirement: * MUST BE INSTALLED* External at Auxiliary 380 VDC Pins: 220uf, 450 Volt Electrolytic
Current Limit Setpoint: 130% of full load rating (typical)
Operating Frequency: 100KHz

Pico Part No.	Output Voltage VDC	Max. Load Current (A) **	Max. Output Power (watts) **	EFF @ Full Load (%) *	Output Ripple Full Load 1-1 MHz BW mv p-p (%) Typical *	Out Volt Toler-ance (±%) *	V Load Reg 10-100% Load (±%) *	Line Regu-lation (±%) *	Price (US $)
UACHV100S	100	2.50	250	85	250	1.0	1.0	0.2	561.75
UACHV125S	125	2.00	250	85	250	1.0	1.0	0.2	561.75
UACHV150S	150	1.67	250	85	350	1.0	1.0	0.2	561.75
UACHV175S	175	1.43	250	85	350	1.0	1.0	0.2	561.75
UACHV200S	200	1.25	250	85	400	1.0	1.0	0.2	593.85
UACHV225S	225	1.11	250	85	400	1.0	1.0	0.2	593.85
UACHV250S	250	1.00	250	85	500	1.0	1.0	0.2	593.85
UACHV275S	275	0.91	250	85	500	1.0	1.0	0.2	593.85
UACHV300S	300	0.83	250	85	500	1.0	1.0	0.2	658.05

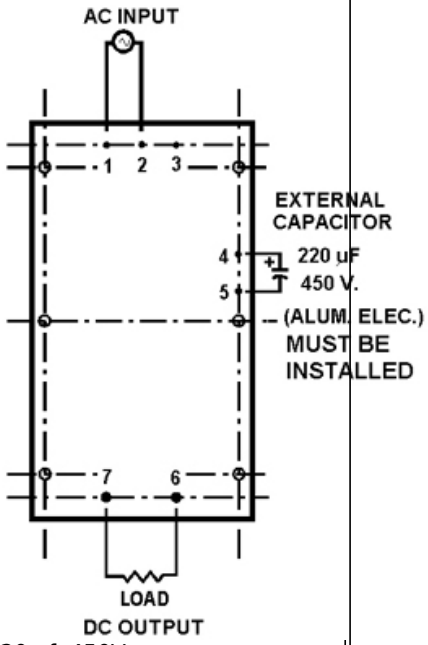
External Capacitor Required: 220µF, 450 V Aluminum Electrolytic Capacitor between pins 4 and 5
Power Factor Corrected: 50 - 100% of Full Load
*All specifications are typical at nominal (115VAC, 60Hz) input, full load and at 25°C baseplate temperature (unless otherwise stated).
** Using proper thermal considerations as outlined in Application Notes

SERIES UACHV



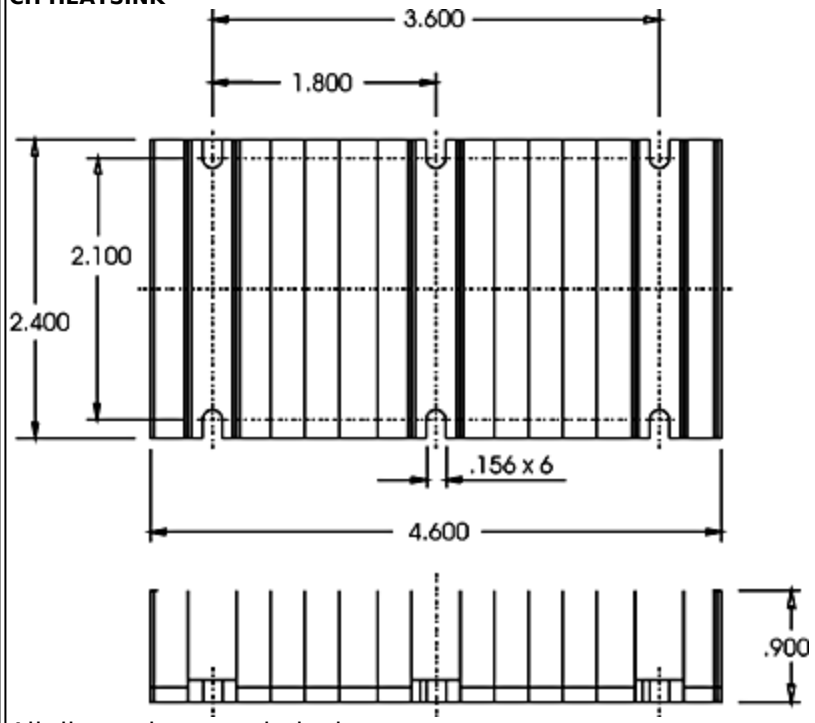
Measurements = inches
Weight: 340 Grams Typical
NOTE: The torque for mounting screws must be 6 to 9 In-Lbs

PIN No.	FUNCTION
1	AC IN
2	AC IN
3	N/C
4	+380 V BUS
5	-V BUS
6	-V OUT
7	+ V OUT



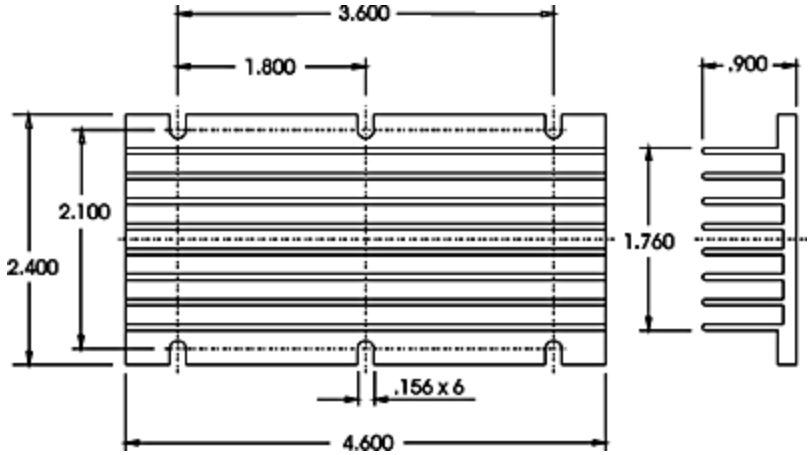
C1 = 220 uf, 450V
Aluminum Electrolytic Capacitor

CH HEATSINK



All dimensions are in inches
Approx. weight = 145 grams

CV HEATSINK



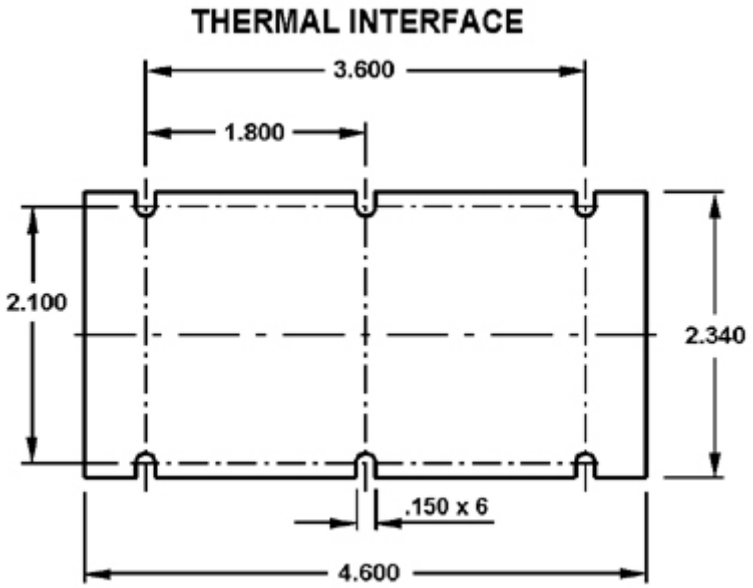
NOTE: Additional Heatsink options, consult factory
Approx. Weight = 145 grams

THERMAL INTERFACE
PART TI

Alloy Aluminum Substrate

Thermal Conductivity, (BTU-in/hr ft² °F) ----1530
Coefficient of Thermal Expansion (25-100°C, 10^{-6} in./in. °F ---13.1

Hardness, Brinnell B ----23
Endurance Limit, psi. ----5000
Standard Thickness (inches) ---.002



Thermal Considerations
Thermal Resistance °C/Watts

	High Voltage UACHV Series		
.	**Baseplate**	**Heatsink CV**	**Heatsink CH**
Free Air	4.8	3.3	2.8
200 LFM	2.6	1.6	0.9
400 LFM	1.6	1.0	0.6
600 LFM	1.3	0.7	0.5
800 LFM	1.1	0.6	0.4
1000 LFM	0.9	0.5	0.35

EXAMPLE 1

A UACHV150S module has an efficiency of 85%. What is the maximum ambient temperature if 250 Watts of power is needed?

A) In free air:

From Table 1: $T_{rca} = 4.8$

Using Relation (2)

$$\Delta T = 4.8(250)\left[\frac{1}{0.85} - 1\right] = -211.8\,^{\circ}c$$

$$Ta = 85 - 211.8 = -126.9\,^{\circ}c$$

B) In free air with heatsink (CV)

$T_{rca} = 3.3$

$$\Delta T = 3.3(250)\left[\frac{1}{0.85} - 1\right] = 146\,^{\circ}c$$

$$Ta = 85 - 146 = -61\,^{\circ}c$$

C) With 400 LFM of air flow and heatsink CH.

$T_{rca} = 0.6$

$$\Delta T = 0.6\,(250)\left[\frac{1}{0.85} - 1\right] = 26.5\,^{\circ}c$$

$$Ta = 85 - 26.5 = 58.5\,^{\circ}c$$

EXAMPLE 2

What would be the maximum output power for a UACHV150S module at an ambient temperature of 50°C with an efficiency of 85%?

A) If the module is used in free air.

From Table 1: $T_{rca} = 4.8$

Using Relation (2)

$$85 - 50 = 4.8\,P_{out}\left[\frac{1}{0.85} - 1\right]$$

$$P_{out} = \frac{35}{4.8\,[0.1765]} = 41.3 \text{ Watts}$$

B) If the module is used in an area with forced air at 200 LFM with no heatsink.

$$T_{rca} = 2.6$$

$$P_{out} = \frac{35}{2.6\,[0.1765]} = 76 \text{ Watts}$$

C) If module with heatsink (CV) is used in free air.

$T_{rca} = 3.3$

$$P_{out} = \frac{35}{3.3\,[0.1765]} = 60 \text{ Watts}$$

EXAMPLE 3

At a maximum ambient temperature of 50°c and an efficiency of 85%, how could a UAC150S module be used if 200 Watts of output is required?

Using Relation (2), we first find the thermal resistance from case to air.

$$\Delta T = T_{rca}(200)\left[\frac{1}{0.85} - 1\right]$$

$$85 - 50 = T_{rca}(35)$$

$$T_{rca} = 1.0$$

A) If no heatsink is used.

From Table 1, approximately 900 LFM of airflow is required.

B) If a (CV) heatsink is used.

400 LFM of airflow is required.

C) If a (CH) heatsink is used.

200 LFM of airflow is required.

For immediate engineering assistance or to place an order:
Call Toll Free: 800-431-1064

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