

## Installation Instructions – H Series

### \*\* Important Note

Before connecting AC power to the H Series, please verify that the power transformer is correctly terminated as detailed section 6. Failure to do so could damage the power supply.

### Installation

#### 1) Power Supply Terminals

To meet safety requirements, the power supply terminals must not be used as the external terminations of any equipment. The wiring of any primary circuitry should be routed in such a way that it does not touch any secondary (output) components.

#### 2) Service Personnel

This product must only be installed in a restricted access location, accessible to authorized competent personnel only. Some surfaces of the power supply may be hot, and must not be touched when the product is in operation.

#### 3) Earthing

For protective earthing, please ensure a secure connection of the Frame Ground terminal to the ground terminal of the equipment as the protective earth connection. Screws and washers used must be of a suitable material as defined by the relevant agency specifications.

#### 4) Cooling

The power supply must be installed where the unit is allowed free air convection. Forced air-cooling will enhance reliability.

#### 5) Remote sensing

Some models have remote sensing to compensate for load cable drops. The H Series units come wired for local sense from the factory. Remove the wire jumpers and install remote sense wiring if load regulation is critical.

Remote sense wiring to the end load should ideally be twisted together and routed separately from load cables or other noisy wiring.

#### 6) Input connection

The AC power is wired directly to the primary of the main power transformer. One or two jumpers will also be needed on that transformer. Connect the AC Line & Neutral and jumper(s) as follows:

<b>AC INPUT &amp; JUMPER INFORMATION</b>				
For use at:	100VAC	120VAC	220VAC	230/240VAC
Jumper(s)	1 - 3, 2 - 4	1 - 3, 2 - 4	2 - 3	2 - 3
Apply L & N to:	1 - 5	1 - 4	1 - 5	1 - 4

7) AC fuse

An external fuse (see ratings table) should be installed. Use a 125VAC or higher rated fuse for 100-120VAC operation, and a 250VAC fuse for 220-240VAC operation. Fuse type should be anti-surge.

8) External Overvoltage Protectors (OVP12 module)

In general most 5V output H Series power supplies come with internal Over Voltage Protection. If OVP is required on other voltage outputs, then an external OVP module should be fitted as follows:

The OVP module is user adjustable from approximately 6.2V to 34V.

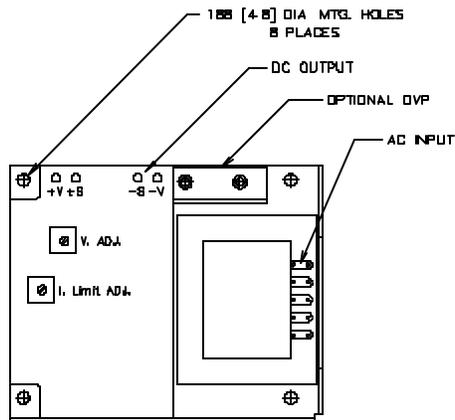
The maximum current rating of the OVP12 module is 12A peak, 8A continuous.

The recommended trigger voltages are

Nominal Output Voltage	Suggested Trip Point
5V	6.2 +/-0.4V
12V	14V
15V	17V
24V	27V
Dual +/-12V	27V
Dual +/-15V	33V

The above table indicates Lambda's recommended level set point for different output voltages. Where +/- outputs exist with a common terminal, a single OVP module located across the + and - terminals will provide functional OVP for both individual outputs.

The OVP module comes complete with mounting hardware and hookup leads. To connect the OVP to your supply, see your power supply's user's manual for recommended placement or Lambda's website [www.lambda.com](http://www.lambda.com) for the power supply outline drawing. See example below



Solder the black lead to the – lead of the supply and the white lead to the + output of the supply. Double check to be sure that the + output of the supply is connected to the + lead of the OVP module and the – output is connected to the – lead. Rotate the potentiometer (R1) on the OVP module completely clockwise. Without having your load connected to the supply, apply power to the supply and adjust the output voltage on the supply, to the level at which you wish the OVP to trigger. Slowly adjust R1 on the OVP module counterclockwise to the point at which the output of the supply drops suddenly. The OVP trip level is now set. Remove input power to the power supply and back the voltage adjust potentiometer slightly. Re-energize the supply and adjust the output voltage to the nominal voltage rating. The OVP trip level is now set. You may wish to set the OVP potentiometer in place with an electrical grade varnish such as glyptol.

Your load is now protected against an overvoltage condition that could destroy the load.

Should you experience a situation where the OVP triggers, remove input power! Check for any failures.

If the input fuse to the power supply is blown, it is a good indication that there is a failure to the power supply itself.

If you find that there is no failure, re-energize the supply. If the supply voltage returns to nominal, the power supply and OVP will be ready for another OVP situation. This is called a nuisance trip. It is not uncommon and does not indicate a failure of the OVP module. Instead, it has done its job and protected your circuit. Nuisance tripping is generally caused by voltage spikes created by the load. If it continually occurs, check your load for noise generating conditions and correct them.

Under all conditions, removal of input power is necessary to reset the OVP.

9) CE Marking

The CE Marking on the product is applied to show conformance to the requirements outlined in the European Union's Low Voltage Directive [72/73/EEC] are amended by the CE Marking Directive [93/68/EEC] in that is compliant with EN60950.

H Series Selector Guide								
Output Voltage (V)	Output Current (A)			Max Output Power (W)	Model	Case Size	AC Input Fusing	
	50°C	60°C	70°C				110V	230V
Single Output Models								
5	3	2.1	1.2	15	HSB 5-3-OVP	A	0.5A	0.25A
5	6	4.2	2.4	30	HSC5-6-OVP	B	1.5A	0.5A
5	9	6.3	3.6	45	HSN5-9-OVP	C	1.5A	0.75A
5	12	8.4	4.8	60	HSD-5-12-OVP	I	2.0A	1.0A
12	1.7	1.2	0.7	20.4	HSB-12-1.7	A	0.5A	0.25A
12	3.4	2.4	1.4	40.8	HSC-12-3.4	B	1.5A	0.5A
12	5.1	3.6	2	61.2	HSN-12-5.1	C	1.5A	0.75A
15	1.5	1.1	0.6	22.5	HSB-15-1.5	A	0.5A	0.25A
15	3	2.1	1.2	45	HSC-15-3	B	1.5A	0.5A
15	4.5	3.2	1.8	67.5	HSN-15-4.5	C	1.5A	0.75A
15	6	4.2	2.4	90	HSD-15-6	I	2.0A	1.0A
24	1.2	0.8	0.5	28.8	HSB-24-1.2	A	0.5A	0.25A
24	2.4	1.7	1	57.6	HSC-24-2.4	B	1.5A	0.5A
24	3.6	2.5	1.4	86.4	HSN-24-3.6	C	1.5A	0.75A
24	4.8	3.4	1.9	115.2	HSD-24-4.8	I	2.0A	1.0A
28	1	0.7	0.4	28	HSB-28-1.0	A	0.5A	0.25A
28	2	1.4	0.8	56	HSC-28-2.0	B	1.5A	0.5A
28	3	2.1	1.2	84	HSN-28-3.0	C	1.5A	0.75A
28	4	2.8	1.6	112	HSD-28-4.0	I	2.0A	1.0A
Dual Output Models								
0.8	1.0/0.8	0.7/0.56	0.4/0.32	24	HDA-12-15	H	1.0A	0.5A
-0.8	1.0/0.8	0.7/0.56	0.4/0.32					
0.8	1.8/1.5	1.26/1.05	0.72/0.6	40	HDB-12-15	D	1.0A	0.5A
-0.8	1.8/1.5	1.26/1.05	0.72/0.6					
12*	3.4	2.4	1.4	80	HDC12	I	2.0A	1.0A
12*	3.4	2.4	1.4					
15*	3	2.1	1.2	80	HDC15	I	2.0A	1.0A
15*	3	2.1	1.2					
Triple Output Models								
5*	3	2.1	1.2	40	HTC1	F	1.0A	0.5A
0.8	1.0/0.8	0.7/0.56	0.4/0.32					
-0.8	1.0/0.8	0.7/0.56	0.4/0.32					
5*	6	4.2	2.8	70	HTD1	G	2.0A	1.0A
0.8	1.7/1.5	1.2/1.05	0.68/0.6					
-0.8	1.7/1.5	1.2/1.05	0.68/0.6					
OVP Option								
N/A	12				OVP12			

\* Isolated outputs

<b>AC Input</b>	100/120/220/230/240VAC 47 - 63Hz (Derate 10% for 50Hz operation)
<b>EMI</b>	FCC Class B, VDE0871 Level B
<b>Leakage Current</b>	< 50uA
<b>Output Voltage Adjustment</b>	± 5% all outputs (except channels 2 & 3 on triple models)
<b>Line Regulation</b>	± 0.05 % for 10% line change
<b>Load Regulation</b>	± 0.05 % for 50% load change
<b>Output Ripple</b>	<3mV peak to peak
<b>Transient Response</b>	50us for 50% load changes for outputs rated up to 6A 100µS for units rated 6A & over.
<b>Temperature Coefficient</b>	± 0.01% per °C
<b>Operating Temperature Range</b>	0 °C ~ +50 °C, derate 3%/°C above 50°C up to 70°C
<b>Storage Temperature Range</b>	-55 °C ~ +85 °C
<b>Operating Humidity</b>	5 ~ 95% RH (non-condensing)
<b>Cooling</b>	Natural Convection
<b>Over Voltage Protection</b>	Standard on 5V outputs set at 6.2V ±0.4V Optional OVP circuit available - OVP12
<b>Over Current Protection</b>	Foldback with automatic recovery
<b>Efficiency (Typical)</b>	5V models 45%, 12/15V models 55%, 24V models 60%
<b>Remote Sensing</b>	All single output models, HDC12 & HDC15 and channel 1 on triple output models.
<b>Warranty</b>	2 years
<b>Agency Approvals</b>	UL1950, CSA950, EN60950, CE Mark
<b>Vibration</b>	MIL STD 810C, Method 514
<b>Shock</b>	MIL STD 810C, Method 516
<b>Dielectric Withstand Voltage</b>	3750VAC Input-Output 1250 VAC Input-Safety ground 500VAC Output-Safety ground