

## HPS35 Series

350 - 1400 Watts

**Total Power:** 350 Watts per module  
**Input Voltage:** 90-264 VAC  
**# of Outputs:** Single and standby



## Special Features

- Active Power Factor Correction
- EN61000-3-2 compliant
- CISPR22, EN55022 Level-B conducted/radiated EMI
- EN61000 immunity standards
- $5V_{sb}@2A$
- Overvoltage protection (OVP)
- Overcurrent protection (OCP)
- Overtemperature protection (OTP)
- AC OK signal and indicator LED
- DC OK signal and indicator LED
- Remote Inhibit
- Remote Sense on main output
- Hot Plug
- N+1 Redundant
- 2 year warranty

## Safety

- **UL** UL60950-1, 1st Ed. (April 1, 2003)
- **CSA** CSA C22.2 60950-1-03
- **TUV** EN60950-1:2001 (1st Ed.)
- **CB** IEC60950-1, 1st Ed. (2001)
- **CE** Mark (LVD)

## Electrical Specifications

### Input

Input voltage:	90-264 VAC typical
Frequency:	47-440 Hz
Inrush current:	40 A peak typical @ 25 °C
Efficiency:	80% typ @ full load, 230 VAC
Power factor:	0.98 typical @ 115 VAC, full load
Turn-on time:	AC ON -2 sec., Inhibit / Enable 160 ms
EMI filter standard:	CISPR 22, EN55022 Level "B"
Leakage current standard:	<0.5 mA max @ 230 VAC @ 60Hz (per module)
Radiated EMI:	CISPR 22, EN55022 Level "B"
Holdup time:	20 ms minimum (independent of input VAC)
AC OK:	5 ms early warning minimum before outputs lose regulation
Harmonic distortion:	Meets EN61000-3-2
Isolation:	Meets EN60950

### Output

Adjustability:	±5% of nominal output voltage
Overall regulation:	±3%
Ripple:	1% of $V_{out}$ pk - pk (20 MHz bandwidth)
Dynamic response:	4% from 25% to 75% load step
Recovery time:	To within 1% in <300 $\mu$ sec
Overcurrent protection:	115 - 130% of rated output current
Short circuit protection:	Protected for continuous short circuit. Auto recovery.
Overvoltage protection:	120 - 140% AC Reset.
Reverse voltage protection:	100% of rated output voltage
Thermal protection:	Main and Aux disabled when internal temp exceeds safe operating range
Remote sense:	Up to 0.5 V total drop
Single wire parallel:	Current share to within 10% of total rated current on main output
DC OK:	±5% of nominal



# Module Information

## Environmental Specifications

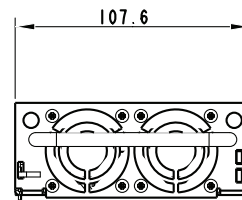
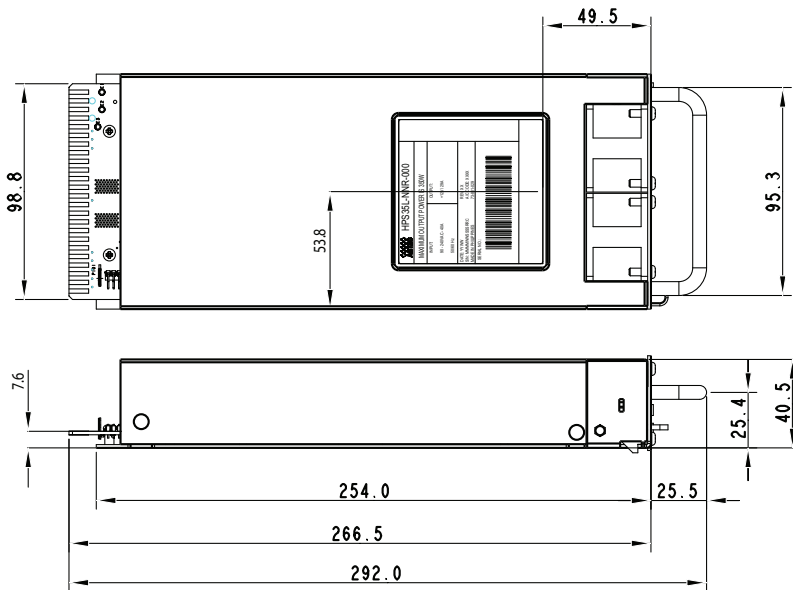
Operating temperature:	0 ° to 50 °C ambient. Derate each output 2.5% per degree from 50 ° to 70 °C
Shock:	Operating: 4g, half sine, 22 ms minimum duration, all 6 faces Non-operating: 30g, half sine, 6 ms minimum duration, all 6 faces
Random Vibration:	Operating: 1g rms, 20 min/axis Non-operating: 2.5g rms, 20 min/axis
Humidity:	95% non-condensing
Storage Temperature:	-40 ° to +85 °C
Temperature coefficient:	0.04% per °C
Cooling	Internal DC fans

## Ordering Information

HPS35L-NNR-000	12V
HPS35Q-NNR-000	24V
HPS35W-NNR-000	48V

## Modules

Watts	350	
Input Voltage	90-264	
Module ID	HPS35	
Code	Volt	Output Amps
L	12.0	29.2
Q	24.0	14.6
W	48.0	7.3
Max. Size (HxWxL)	1.6" x 4.3" x 10.5"	
Number per Rack	4	
Unit Weight (lbs)	3.2	



(All units in mm)

## Pin Assignments

### HPS35 Module

#### Top

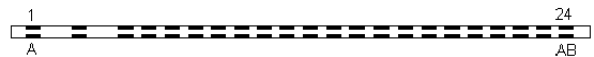
Pin	Description	Pin	Description
1	AC (L)	13	COMMON
2	BLANK	14	V OUT
3	AC (N)	15	V OUT
4	BLANK	16	V OUT
5	GND	17	V OUT
6	SWP	18	V OUT
7	5V RTN	19	V OUT
8	COMMON	20	BLANK
9	COMMON	21	+5 STANDBY
10	COMMON	22	TBA
11	COMMON	23	FAN MON
12	COMMON	24	I <sup>2</sup> C CLK

#### Bottom

Pin	Description	Pin	Description
A	AC (L)	P	COMMON
B	BLANK	R	V OUT
C	AC (N)	S	V OUT
D	BLANK	T	V OUT
E	GND	U	V OUT
F	-SENSE	V	V OUT
H	+SENSE	W	V OUT
J	COMMON	X	INHIBIT
K	COMMON	Y	TBA
L	COMMON	Z	AC OK
M	COMMON	AA	DC OK
N	COMMON	AB	I <sup>2</sup> C DATA

#### Unit Connector

Card Edge Connector with gold fingers double-sided 1.6mm FR-4 PCB

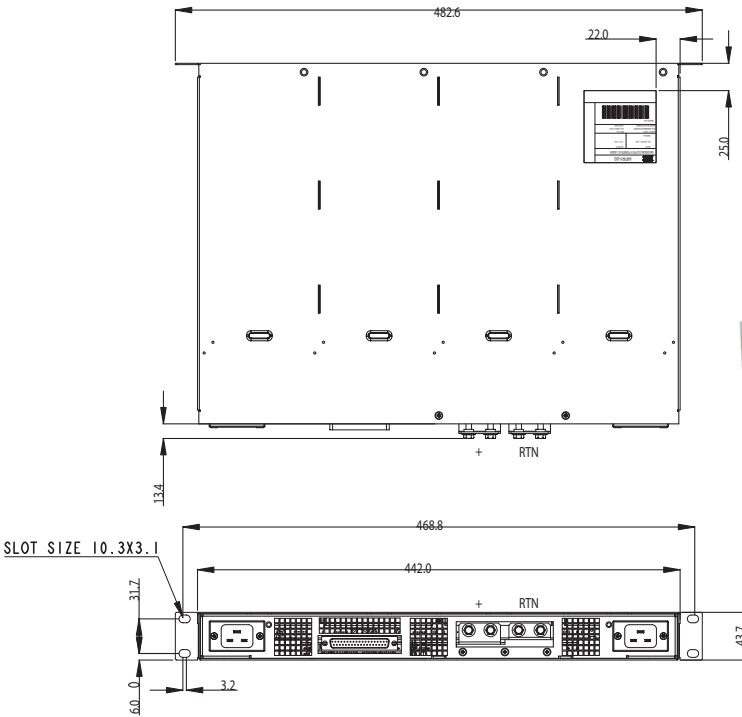


Mating connector:  
EDAC 307-048-520-201 or  
equivalent

Rating: 5A per contact

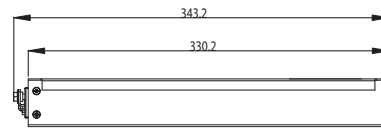


# Rack Information HPR1-00



## Racks

Watts	1400 (fully populated)
Input Voltage	90-264
Module ID	HPS35
Rack ID	HPR1-00
Max. Size (HxWxL)	1.75" x 19.0" x 13.0"
Module Distribution	(4 ea) HPS35
Standard Size	1U
Unit Weight (lbs)	8.6



### AC Cord: (North America)

For all other countries, please contact factory.

- 1) Quail Electronics Series 5050 or equivalent (15A/125V)  
Supply End - NEMA 5-15P  
Equipment End - IEC 60320-C19
- 2) Quail Electronics Series 5052 or equivalent (20A/125V)  
Supply End - NEMA 5-20P  
Equipment End - IEC60320-C19

### Blank Panel:

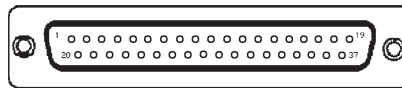
Astec P/N 73-686-000

## D-sub Connector Pin Outs

Pin	Description	Pin	Description
1	5V Return (std-by)	20	I2C CLOCK
2	+ Remote Sense	21	I2C DATA
3	- Remote Sense	22	SWP
4	5V Stand by	23	Unused (I2C_INT)
5	Unused	24	Module Inhibit
6	Module Inhibit	25	DC OK
7	DC OK	26	AC OK
8	AC OK	27	I2C_ADD#1
9	I2C_ADD#1	28	I2C_ADD#2
10	I2C_ADD#2	29	Fan Monitor
11	Fan Monitor	30	Unused
12	Global AC OK	31	Module Inhibit
13	Module Inhibit	32	DC OK
14	DC OK	33	AC OK
15	AC OK	34	I2C_ADD#1
16	I2C_ADD#1	35	I2C_ADD#2
17	I2C_ADD#2	36	Fan Monitor
18	Fan Monitor	37	Unused
19	Global Inhibit		

### PSU Connector

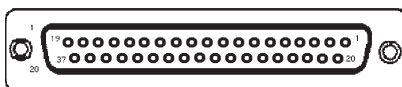
617-A-037-P-AJ-1-21 (Male socket) Amphenol



Pin Out Diagram D-sub Connector (male)

### Mating Connector

617-A-037-S-AJ-1-20 (Female socket) Amphenol

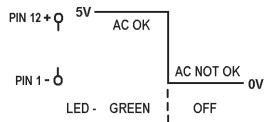


Pin Out Diagram D-sub Connector (female)

## D. Sub Connector Additional Notes

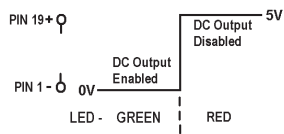
Pin 2 + Remote Sense  
Pin 3 - Remote Sense  
Compensates for up to 0.5V drop.  
Recommended shielded twisted wire pair.

Pin 12 - Global AC OK (OUT signal)



Note: AC OK signals are OR'ed together internally. If any module fails, the LED on the affected module will be off and the logic signal will indicate AC NOT OK.

Pin 19 - Global Inhibit (IN signal)



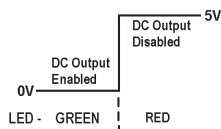
Note: All outputs disabled when Pin 19 is open or High.

Pin 22 - SWP (IN/OUT signal)

SWP Pin is used when connecting racks in parallel to achieve current sharing. Current share accuracy is typically 10% of full load.

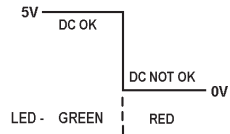
Note: SWP Voltage is 5V at 100% load current.

Module Inhibit (IN Signal)



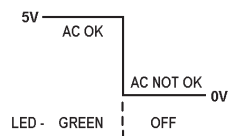
Note: Module Inhibit signals for each slot in the rack is accessible in the D-sub connector (J18). Refer to Connector Pin-out table for pin assignments. Pin 1 is the Return Pin.

DC OK (OUT Signal)



Note: DC OK signals for each slot in the rack is accessible in the D-sub connector (J18). Refer to Connector Pin-out table for pin assignments. Pin 1 is the Return Pin.

AC OK (OUT Signal)



Note: AC OK signals for each slot in the rack is accessible in the D-sub connector (J18). Refer to Connector Pin-out table for pin assignments. Pin 1 is the Return Pin.

Hi state: Source 100uA @ 4V  
Low State: Sink 10mA @ 0.5V

Fan Monitor (OUT Signal)



Note: Fan Monitor signals for each slot in the rack is accessible in the D-sub connector (J18). Refer to Connector Pin-out table for pin assignments. Pin 1 is the Return Pin.

I2C\_ADD#1  
I2C\_ADD#2  
TBD

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