

# JASPER ELECTRONICS

1580 No. Kellogg Dr.  
Anaheim, CA 92807  
USA

Ph: (714) 917-0749 Fax: (714) 687-6909  
[jaspel@earthlink.net](mailto:jaspel@earthlink.net)

## **SERIES HYL HOT SWAP POWER SUPPLIES FAULT TOLERANT - N+1 REDUNDANT WITH POWER FACTOR CORRECTION**

- ◆ > .99 Power Factor
- ◆ IEC555-2 Harmonic Distortion Compliant
- ◆ Single Wire Current Share
- ◆ Internal Oring Diodes Provided
- ◆ Surface Mount Technology
- ◆ International Safety Approvals
- ◆ CE Mark
- ◆ Fan Cooled
- ◆ Optional AC/Power Good LED Display

**1 THROUGH 3 OUTPUTS**

**400 THROUGH 600 WATTS**

A number of typical standard configurations are shown on the following charts. Many other configurations are available with various output modules and options. Please consult your sales representative or the factory for more information.

### Typical Standard Models 400 Watts<sup>1</sup>

# of Outputs	Model	Main, V1 Volts / Amps	V2 Volts / Amps	V3 Volts / Amps
1	HYL401-0	3.3 @ 120		
	HYL401-1	5 @ 80		
	HYL401-2	12 @ 34		
	HYL401-5	24 @ 17		
	HYL401-8	48 @ 8.5		
2	HYLX402-10	5 @ 70	3.3 @ 20	
	HYLS402-05	3.3 @ 50	24 @ 10	
	HYLX402-12	5 @ 50	12 @ 20	
	HLX402-13	5 @ 50	15 @ 16	
3	HYL403-122	5 @ 50	12 @ 10	12 @ 10
	HYL403-033	3.3 @ 50	15 @ 8	15 @ 8
	HYL403-121	5 @ 50	12 @ 10	5 @ 10
	HYL403-125	5 @ 50	12 @ 10	24 @ 5

### Typical Standard Models 500 Watts<sup>1</sup>

# of Outputs	Model	Main, V1 Volts / Amps	V2 Volts / Amps	V3 Volts / Amps
1	HYL501-1	5 @ 100		
	HYL501-2	12 @ 40		
	HYL501-3	15 @ 34		
2	HYLX502-10	5 @ 70	3.3 @ 20	
	HYLS502-15	5 @ 70	24 @ 10	
	HYLX502-12	5 @ 70	12 @ 20	
	HYLX502-13	5 @ 70	15 @ 16	
3	HYL503-122	5 @ 70	12 @ 10	12 @ 10
	HYL503-033	3.3 @ 70	15 @ 8	15 @ 8
	HYL503-153	5 @ 70	24 @ 5	15 @ 8
	HYL503-121	5 @ 70	12 @ 10	5 @ 10

### Typical Standard Models 600 Watts<sup>1</sup>

# of Outputs	Model	Main, V1 Volts / Amps	V2 Volts / Amps	V3 Volts / Amps
1	HYL601-1	5 @ 120		
	HYL601-5	24 @ 25		
	HYL601-8	48 @ 12.5		

1. Total loading of all outputs combined cannot exceed the total rated output power. 250W max for auxiliary (V2,V3) output module, and 10A max current for each individual auxiliary output.
2. Typical peak current on V2 and V3 outputs is 120% of full load.

## Product Specifications:

### Power Factor

>0.99 power factor at full power.

### Input Operating range

90-264 VAC, single phase.  
47-63 Hz.

### Input current (Maximum)

	400W	500W	600W
90VAC	7.5A	9.5A	11.5A
180VAC	3.5A	4.5A	5.5A

### Inrush Limiting

Thermistor soft start.  
75A peak at cold start for 500W/600W.  
38A peak at cold start for 400W.

### Input Transient Protection

MOV & gas tube protection. Withstands transients as specified by IEEE C62.41 3KV (differential & common mode). Auto shutdown when input is more than 130% of nominal line voltage. Designed to meet IEC 801-5.

### Turn-on Time

<2 sec from AC turn on.  
<100 msec from remote on/off.

### Under Voltage Protection

Auto turn off when input is below safe operating limits (approximately 63 VAC).

### Efficiency

65% typical.

### Output Voltage Setpoint

Factory preset within 3% of nominal voltage.

### Line Regulation

< ±0.1% over input range.

### Load Regulation

With remote sense connected when available,  
< ± 0.2% from 0 to 100% load.  
< ± 1.0 % for outputs without remote sense.

### Stability

<0.1% after 20 minutes warm-up.  
<0.2% for the ± dual outputs.

### Ripple & Noise

<1% or 50mV, whichever is greater, with 20 MHz bandwidth limit. Consult factory for measurement method.

### Hold-up Time

> 20 msec at full load.

### Temperature Coefficient

< ±0.02%, per degree C, 0-50°C, after 20 minutes of warm-up.

### Dynamic Response

<3% deviation for a load change of 25% at 1A/usec.  
<200 μsec until output recovers to 1% of nominal voltage.

### Remote Sense

Will compensate for up to 0.5V of total cable loss.

### Current Share/Parallel N+1 Operation

Load sharing within 5% by single wire connection. Standard for V1 and auxiliary outputs > 5A.

### Minimum Load

None for single output V1.  
>10% on main output for multiple output models.

### Overshoot

None for turn-on or turn-off.

### Overload protection

Standard hiccup (cycle on/off) current limit when main output current is 105% to 120% full load, or when the auxiliary outputs V2 or V3 exceeds 120 - 150% of its full load.  
Constant current limit for V3, V4 auxiliary outputs (full load <3A ). Automatic recovery when overload is removed.

### Over Voltage Protection

Non-crowbar type standard for all outputs, set at approximately 125%.

### Over Temperature Protection

Internal temperature sensing. Automatic recovery.

### Reverse Sense Protection

Standard for outputs with remote sensing. Shutdown occurs if remote sense leads are installed reversed.

### Remote On/Off

Enabled by closed circuit or TTL logic 0 (sink 400uA) referenced to V1 negative sense. Disabled by open circuit or TTL logic 1. See options for reversed remote on/off.

### Remote Step Margining

Jumper Remote Adjust pin to High Margin pin to obtain 105% of V1 nominal voltage.  
Jumper Remote Adjust pin to V1 -sense to obtain 95% nominal V1.

### Remote Adjustment

External 0-5VDC on Remote Adjust pin referenced to V1 -sense equals -5% to +5% change of nominal voltage for V1.

Consult factory for availability of Remote Margining and Remote Adjust on models with 4 or more outputs due to pin-out limitations.

## Environmental

### Operating Temperature

0 to 50°C at full load, derates linearly to 50% load at 70°C.

### Storage Temperature

-40 to 85°C.

### Relative Humidity

Up to 90% RH non-condensing.

### Altitude

Operating - 8000 ft. Storage - 30,000 ft.

### Operating Shock

15 G peak, 11 msec duration along three orthogonal axis.

### Operating Vibration

0.75 G peak, 5-500Hz along three orthogonal axis.

### Cooling

Single or dual DC ball bearing fans rated from 20 to 50 cfm dependent on output power range. Forward airflow intake is at the fan and handle end.

### Safety

Complies with UL1950, CSA 22.2, TUV EN 60950 and IEC 950 standards.

### Electromagnetic Interference

Meets FCC, VDE 0871 & CISPR 22, Level A. See options for level B filter.

## Options

### Current Monitor

An analog output voltage proportional to the main output current is available.

### EMI Filter

Optional filter for CISPR 22 level B and FCC 20780 level B.

### AC Good (Power Fail) Signal

Loss of AC causes a TTL compatible signal to go low >2 msec before loss of DC output. At AC turn on, signal stays low until outputs are in regulation.

### DC Good (DC OK) Signal

A TTL signal (TTL high, typically) indicates main output V1 beyond limits (10% typical).

### Reverse Airflow

Consult factory for output power derating.

### Reverse Remote On / Off

Enabled by TTL logic 1 or open circuit. Disabled by short circuit or TTL 0.

### Universal DC Good

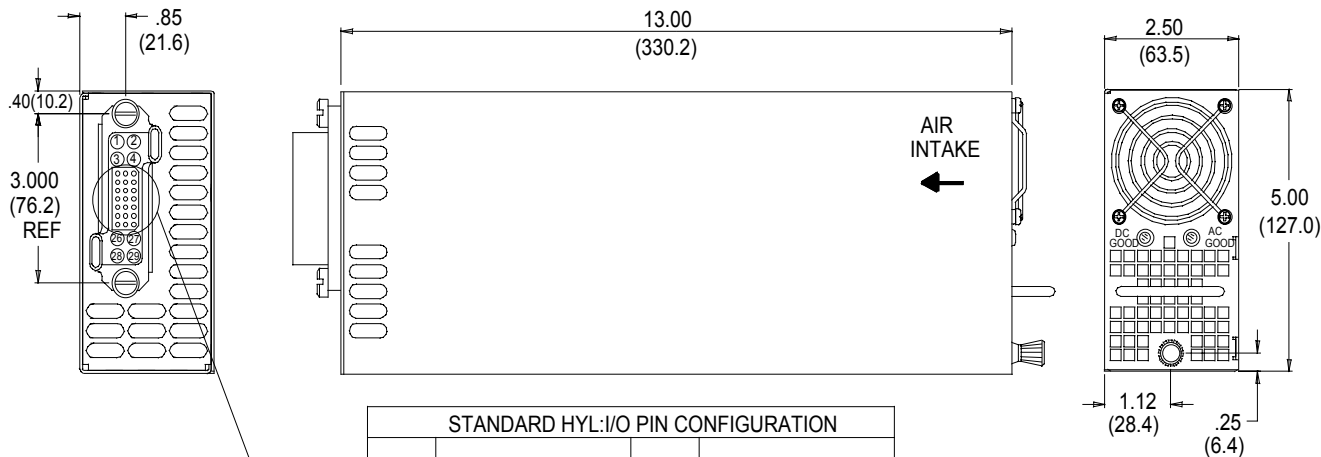
Provides a TTL signal (typical TTL 0) when one output exceeds user-specified limits (typical factory setting: ±10%).

### AC Good / DC Good LED Indicators

LEDs indicate status (off = bad) of the above AC Good and DC Good signals.

## Mechanical Specifications

### SINGLE OUTPUT MODELS



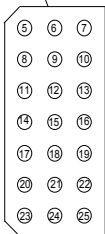
STANDARD HYL:I/O PIN CONFIGURATION			
PIN #	PIN DESCRIPTION	PIN #	PIN DESCRIPTION
1	AC LINE	16	REMOTE ON/OFF
2	AC NEUTRAL	17	V1 CURRENT SHARE
3	CHASSIS GROUND	18	SPARE
4	NOT USED	19	V3 CURRENT SHARE
5	HIGH MARGIN	20	V3 NEGATIVE (-V3)
6	V2 NEGATIVE (-V2)	21	V3 POSITIVE (+V3)
7	V2 POSITIVE (+V2)	22	V3 POSITIVE (+V3)
8	REMOTE ADJUST	23	V3 NEGATIVE (-V3)
9	V2 NEGATIVE (-V2)	24	V3 NEGATIVE (-V3)
10	V2 POSITIVE (+V2)	25	V3 POSITIVE (+V3)
11	V1 + SENSE (+S1)	26	V1 POSITIVE (+V1)
12	V1 - SENSE (-S1) OR SIG RTN	27	V1 POSITIVE (+V1)
13	V2 CURRENT SHARE	28	V1 NEGATIVE (-V1)
14	AC GOOD (PWR FAIL) OPTIONAL	29	V1 NEGATIVE (-V1)
15	POWER GOOD (DC OK) OPTIONAL		

**I/O PIN CONFIGURATION NOTES**

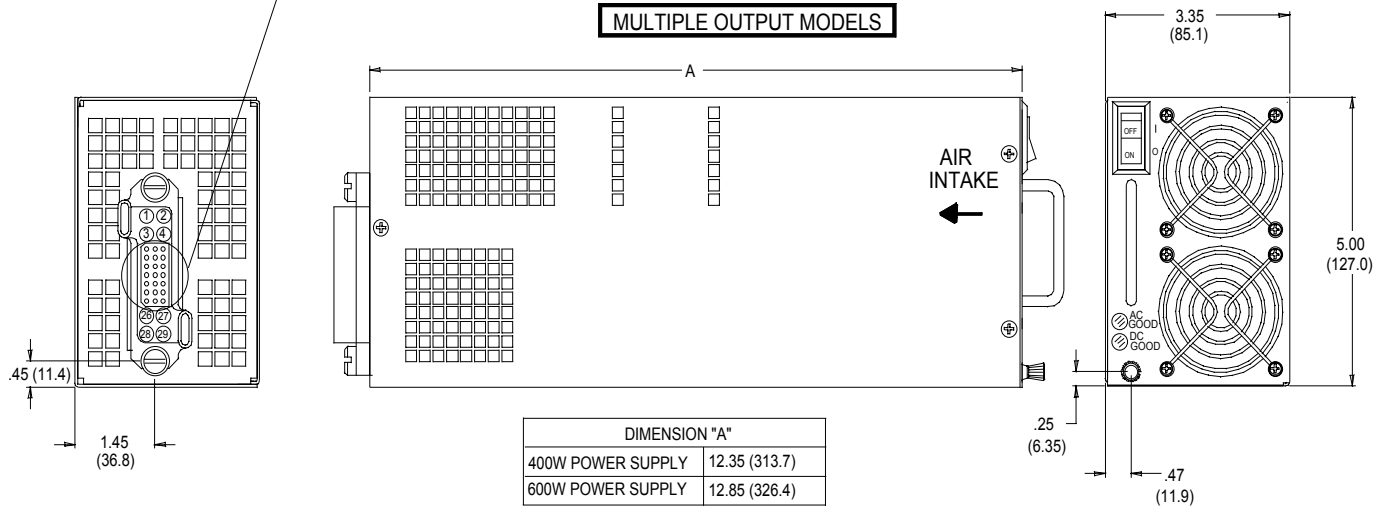
THE FOLLOWING PINS ARE NOT USED FOR SINGLE OUTPUT POWER SUPPLY: 6,7,9,10,13,19,21,22,24,25

FOR MODELS WITH REMOTE SENSE OPTION FOR V2 & V3:  
 PIN 5 = V2 +SENSE (+S2), PIN 8 = V2 -SENSE (-S2)  
 PIN 20 = V3 + SENSE (+S3), PIN 23 = V3 -SENSE (-S3)  
 AND MARGINING IS NOT PROVIDED.

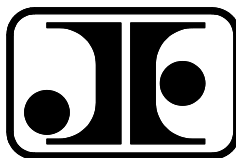
PIN ASSIGNMENTS MAY VARY WITH OPTIONS. CONSULT FACTORY FOR APPROPRIATE CONFIGURATION.



### MULTIPLE OUTPUT MODELS



JASPER ELECTRONICS reserves the right to change specifications without prior notice.



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 FAX: 714.917.0786  
 Sales@jasperelectronics.com