

## JASPER ELECTRONICS

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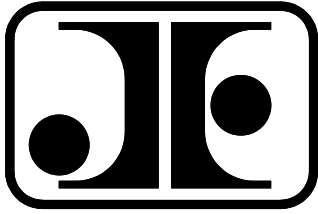
# *HTL MODEL SERIES*

## *200W – 400W, Single and Multiple Outputs*

### **Features:**

- 1 U High
- Hot Swap Power Supplies
- N + 1 Redundant
- Powerfactor Corrected
- Configurable for Power Racks (Ask for Jasper 1U high Power Rack)
- Single Wire Current Sharing
- International Safety Approved
- Fan Cooled – Option
- AC/Power Good LED Display
- Internal Oring Diodes Provided





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### General Product Specifications:

## HTL Model Series

### 200W – 400W, Single and Multiple Outputs.

#### -AC Input-

Voltage/Current.....	AC 90-264V, 47-63Hz, 5.5A Max, 1 Phase.
Fusing.....	AC 6.3A, 250V internal line fuse provided, non-user serviceable.
Power Factor .....	>0.99 line PFC typical at AC 115V, full load.
Inrush Current.....	Thermistor soft start (~25°C cold start). 15Apk @ AC 115V, 30Apk @ AC 230V.
Transient Protection.....	MOV. Withstands transients as specified by EN61000-4-5 (differential / common mode).
EMI Filtering.....	Meets CISPR22B Level A, and EN 55022 Level A.
Efficiency .....	70% typical at AC 115V, full load.
Redundant/Hot Swap.....	Full power N+1 redundant, hot swap capable.

#### -DC Outputs-

Voltage/Current (V/A) .....	Refer to Model Chart.
Line/Load Regulation.....	<±1% at the sense point over full AC input range and 0 – 100% output loading, sense leads connected.
Minimum Loading .....	None required for single unit applications. 10% loading required in N+1, N2 configurations.
Output Turn-on Delay .....	<2 sec from AC turn on. <100 msec from remote enable.
Over/Under Shoot.....	None at turn-on or turn-off.
Stability .....	Output drift <±0.2% after 20 min. warm-up.
Temp. Coefficient.....	<±0.02%/°C, 0-50°C, after 20 min. warm-up.
Dynamic Response.....	Less than 3% deviation with a 25% load change at 1A/μsec. Output recovers to 1% in less than 300μsec.
within Ripple & Noise (PARD) .....	50mV max or <1% peak-to-peak nominal, whichever is greater, at the output terminals with a 20 Mhz bandwidth limit. May be measured with 0.1μF ceramic capacitor in parallel with a 22μF tantalum.
Current Sharing/ Parallel N+1 Operation ...	Single wire connection for ±10% current sharing between any number of units.
Remote Sense .....	Output compensates for up to 0.5V total line drop in the load cables. Output internally sensed if leads are opened.
Over Temperature Protection.....	Internal temperature sensing. Automatic recovery.

Hold-up Time..... Output remains in regulation >20msec minimum following loss of AC power at low line, full load.

Over Current/Short  
Circuit Protection .....

Load current hiccup (cycles on/off). Automatic recovery when overload is removed.

Over Voltage Protection . Non-crowbar type. Output exceeding 25%±10% of nominal Vout will cause the unit to latch off. Remote enable or AC input recycle required to reset.

#### -Signals, Indicators and Controls-

Remote Enable..... Enabled by closed circuit or TTL logic 0. Disabled by open circuit or TTL logic 1.

Power Fail Warning .....

Loss of input AC causes a TTL compatible signal to go low >4msec prior to the output dropping out of regulation. At AC turn-on, signal stays low until the output is in regulation. PF signal also triggered by an under voltage condition (V-out 10% below V-nom.)

LED Indicator..... Front panel mounted, single-color LED. Green indicates AC power ON and output within regulation. Off indicates an input output power fault.

and/or

#### -Operating Environment-

Operating Temperature .. 0° – 50°C ambient at full load, with specified airflow. Derates linearly to 50% at 70°C.

Cooling .....

Provided with internal single or dual DC ball bearing fans dependant on output power, rated 9 cfm minimum each. Forward airflow intake is at end opposite of I/O terminations.

Relative Humidity .....

Up to 90% RH, non-condensing.

Operating Vibration .....

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

Storage Temperature .....

-40° to 85°C.

Altitude .....

Operating to 10,000 ft. Storage to 30,000 ft.

MTBF.....

Designed for 150,000 hours at 25°C.

#### -Interconnect-

**Single** Output Model .....

18-circuit (3X6), sequential contact, hot plug-gable type.  
Positronic Ind. P/N PLC18M4BN0A2-164.9.  
Mates with PI P/N PLC18F300A1.

**Multiple** Output Model ...

38-circuit, sequential contact, hot pluggable type.  
Positronic Ind. P/N PCIH38M400A1-241.1.  
Mates with PI P/N PCIH38F300A1.

**Note:** Use of the specified mating connector is required to insure proper "make/break" sequential contact sequence.

## -Safety-

HTL Single Output

Models Only: ..... Recognized to U.S. and Canadian Bi-National Standard  
 CSA C22.2 No. 60950 / UL 60950, Third (3<sup>rd</sup>) Edition (cULus);  
 TUV approved to TUV EN60950/A1-A4/A11.  
 CE Marked.

Immunity: Complies with EN 50082-1, IEC 802-2,3,4.

<b>Model:</b>	<b>Input:</b> ~100-240V 50/60Hz Single Phase	<b>Output:</b> Volts @ Amps	<b>Fans:</b>
<b>200 Watt:</b>	<b>Input Amps:</b>		
HTL201-3	3.0A Max	15V, 13.3A	Single
HTL201-5		24V, 8.3A	Single
HTL201-6		28V, 7.2A	Single
HTL201-8		48V, 4.2A	Single
HTL201-9		54V, 3.7A	Single
<b>300 Watt:</b>			
HTL301-2	4.5A Max	12V, 25.0A	Dual
HTL301-3		15V, 20.0A	Single
HTL301-5		24V, 12.5A	Single
HTL301-6		28V, 10.7A	Single
HTL301-8		48V, 6.3A	Single
HTL301-9		54V, 5.6A	Single
HTL301-(125)		125V, 2.4A	Single
<b>400 Watt:</b>			
HTL401-5	5.5A Max	24V, 16.7A	Dual
HTL401-6		28V, 14.3A	Dual
HTL401-8		48V, 8.3A	Dual
HTL401-9		54V, 7.4A	Dual

All statements and technical information contained herein are believed by JE to be reliable as of the publication date of this document, but the accuracy or completeness is not guaranteed, and JE reserves the right to change specifications without prior notification. However, every reasonable effort will be made by JE to inform users of JE products of changes to design form, fit or function that may affect the user's applications. JE manufactures a quality product, equal to any available in the marketplace; however, these products are intended to be used in accordance with the specifications described in these instructions. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe.

*HTL Single Output Input/Output and Signal Connector Type and Pin Functions:*

Positronics Ind. P/N PLC18M4BN0. 18 circuit (3x6) hot plug-able type, with 16ga contact pin terminals. Glass filled polyester insulator material, rated 94V-0. Secured in the unit rear. Use of Positronic PLC18F series mating connector is required to ensure correct mating contact sequence and current capacity.

<u>Pin#</u>	<u>Sequence</u>	<u>Function</u>
1	(2) standard,	+V1 (DC power output).
2	(2) standard,	-V1 (Rtn).
3	(2) standard,	Not used.
4	(2) standard,	-S (-V1) Remote Sense.
5	Blank	No connection.
6	(2) standard,	L – Line (AC) Input.
7	(2) standard,	+S1 (+V1) Remote Sense.
8	(1) premate,	-V1 (Rtn).
9	(3) postmate,	Current Share Signal.
10	(3) postmate,	Remote DC Enable. TTL Low/Closed= ON.
11	(1) premate,	Primary Earth (PE) chassis ground.
12	Blank	No connection.
13	(2) standard,	+V1 (DC power output).
14,15	(2) standard,	Not used.
16	(2) standard,	Power Fail Warning.
17	Blank	No connection.
18	(2) standard,	N – Neutral (ACC) Input.

*Indicators and Controls:*

LED 1: DC Power Good. Located on the front panel. The power supply is functioning within specifications when the LED indicator is green. Off indicates an input or output fault condition.

Power Fail Warning ..... P1-16. Loss of input AC causes a TTL compatible signal to go low >4mSec prior to the output dropping out of regulation. At AC turn-on, signal stays low until output is in regulation. PF signal also triggered by an under voltage condition (V-out drops 10% below V-nom.)

Remote Sense ..... P1-4, P1-7. Output compensates for up to 0.5V total line drop in the load cables.

Current Sharing/  
Parallel N+1 Operation..... P1-9. Single wire connection for ±10% current sharing between any number of units.

Remote DC Enable ..... P1-10. Enabled by closed circuit or TTL logic 0. Disabled by open circuit or TTL logic 1.

*Other Features:*

Undervoltage Protection... Auto DC output shutdown when AC input falls below safe operating limits (≈ 80VAC). Automatic recovery.

Minimum Loading..... None required.

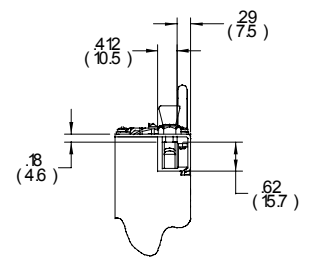
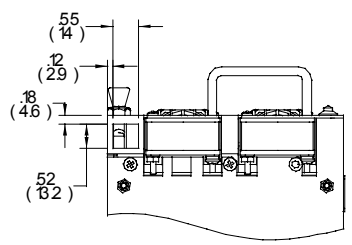
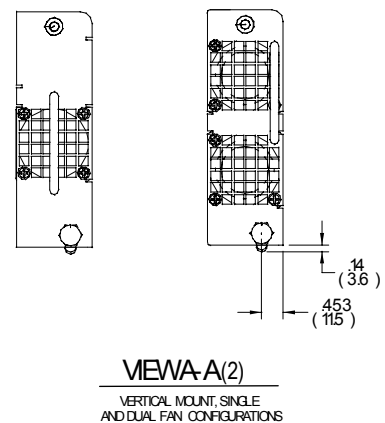
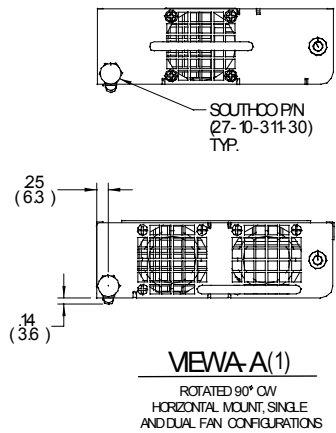
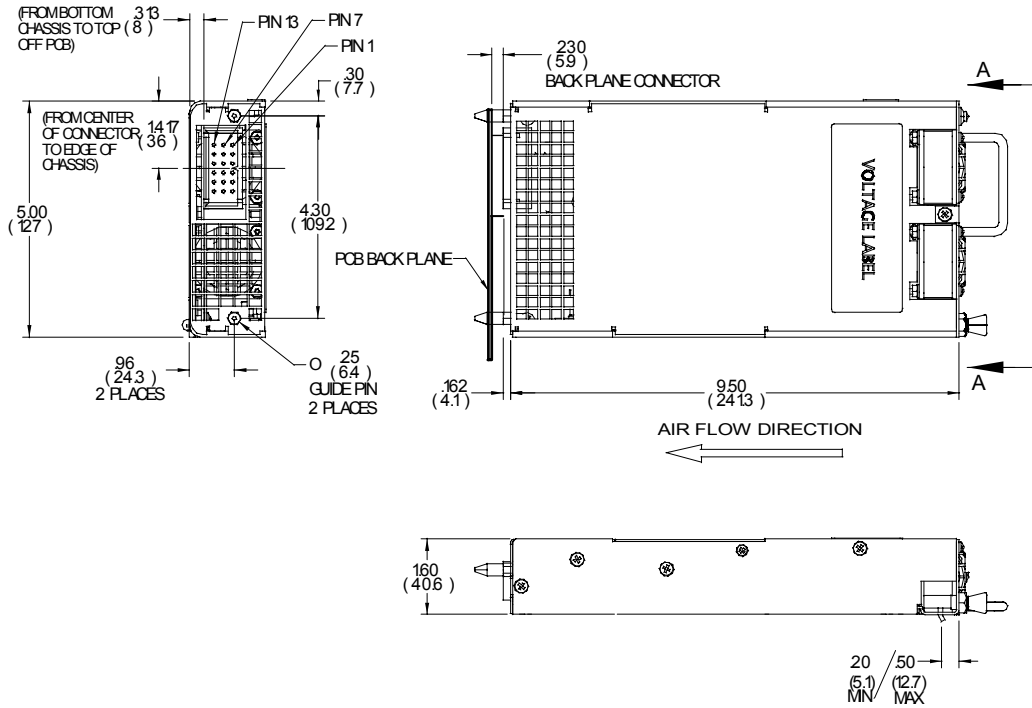
Over Current/Short  
Circuit Protection ..... Standard hiccup mode (on/off cycle) current limit when Vout current is >105% to 120% of full load. Automatic recovery when overload is removed.

Over Voltage Protection... Non-crowbar type. Any output that exceeds 25% ±10% of nominal Vout will cause Vout to latch off. Remote enable or AC input recycle required to reset.

Over Temperature  
Protection ..... Internal temperature sensing. Causes Vout to shut down. Automatic recovery.

# Mechanical Outline

## Single Output



Multiple Output Models

<b>Model:</b>	<b>Input:</b> ~100-240V 50/60Hz Single Phase	<b>V1 (Main) Output:</b> Volts @ Amps	<b>V2</b>	<b>V3</b>	<b>V4</b>	<b>Fans:</b>
<b>200 Watt:</b>	<b>Input Amps:</b>					
HTL202-10	3.0A Max	5V, 25.0A	3.3V, 25.0A			
HTL202-12		5V, 25.0A	12V, 10.0A			
HTL202-13		5V, 25.0A	15V, 6.0A			
HTL202-02		3.3V, 25.0A	12V, 10.0A			
HTL203-122		5V, 25.0A	12V, 8.0A	12V, 3.0A		
HTL203-102		5V, 25.0A	3.3V, 20.0A	12V, 3.0A		
HTL203-121		5V, 25.0A	12V, 8.0A	5V, 4.0A		
HTL203-133		5V, 25.0A	15V, 6.0A	15V, 3.0A		
HTL213-133		5V, 30.0A	15V, 2.0A	15V, 2.0A		
HTL204-1222		5V, 25.0A	12V, 8.0A	12V, 3.0A	12V, 3.0A	
HTL204-1221		5V, 25.0A	12V, 8.0A	12V, 3.0A	5V, 3.0A	
HTL204-1022		5V, 25.0A	3.3V, 15.0A	12V, 3.0A	12V, 3.0A	
HTL204-1021		5V, 25.0A	3.3V, 15.0A	12V, 3.0A	5V, 3.0A	
<b>300 Watt:</b>						
HTL302-10	4.5A Max	5V, 40.0A	3.3V, 40.0A			
HTL302-12		5V, 40.0A	12V, 15.0A			
HTL302-13		5V, 40.0A	15V, 15.0A			
HTL302-02		3.3V, 40.0A	12V, 15.0A			
HTL303-122		5V, 30.0A	12V, 10.0A	12V, 3.0A		
HTL303-102		5V, 30.0A	3.3V, 30.0A	12V, 3.0A		
HTL303-121		5V, 30.0A	12V, 10.0A	5V, 3.0A		
HTL303-133		5V, 30.0A	15V, 8.0A	15V, 3.0A		
HTL303-022		3.3V, 30.0A	12V, 10.0A	12V, 3.0A		
HTL304-1222		5V, 30.0A	12V, 9.0A	12V, 3.0A	-12V, 1.0A	
HTL304-1221		5V, 30.0A	12V, 9.0A	12V, 3.0A	-5V, 1.0A	
HTL304-1022		5V, 30.0A	3.3V, 30.0A	12V, 3.0A	-12V, 1.0A	
HTL304-1021		5V, 30.0A	3.3V, 30.0A	12V, 3.0A	-5V, 1.0A	

*HTL Multiple Output Input/Output and Signal Connector Type and Pin Functions:*

Positronics Ind. P/N PCIH38M400A1.315. 38-circuit hot plug-able type. Glass filled polyester insulator material, rated 94V-0. Secured in the unit rear. Use of Positronic PCIH38F300A1 series mating connector is required to ensure correct mating contact sequence and current capacity.

<u>PIN#</u>	<u>SEQ</u>	<u>FUNCTION</u>
01-02	2	N/U Not Used.
03-04	2	+5.0V V1 Output.
05-06	2	GND V1 Return.
07-10	2	N/U Not Used.
11-12	2	GND V2 Return.
13-14	2	+3.3V V2 Output.
15-16	2	N/U Not Used.
17	2	+12.0V V3 Output.
18	2	GND V3 Return.
19,20	2	N/U Not Used.
21	2	-12.0V V4 Output.
22,23	2	GND V4 Return.
24	2	+S1 +5.0V (V1) Remote Sense.
25	3	R/EN Remote Enable. Close circuit to GND.
26	2	S-RTN Sense Return for V1, V2.
27	2	+S2 +3.3V (V2) Remote Sense.
28-30	2	N/U Not Used.
31	2	R/INH Remote Inhibit. Close circuit to GND.
32	3	ISHR-1 +5.0V (V1) Current Share.
33	3	ISHR-2 +3.3V (V2) Current Share.
34	3	N/U Not Used.
35	2	PF Power Fail Signal.
36	1	PE Primary Earth (chassis) Safety Ground.
37	2	ACC Neutral AC Power Input.
38	2	AC Line AC Power Input.

*Indicators and Controls:*

LED 1: DC Power Good. Located on the front panel. The power supply is functioning within specifications when the LED indicator is green. Off indicates an input or output fault condition.

Power Fail Warning ..... P1-35. Loss of input AC causes a TTL compatible signal to go low >4mSec prior to the output dropping out of regulation. At AC turn-on, signal stays low until output is in regulation. PF signal also triggered by an under voltage condition (V-out drops 10% below V-nom.)

Remote Sense ..... P1-24, P1-26, P1-27. V1, V2 outputs

compensate for up to 0.5V total line drop in the load cables.

Current Sharing/  
Parallel N+1 Operation..... P1-32, P1-33. Single wire connection for V1 and V2. ±10% current sharing between any number of units.

Remote DC Enable ..... P1-25. Enabled by closed circuit or TTL logic 0. Disabled by open circuit or TTL logic 1.

Remote DC Inhibit ..... P1-31. Enabled by open circuit or TTL logic 1. Disabled by closed circuit or TTL logic 0.

*Other Features:*

Undervoltage Protection... Auto DC output shutdown when AC input falls below safe operating limits (≈ 80VAC). Automatic recovery.

Minimum Loading ..... None required.

Over Current/Short  
Circuit Protection ..... Standard hiccup mode (on/off cycle) current limit when Vout current is >105% to 120% of full load. Automatic recovery when overload is removed.

Over Voltage Protection... Non-crowbar type. Any output that exceeds 25% ±10% of nominal Vout will cause Vout to latch off. Remote enable or AC input recycle required to reset.

Over Temperature  
Protection ..... Internal temperature sensing. Causes Vout to shut down. Automatic recovery.

# Mechanical Specifications

## Multiple Output.

