



FEATURES

- •1 U High
- N + 1 Redundant
- Power Factor Corrected
- Configurable for Power Racks (Ask for Jasper 1U High Power Rack)
- Single Wire Current Sharing
- CSA / UL / TUV / CE Approved (Single Output)
- Fan Cooled Option
- UV/ OV/ Overtemp Protected
- Internal O-ring Diodes Provided



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HTL Series 200-400W Hot Swap Power Supplies

Single and Multiple Outputs



HTL SERIES FRONT VIEW

GENERAL OVERVIEW

Jasper's Ultra-Reliable HTL-Series Power Supplies are most commonly used in redundant systems in applications such as nuclear plants, server rooms, security systems, and communication systems. Units in this series are available from 200W–400W, and universal AC input with single and multiple output from 12V-54V.

FEATURES ON SELECT MODELS INCLUDE:

- 90-264VAC Universal Input
- North American Safety Certification, CB Scheme & CE
- ORing Diodes for N+1 Redundant Operation
- Hot Swappable
- 24-54VDC Outputs with Choice of Standby Voltages
- High Power Factor and 90% + Efficiency
- Full Power to 50C Ambient with Derating to 70C
- High Density 1U Form Factors
- Custom Performance & Mechanical Modifications Readily Available
- Models can be ruggedized against high shock, vibration, and humidity to meet MIL-STD-810 requirements









TECHNICAL SPECIFICATIONS

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 Level A	Meets CISPR22B Level A, and EN 55022
Efficiency	70% typical at AC 115V, full load
Redundant/Hot Swap Capable	Full power N+1 redundant, hot swap
DC OUTPUTS	
Voltage/Current (V/A)	Refer to Model Chart
Line/ Load Regulation	$<\pm1\%$ 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 minute warm-up
Temperature Coefficient	<±0.02%/ºC, 0-50ºC, 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
Ripple and 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 0.1μ F ceramic capacitor in parallel with a 22 μ F tantalum
Current Sharing/ Parallel N+1 Operation	Single wire connection for $\pm 10\%$ 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 $25\% \pm 10\%$ of nominal Vout will cause the output to latch off. Remote enable or AC input recycle required to reset
SIGNALS, INDICATORS AND CONT	TROLS
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 regula- tion. 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 and/ or output power fault.

*Specifications subject to change without notice.





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			
Operational 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 hrs at 25°C			
INTERCONNECT				
Single Output Model	18-circuit (3X6), sequential contact, hot pluggable 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 (3rd) Edition (cULus); TUV approved to TUV EN60950/A1-A4/A11. CE Marked. Immunity: Complies with EN 50082-1, IEC 802-2,3,4.			

*Specifications subject to change without notice.

MODEL	INPUT ~100-240V 50/60Hz Single Phase	OUTPUT: Volts @ Amps	FANS
200 Watt	Input Amps		
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
300 Watt			
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
400 Watt			
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.

PIN#	SEQUENCE	FUNCTION
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 drop- ping 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 $\pm 10\%$ 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 (\approx 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 $25\% \pm 10\%$ 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





SINGLE OUTPUT MECHANICAL DRAWING







MODEL	INPUT ~100-240V 50/60Hz Single Phase	V1 (MAIN) OUTPUT Volts @ Amps	V2	V3	V4	FANS
200 Watt	Input Amps					
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	İ	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	
300 Watt						
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.

PIN#	SEQUENCE	FUNCTION			
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. $\pm 10\%$ 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 (\approx 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. Auto-matic recovery when overload is removed
Over Voltage Protection	Non-crowbar type. Any output that exceeds $25\% \pm 10\%$ of nominal Vout will cause Vout to latch off. Remote enable or AC input recycle required to reset





MULTIPLE OUTPUT MECHANICAL SPECIFICATIONS DRAWING









INNOVATIVE SPECIALTY DC POWER SYSTEMS

Standard and Custom Power Supplies from 5W to 10KW

TRAFFIC CONTROL POWER SUPPLIES



- 70-400+ Watts / 120 and 220 VAC Models Available
- CALTRANS TEES, NYSDOT, CDOT, GDOT Compliant for 332, 334, 336, 342, 344, and 346 Series cabinets
- RoHS and NEMA Compliant
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

CUSTOM POWER DISTRIBUTION ASSEMBLIES (PDAs)



- Compliant with TEES 2020
- 1U smaller than the PDA2-LX and PDA3-LX
- User accessible slots as specified
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

COMPACT PCI



- AC or DC input, 175W 500W DC output, active PFC
- 3U x 8HP, 6U x 8HP sizes
- PICMG 2.11 compliant, UL/CSA, NEMKO/TUV/CE certified, ROHS compliant
- Ruggedization against shock/ vibration/ humidity optional

Primary Applications: Industrial Computing, Military, Satellite Comm, Test, Transportation, Telecom, Aerospace

SPECIALTY HOT-SWAPPABLE POWER SUPPLIES



- 200-1500W, Universal Input, 5-54VDC Output
- Hot Swap. N+1, 90+% Efficiency
- 1U Form Factors
- 30+ Variations for Various Applications Including Nuclear
- Ruggedization against shock/ vibration/ humidity optional

Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics

RACK POWER SYSTEMS



- 200W-1500W, 2-8 slots, single or mixed output voltages, up to 10KW total
- Single, dual, or individual unit AC or DC input
- Internally or externally redundant DC outputs
- Standard 19" and 23" size or user-specified configurations also available
- Ruggedization against shock/ vibration/ humidity optional

Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics

LOW NOISE CONVECTION / CONDUCTION COOLED POWER SUPPLIES



- 200W-500W, 90—264VAC full range input with 12-54 VDC Output
- Wide operating temperature range / high efficiency
- Small form factors
- Ruggedization against shock/ vibration/ humidity optional

Primary Applications: Medical Equipment, Military, IT, Sensitive Electronics

MEDICAL ADAPTERS



- 6W-250W, Efficiency levels V & VI
- Desktop, Wall-mount, and Interchangeable AC
 plug types
- Large selection of output connectors additional cable lengths available
- UL60601 (medical) approved adapters available
- Ruggedization against shock/ vibration/ humidity optional

CUSTOMS & MODIFIED STANDARDS



- 75W-2KW
- Single to 7 outputs
- Designed and built to custom or semi-custom specifications
- Ruggedization against shock/ vibration/ humidity optional
- Custom electrical specs, chassis, paint, labeling, connectors, interface all available

Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics





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