



JASPER ELECTRONICS

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HHL1200 SERIES

1200 WATTS, SINGLE OUTPUT

Features:

- Universal input
- Front-end power supply
- 0.99 line power factor
- High density, 16.6 to 17 W/cu in.
- High efficiency
- Hot Swap-Redundancy.
- Internal Oring MOSFETs
- I²C interface status and control
- Extended operating temperature range
- Status LEDs
- Choice of 5V or 12V standby voltage
- Single wire current share
- cULus, TUV and CE Marked

General Product Specifications:

-INPUT-

Voltage/Current AC 90-264V, 12.4Arms max, 47-63Hz, 1 Phase.
 Fusing AC 15.0A, 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).
 35 Apk @ AC 115V, 70 Apk @ AC 230V.
 Transient Protection Withstands transients as specified by EN61000-4-5 (differential and common mode).
 Under Voltage Protection Auto DC output shutdown when AC input falls below safe operating limits (\approx 80V AC). Automatic recovery.
 EMI Filtering Meets FCC Level B, and EN 55022 Level B.
 Efficiency 90% typical at AC 230V, full load.
 Redundant/Hot Swap Full power N+1 redundant, hot swap capable.

-OUTPUTS-

Voltage/Current (V/A).....	V1 ⁽¹⁾	V2 Standby ⁽²⁾
HHL1201-2	12.0V @ 100.0A/83.3A	5.0V @ 1.0A
HHL1201-5	24.0V @ 50.0A/41.7A	"
HHL1201-6	28.0V @ 42.8A/35.7A	"
HHL1201-8	48.0V @ 25.0A/20.8A	"
HHL1201-9	54.0V @ 22.2A/18.5A	"

- 1) Total loading not to exceed 1200 Watts at high line (180V-250V), and not to exceed 1000 Watts at low line (90V-132V). Outputs also derate linearly above 50°C ambient. See Op. Temp. specification.
- 2) Optional 12V, 0.5A standby output available.

Output Voltage Setpoint. Factory preset within \pm 0.2% of nominal voltage.
 Line/Load Regulation 1% at the sense point over full AC input range and 0 – 100% output loading, with sense leads connected.
 Minimum Loading None required.
 Stability Output drift $<\pm$ 0.2% after 20 minute warm-up.
 Temp. Coefficient $<\pm$ 0.02%/°C, 0° - 50°C, after 20 minute warm-up.
 Dynamic Response Less than 3% deviation with a 25% load change at 1A/ μ sec. Output recovers to within 1% in less than 300 μ sec.
 Ripple and Noise (PARD) <1% nominal with a 20 MHz bandwidth limit, measured with a 0.1 μ F ceramic capacitor in parallel with a 20 μ F tantalum capacitor connected between the measured output and its return at the connector.
 Current Sharing/ Parallel N+1 Operation... Single wire connection. CS Accuracy is \pm 10% of rated current between any number of units.
 Remote Sense Output compensates for up to 0.25V total line drop in the load cables. Output is internally sensed if leads are opened. Δ V_o \leq 1V.
 Output Turn-on Delay <1sec from AC turn-on.
 <100msec from remote enable.
 Over/Under Shoot None at turn-on or turn-off.
 Hold-Up Time Output remains in regulation 16mSec *minimum* following loss of AC power at low line, full load.

Over Current/Short Circuit Protection Standard hiccup mode (cycles on/off) current limit when output current is 110% to 130% of full load.
 Over Temperature Protection Internal temperature sensing. Causes output to shut down. Automatic recovery.
 Over Voltage Protection Non-crowbar type. V-out exceeding 25% \pm 10% of nominal will cause output to latch off. Remote enable or AC input recycle required to reset.
 Reverse sense Protection Power supply shuts down if sense leads are reversed

-SIGNALS, INDICATORS and CONTROLS-

Remote Enable Enabled by closed circuit or TTL logic 0. Disabled by open circuit or TTL logic 1.
 Remote Adjust External 0-5V DC on remote adjust pin referenced to negative sense equals -5% to +5% change of nominal output voltage.
 Power Good (DC-OK) Signal High signal when V-out is above 97% of nominal voltage. Signal goes low when V-out drops below 95% of nominal.
 Power Fail Warning Loss of input AC causes a TTL compatible signal to go low >4msec prior to any output dropping out of regulation. At AC turn-on, signal stays low until outputs are in regulation.
 Indicator LEDs Dual, front mounted. Single-color AC input: Amber indicates power ON. Dual color DC output: Green indicates the output is within tolerance, and Red indicates an output fault.

-I²C Serial Communication-

Optional. Specifications TBD.

-OPERATING ENVIRONMENT-

Operating Temperature.. 0 - 50°C ambient at full load. V1 output derates linearly to 60% of full load at 70°C.

Cooling Internal front panel mounted, dual DC ball bearing fans provided. CFM rating TBD. Forward airflow direction is front to rear.

Audible Noise 45dba at 25°C, 110V/220Vac operation. Fan speed adjusts as a function of load and ambient temperature.

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-

AC Inlet Connector,
Standard..... Recessed 3-circuit, IEC 320/C14 receptacle. User accessible on the front panel.

Optional..... AC input via the rear mounted, pluggable output connector. See option "I" in the model configuration code section.

Output Connector..... 33 circuit (9 power, 24 signal) sequential contact, hot pluggable type, located at the rear.

Notes: Use of the specified mating connector is required to insure proper "make/break" sequential contact sequence. When standard AC input configuration selected, optional Line and Neutral pluggable connections are still present but disabled.

-MECHANICAL-

Size 4.1" x 1.6" x 11.2"

Weight TBD.

Retaining Latch Side mounted, lever type with positive retaining screw. User accessible on the front panel.

Mounting Orientation..... Horizontal or vertical at user's option. Requires user to provide appropriate latching point. Refer to mechanical outline drawing.

-SAFETY-

Designed to comply with the relevant industry standards of the authorities having jurisdiction. Pending JE engineering evaluation of the final design configuration, this model series may be submitted for certification to the U.S. and Canadian Bi-National Standard CSA C22.2 No. 60950 / UL 60950-1, First (1st) Edition (cULus or cCSAus); and for approval by TUV Product Services to IEC EN60950. CE Mark pending final configuration acceptance.

Input/Output and Signal Connector Type and Pin

Functions:

<u>Pin#</u>	<u>Sequence</u>	<u>Function</u>
		TBD

-LIMITED WARRANTY POLICY-

All Jasper Electronics (JE) standard model power supplies and products are guaranteed to be free of defects in workmanship and materials for a minimum of two (2) years from the date of original shipment, when operated within specification. This warranty applies only to defects that result in a failure to comply or perform to published specifications. Non-standard (custom) power supplies and products may be warranted on an individual basis. The unused portion of this warranty is fully transferable with the original equipment in which the power supply is installed.

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 this catalog. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe.

ORDERING INFORMATION:

A multi-character option code is required following the base model description to define the required model configuration. Codes added in the following sequence, 1 from each category:

HHL1201-	(1)-	(2)	(3)	(4)	(5)	(6)
Base Model.	V1 Output Voltage Code.	Standby Output Voltage.	I ² C Serial Comm.	AC Input Connection.	-MXXXX Custom Configuration.	RoHS Compliant Model

- Configuration Options -

Option:

Code:

- (1) V1 Output 2 = 12.0V,
5 = 24.0V,
6 = 28.0V,
8 = 48.0V,
9 = 54.0V.
- (2) Standby Voltage -1 = 5.0V, standard.
-2 = 12.0V, optional.
- (3) I²C Serial Comm. N = Not required.
I = Included, optional.
- (4) AC Input Connection S = Standard, front panel receptacle for user supplied detachable power cord.
P = Optional, via rear mounted pluggable connector.

Examples: HHL1201-5-1ISG (12V V1, 5V Sb, I²C option, cord connected).
HHL1201-8-2NSG (48V V1, 12V Sb, no I²C option, pluggable AC input).
- (5) Custom Configuration MXXXX: Modified, where XXXX is a factory assigned 4-digit number to identify a user specified configuration. Such models may include special or non-standard features and/or options, or be in a configuration differing sufficiently from the design of the approved similar standard model from which it is derived to require re-evaluation of all or part of the design to insure continuing compliance with all safety require-ments. Option codes 2,3,4 may not be present in the model description as these requirements are generally defined in the user specification documentation on file with the factory. Consult the factory for exact requirements.

Examples: HHL1201-5-M6341G
- (6) RoHS 6 Compliant G: Jasper products that are fully compliant with the requirements of Directive 2002/95/EC Restrictions of Hazardous Substances (RoHS) are identified with the letter code "G" either included in or adjacent to the model description on the unit labels and related documents (sales orders, etc). All materials, processes and packaging used in the assembly and shipping of this product comply.
G5: For user determined applications that require the use of lead based solder for component connections to printed circuit boards, specify "G5" for RoHS 5 compliance.

Mechanical Outline

(Dimensions in millimeters [inches])

