

MHI-1005

Description

The **MHI-1005** is a custom housed Power Supply, based on a Modular Design.

The MHI-1005 is manufactured in the UK, and is assembled in our facility certified to AS-9100, J-STD-001, & IPC-A-610 Class 3.

General

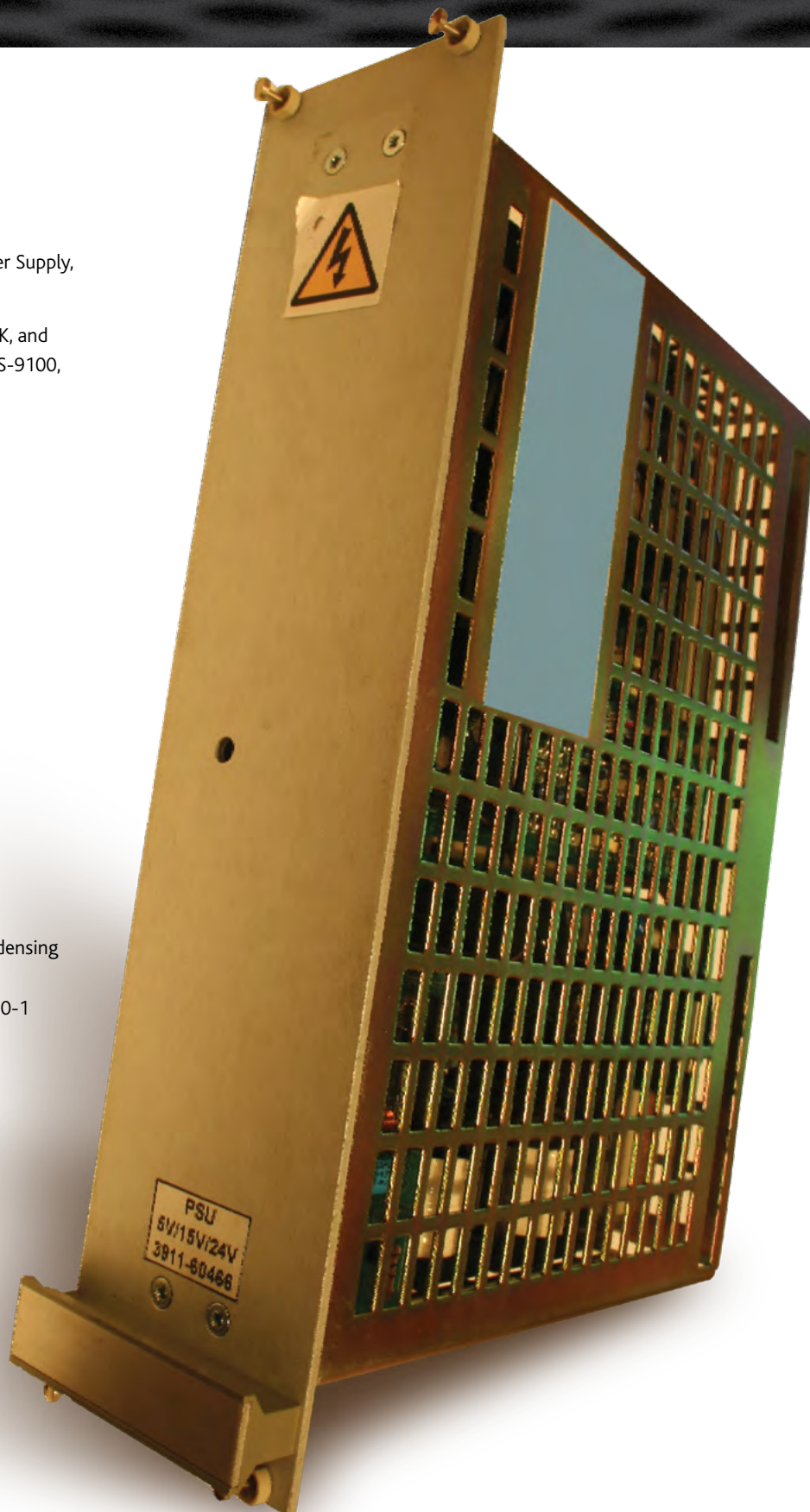
6U High
12HP Wide

Features

300W with 18 CFM Air Flow
Efficiency up to 75%
3 Year Warranty
CE Marked LVD and EMC
28 ms Hold Up Time
Over Temperature Shut Down at 110°C

Environmental

Operating Temp: 0°C to +55°C,
Storage Temp: -40°C to +85°C
Humidity: 5-95% RH, non-condensing
Altitude: 3000m
Safety Approvals: EN60950-1, UL60950-1



Input

Input Voltage	85...264VAC
Input Power Factor	Electronic PFC >0.9
Input Frequency range	47...63Hz
Input Current	3.6A @ 115VAC, 1.8A @ 230VAC
Inrush Current	Max 15A @ 115V input, 25A @ 230V
Input Protection	F5 A/350V internal in line safety fuse
Input Earth Leakage Current	<2.5mA @ 230V AC input 50Hz, <1.5mA @ 115V AC 60Hz.

General

Input to Output Isolation	3000 VAC RMS Test Voltage
Input to Case Isolation	1500 VAC RMS Test Voltage
Output to Case Isolation	500V RMS
Hold Up Time	28mS @ 115V AC Input
Overall Efficiency	70-75% Typical (100W Dissipation @ 300W load)
Input PFC and Intermediate DC Stage Efficiency	88% Typical
Input PFC Switching Frequency	62kHz Typical
Intermediate DC-DC Switching Frequency	157kHz Typical
Output Stage DC-DC Switching Frequency	450kHz Typical at 1/2 load

Outputs

This unit has a total of four outputs, each individually controlled and regulated

Output 1 : 5V DC	Min	Typical	Max	
Output Voltage		5V DC		Setpoint $\pm 1\%$, nominal output, full load, 25°C
Voltage Sense (Vs)		-		Compensates up to 500mV drop in output cables
Load Current		20A		
Current Limit	20.4A	23A	27A	Constant current topology
Ripple & Noise		100mV (2%)	125mV	Pk-Pk nominal input, full load, 20MHz bandwidth
Overvoltage Setpoint	6.03V	6.25V	6.47V	
Load Regulation		$\pm 0.02\%$	$\pm 0.2\%$	No load to full load, nominal input
Line Regulation		$\pm 0.02\%$		85...264V AC
Minimum Load		0		No minimum load
Dynamic Regulation		1%		Max deviation of output for 10% load change Recovers within 1ms
Rise time		20ms		Up to 20ms, load dependent.
Temperature Coefficient		-		$\pm 0.002\% - \pm 0.005\%$, (range 0...55°C)
Efficiency		84%		Typical for this output (combine with main PFC converter efficiency for total efficiency figure)

Outputs (cont.)**Output 2 : -15.5V DC**

	Min	Typical	Max	
Output Voltage		-15.5V DC		Setpoint $\pm 1\%$, nominal output, full load, 25°C
Voltage Sense (Vs)		-		Not fitted
Load Current		3.33A		
Current Limit	3.39A	3.83A	4.5A	Constant current topology
Ripple & Noise		160mV (1%)	200mV	Pk-Pk nominal input, full load, 20MHz bandwidth
Overvoltage Setpoint	17.1V	17.8V	18.5V	
Load Regulation		$\pm 0.02\%$	$\pm 0.2\%$	No load to full load, nominal input
Line Regulation		$\pm 0.02\%$		85...264V AC
Minimum Load		0		No minimum load
Dynamic Regulation		1%		Max deviation of output for 10% load change Recovers within 1ms
Rise time		20ms		Up to 20ms, load dependent
Temperature Coefficient		-		$\pm 0.002\% - \pm 0.005\%$, (range 0...55°C)
Efficiency		88%		Typical for this output (combine with main PFC converter efficiency for total efficiency figure)

Output 3 : +14.5V DC

	Min	Typical	Max	
Output Voltage		+14.5V DC		Setpoint $\pm 1\%$, nominal output, full load, 25°C
Voltage Sense (Vs)		-		Not fitted
Load Current		3.33A		
Current Limit	3.39A	3.83A	4.5A	Constant current topology
Ripple & Noise		160mV (1%)	200mV	Pk-Pk nominal input, full load, 20MHz bandwidth
Overvoltage Setpoint	17.1V	17.8V	18.5V	
Load Regulation		$\pm 0.02\%$	$\pm 0.2\%$	No load to full load, nominal input
Line Regulation		$\pm 0.02\%$		85...264V AC
Minimum Load		0		No minimum load
Dynamic Regulation		1%		Max deviation of output for 10% load change Recovers within 1ms
Rise time		20ms		Up to 20ms, load dependent
Temperature Coefficient		-		$\pm 0.002\% - \pm 0.005\%$, (range 0...55°C)
Efficiency		88%		Typical for this output (combine with main PFC converter efficiency for total efficiency figure)

Output 4 : 24V DC

	Min	Typical	Max	
Output Voltage		24V DC		Setpoint $\pm 1\%$, nominal output, full load, 25°C
Voltage Sense (Vs)		-		Not fitted
Load Current		4.17A		
Current Limit	4.25A	4.8A	5.67A	Constant current topology
Ripple & Noise		70mV (0.3%)	88mV	Pk-Pk nominal input, full load, 20MHz bandwidth
Overvoltage Setpoint	17.1V	17.8V	18.5V	
Load Regulation		$\pm 0.02\%$	$\pm 0.2\%$	No load to full load, nominal input
Line Regulation		$\pm 0.02\%$		85...264V AC
Minimum Load		0		No minimum load
Dynamic Regulation		1%		Max deviation of output for 10% load change Recovers within 1ms
Rise time		20ms		Up to 20ms, load dependent
Temperature Coefficient		-		$\pm 0.002\% - \pm 0.005\%$, (range 0...55°C)
Efficiency		88%		Typical for this output (combine with main PFC converter efficiency for total efficiency figure)

Environmental

Operating Temperature	0°C to +55°C
Storage Temperature	-40°C to +85°C
Over Temperature Shut Down	110°C (automatic re-start at 95°C)
Cooling	Forced Air 18 CFM @ 300W load
Operating Humidity	5-95 % RH, non-condensing
Operating Altitude	3000m
Unpressurised Transport	15,000
Shock & Vibration	Shock 18.5G 1/2 sine 20ms any direction, Vibration +/- 1g, 4 to 33Hz
MTBF	>150 kHrs to MIL-HDBK-217F at 25°C, GB
WEEE Directive	2002-96-EC
RoHS Directive	2002-95-EC
REACH Regulations	EU-1907-2006

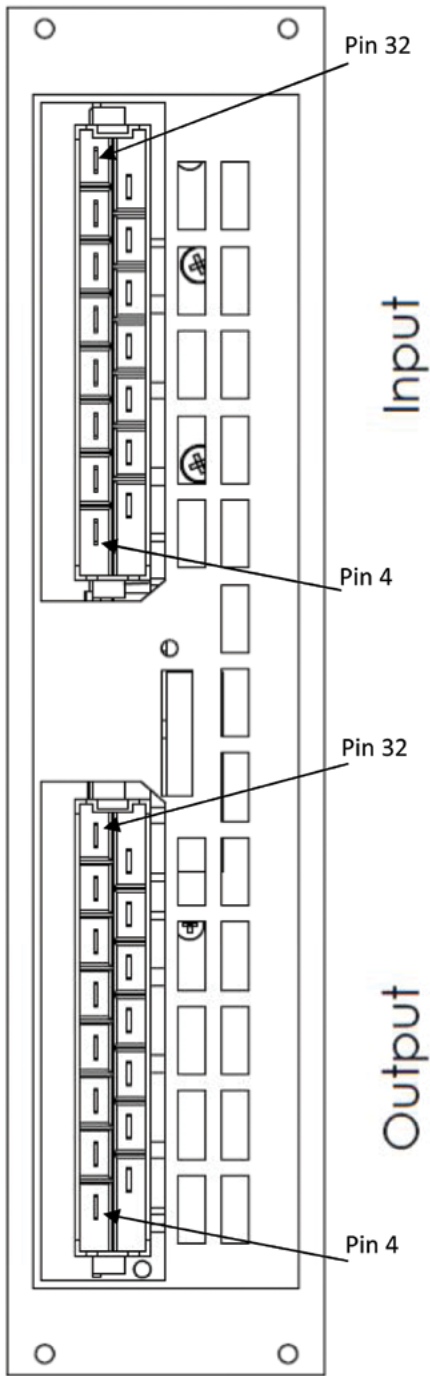
EMC and Safety

Safety Approvals	EN60950-1:2006 , UL60950-1
Emissions	EN55022 level B conducted and level A radiated
Harmonic Currents	EN61000-3-2 class A
Voltage Flicker	EN61000-3-3
ESD Immunity	EN61000-4-2, Level 3
Radiated Immunity	EN61000-4-3, 10V/m, Level 3 Performance Criteria A
EFT/ Burst	EN61000-4-4, Level 3 Performance Criteria A
Surge	EN61000-4-5, Installation class 3, Perf Criteria A
Conducted Immunity	EN61000-4-6, 10V RMS, Perf Criteria A
Dips & Interruptions	EN61000-4-11, 30% 10ms, 60% 100ms, 100% 5000ms, Perf Criteria A, B, B

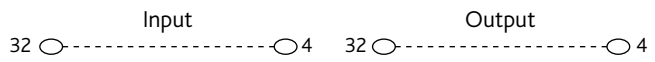
Signals and Indicators

Global PSU OK (DC & AC OK)	TTL Logic 1 (+5V) = OK, TTL Logic 0 (0V) = FAIL
Front Panel LED, AC Input Indicator	LED ON = AC OK

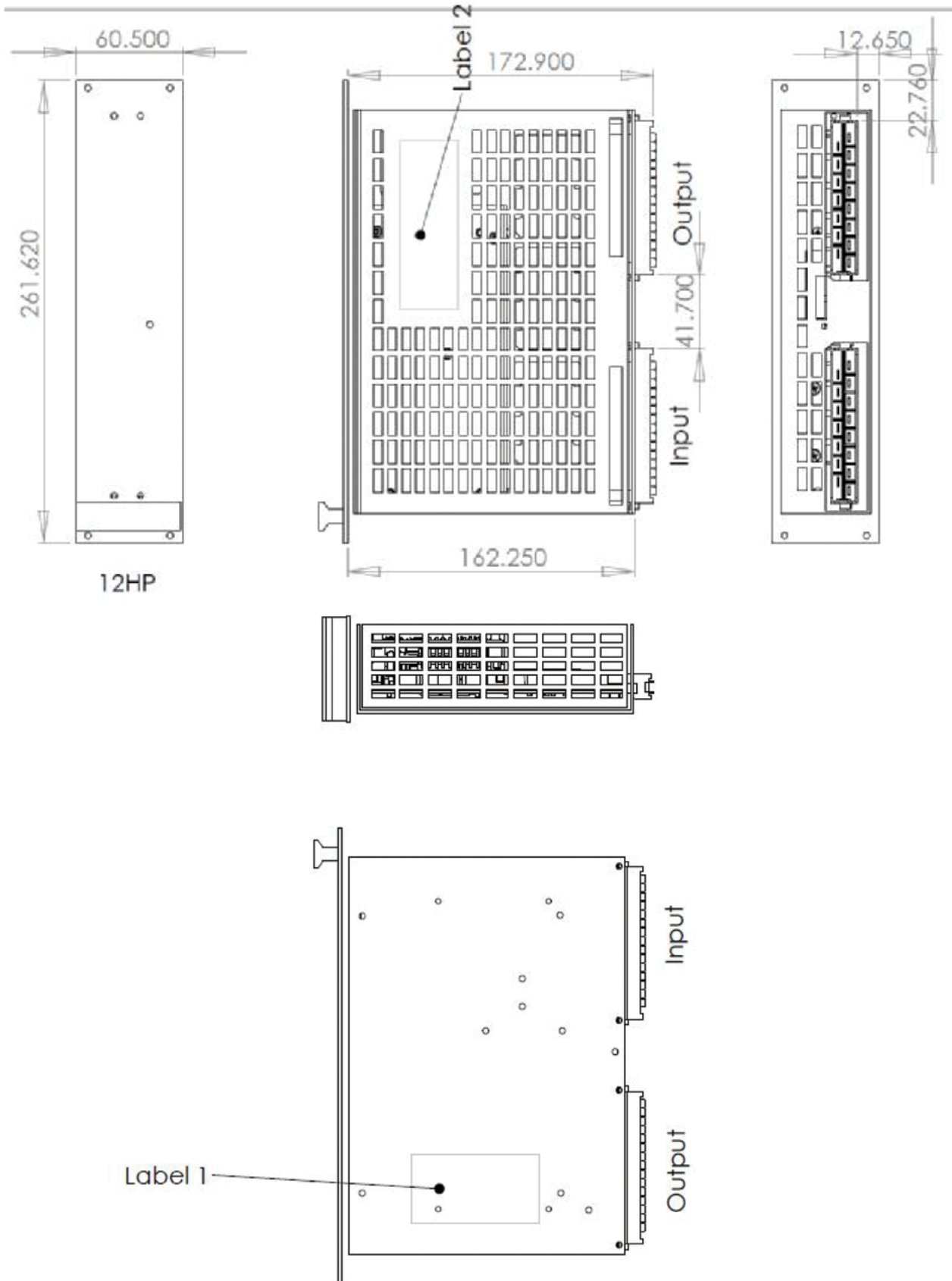
Connector Pinouts



CONNECTOR PIN OUT			
Input		Output	
32	Earth	32	N/C
30	N/C	30	N/C
28	Neutral (Line 2)	28	PSU OK
26	N/C	26	N/C
24	Line (Line 1)	24	Sense (O/P 1)
22	N/C	22	O/P 1 (+5v)
20	N/C	20	O/P 1 (+5v)
18	N/C	18	O/P 1 (+5v)
16	N/C	16	0V
14	N/C	14	0V
12	N/C	12	0V
10	N/C	10	N/C
8	N/C	8	O/P 2 (-15v)
6	N/C	6	O/P 3 (+15v)
4	N/C	4	O/P 4 (+24v)



Mechanical Details



Labelling

Two labels are fitted,

Label 1 Shows: Part Number, Serial number, Input voltage range, Input fuse type, Input current, CE mark, all four output voltages and current ratings, Maximum power rating, Manufacturer name.

Label 2 shows: Pinout details.

Compliance Notes

This power supply is based on a proven approach using fully approved off the shelf power supply modules.

The front end AC-DC converter is fully safety approved and EMC compliant, whilst the individually controlled downstream DC-DC converters provide complete control and flexibility on the output parameters.

The PSU shall be supported by an EC Declaration of Conformity stating and all applicable EN test standards applied.

Fault condition tests have already been applied to the standard AC-DC part as defined by EN60950-1:2006 to verify maximum temperature and protection circuitry effectiveness. Test reports / results may be obtained from On-Systems.

The EN61000-4-8 – Power Magnetic Immunity is not applicable as the PSU incorporates no magnetically sensitive devices.

In order to confirm EMC compliance to the requirements of EMC Directive 2004/108/EC and MIL STD 461E, On-Systems shall bare in mind that a ship's supply is a balanced arrangement and that performance and EMC testing should be carried out by On-Systems using the same arrangement.

Ordering Information

The MHI-1005 is designed and manufactured by On-Systems.

*To request a quotation or place an order,
please contact your sales representative,
or the On-Systems sales office.*

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