Pascall
POWER PRODUCTS

INPUT 97-134VAC

Key Features:

- **EMC to RTCA/DO-160C**
- **Safety to EN60950**
- ***Active power factor correction***
- **Low Harmonic Distortion**
- **In built BITE**
- **3U rack and panel Mounting**
- **Temperature rating -20 to +50°C**
- **Remote ON/OFF**
- **Low Profile**

This series of AC/DC converters offers up to 100 WATTS in single, dual or triple outputs for the civil aerospace market.

The units use active power factor correction and Passive filter to ensure that they meet the EMC and Harmonic distortion for specified RTCA/DO-160C.

This provides the engineer with a highly reliable cost effective solution for critical/non-critical flight applications.

Output Configuration

Model	Efficiency % (Typical)	Ripple (mV) (Typical)	Vout (Volts)	Iout (Amps)
CL-CUA-100	76	50	5	20
CL-CUG-100	78	120	12	8.3
CL-CUH-100	78	150	15	6.7
CL-CUE-100	77	50, 120, 120	5, 12, 12	12, 1.7, 1.7
CL-CUF-100	77	50, 150, 150	5, 15, 15	12, 1.3, 1.3
CL-CUA-75	76	50	5	15
CL-CUG-75	78	120	12	6.3
CL-CUH-75	78	150	15	5
CL-CUM-75	76	50, 120	5, 12	12, 1.7
CL-CUN-75	76	50, 150	5, 15	12, 1.3
CL-CUA-50	76	50	5	10
CL-CUG-50	78	120	12	4.2
CL-CUH-50	78	150	15	3.3

PSELS0007

100 WATT AC/DC CONVERTER

CL SERIES

Input Power Characteristics:

The unit accepts single phase ac input power in accordance with RTCA/DO-160c Section 16
RTCA/DO-160c Equipment cat A
Steady state voltage 97-134v rms live to neutral
Steady state frequency 360Hz-440 Hz
Surges 180v as per Fig 16-7 of RTCA/DO-160c
Hold-up, 50ms @ full output power-option for 200ms (increased case size)

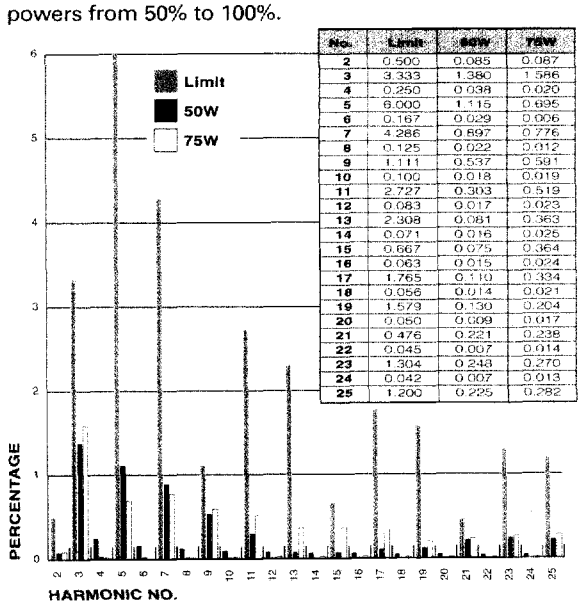
Inrush Current:
Less than 1.5Arms at maximum input voltage.

Power Factor:

Power factor 0.95 or greater, typically 0.98

Input Harmonic Distortion:

The following table shows the percentage Harmonic distortion of the input current up to the 25th harmonic. These figures apply to the 100w triple output for output powers from 50% to 100%.



No.	Limit	50W	75W
2	0.500	0.085	0.087
3	3.333	1.380	1.586
4	0.250	0.038	0.020
5	6.000	1.115	0.695
6	0.167	0.029	0.006
7	4.286	0.897	0.776
8	0.125	0.022	0.012
9	1.111	0.537	0.581
10	0.100	0.018	0.019
11	2.727	0.303	0.519
12	0.083	0.017	0.023
13	2.308	0.081	0.363
14	0.071	0.016	0.025
15	0.667	0.075	0.364
16	0.063	0.015	0.024
17	1.765	0.110	0.334
18	0.056	0.014	0.021
19	1.579	0.130	0.204
20	0.050	0.009	0.017
21	0.476	0.221	0.238
22	0.045	0.007	0.014
23	1.304	0.248	0.270
24	0.042	0.007	0.013
25	1.200	0.225	0.282

HARMONIC PERFORMANCE OF SINGLE PHASE CONVERTER TI D6-44588 REV W

EMI:

The units meets the following requirements of RTCA/DO-160c:

Voltage Spikes	Section 17 Cat A 600 v/50Ω
RF conducted susceptability	Section 18 Cat A
Induced signal susceptability	Section 19 Cat Z
RF susceptability	Section 20 Cat T
RF Emissions	Section 21 Cat Z

Isolation:

Input to Output(s)	>10MΩ @ 1500VAC rms
Input to Chassis	>10MΩ @ 1500VAC rms
Output(s) to Chassis	>10MΩ @ 1000VDC
Output to output(s)	>10MΩ @ 500VDC

*Board level test only

Efficiency:

Not less than 70% at full load, nominal input voltage and at 25°C baseplate temperature.

Load, Line & Temperature Regulation (CEB):

Output 1	±2% of output voltage.
Outputs 2 & 3	±2% of output voltage.

Output Ripple (up to 1MHz):

Switching ripple (160KHz)

Output 1	2% pk-pk
Outputs 2 & 3	2% pk-pk

Noise and Spikes (1MHz to 20MHz):

Output 1	2% pk-pk
Outputs 2 & 3	2% pk-pk

Long Term Drift:

Total combination of CEB + PARD + drift and warm-up.

Output 1	±1% of output voltage
Output 2 & 3	±1% of output voltage

Cross Regulation: (Dual & Triple Outputs Only)

Output 1	±2% of output voltage
Output 2 & 3	±2% of output voltage

Dynamic Load Regulation:

Maximum transient over or undershoot of 5% of nominal output voltage for a 50% step load change in 20µs. Recovery within 1ms.

Dynamic Line Regulation:

Maximum transient over or undershoot of 5% of nominal output voltage with recovery within 1ms for all line transients and surges defined in Input Power Characteristics above.

Minimum Load Conditions:

For full specified performance.
Output 1 10% of maximum current
Output 2 & 3 No minimum load

Output Protection:

Individual outputs are protected against indefinite overload and short circuit. Current limiting circuitry operates at 105-135% of full rated current.

All outputs are overvoltage protected by means of zener diode clamps. These limit the output voltage to 120% to 130%, typically, of the nominal value.

Models fitted with remote sense facility are protected against misconnection of remote sense.

Specification

Soft Start:

Under all conditions the converters start up in an orderly fashion. Rise time of outputs is less than 10ms.

Undervoltage Lockout:

The unit will not be damaged and will switch off at voltages typically below 80% of minimum input voltage.

Safety:

Meets the requirements of EN60950 basic insulation, IEC950 and UL 1950 (unit must be earthed to meet safety requirements).

Remote Shutdown:

There is a logic compatible remote on/off referenced to input return. A logic low will cause the unit to shutdown. A logic high will cause the unit to start up.

(If signal is not used, leave disconnected)

Overtemperature Shutdown:

The unit will shutdown if the internal temperature exceeds safe limits. Outputs will recover automatically on cooling.

Operating Temperature:

Full specification performance with the baseplate temperature maintained within the range -20°C to +50°C.

Storage Temperature:

-40°C to +95°C.

Built in Test:

Input Power Fail: the unit indicates if the input falls below 80Vrms.
Output Good: the unit indicates if any output is outside ±6% of nominal.
Both signals are provided by independent open collector outputs (normally open) and are referenced to output 1 -ve sense. The outputs are forced low when input or output are outside specified limits.

Hold Up

Outputs will be maintained for a minimum period of 50ms from removal of input power, (option for 200ms in a larger case).

Remote Sense

This can be used to compensate for cable loss of upto 0.5V (0.25V each output line) Output 1 only.

Cooling:

The converter operates without de-rating when the base plate temperature is maintained within specified limits.

Environmental:

Humidity:
IEC68-2-27. 40°C 93% humidity
MIL-STD-810D, 507.2 56 days.
DIN 40046 Part 5.

Shock:
IEC68-2-27. 50g, 11ms
MIL-STD-810E, Method 516.4 Proc. V. 18 bumps
DIN 40046 Part 7.

Vibration:
IEC68-2-6. 10 - 2000Hz
MIL-STD-810E, Method 514.4 Cat. 5. 5g, 11ms
DIN 40046 Part 8 3 axes 2.5h/axis

Acceleration:
MIL-STD-810E, Method 513.4 Procedure 11.
BS3G100, Part 2, Section 3, Sub-Section 3.6.

Salt Mist:
BS3G100, Part 2, Section 3, Sub-Section 3.8.
IEC68-2-51

Construction:

Fully enclosed construction utilising Aluminium Alloy LM25M to BS1490.
Paint finish - Matt Black.

Weight and dimensions:

The maximum weight is less than 750 grams. Refer to outline drawing for unit dimensions and fixing positions.

Maintainability:

Units are constructed in a non-hermetically sealed extruded housing. Internal circuitry is protected by means of conformal coating. All modules are repairable.

Shelf Life:

The shelf life of the units is ten years, they may be left in deep store, without the need for intermittent powering-up or any form of servicing for the period of the shelf life.

Warranty

Units carry a 12 month warranty as standard.

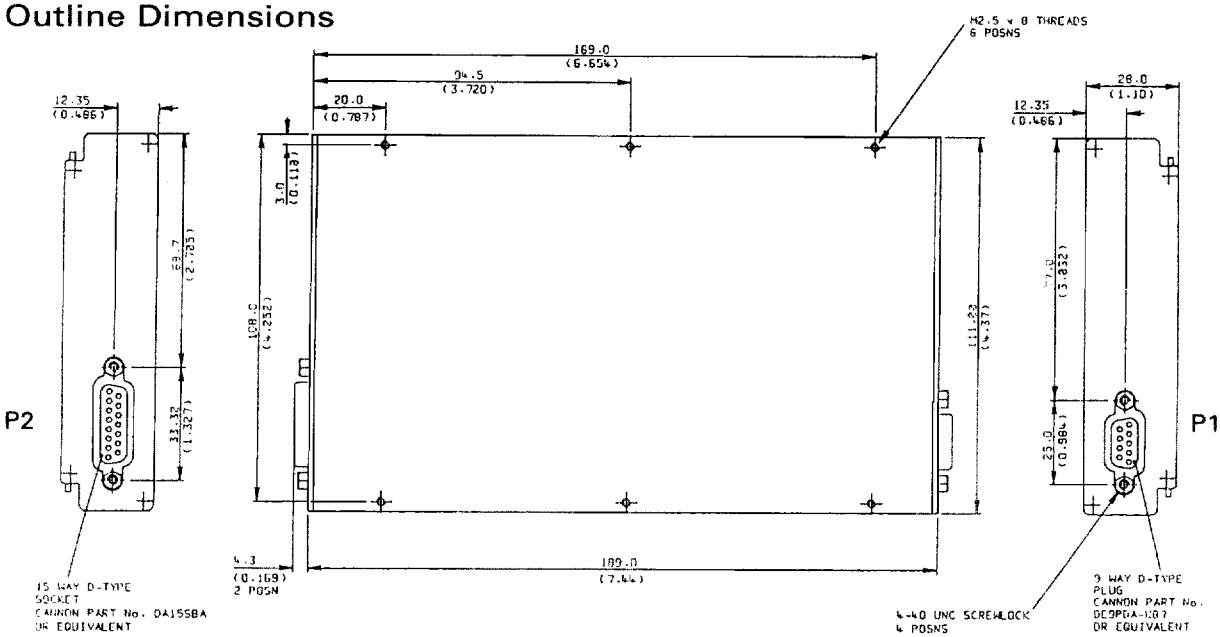
Burn-In:

All units are subjected to standard stress screening procedure.

Reliability MTBF (Hrs) MIL-HDBK-217F

	Triple	Dual	Single
Ground Benign 40°C	534,000	587,000	638,000
Ground Fixed 40°C	162,000	176,000	194,000
Ground Mobile 40°C	69,000	75,000	83,000

Outline Dimensions



Pin Details

Fixing Holes M2.5 x 4 Max
Connector - P1 - P2

Dimensions in mm tolerances
±0.3mm unless otherwise stated.

Function	Input Connections (connector P1)	Single Output Module - Pin No. (connector P2)	Dual Output Module - Pin No. (connector P2)	Triple Output Module - Pin No. (connector P2)
Output 1 +ve load	-	22, 24, 26	26	26
Output 1 +ve Sense	-	20	24	24
Output 1 -ve Sense	-	10	22	22
Output 1 -ve load	-	4, 6, 8	20	20
Output 2 +ve load	-	Not Connected	10	10
Output 2 -ve load	-	Not Connected	8	8
Output 3 +ve load	-	Not Connected	Not Connected	6
Output 3 -ve load	-	Not Connected	Not Connected	4
Inhibit	-	18	18	18
BIT - Output 1 Good	-	14	14	14
BIT - Input Power Fail	-	16	16	16
BIT - System Reset (option)	-	12	12	12
Neutral	5	-	-	-
Line	1	-	-	-
Chassis / Earth	3	-	-	-

FM 13274
BS EN ISO 9001

PASCALL'S QUALITY SYSTEM IS REGISTERED UNDER BS EN ISO 9001

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Pascall reserves the right to change the specifications of its products at any time without prior notice.
It is Pascall's policy to continually improve its products as new techniques and components become available.

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