

# M1115 SERIES

COMPACT, HIGH DENSITY,  
HIGH EFFICIENCY  
SINGLE OUTPUT  
(UP TO 500W)  
AC/DC CONVERTERS



## Applications

Military (Airborne, ground-fix, shipboard), Ruggedized, Telecom, Industrial

## Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- External On/Off Inhibit
- Fixed switching frequency (~250KHz)
- External synchronization capability
- EMI/RFI filters included
- High Density up to 22.9 W/in<sup>3</sup>
- Power Factor 88% - 90% (75-100% load)
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

## Electrical Specifications

### AC Input / DC Input Range:

AC Input range: 115V(98-150V)  
V<sub>AC</sub>L-N V<sub>ac</sub>, 50/60/400 Hz, 3-phase  
per MIL-STD-704A  
DC Input range: 220-350V<sub>DC</sub>

### DC Output:

Output range – 5V to 50V  
Output power – 500W  
Output current – max. 40A

### Isolation:

500V between Input and Output  
5000V between Input and Case  
100V between Output and Case

### Line/Load regulation:

Less than 1%  
(no load to full load, -55°C to +85°C)

### Efficiency :

90% - Typical (full load, room temperature)

### EMI/RFI:

Design to meet MIL-STD-461D:  
CE102, CS101, CS114, CS115, CS116,  
RE101, RE102, RS101, RS103

Meets MIL-STD-461C – CE03

### Ripple and Noise:

100±150mV<sub>p-p</sub>, typical (max. 1%)  
without external capacitance. When  
connected to system capacitance ripple  
drops significantly.

### Load Transient Overshoot and

undershoot - Current change from  
50%-100% output voltage change less  
than 0.7V (9A-18A step, Tr, Tf =  
10µSec) within 50-100° Sec

### Turn on Transient

No voltage over shoot during power  
on.

## Protections \*

### Input

- **Inrush Current Limiter** –  
peak value of 4x I<sub>in</sub> for less than  
300µSec.

### Output

- **Passive tranzorb on outputs** – 20%  
above nominal voltage.
- **Current limiting** – Continuous  
protection (10-30% above max.  
current) for unlimited time.

### General

- **Over temperature protection:**  
Shutdown at base plate temperature  
of +105°C (±5°C). Automatic  
recovery at base plate temperature  
lower than +95°C (±5°C)

\* Thresholds and protections can be modified / removed – please consult factory.

**Environmental** (Design to Meet MIL-STD-810F)

**Temperature:**

Operating: -55°C to +85°C  
(base plate)

Storage: -55°C to +125°C

**Humidity:**

Method 507.4 - Up to 95%.

**Altitude:**

Method 500.4, Procedure I & II,  
40,000 ft. and 70,000 ft. Operational

**Vibration and Shock:**

Shock - Saw-tooth, 20g peak, 11mS.  
Vibration - Figure 514.5C-17.  
General minimum integrity exposure.  
(1 hour per axis)

**Salt Fog:**

Method 509-4

**Reliability**

150,000 hours, calculated per  
MIL-STD-217F at +85°C base plate,  
Ground fixed.

**Environmental Stress Screening (ESS)**

Including random vibration and thermal cycles is also available. **Please consult factory for details.**

**Pin Assignments (Output Connector)**

PIN No.	PIN Function
1	+ OUT
2	+ OUT
3	+ OUT
4	+ OUT
5	+ OUT
6	SENSE
7	- OUT
8	- OUT
9	- OUT
10	- OUT

PIN No.	PIN Function
11	INHIBIT
12	SYN
13	SYN RTN
14	N.C.
15	PHASE A
16	N.C.
17	PHASE B
18	N.C.
19	PHASE C
20	+ OUT

PIN No.	PIN Function
21	+ OUT
22	+ OUT
23	+ OUT
24	+ OUT
25	SENSE RTN
26	- OUT
27	- OUT
28	- OUT
29	- OUT
30	- OUT

PIN No.	PIN Function
31	- OUT
32	N.C.
33	PHASE A
34	N.C.
35	PHASE B
36	N.C.
37	PHASE C

\* All output parallel pins should be connected together for best performance.

## Functions and Signals

### INHIBIT signal

The INHIBIT signal is used to turn the power supply ON and OFF.

OPEN – will turn on the power supply.

SHORT – between pin 11 and any of the output pin will turn off the power supply.

### SYN signal

The SYN signal is used to allow the power supply frequency to sync with the system frequency. The system frequency should be  $250\text{Khz} \pm 10\text{Khz}$ .

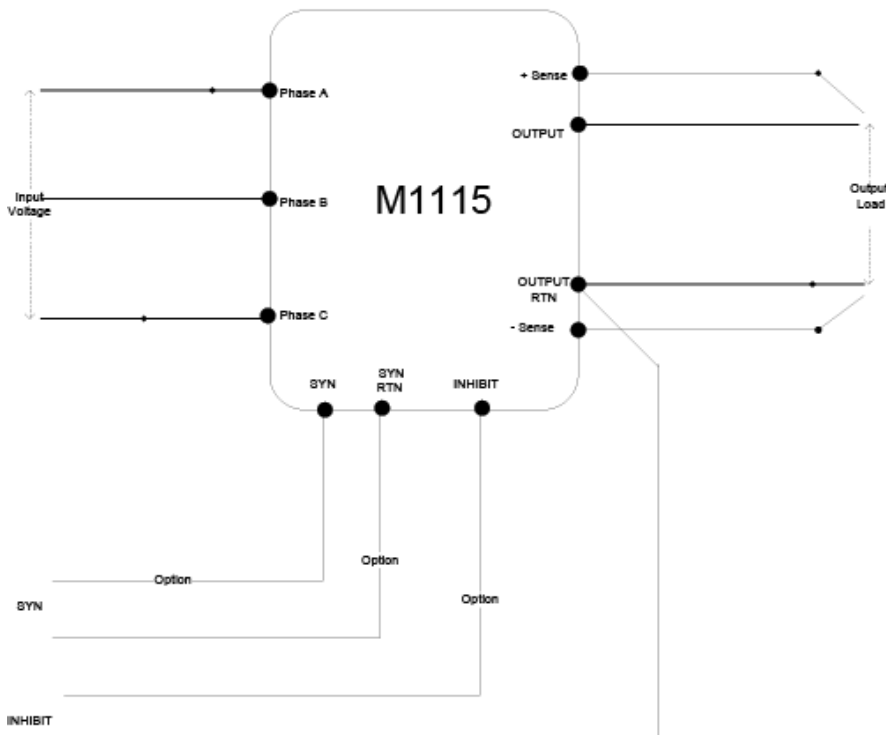
When not connected the power supply will work at  $\sim 250\text{KHZ}$

### SENSE signals

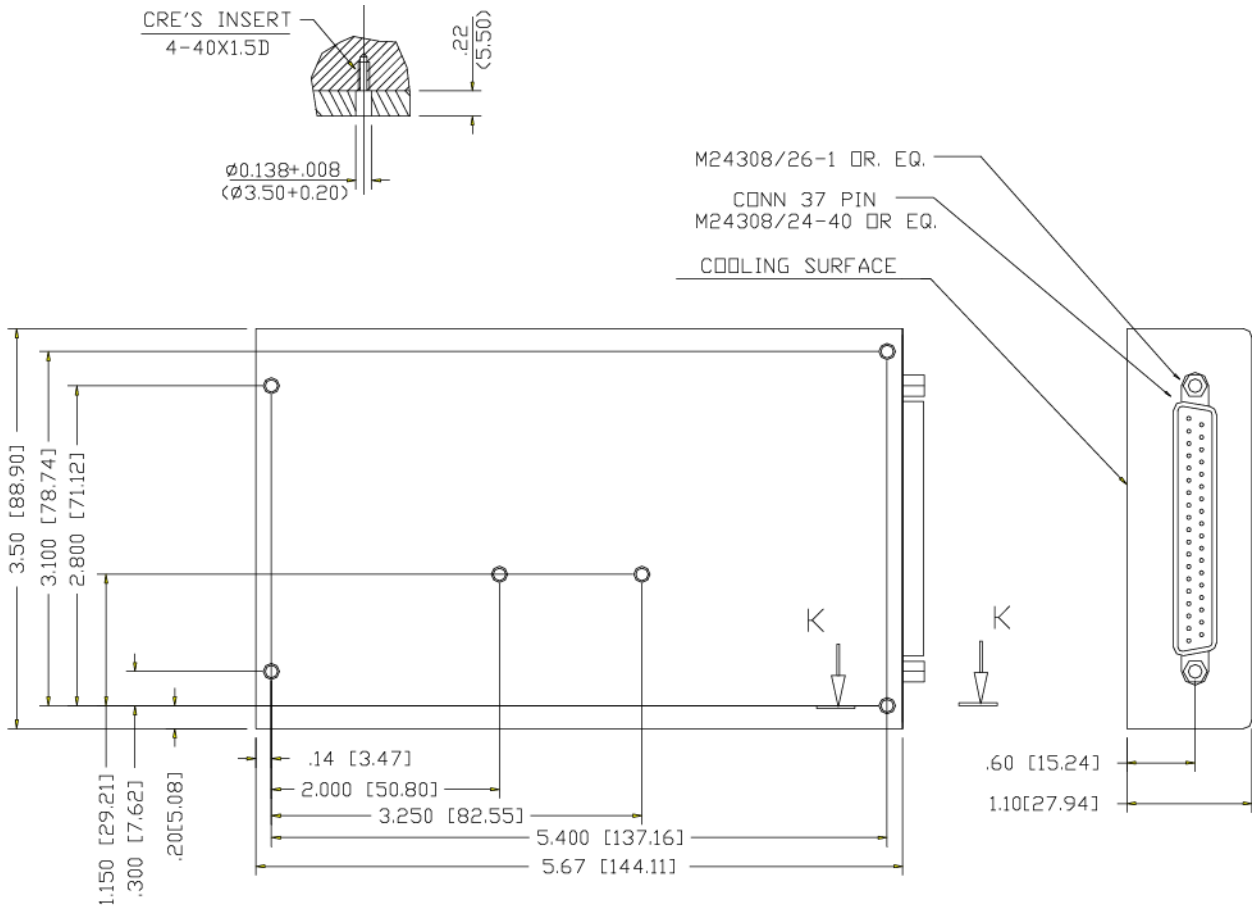
The SENSE is used to achieve accurate load regulations at load terminals (this is done by connecting the pins directly to the load's terminals). The use of remote sense has a limit of voltage dropout between converter's output and load terminals of 2-10% of voltage output (up to 2V).

Please note that if Sense lines are not needed short the +SENSE pin to the +OUT pins and the -SENSE pin to the -OUT pins.

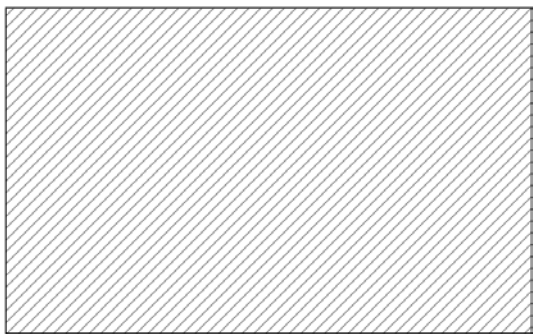
## Typical connection



## Outline Drawing



## Heat Dissipation Surface



Dissipation Area  
15.7 in<sup>2</sup>  
(10130mm<sup>2</sup>)

### Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:  
.XX ±.02 IN  
.XXX ±.01 IN
3. Weight: 1.28 lb (580gr)
4. Parasolid 3D module is available for download on site.

\* Specifications are subject to change without prior notice by the manufacturer