

M916 SERIES

**SMALL SIZE, HIGH DENSITY,
HIGH POWER FACTOR,
500W, SINGLE OUTPUT
AC/DC CONVERTERS**



Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- High power factor (0.99)
- Input / Output isolation
- Inrush Current Limiter
- External On/Off Inhibit
- Fixed switching frequency (250 KHz)
- External synchronization capability
- EMI/RFI filters included
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

AC Input:

AC Input range: 85 to 265 Vac, 50/60/400 Hz, single phase per MIL-STD-704A & per MIL-STD-1399 (60Hz).

DC Output:

Output range – 3.3V to 48V
Output power – 500W (peak 550W)
Output current – max 50A.

Isolation:

1000V between Input and Output
1000V between Input and Case
200V between Output and Case

Line/Load regulation:

Less than 1% (no load to full load, -40°C to +85°C).

Efficiency:

Up to 80% - Typical (full load, room temperature)

EMI/RFI:

Design to meet MIL-STD-461D: CE101, CE102, CS101, CS114, CS115, CS116, RE101, RS101, RS103

Ripple and Noise:

100±150mVp-p, 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.
Impedance change less than 50mΩ-250mΩ depending on output voltage within 200-300µSec.

Turn on Transient

Voltage overshoot at during power on is less than 3% nominal voltage.

Protections *

Input

- **Inrush Current Limiter** – peak value of 5 x I_{in} for less than 50µSec.
- **Under voltage protection** – unit protects itself (no damage) below 75Vac.

Output

- **Electronic over voltage protection** – Internal control protects unit (no damage) 10% above nominal voltage.
- **Passive tranzorb on outputs** – 20% above nominal voltage.
- **Current limiting** – Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).

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: -40°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 Assignment

J1 input connector		J2 output connector		J2 output connector		J2 output connector	
PIN No.	PIN Function	PIN No.	PIN Function	PIN No.	PIN Function	PIN No.	PIN Function
1	NEUTRAL	1	SIGNAL RTN	11	- VOUT	21	- VOUT
2	NEUTRAL	2	SYN	12	- VOUT	22	- VOUT
3	SPARE	3	+ SENSE	13	- VOUT	23	- VOUT
4	PHASE	4	+ VOUT	14	INHIBIT	24	- VOUT
5	PHASE	5	+ VOUT	15	- SENSE	25	- VOUT
6	NEUTRAL	6	+ VOUT	16	+ VOUT		
7	SPARE	7	+ VOUT	17	+ VOUT		
8	SPARE	8	+ VOUT	18	+ VOUT		
9	PHASE	9	- VOUT	19	+ VOUT		
		10	- VOUT	20	+ VOUT		

* 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.

TTL “1” or OPEN – will turn on the power supply. (For normal operation leave the signal not connected.)

TTL “0” – 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 250KHZ

SIGNAL RTN

The SIGNAL RTN is used as grounding for SYN and INHIBIT signals.

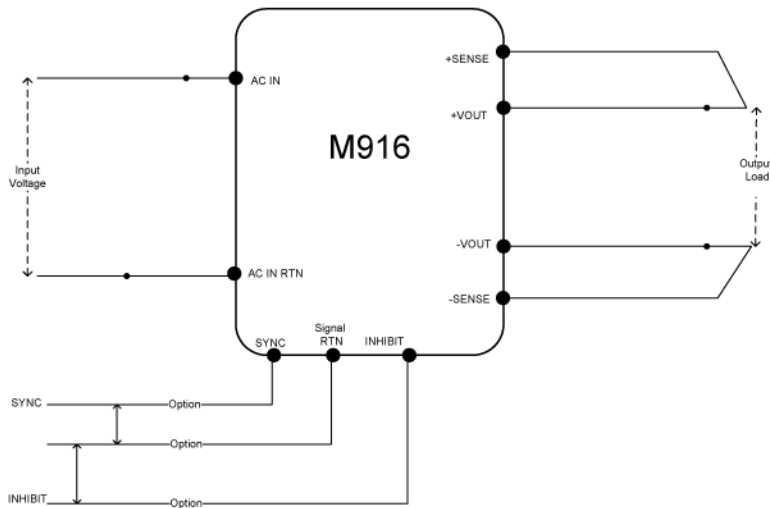
VOUT SENSE

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).

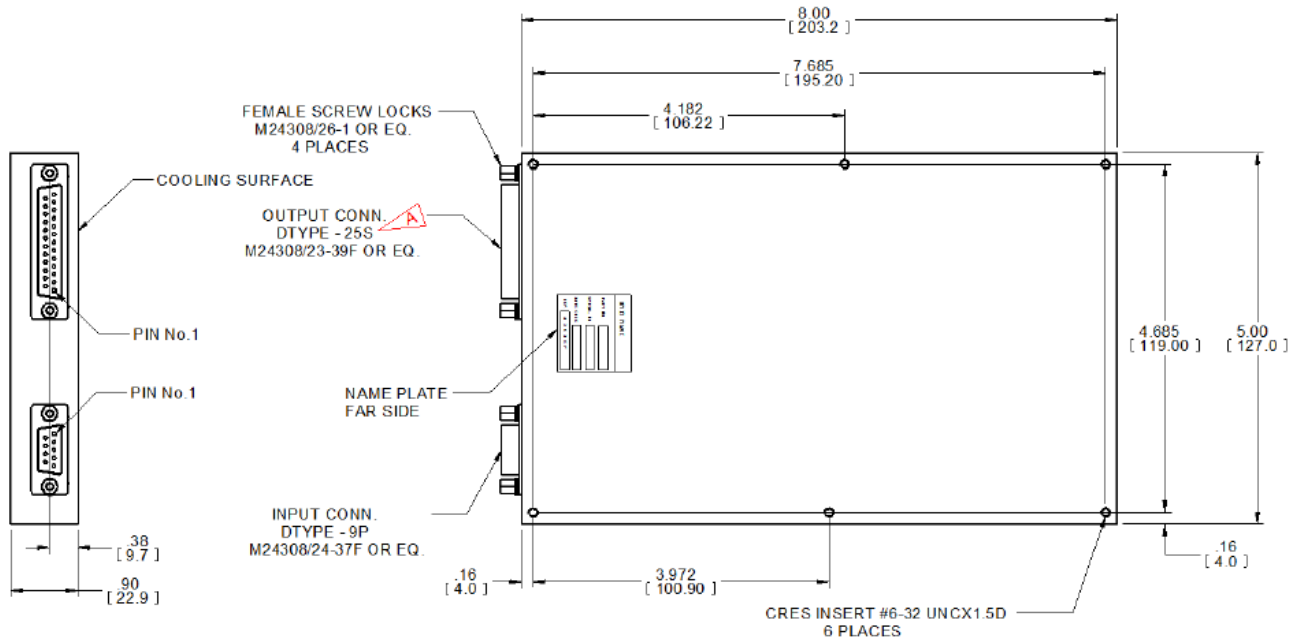
The use of remote sense has a limit of voltage dropout between converter’s output and load terminals of 2-10% of voltage output.

When not used connect +SENSE to +VOUT and –SENSE to –VOUT

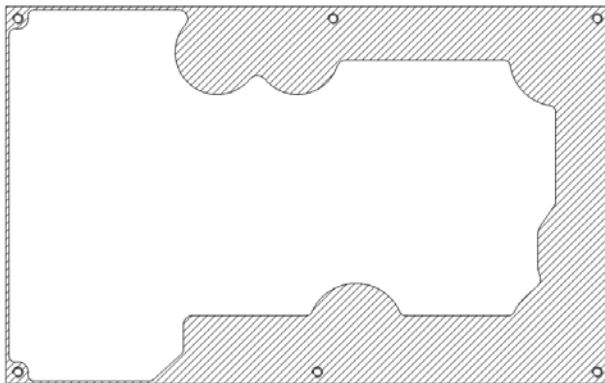
Typical connection



Outline Drawing



Heat Dissipation Surface



Dissipation Area
13.9 in²
(8952 mm²)

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

Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:
.XX ±0.01 IN
.XXX ±0.008 IN
3. Weight: Approx. 33.3 Oz (944 gr)
4. Parasolid 3D module is available for download on site.