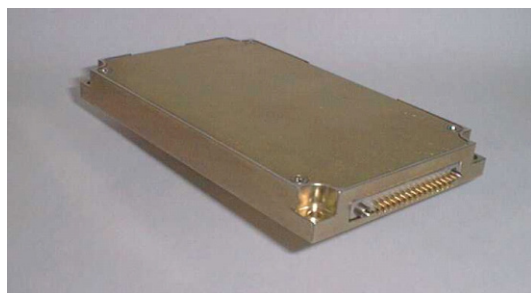


# M7318 SERIES

MINIATURE, HIGH DENSITY,  
SINGLE OUTPUT  
(UP TO 200W)  
DC/DC CONVERTERS



## Applications

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

## Special Features

- Miniature size
- High efficiency
- Wide input range
- Very Low output impedance  
(Typical: 50mΩ @ 28V output)
- Input / Output isolation
- Remote sense
- More than 40db ripple reduction
- Parallel connection with current share
- Redundancy connection
- External On/Off Inhibit
- Fixed switching frequency (250KHz)
- 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

### DC Input:

DC Input range: 18 to 48V<sub>DC</sub>,  
per MIL-STD-704E.

No damage for:

MIL-STD-1275A (100V for 50mSec)

MIL-STD-704A (80V for 0.1 Sec)

### Line/Load regulation:

Less than 1%

(no load to full load, -55°C to +85°C)

### Ripple and Noise:

Less than 100mVp-p, typical (max.

1%) without external capacitance.

When connected to system  
capacitance ripple drops significantly.

### DC Output:

Output range – 3.3V to 50V

Output power – 200W (peak 250W)

Output current – max. 18A

### Efficiency :

76-86% - Typical 85% (full load, room  
temperature)

### Load Transient Overshoot and undershoot

Output resistance at load change of  
10%-100% is 20-50mΩ (depending on  
output voltage). Output back to steady  
stated within 50-100μSec

### Isolation:

200V between Input and Output

200V between Input and Case

100V between Output and Case

### EMI/RFI:

Design to meet MIL-STD-461C:  
CE03, CE07, CS01, CS02, CS06, RE02,  
RS02, RS03

### Ripple Reduction

More than 40db ripple reduction  
between input and output.

### Turn on Transient

No turn on transient.

## Protections \*

### Input

- **Inrush Current Limiter** – peak  
value of 5 x I<sub>in</sub> for less than 50μSec.
- **Under voltage protection** –  
unit protects itself (no damage)  
below 16.5Vdc
- **Over voltage protection** –  
unit protects itself (no damage)  
above 52Vdc

### 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 max.  
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: -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

PIN Numbers	PIN Assignment	PIN Numbers	PIN Assignment
10, 11, 23, 24, 25	+ VIN	1, 2, 3, 16, 17, 18	+ VOUT
12, 13, 26, 27, 28	- VIN	4, 5, 6, 19, 20, 21	- VOUT
30	Input SIG. RTN	22	+ VOUT Sense
29	INHIBIT	8	- VOUT Sense
14	SYN. OUT	7	Current Share
15	SYN. IN	9	Volts Good

\* 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.

### SYNC IN signal

The SYNC IN signal is used to allow the power supply frequency to sync with the system frequency.

The system frequency should be 250Khz  $\pm$ 10Khz.

When not connected the power supply will work at 250KHZ.

### SYNC OUT signal

The SYNC OUT signal is used to sync the system with the power supply frequency.

### INPUT SIGNAL RTN

The INPUT SIGNAL RTN is referred to the input.

This is used as grounding for SYNC IN, SYNC OUT 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 +VOUT SENSE (Pin #22) to +VOUT (Pin #1,2,3,16,17,18) and –VOUT SENSE (Pin #8) to –VOUT (Pin #4,5,6,19,20,21)

### CURRENT SHARE (Pin#7)

The CURR SHARE signal is used to connect the power supply in parallel to other power supplies and have them divide equally the power between one another. All the power supplies should connect CURRENT SHARE signals together.

The –VOUT SENSE (Pin #8) is used as reference ground for this signal.

### VOLTS GOOD (Pin#9)

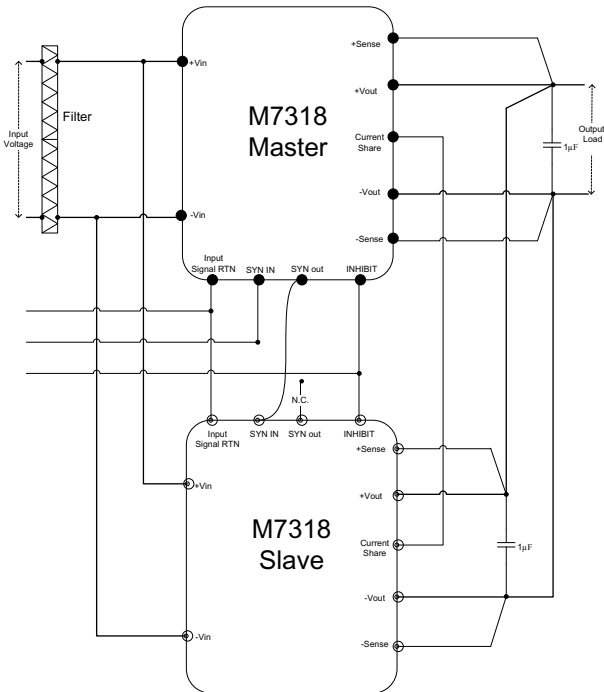
The VOLTS GOOD TTL signal is used to indicate if the output voltage is within the calibrated tolerances (typical 5%).

TTL “1”- output is within the required tolerances.

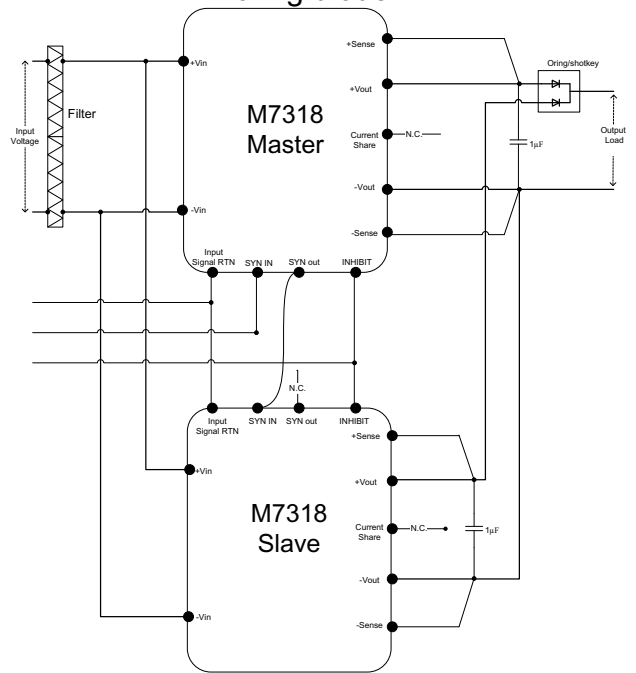
TTL “0” - output is not within the required tolerances.

The –VOUT SENSE (Pin #8) is used as reference ground for this signal.

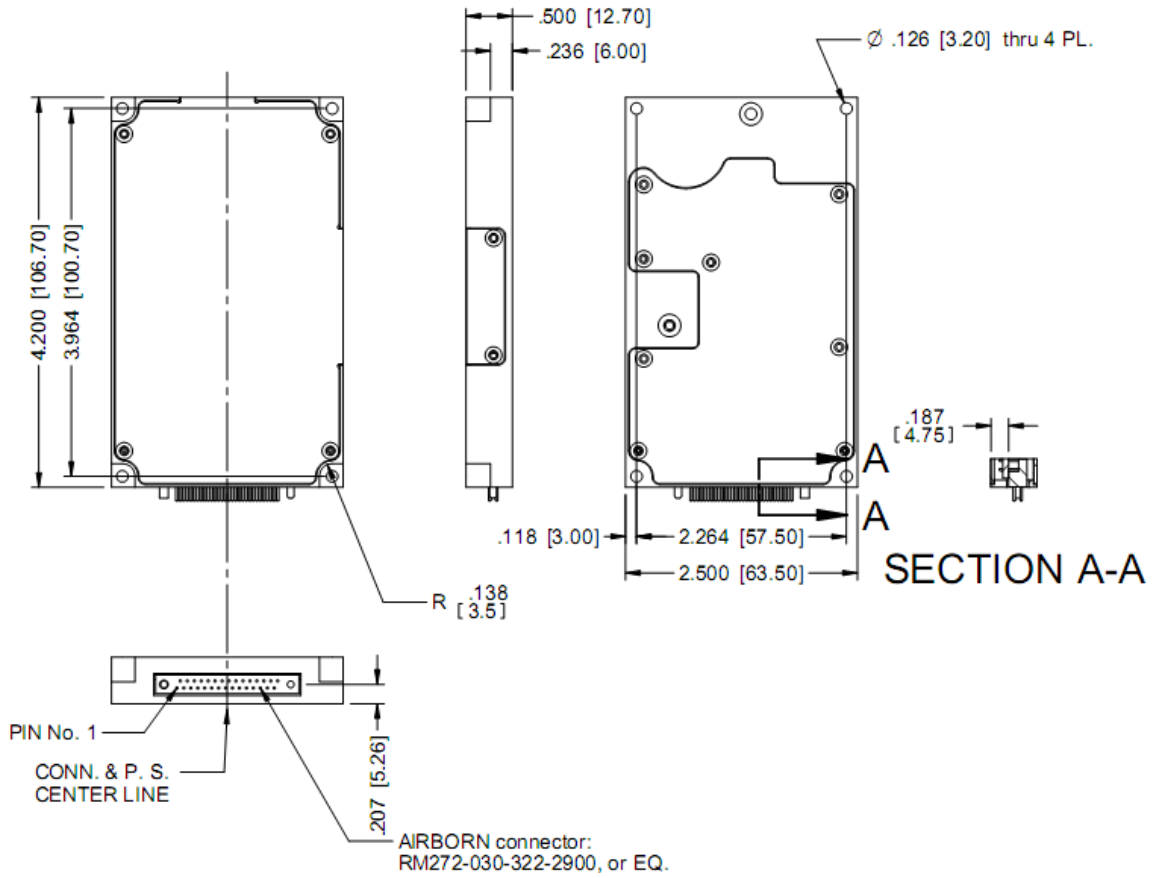
## Parallel connection with current share



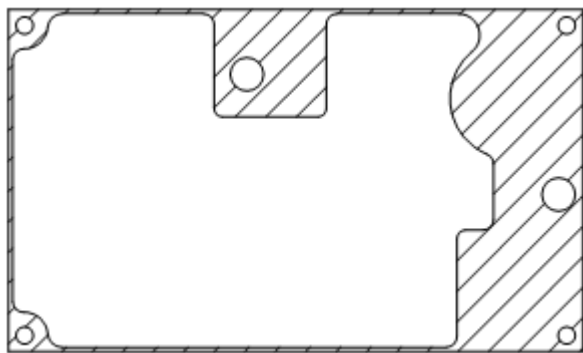
## Redundancy connection with external oring diode



## Outline Drawing



## Heat Dissipation Surface



Dissipation Area  
2.99 in<sup>2</sup>  
(1930mm<sup>2</sup>)

### Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:  
.XX ±.02 IN  
.XXX ±.01 IN
3. Weight: Approx. 150gr (5.3 Oz)
4. Mounting holes can be modified – please consult factory.
5. Parasolide 3D module is available for download on site.

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