

## M7318 SERIES

DC/DC POWER SUPPLY



### PRODUCT HIGHLIGHTS

- MINIATURE
- HIGH DENSITY
- SINGLE OUTPUT
- DC/DC CONVERTER
- UP TO 200W



**Applications**

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

**Special Features**

- Wide input range
- Input / Output isolation
- High efficiency – up to 90%
- Over 40dB ripple rejection
- EMI filters included
- Remote sense compensation
- Current sharing available
- Fixed switching freq. (250 kHz)
- External sync. capability
- Remote inhibit (on/off)
- Non-latching protections:
  - Overload / short-circuit
  - Input OV/UV lockout
  - Output over-voltage
  - Over temperature

**Electrical Specifications**

**DC Input**

18 to 48 V<sub>DC</sub>

**Transient protection**

IAW MIL-STD-1275A, M-STD-704A  
(no operation, no damage)

**Output Voltage Regulation**

Up to ±1% (no load to full load, –55°C to +85°C, and over input voltage range).

**Ripple and Noise**

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

**DC Output**

Voltage range: 3.3 to 50 V<sub>DC</sub>  
Current range: 0 to 18 A  
Power range: 0 to 200 W

**Efficiency**

Typical: 84% (at 28V<sub>DC</sub> output, nominal input, full load, room temperature)

**Transient Over-and-undershoot**

Output change at load transient of 10 to 100% with T<sub>r</sub> & T<sub>f</sub> of max 30 μs is less than 5% of output voltage. Output recovers to steady stated within less 0.1 ms, typically.

**Isolation**

Input to Output: 200 V<sub>DC</sub>  
Input to Case: 200 V<sub>DC</sub>  
Output to Case: 100 V<sub>DC</sub>

**EMC**

Designed to meet MIL-STD-461F\* CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

**Turn on Transient**

No overshoot.

\* Compliance achieved with 5μH LISN, shielded harness and static resistive load.

**Protections<sup>†</sup>**

**Input**

- **Input Reverse Polarity:**  
Protection for unlimited time
- **Under-Voltage Lock-Out:**  
Unit shuts down below 16V ± 1.5V.
- **Over-Voltage Lock-Out:**  
Unit shuts down above 52V ± 2V.

**Output**

- **Active Over-Voltage (Hiccup):**  
Secondary control circuit takes over if output voltage exceeds 110% ± 5% of nominal voltage. The output voltage go hiccup.
- **Passive Over-Voltage:**  
Zener diode installed on output terminals, selected at 120% ± 10% of nominal voltage.
- **Other forms of protection CV/CC, foldback**

**General**

- **Over Temperature Protection:**  
Output shuts down if base plate temperature exceeds +105°C ± 5°C.  
Automatic recovery when baseplate temperature returns to below +95°C ± 5°C.

**Environmental Conditions**

Meets MIL-STD-810F

**Temperature**

Operating: -55 °C to +85 °C (at baseplate)  
Storage: -55 °C to +125 °C

**Altitude**

Method 500.4  
Procedures I & II  
Up to 70,000 ft. Operational

**Salt Fog**

Method 509.4

**Humidity**

Method 507.4  
Procedure I  
Up to 95% RH

**Vibration (random)**

Method 514.5  
Category 24 – General minimum integrity exposure  
IAW Figure 514.5C-17  
1 hour per axis.

**Shock**

Method 516.5  
Procedure I – Functional shock  
Saw-tooth, 20 g peak, 11 ms

**Reliability**

150,000 hours, calculated per MIL-HDBK-217F Notice 2 at +85 °C baseplate, Ground Fix conditions.

**Environmental Stress Screening (ESS)**

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

<sup>†</sup> Thresholds and protections can be modified / removed – please consult factory.

**Pin Assignment**

Connector: RM272-030-322-2900 or eq.

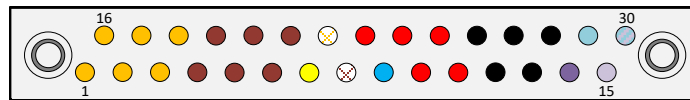
Mating connector options (Other options available - consult factory):

- Solder cup sockets: RM242-030-241-5900 or eq.
- Removable crimp sockets: RM242-030-571-5900 or eq.

| Pin # | Function      |   |
|-------|---------------|---|
| 1     | OUTPUT        | ● |
| 2     | OUTPUT        | ● |
| 3     | OUTPUT        | ● |
| 4     | OUTPUT RTN    | ● |
| 5     | OUTPUT RTN    | ● |
| 6     | OUTPUT RTN    | ● |
| 7     | CURRENT SHARE | ● |
| 8     | SENSE RTN     | ⊗ |
| 9     | POWER GOOD    | ● |
| 10    | INPUT         | ● |

| Pin # | Function   |   |
|-------|------------|---|
| 11    | INPUT      | ● |
| 12    | INPUT RTN  | ● |
| 13    | INPUT RTN  | ● |
| 14    | SYNC OUT   | ● |
| 15    | SYNC IN    | ● |
| 16    | OUTPUT     | ● |
| 17    | OUTPUT     | ● |
| 18    | OUTPUT     | ● |
| 19    | OUTPUT RTN | ● |
| 20    | OUTPUT RTN | ● |

| Pin # | Function   |   |
|-------|------------|---|
| 21    | OUTPUT RTN | ● |
| 22    | +SENSE     | ● |
| 23    | INPUT      | ● |
| 24    | INPUT      | ● |
| 25    | INPUT      | ● |
| 26    | INPUT RTN  | ● |
| 27    | INPUT RTN  | ● |
| 28    | INPUT RTN  | ● |
| 29    | INHIBIT    | ● |
| 30    | SIGNAL RTN | ● |



Note: All pins with identical function/designation should be connected together for optimal performance.

## ***Functions and Signals***

### **INHIBIT**

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

To turn the power supply OFF, apply a TTL "0" signal or SHORT to **SIGNAL RTN**.

To turn the power supply ON, apply a TTL "1" signal or leave this pin OPEN.

If not used (always ON), leave this pin OPEN.

This signal is referenced to **SIGNAL RTN**.

### **SYNC IN**

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

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

When not connected the power supply will work at 250 kHz  $\pm$  10 kHz.

This signal is referenced to **SIGNAL RTN**.

### **SYNC OUT**

The **SYNC OUT** signal can be used to synchronize the system to the power supply's clock.

This signal is referenced to **SIGNAL RTN**.

### **SIGNAL RTN**

The **SIGNAL RTN** is referenced to **IN RETURN**.

This is used as grounding for **SYNC IN**, **INHIBIT** and **SYN OUT** signals.

### **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 up to 0.5V.

When not used connect **SENSE** to **OUT** and **SENSE RTN** to **OUT RTN**.

### **CURRENT SHARE (Pin #7)**

The **CURRENT 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.

Connect all **CURRENT SHARE** signals of all paralleled power supplies together.

This signal is referenced to **SENSE RTN** (pin #8).

### **POWER GOOD (Pin #9)**

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

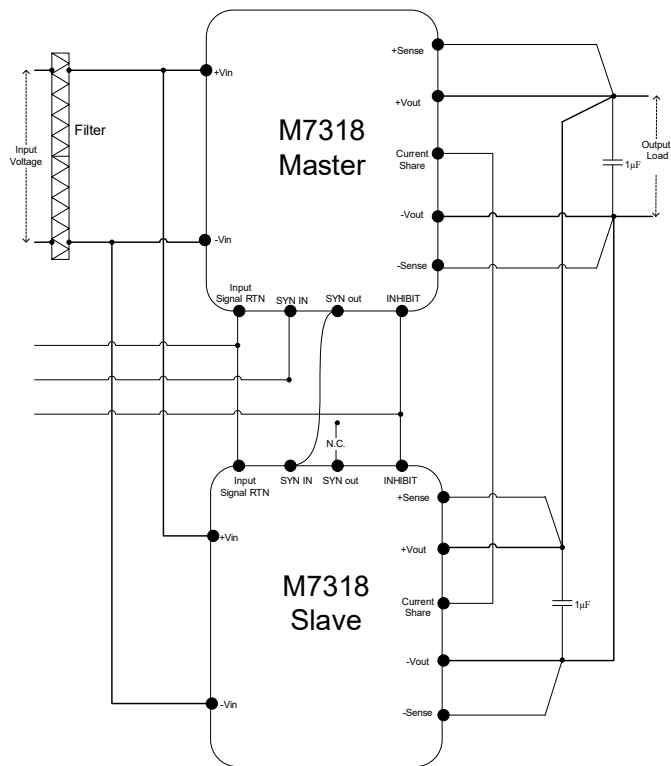
TTL "1" - output is within the required tolerances.

TTL "0" - output is not within the required tolerances.

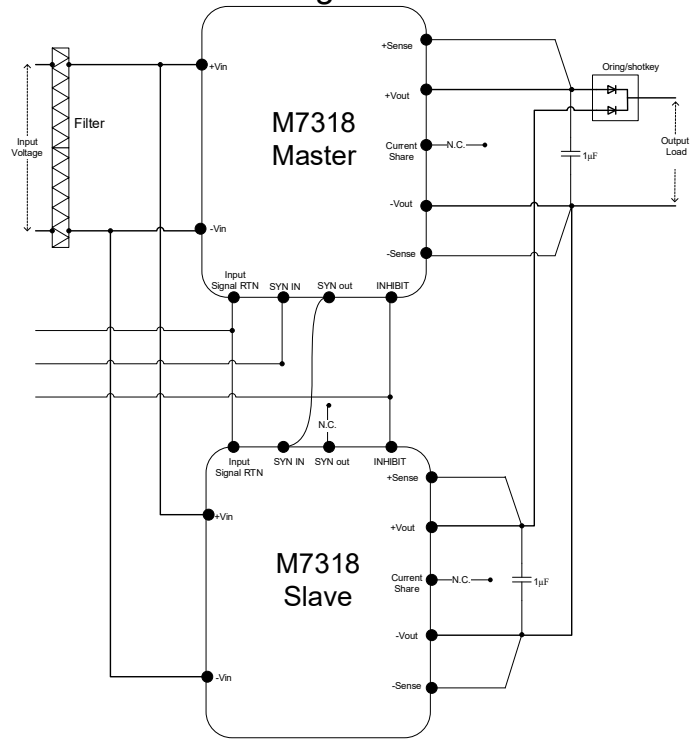
This signal is referenced to **SENSE RTN** (pin #8).

*Typical Connection Diagram*

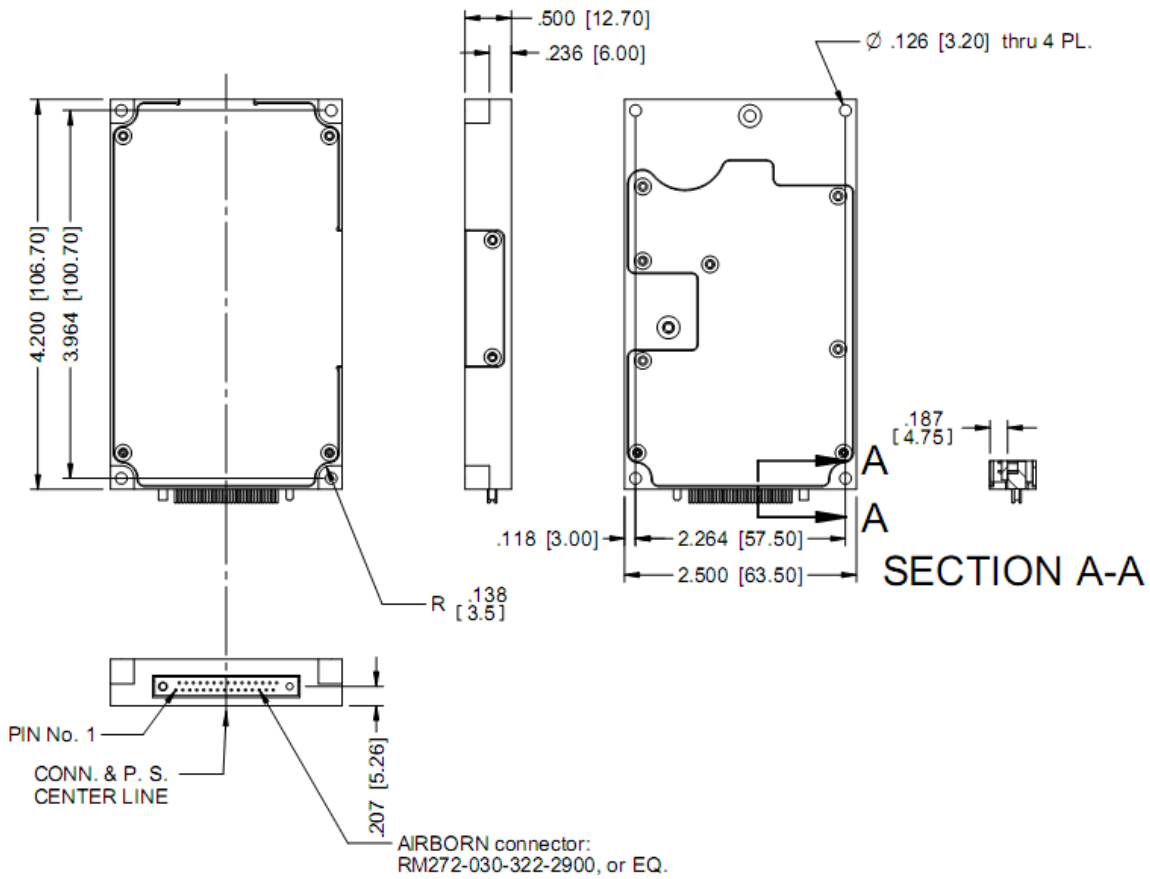
Parallel connection with current share



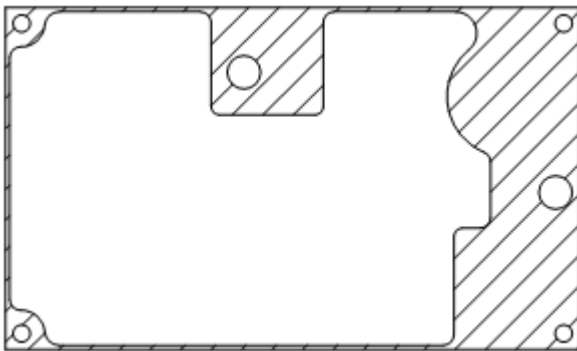
### Redundancy connection with external oring diode



**Outline Drawing**



**Heat Dissipation Surface**



**Notes**

1. Dimensions are in Inches [mm]
2. Tolerance is:  
.XX ±.02 IN  
.XXX ±.01 IN
3. Weight: Approx. 150gr (5.3 Oz)

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