M7127 SERIES

DC/DC POWER SUPPLY

PRODUCT HIGHLIGHTS

- **MINIATURE**
- **VERY HIGH DENSITY**
- **DC/DC CONVERTER**
- **UP TO 500W (750W peak)**

Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Remote sense
- Remote Inhibit (On/Off)

- Optional parallel connection
- High Density – up to 47 W/in³
- Fixed switching freq. (250 kHz)
- External sync capability
- EMI filters included
- Floating Connector

- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

DC Input:
Voltage range: 18 to 48 V_{DC}
Transient protection (no damage) IAW MIL-STD-1275A (100 V for 50 ms) and IAW MIL-STD-704A (80 V for 0.1 s)
Extended input range option:
18 to 100 V_{DC},
IAW MIL-STD-1275E.

DC Output:
Voltage: 5 to 50 V_{DC}
Current: 0 to 40 A
Power Range: 0 to 500 W
Peak power: Up to 750 W for up to 4 seconds.
After 4 seconds, the output falls to 70% from it is nominal value.

Isolation:
Input to Output: 200 V_{DC}
Input to Case: 200 V_{DC}
Output to Case: 100 V_{DC}

Line/Load regulation:
Less than ±1%
(No load to full load, −55 °C to +85 °C, and over input voltage range).

Efficiency:
88% - 90% typical (full load, room temperature)

83% - 86% for extended input range

EMC:
Meets* MIL-STD-461F
CE101, CE102, CS101, CS114, CS115, CS116, RE102, RS101, RS103

Ripple and Noise:
Less than 50 mV_{p-p}, typical (max. 100 mV) without external capacitance. When connected to system capacitance ripple drops significantly.

Load Transient Overshoot and undershoot
Output change at load transient of 30%-100% with T_r & T_f of max 30 µs is 5% of output voltage. Output recover to steady stated within less 0.5 ms.

Turn on Transient
No overshoot.

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

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Protections *

Input

- **Input Reverse Polarity:**
  Protection for unlimited time
- **Under-Voltage Lock-Out:**
  Unit shuts down below 15 V ± 1 V.
  Resumes operation at 17 V ± 1 V.
  Min. hysteresis 2 V.
- **Over-Voltage Lock-Out**:
  Unit shuts down above 54 V ± 2 V.

Output

- **Active Over-Voltage Protection:**
  Secondary control circuit takes over if output voltage exceeds 110% ± 5% of nominal voltage.
- **Passive Over-Voltage Protection:**
  Zener diode installed on output terminals, selected at 120% ± 10% of nominal voltage.
- **Current limiting:**
  Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).

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.
- **POR:**
  Protection Override signal (BATTLE SHORT function) overrides over temperature protection and input over/under-voltage lock-out.

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.

Salt Fog
Method 509.4

Humidity
Method 507.4
Procedure I
Up to 95%.

Vibration
Method 514.5
Category 4
General minimum integrity exposure IAW Figure 514.5C-17,
1 hour per axis.

Shock
Method 516.5
Procedure I
Saw-tooth, 30 g peak, 11 ms

Reliability
150,000 hours, calculated per MIL-STD-217F Notice 2 at +85°C baseplate, Ground fixed.

Environmental Stress Screening (ESS)
Including random vibration and thermal cycles is also available. **Please consult factory for details.**

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

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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" or short will turn off the power supply.

SYNC signal
The SYNC signal is used to allow the power supply frequency to sync with the system frequency.
The system frequency should be 250 kHz ± 10 kHz.
When not connected the power supply will work at 250 kHz

POR (Protection Override)
The POR signal disables the input under voltage lockout, over voltage lockout and over temperature protection.
TTL "0" or short circuit – Protections are disabled.
TTL "1"or open circuit – Protections are enabled.

SIGNAL RTN
The INPUT SIGNAL RTN is referred to the input.
This is used as grounding for SYNC IN, INHIBIT and POR signals.
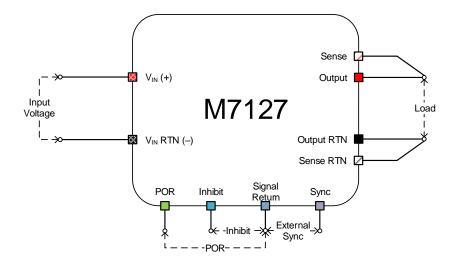
SENSE
The SENSE is used to achieve accurate load regulations at load terminals (this is done by connecting the pins directly to the load's terminals).
The use of remote sense has a limit of voltage dropout between converter's output and load terminals up to 0.5V.
When not used connect + SENSE to +VOUT and –SENSE to –VOUT.

Typical Connection Diagram

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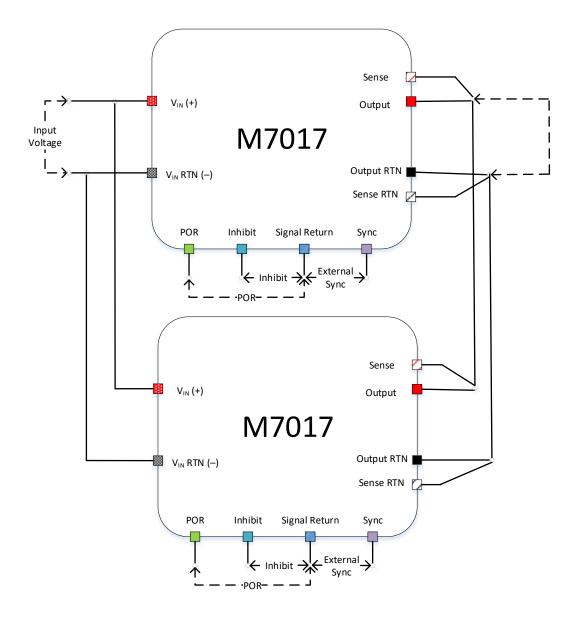Email: sales@milpower.com • Website: www.milpower.com • CAGE: 0B7R6

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Parallel operation - Typical Connection Diagram

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Pin Assignment

Connector type: Positronic DD44M3000S-759.1 or eq.

Mates with: Positronic DD44S###0S-759.0 or eq.

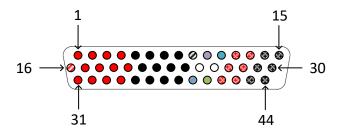| Pin #	Function
1	OUT (+)
2	OUT (+)
3	OUT (+)
4	OUT (+)
5	OUT RTN (–)
6	OUT RTN (–)
7	OUT RTN (–)
8	OUT RTN (–)
9	SENSE RTN (–)
10	SYNC IN
11	INHIBIT

Pin #	Function
12	VIN (+)
13	VIN (+)
14	VIN RTN (–)
15	VIN RTN (–)
16	SENSE (+)
17	OUT (+)
18	OUT (+)
19	OUT (+)
20	OUT (+)
21	OUT RTN (–)
22	OUT RTN (–)

Pin #	Function
23	OUT RTN (–)
24	OUT RTN (–)
25	N/C
26	N/C
27	VIN (+)
28	VIN (+)
29	VIN RTN (–)
30	VIN RTN (–)
31	OUT (+)
32	OUT (+)
33	OUT (+)

Pin #	Function
34	OUT (+)
35	OUT RTN (–)
36	OUT RTN (–)
37	OUT RTN (–)
38	OUT RTN (–)
39	SIGNAL RTN
40	POR
41	VIN (+)
42	VIN (+)
43	VIN RTN (–)
44	VIN RTN (–)

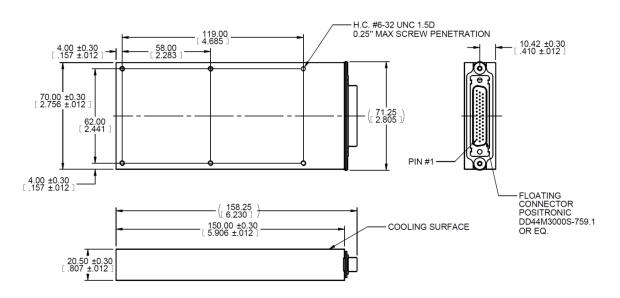Note: All identically designated pins should be connected together for best performance.

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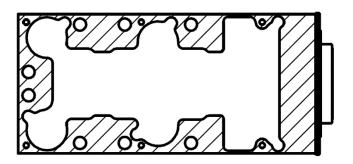Email: sales@milpower.com • Website: www.milpower.com • CAGE: 0B7R6

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Outline Drawing

Heat Dissipation Surface

Dissipation Area
6.5 in²
(4 200 mm²)

Notes
1. Dimensions are in inches [mm]
2. Tolerance is:
    .XX ± 0.02 in
    .XXX ± 0.008 in
3. Weight: TBD

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

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