M8186 SERIES

DC/DC POWER SUPPLY

PRODUCT HIGHLIGHTS

- **COMPACT**
- **HIGH DENSITY**
- **SINGLE OUTPUT**
- **DC/DC CONVERTER**
- **UP TO 2000W**

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Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- High density: up to 30.5 W/in³
- Input / Output isolation
- Limited Inrush Current
- Remote Inhibit (On/Off)
- Fixed switching freq. (400 kHz)
- EMI filters included
- Cos ϕ > 0.92 from 75% load
- Non-latching protections:
  - Output overload
  - Output short-circuit
  - Output over-voltage
  - Over temperature

Electrical Specifications

Normal Input Voltage
DC voltage range:
220 to 350 V_{DC}

DC Output:
Voltage range: 5 to 60 V_{DC}
Current range: 0 to 80 A
Power range: 0 to 2 000 W

Isolation
Input to Output: 500 V_{DC}
Input to Case: 500 V_{DC}
Output to Case: 100 V_{DC}

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

Efficiency
90% - Typical (nominal line voltage, 28 V_{DC} output, full load, standard room temperature)

EMC
Designed to meet MIL-STD-461C: CE102, CS101, CS114, CS115, CS116, RE102, RS101, RS103

Ripple and Noise
100 to 150 mV_{p-p}, typical (max. 1% of nominal voltage) measured across a 1µF ceramic capacitor.

Transient Over-and-undershoot
Voltage change less than 10% of nominal value for load step from 50% to 100%. Return to regulation in under 1 ms.

Turn on Transient
No Voltage overshoot during turn on.

Protections *

Input
- **Inrush Current Limiter**
  Up to 6 times the maximum input current for less than 50 µs.

Output
- **Over-voltage Protection**
  Passive transorb on output, 120% ± 10% of nominal voltage.
- **Current limiting**
  Continuous protection (10 to 30% above maximum current) for unlimited time.

General
- **Over temperature protection**
  Shutdown at baseplate 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 Conditions

Designed to Meet MIL-STD-810F

Temperature
Methods 501.4 & 502.4
Operating: –55°C to +85°C (at baseplate)
Storage: –55°C to +125°C (ambient)

Vibration
Method 514.5
Procedure I, Category 24
General minimum integrity exposure
IAW Figure 514.5C-17
1 hour per axis.

Altitude
Method 500.4
Procedure I – Storage/Air transport:
up to 70,000 ft. (non-operational)
Procedure II – Operation/Air Carriage:
up to 40,000 ft. (operational)

Shock
Method 516.5
Procedure I
20 g / 11 ms terminal peak sawtooth shock pulse

Humidity
Method 507.4
Up to 95% RH

Salt Fog
Method 509.4

Reliability

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

Environmental Stress Screening (ESS)

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

Pin Assignment

Pin No.	Function
1	Signal RTN
2	- SENSE †
3	N/C
4	N/C
5	N/C
6	N/C
7	VIN (–)
8	VIN (–)
9	N/C

Pin No.	Function
10	VIN (+)
11	VIN (+)
12	N/C
13	N/C
14	Inhibit
15	+ SENSE †
16	N/C
17	N/C
18	N/C

Pin No.	Function
19	N/C
20	VIN (–)
21	N/C
22	N/C
23	VIN (+)
24	N/C
25	Chassis

† Please inform factory if sense lines are required to be tied to the output from within, or if the remote sense compensation function will be used.

Functions and Signals

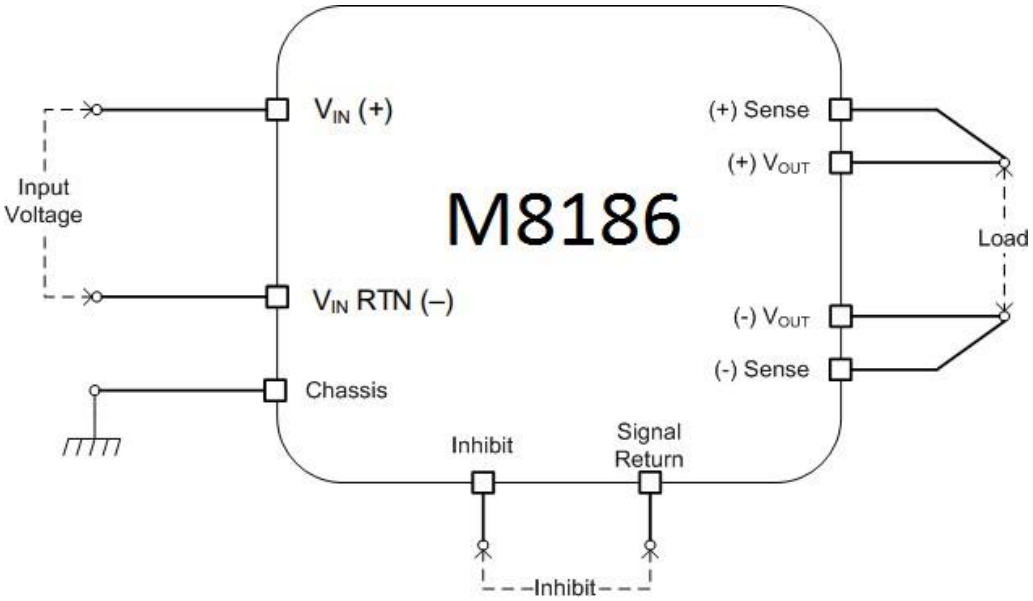
INHIBIT

The ***INHIBIT*** signal is used to turn the power supply ON and OFF.
OPEN – will turn on the power supply.
SHORT – between pin 14 and pin 1 will turn off the power supply.
This signal is referenced to the ***SIGNAL RTN*** pin.

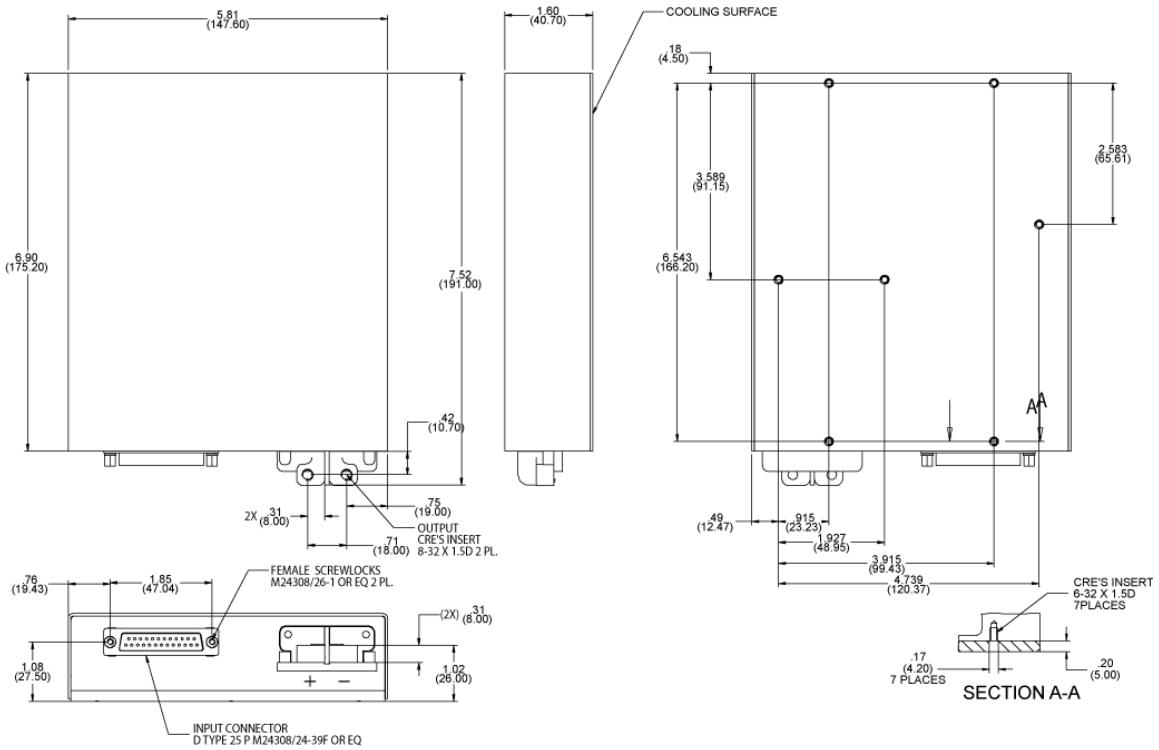
SENSE

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 (up to 2V).
Please note that if Sense lines are not used the output may rise as much as 2V above nominal outputs.
If sense lines are not to be used in the application, please inform factory for internal connection to output pins.

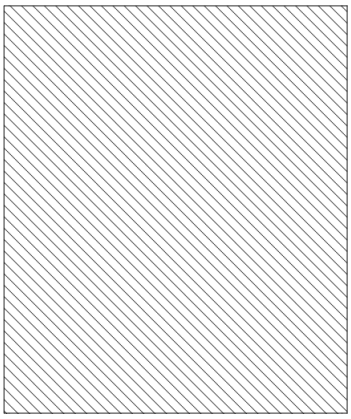
Typical Connection Diagram



Outline Drawing*



Heat Dissipation Surface



Dissipation Area
40.08 in² (258.6 cm²)

Notes

1. Dimensions are in inches [mm]
2. Tolerance is:
   .XX ± 0.025 in
   .XXX ± 0.010 in
3. Weight: Approx. 4.4 lbs [2 kg]

Standard Configurations

Part number	Input	Output	
	Voltage range	Voltage	Current
M8186-100	220 to 350 Vdc	28 V_{DC}	70 A
M8186-101	220 to 350 Vdc	28 V_{DC}	70 A
M8186-102	220 to 350 Vdc	28 V_{DC}	70 A

Special Features

- **M8186-101:**
  - Parallel operation via output voltage droop. Voltage regulation is ±2%.
- **M8186-102:**
  - Output voltage sense wires tied internally to the unit.

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