

## M8186 SERIES

### DC/DC POWER SUPPLY



#### DESCRIPTION

The M8186 military power supply is a rugged single output DC to DC converter which accepts an 220 - 350VDC input voltage range and provides a single DC output from 5 to 60V at up to 2000W. Custom outputs available upon request and the unit is Designed to meet military standards, MIL-STD-810, MIL-STD-461.

#### FEATURES

- Miniature size
- High efficiency
- Wide input range
- High density: up to 30.5 W/in<sup>3</sup>
- Input / Output isolation
- Limited Inrush Current
- Remote Inhibit (On/Off)
- Fixed switching freq. (400 kHz)
- EMI filters included
- Non-latching protections:
  - o Output overload
  - o Output short-circuit
  - o Output over-voltage
  - o Over temperature

## HOW TO ORDER

Part number	Input	Output	
	Voltage Range	Voltage	Current
CF-02EM8186-1	220 to 350VDC	28VDC	70A
CF-02EM8186-2	220 to 350VDC	28VDC	70A
CF-02EM8186-3	220 to 350VDC	28VDC	70A

### ELECTRICAL SPECIFICATIONS:

<b>Normal Input Voltage:</b> DC voltage range: 220 to 350VDC	<b>DC Output:</b> Voltage range: 5 to 60VDC Current range: 0 to 80A Power range: 0 to 2000W	<b>Isolation:</b> Input to Output: 500VDC Input to Case: 500VDC Output to Case: 100VDC
<b>Line/Load regulation:</b> Up to $\pm 1\%$ (no load to full load, $-55^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ and over input voltage range).	<b>Efficiency:</b> 90% - Typical (nominal line voltage, 28VDC output, full load, standard room temperature)	<b>EMC:</b> Designed to meet MIL-STD-461C: CE102, CS101, CS114, CS115, CS116, RE102, RS101, RS103
<b>Ripple and Noise:</b> 100 to 150mVp-p, typical (max. 1% of nominal voltage) measured across a $1\mu\text{F}$ ceramic capacitor.	<b>Transient Over-and undershoot:</b> Voltage change less than 10% of nominal value for load step from 50% to 100%. Return to regulation in under 1 ms.	<b>Turn on Transient:</b> No Voltage overshoot during turn on.

PROTECTIONS		
Input	Output	General
<b>Inrush Current Limiter:</b> Up to 6 times the maximum input current for less than 50 $\mu$ s.	<b>Over-voltage Protection:</b> Passive transorb on output, 120% $\pm$ 10% of nominal voltage.	<b>Over temperature protection</b> Shutdown at baseplate temperature of +105 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C. Automatic recovery at base plate temperature lower than +95 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C.
	<b>Current limiting:</b> Continuous protection (10 to 30% above maximum current) for unlimited time.	

Environmental Conditions		
<b>Temperature:</b> Methods 501.4 & 502.4 Operating: -55 $^{\circ}$ C to +85 $^{\circ}$ C (at baseplate) Storage: -55 $^{\circ}$ C to +125 $^{\circ}$ C (ambient)	<b>Altitude:</b> 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)	<b>Vibration:</b> Method 514.5 Procedure I, Category 24 General minimum integrity exposure IAW Figure 514.5C-17 1 hour per axis.
<b>Humidity:</b> Method 507.4 Up to 95% RH	<b>Salt Fog:</b> Method 509.4	<b>Shock:</b> Method 516.5 Procedure I 20 g / 11 ms terminal peak sawtooth shock pulse

## 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

## 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).

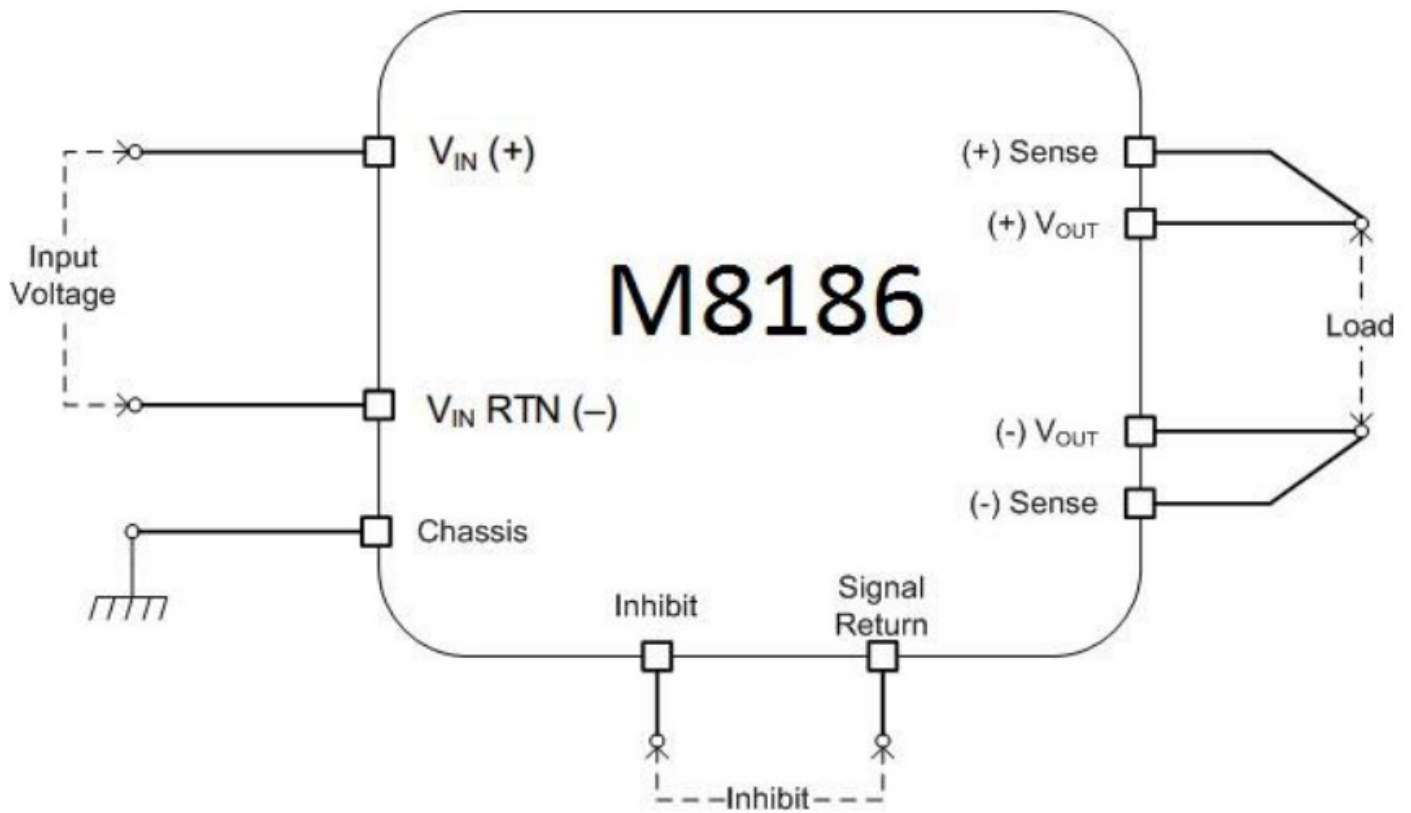
The use of remote sense has a limit of voltage dropout between converter's output and load terminals

of 2-10% of voltage output (up to 2V).

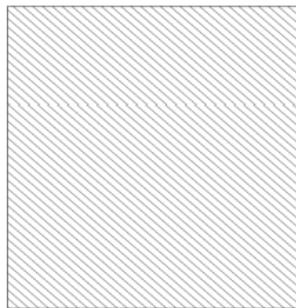
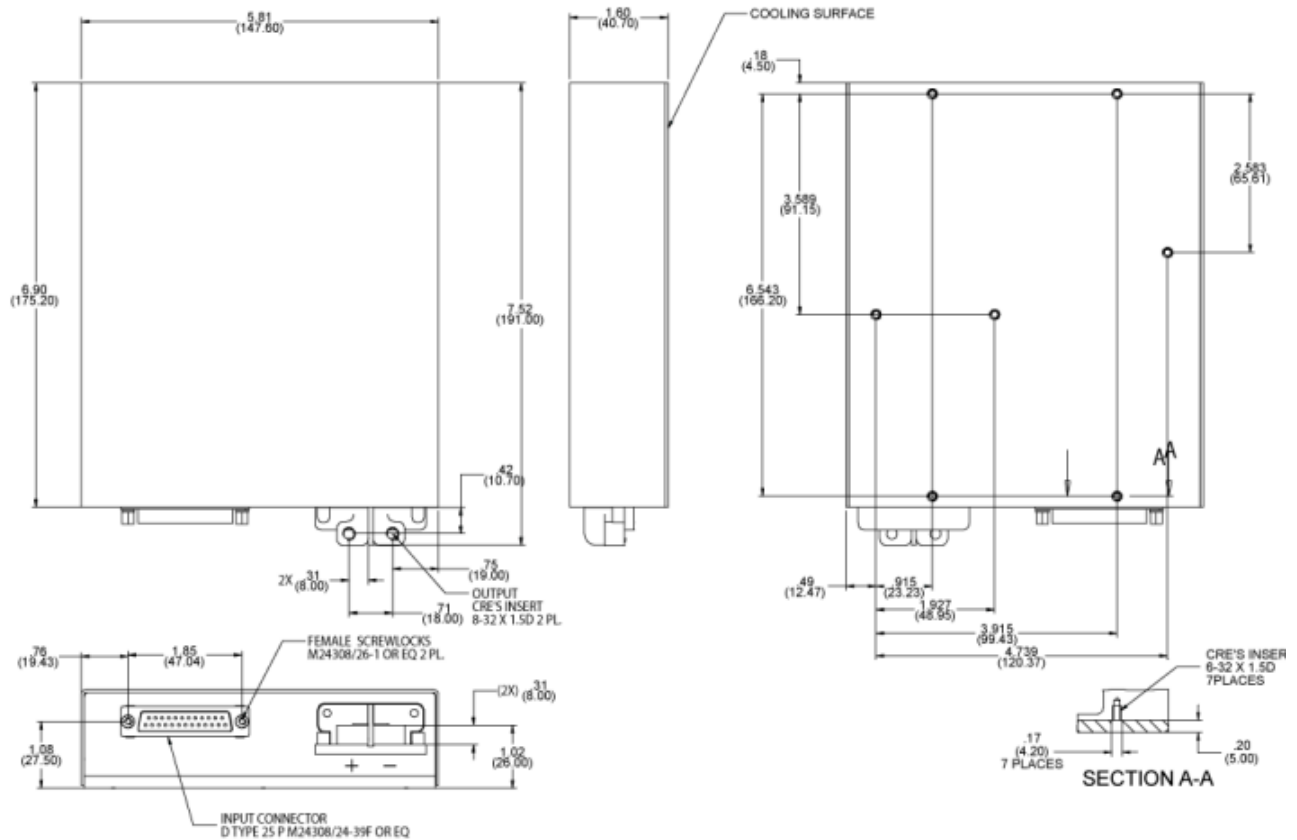
Please note that if Sense lines are not used the output may rise as much as 2V above nominal outputs.

If sense lines are not to be used in the application, please inform factory for internal connection to output pins.

## TYPICAL CONNECTION:



## OUTLINE DRAWING:



Dissipation Area  
40.08 in<sup>2</sup> (258.6 cm<sup>2</sup>)

### 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]

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