M186 SERIES

THREE-PHASE
AC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

- **THREE PHASE AC/DC POWER SUPPLY**
- **103 to 127 VAC 3 phase Input**
- **400Hz**
- **SINGLE OUTPUT**
- **UP TO 2000 W**

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Amphenol
MILITARY HIGH SPEED

M186 SERIES THREE-PHASE AC/DC POWER SUPPLY

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

AC variant voltage range:
115 ± 10% $V_{AC,L-N}$,
400 Hz, 3-Phase

Optional for 50/60Hz Input frequency: **Please consult factory for details.**

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-461F**:
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.
** Depending on configuration, an external filter may be required to comply with EMI requirements.

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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)

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)

Humidity
Method 507.4
Up to 95% RH

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

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

Salt Fog
Method 509.4

Reliability

100,000 hours, calculated IAW MIL-HDBK-217F Notice 2 at +85 °C baseplate, Ground fixed conditions.

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Pin Assignment

Connector type: M24308/24-39F or eq.
Mating connector type M24308/2-3F or eq.

Pin No.	Description
4, 5, 17	PHASE A
7, 8, 20	PHASE B
10, 11, 23	PHASE C
15	+ SENSE †
2	- SENSE †
14	INHIBIT
1	SIGNAL RTN
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.

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Functions and Signals

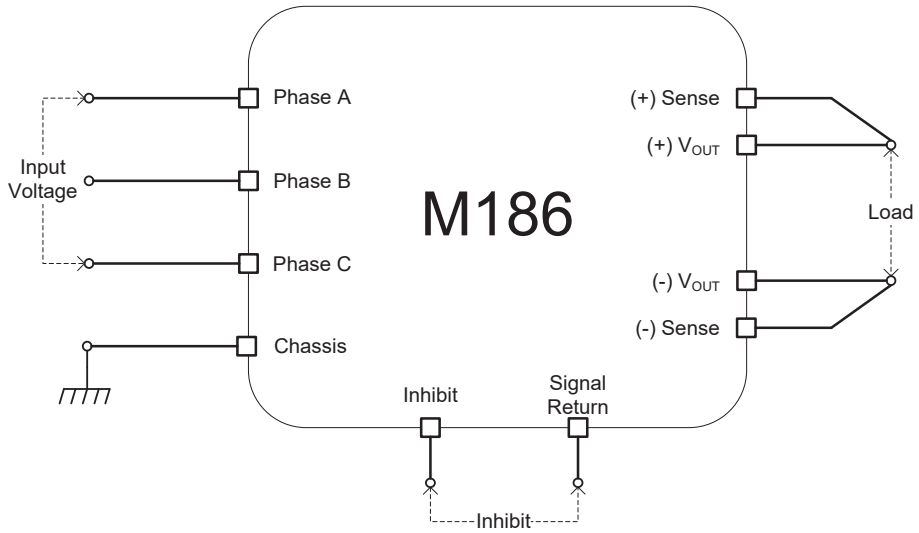
INHIBIT

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.

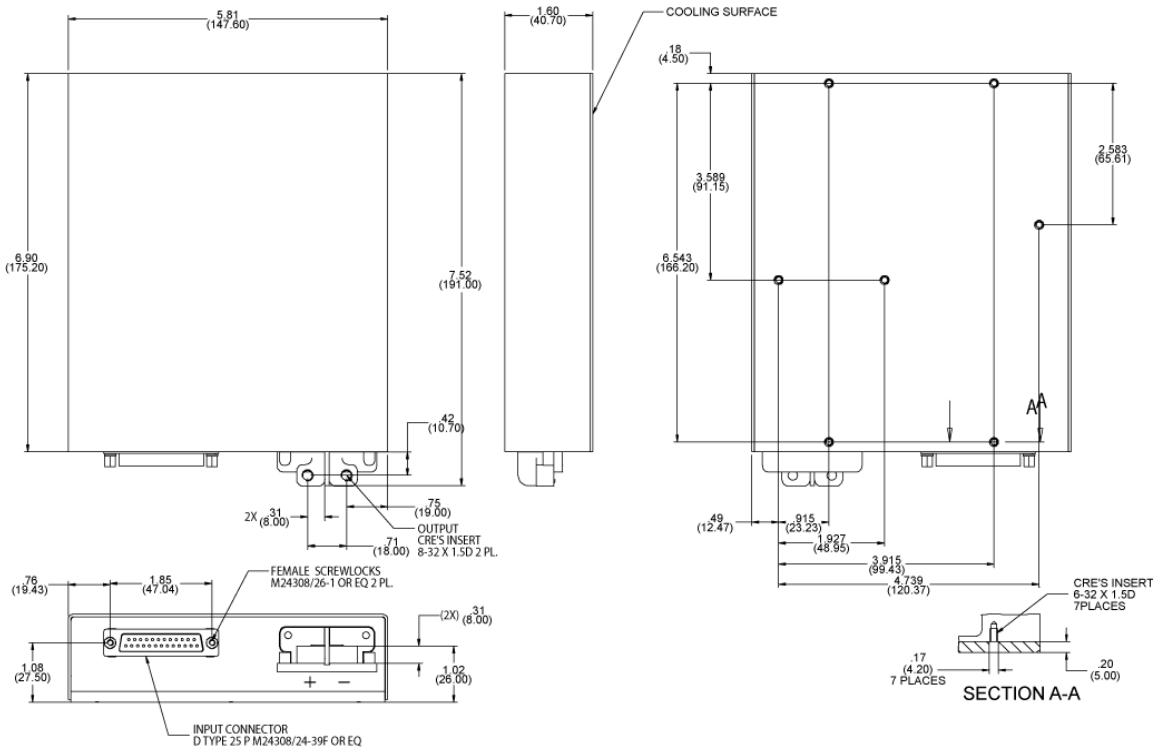
Typical Connection Diagram



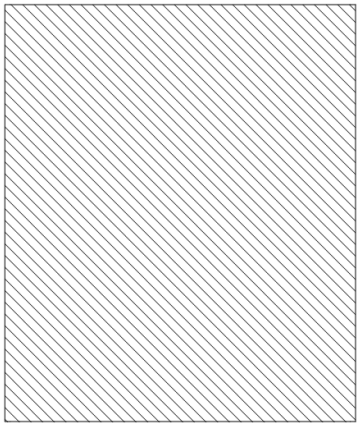
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Outline Drawing



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]

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Standard Configurations

Part number	Input		Output	
	Voltage range	Frequency	Voltage	Current
M186100	3-phase, 103 to 127 V_{AC}	400 Hz	12 V_{DC}	70 A
M186101	3-phase, 103 to 127 V_{AC}	400 Hz	15 V_{DC}	70 A
M186102	3-phase, 103 to 127 V_{AC}	400 Hz	24 V_{DC}	70 A
M186103	3-phase, 103 to 127 V_{AC}	400 Hz	28 V_{DC}	70 A
M186104	3-phase, 103 to 127 V_{AC}	400 Hz	36 V_{DC}	55 A
M186105	3-phase, 103 to 127 V_{AC}	400 Hz	48 V_{DC}	40 A

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

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