



M1981 SERIES

AC/DC CONVERTERS

HIGH DENSITY, HIGH POWER FACTOR
SINGLE PHASE, SINGLE OUTPUT
UP TO 200W



Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- High power factor (0.98)
- Input / Output isolation
- Inrush Current Limiter
- External On/Off Inhibit
- Fixed switching freq. (250 kHz)
- External synchronization capability
- EMI filters included
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

AC Input:

85 to 265 V_{AC}, 50/60/400 Hz, single-phase per MIL-STD-704A & per MIL-STD-1399:300A (60Hz)

DC Output:

Output range – 3.3V to 48V
Output power – 200W (peak 250W)
Output current – max 20A

Isolation:

1000V between Input and Output
1000V between Input and Case
200V between Output and Case

Line/Load regulation:

Less than 1% (no load to full load, -55°C to +85°C).

Efficiency :

Up to 80% - Typical (full load, room temperature)

EMC:

Designed to meet MIL-STD-461D:
CE101, CE102, CS101, CS114, CS115, CS116, RE101, RS101, RS103

Ripple and Noise:

100÷150mV_{p-p}, typical (max. 1%) without external capacitance.

Load Transient Overshoot and undershoot

Current change from 50%-100% output voltage change less than 0.5V within 200-300µSec

Turn on Transient

Voltage overshoot at during power on is less than 3% nominal voltage.



Protections *		
<p><u>Input</u></p> <ul style="list-style-type: none"> • Inrush Current Limiter peak value of $5 \times I_{IN}$ for inrush currents lasting more than $50\mu\text{Sec}$. • Under Voltage Lock-Out Unit shuts down below $75V_{AC} \pm 5V_{AC}$. 	<p><u>Output</u></p> <ul style="list-style-type: none"> • Active Overvoltage Protection Internal control protects unit 5-15% above nominal voltage. • Passive Overvoltage Protection 10-30% above nominal voltage. • Current limiting Continuous protection (10-30% above maximum current) for unlimited time (Hiccup). 	<p><u>General</u></p> <ul style="list-style-type: none"> • Over temperature protection: Shuts down if base plate temp exceeds $+105^{\circ}\text{C} \pm 5^{\circ}\text{C}$. Automatic recovery when base plate temperature drops below $+95^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

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

Environmental		
Designed to Meet MIL-STD-810F		
<p><u>Temperature:</u> Operating: -40°C to $+85^{\circ}\text{C}$ (base plate) Storage: -55°C to $+125^{\circ}\text{C}$</p>	<p><u>Altitude:</u> Method 500.4, Procedure I & II, 40,000 ft. and 70,000 ft. Operational</p>	<p><u>Salt Fog:</u> Method 509-4</p>
<p><u>Humidity:</u> Method 507.4 - Up to 95%.</p>	<p><u>Vibration and Shock:</u> Shock - Saw-tooth, 20g peak, 11mS. Vibration - Figure 514.5C-17, General minimum integrity exposure. (1 hour per axis.)</p>	<p><u>Reliability</u> ~143,000 hours, calculated per MIL-STD-217F Change Notice 2 at $+85^{\circ}\text{C}$ base plate, Ground Fixed.</p>

Environmental Stress Screening (ESS)

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



Pin Assignment

Option A: with external synchronization, without sense lines.

Pin No.	Function
1	OUT RTN (-)
2	OUT RTN (-)
3	N/C
4	OUT (+)
5	OUT (+)
6	N/C
7	SYNC
8	INHIBIT
9	N/C

Pin No.	Function
10	PHASE
11	N/C
12	NEUTRAL
13	NEUTRAL
14	OUT RTN (-)
15	OUT RTN (-)
16	N/C
17	OUT (+)
18	OUT (+)

Pin No.	Function
19	N/C
20	SYNC RTN
21	INHIBIT RTN
22	N/C
23	PHASE
24	N/C
25	CHASSIS

Option B: with sense lines, without external synchronization.

Pin No.	Function
1	OUT RTN (-)
2	OUT RTN (-)
3	N/C
4	OUT (+)
5	OUT (+)
6	N/C
7	SENSE (+)
8	INHIBIT
9	N/C

Pin No.	Function
10	PHASE
11	N/C
12	NEUTRAL
13	NEUTRAL
14	OUT RTN (-)
15	OUT RTN (-)
16	N/C
17	OUT (+)
18	OUT (+)

Pin No.	Function
19	N/C
20	SENSE RTN (-)
21	INHIBIT RTN
22	N/C
23	PHASE
24	N/C
25	CHASSIS

Note: All pins with the identical function or designation should be connected together for best performance.



Functions and Signals

SENSE

The SENSE line is used to achieve accurate voltage regulation at load terminals.
 To use this feature, connect this pin directly to load's positive terminal.
 If this function is not required, short SENSE pin to OUTPUT pins as close as possible to the unit.

SENSE RTN

The SENSE RTN line is used to achieve accurate voltage regulation at load terminals.
 To use this feature, connect this pin directly to load's negative terminal.
 If this function is not required, short SENSE RTN pin to OUTPUT RTN pins as close as possible to the unit.

Note: The use of remote sense has a limit of voltage dropout between the converter's output and the load's terminals of approximately 5% of nominal output voltage.

INHIBIT

The INHIBIT signal is used to turn the power supply ON and OFF.
 TTL "1" or OPEN – Power supply active (output turned on).
 TTL "0" or SHORT to Signal RTN – Power supply inhibited (output turned off).
 If this function is not required, leave this pin unconnected.

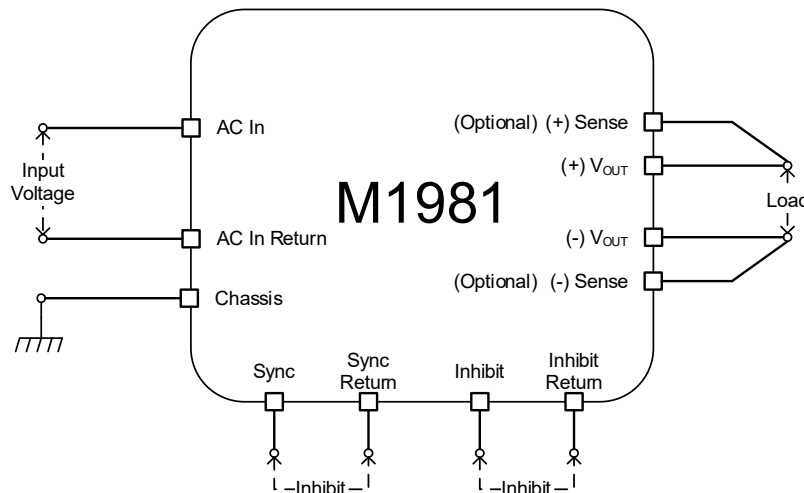
SYNC

The SYNC signal is used to synchronize the power supply's switching frequency to system's clock.
 Valid external clock frequency is 250kHz ±10kHz.
 If this function is not required, leave this pin unconnected - the power supply will use its internal clock.

CHASSIS

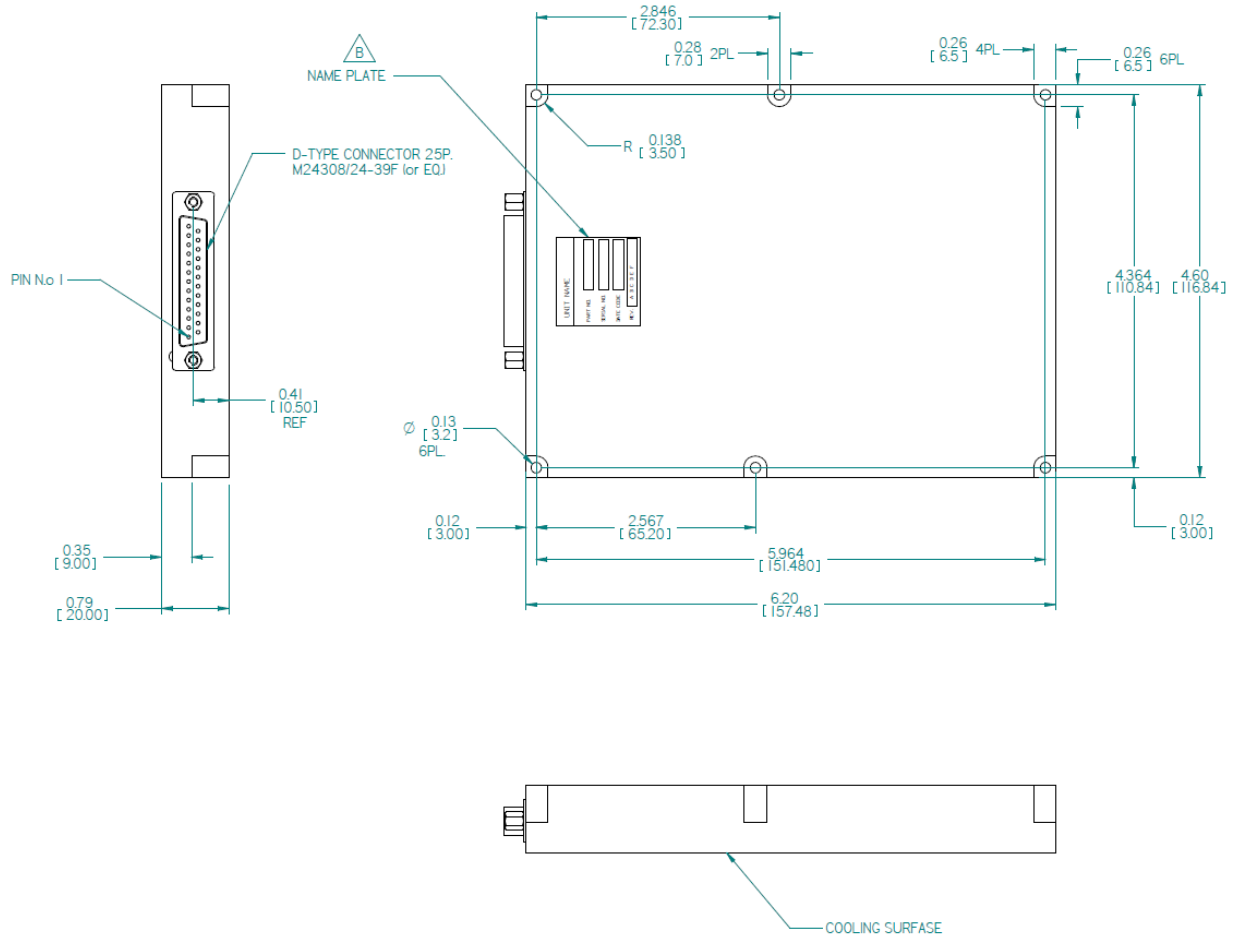
The CHASSIS pin allows additional connection of unit's chassis to system ground.

Typical Connection

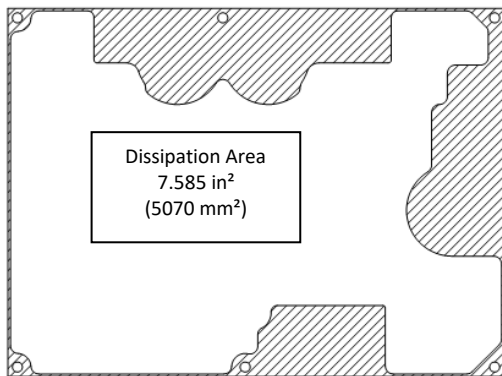




Outline Drawing



Heat Dissipation Surface



Notes

1. Dimensions are in inches [mm]
2. Tolerance is:
.XX ± 0.01 in
.XXX ± 0.005 in
3. Weight: Approx. 23 Oz [650 g]
4. Parasolid 3D module is available

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