

M1982 Series

AC-DC POWER SUPPLY



DESCRIPTION:

The M1982 military power supply is a rugged AC to DC converter. It accepts an AC input range from 85 to 265VAC, 50/60/400Hz and provides a single DC output from 3.3V to 48V, up to 300W, with custom outputs available. Designed to meet military standards MIL-STD-704, MIL-STD-1399, MILSTD-810, MIL-STD-461.

FEATURES

- Miniature size
- High efficiency
- Wide input range
- High power factor (0.99)
- Input / Output isolation
- Inrush Current Limiter
- External Inhibit (On/Off)
- Fixed switching freq. (250 kHz)
- Externally synchronizable
- EMI filters included
- Remote sense compensation
- Indefinite short circuit
- protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

HOW TO ORDER

PART NUMBER	OUTPUT
CF-02EM1982-1	5V / 20A
CF-02EM1982-2	12V / 20A
CF-02EM1982-3	15V / 20A
CF-02EM1982-4	24V / 12.5A
CF-02EM1982-5	28V / 10.7A
CF-02EM1982-6	48V / 6.2A

PRODUCT SPECIFICATIONS:

ELECTRICAL SPECIFICATIONS	
AC Input	85 to 265VAC, 50/60/400 Hz single-phase IAW MIL-STD-704A † (115Vrms / 400Hz) & MIL-STD-1399-300B Type I ‡ (115Vrms / 60Hz)
Line/Load regulation	Less than 1% (no load to full load, -40°C to +85°C)
Ripple and Noise	100 - 150mVp-p, typical (max 1%) without external capacitance.
DC Output	Voltage range: 3.3 to 48VDC Current range: 0 to 20A Power range: 0 to 300W
Efficiency	86% Typical (115Vrms input) 88% Typical (230Vrms input) (Both at 28VDC output, full load, room temperature)
Load Transient Response	For 28VDC output, current change from 50% - 100% results in less than 0.5V change and settling within 200 - 300µs
Isolation	Input to Output: 1000VDC Input to Case: 1000VDC Output to Case: 200VDC
EMC	Designed to meet MIL-STD-461F: CE101, CE102, CS101, CS114 CS115, CS116, RE101, RE102 RS101, RS103
Turn on Transient	No output voltage overshoot during power on.

Protections	
Input	Inrush Current Limiter Peak value of up to 5 times maximum input current for less than 50µs.
	Under Voltage Lock-Out Unit protects itself (no damage) below 75VAC and turn off.
Output	Active Over Voltage Protection 10% ± 2% above nominal voltage.
	Passive Over Voltage Protection Transorb at output selected 20% ± 5% above nominal voltage.
	Over Load / Short Circuit 10 - 30% above maximum current, indefinitely (Hiccup).
General	Over Temperature Protection Shutdown at base plate temp. above +105°C ± 5°C Automatic recovery at base plate temp. below +95°C ± 5°C

ENVIRONMENTAL CONDITIONS	
Designed to Meet MIL-STD-810F	
Temperature	Methods 501.4 & 502.4 Operating: -40°C to +85°C (at baseplate) Storage: -55°C to +125°C (ambient)
Altitude	Method 500.4 Procedures 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

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

PIN ASSIGNMENT:

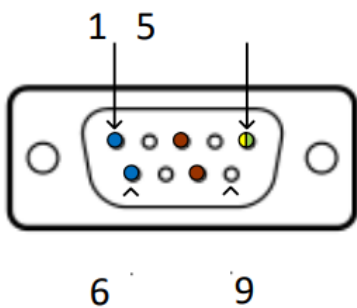
J1 - Input connector
 Type: M24308/24-37F or eq.
 Mates with: M24308/2-1F or eq.

J2 - Output connector
 Type: M24308/23-38F or eq.
 Mates with: M24308/4-2F or eq.

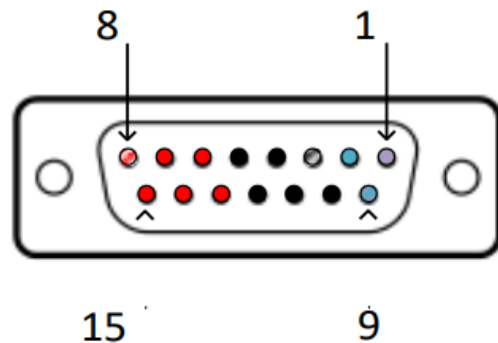
Pin No.	Function	
1	NEUTRAL	•
2	N/C	
3	PHASE	•
4	N/C	
5	CHASSIS	•
6	NEUTRAL	•
7	N/C	
8	PHASE	•
9	N/C	

Pin No.	Function	
1	SYNC	•
2	INHIBIT	•
3	SENSE RTN	•
4	OUTPUT RTN	•
5	OUTPUT RTN	•
6	OUTPUT	•
7	OUTPUT	•
8	SENSE	•
9	SIGNAL RTN	•

Pin No.	Function	
10	OUTPUT RTN	•
11	OUTPUT RTN	•
12	OUTPUT RTN	•
13	OUTPUT	•
14	OUTPUT	•
15	OUTPUT	•



(Connectors shown from front view)



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 $250\text{kHz} \pm 10\text{kHz}$. If this function is not required, leave this pin unconnected - the power supply will use its internal clock.

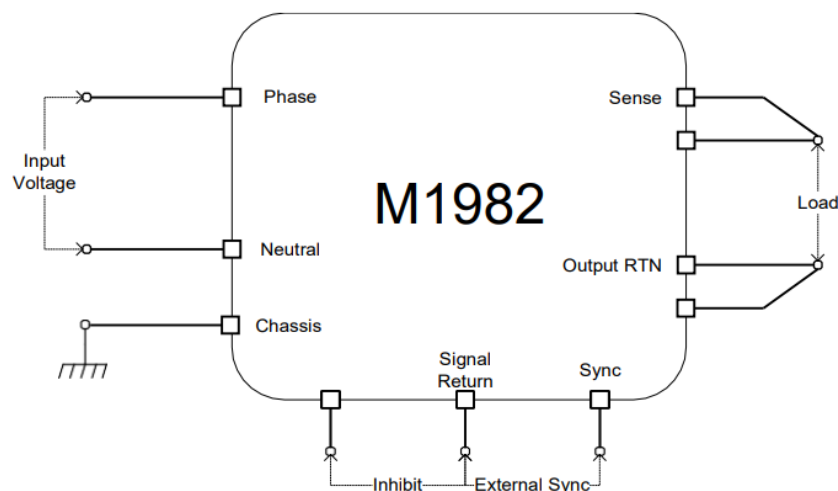
SIGNAL RTN

Both INHIBIT and SYNC signals are referenced to this pin. This pin is floating from both input and output.

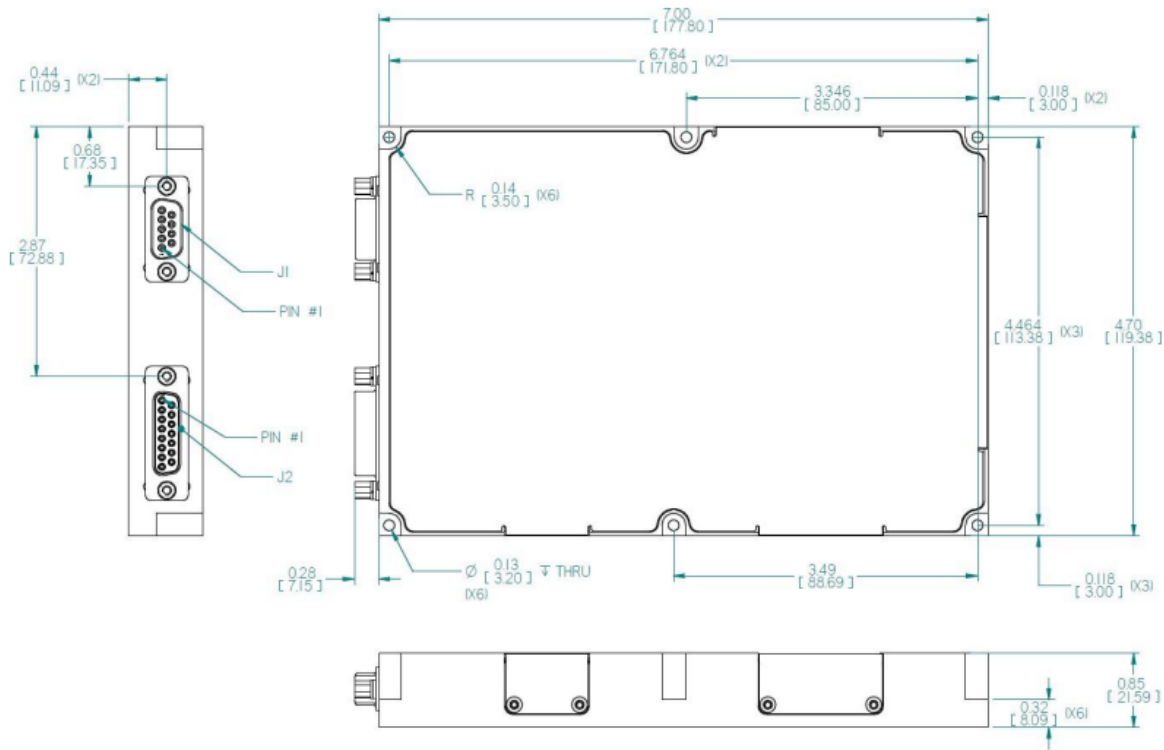
CHASSIS

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

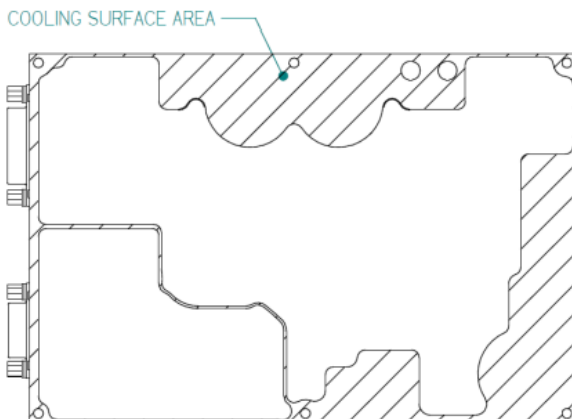
TYPICAL CONNECTION DIAGRAM:



OUTLINE DRAWING:



HEAT DISSIPATION SURFACE:



Dissipation Area
9.1 in²
[5871 mm²]

Notes

1. Dimensions are in inches [mm]
2. Tolerance is:
.XX ± 0.03 in
.XXX ± 0.010 in
3. Weight: Approx. 27.16 oz [770g]

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PRELIMINARY

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