Amphenol
MILITARY HIGH SPEED

M1963 Series
AC-DC POWER SUPPLY

DESCRIPTION:

The M1963 military power supply is a rugged AC to DC converter, accepts an AC input range from 85 to 265VAC, 50/60/400Hz and provides Three DC outputs from 3.3V to 50V, up to 130W, with custom outputs available. Designed to meet military standards MIL-STD-704, MIL-STD-1399, MIL-STD-810, MIL-STD-461.

FEATURES

- Miniature size
- High efficiency
- High power factor (up to 96%)
- Fixed switching freq. (450 kHz for output converters)
- Remote Inhibit (On/Off)
- EMI filters included
- Remote inhibit (On/Off)
- Limited inrush current
- Non-latching protections:
  - o Overload/Short-Circuit
  - o Over temperature

HOW TO ORDER

Part number	CF-02EM1963	AC-DC POWER SUPPLY

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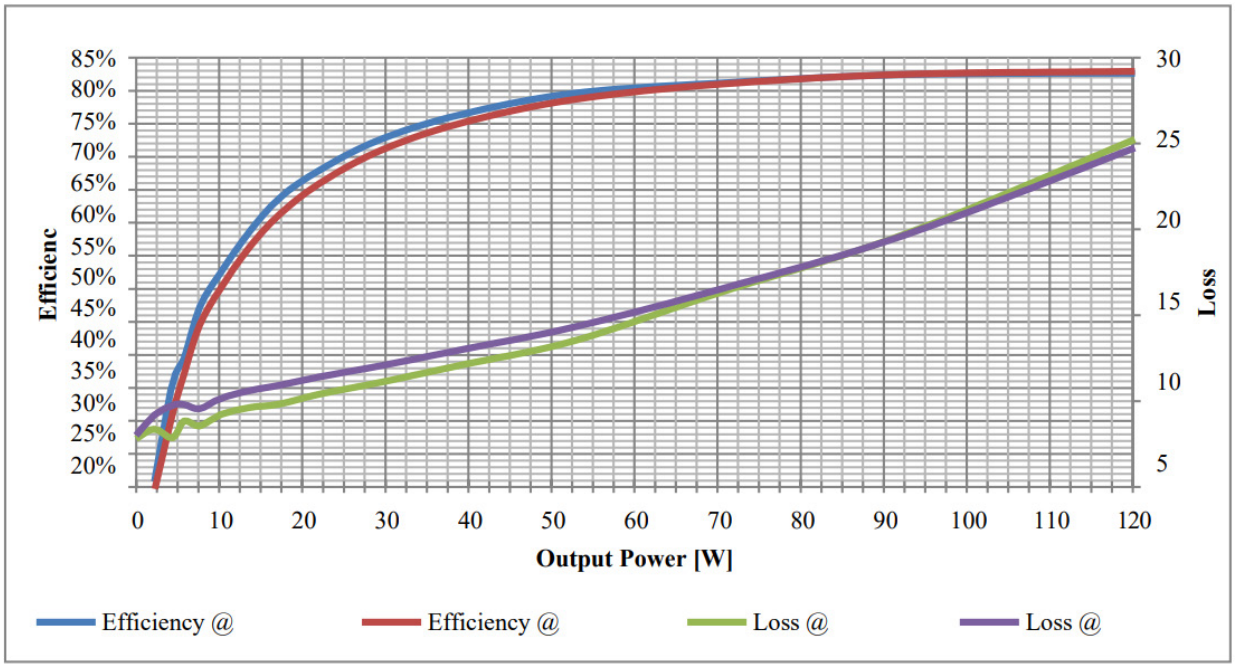
PRODUCT SPECIFICATIONS:

ELECTRICAL SPECIFICATIONS					
AC Input	Single-phase 85 to 265 VAC 50/60/400 Hz				
Output Voltage Regulation	Less than ±1% (no load to full load, –40°C to +85°C at baseplate)				
Ripple and Noise	100÷150 mVp-p, typical (max. 1%) without external capacitance.				
Output Waveform	Sinusoidal with max 5% (for 50,60Hz) and 7% (for 400Hz) harmonic distortion into a resistive load.				
DC Output	Out #	Option	Voltage Range	Max Current	Max Power
	1	A B	0.8-12 V 0.8-40 V	5 A 3.5 A	60 W
	2	A B	0.8-12 V 0.8-40 V	5A 3.5 A	60 W
	3	A	0.6-5 V	8 A	40 W
Efficiency	83% Typical (at nominal input voltage, full load, room temperature)				
Turn on Transient	Voltage overshoot at during power on is less than 3% nominal voltage.				
Isolation	Input to Output: 500 VDC Input to Case: 500 VDC Output to Case: 100 VDC Output to Output:100 VDC				
EMC	Designed to meet* MIL-STD-461F CE102, CS101, CS114, CS115, CS116 RE102, RS103. CE101, RE101 and RS101 optional.				
Input Current Harmonics Meets current harmonics requirements of MIL-STD1399:300B and EN 61000-3-2 Classes A, B and D.					

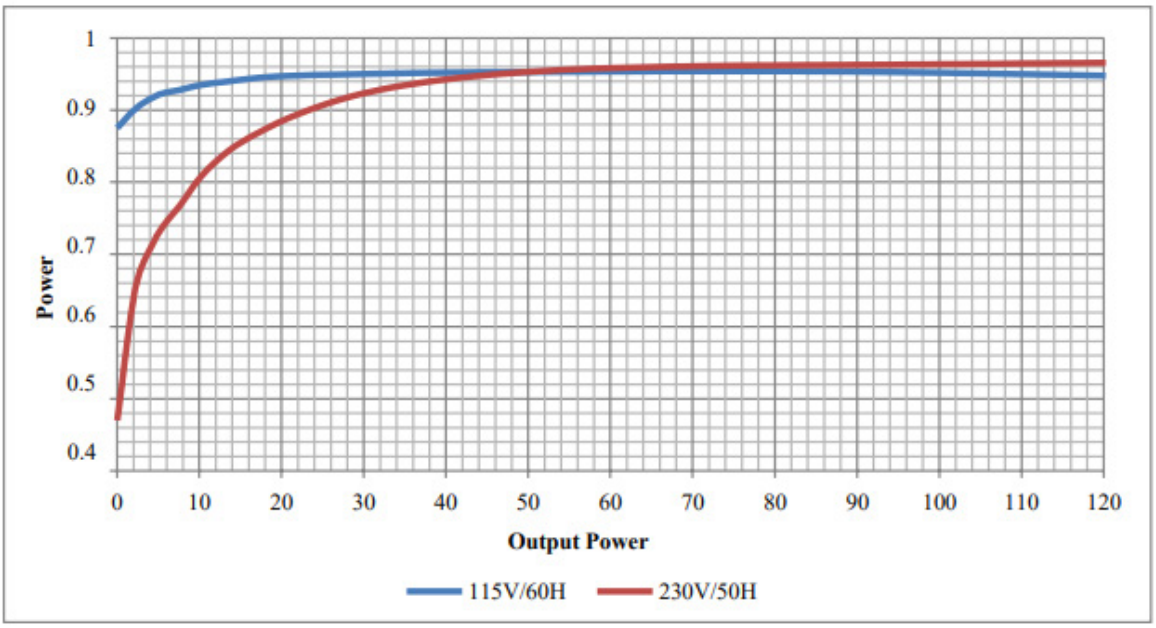
Protections	
Input	Inrush Current Limiter Peak value of up to 5 times of maximum steady-state input current for inrush currents lasting longer than 50 µs.
Output	Overvoltage protection: Passive transorbs selected at 120% ± 10% of nominal voltage.
	Overload / shortcircuit protection: Continuous protection (constant current) for unlimited time.
General	Over temperature protection: Shutdown at baseplate temperature of +105°C ± 5 °C. Automatic recovery when baseplate temperature returns to +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 – up to 70,000 ft. (non-operational) Procedure II – up to 40,000 ft. (operational)
Humidity	Method 507.4 Up to 95% RH
Vibration	Method 514.5 General minimum integrity exposure IAW Figure 514.5C-17 1 hour per axis.
Shock	Method 516.5 20 g, 11 ms terminal peak saw-tooth
Salt Fog	Method 509.4

TYPICAL EFFICIENCY:



TYPICAL POWER FACTOR:



Test Conditions:
Input: 115 Vrms
Outputs: 5 VDC / 8 A, +12 VDC / 3.5 A, -12 VDC / 3.5 A

TYPICAL TEST RESULTS PWRGOOD SIGNAL:

Resist after 5V source	PWRGOOD Voltage
1 MΩ	31mV
100 KΩ	0.14V
10KΩ	0.36V
1KΩ	1V

PIN ASSIGNMENT:

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

Pin No.	Function	P	
1	LINE (IN)	~	
2	N/C		
3	N/C		
4	INHIBIT	+	
5	SIGNAL RTN	–	
6	PWR GOOD RTN	–	
7	OUT 3	+	
8	OUT 3 RTN	–	
9	OUT 3 RTN	–	
10	OUT 2	+	
11	OUT 2 RTN	–	
12	OUT 1	+	
13	OUT 1 RTN	–	

Pin No.	Function	P	
14	N/C		
15	NEUTRAL (IN)	0	
16	N/C		
17	SYNC	+	
18	PWR GOOD	+	
19	OUT 3	+	
20	OUT 3	+	
21	OUT 3 RTN	–	
22	OUT 2	+	
23	OUT 2 RTN	–	
24	OUT 1	+	
25	OUT 1 RTN	–	

FUNCTIONS AND SIGNALS:

INHIBIT (pin 4)
Description: The **INHIBIT** signal is used to turn the power supply ON and OFF.
Operation: Applying "1" or leaving open will turn the power supply ON.
Applying "0" or shorting this pin to its return line will turn the power supply OFF. For constant operation, leave this pin unconnected.
Signal Type: 5V TTL or dry contact (open/short).
Return line: This signal is referenced to **SIGNAL RTN** (pin 5).

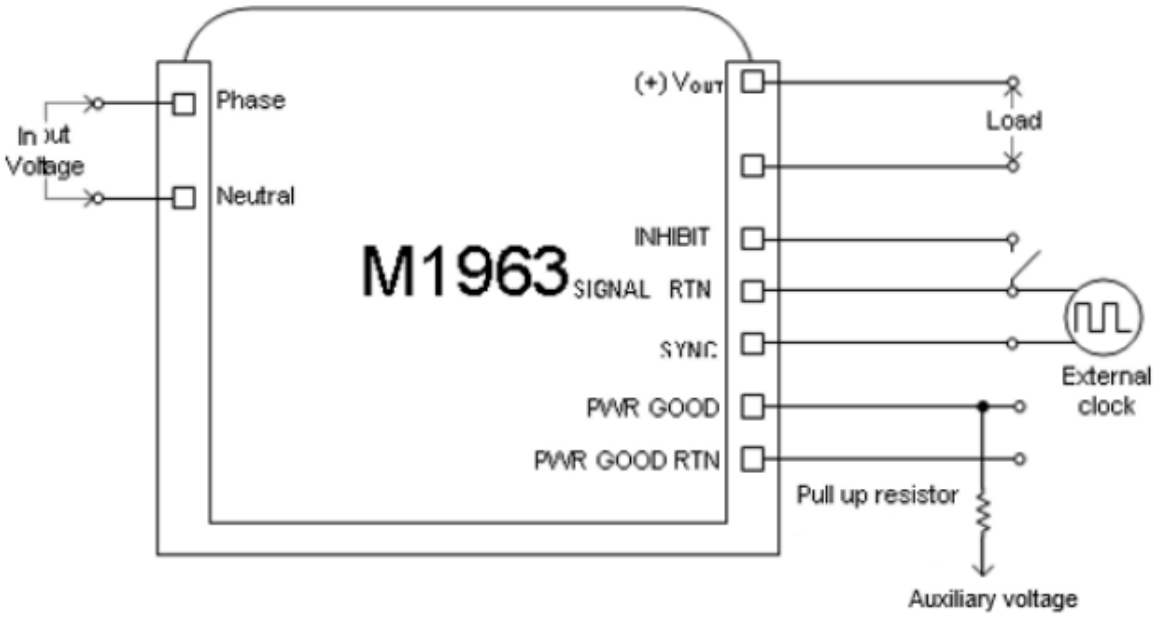
SYNC (pin 17)
Description: The **SYNC** signal can be used to allow the power supply switching frequency to synchronize with a system clock.
Operation: Apply a square wave clock with frequency in the range of 450 kHz ± 10 kHz and duty-cycle of 50% ± 10%., TTL level.
If not required, leave open. The power supply will work at 450 kHz ± 10 kHz (internal clock).
Signal Type: 5V TTL
Return line: This signal is referenced to **SIGNAL RTN** (pin 5).

PWR GOOD (pin 18)
Description: The **PWR GOOD** signal indicates the status of the output voltage.
Operation: When the output voltages rise above 90% ± 5% of its nominal value, pin 18 will be pulled down to pin 6 through a 100 Ω ± 1% resistor and three phototransistors.
When one of the output voltages falls below 90% ± 5% of its nominal value, pin 18 will be in high impedance mode.
If not used, leave the signal unconnected.
This signal is the series connection of three opto-couplers and a 100 Ω resistor to limit the current.
Signal Type: Isolated open collector.
Return line: This signal is referenced to **PWR GOOD RTN** (pin 6) and is floating from all other pins.

WARNING: Mind the polarity! Connecting a reverse polarity voltage source with current limit higher than 30mA to this signal will result in permanent damage to the converter.

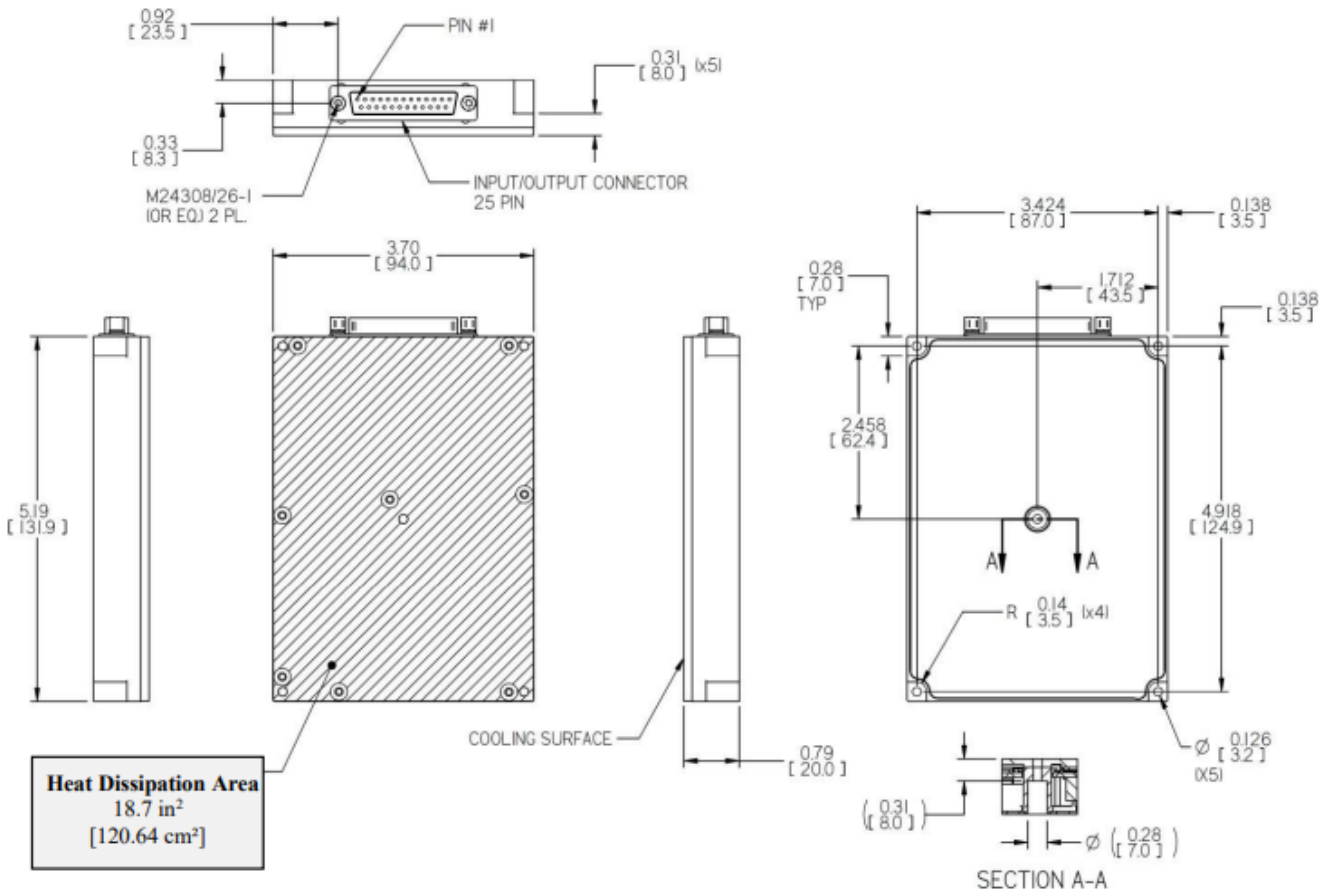
SIGNAL RTN (pin 5)
Description: Both **INHIBIT** and **SYNC** signals are referenced to this pin.

TYPICAL CONNECTION DIAGRAM:



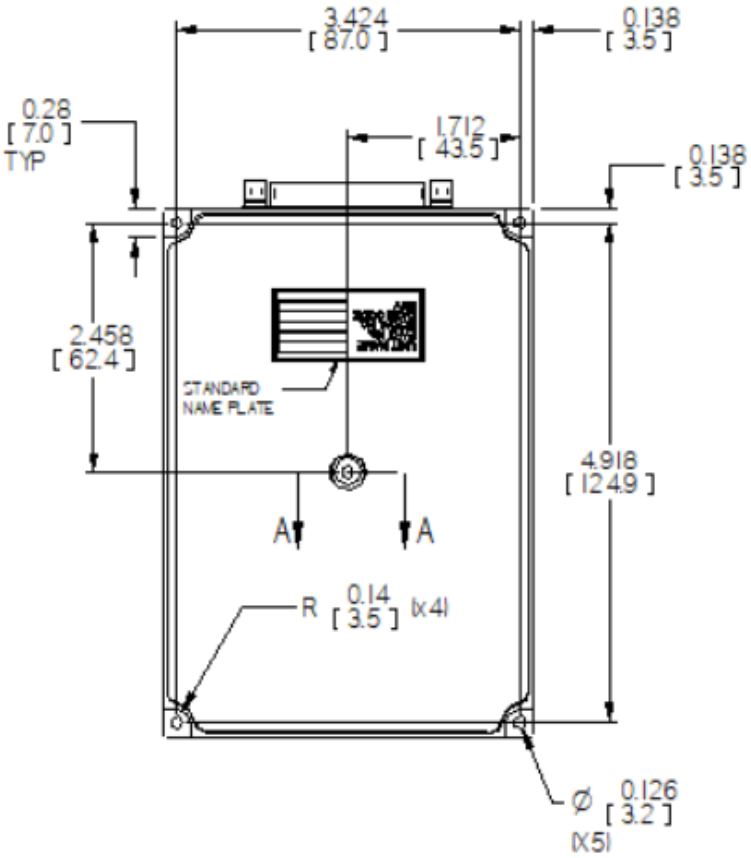
Note: PWR GOOD- the load for the pull-up resistor and the auxiliary voltage shown in this diagram should be less than 1mA. The system designer must select the actual values such that no damage can occur to the internal components of the power supply – **consult factory for more information**

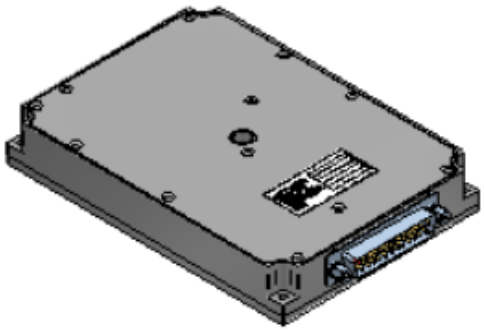
OUTLINE DRAWING:



Notes
1. Dimensions are in inches [mm]
2. Tolerance is:
.XX ± .02 in
.XXX ± .010 in
3. Weight: approx. 14.46 oz [410 g]

LABLE POSITION:





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