Amphenol
MILITARY HIGH SPEED

M4244 SERIES
DC/DC POWER SUPPLY

DESCRIPTION

The M4244 military power supply is a rugged DC to DC converter which accepts an 18 - 70VDC input voltage range and provides a single DC output from 3.3 to 400V at up to 500W. Custom outputs available upon request and the unit is Designed to meet military standards, MIL-STD-704, MIL-STD-1275, MIL-STD-810, MIL-STD-461.

FEATURES

- Miniature size
- High efficiency
- Wide input range
- Input / Output Isolation
- Voltage Sense Compensation
- Fixed switching freq. (250 kHz)
- External sync. capability
- Sync. out capability
- Remote Inhibit
- EMI filters included
- Non-latching protections:
  - o Short-circuit
  - o Over-voltage
  - o Over temperature

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HOW TO ORDER

PART NUMBER	INPUT VOLTAGE RANGE	OUTPUT VOLTAGE / CURRENT
CF-	18 to 70 VDC	12 VDC / 30A
CF-	18 to 70 VDC	15 VDC / 30A
CF-	18 to 70 VDC	24 VDC / 20A
CF-	18 to 70 VDC	28 VDC / 17A
CF-	18 to 70 VDC	48 VDC / 10.5A
CF-	18 to 70 VDC	270 VDC / 1.8A
CF-	18 to 70 VDC	270 VDC / 1.8A

ELECTRICAL SPECIFICATIONS

DC Input: Voltage range: 18 to 70 VDC	**Normal surge (operational):** IAW MIL-STD-1275A-D and MIL-STD-704A-F. MIL-STD-1275E option	**Abnormal surge (no damage):** IAW MIL-STD-1275A-D (100 V for 50 ms) and MIL-STD-704A-F (80 V for 0.1 s)
DC Output: Voltage range: 3.3 to 400 VDC Current range: 0 to 30 A Power range: 0 to 500 W	**Output voltage regulation:** Less than ±1% (no load to full load, –55°C to +85°C and over normal input voltage range).	**Ripple & Noise:** Less than 50mVp-p, typical (max. 1%) without external capacitance. When connected to system capacitance ripple drops Tsignificantly.
Isolation – Low voltage version: Input to Output: 200 VDC Input to Case: 200 VDC Output to Case: 200 VDC	**Isolation –High voltage version:** Input to Output: 500 VDC Input to Case: 200 VDC Output to Case: 500 VDC	**EMC:** Designed to meet* MIL-STD-461F CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103
Transient over-and-undershoot: Output resistance at load change of 50% to 100% is 30 to 120 mΩ (depending on output voltage). Output returns to steady-state value within 300 to 500µs	**Efficiency:** Typically, 80 to 85% (28VDC or 270VDC output, full load, nominal input voltage, room temperature)	**Turn-on transient:** No Voltage overshoot during power on.

PROTECTIONS

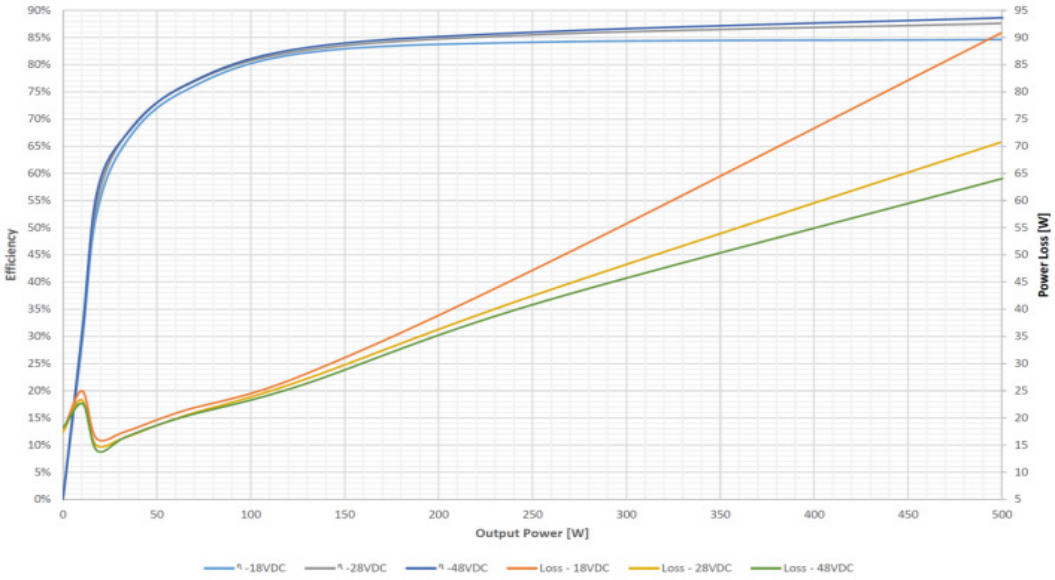
Input	Output	General
Under-Voltage Lock-Out: Unit shuts down below 16V ± 1.5V.	**Active Over-Voltage Protection:** Internal control shuts output voltage down if it exceeds 110% ±5% of nominal voltage	**Over Temperature Protection:** Unit shuts down if baseplate temperature rises above +105°C ± 5°C. Automatic recovery when baseplate temperature falls below +95°C ± 5°C.
Over-Voltage Lock-Out: Unit shuts down above 52V ± 2V.	**Passive Over-Voltage Protection:** Transorb assembled across the output pins, selected at 120% ±10% of nominal voltage.	
	Under-Voltage Protection: Internal control shuts output voltage down (hiccup) if falls below 85% ± 5% of nominal voltage	
	Current Limiting: Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).	

ENVIRONMENTAL CONDITIONS

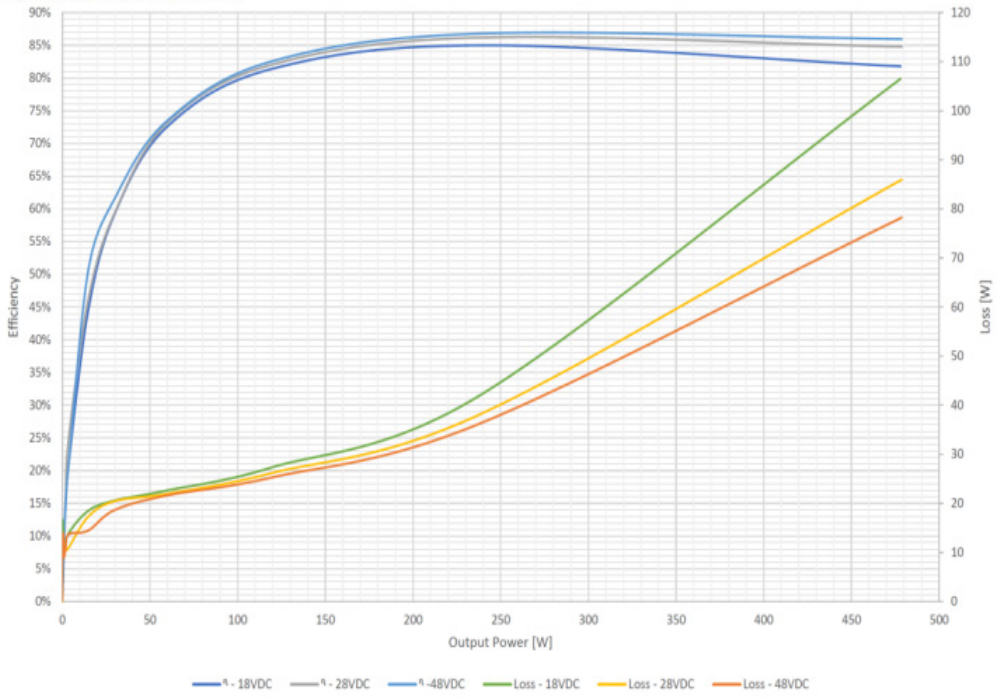
Temperature: Operating: –55 °C to +85 °C (at baseplate) Storage: –55 °C to +125 °C	**Altitude:** Method 500.4 Procedures I & II Up to 70,000 ft. Operational	**Salt Fog:** Method 509.4
Humidity: Method 507.4 Procedure I Up to 95% RH	**Vibration (random):** Method 514.5 Category 24 – General minimum integrity exposure IAW Figure 514.5C-17 1 hour per axis.	**Shock:** Method 516.5 Procedure I – Functional shock Saw-tooth, 20 g peak, 11 ms

TYPICAL EFFICIENCY CURVES

270 V_{DC} output version:



28 V_{DC} output version:



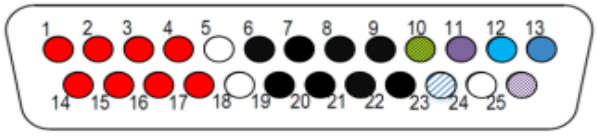
PIN ASSIGNMENT

J1 - Input Connector
Type: M24308/24-39F or eq.
Mates with: M24308/2-3F or eq.

Pin #	Function	P	
1	INPUT	+	
2	INPUT	+	
3	INPUT	+	
4	INPUT	+	
5	N.C.		
6	INPUT RTN	–	
7	INPUT RTN	–	
8	INPUT RTN	–	
9	INPUT RTN	–	

Pin #	Function	P	
10	CHASSIS		
11	SYNC IN	+	
12	INHIBIT IN	+	
13	SIGNAL RTN	–	
14	INPUT	+	
15	INPUT	+	
16	INPUT	+	
17	INPUT	+	
18	N.C.		

Pin #	Function	P	
19	INPUT RTN	–	
20	INPUT RTN	–	
21	INPUT RTN	–	
22	INPUT RTN	–	
23	N.C.		
24	INHIBIT OUT		
25	SYNC OUT		

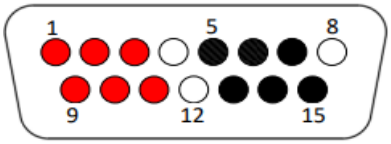


J2 - Output Connector
Type: M24308/23-38F or eq.
Mates with: M24308/4-2F or eq

Pin #	Function	P	
1	OUTPUT	+	
2	OUTPUT	+	
3	OUTPUT	+	
4	N.C.		
5	OUTPUT RTN	–	

Pin #	Function		
6	OUTPUT RTN	–	
7	OUTPUT RTN	–	
8	N.C.		
9	OUTPUT	+	
10	OUTPUT	+	

Pin #	Function	P	
11	OUTPUT	+	
12	N.C.		
13	OUTPUT RTN	–	
14	OUTPUT RTN	–	
15	OUTPUT RTN	–	



FUNCTIONS AND SIGNALS

INHIBIT IN

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.

INHIBIT OUT

Used when connecting two units or more in parallel. Connect this signal to the INHIBIT IN pin of the slave unit (see diagram below). This signal synchronizes the shutdown and startup of the units.

SYNC IN signal

The SYNC IN signal is used to allow the power supply frequency to sync with the system frequency.
The system frequency can be 250 kHz ± 10 kHz.
When not connected the power supply will work at 250 kHz ± 10 kHz
POWER GOOD (Pin #9)

SYNC OUT signal

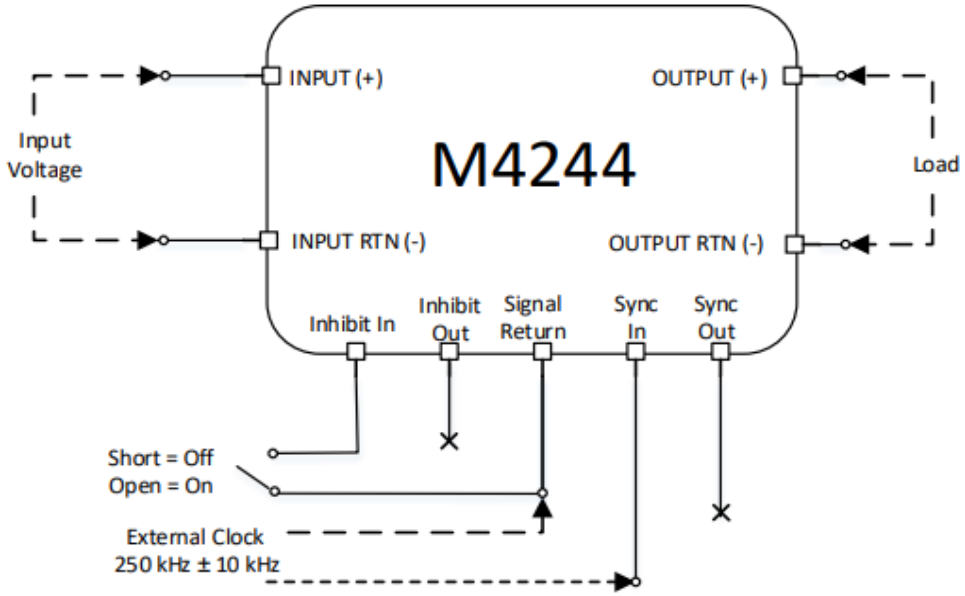
The SYNC OUT signal is used to sync the system and / or other power supplies with the power supply’s frequency.

SIGNAL RTN

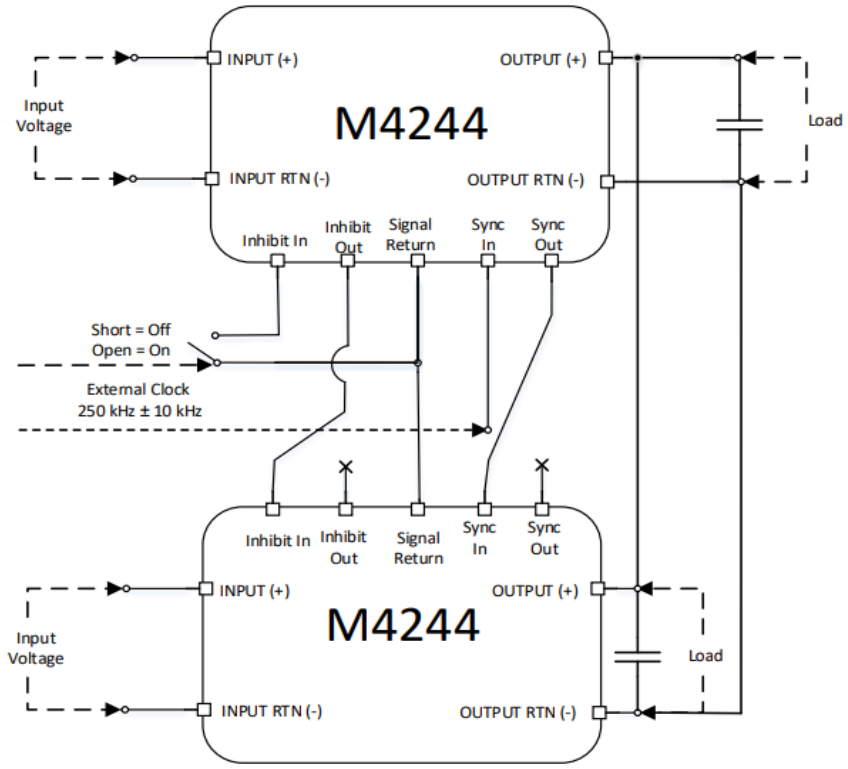
The SIGNAL RTN is referred to the input.
This pin is used as a return path for SYNC IN, SYNC OUT and INHIBIT IN.

TYPICAL CONNECTION DIAGRAM

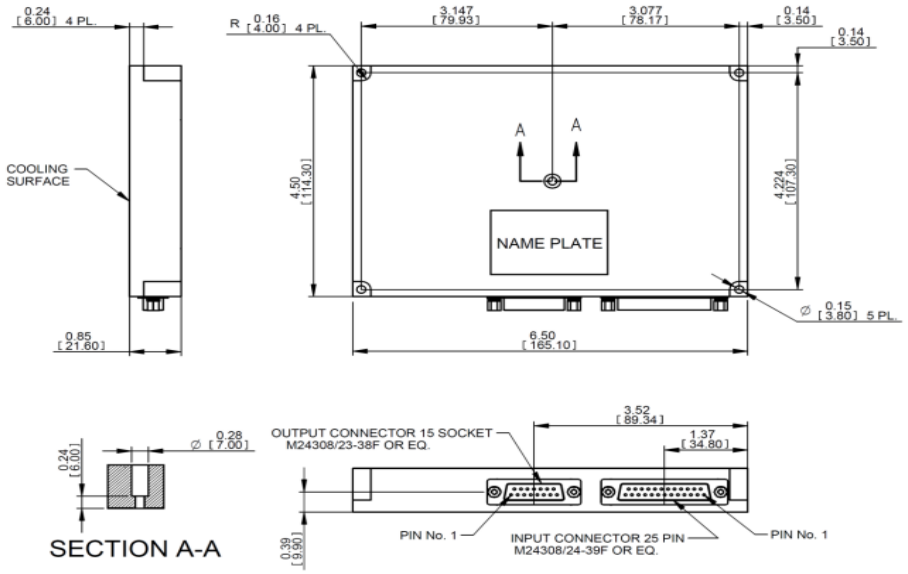
Single Converter Operation



Parallel connection operation



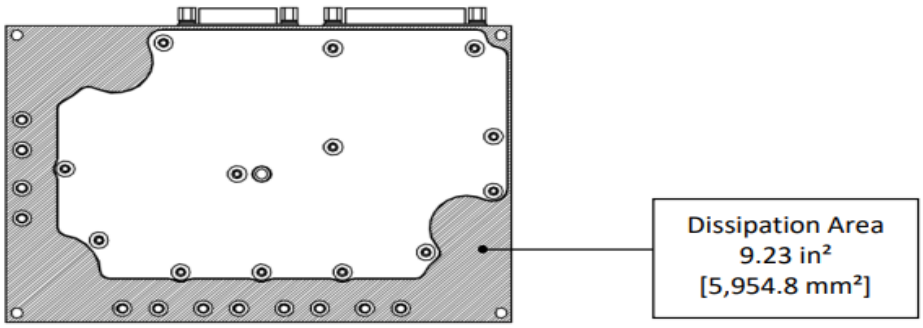
OUTLINE DRAWING



Notes

1. Dimensions are in inches [mm]
2. Tolerance is:
   .XX ± 0.01 in
   .XXX ± 0.005 in
3. Weight: Approx. 25.5 oz [725 g]

HEAT DISSIPATION SURFACE



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