M1158 SERIES

AC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

- COMPACT
- HIGH DENSITY
- HIGH EFFICIENCY
- SINGLE OUTPUT
- AC/DC POWER SUPPLY
- UP TO 500 W

John Tucci • Phone: (607) 563-5388 • Email: jtucci@amphenol-aao.com
• www.amphenol-aerospace.com

Amphenol
MILITARY HIGH SPEED

M1158 Series– AC/DC Power Supply

Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- BIT function
- Remote Inhibit (On/Off)
- Fixed switching freq. (~250 kHz)
- EMI filters included
- Power factor 0.86 at full load
- Designed for large capacitive loads
- Input / Outputs isolation
- Indefinite short circuit protection with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

AC Input

Nominal: 3-ph, 115 $V_{AC,L-N}$, 60-400 Hz
Operating range: 100-140 $V_{AC,L-N}$

DC Output

Voltage range: 5 to 50 VDC
Current: 0 to 25 A
Power output: 0 to 500 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, with load capacitance of 9.6 mF ± 25%)

Efficiency

89% minimum (at nominal line voltage, full load, room temperature)

EMC

Designed to meet MIL-STD-461F with static resistive load and shielded cables:
CE102 (with 12 dB relaxation below 30 kHz), CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

Ripple and Noise

Less than 50 mV_{p-p} with 9.6 mF load capacitance

Turn on Transient

No voltage over shoot during power on.

Protections

Input

- Inrush current limiter

Output

- **Passive transorb on outputs**.
- **Current limiting**
  Continuous protection for unlimited time.

General

- Over temperature protection:
  Shutdown at base plate temperature of +95 °C ± 5 °C
  Automatic recovery at base plate temperature greater than 85 °C

John Tucci • Phone: (607) 563-5388 • Email: jtucci@amphenol-aao.com
• www.amphenol-aerospace.com

Environmental Conditions

Temperature

Operating: –55 °C to +85 °C (at baseplate)
Storage: –55 °C to +125 °C

Low Pressure (Altitude)

IAW MIL-STD-810G
Method 500.5
Procedure I – up to 45 000 ft.
Procedure II – up to 45 000 ft.

Humidity

IAW MIL-STD-810G
Method 507.5
Up to 95%.

Fungus

IAW MIL-STD-810G
Method 508.6

Sand and Dust

IAW MIL-STD-810G
Method 510.5
Procedure I

Shock

IAW MIL-STD-810G
Method 516.6
Procedure I, Figure 516.6-10
20 g, 11 ms terminal peak saw-tooth (all directions)

Random Vibration

Frequency [Hz]	Amplitude [g^2/Hz]
2 to 3.7	$1x10^{-3}$
4 to 60	$2x10^{-3}$
70 to 200	$1x10^{-3}$
210	$1x10^{-5}$
10 000	$1x10^{-6}$

Vibration of Shipboard Equipment

IAW MIL-STD-167-1A
Below Deck

Reliability

150 000 hours, calculated per MIL-STD-217F at +80°C base plate, Ground fixed.

Environmental Stress Screening (ESS)

Random vibration and thermal cycles ESS is available upon request. ***Please consult factory for details.***

John Tucci • Phone: (607) 563-5388 • Email: jtucci@amphenol-aao.com
• www.amphenol-aerospace.com

Pin Assignment

Input Connector
Connector type: M24308/24-37F or eq.
Mates with: M24308/2-1F or eq.

Pin No.	Function
1	Phase A
2	N.C.
3	Phase B
4	Phase C
5	Chassis
6	Phase A
7	N.C.
8	Phase B
9	Phase C

Output Connector
Connector type: M24308/23-39F or eq.
Mates with: M24308/4-3F or eq.

Pin No.	Function
1	N/C
2	BIT (+)
3	INHIBIT (+)
4	VOUT RTN (–)
5	VOUT RTN (–)
6	VOUT RTN (–)
7	VOUT RTN (–)
8	VOUT RTN (–)
9	VOUT (+)

Pin No.	Function
10	VOUT (+)
11	VOUT (+)
12	VOUT (+)
13	VOUT (+)
14	N/C
15	BIT RTN (–)
16	VOUT RTN (–)
17	VOUT RTN (–)
18	VOUT RTN (–)

Pin No.	Function
19	VOUT RTN (–)
20	VOUT RTN (–)
21	VOUT (+)
22	VOUT (+)
23	VOUT (+)
24	VOUT (+)
25	VOUT (+)

Note: For best performance; all output pins of the same designation should be connected together.

Functions and Signals

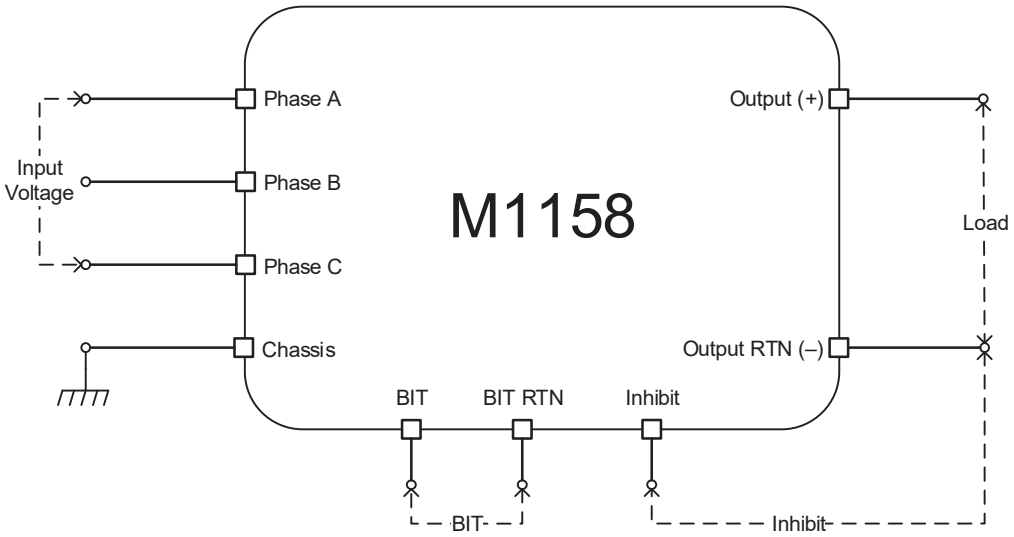
INHIBIT

The INHIBIT signal turns the Outputs of the power supply ON and OFF.
OPEN (I < 0.03 mA @ V = 6.2 V) – Output power available.
SHORT (V < 2 V @ I = 2 mA) to VOUT RTN – Output power is inhibited.

BIT (Built-In Test)

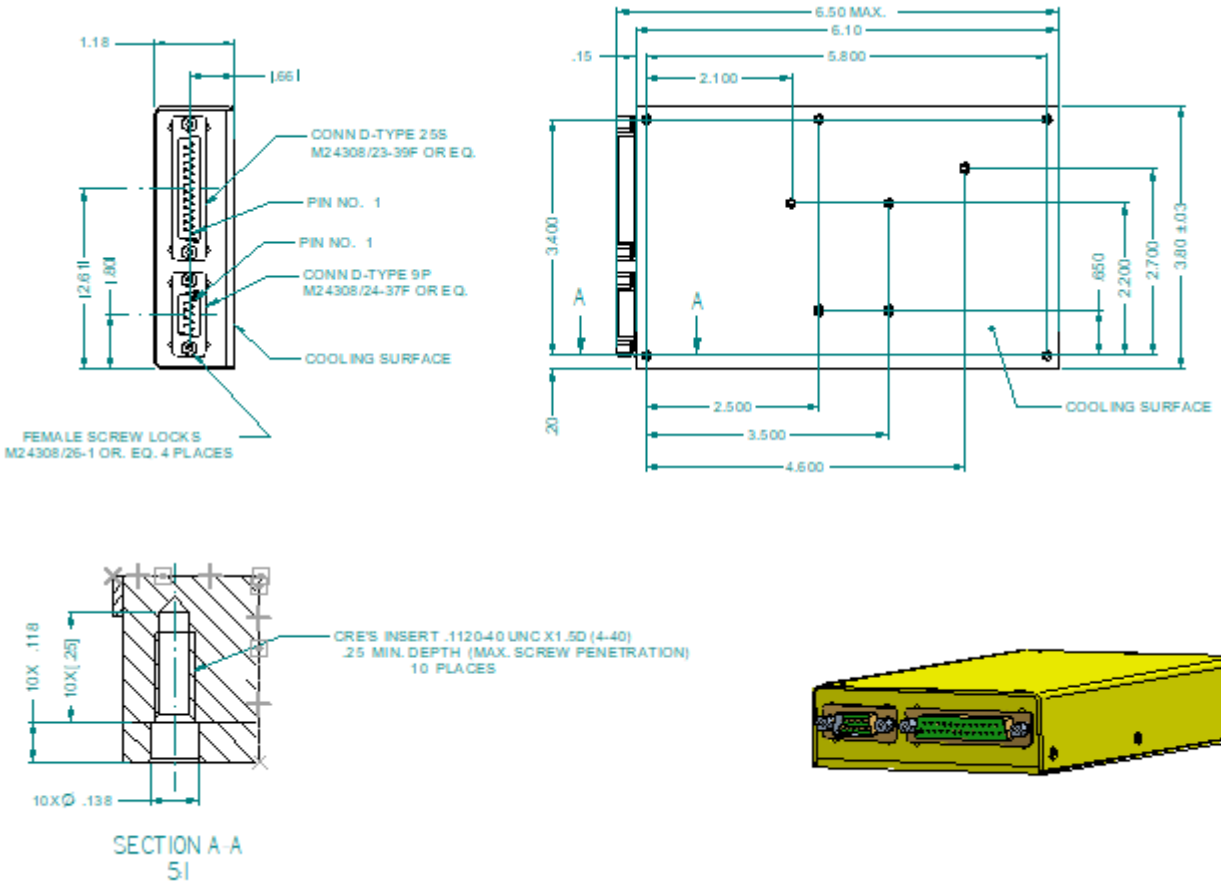
Isolated open-collector transistor (Optocoupler secondary side).
Low (V < 0.5 VDC @ 2 mA): when output voltage rise above 95%±5% off its nominal value.
Open (I < 0.1 mA @ 20 VDC max): when output voltage falls below 90%±5% off its nominal value.

Typical Connection Diagram



John Tucci • Phone: (607) 563-5388 • Email: jtucci@amphenol-aao.com
• www.amphenol-aerospace.com

Outline Drawing:



NOTES :
1. MATERIAL CHASSIS : AL 6061-T651 OR EQ.
COVER : AL 5052-H32 OR EQ.
2. FINISH : CHROMATE CONVERSION COATING PER MIL-DTL-5541F,
TYPE I CLASS 1A OR EQ.

Weight: Approx. 1.6 lbs Typical

John Tucci • Phone: (607) 563-5388 • Email: jtucci@amphenol-aao.com
• www.amphenol-aerospace.com

Standard configuration table:

Part Number	Input	Output		Power	Special features
	Voltage range	Voltage	Current		
M1158100	103 126-Vac / 50/60/400Hz /3 phase	5 V_{DC}	20 A	100W	
M1158101	103 126-Vac / 50/60/400Hz /3 phase	12 V_{DC}	20 A	240W	
M1158102	103 126-Vac / 50/60/400Hz /3 phase	15 V_{DC}	20 A	300W	
M1158103	103 126-Vac / 50/60/400Hz /3 phase	24 V_{DC}	20 A	480W	
M1158104	103 126-Vac / 50/60/400Hz /3 phase	28 V_{DC}	18A	504W	
M1158105	103 126-Vac / 50/60/400Hz /3 phase	48 V_{DC}	10.4A	499W	
*M1158800	103 126-Vac / 50/60/400Hz /3 phase	5 V_{DC}	20 A	100W	• This Product is REACH Compliant • The aluminum parts comprising this converter are chromate conversion coated per MIL-DTL-5541F, Type II CLASS 1A or eq. • Pin Assignment: Input connector: M24308/24-37Z or eq. Output connector: M24308/23-39Z or eq.
*M1158801	103 126-Vac / 50/60/400Hz /3 phase	12 V_{DC}	20 A	240W	
*M1158802	103 126-Vac / 50/60/400Hz /3 phase	15 V_{DC}	20 A	300W	
*M1158803	103 126-Vac / 50/60/400Hz /3 phase	24 V_{DC}	20 A	480W	
*M1158804	103 126-Vac / 50/60/400Hz /3 phase	28 V_{DC}	18A	504W	
*M1158805	103 126-Vac / 50/60/400Hz /3 phase	48 V_{DC}	10.4A	499W	

- Additional standard configurations available. **Contact factory for more details.**
- All of our products can be configured to comply with EU REACH regulations. **Contact factory for more details.**

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

John Tucci • Phone: (607) 563-5388 • Email: jtucci@amphenol-aao.com
• www.amphenol-aerospace.com