M1158 SERIES

AC/DC POWER SUPPLY

PRODUCT HIGHLIGHTS

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

Milpower Source, Inc. • Belmont, NH, **USA** • P: (603) 267-8865
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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

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.***

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

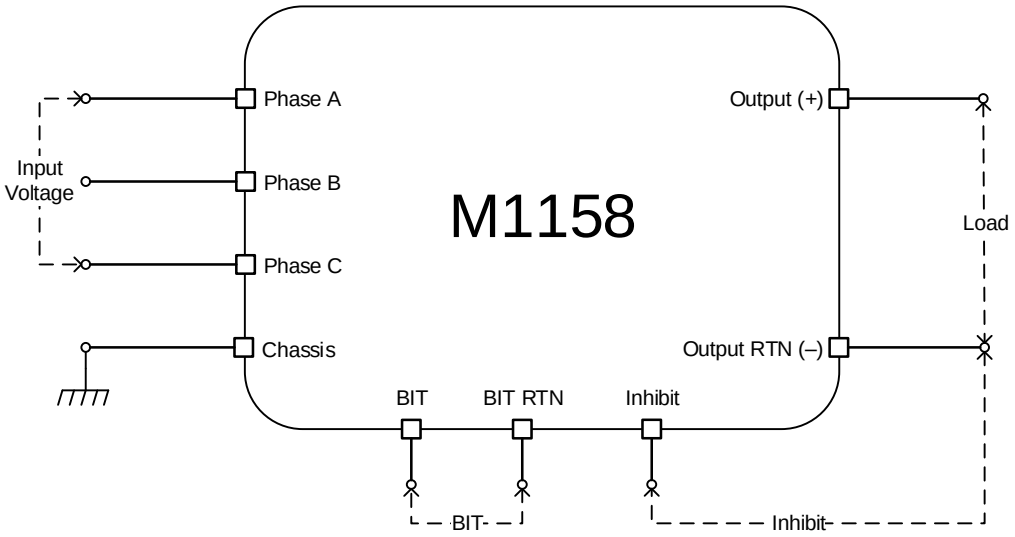
INHIBIT

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.

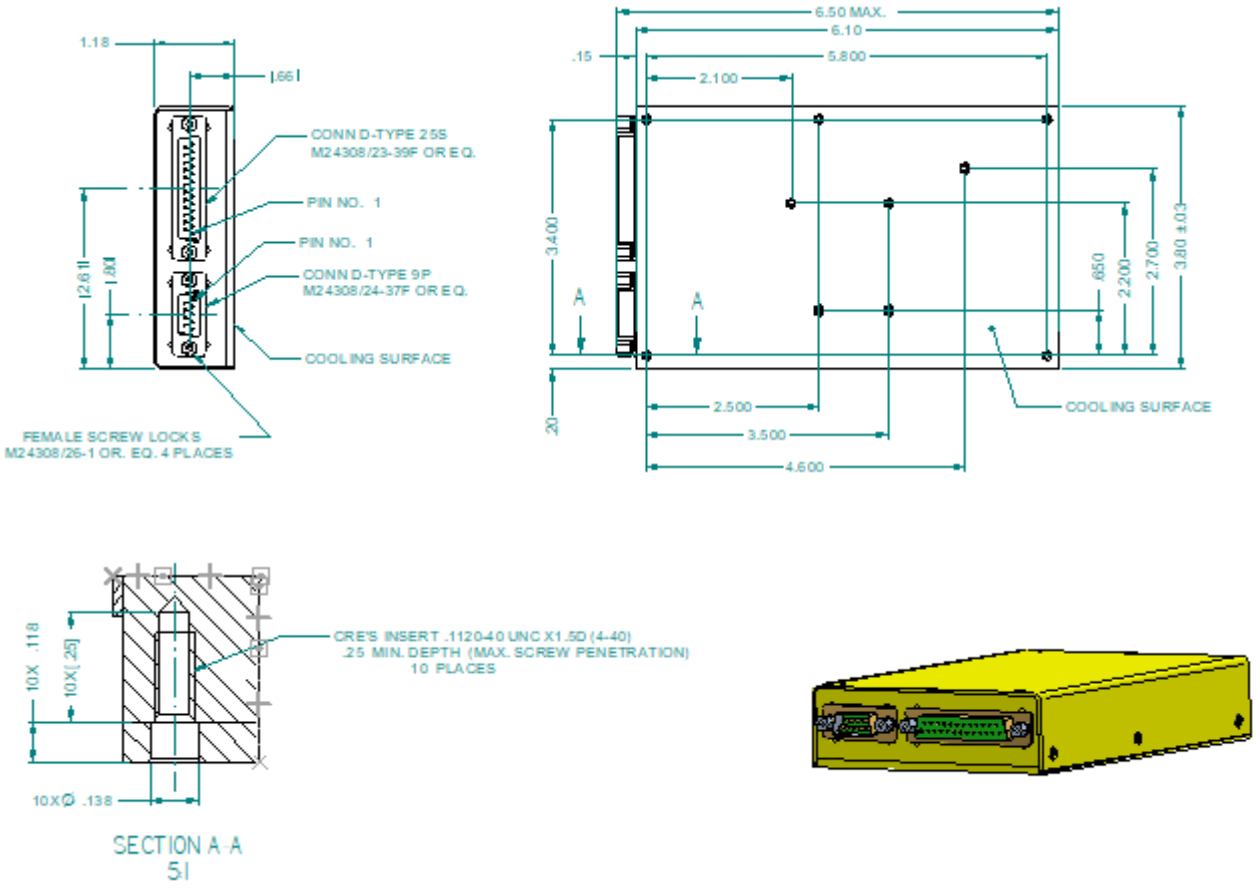
BIT (Built-In Test)

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



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

Standard configuration table:

Part Number	Input	Output		Power	Special features
	Voltage range	Voltage	Current		
M1158-100	103 126-Vac / 50/60/400Hz /3 phase	5 V_{DC}	20 A	100W	
M1158-101	103 126-Vac / 50/60/400Hz /3 phase	12 V_{DC}	20 A	240W	
M1158-102	103 126-Vac / 50/60/400Hz /3 phase	15 V_{DC}	20 A	300W	
M1158-103	103 126-Vac / 50/60/400Hz /3 phase	24 V_{DC}	20 A	480W	
M1158-104	103 126-Vac / 50/60/400Hz /3 phase	28 V_{DC}	18A	504W	
M1158-105	103 126-Vac / 50/60/400Hz /3 phase	48 V_{DC}	10.4A	499W	
*M1158-800	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.
*M1158-801	103 126-Vac / 50/60/400Hz /3 phase	12 V_{DC}	20 A	240W	
*M1158-802	103 126-Vac / 50/60/400Hz /3 phase	15 V_{DC}	20 A	300W	
*M1158-803	103 126-Vac / 50/60/400Hz /3 phase	24 V_{DC}	20 A	480W	
*M1158-804	103 126-Vac / 50/60/400Hz /3 phase	28 V_{DC}	18A	504W	
*M1158-805	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