

M1158 SERIES

AC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

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

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}

Line/Load regulation

Up to ±1% (no load to full load, with load capacitance of 9.6 mF ± 25%)

Ripple and Noise

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

DC Output

Voltage range: 5 to 50 VDC
Current: 0 to 25 A
Power output: 0 to 500 W

Efficiency

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

Turn on Transient

No voltage over shoot during power on.

Isolation

Input to Output: 500 V_{DC}
Input to Case: 500 V_{DC}
Output to Case: 100 V_{DC}

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

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

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Environmental Conditions

Temperature

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

Storage: –55 °C to
+125 °C

Fungus

IAW MIL-STD-810G
Method 508.6

Low Pressure (Altitude)

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

Sand and Dust

IAW MIL-STD-810G
Method 510.5
Procedure I

Humidity

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

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.**

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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.

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Functions and Signals

INHIBIT

The INHIBIT signal turns the Outputs of the power supply ON and OFF.

OPEN ($I < 0.03 \text{ mA}$ @ $V = 6.2 \text{ V}$) – Output power available.

SHORT ($V < 2 \text{ V}$ @ $I = 2 \text{ mA}$) to $V_{OUT} \text{ RTN}$ – Output power is inhibited.

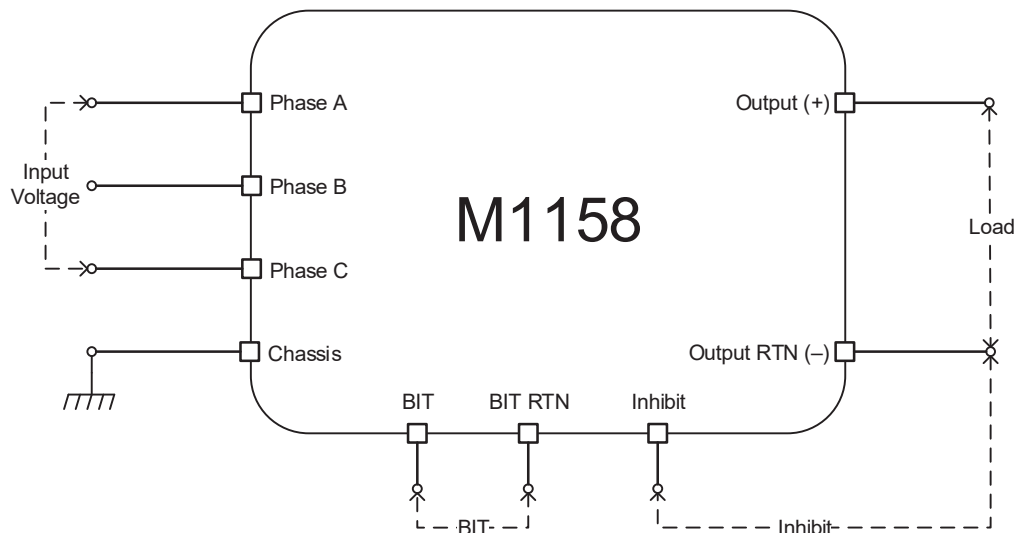
BIT (Built-In Test)

Isolated open-collector transistor (Optocoupler secondary side).

Low ($V < 0.5 \text{ VDC}$ @ 2 mA): when output voltage rise above $95\% \pm 5\%$ off its nominal value.

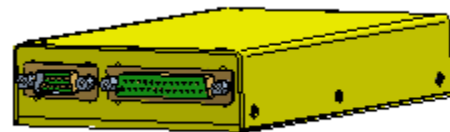
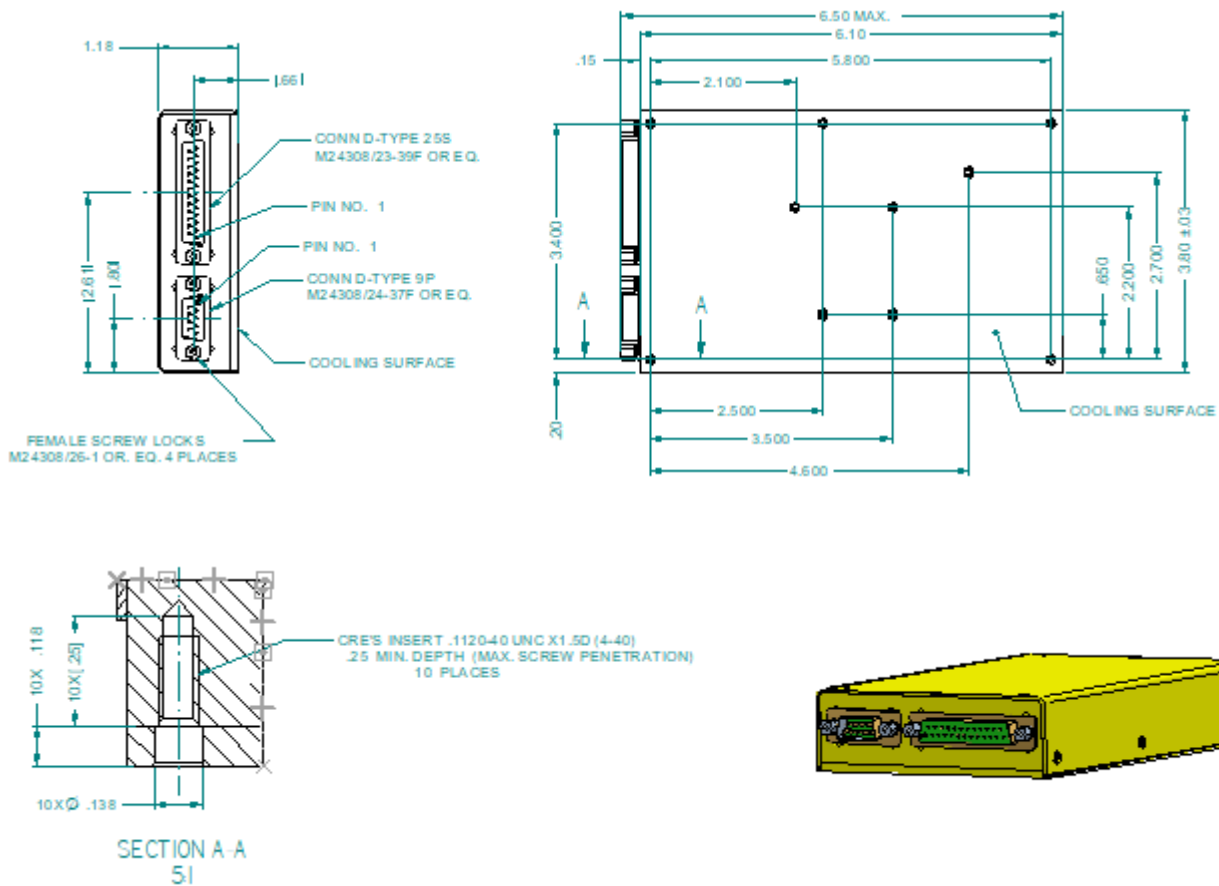
Open ($I < 0.1 \text{ mA}$ @ 20 VDC max): when output voltage falls below $90\% \pm 5\%$ off its nominal value.

Typical Connection Diagram



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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

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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	<ul style="list-style-type: none"> • 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