

M1158 Series

AC/DC POWER SUPPLY



DESCRIPTION:

The M1158 military power supply is a rugged 3 phase AC to DC converter. It accepts a 115 AC input range from 100 to 140VAC, L-N, 50/60/400Hz and provides a single DC output from 5V to 50V, up to 500W, with custom outputs available. Designed to meet military standards, MIL-STD-810, MIL-STD-461.

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

HOW TO ORDER

Part Number	Input Voltage Range	Output		Power
		Voltage	Current	
CF-02EM1158100	103 126-Vac / 50/60/400Hz /3 phase	5 VDC	20 A	100W
CF-02EM1158101	103 126-Vac / 50/60/400Hz /3 phase	12 VDC	20 A	240W
CF-02EM1158102	103 126-Vac / 50/60/400Hz /3 phase	15 VDC	20 A	300W
CF-02EM1158103	103 126-Vac / 50/60/400Hz /3 phase	24 VDC	20 A	480W
CF-02EM1158104	103 126-Vac / 50/60/400Hz /3 phase	28 VDC	18A	504W
CF-02EM1158105	103 126-Vac / 50/60/400Hz /3 phase	48 VDC	10.4A	499W

PRODUCT SPECIFICATIONS:

AC INPUT	Nominal:	3-ph, 115 VAC,L-N, 60-400Hz
	Operating range:	100-140VAC,LN
Line/Load regulation	Up to $\pm 1\%$ (no load to full load, with load capacitance of 9.6mF $\pm 25\%$)	
Ripple and Noise	Less than 50mVp-p with 9.6mF 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 VDC
	Input to Case:	500 VDC
	Output to Case:	100 VDC
EMC	Designed to meet MIL-STD461F with static resistive load and shielded cables:	CE102 (with 12 dB relaxation below 30kHz), CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

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	
Random Vibration	Frequency [Hz] 2 to 3.7 4 to 60 70 to 200 210 10000	Amplitude [g2/Hz] 1x10-3 2x10-3 1x10-3 1x10-5 1x10-6
Low Pressure (Altitude)	IAW MIL-STD-810G Method 500.5 Procedure I – up to 40000 ft. Procedure II – up to 20000 ft.	
Sand and Dust	IAW MIL-STD-810G Method 510.5 Procedure I	
Vibration of Shipboard Equipment	IAW MIL-STD-167-1A Below Deck	
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 sawtooth (all directions)	
Reliability	150000 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		

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 baseplate temperature greater than 85 °C

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 (+)

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 VOUT RTN – Output power is inhibited.

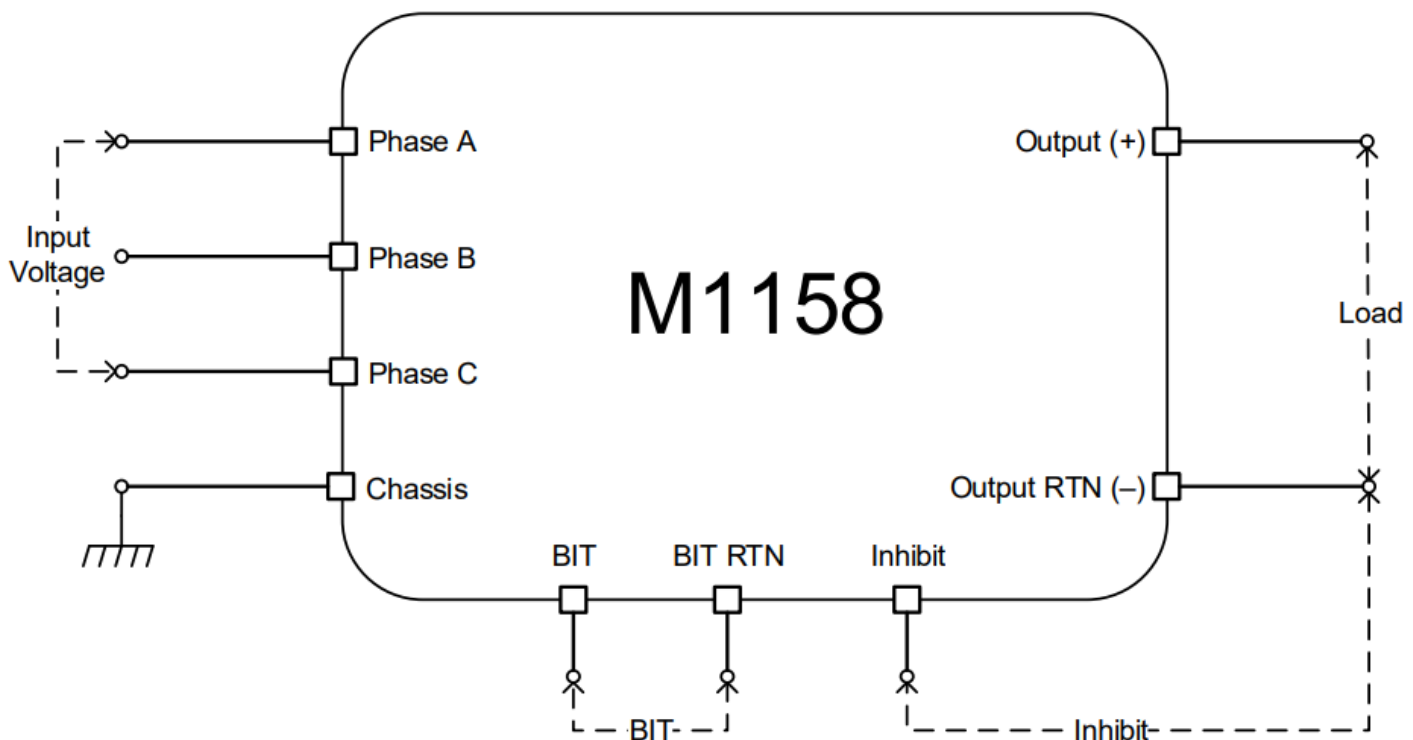
BIT (Built-In Test)

Isolated open-collector transistor (Optocoupler secondary side).

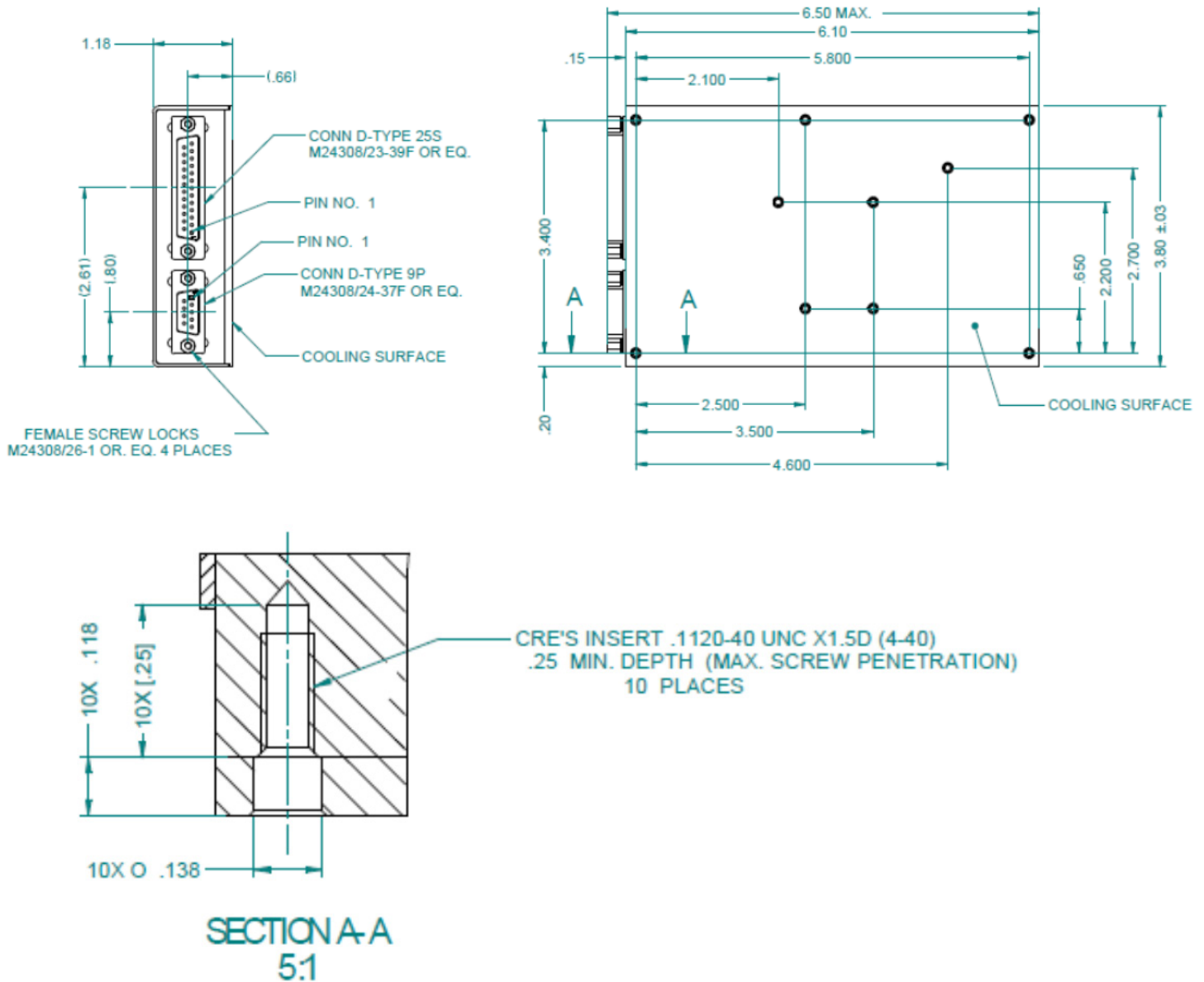
Low ($V < 0.5 \text{ VDC}$ @ 2 mA): when output voltage rise above $95\% \pm 5\%$ off its nominal value.

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

TYPICAL CONNECTION DIAGRAM:



OUTLINE DRAWING:



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PRELIMINARY

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