

## M1158 SERIES

AC/DC POWER SUPPLY



### PRODUCT HIGHLIGHTS

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



**Cham, Switzerland**  
[www.enercon-europe.com](http://www.enercon-europe.com)  
[enercon@enercon-europe.com](mailto:enercon@enercon-europe.com)  
+41 41 740 4554

Global Headquarters

**Netanya, Israel**  
[www.enercon.co.il](http://www.enercon.co.il)  
[sales@enercon.co.il](mailto:sales@enercon.co.il)  
+972-73-246 9200



**Gurgaon, India**  
[www.mpsindia.in](http://www.mpsindia.in)  
[sales@mpsindia.in](mailto:sales@mpsindia.in)  
+91-124-651 0010

<p><b>Applications</b>  <i>Military (Airborne, ground-fix, shipboard), Ruggedized, Telecom, Industrial</i></p>					
<p><b>Special Features</b></p> <ul style="list-style-type: none"> <li>• Miniature size</li> <li>• High efficiency</li> <li>• Wide input range</li> <li>• BIT function</li> <li>• Remote Inhibit (On/Off)</li> <li>• Fixed switching freq. (~250 kHz)</li> <li>• <u>EMI</u> filters included</li> <li>• Power factor 0.86 at full load</li> <li>• Designed for large capacitive loads</li> <li>• Input / Outputs isolation</li> <li>• Indefinite short circuit protection with auto-recovery</li> <li>• Over temperature shutdown with auto-recovery</li> </ul>					
<p><b>Electrical Specifications</b></p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 33%;"> <p><b><u>AC Input</u></b>                      Nominal: 3-ph, 115 V<sub>AC,L-N</sub>, 60-400 Hz                      Operating range: 100-140 V<sub>AC,L-N</sub></p> <p><b><u>Line/Load regulation</u></b>                      Up to ±1% (no load to full load, with load capacitance of 9.6 mF ± 25%)</p> <p><b><u>Ripple and Noise</u></b>                      Less than 50 mV<sub>p-p</sub> with 9.6 mF load capacitance</p> </td> <td style="vertical-align: top; width: 33%;"> <p><b><u>DC Output</u></b>                      Voltage range: 5 to 50 VDC                      Current: 0 to 25 A                      Power output: 0 to 500 W</p> <p><b><u>Efficiency</u></b>                      89% minimum (at nominal line voltage, full load, room temperature)</p> <p><b><u>Turn on Transient</u></b>                      No voltage over shoot during power on.</p> </td> <td style="vertical-align: top; width: 33%;"> <p><b><u>Isolation</u></b>                      Input to Output: 500 V<sub>DC</sub>                      Input to Case: 500 V<sub>DC</sub>                      Output to Case: 100 V<sub>DC</sub></p> <p><b><u>EMC</u></b>                      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</p> </td> </tr> </table>			<p><b><u>AC Input</u></b>                      Nominal: 3-ph, 115 V<sub>AC,L-N</sub>, 60-400 Hz                      Operating range: 100-140 V<sub>AC,L-N</sub></p> <p><b><u>Line/Load regulation</u></b>                      Up to ±1% (no load to full load, with load capacitance of 9.6 mF ± 25%)</p> <p><b><u>Ripple and Noise</u></b>                      Less than 50 mV<sub>p-p</sub> with 9.6 mF load capacitance</p>	<p><b><u>DC Output</u></b>                      Voltage range: 5 to 50 VDC                      Current: 0 to 25 A                      Power output: 0 to 500 W</p> <p><b><u>Efficiency</u></b>                      89% minimum (at nominal line voltage, full load, room temperature)</p> <p><b><u>Turn on Transient</u></b>                      No voltage over shoot during power on.</p>	<p><b><u>Isolation</u></b>                      Input to Output: 500 V<sub>DC</sub>                      Input to Case: 500 V<sub>DC</sub>                      Output to Case: 100 V<sub>DC</sub></p> <p><b><u>EMC</u></b>                      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</p>
<p><b><u>AC Input</u></b>                      Nominal: 3-ph, 115 V<sub>AC,L-N</sub>, 60-400 Hz                      Operating range: 100-140 V<sub>AC,L-N</sub></p> <p><b><u>Line/Load regulation</u></b>                      Up to ±1% (no load to full load, with load capacitance of 9.6 mF ± 25%)</p> <p><b><u>Ripple and Noise</u></b>                      Less than 50 mV<sub>p-p</sub> with 9.6 mF load capacitance</p>	<p><b><u>DC Output</u></b>                      Voltage range: 5 to 50 VDC                      Current: 0 to 25 A                      Power output: 0 to 500 W</p> <p><b><u>Efficiency</u></b>                      89% minimum (at nominal line voltage, full load, room temperature)</p> <p><b><u>Turn on Transient</u></b>                      No voltage over shoot during power on.</p>	<p><b><u>Isolation</u></b>                      Input to Output: 500 V<sub>DC</sub>                      Input to Case: 500 V<sub>DC</sub>                      Output to Case: 100 V<sub>DC</sub></p> <p><b><u>EMC</u></b>                      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</p>			
<p><b>Protections</b></p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 33%;"> <p><b><u>Input</u></b></p> <ul style="list-style-type: none"> <li>• Inrush current limiter</li> </ul> </td> <td style="vertical-align: top; width: 33%;"> <p><b><u>Output</u></b></p> <ul style="list-style-type: none"> <li>• <b>Passive transorb on outputs.</b></li> <li>• <b>Current limiting</b>                              Continuous protection for unlimited time.</li> </ul> </td> <td style="vertical-align: top; width: 33%;"> <p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>• Over temperature protection:                              Shutdown at base plate temperature of +95 °C ± 5 °C Automatic recovery at base plate temperature lower than +80 °C ± 5 °C</li> </ul> </td> </tr> </table>			<p><b><u>Input</u></b></p> <ul style="list-style-type: none"> <li>• Inrush current limiter</li> </ul>	<p><b><u>Output</u></b></p> <ul style="list-style-type: none"> <li>• <b>Passive transorb on outputs.</b></li> <li>• <b>Current limiting</b>                              Continuous protection for unlimited time.</li> </ul>	<p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>• Over temperature protection:                              Shutdown at base plate temperature of +95 °C ± 5 °C Automatic recovery at base plate temperature lower than +80 °C ± 5 °C</li> </ul>
<p><b><u>Input</u></b></p> <ul style="list-style-type: none"> <li>• Inrush current limiter</li> </ul>	<p><b><u>Output</u></b></p> <ul style="list-style-type: none"> <li>• <b>Passive transorb on outputs.</b></li> <li>• <b>Current limiting</b>                              Continuous protection for unlimited time.</li> </ul>	<p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>• Over temperature protection:                              Shutdown at base plate temperature of +95 °C ± 5 °C Automatic recovery at base plate temperature lower than +80 °C ± 5 °C</li> </ul>			

***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 40 000 ft.  
Procedure II – up to 20 000 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 <sup>2</sup> /Hz]
2 to 3.7	1x10 <sup>-3</sup>
4 to 60	2x10 <sup>-3</sup>
70 to 200	1x10 <sup>-3</sup>
210	1x10 <sup>-5</sup>
10 000	1x10 <sup>-6</sup>

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

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

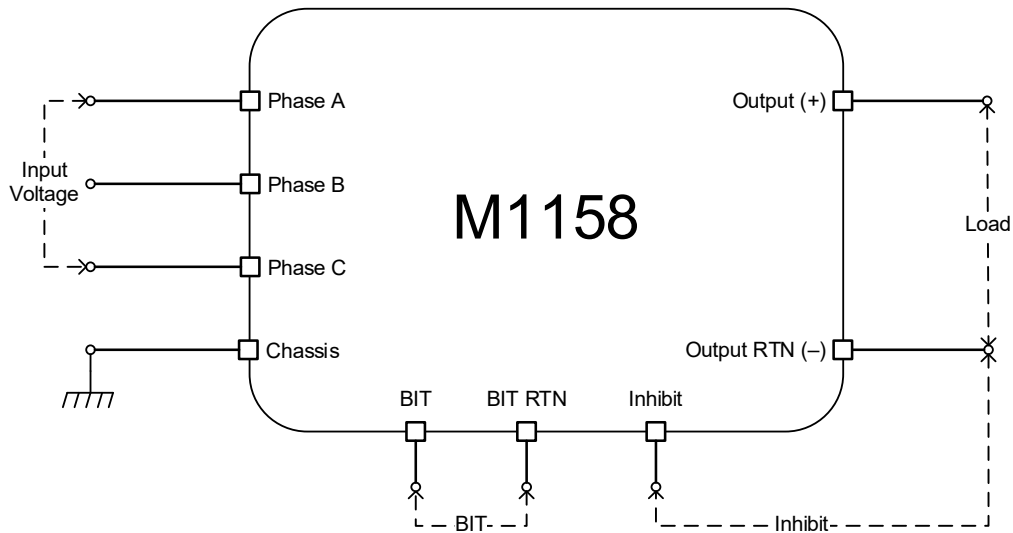
**BIT (Built-In Test)**

Isolated open-collector transistor (Optocoupler secondary side).

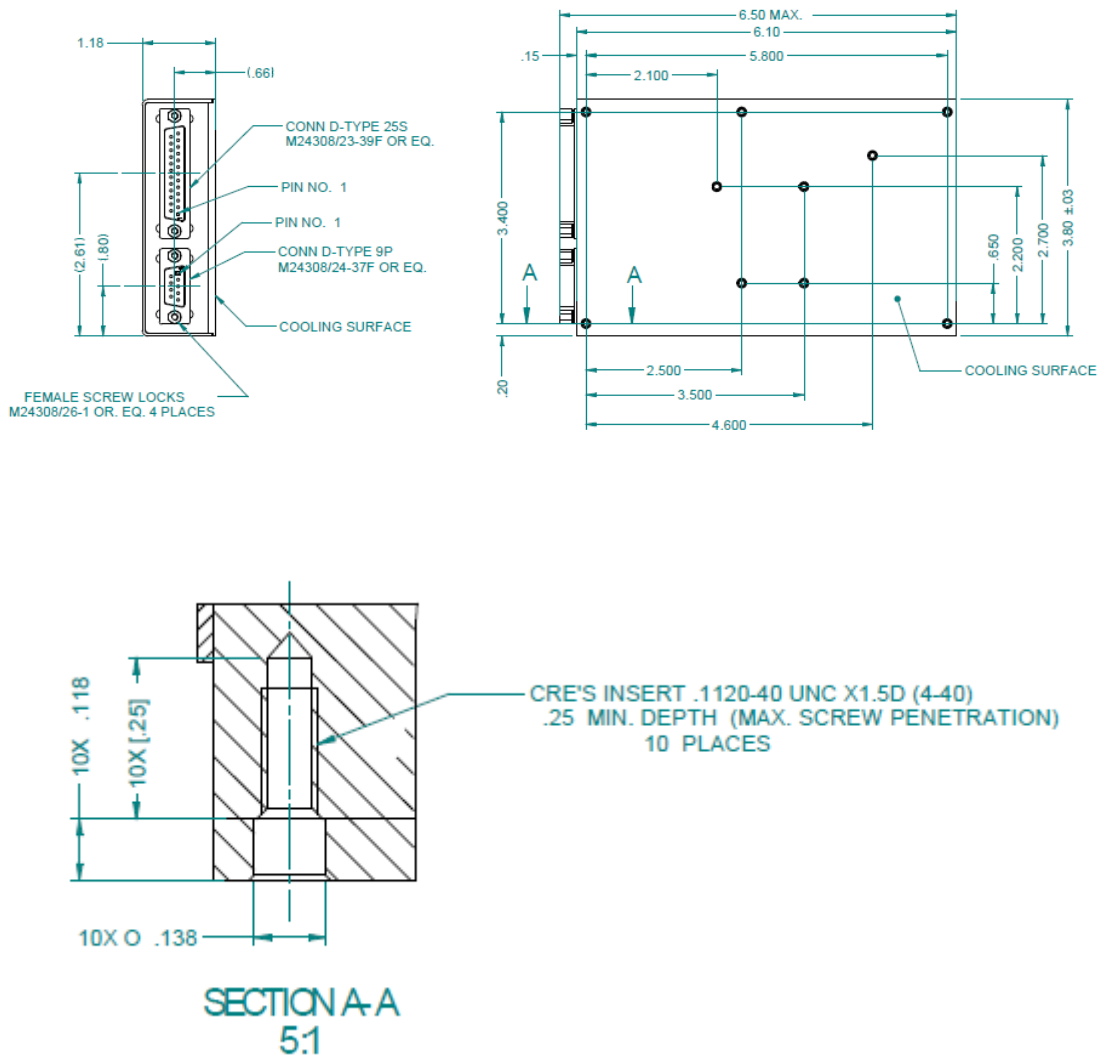
Low ( $V < 0.5 \text{ V}_{\text{DC}}$  @  $2 \text{ mA}$ ): Output voltage exceeds  $48 \pm 1 \text{ V}$ .

Open ( $I < 0.1 \text{ mA}$  @  $20 \text{ V}_{\text{DC}}$  max): Output voltage drops below  $45 \pm 1 \text{ V}$ .

**Typical Connection Diagram**



**Outline Drawing:**



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