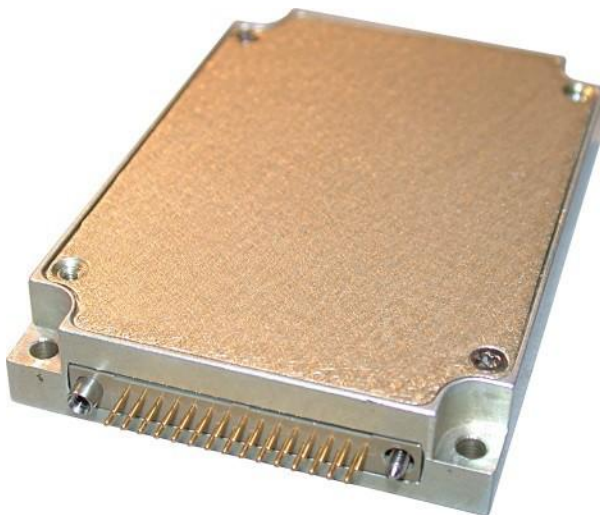


M8139 SERIES

TRIPLE-OUTPUTS, 60W DC TO DC POWER SUPPLY

The M8139 is a series of mechanically robust, base-plate cooled, high performance, power supplies, designed for Ground Mobile (MIL-STD-1275), Airborne (MIL-STD-704) and other Hi-Reliability applications where 28VDC has to be converted to a tightly regulated, filtered and protected DC output.

TYPE A



TYPE B

M8139 SERIES DC/DC POWER SUPPLY

Standard Models List (for other voltages – consult factory)

Part number	Input	Output 1		Output 2		Output 3		Type	
	Voltage range	Voltage	Current	Voltage	Current	Voltage	Current	A	B
M8139-100	18 to 48 V _{DC}	5 V _{DC}	6 A	3.3 V _{DC}	2 A	12 V _{DC}	1 A	V	
M8139-101	18 to 48 V _{DC}	12 V _{DC}	3 A	5V _{DC}	1.25 A	12 V _{DC}	1 A		V
M8139-102	18 to 48 V _{DC}	5 V _{DC}	5 A	15 V _{DC}	1 A	15 V _{DC}	1 A	V	

- Regulation at output #2 and output #3 up to 2% of nominal voltage, peak-to-peak when output is 3.3V or 5V.
- 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.**

M8139 SERIES DC/DC POWER SUPPLY

THE MAIN FEATURES OF THE M8139 ARE:

- DC/DC Triple outputs power supply up to 60W
- 18 to 48VDC Standard Input version
- For extended input version - **Please contact factory for more details**
- No damage (may shutdown) due to abnormal transients IAW MIL-STD-1275A (100 V / 50 ms) and MIL-STD-704A (80 V / 0.1 s)
- High efficiency – up to 80% (depending on output voltage).
- Full galvanic isolation between Input, Chassis and Outputs
- External Inhibit (On/Off)
- Fixed switching freq. (250 kHz)
- EMI filters included
- Remote sense compensation (for type A at output #1)
- Indefinite short circuit protection with auto-recovery
- Over-voltage protection
- Over temperature shutdown with auto-recovery
- High density
- Conduction cooled via the baseplate
- J-STD-001B and IPC-610A Class-3 workmanship
- Conformal Coating per MIL-I-46058C and IPC-CC-830

M8139 SERIES DC/DC POWER SUPPLY

SPECIFICATIONS:

DC Input	Voltage Range	<p>Normal range: 18 to 48 V_{DC} No damage (may shutdown) due to abnormal transients IAW MIL-STD-1275A (100 V / 50 ms) and MIL-STD-704A (80 V / 0.1 s)</p> <p>For extended input version - Please contact factory for more details</p>
	Isolation	<p>Input to Output: 200 VDC Input to Case: 200 VDC</p>
DC Output	Rating	See table on page 8
	Voltage Regulation	Better than or equal to $\pm 1\%$ (low to high line voltage, no load to full load, $-55\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ at baseplate).
	Remote Sense for type A out 1	<p>The SENSE 1 is used to achieve accurate load regulations at load terminals (this is done by connecting the pins directly to the load's terminals).</p> <p>For output voltage above 8V, the use of remote sense has a max limit of 0.25V voltage dropout between converter's output and load terminals.</p> <p>For output voltage below 8V, the use of remote sense has a max limit of 0.5V voltage dropout between converter's output and load terminals.</p> <p>When not used connect SENSE 1 to OUT 1 and SENSE 1 RTN to OUT 1 RTN.</p>
	Ripple	Less than 50 mVp-p, typical (max. 1% of output voltage)
	Isolation	Output to Case: 100 VDC
	Current Limit & Overload	<p>Continuous protection for unlimited time Overload/short-circuit</p> <p>*If output current is higher than 1.5A and there is short due to failure, when the failure is removed the load will be 50%.</p>
	Efficiency	Up to 80%, depending on output voltage.
	Overvoltage Protection	Passive transorb, chosen at $120\% \pm 10\%$ of nominal voltage.
Over Temp. Protection	<p>Shutdown if base plate temperature rises above $+105\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$. Auto recovery when baseplate cools down to $+95\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.</p>	

M8139 SERIES DC/DC POWER SUPPLY

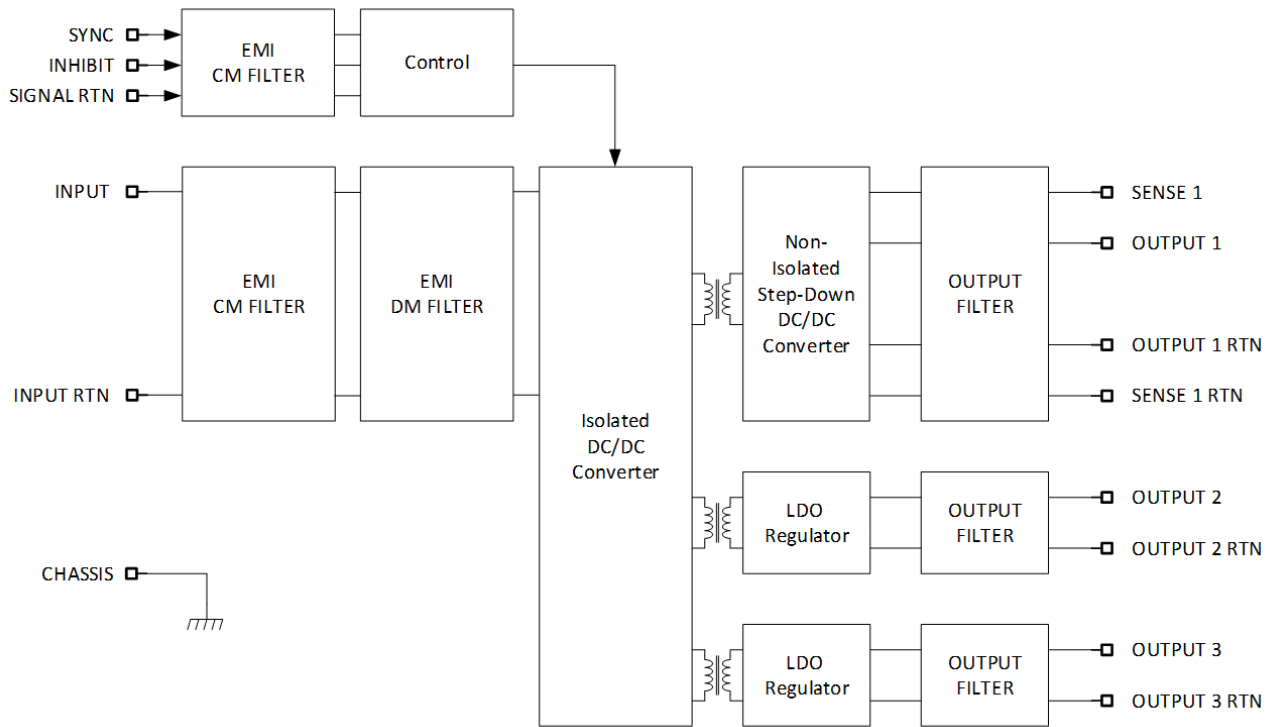
Specifications (Cont.):

Control & Indication	<i>INHIBIT Input</i>	The INHIBIT signal is used to turn the power supply ON and OFF. TTL "1" or OPEN – Power supply active (output turned on). TTL "0" or SHORT to Signal RTN – Power supply inhibited (output turned off). If this function is not required, leave this pin unconnected. This signal is referenced to SIGNAL RTN (pin 17)
	<i>SIGNAL RTN</i>	INHIBIT and SYNC signals are referenced to this pin. This pin is referenced to IN RTN (pins 7, 8, 22 and 23).
Environment Designed to meet MIL-STD-810F	<i>Temperature</i>	Methods 501.4 & 502.4 Operating: -55 °C to +85 °C (at baseplate) Storage: -55 °C to +125 °C (ambient)
	<i>Humidity</i>	Method 507.4 Up to 95% RH
	<i>Salt-fog</i>	Method 509.4
	<i>Altitude</i>	Method 500.4 Procedures I – Storage/Air transport: up to 70,000 ft. (non-operational) Procedure II – Operation/Air Carriage: up to 70,000 ft. (operational)
	<i>Mechanical Shock</i>	Method 516.5 Procedure I 50 g / 11 ms terminal peak half-sine shock pulse
	<i>Vibration</i>	Method 514.5 Procedure I 14.76 grms 20-2000 Hz for 500 seconds at each of 3 perpendicular axes.
	<i>Fungus</i>	Does not support fungus growth, in accordance with the guidelines of MIL-STD-454, Requirement 4.
EMI	<i>MIL-STD-461F</i>	Designed to meet* MIL-STD-461F CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103
Reliability	150,000 hours, calculated per MIL-HDBK-217F Notice 2 at +85 °C baseplate, Ground Fix conditions.	
Cooling Requirements	The M8139 is a baseplate cooled unit. The base of the M8139 should be thermally attached to a suitable heatsink that maintains it below +85 °C.	
Form factor	2.16" wide, 0.50" high and 3.10" deep. For detailed dimensions and tolerances see Drawing: M8139001 M8139002	
Weight	Type A: 100 gram, Type B: TBD	
Connectors	See Page 8	

* Compliance achieved with 5µH LISN, shielded harness and static resistive load.

[OPERATIONAL BLOCK DIAGRAM TYPE A](#)

M8139 SERIES DC/DC POWER SUPPLY

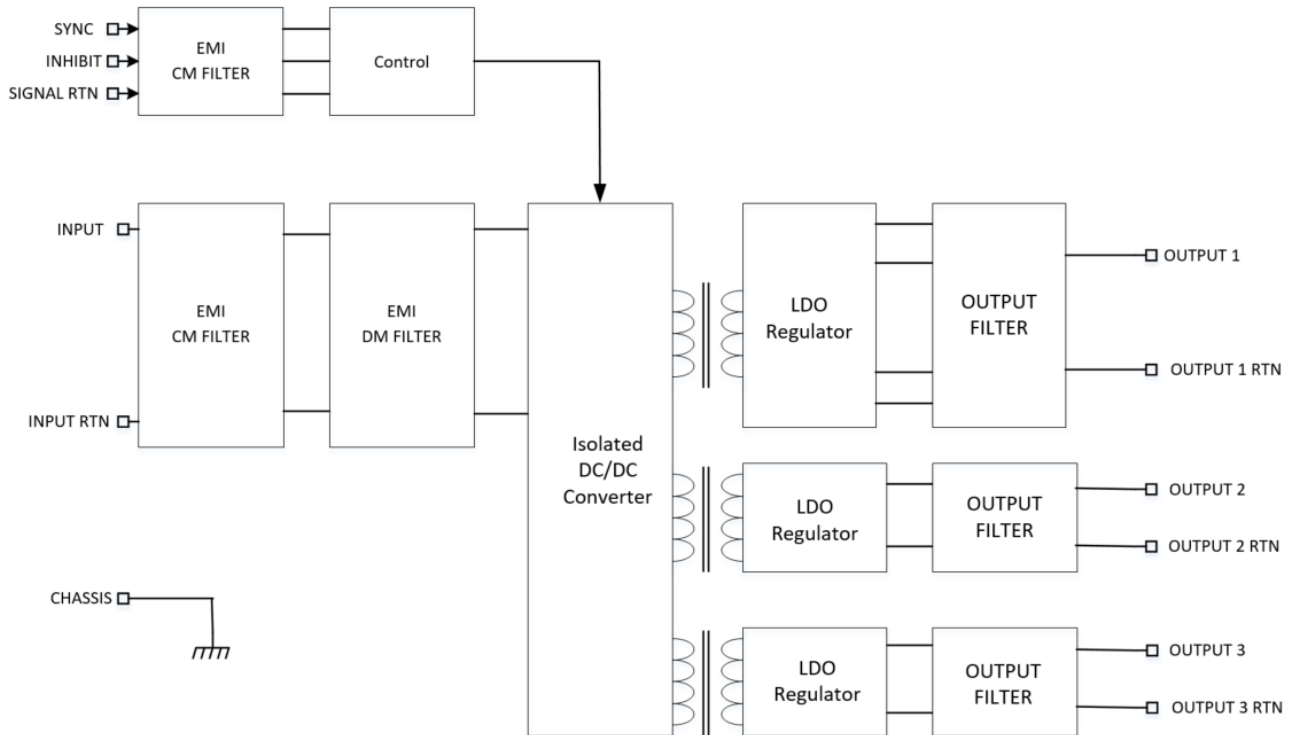


Type A - Outputs Range

Output #	Voltage Range	Current Range	Output Regulation	Power Range
1	1 to 5 V _{DC}	0 to 8 A	±1%	0 to 40 W
2	1.8 to 24 V _{DC}	0 to 3 A	±2%	0 to 20 W
3	1.8 to 24 V _{DC}	0 to 1.25 A	±2%	0 to 20 W
Total				0 to 60 W

M8139 SERIES DC/DC POWER SUPPLY

OPERATIONAL BLOCK DIAGRAM TYPE B



Type B - Outputs Range

Output #	Voltage Range	Current Range	Output Regulation	Power Range
1	1.5 to 24 V _{DC}	0 to 3 A	±1%	0 to 24 W
2	1.5 to 24 V _{DC}	0 to 1.25 A	±2%	0 to 18 W
3	1.5 to 24 V _{DC}	0 to 1.25 A	±2%	0 to 18 W
Total				0 to 60 W

M8139 SERIES DC/DC POWER SUPPLY

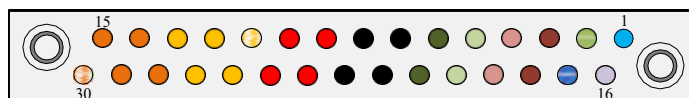
PIN ASSIGNMENT: TYPE A

Connector type: Airborn RM272-030-312-2900 or eq.

Mates with: Airborn RM242-030-241-5900 (solder cup terminations) or RM242-030-571-5900 (#20-22 AWG crimp contacts) or eq.

Pin No.	Function	P	
1	INHIBIT	+	⊖
2	CHASSIS	0	⊕
3	OUT 2 RTN	-	⊖
4	OUT 2	+	⊕
5	OUT 3	+	⊕
6	OUT 3 RTN	-	⊖
7	IN RTN	-	⊖
8	IN RTN	-	⊖
9	IN	+	⊕
10	IN	+	⊕
11	SENSE 1	+	⊕
12	OUT 1	+	⊕
13	OUT 1	+	⊕
14	OUT 1 RTN	-	⊖
15	OUT 1 RTN	-	⊖

Pin No.	Function	P	
16	SYNC	+	⊕
17	SIGNAL RTN	-	⊖
18	OUT 2 RTN	-	⊖
19	OUT 2	+	⊕
20	OUT 3	+	⊕
21	OUT 3 RTN	-	⊖
22	IN RTN	-	⊖
23	IN RTN	-	⊖
24	IN	+	⊕
25	IN	+	⊕
26	OUT 1	+	⊕
27	OUT 1	+	⊕
28	OUT 1 RTN	-	⊖
29	OUT 1 RTN	-	⊖
30	SENSE 1 RTN	-	⊖



Note: All pins with identical function/designation should be connected together for optimal performance.

CHASSIS Note: The CHASSIS pin allows additional connection of unit's chassis to system ground.

M8139 SERIES DC/DC POWER SUPPLY

PIN ASSIGNMENT: TYPE B

Connector type: Airborn RM272-030-312-2900 or eq.

Mates with: Airborn RM242-030-241-5900 (solder cup terminations) or RM242-030-571-5900 (#20-22 AWG crimp contacts) or eq.

Pin No.	Function	P	
1	INHIBIT	+	⊙
2	CHASSIS	0	⊙
3	OUT 2 RTN	-	●
4	OUT 2	+	●
5	OUT 3	+	⊙
6	OUT 3 RTN	-	●
7	IN RTN	-	●
8	IN RTN	-	●
9	IN	+	●
10	IN	+	●
11	OUT 1	+	●
12	OUT 1	+	●
13	OUT 1	+	●
14	OUT 1 RTN	-	●
15	OUT 1 RTN	-	●
16	SYNC	+	○
17	SIGNAL RTN	-	●
18	OUT 2 RTN	-	●
19	OUT 2	+	●
20	OUT 3	+	⊙
21	OUT 3 RTN	-	●
22	IN RTN	-	●
23	IN RTN	-	●
24	IN	+	●
25	IN	+	●
26	OUT 1	+	●
27	OUT 1	+	●
28	OUT 1 RTN	-	●
29	OUT 1 RTN	-	●
30	OUT 1 RTN	-	●



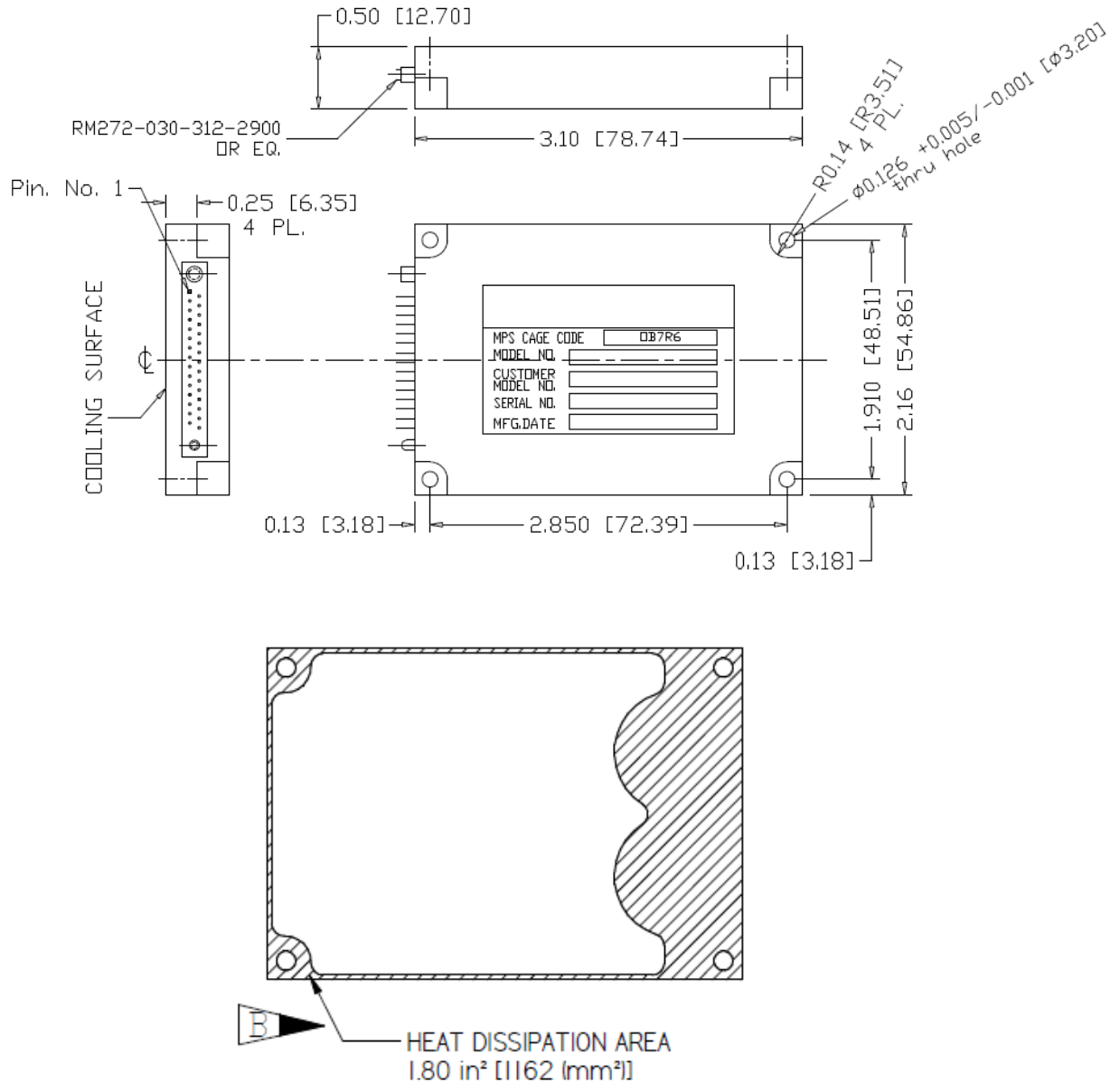
Note: All pins with identical function/designation should be connected together for optimal performance.

CHASSIS Note: The CHASSIS pin allows additional connection of unit's chassis to system ground.

M8139 SERIES DC/DC POWER SUPPLY

OUTLINE DRAWING TYPE A:

For detailed dimensions and tolerances see Drawing: M8139001



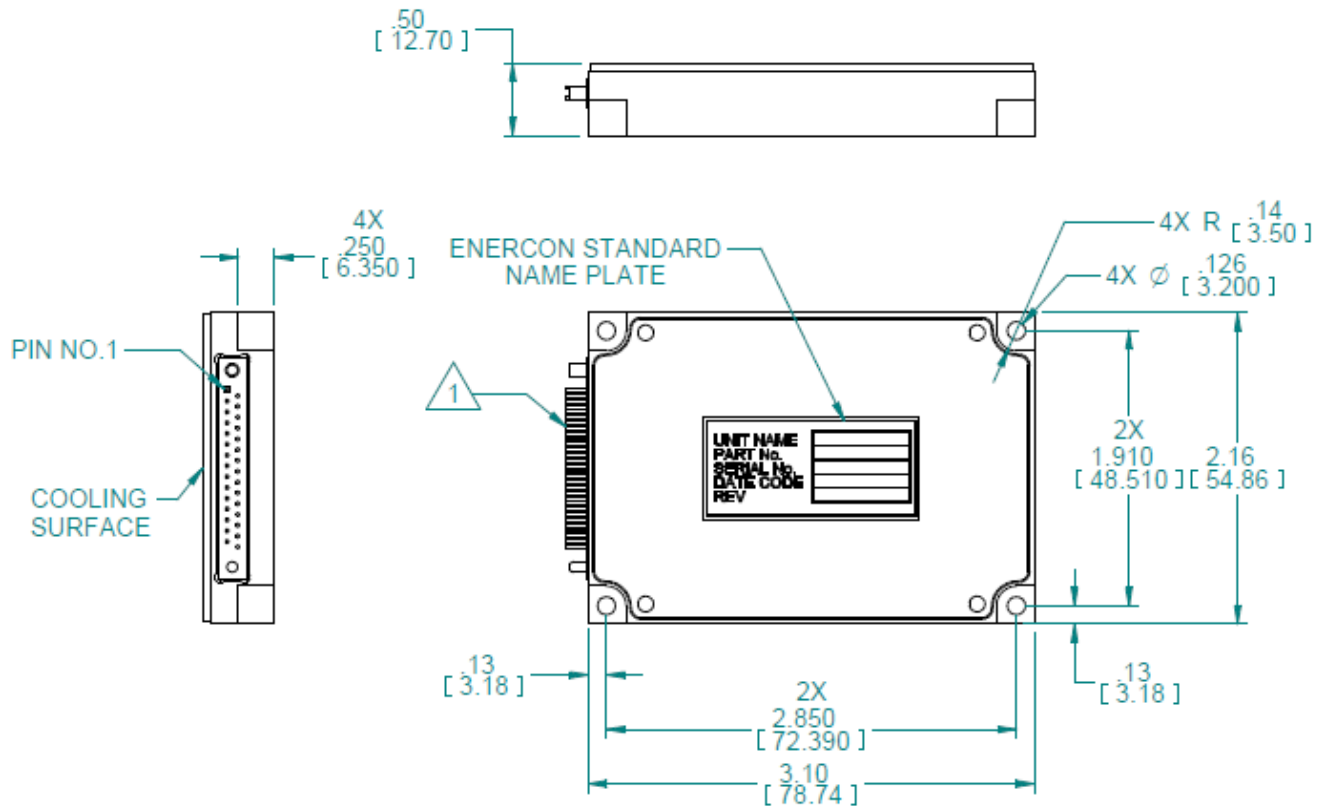
NOTES :

1. HEAT DISSIPATION AREA - TOTAL AREA 1.8 SQ. IN.
2. WORKMANSHIP SHALL BE MIL-STD-454, REQ. 9
3. DRILL, TAP & COUNTERSINK PER NASM33537
4. MTL. AL 6061-T651& AL 5052-H32
5. CONVERSION COATING PER MIL -C-5541 CL 1A

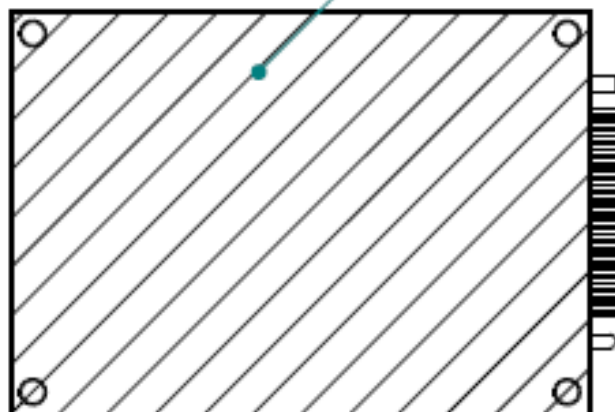
OUTLINE DRAWING TYPE B:

M8139 SERIES DC/DC POWER SUPPLY

For detailed dimensions and tolerances see Drawing: M8139002



HEAT DISSIPATION AREA
4060 MM² [6.29 IN²]



GENERAL TOLERANCES

Dimensions are in inches [mm]

.XX ± .01[0.25]

.XXX ± .005[0.127]

ANGELES ± 0.5°

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