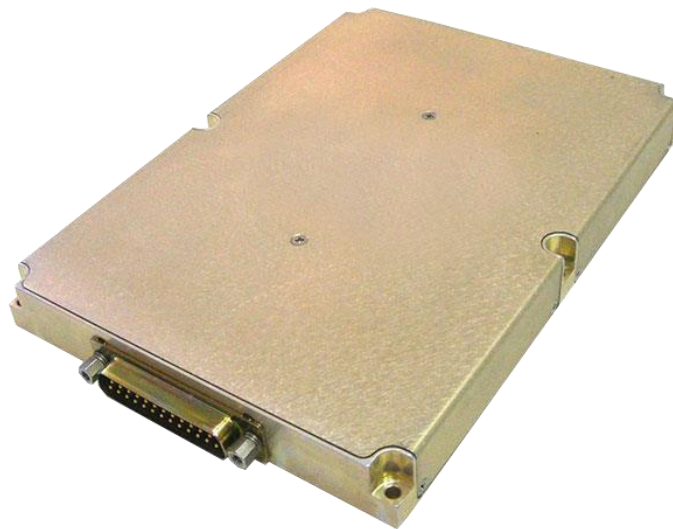


# M7338 SERIES

## TRIPLE-OUTPUTS, 600W DC/ DC POWER SUPPLY

The M7338 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 outputs.



**Standard Models List (for other voltages – consult factory)**

Part number	Input	Output 1		Output 2		Output 3	
	Voltage range	Voltage	Current	Voltage	Current	Voltage	Current
M7338-100	18 to 48 V <sub>DC</sub>	12 V <sub>DC</sub>	16 A	5 V <sub>DC</sub>	16 A	3.3 V <sub>DC</sub>	16 A
M7338-101	18 to 48 V <sub>DC</sub>	28 V <sub>DC</sub>	7 A	5V <sub>DC</sub>	16 A	3.3 V <sub>DC</sub>	16 A
M7338-102	18 to 48 V <sub>DC</sub>	28 V <sub>DC</sub>	7 A	12 V <sub>DC</sub>	16 A	5 V <sub>DC</sub>	16 A
M7338-103	18 to 48 V <sub>DC</sub>	12 V <sub>DC</sub>	16 A	12 V <sub>DC</sub>	16 A	28 V <sub>DC</sub>	7 A
M7338-104	18 to 48 V <sub>DC</sub>	15 V <sub>DC</sub>	13 A	15 V <sub>DC</sub>	13 A	5 V <sub>DC</sub>	16 A
M7338-105	18 to 48 V <sub>DC</sub>	48 V <sub>DC</sub>	4 A	12 V <sub>DC</sub>	16 A	5 V <sub>DC</sub>	16 A

- 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.**

**THE MAIN FEATURES OF THE M7338 ARE:**

- DC/DC Triple outputs power supply up to 600W
- 18 to 48VDC Standard Input version
- For extended input version - **Please contact factory for more details**
- Miniature size
- High efficiency
- High density – up to 23.2 W/in<sup>3</sup>
- Wide input range
- Input / Output isolation
- EMI filters included
- Fixed switching freq. (250 kHz)
- External sync. capability
- Remote Inhibit (On/Off)
- Remote sense compensation
- Non-latching protections:
  - Overload/short-circuit
  - Output overvoltage
  - Input UVLO/OVLO
  - Over temperature

### SPECIFICATIONS:

<b>DC Input</b>	<b>Voltage Range</b>	Normal range: 18 to 48 VDC Abnormal voltage transient: No damage* due to exposure to 100 V / 50 ms IAW MIL-STD- 1275A and 80 V / 0.1 s IAW MIL-STD-704A For extended input version - <b>Please contact factory for more details</b>
	<b>Isolation</b>	Input to Output: 200VDC Input to Case: 200 VDC
	<b>Under-Voltage Lock-Out</b>	Unit shuts down below 16V ± 1.5V.
	<b>Over-Voltage Lock-Out</b>	Unit shuts down above 52V ± 2V.
<b>DC Output</b>	<b>OUTPUTS RANGE</b>	See table on page 9
	<b>Voltage Regulation</b>	Less than ±1% (no load to full load; across input voltage range; –55 °C to +85 °C baseplate temperature).
	<b>SENSE</b>	See page 8
	<b>Ripple &amp; Noise</b>	Less than 50 mVp-p, typical (max. 1%) without external capacitance. When connected to system capacitance ripple drops significantly.
	<b>Isolation</b>	Output to Output: 100 VDC Outputs to Case: 100 VDC
	<b>Overload &amp; Short</b>	Output shuts down and attempts to restart periodically, until fault condition removed (hiccup).
	<b>Efficiency</b>	Typical 79% to 85% (28VDC output, full load, room temperature)
	<b>Overvoltage Protection</b>	<b>Active Over Voltage Protection</b> Internal control hiccup unit 10 ± 5% above nominal voltage. <b>Passive Over Voltage Protection</b> Transorb protects unit 20 ± 10% above nominal voltage
	<b>Over Temp. Protection</b>	Unit shuts down if baseplate temperature exceeds +105 ± 5 °C. Automatic recovery upon cooldown to below +95 ± 5 °C
	<b>Transient Over-and-undershoot</b>	Output resistance at load change of 50% to 100% is typically 50 mΩ (for 28 V <sub>DC</sub> output). Output back to steady stated within 300 to 500 μs.

\*The power supply shut down during the transient once out of the normal operation range, and restart once back within normal operation range.

Specifications (Cont.):

<b>Control &amp; Indication</b>	<b>SYNC</b>	See page 8-9
	<b>INHIBIT Input</b>	See page 8-9
	<b>SIGNAL RTN</b>	See page 8-9
<b>Environment Designed to meet MIL-STD-810F</b>	<b>Temperature</b>	Methods 501.5 & 502.5 Operating: -55°C to +85°C (at baseplate) Storage: -55°C to +125°C (ambient)
	<b>Humidity</b>	Method 507.5 Up to 95% RH
	<b>Salt-fog</b>	Method 509.5
	<b>Altitude</b>	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)
	<b>Mechanical Shock</b>	Method 516.5 Procedure I 50 g / 11 ms terminal peak half-sine shock pulse
	<b>Vibration</b>	Method 514.6 Procedure I, Category 24 General minimum integrity exposure 1 hour per axis.
	<b>Fungus</b>	Does not support fungus growth, in accordance with the guidelines of MIL-STD-454, Requirement 4-
<b>EMI</b>	<b>Design to meet MIL-STD-461F</b>	CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103 Compliance achieved with 5µH LISN, shielded harness and static resistive load.
<b>Reliability</b>	150,000 hours, calculated IAW MIL-HDBK-217F Notice 2 at +85°C baseplate, Ground fixed conditions	
<b>Cooling Requirements</b>	The M7338 is a baseplate cooled unit. The base of the M7338 should be thermally attached to suitable heatsink that maintains it below +85 °C.	
<b>Form factor</b>	120.65" wide, 17.78" high and 165.1" deep. For detailed dimensions and tolerances see Drawing: M7338001	
<b>Weight</b>	Approx. 510 gram	
<b>Connectors</b>	See Page 6-7	

**PIN ASSIGNMENT: J1 - INPUT CONNECTOR**

**Connector type:** M24308/24-39F or eq

**Mates with:** M24308/2-3F or eq.

Pin Assignment	Pin Numbers	P
INPUT	9, 10, 11, 12, 13, 22, 23, 24, 25	+
INPUT RTN	5, 6, 7, 8, 17, 18, 19, 20, 21	-
INHIBIT 1	1	+
INHIBIT 2	2	+
INHIBIT 3	15	+
MAIN INHIBIT	16	+
SYNC	4	+
SIGNAL RTN	3	-
CHASSIS	14	0

**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.

**PIN ASSIGNMENT: J2 - OUTPUT CONNECTOR**

**Connector type:** M24308/23-40F or eq.

**Mates with:** M24308/4-4F or eq.

Pin Assignment	Pin Numbers	P
OUTPUT 1	8, 9, 10, 27, 28	+
OUTPUT 1 RTN	11, 12, 29, 30, 31	-
SENSE 1	26	+
SENSE 1 RTN	13	-
OUTPUT 2	2, 3, 4, 21, 22	+
OUTPUT 2 RTN	5, 6, 23, 24, 25	-
SENSE 2	1	+
SENSE 2 RTN	7	-
OUTPUT 3	14, 15, 16, 33, 34	+
OUTPUT 3 RTN	17, 18, 35, 36, 37	-
SENSE 3	32	+
SENSE 3 RTN	19	-
N.C.	20	

**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.

## SIGNALS DESCRIPTION

**SENSE #** (connector J2: pin 26 for output #1, pin 1 for output #2 and pin 32 for output #3)

The **SENSE #** lines are used to achieve accurate voltage regulation at their respective load terminals. To use this feature, connect these pins directly to their respective load's positive terminal.

**SENSE # RTN** (connector J2: pin 13 for output #1, pin 7 for output #2 and pin 19 for output #3)

The **SENSE # RTN** lines are used to achieve accurate voltage regulation at their respective load terminals. To use this feature, connect these pins directly to their respective load's negative terminal.

If this function is not required, short short **SENSE #** directly to its respective output pins and **SENSE # RTN** to its respective output return pins.

**Note:** The use of remote sense has a limit of voltage dropout between the converter's output and the load's terminals of approximately 5% of nominal output voltage or 0.3 V – the lesser of the two.

### INHIBIT

The **MAIN INHIBIT** (connector J1, pin 16) signal is used to turn all outputs ON and OFF together. The **INHIBIT #** (connector J1, pins 1 for output #1, pin 2 for output #2 and pin 15 for output #3) signals are used to turn their respective outputs ON and OFF individually.

Leaving these pins open will result in active outputs (according to table truth table).

Shorting these pins to **SIGNAL RTN** will result in inhibited outputs (according to table truth table).

MAIN INHIBIT	INHIBIT 1	INHIBIT 2	INHIBIT 3	Output #1	Output #2	Output #3
OPEN	OPEN	OPEN	OPEN	ON	ON	ON
OPEN	OPEN	OPEN	SHORT	ON	ON	OFF
OPEN	OPEN	SHORT	OPEN	ON	OFF	ON
OPEN	OPEN	SHORT	SHORT	ON	OFF	OFF
OPEN	SHORT	OPEN	OPEN	OFF	ON	ON
OPEN	SHORT	OPEN	SHORT	OFF	ON	OFF
OPEN	SHORT	SHORT	OPEN	OFF	OFF	ON
X	SHORT	SHORT	SHORT	OFF	OFF	OFF
SHORT	X	X	X	OFF	OFF	OFF

If this function is not required, leave these pins unconnected. This signal is referenced to **SIGNAL RTN** (connector J1 pin 3).



## M7338 Series– DC/DC Power Supply

**SYNC** (connector J1, pin 4)

The **SYNC** signal is used for synchronizing the power supply's switching frequency to external clock. Valid external clock frequency is 250 kHz  $\pm$  10 kHz, and duty cycle is 50%  $\pm$  10%. If this function is not required, leave this pin unconnected - the power supply will use its internal clock.

This signal is referenced to **SIGNAL RTN** (connector J1, pin 3)

**SIGNAL RTN** (connector J1, pin 3)

Both **INHIBIT** and **SYNC** signals are referenced to this pin.

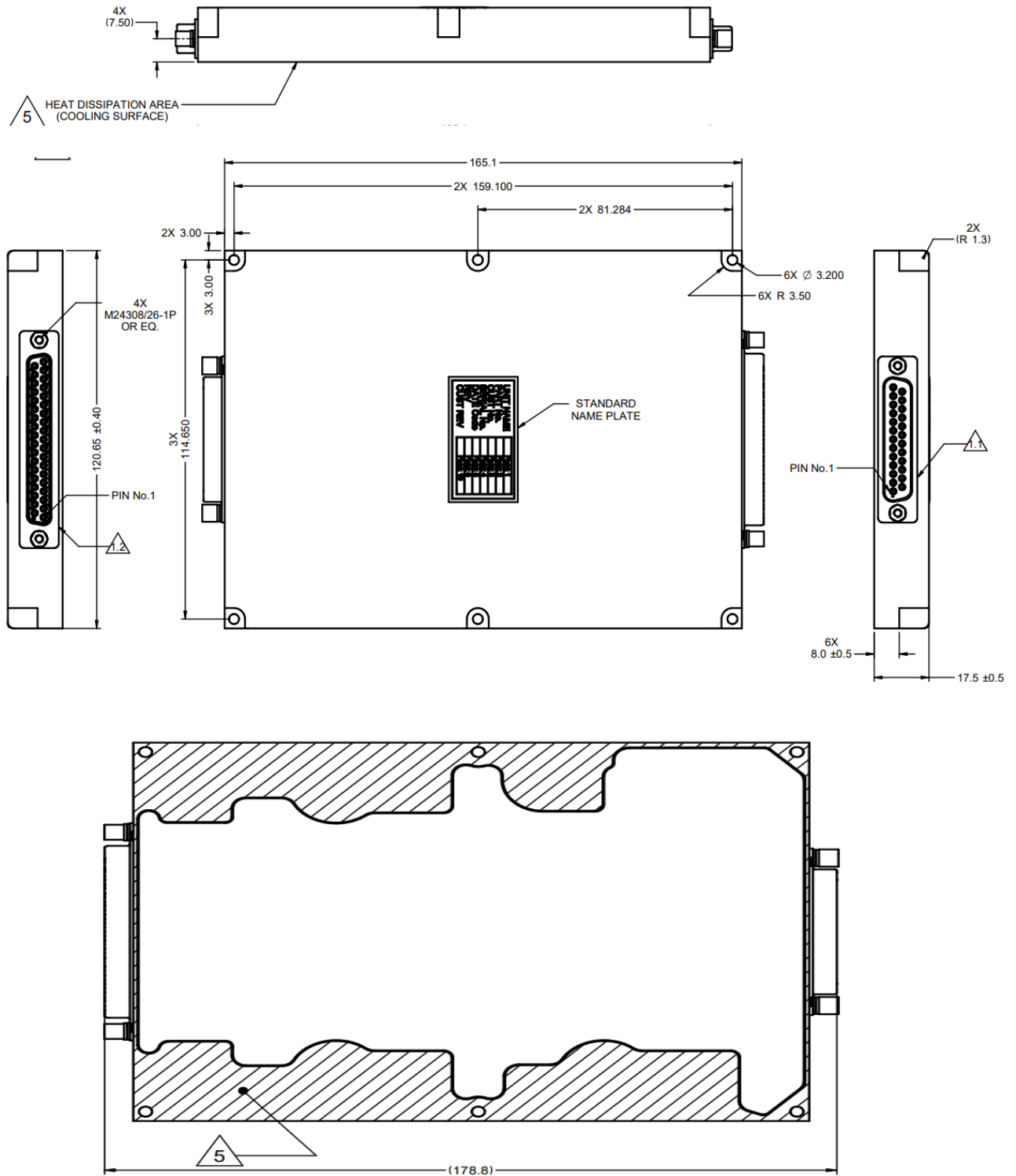
This pin is referenced to **INPUT RTN** (connector J1, pins 5, 6, 7, 8, 17, 18, 19, 20 and 21).

### OUTPUTS RANGE

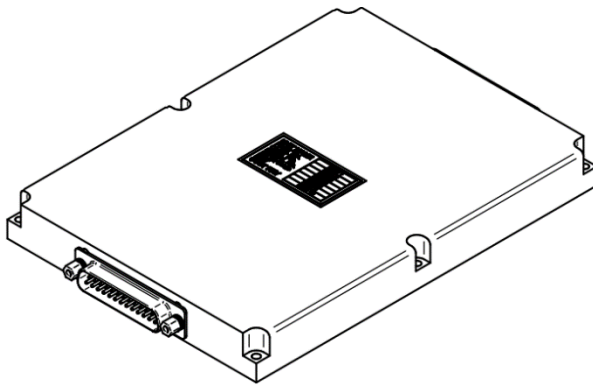
Output #	Voltage Range	Current Range	Power Range
1	1.8 to 50 VDC	16 A	200W
2	1.8 to 50 VDC	16 A	200W
3	1.8 to 50 V <sub>DC</sub>	16 A	200W
<b>Total</b>			

**OUTLINE DRAWING TYPE :**

For detailed dimensions and tolerances see Drawing: M7338001



## M7338 Series– DC/DC Power Supply



ENERCON SCD NUMBER		<b>SCD000107</b>	
UNLESS OTHERWISE SPECIFIED			
DIMENSIONS ARE IN MM DO NOT SCALE DRAWING		GENERAL TOLERANCES	
	X.X ± 0.3	ANGLES ± 1°	
	X.XX ± 0.20		
	X.XXX ± 0.100		

### NOTES :

#### 1. CONNECTORS:

- 1.1. J1- INPUT PLUG D-TYPE CONN. 25P, P/N: M24308/24-39F OR EQ.
- 1.2. J2- OUTPUT SOCKET D-TYPE CONN. 37S, P/N: M24308/23-40F OR EQ.
2. WORKMANSHIP SHALL BE MIL-STD-454, REQT. 9.
3. MTL. AL 6061-T651& AL 5052-H32.
4. CHROMATE CONVERSION COATING PER MIL -DTL-5541, LAST REVISION, TYPE 1, CLASS 1A.
5. HEAT DISSIPATION SURFACE: 5,612.6 [mm<sup>2</sup>].

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