

## M8637 SERIES

DC/DC POWER SUPPLY



### PRODUCT HIGHLIGHTS

- MINIATURE
- HIGH DENSITY
- TRIPLE OUTPUT
- DC/DC CONVERTERS
- UP TO 125W



## Applications

Military, Ruggedized, Telecom, Industrial

## Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Fixed switching frequency (250 kHz)
- External synchronization capability
- TTL logic enable
- EMI filters included
- Indefinite short circuit protection with auto-recovery
- Over temperature protection

## Environmental Conditions

Designed to meet MIL-STD-810F

### Temperature:

Operating  $-55\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  (baseplate)

Storage  $-55\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$

### Altitude:

Method 500.4, Procedures I & II up to 70,000 ft. Operational

### Humidity:

Method 507.4 - Up to 95% RH (including condensation)

### Salt Fog:

Method 509.4

### Vibration and Shock:

Shock: Saw-tooth, 20 g peak, 11 ms.

Vibration: Figure 514.5C-17 general minimum integrity exposure (1 hour per axis)

## Reliability

150,000 hours calculated per MIL-STD-217F Notice 2, at  $+85\text{ }^{\circ}\text{C}$  baseplate, Ground Fixed.

## Electrical Specifications

### DC INPUT

Normal voltage range: 18 to 70 V<sub>DC</sub>

Option: 12 to 70 V<sub>DC</sub> – *consult factory*

### Abnormal transient protection:

No damage (may shut down) when exposed to abnormal transients IAW MIL-STD-1275A (100 V for 50 ms) and MIL-STD-704A (80 V for 0.1 s)

Efficiency: up to 80%

EMC: Designed to meet MIL-STD-461F\*

CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

### Isolation:

Input to Output:

200 V<sub>DC</sub> Input to Case:

200 V<sub>DC</sub>

### DC OUTPUT (floating)

#### Line/Load regulation:

Up to  $\pm 1\%$  (no load to full load,  $-55\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$ )

Ripple and Noise: 50 mV<sub>p-p</sub>, typical (max. 1%)

#### Current limiting (Hiccup):

Continuous protection for unlimited time

#### Over Voltage Protection:

Passive transorbs on outputs.

#### Over Temperature

##### Protection:

Shutdown if baseplate temperature exceeds  $+105\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ ; Automatic recovery upon cooldown to below  $+95\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ .

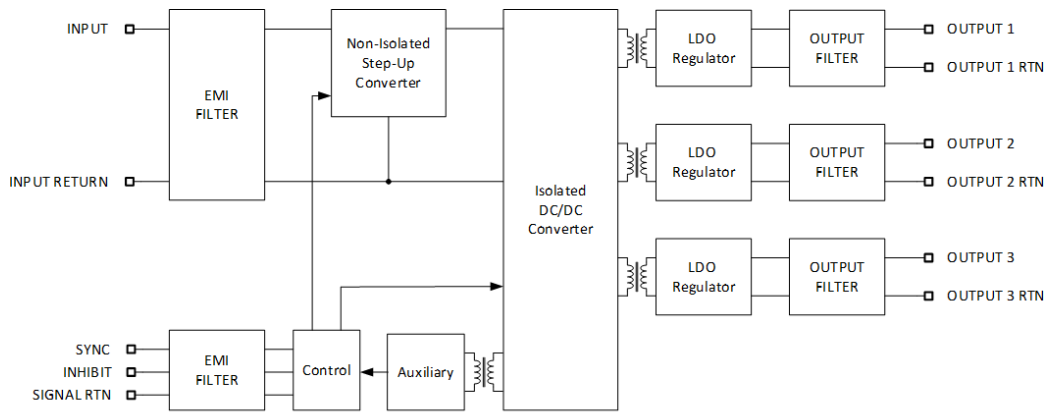
##### Isolation:

Output to Case: 100 V<sub>DC</sub>

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\* EMC compliance achieved when tested with 5  $\mu\text{H}$  LISNs, shielded harness and static resistive load.

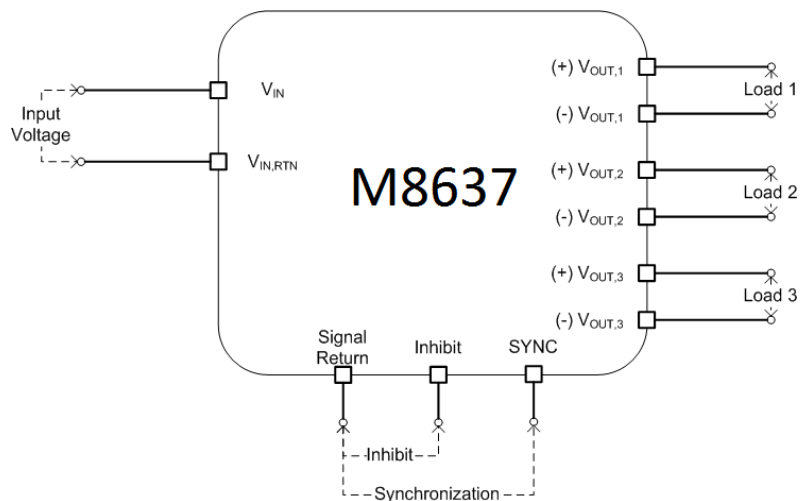
**Operational Block Diagram**



**Outputs Range**

Output #	Voltage Range	Current Range	Power Range
1	3.3 to 28 V <sub>DC</sub>	0 to 10 A	0 to 50 W
2	3.3 to 28 V <sub>DC</sub>	0 to 6 A	0 to 50 W
3	7 to 28 V <sub>DC</sub>	0 to 6 A	0 to 50 W
<b>Total</b>			0 to 125 W

**Typical Connection Diagram**



**Pin Assignment\***

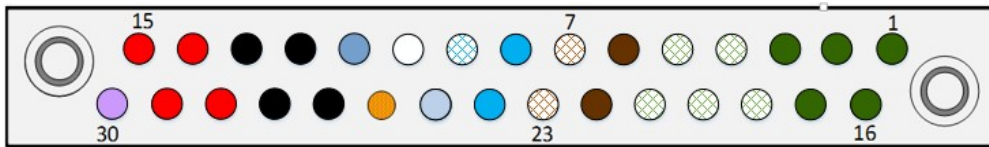
**Connector type:** 55302/61-A30

**Mates with:** M55302/62-A30M (solder cup termination) or M55302/66-30M (#22 AWG crimp termination) or eq.

Pin No.	Function	
1	OUT 1 (+)	●
2	OUT 1 (+)	●
3	OUT 1 (+)	●
4	OUT 1 RTN (-)	○
5	OUT 1 RTN (-)	○
6	OUT 2 (+)	●
7	OUT 2 RTN (-)	○
8	OUT 3 (+)	●
9	OUT 3 RTN (-)	○
10	N.C.	

Pin No.	Function	
11	SIGNAL RTN	●
12	VIN RTN (-)	●
13	VIN RTN (-)	●
14	VIN (+)	●
15	VIN (+)	●
16	OUT 1 (+)	●
17	OUT 1 (+)	●
18	OUT 1 RTN (-)	○
19	OUT 1 RTN (-)	○
20	OUT 1 RTN (-)	○

Pin No.	Function	
21	OUT 2 (+)	●
22	OUT 2 RTN (-)	○
23	OUT 3 (+)	●
24	OUT 3 RTN (-)	○
25	INHIBIT	●
26	VIN RTN (-)	●
27	VIN RTN (-)	●
28	VIN (+)	●
29	VIN (+)	●
30	SYNC	●



\* For optimal performance, connect all pins with identical designation together.

## ***Functions and Signals***

### **INHIBIT**

The ***INHIBIT*** signal is used to turn the power supply ON and OFF.  
TTL "1" or OPEN – Power supply is ON (For normal operation, leave this pin unconnected.) TTL "0" or SHORT to ***SIGNAL RTN*** – Power supply is OFF.

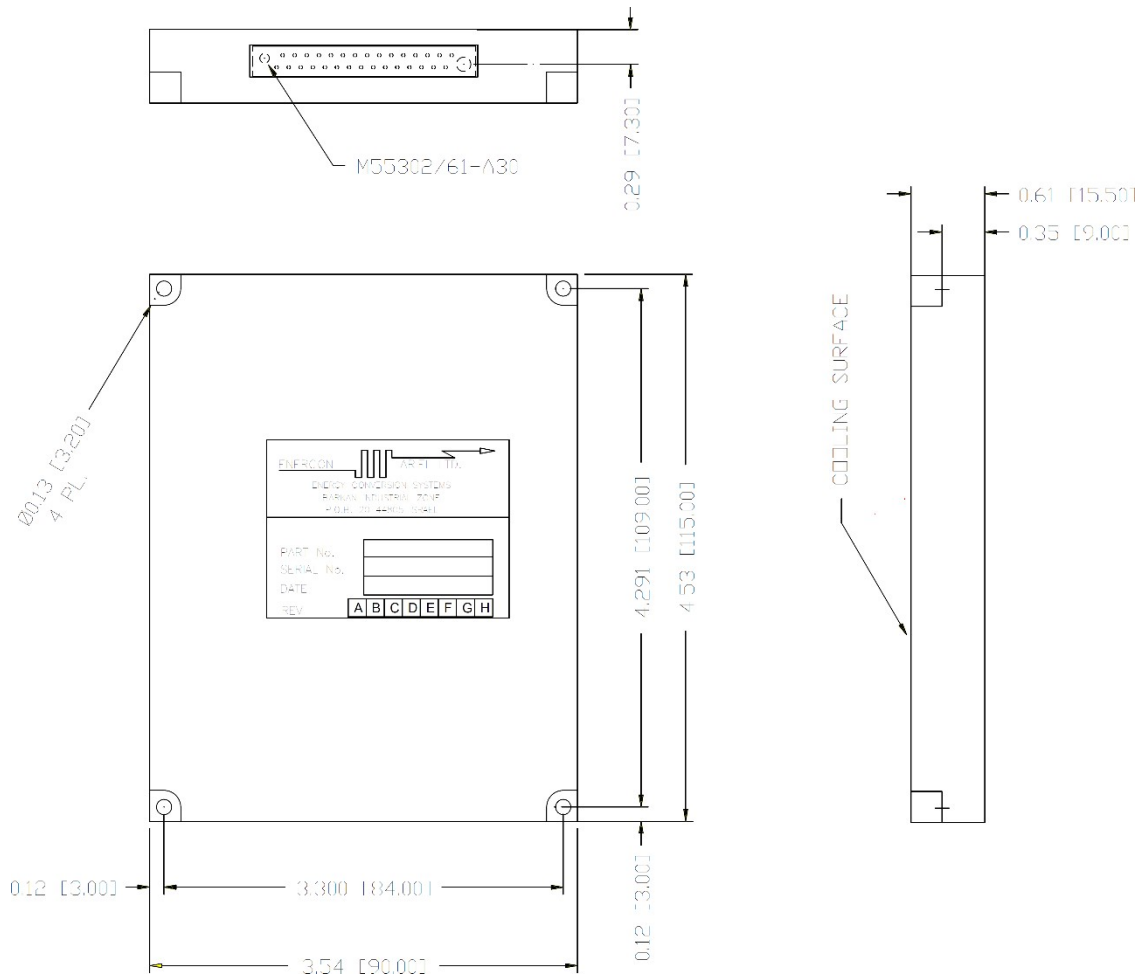
### **SYNC**

The ***SYNC*** signal is used to allow the power supply's switching frequency to sync with the system clock. The external clock's frequency can be 250 kHz  $\pm$  10 kHz.  
When this pin is left open (unconnected) the power supply will synchronize to its internal clock, set at 250 kHz  $\pm$  10 kHz.

### **SIGNAL RTN**

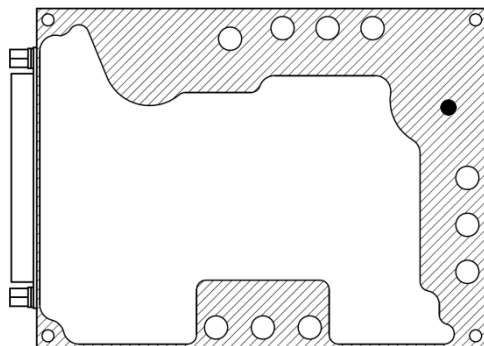
The ***SIGNAL RTN*** is used as a return path for the ***SYNC*** and ***INHIBIT*** signals. This pin is referenced to ***VIN RTN***.

**Outline Drawing**



1. Dimensions are in inches [mm]
2. Tolerance is:  
 .XX  $\pm$  0.01 in  
 .XXX  $\pm$  0.005 in
3. Weight: 13.4 oz [380 g]

**Heat Dissipation Surface**



**Heat Dissipation Area:**  
 6.045 in<sup>2</sup>  
 [3,900 mm<sup>2</sup>]

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