

## M8110 SERIES

*DC/DC POWER SUPPLY*



### PRODUCT HIGHLIGHTS

- MINIATURE
- HIGH DENSITY
- TEN OUTPUTS
- DC/DC CONVERTER
- UP TO 150W



### 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-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

### Environmental Conditions

Meets or exceeds MIL-STD-810D

#### Temperature:

Operating: -55 °C to +85 °C (baseplate)

Storage: -55 °C to +125 °C

### Reliability

150,000 hours, calculated IAW MIL-HDBK-217F Notice 2 at +85 °C baseplate, Ground Fix conditions.

### Electrical Specifications

#### DC INPUT

Input voltage range: 18 to 48 V<sub>DC</sub>

#### Input transient protection:

All models meet or exceed (no damage)

MIL-STD-1275A (100 V for 50 ms) and

MIL-STD-704A, MIL-STD-704D (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 OUTPUTS (floating from input)

#### Line/Load regulation:

Typical ±1% (for low voltages up to ±4%)

(no load to full load, -55 °C to +85 °C)

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

#### Current limiting:

Continuous protection for unlimited time

#### Over voltage protection:

Passive transorb on outputs

#### Over temperature protection:

Shutdown if baseplate temperature exceeds +105 ±

5 °C. Automatic recovery upon cooldown to below

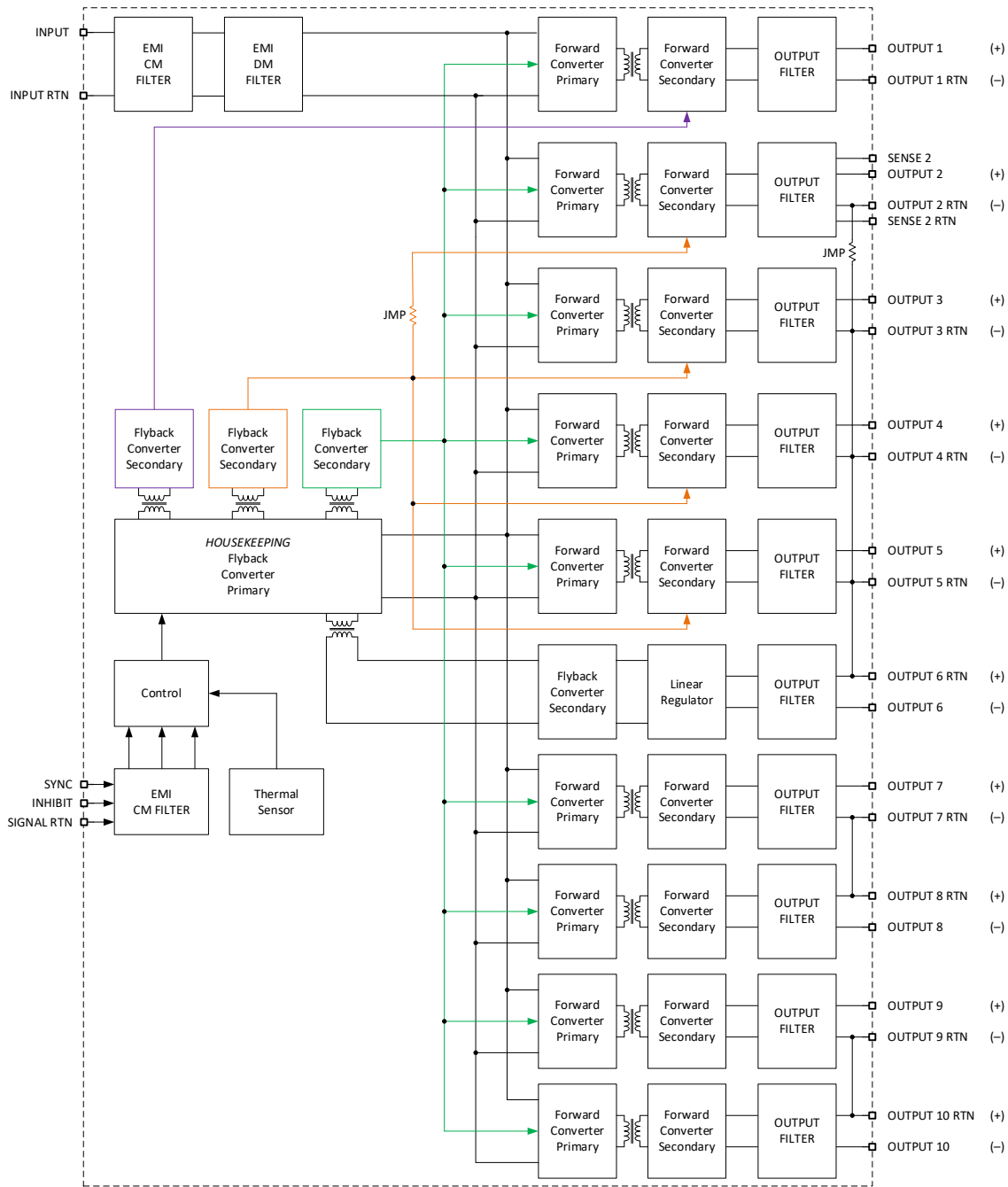
+95 ± 5 °C.

#### Isolation:

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

\* EMC compliance achieved when tested with 5 μH LISNs, shielded harness and static resistive load

Operational Block Diagram



**Outputs Configuration Range**

| Output #     | Voltage Range               | Current Range | Power Range |
|--------------|-----------------------------|---------------|-------------|
| 1            | 2.5 to 30 V <sub>DC</sub>   | 0 to 4 A      | 0 to 10 W   |
| 2            | 2.5 to 50 V <sub>DC</sub>   | 0 to 6 A      | 0 to 30 W   |
| 3            | 2.5 to 50 V <sub>DC</sub>   | 0 to 9 A      | 0 to 40 W   |
| 4            | 1.1 to 5 V <sub>DC</sub>    | 0 to 3 A      | 0 to 5 W    |
| 5            | 1.1 to 5 V <sub>DC</sub>    | 0 to 3 A      | 0 to 5 W    |
| 6            | -3.3 to -24 V <sub>DC</sub> | 0 to 0.4 A    | 0 to 5 W    |
| 7            | 2.5 to 50 V <sub>DC</sub>   | 0 to 6 A      | 0 to 45 W   |
| 8            | -2.5 to -50 V <sub>DC</sub> | 0 to 6 A      | 0 to 45 W   |
| 9            | 1.5 to 30 V <sub>DC</sub>   | 0 to 3 A      | 0 to 10 W   |
| 10           | -1.5 to -30 V <sub>DC</sub> | 0 to 3 A      | 0 to 10 W   |
| <b>Total</b> |                             |               | 0 to 145 W  |

**Outputs Isolation (Ground RTN groups)**

- All outputs are isolated from the input.
- Outputs are separated into the following five galvanically isolated groups:
  - Group A: Output #1
  - Group B: Output #2 (must be connected to group C if output voltage is lower than 5V)
  - Group C: Outputs #3, #4, #5 and #6
  - Group D: Outputs #7 and #8
  - Group E: Outputs #9 and #10

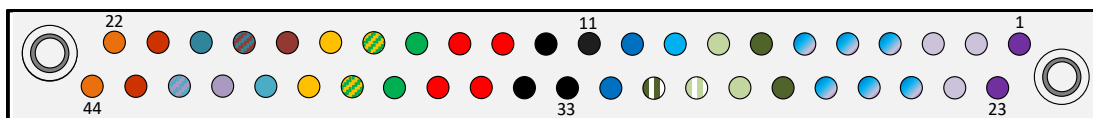
**Pin Assignment**

**Connector type:** M55302/61A44 or eq.

**Mates with:** M55302/62-A44M (solder cup termination) or M55302/66-44M (#22 AWG crimp termination) or eq.

| Pin No. | Function        | P |   |
|---------|-----------------|---|---|
| 1       | OUT 4           | + | ● |
| 2       | OUT 3           | + | ○ |
| 3       | OUT 3           | + | ○ |
| 4       | OUT 3/4/5/6 RTN |   | ● |
| 5       | OUT 3/4/5/6 RTN |   | ● |
| 6       | OUT 3/4/5/6 RTN |   | ● |
| 7       | OUT 2 RTN       | - | ● |
| 8       | OUT 2           | + | ○ |
| 9       | OUT 6           | - | ● |
| 10      | OUT 5           | + | ● |
| 11      | INPUT RTN       | - | ● |
| 12      | INPUT RTN       | - | ● |
| 13      | INPUT           | + | ● |
| 14      | INPUT           | + | ● |
| 15      | OUT 8           | - | ● |
| 16      | OUT 7/8 RTN     |   | ● |
| 17      | OUT 7           | + | ● |
| 18      | OUT 9           | + | ● |
| 19      | OUT 9/10 RTN    |   | ● |
| 20      | OUT 10          | - | ● |
| 21      | OUT 1 RTN       | - | ● |
| 22      | OUT 1           | + | ● |

| Pin No. | Function        | P |   |
|---------|-----------------|---|---|
| 23      | OUT 4           | + | ● |
| 24      | OUT 3           | + | ○ |
| 25      | OUT 3/4/5/6 RTN |   | ● |
| 26      | OUT 3/4/5/6 RTN |   | ● |
| 27      | OUT 3/4/5/6 RTN |   | ● |
| 28      | OUT 2 RTN       | - | ● |
| 29      | OUT 2           | + | ○ |
| 30      | SENSE 2         | + | ○ |
| 31      | SENSE 2 RTN     | - | ○ |
| 32      | OUT 5           | + | ● |
| 33      | INPUT RTN       | - | ● |
| 34      | INPUT RTN       | - | ● |
| 35      | INPUT           | + | ● |
| 36      | INPUT           | + | ● |
| 37      | OUT 8           | - | ● |
| 38      | OUT 7/8 RTN     |   | ● |
| 39      | OUT 7           | + | ● |
| 40      | INHIBIT         | + | ○ |
| 41      | SYNC            | + | ○ |
| 42      | SIGNAL RTN      | - | ○ |
| 43      | OUT 1 RTN       | - | ● |
| 44      | OUT 1           | + | ● |



## Signals Description

### **SENSE 2** (pin 11)

The **SENSE 1** line is used to achieve accurate voltage regulation at load 1 terminals.

To use this feature, connect this pin directly to load 1's positive terminal.

If this function is not required, short **SENSE 2** to **OUT 2** (pins 8 and 29) as close as possible to the connector.

### **SENSE 2 RTN** (pin 30)

The **SENSE 1 RTN** line is used to achieve accurate voltage regulation at load terminals.

To use this feature, connect this pin directly to load's negative terminal.

If this function is not required, short **SENSE 2 RTN** to **OUT 2 RTN** (pins 7 and 28) as close as possible to the connector.

**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 0.5 V – the lesser of the two.

### **INHIBIT** (pin 40)

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 42)

### **SYNC** (pin 41)

The **SYNC** signal is used to synchronize the power supply's switching frequency to system's 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.

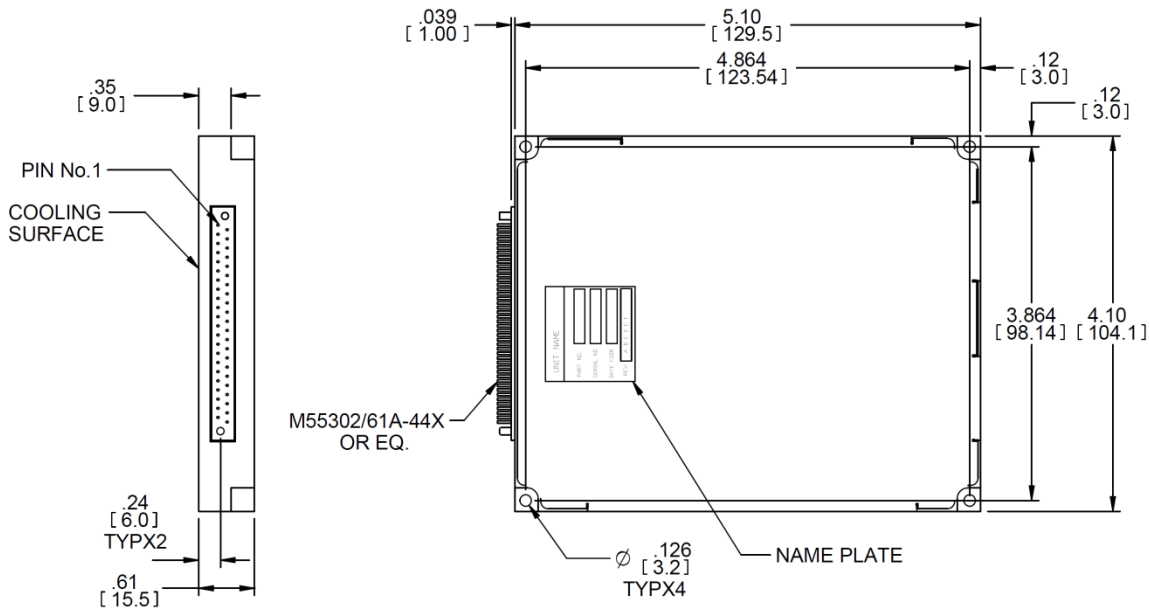
This signal is referenced to **SIGNAL RTN** (pin 42)

### **SIGNAL RTN** (pin 42)

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

This pin is referenced to **INPUT RTN** (pins 11, 12, 33 and 34) .

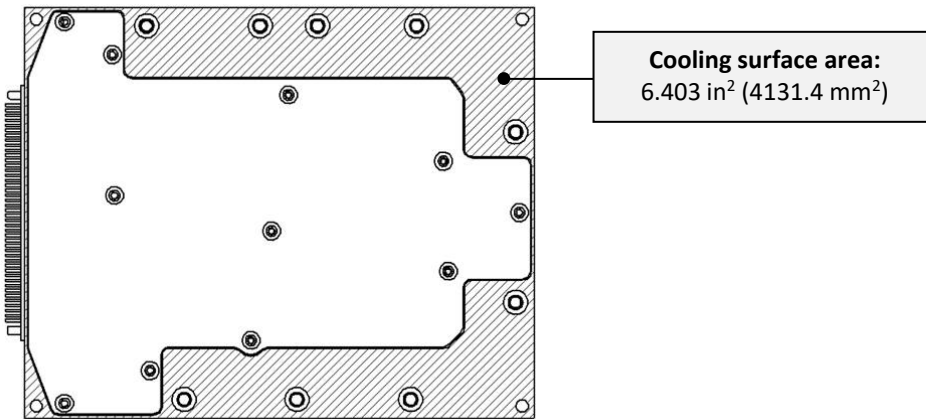
**Outline Drawing**



**Notes**

1. Dimensions are in inches [mm]
2. Tolerance is:  
 .XX ± .02 in  
 .XXX ± .01 in
3. Weight: 11.78 oz [334 g] ± 2%

**Heat Dissipation Area**



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