

# M8254 SERIES

## A DUAL-OUTPUT, 200W DC TO DC POWER SUPPLY

The M8254 is a series of mechanically robust, baseplate cooled, high performance, power supplies, designed for Ground Mobile (MIL-STD-1275), Airborne (MIL-STD-704) and other Hi-Reliability applications.

The M8254 converts 28VDC to a well-regulated, filtered and protected DC Output 200W.

The product meet MIL-STD requirements (specified herein)



**M8254 Standard configuration table:**

| Part number | Input         | Outputs   |           | Output Power |
|-------------|---------------|-----------|-----------|--------------|
|             | Voltage range | Output #1 | Output #2 |              |
| M8254100    | 10 to 48 VDC  | 28V/6A    | 5V/3A     | 183W         |
| M8254101    | 10 to 48 VDC  | 24V/7A    | 15V/1.5A  | 190.5W       |
| M8254102    | 10 to 48 VDC  | 6V/16A    | 12V/2A    | 120W         |

Other options available – consult factory

### THE MAIN FEATURES OF THE M8254 ARE:

- DC/DC Dual output power supply
- When the minimum input voltage is 9V the output power is up to 180W
- When the minimum input voltage is 12V the output power is up to 200W
- Standard input version: 9 to 48 VDC
- Can be configure as charger
- Can be configure to meet MIL-STD-1275E
- Complies with MIL-STD-461F
- Output #1 3.3V to 48V @ Max 160W
- Output #2 3.3V to 48V @ Max 40W
- High efficiency
- Full galvanic isolation between Input, Chassis and Outputs.
- External Inhibit (On/Off)
- Fixed switching freq. (250 kHz)
- EMI filters included
- Remote sense compensation
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- 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

### SPECIFICATIONS:

|                  |                                            |                                                                                                                                                                |
|------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DC Input</b>  | <b><i>Voltage and Frequency</i></b>        | 10 to 36 VDC<br>9 to 48 VDC                                                                                                                                    |
|                  | <b><i>Isolation*</i></b>                   | Input to Output: 200 VDC<br>Input to Case: 200 VDC                                                                                                             |
|                  | <b><i>Reverse Polarity Protections</i></b> | Protection for unlimited time                                                                                                                                  |
| <b>DC Output</b> | <b><i>Rating</i></b>                       | See table on page 10                                                                                                                                           |
|                  | <b><i>Voltage Regulation</i></b>           | ±1% or better<br>(no load to full load, low line to high line, –46 °C to +85 °C).                                                                              |
|                  | <b><i>Ripple &amp; Noise</i></b>           | Max. 1% of output voltage without external capacitance. When connected to system capacitance ripple drops significantly.                                       |
|                  | <b><i>Isolation</i></b>                    | Output to Case: 200 VDC                                                                                                                                        |
|                  | <b><i>Current Limit &amp; Overload</i></b> | Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).                                                                              |
|                  | <b><i>Efficiency</i></b>                   | Minimum 80%-85%                                                                                                                                                |
|                  | <b><i>Overvoltage Protection</i></b>       | <b>Output Active Over-Voltage Protection:</b><br>The power supply shall protect the outputs from overvoltage greater than 110% of the specified outputvoltage. |
|                  | <b><i>Over Temp. Protection</i></b>        | Output shuts down if base plate temperature exceeds +105°C ± 5°C. Automatic recovery when baseplate temperature returns to below +95°C ± 5°C.                  |

### SPECIFICATIONS (CONT.):

|                                                               |                                  |                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Control &amp; Indication</b>                               | <b><i>INHIBIT*<br/>Input</i></b> | <p>The <b>INHIBIT</b> signal is used to turn the power supply ON and OFF. To turn the power supply OFF, apply a TTL “0” signal or SHORT to <b>SIGNAL RTN</b>.</p> <p>To turn the power supply ON, apply a TTL “1” signal or leave this pin OPEN.</p> <p>If not used (always ON), leave this pin OPEN.</p> <p>This signal is referenced to <b>SIGNAL RTN</b>.</p>          |
|                                                               | <b><i>VOUT SENSE</i></b>         | <p>The SENSE is used to achieve accurate load regulations at load terminals (this is done by connecting the pins directly to the load’s terminals). The use of remote sense has a limit of voltage dropout between converter’s output and load terminals up to 0.25V.</p> <p>When not used connect <b>SENSE</b> to <b>OUT</b> and <b>SENSE RTN</b> to <b>OUT RTN</b>.</p> |
| <b>Environment<br/>Designed to<br/>meet MIL-<br/>STD-810H</b> | <b><i>Temperature</i></b>        | <p>Operating: –46 °C to +85 °C (at baseplate)</p> <p>Storage: –46 °C to +105 °C</p>                                                                                                                                                                                                                                                                                       |
|                                                               | <b><i>Humidity</i></b>           | <p>Method 514.8 , 516.8</p> <p>Procedure I &amp; VI</p> <p>Up to 95%-100%</p>                                                                                                                                                                                                                                                                                             |
|                                                               | <b><i>Salt-fog</i></b>           | Method 509.4                                                                                                                                                                                                                                                                                                                                                              |
|                                                               | <b><i>Altitude</i></b>           | <p>Method 514.8 &amp; 516.8</p> <p>Procedures I &amp; VI</p> <p>Up to 10,000 ft. AGL</p>                                                                                                                                                                                                                                                                                  |
|                                                               | <b><i>Mechanical Shock</i></b>   | <p>Functional Shock IAW MIL-STD-810H, Method 516.8, Procedure-I, SRS Curve for</p> <p>Functional Test for Ground Equipment (40g peak, 45hz crossover frequency).</p>                                                                                                                                                                                                      |
|                                                               | <b><i>Vibration</i></b>          | <p>Functional Vibration IAW MIL-STD-810H, Method 514.8, Procedure-I, Cat 4, Composite</p> <p>Wheeled Vehicle Unknown Orientations (Figure 514.8C-6 / Table 514.8C-VIII).</p>                                                                                                                                                                                              |
|                                                               | <b><i>Fungus</i></b>             | <p>Method 509.5</p> <p>Does not support fungus growth, in accordance with the guidelines of MIL-STD-454, Requirement 4.</p>                                                                                                                                                                                                                                               |

## M8254 Series– DC/DC Power Supply

|                                 |                                                                                                                                                    |                                                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EMI</b>                      | <b><i>MIL-STD-461F</i></b>                                                                                                                         | Meets* MIL-STD-461F<br>CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102,<br>RS101, RS103<br>*EMC Compliance achieved with 5μH LISN, shielded harness and<br>static resistive load. |
| <b>Reliability</b>              | 150,000 hours, calculated per MIL-HDBK-217F Notice 2 at +85 °C baseplate,<br>Ground Fix conditions.                                                |                                                                                                                                                                                          |
| <b>Cooling<br/>Requirements</b> | The M8254 is a baseplate cooled unit. The base of the M8254 should be<br>thermally attached to a suitable heatsink that maintains it below +85 °C. |                                                                                                                                                                                          |
| <b>Form factor</b>              | 3.091" wide, 1" high and 5.512" deep. For detailed dimensions and tolerances see<br>Drawing: M8254001                                              |                                                                                                                                                                                          |
| <b>Weight</b>                   | 500gram Typical                                                                                                                                    |                                                                                                                                                                                          |
| <b>Connectors</b>               | See Page 7                                                                                                                                         |                                                                                                                                                                                          |

### PIN ASSIGNMENT:

**Connector type:** DD44M4000C or eq.

**Mates with:** M24308/2-13F or eq.

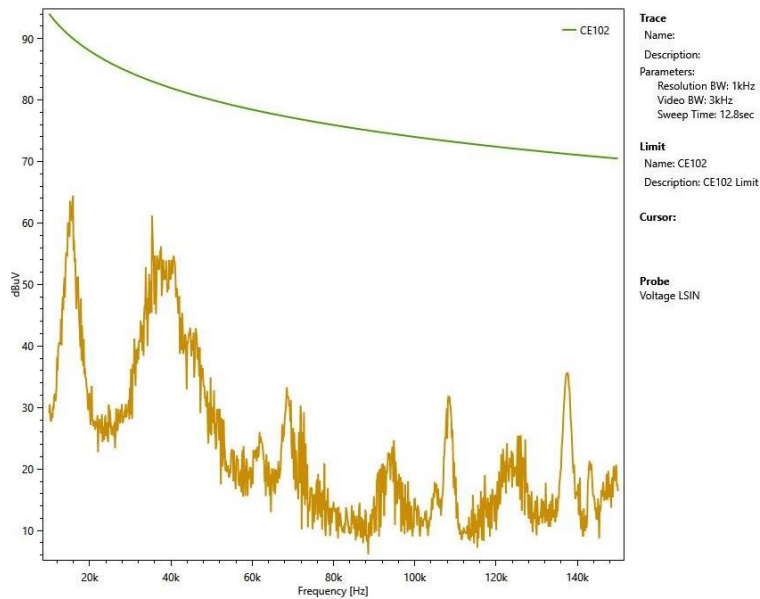
| Function           | Pin No.                 |
|--------------------|-------------------------|
| VIN                | 12,13,14,27,28,29,42,43 |
| VIN RTN            | 9,10,11,25,26,39,40,41  |
| OUT 1              | 1,2,16,17,31,32         |
| OUT 1 RTN          | 3,4,18,19,33,34         |
| +SENSE 1           | 36                      |
| -SENSE 1           | 35                      |
| OUT 2              | 5,6,20,21               |
| OUT 2 RTN          | 7,8,22,23               |
| +SENSE 2           | 38                      |
| -SENSE 2           | 24                      |
| INHIBIT            | 44                      |
| SYN                | 30                      |
| SIGNAL RTN         | 15                      |
| CHASSIS (Not Used) | 37                      |

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

### TEST RESULT

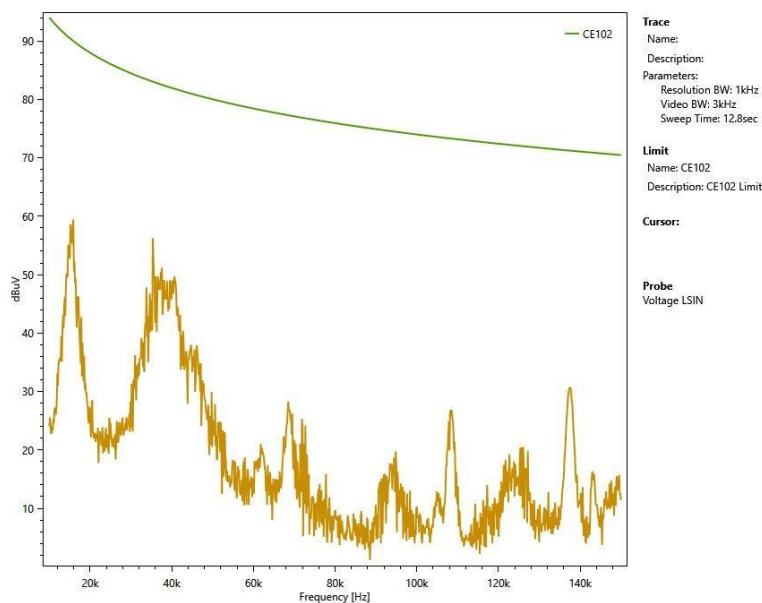
#### **CE102 MIL-STD-461F Conducted Emission, 10 kHz -150 kHz**

Line (nominal input voltage, full load)



#### **CE102 MIL-STD-461F Conducted Emission, 10 kHz -150 kHz**

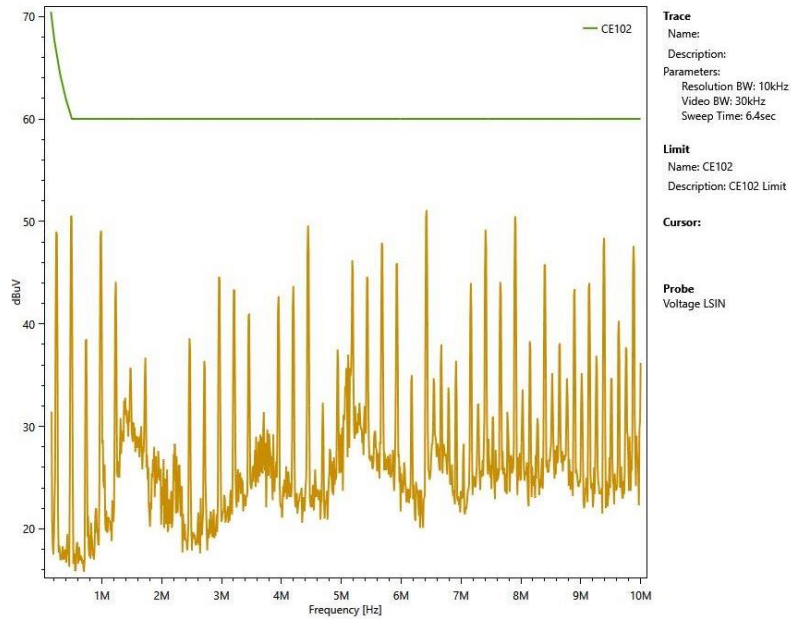
Return (nominal input voltage, full load)





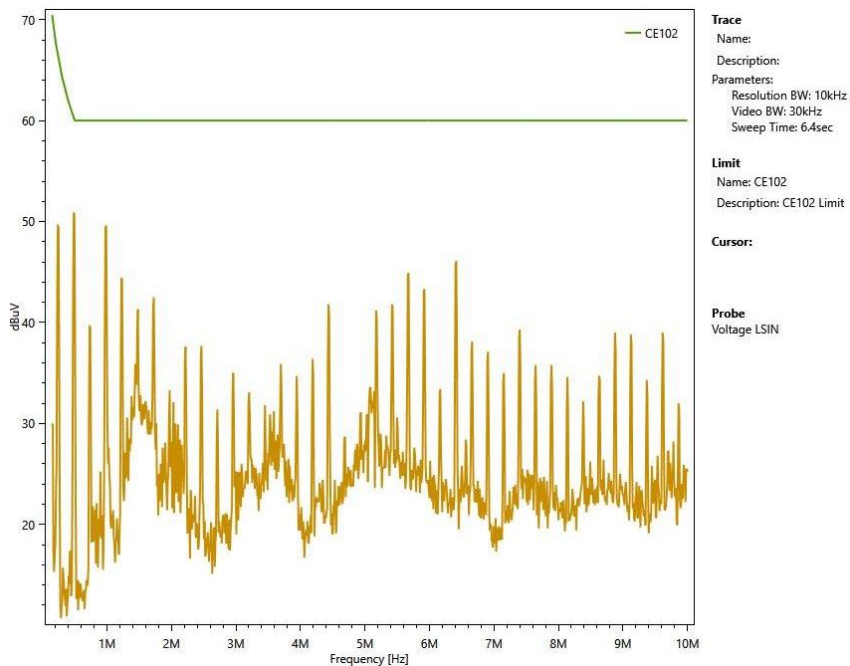
### CE102 MIL-STD-461F Conducted Emission, 150 kHz - 10 MHz

Return (nominal input voltage, full load)

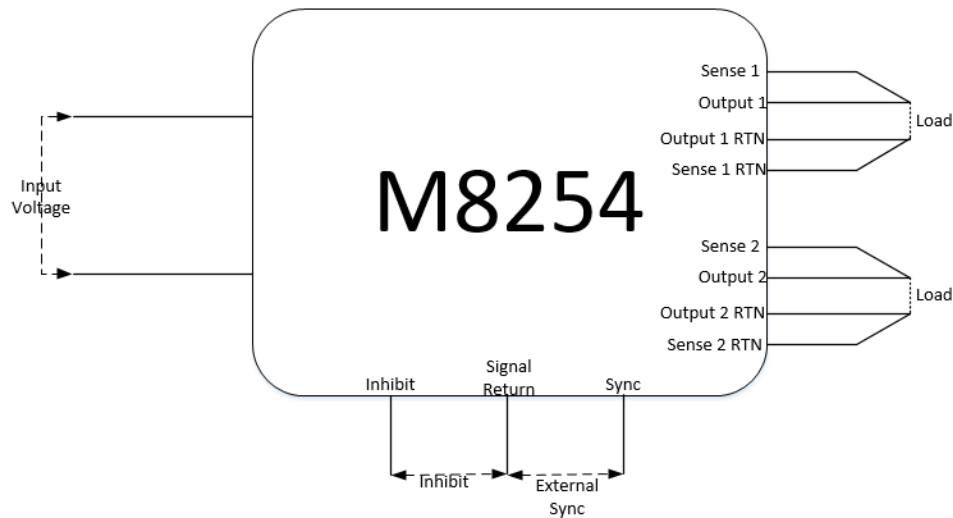


### CE102 MIL-STD-461F Conducted Emission, 150 kHz - 10 MHz

Line (nominal input voltage, full load)



### TYPICAL CONNECTION DIAGRAM



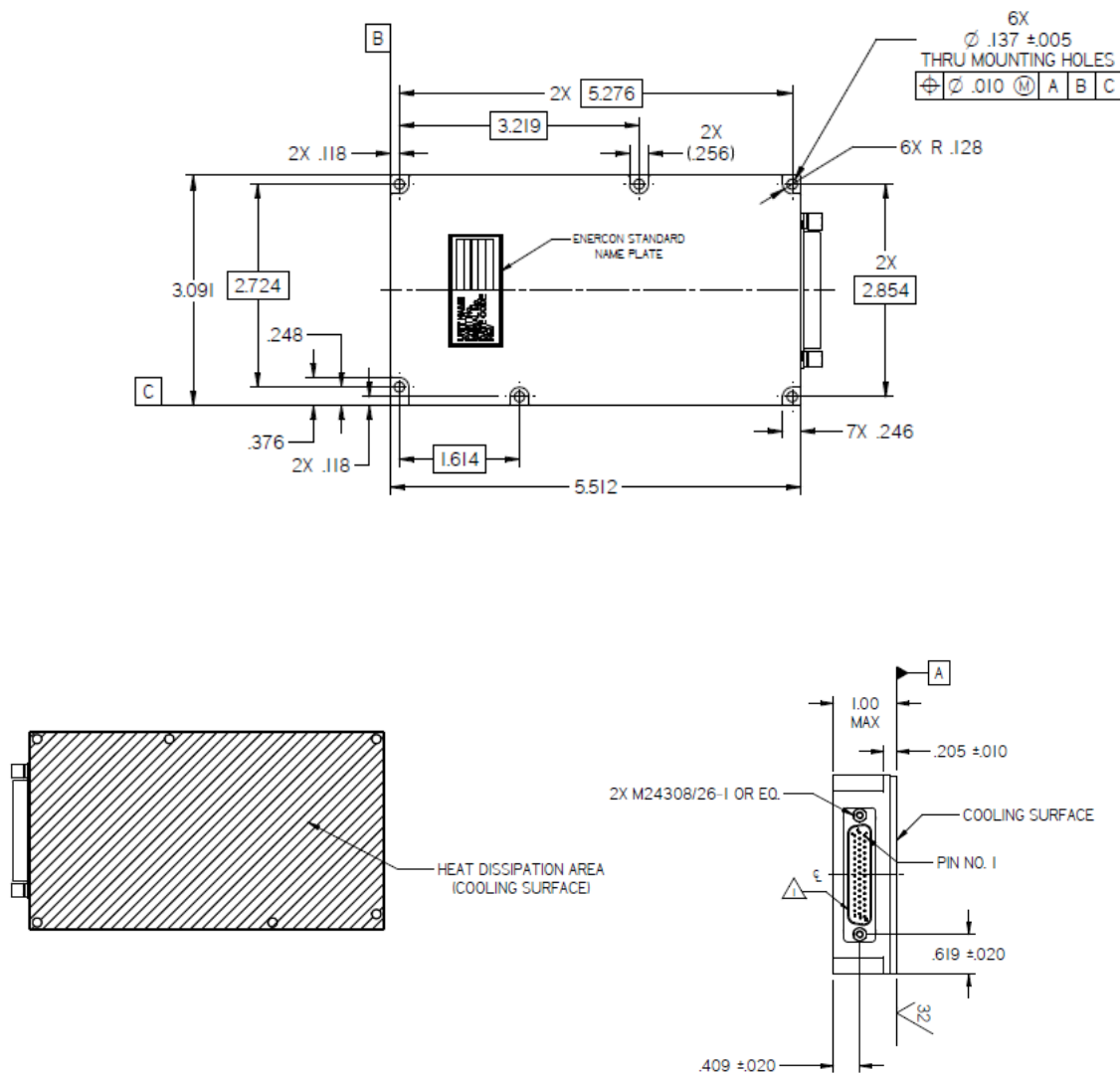
### Outputs Range

| Output #     | Voltage Range             | Current Range | Output Regulation | Power Range  |
|--------------|---------------------------|---------------|-------------------|--------------|
| 1            | 3.3 to 48 V <sub>DC</sub> | 0-18A         | ±%1               | 0 to 160 W   |
| 2            | 3.3 to 48 V <sub>DC</sub> | 0-12A         | ±%1               | 0 to 40 W    |
| <b>Total</b> |                           |               |                   | 0 to 200 W * |

\*Depending on the input voltage.

### OUTLINE DIMENSIONS:

For detailed dimensions and tolerances see Drawing: M8254001



**Please note: Specifications are subject to change without prior notice by the manufacturer.**