M8696 SERIES

A QUAD-OUTPUT, 200W DC/DC POWER SUPPLY

The M8696 is a series of mechanically robust, base-plate cooled, high performance, 200W DC to DC power supplies, designed for Airborne , Ground and Navy shipboard applications.

STANDARD CONFIGURATIONS

Part number	Input	Output			
	Voltage range	#1	#2	#3	#4
M8696-100	10.5-36V	28V/2.6A	12V/3.3A	5V/2.5A	5V/20A
M8696-110	18-48V	28V/1.5A	12V/4A	5V/8A	50V/2A

* 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 M8696 SERIES ARE:

- DC/DC Dual output power supply up to 200W
- Standard input version:
- Option 1: 10.5V-36V
- Option 2: 18V-48V
- When the minimum input voltage is 10.5V the output power is up to 200W
- When the minimum input voltage is 18V the output power is up to 280W
- For 9V or 12V minimum input voltage **please consult factory.**
- Can be configure as charger
- Can be configure to meet MIL-STD-1275E
- Complies with MIL-STD-461F
- 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 for outputs 1-4
- 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

SPECIFICATIONS:

DC Input	***Voltage***	Option 1: 10.5V-36V Option 2: 18V-48V For 9V or 12V minimum input voltage **please consult factory.**
	Isolation*	Input to Output: 200 VDC Input to Case: 200 VDC
	Reverse Polarity Protections	Protection for unlimited time
DC Output	***Rating***	See table on page 6
	Voltage Regulation	±1% or better (no load to full load, low line to high line, –46 °C to +85 °C).
	Ripple & Noise	Max. 1% of output voltage without external capacitance. When connected to system capacitance ripple drops significantly.
	Isolation	Output to Case: 200 VDC
	Current Limit & Overload	Continuous protection (10-30% above maximum current) for unlimited time (Hiccup)
	Efficiency	Minimum 80%-85% (depending on output configuration)
	Overvoltage Protection	**Output Active Over-Voltage Protection:** The power supply shall protect the outputs from overvoltage greater than 110%±5% of the specified output voltage.
	Over Temp. Protection	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.):

Control & Indication	***ENABLE Input***	The **ENABLE** 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 **SIGNAL RTN**. To turn the power supply ON, apply a TTL "1" signal or leave this pin OPEN. If not used (always ON), leave this pin OPEN. This signal is referenced to **SIGNAL RTN**.
	VOUT SENSE for all outputs	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. When not used connect **SENSE** to **OUT** and **SENSE RTN** to **OUT RTN**.
	GPIO	**Contact factory for more details**.
Environment Designed to meet MIL-STD-810H	***Temperature***	Operating: –46 °C to +85 °C (at baseplate) Storage: –46 °C to +105 °C
	Humidity	Method 514.8 , 516.8 Procedure I & VI Up to 95%-100%
	Salt-fog	Method 509.4
	Altitude	Method 514.8 & 516.8 Procedures I & VI Up to 10,000 ft. AGL
	Mechanical Shock	Functional Shock IAW MIL-STD-810H, Method 516.8, Procedure-I, SRS Curve for Functional Test for Ground Equipment (40g peak, 45hz crossover frequency).
	Vibration	Functional Vibration IAW MIL-STD-810H, Method 514.8, Procedure-I, Cat 4, Composite Wheeled Vehicle Unknown Orientations (Figure 514.8C-6 / Table 514.8C-VIII).
	Fungus	Method 509.5 Does not support fungus growth, in accordance with the guidelines of MIL-STD-454, Requirement 4.

EMI	***MIL-STD-461F***	Designed to meets* MIL-STD-461F CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103 *EMC Compliance achieved with 5µH LISN, shielded harness and static resistive load.
Reliability	150,000 hours, calculated per MIL-HDBK-217F Notice 2 at +85 °C baseplate, Ground Fix conditions.	
Cooling Requirements	The M8696 is a baseplate cooled unit. The base of the M8696 should be thermally attached to a suitable heatsink that maintains it below +85 °C.	
Form factor	3.192” wide, 1.1” high and 6.992” deep. For detailed dimensions and tolerances see Drawing: TBD	
Weight	600gr (1.35LB)	
Connectors	See page 7	

Outputs Range

Output #	Voltage Range	Current Range	Output Regulation	Power Range
1	3.3 to 28 V_{DC}	0-8A	±%1	0-60W
2	3.3 to 28 V_{DC}	0-8A	±%1	0-60W
3	3.3 to 28 V_{DC}	0-8A	±%1	0-60W
4	3.3 to 50 V_{DC}	0-20A	±%1	0-150W
Total				0 to 280 W *

*Depending on the input voltage.

PIN ASSIGNMENT

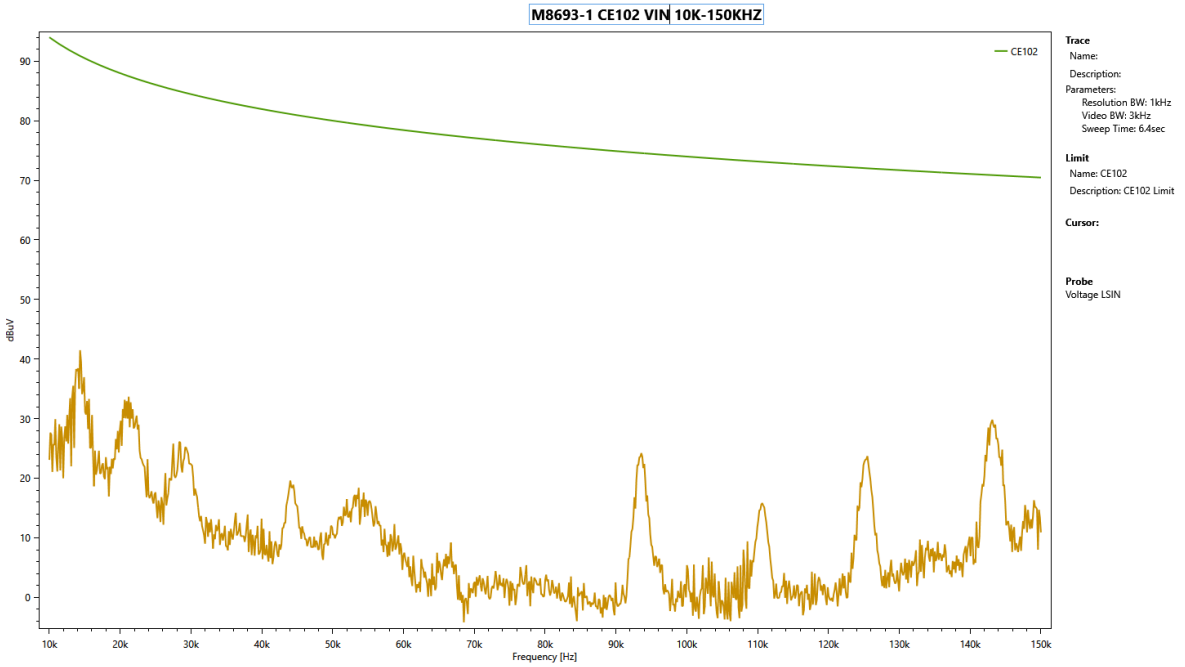
CONNECTOR- INPUT/OUTPUT: MALE CONNECTOR, POSITRONIC DD44M4000C-15 OR EQ.

Function	Pin No.
VIN	14,15,29,30,43,44
VIN RTN	11,12,13,27,28,42
OUT 1	3
OUT 1 RTN	4
OUT 1 +SENSE	20
OUT 1 -SENSE	5
OUT 3	35
OUT 3	34
OUT 3 +SENSE	31
OUT 3 -SENSE	32
OUT 4	9,10,25,26,41
OUT 4 RTN	7,8,23,24,37
OUT 4 +SENSE	21
OUT 4 -SENSE	6
OUT 2 OUT	1,16
OUT 2 OUT RTN	2,17
OUT 2 +SENSE	19
OUT 2 -SENSE	18
GPIO[1] OUT 4	22
GPIO[1] OUT 2	38
GPIO[1] OUT 1	39
ENABLE[1]	36
SIGNAL RTN	40
N.C	33

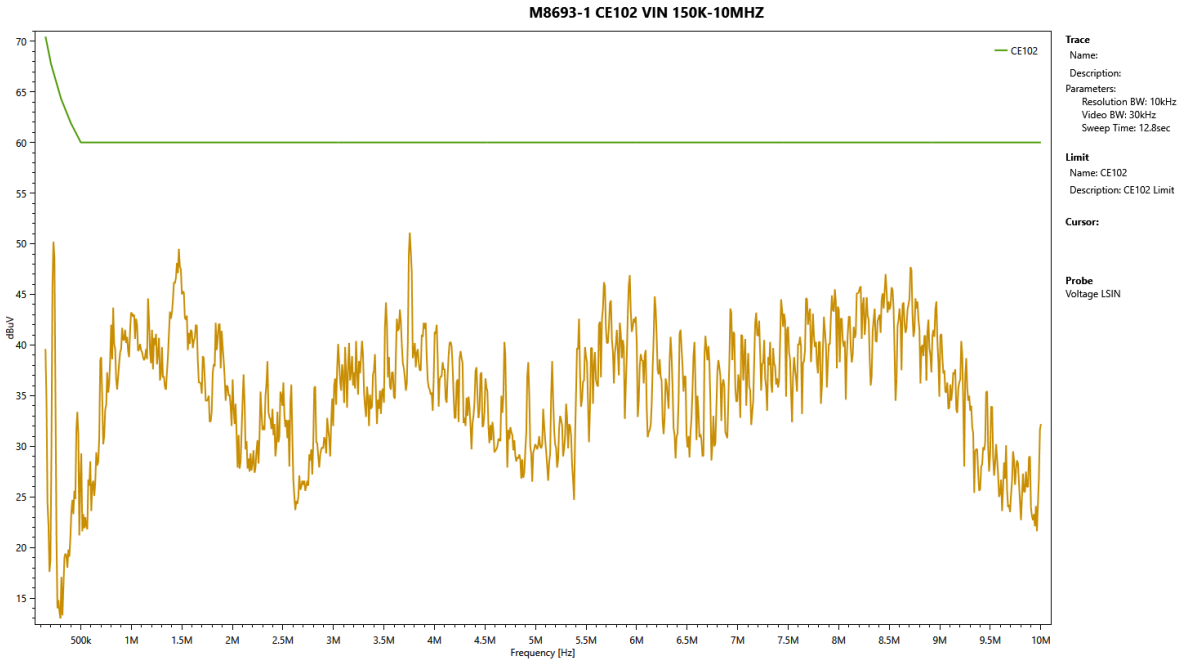
Notes:

[1]This signal received pullup resistor of 4.7kΩ from 5V auxiliary voltage.

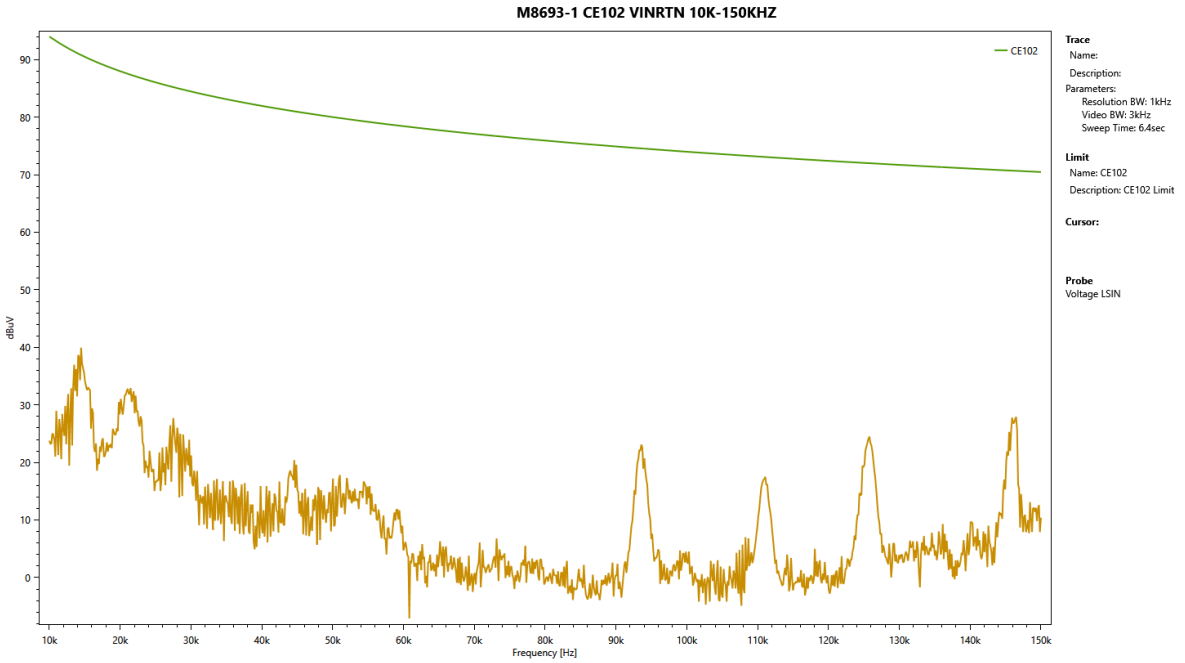
Test Results CE102 Low range Vin



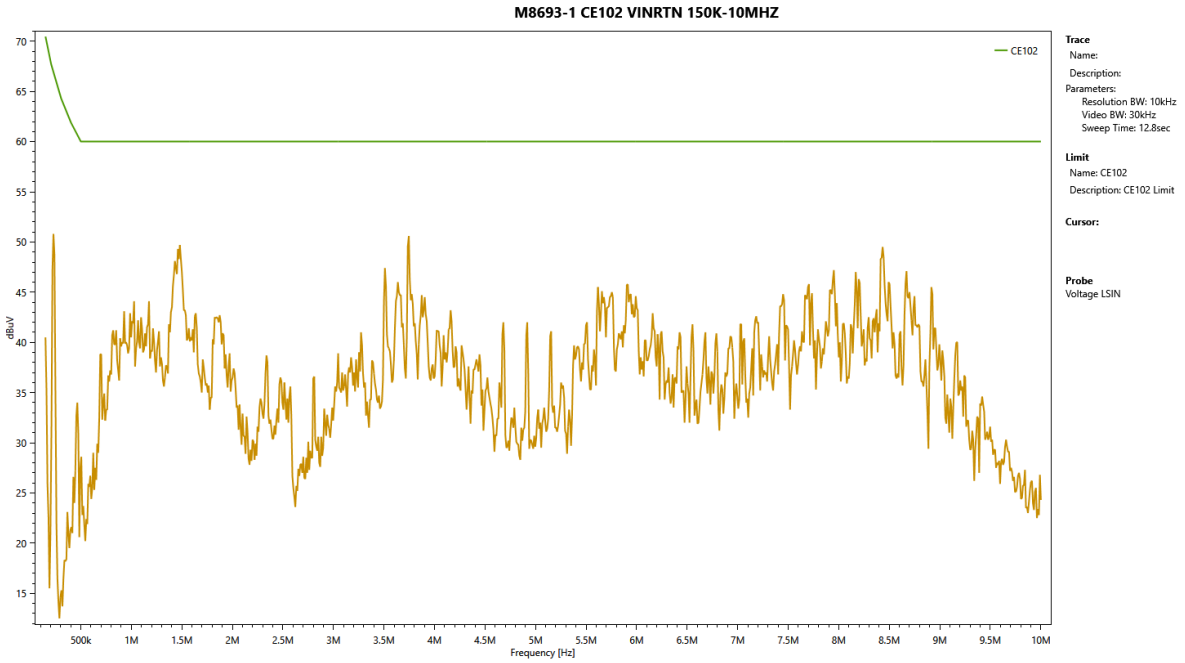
Test Results CE102 High range Vin



Test Results CE102 Low range Vin RTN



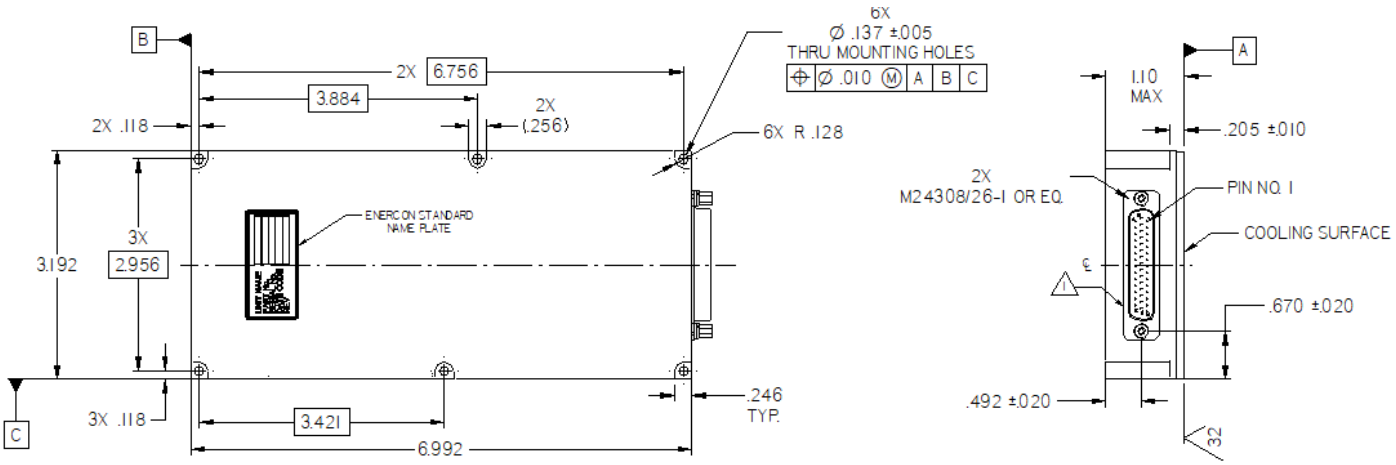
Test Results CE102 High range Vin RTN



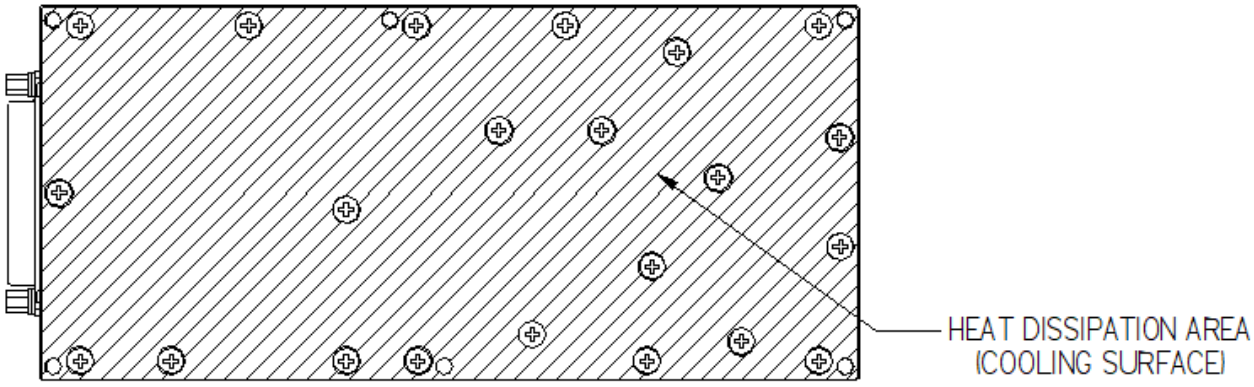
OUTLINE DRAWING

For detailed dimensions and tolerances see Drawing: M8696001

CONNECTOR- INPUT/OUTPUT: MALE CONNECTOR, POSITRONIC DD44M4000C-15 OR EQ.



HEAT DISSIPATION SURFACE



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