

## 500 Watt, Single Output Military Grade DC to DC Converter

### Product Description

This unit is a 500 watt, single output, military grade dc to dc converter designed for electronic systems operating in harsh environments (subject to abnormal shock and vibration) and extreme temperature conditions. It is conduction cooled providing a -55° to +85° C operating temperature range. This highly reliable design will meet or exceed all applicable military standards including MIL-STD-810D & MIL-STD-461C.

### Product Features

- Meets MIL-STD-704A/704D
- Meets MIL-STD-1275A
- Meets MIL-STD-461C
- Meets MIL-STD-810D
- Wide Range Input: 18-48Vdc
- Operating Temperature Range: -55° to +90° C



### DC Input

- Voltage Input Range: 28VDC (18-48Vdc input range)

### Output Selection Guide

Model #:	Voltage	Max Current	Regulation	Ripple
M7025-1	3.3Vdc	128.8 Amps	±3%	50mV pk-pk
M7025-2	5.0Vdc	90.0 Amps	±3%	50mV pk-pk
M7025-3	9.0Vdc	52.7 Amps	±1%	120mV pk-pk
M7025-4	12Vdc	41.6 Amps	±1%	120mV pk-pk
M7025-5	15Vdc	33.3 Amps	±1%	150mV pk-pk
M7025-6	19Vdc	26.3 Amps	±1%	150mV pk-pk
M7025-7	24Vdc	20.8 Amps	±1%	240mV pk-pk
M7025-8	28Vdc	17.8 Amps	±1%	240mV pk-pk
M7025-9	36Vdc	13.8 Amps	±1%	240mV pk-pk
M7025-10	48Vdc	10.4 Amps	±1%	240mV pk-pk

**Note:** Alternate output voltages are available, consult factory for availability.

## DC Output Characteristics (floating)

- Output Power: 500 Watts (maximum continuous power, may require derating for some low voltage outputs)
- Line Regulation:  $\pm 1.0\%$  Typical
- Load Regulation:  $\pm 2.0\%$  Typical (No load to full load; nominal input)
- Output Ripple/Noise: 1% Typical (pk-pk; nominal input; full load; 20MHz bandwidth)
- Set Point Accuracy:  $\pm 1.0\%$  of Output Voltage (Nominal input; full load; 25°C)
- Transient Response: Output voltage returns to within 1% in less than 2.5mS for a 50% load change and the peak transient does not exceed 5%.
- Overshoot: Turn-on and turn-off overshoot should not exceed 5% over nominal voltage.

## Electrical Characteristics

- Switching Frequency: 250KHz Fixed
- Efficiency: 85% Typical (Measuring at 28Vdc and at full load)
- Isolation Voltage: 200V between input and output. 100V between input and case.
- Temperature Regulation:  $\pm 2.0\%/^{\circ}\text{C}$  ( $\pm .005\%/^{\circ}\text{C}$  max; over operating temp range)

## Protection

- Over Current Limit:  $\sim 115$  to 120% of maximum rating. Hiccup, continuous.
- Over-Voltage Setpoint:  $\sim 115\%$  of nominal main. Unit latched 1 minute, recycle AC input to reset at 25°C.
- Short Circuit: Auto-Recovery after short circuit condition is removed.
- Over temperature Protection: Shutdown at baseplate temperature of  $+105^{\circ}\text{C}$  ( $\pm 5^{\circ}\text{C}$ ) Automatic recovery at baseplate temperature lower than  $+95^{\circ}\text{C}$  ( $\pm 5^{\circ}\text{C}$ )

## Environmental

- Operating Temperature:  $-55^{\circ}$  to  $+85^{\circ}$  C (baseplate)
- Storage Temperature:  $-55^{\circ}$  to  $125^{\circ}$  C
- Operating Humidity: 5% to 90% RH, Non-condensing
- Storage Humidity: 5% to 95% RH, Non-condensing
- Operating Altitude: Sea-level to 40,000 ft. in pressurized environment
- Shock & Vibration Standards: MIL-STD-810D
- Conducted EMI: Meets MIL-STD-461C requirements CE03, CE07, CS01, CS02, CS06, RE02, RS02, & RS03
- Cooling: Conduction cooled, coldplate mounting

## Reliability

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

## Mechanical

- Outline Dimensions: ~0.81" X 3.1" X 5.4" (H X W X L) – not including I/O connector
- Weight: ~12.3 oz. (355 grams)
- DC Input & Output Connector: 37 Pin D-Sub M24308/26-1 or equiv.

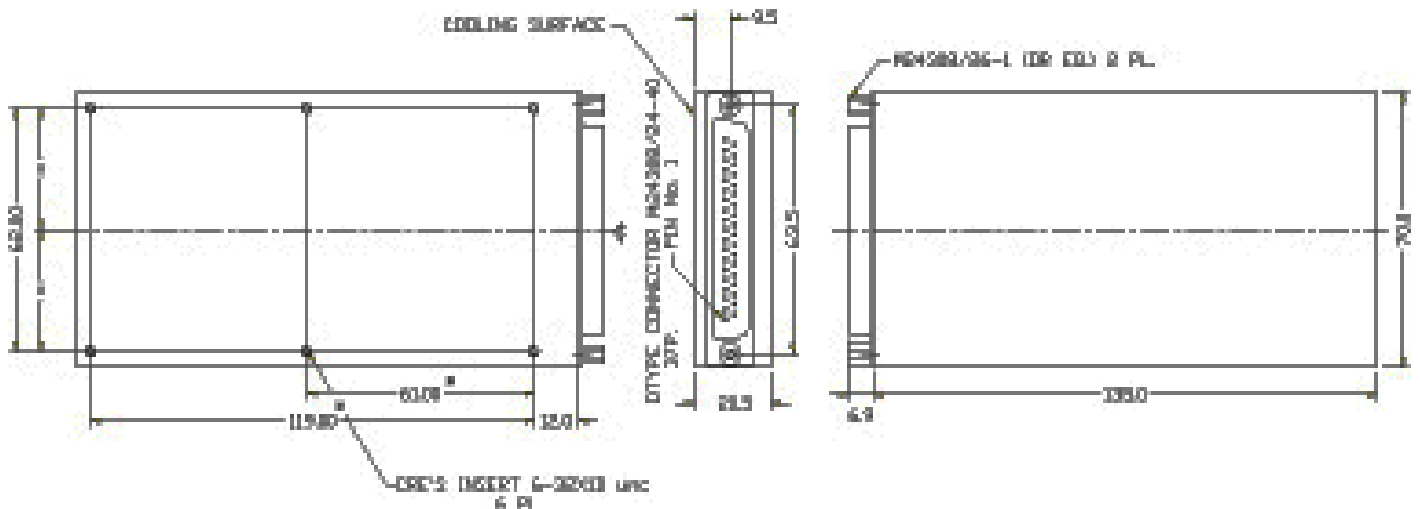
## Additional Features, Controls or Alarms

- Remote External Synchronization Capability In/Out
- TTL Logic Enable
- Remote Sense
- Parallel Operation

## Notes

- Some specifications have not been tested for actual compliance and can not be guaranteed to meet 100% compliance during system testing.
- Product specifications subject to change without notice. All rights reserved.
- The information and specifications contained in this document are believed to be correct and accurate at the time of publication. DSC Power Solutions, Inc. accepts no responsibility for consequences

## Outline Drawing



### Notes:

1. Dimensions are in Inches [mm]
2. Tolerance is:
  - .XX ±.02 IN
  - .XXX ±.01 IN
3. Weight: 12.32 Oz (355 gr)
4. The +SENSE and -SENSE pins must be connected to the +OUT and -OUT pins, respectively.

## Pinout Assignments

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment	Pin #	Assignment		
1	+SENSE	9	-SENSE	17	SHARE	25	-VDC	33	-VDC INPUT
2	+VDC	10	SYNC OUT	18	N/C	26	-VDC	34	-VDC INPUT
3	+VDC	11	INHIBIT	19	N/C	27	-VDC	35	-VDC INPUT
4	+VDC	12	+VDC INPUT	20	+VDC	28	-VDC	36	N/C
5	-VDC	13	+VDC INPUT	21	+VDC	29	SYNC IN	37	SIGNAL RTN
6	-VDC	14	-VDC INPUT	22	+VDC	30	+VDC INPUT	38	
7	-VDC	15	-VDC INPUT	23	+VDC	31	+VDC INPUT	39	
8	-VDC	16	N/C	24	+VDC	32	+VDC INPUT	40	