

# M7525 SERIES

## DC/DC POWER SUPPLY



### PRODUCT HIGHLIGHTS

- DC/DC CONVERTER
- 18V<sub>DC</sub> to 48V<sub>DC</sub> INPUT
- Extended Input Range Option
- SINGLE OUTPUT
- 3.3 V<sub>DC</sub> to 50 V<sub>DC</sub>
- UP TO 800W
- Peak power (short period):  
1kW

### Applications

Military (Airborne, ground-fix, shipboard), Ruggedized, Telecom, Industrial

### Special Features

- Miniature size
- High efficiency
- Wide input range
- Input-to-output isolation
- Remote sense compensation
- Remote inhibit (ON/OFF)
- Fixed switching freq. (250 kHz)
- External sync. capability
- EMI filters included
- Indefinite short circuit protection with auto-recovery
- Over-voltage clamp with auto-recovery
- Over temperature shutdown with auto-recovery

### Electrical Specifications

#### DC Input

Voltage range: 18 to 48V<sub>DC</sub> Transient protection:  
No damage due to surges IAW MIL-STD-1275A (100V for 50ms)  
MIL-STD-704A (80V for 0.1s)

#### **Extended input range option:**

16-100 V<sub>DC</sub> IAW MIL-STD-1275E

**Please consult factory for details.**

#### Output Voltage Regulation

Up to ±1% (no load to full load, –55°C to +85°C and over input voltage range).

#### Ripple and Noise

Less than 50mV<sub>p-p</sub>, typical (max. 1%) without external capacitance. When connected to system capacitance ripple drops significantly.

#### DC Output

Voltage range: 3.3V to 50V<sub>DC</sub> Current range: up to 50A Power range: 800W

**Peak power (short period- up to 4 seconds): 1kW**

#### Efficiency

Typical 87% (28V<sub>DC</sub> output, nominal input voltage, full load, room temperature)

#### Transient Over- and Undershoot

Output resistance at load change of 50%-100% is 30-120mΩ (depending on output voltage). Output back to steady stated within 500-800μs.

#### Isolation

Input to Output:  
200V<sub>DC</sub> Input to Case:  
200V<sub>DC</sub> Output to Case: 100V<sub>DC</sub>

#### EMC

Designed to meets\* MIL-STD-461F  
CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103.

#### Turn on Transient

No voltage overshoot during power on.

\* Compliance achieved with 5μH LISN, shielded harness and static resistive load.

**Protections \***

**Input**

- **Under Voltage Lock Out**  
Unit shuts down when input voltage falls below  $16.5V_{DC} \pm 1V_{DC}$   
**For Extended input range option - Please consult factory for details.**
- **Over Voltage Lock Out**  
Unit shuts down when input voltage rises above  $52V_{DC} \pm 2V_{DC}$   
**For Extended input range option - Please consult factory for details.**
- **Input Reverse Polarity:**  
Protection for unlimited time

**Output**

- **Active Over-Voltage Protection**  
The converter output voltage clamp if it exceeds  $110\% \pm 5\%$  of the nominal voltage.
- **Passive Over-Voltage Protection**  
Load protected by a transorb rated  $120\% \pm 10\%$  above nominal output voltage.
- **Overload Protection (Hiccup)**  
Continuous protection ( $20\% \pm 10\%$  above maximum current) for unlimited time.

**General**

- **Over Temperature Protection**  
The converter shuts down if baseplate temperature exceeds  $+105^{\circ}C \pm 5^{\circ}C$ . The converter automatically recovers when its baseplate temperature falls back below  $+95^{\circ}C \pm 5^{\circ}C$ .

**Environmental**

Design to Meet MIL-STD-810F

**Temperature**

Operating:  $-55^{\circ}C$  to  $+85^{\circ}C$   
(base plate)  
Storage:  $-55^{\circ}C$  to  $+125^{\circ}C$

**Humidity**

Method 507.4  
Procedure I  
  
Up to 95% RH

**Altitude**

Method 500.4  
  
Procedure I & II,  
Up to 70,000 ft. operational

**Vibration (random)**

Method 514.5  
Category 4 - General minimum integrity exposure  
  
IAW Figure 514.5C-17  
1 hour per axis.

**Salt Fog**

Method 509-4

**Shock**

Method 516.5  
Procedure I  
  
30g, 11ms terminal peak saw-tooth.

***Reliability***

150,000 hours, calculated per MIL-STD-217F Notice 2 at +85°C baseplate, Ground Fixed environment.

***Environmental Stress Screening (ESS)***

Including random vibration and thermal cycles is also available. **Please consult factory for details.**

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\* Thresholds and protections can be modified / removed – please consult factory.

**Pin Assignment**

**Input connector - J1**

**Connector type:** M24308/24-39F or eq.

**Mates with:** M24308/2-3F or eq.

Pin No.	Function	P	Pin No.	Function	P	Pin No.	Function	P
1	INPUT	+	10	INPUT RTN	-	19	INPUT RTN	-
2	INPUT	+	11	CHASSIS		20	INPUT RTN	-
3	INPUT	+	12	INHIBIT	+	21	INPUT RTN	-
4	INPUT	+	13	SIGNAL RTN	-	22	INPUT RTN	-
5	INPUT	+	14	INPUT	+	23	INPUT RTN	-
6	N.C.		15	INPUT	+	24	N.C.	
7	INPUT RTN	-	16	INPUT	+	25	SYNC	+
8	INPUT RTN	-	17	INPUT	+			
9	INPUT RTN	-	18	N.C.				

**Output connector – J2**

**Connector type:** M24308/23-39F or eq.

**Mates with:** M24308/4-3F or eq.

Pin No.	Function	P	Pin No.	Function	P	Pin No.	Function	P
1	SENSE	+	10	OUTPUT RTN	-	19	N.C.	
2	OUTPUT	+	11	OUTPUT RTN	-	20	N.C.	
3	OUTPUT	+	12	OUTPUT RTN	-	21	OUTPUT RTN	-
4	OUTPUT	+	13	SENSE RTN	-	22	OUTPUT RTN	-
5	OUTPUT	+	14	OUTPUT	+	23	OUTPUT RTN	-
6	OUTPUT	+	15	OUTPUT	+	24	OUTPUT RTN	-
7	N.C.		16	OUTPUT	+	25	OUTPUT RTN	-
8	OUTPUT RTN	-	17	OUTPUT	+			
9	OUTPUT RTN	-	18	OUTPUT	+			

NOTE: All pins with identical function/designation should be connected together for best performance.

### ***Functions and Signals***

#### **INHIBIT**

Description: The INHIBIT IN signal is used to turn the power supply ON and OFF.

Use: High or OPEN – will turn on the power supply. (For normal operation leave the signal not connected.)

Low or SHORT – will turn off the power supply.

Referenced to: SIGNAL RTN

#### **SYNC**

Description: Synchronizes internal switching frequency to system clock. Use: Apply TTL level, 250 kHz  $\pm$  10 kHz, 50% duty-cycle clock.

Leave open if unused. In this case, the switching frequency will be set by the internal clock (250 kHz)

Referenced to: SIGNAL RTN

#### **SIGNAL RTN**

Description: Signals return reference.

Referenced to: Connected by a 100  $\Omega$  resistor to INPUT RTN

#### **SENSE**

Description: Used to achieve accurate voltage regulation at load terminals, to compensate for voltage drop across the leads connecting the converter to the load, 0.25 V  $\pm$  0.1 V

Use: Connect SENSE line directly to the load's positive terminal, and SENSE RTN directly to the load's negative terminal.

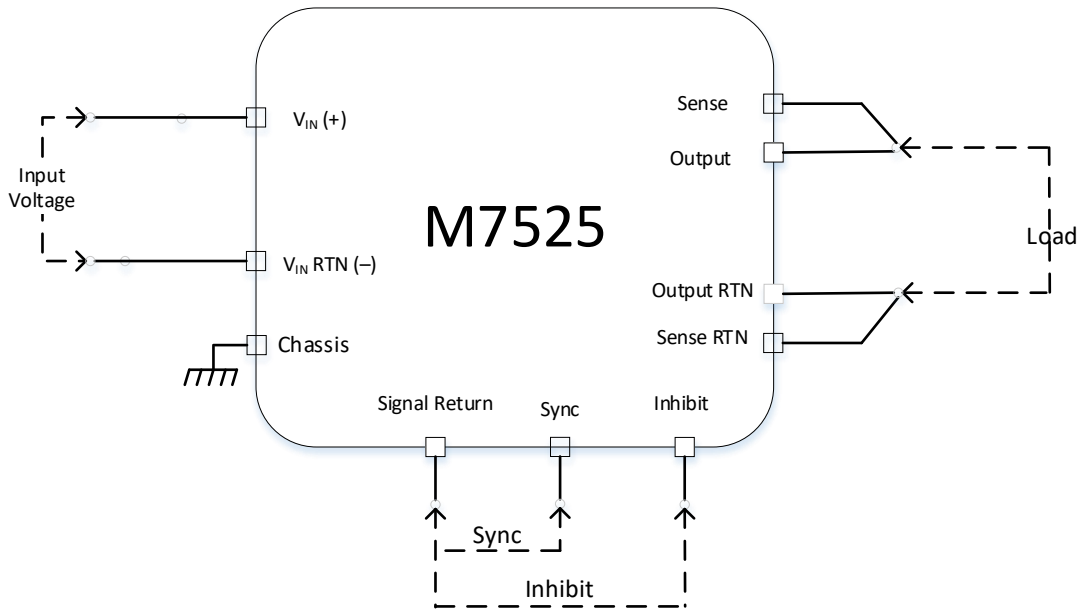
If not used, connect SENSE to OUTPUT and SENSE RTN to OUTPUT RTN. Do not leave open!

#### **POR (Protection Override) - Optional**

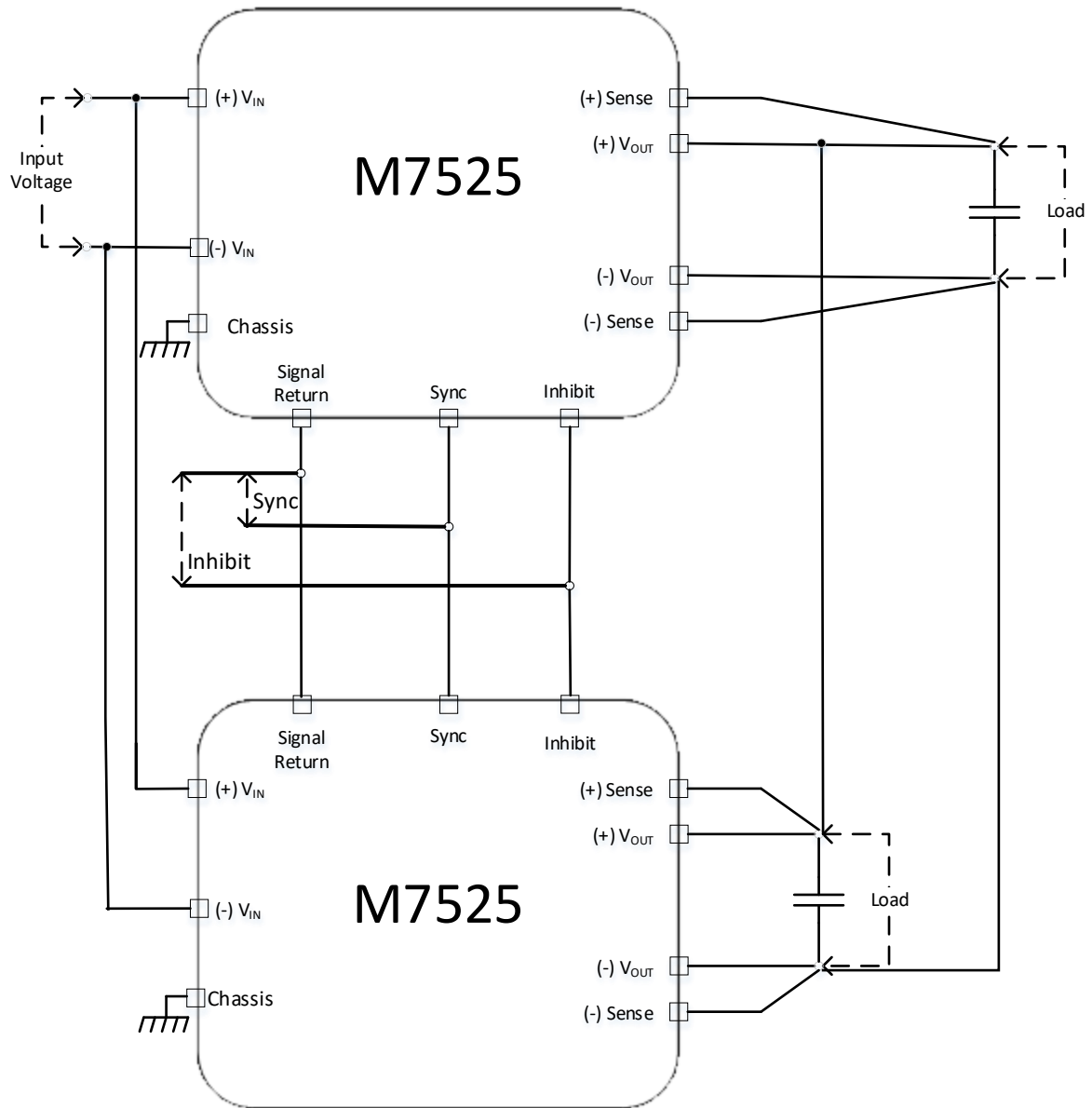
Description: The **POR** signal disables the input under voltage lockout, input over voltage lockout, over temperature protection and peak load duration limiter.

**Please consult factory for details.**

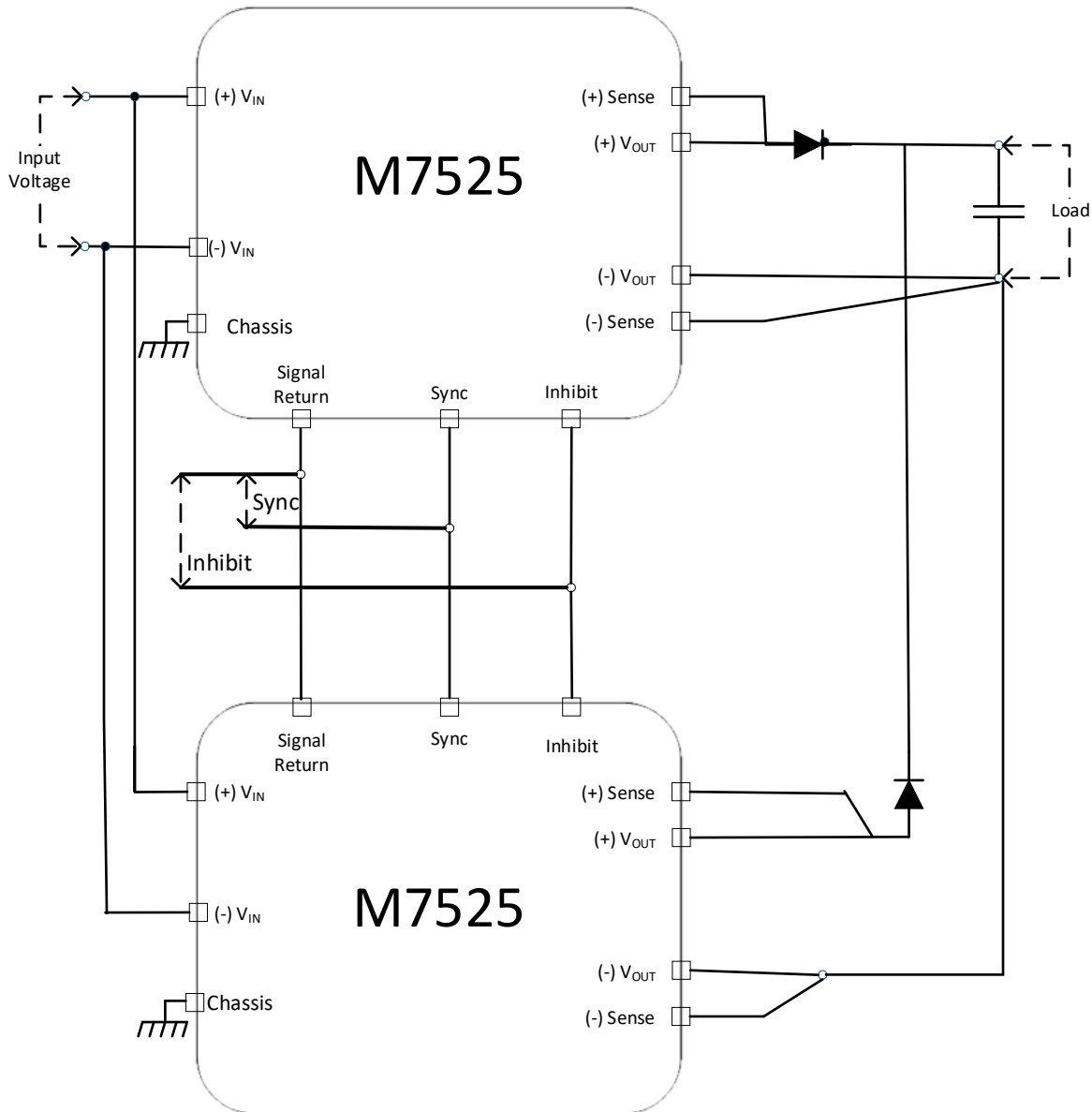
**Typical Connection**



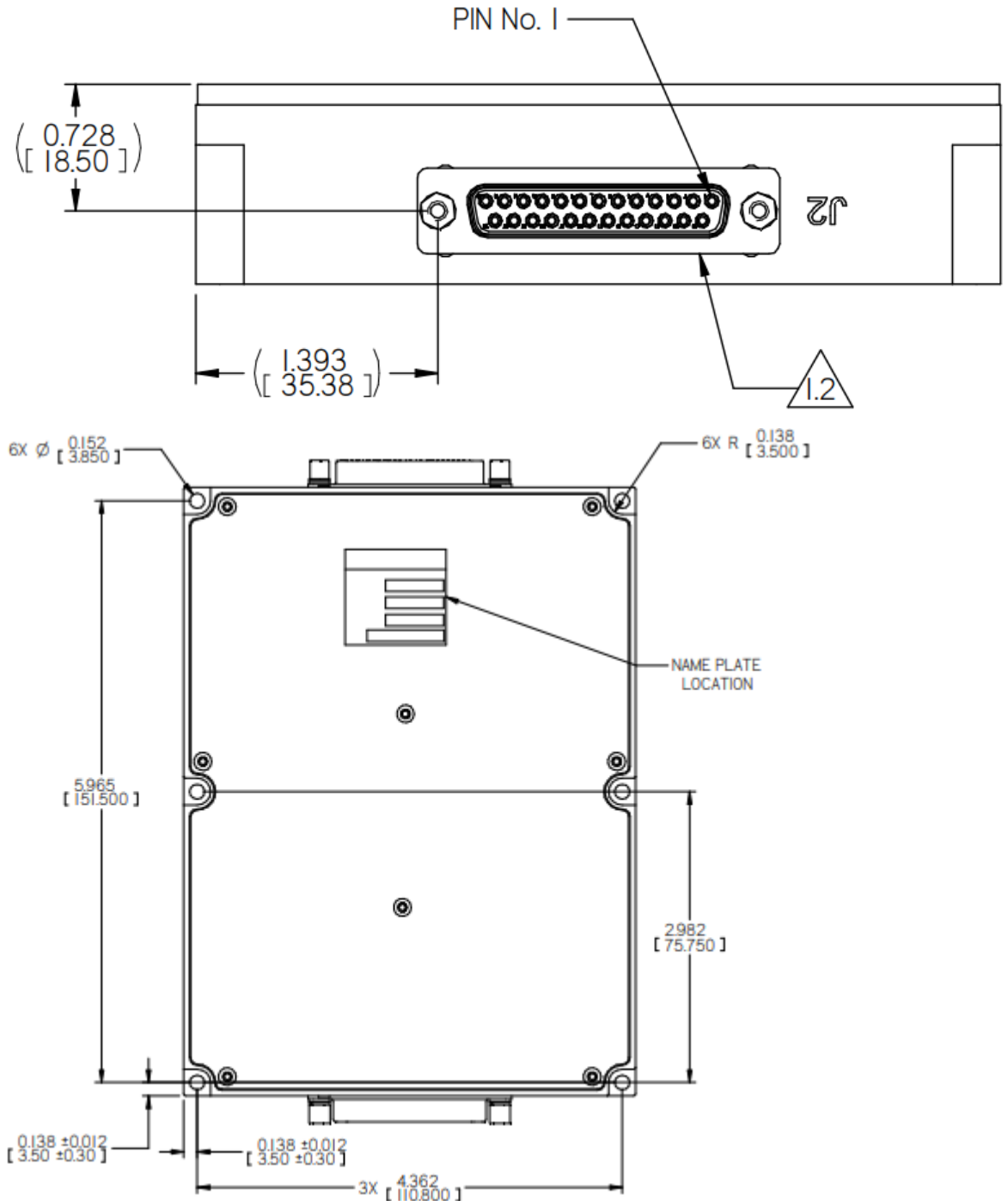
*Parallel Connection Diagram*



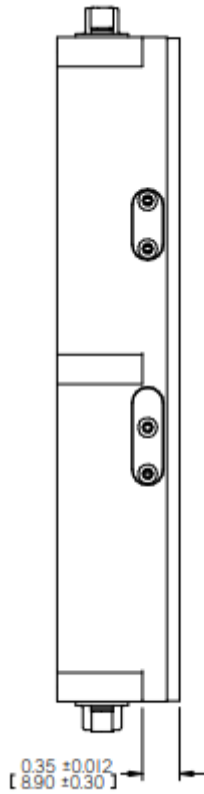
*Redundant Connection Diagram*



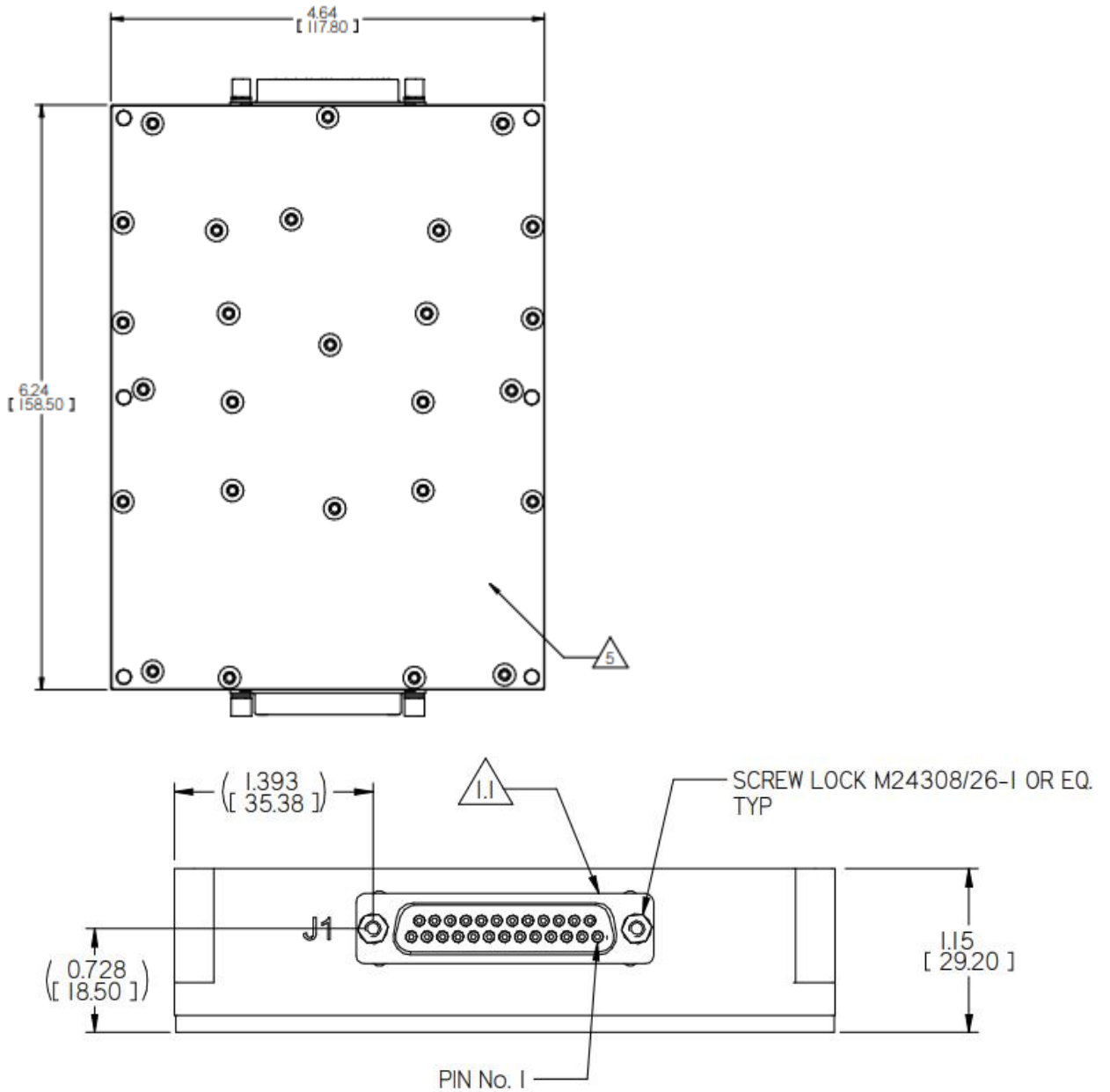
*Outline Drawing*



## M7525 Series– DC/DC Power Supply



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NOTES :

I. CONNECTORS:

I.1 - INPUT PLUG D-TYPE CONN. 25P, P/N: M24308/24-39F OR EQ.

I.2 - OUTPUT SOCKET D-TYPE CONN. 25P, P/N: M24308/23-39F OR EQ.

2. WORKMANSHIP SHALL BE MIL-STD-454, REQT. 9

3. MTL. AL 6061-T65I& AL 5052-H32

4. CHROMATE CONVERSION COATING PER  
MIL -DTL-554IF, TYPE 1 OR 2 CLASS IA

5. HEAT DISSIPATION SURFACE: 17,700 mm<sup>2</sup>

6. ENGRAVING:

CHARACTERS HEIGHT: 4 (mm), DEPTH: 0.4 (mm).

ENGRAVING FILLED WITH BLACK COLOR.

**Notes**

1. Dimensions are in mm [inch]
2. Tolerance is:  
.XX ± .02 [0.50]  
.XXX ± .006 [0.15]
3. Weight: TBD

## Standard Configurations

Part Number	Input	Output		Special features
	Voltage range	Voltage	Current	
M7525-100	18 to 48 V <sub>DC</sub>	5 V <sub>DC</sub>	50 A	
M7525-101	18 to 48 V <sub>DC</sub>	12 V <sub>DC</sub>	50 A	
M7525-102	18 to 48 V <sub>DC</sub>	15 V <sub>DC</sub>	50 A	
M7525-103	18 to 48 V <sub>DC</sub>	24 V <sub>DC</sub>	33 A	
M7525-104	18 to 48 V <sub>DC</sub>	28 V <sub>DC</sub>	28 A	
M7525-105	18 to 48 V <sub>DC</sub>	48 V <sub>DC</sub>	16 A	
M7525-106	18 to 48 V <sub>DC</sub>	28 V <sub>DC</sub>	28 A	Parallel operation via output voltage droop. Voltage regulation is ±2%.
M7525-107	18 to 48 V <sub>DC</sub>	48 V <sub>DC</sub>	16 A	Parallel operation via output voltage droop. Voltage regulation is ±2%.
M7525-108	18 to 48 V <sub>DC</sub>	24 V <sub>DC</sub>	33 A	Parallel operation via output voltage droop. Voltage regulation is ±2%.
M7525-800	18 to 48 V <sub>DC</sub>	5 V <sub>DC</sub>	50 A	
M7525-801	18 to 48 V <sub>DC</sub>	12 V <sub>DC</sub>	50 A	
M7525-802	18 to 48 V <sub>DC</sub>	15 V <sub>DC</sub>	50 A	
M7525-803	18 to 48 V <sub>DC</sub>	24 V <sub>DC</sub>	33 A	
M7525-804	18 to 48 V <sub>DC</sub>	28 V <sub>DC</sub>	28 A	
M7525-805	18 to 48 V <sub>DC</sub>	48 V <sub>DC</sub>	16 A	
M7525-806	18 to 48 V <sub>DC</sub>	28 V <sub>DC</sub>	28 A	Parallel operation via output voltage droop. Voltage regulation is ±2%.
M7525-807	18 to 48 V <sub>DC</sub>	48 V <sub>DC</sub>	16 A	Parallel operation via output voltage droop. Voltage regulation is ±2%.
M7525-808	18 to 48 V <sub>DC</sub>	24 V <sub>DC</sub>	33 A	Parallel operation via output voltage droop. Voltage regulation is ±2%.

### Special Features for M7525-800 to 808:

- M7525-8xx: this variant is REACH Compliant
- M7525-8xx: The aluminum parts comprising this converter are chromate conversion coated per MIL-DTL-5541F, Type II CLASS 1A or eq.
- M7525-8xx: The shell of the connectors are Zinc:
  - **Input connector - J1**  
Connector type: M24308/24-39Z or eq.
  - **Output connector – J2**  
Connector type: M24308/23-39Z or eq.

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