M7427 SERIES

SINGLE-OUTPUT, 500W DC TO DC BASEPLATE COOLED SEALED POWER SUPPLY

The M7427 is a series of mechanically robust, base-plate cooled, high performance, power supplies, designed for applications where 28VDC has to be converted to a tightly regulated, filtered and protected DC output.



Standard Models List (for other voltages – consult factory)

Part Number	Input	Output		Power	Special features
	Voltage range	Voltage	Current		
M7427-100	18 to 50 V_{DC}	12 V_{DC}	40 A	480W	Peak Power 540W for 2 sec
M7427-101	18 to 50 V_{DC}	15 V_{DC}	33 A	495W	Peak Power 600W for 2 sec
M7427-103	18 to 50 V_{DC}	28 V_{DC}	18 A	504W	Peak Power 750W for 4 sec
M7427-104	18 to 50 V_{DC}	48 V_{DC}	10.5A	504W	Peak Power 750W for 4 sec
M7427-105	18 to 50 V_{DC}	24 V_{DC}	21 A	504W	Peak Power 750W for 4 sec
M7427-106	18 to 50 V_{DC}	28 V_{DC}	18A	504W	Peak Power 750W for 4 sec Parallel operation via output voltage droop. Voltage regulation is ±2%.

- 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 M7427 ARE:

- DC/DC Single outputs power supply up to 500W
- 750W Power peak for 4 sec for output voltage above 24Vdc
- 600W peak power for 2 sec for output voltage below 24Vdc
- Sealed enclosure
- 18 to 50VDC Standard Input version
- For standard Input version No damage due to abnormal transients IAW MIL-STD-1275E (100 V / 50 ms) and MIL-STD-704A (80 V / 0.1 s)
- For extended input version 12 to 100VDC operation - **Please contact factory for more details**
- High efficiency – up to 90% (depending on output voltage).
- Full galvanic isolation between Input, Chassis and Outputs
- Fixed switching freq. (250 kHz)
- EMI filters included
- Indefinite short circuit protection with auto-recovery
- Over-voltage protection
- Over temperature shutdown with auto-recovery
- High density
- Conduction cooled via the baseplate

SPECIFICATIONS:

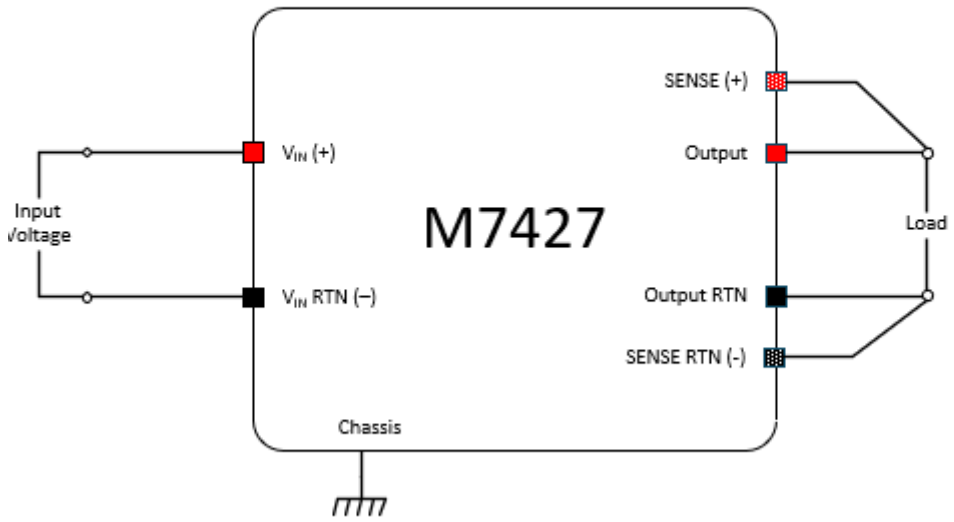
DC Input	***Voltage Range***	18 to 50 V_{DC} **Extended input range option:** 12 to 100 V_{DC} IAW MIL-STD-1275E
	Isolation	Input to Output: 200 VDC Input to Case: 200 VDC
	Input Reverse Polarity	Protection for unlimited time
	Under-Voltage Lock-Out	The unit shuts down below 15V ± 1V*. Resumes operation at 17V ± 1V*. Min. hysteresis 2V*. *Estimated values.
	Over-Voltage Lock-Out	The unit shuts down above 55V ± 4V. Optional: At 12-100V input unit shuts down 105 ±2V
DC Output	***Rating***	See table on page 9
	Voltage Regulation	Better than or equal to ±1% (low to high line voltage, no load to full load, –55 °C to +80 °C at baseplate).
	Remote Sense	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). For output voltage above 8V, the use of remote sense has a max limit of 0.25V voltage dropout between converter's output and load terminals. For output voltage below 8V, the use of remote sense has a max limit of 0.5V voltage dropout between converter's output and load terminals. When not used connect SENSE 1 to OUT 1 and SENSE 1 RTN to OUT 1 RTN.
	Ripple	Less than 50 mVp-p, typical (max. 1% of output voltage)
	Isolation	Output to Case: 100 VDC
	Overvoltage Protection	• **Active Over-Voltage Protection:** The secondary control circuit takes the over if output voltage exceeds 110% ± 5% of nominal voltage. Beyond this, output voltage clamps. • **Passive Over-Voltage Protection:** Zener diode installed on output terminals, selected at 120% ± 10% of nominal voltage.

	Peak Load Duration Limiter	Peak load is enabled for 2- 4 seconds. Beyond this, output voltage folds to limit the output power to the nominal value.
	Efficiency	Typical: 88% - 90% Extended input range: 83% - 86% ($28V_{DC}$ output, nominal input, full load, room temperature)
	Current Limit & Overload	Output voltage turns off and on periodically with low duty cycle (hiccup) to protect system conductors and converter from short circuit **Optional:** Continuous protection for unlimited time. **If this feature is required please consult factory.**
	Over Temp. Protection	Output shuts down if base plate temperature exceeds +100°C ± 5°C. Automatic recovery when baseplate temperature returns to below +95°C ± 5°C.

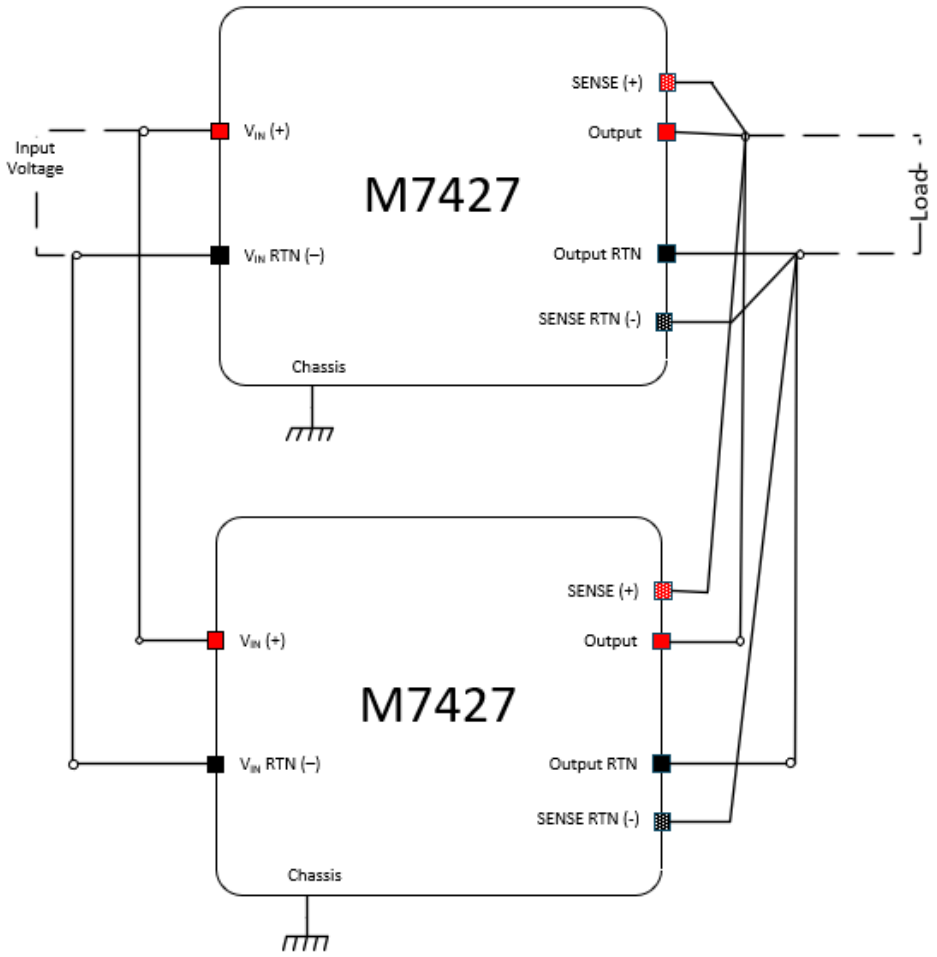
Specifications (Cont.):

Environment Designed to meet MIL-STD-810F	***Temperature***	Methods 501.4 & 502.4 Operating: –55 °C to +80 °C (at baseplate) Storage: –55 °C to +125 °C (ambient)
	Humidity	Method 507.4 Up to 95% RH
	Salt-fog	Method 509.4
	Altitude	Method 500.4 Procedures I – Storage/Air transport: up to 70,000 ft. (non-operational) Procedure II – Operation/Air Carriage: up to 70,000 ft. (operational)
	Mechanical Shock	Method 516.5 Procedure I 50 g / 11 ms terminal peak half-sine shock pulse
	Vibration	Method 514.5 Procedure I 14.76 g_{rms} 20-2000 Hz for 500 seconds at each of 3 perpendicular axes.
	Rain	Method 506.4 Procedures I - Rain and Blowing Rain Procedure III - Drip
	Fungus	Does not support fungus growth, in accordance with the guidelines of MIL-STD-454, Requirement 4.
IP Rating	Designed to meet IP67	
EMI	***MIL-STD-461F***	Meets* MIL-STD-461F CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103 *EMI Compliance achieved with 5µH LISN, shielded harness and static resistive load. (Optional: 50 µH – Please consult factory)
Reliability	150,000 hours, calculated per MIL-HDBK-217F Notice 2 at +85 °C baseplate, Ground Fix conditions.	
Cooling Requirements	The M7427 is a baseplate cooled unit. The base of the M7427 should be thermally attached to a suitable heatsink that maintains it below +80 °C.	
Weight	Typical 2.1 kg	

TYPICAL CONNECTION DIAGRAM



PARALLEL OPERATION - TYPICAL CONNECTION DIAGRAM



Note: Parallel operation via output voltage droop. Voltage regulation is ±2%.

Outputs Range

Output #	Voltage Range	Current Range	Output Regulation	Power Range
1	12 to 50 V_{DC}	40A max	±1%	500W max

PIN ASSIGNMENT: J1 - INPUT CONNECTOR

Connector type J1: D38999/24TG16PN OR EQ.
Mates with: TBD

Function	Pin #
Vin	S,R,P,N,M,C
Vin_RTN	L,K,J,H,A,B

PIN ASSIGNMENT: J2 - OUTPUT CONNECTOR

Connector type J2: D38999/24TG29SN OR EQ

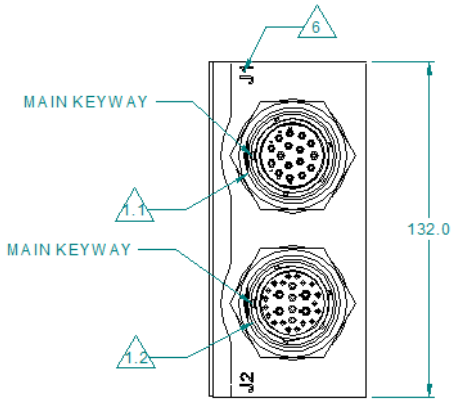
Mates with: TBD

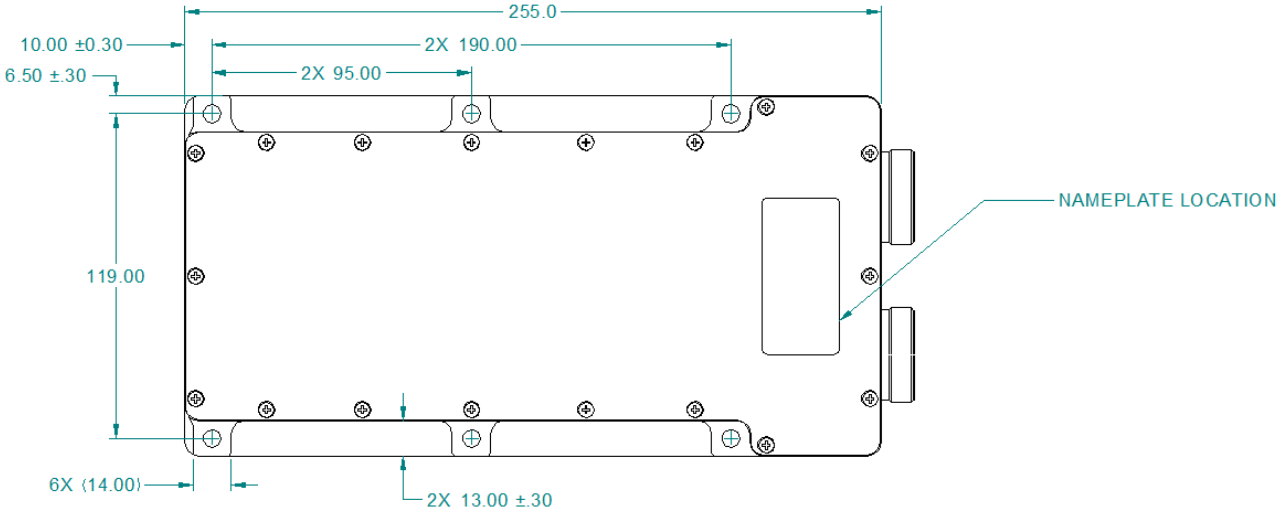
Function	Pin #
Output	11,14,15,16,17,18,19,25
Output RTN	1,2,3,4,5,6,9,20
SENSE	8
SENSE RTN	12

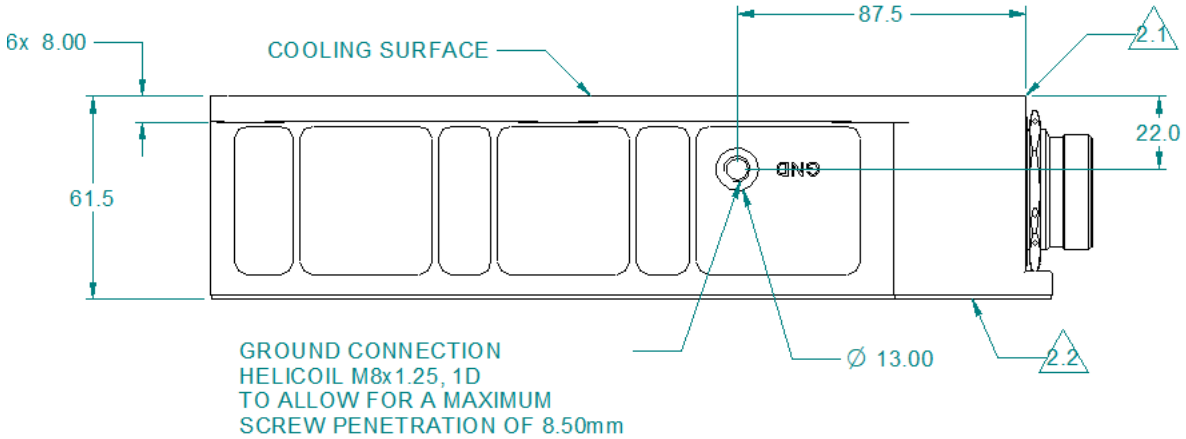
Note: All pins with identical function/designation should be connected together for optimal performance.

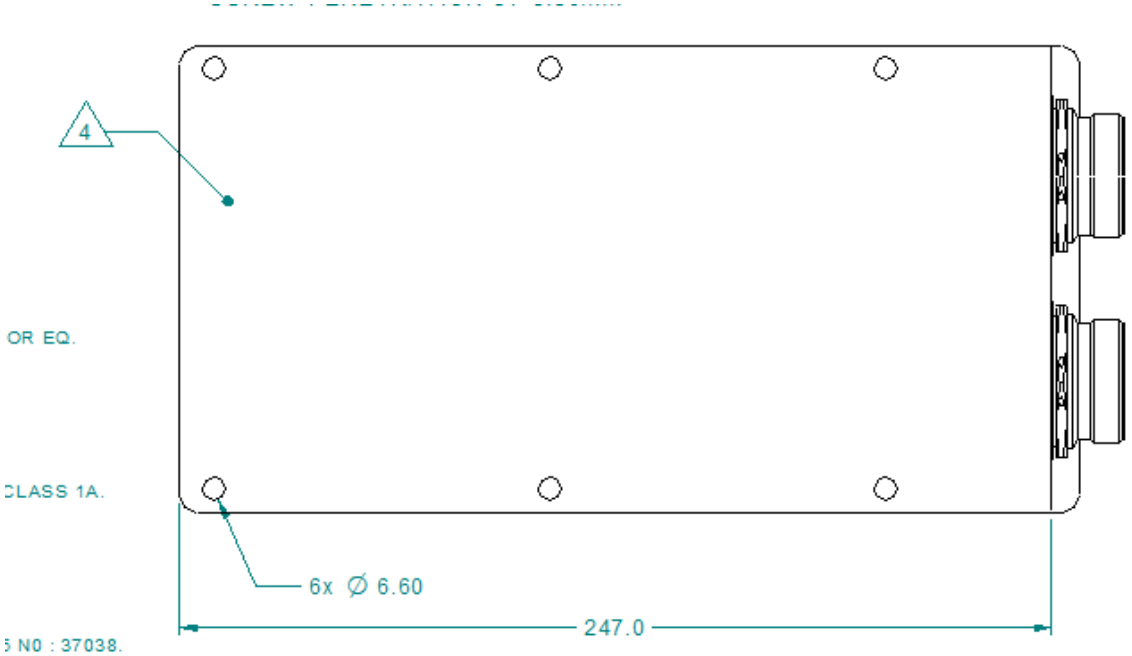
OUTLINE DRAWING:

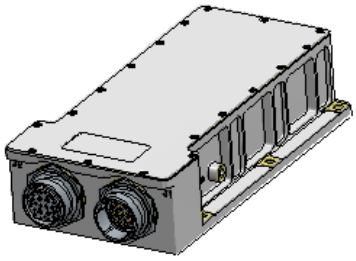
For detailed dimensions and tolerances see Drawing: M7427-105











NOTES :
1. CONNECTORS LIST:
1.1. J1 INPUT - JAM NUT RECEPTACLE 16 MALE CONTACTS (#16) P/N: D38999/24TG16PN OR EQ.
1.2. J2 OUTPUT - JAM NUT RECEPTACLE 27 FEMALE CONTACTS (19#20, 4X#16, 4#12)
P/N: D38999/24TG29SN OR EQ.
2. MTL.
2.1. AL 6061-T6/T651/T6511, OR EQ.
2.2. AL 5052-H32, OR EQ.
3. FINISH:
3.1 CHROMATE CONVERSION COATING PER MIL -DTL-5541, LAST REVISION, TYPE I, CLASS 1A.
4. COOLING: HEAT DISSIPATION AREA- 31,000 [mm²] .
5. WORKMANSHIP SHALL BE MIL-STD-454, REQT. 9
6. ENGRAVING
6.1. CHARACTER HEIGHT : 5.0 MM.
6.2. CHARACTER DEPTH : 0.5 MM.
6.4. CHARACTER ARE CENTRALLY LOCATED,
6.5. FILL ENGRAVING WITH BLACK LUSTERLESS EPOXY PAINT COLOR PER FED-STD 595 N0 : 37038.

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