M7017 SERIES

DC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

- MINIATURE
- HIGH DENSITY
- SINGLE OUTPUT
- DC/DC POWER SUPPLY
- UP TO 200 W CONTINUOUS, 330 W PEAK

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Amphenol
MILITARY HIGH SPEED

M7017 Series– DC/DC Power Supply

Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Remote sense
- External On/Off Inhibit
- High Density – up to 25.3 W/in³
- Fixed switching frequency (250 kHz)
- External synchronization capability
- EMI filters included
- Indefinite short circuit and current limit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

DC Input:
18 to 48V_{DC} per MIL-STD-704F.
Works thorough surges as defined by:
MIL-STD-704A (80V for 0.1 Sec)
No damage for:
MIL-STD-1275A (100V for 50mSec)

DC Output:
Output range – 1.5V to 60V
Output current – up to 15A
Output power – steady state 200W
Peak power – 330W up to 5 Sec (after that overload protection turns output to 70% from output).

Isolation:
200V between Input and Output
200V between Input and Case
100V between Output and Case

Line/Load regulation:
Less than 1% (no load to full load, –55□C to +85□C, and over input voltage range).

Efficiency:
Typical 88-90% - (full load, room temperature) at worst case.

EMC:
Designed to meet* MIL-STD-461F
CE101, CE102, CS101, CS114
CS115, CS116, RE101, RE102
RS101, RS103

Ripple and Noise:
Less than 50mV_{p-p}, typical (max. 100mV) without external capacitance. When connected to system capacitance ripple drops significantly.

Load Transient Overshoot and undershoot
Output change at load transient of 30%-100% with t_r & t_f of max 30µsec is 5% of output voltage. Output recover to steady stated within less 0.5ms.

Turn on Transient
No voltage overshoot during startup.

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

Protections *

Input
- **Input reverse polarity:** Protection for unlimited time
- **Under voltage protection:** Unit protects itself (shutdown) below 15V_{DC}. Turn on at 16V-18V with min. 3V hysteresis to shut down.
- **Over voltage protection** – unit protects itself (shut down) above 86V_{DC}.

Output
- **Electronic over voltage protection:** Internal control protects unit (no damage) 10% above nominal voltage.
- **Passive zener on output:** 20% above nominal voltage.
- **Current limiting:** Continuous protection (10-30% above maximum current) for unlimited time (Hick up).

General
- **Over temperature protection:** Shutdown at base plate temperature of +105□C (□5□C) Automatic recovery at base plate temperature lower than +95□C (□5□C)
- **POR:** Protection override signal for BATTLE SHORT function

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

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Environmental

Design to Meet MIL-STD-810F

Temperature:
Operating: –55°C to +85°C (base plate)
Storage: –55°C to +125°C

Humidity:
Method 507.4 - Up to 95%.

Altitude:
Method 500.4, Procedure I & II, 40,000 ft. and 70,000 ft. Operational

Vibration and Shock:
Shock - Saw-tooth, 30g peak, 11mS.
Vibration - Figure 514.5C-17. General minimum integrity exposure. (1 hour per axis.)

Salt Fog:
Method 509-4

Reliability
150,000 hours, calculated per MIL-STD-217F at +85°C base plate, Ground fixed.

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Pin Assignment

P1 – Input			
Pin No.	Pin Function	Pin No.	Pin Function
1	N/C	9	VIN RTN
2	SYNC	10	VIN RTN
3	INHIBIT	11	VIN
4	POR	12	VIN
5	SIGNAL RTN	13	VIN RTN
6	VIN	14	VIN RTN
7	VIN	15	VIN RTN
8	VIN		

J2 – Output			
Pin No.	Pin Function	Pin No.	Pin Function
1	VOUT RTN	9	N/C
2	VOUT RTN	10	SENSE
3	VOUT RTN	11	VOUT
4	VOUT RTN	12	VOUT
5	VOUT RTN	13	VOUT
6	SENSE RTN	14	VOUT
7	N/C	15	VOUT
8	N/C		

Functions and Signals

INHIBIT signal

The INHIBIT signal is used to turn the power supply ON and OFF.
TTL "1" or OPEN – will turn on the power supply. (For normal operation leave the signal not connected.) TTL "0" or short– will turn off the power supply.

SYNC signal

The SYNC IN signal is used to allow the power supply frequency to sync with the system frequency.
The system frequency should be 250kHz ± 10kHz.
When not connected the power supply will work at 250kHz

SIGNAL RTN

The INPUT SIGNAL RTN is referred to the input.
This is used as grounding for SYNC IN, INHIBIT and POR signals.

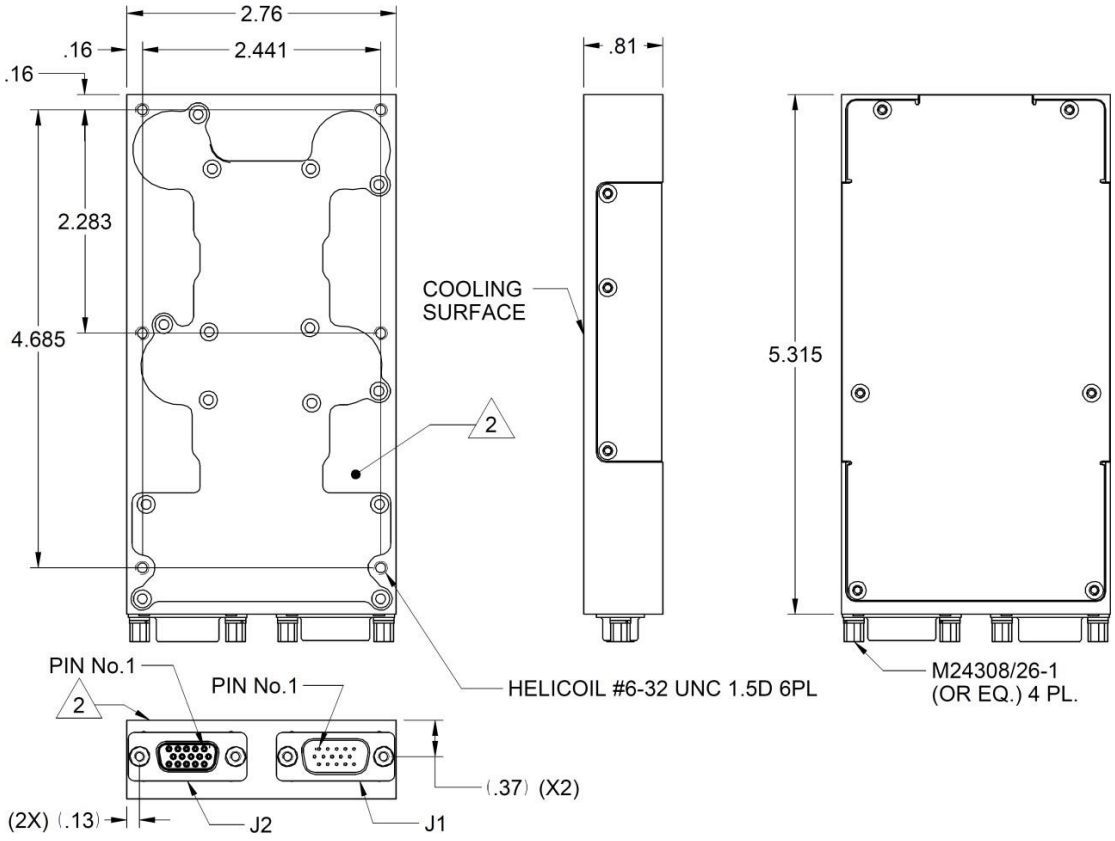
SENSE

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).
The use of remote sense has a limit of voltage dropout between converter's output and load terminals up to 0.5V.
When not used connect + SENSE to +VOUT and –SENSE to –VOUT

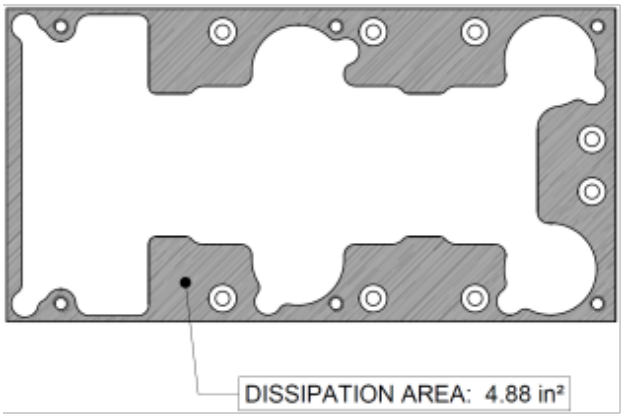
POR (Protection Override)

The POR signal disables the Input Under Voltage protection, Input Over Voltage Protection, Over Temperature protection and Hiccup function (overcurrent and short circuit).
TTL "0" or short – All protections are disabled (override mode).
TTL "1" or OPEN – All protections are enabled (protected mode).

Outline Drawing



Heat Dissipation Surface



Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:
   .XX ± 0.02 IN
   .XXX ± 0.008 IN
3. Weight: Approx. 400g (14.1 oz)
4. Mounting holes can be modified – please consult factory.
5. Parasolid 3D module is available for download on site.

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

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Standard Configurations

Part number	Input voltage range	Output Voltage	Output Current
M7017101	18 to 48 V_{DC}	28.5 V_{DC}	7 A

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