

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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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)

Line/Load regulation:

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

Ripple and Noise:

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

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).

Efficiency:

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

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.

Isolation:

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

EMC:

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

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

J1 Connector type: POSITRONIC P/N: DDI5S4000C-50 OR EQ.

Mates with: POSITRONIC DDI5S4000C or eq

J2 Connector type: POSITRONIC P/N: DDI5S4000C-50 OR EQ.

Mates with: POSITRONIC DDI5S4000C or eq

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 \pm 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

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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).

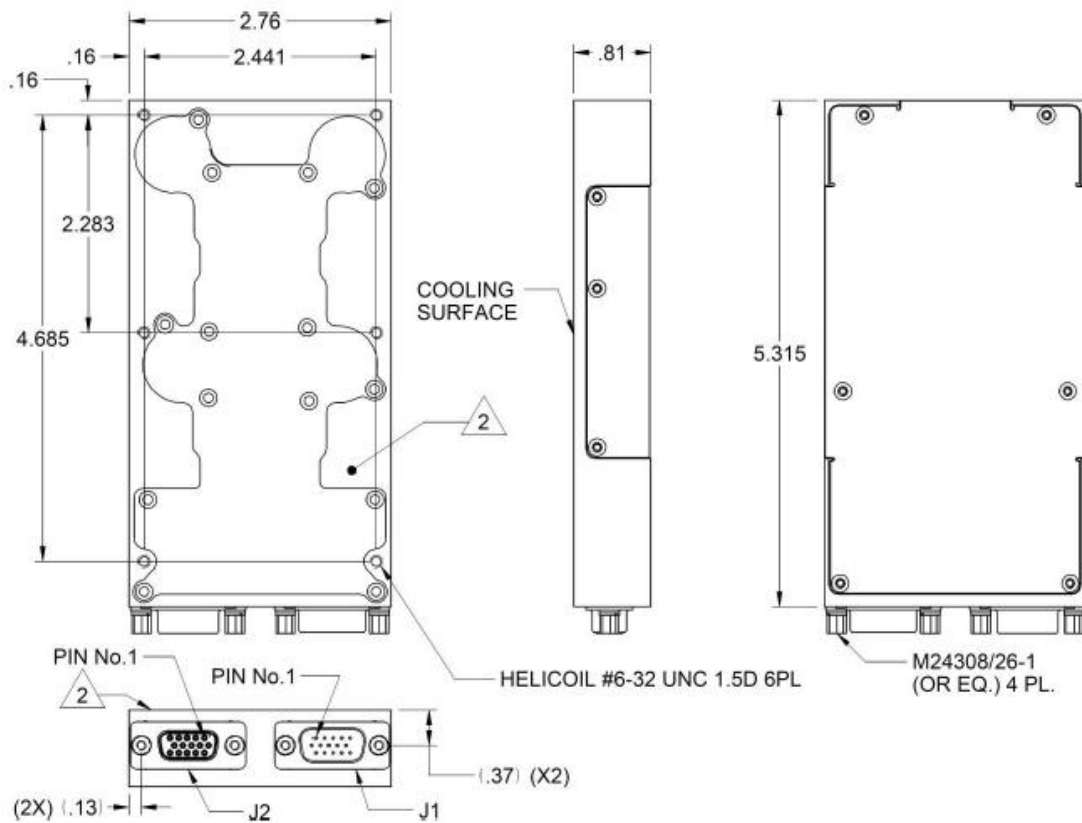
TTL "0" or short – All protections are disabled (override mode).

TTL "1" or OPEN – All protections are enabled (protected mode).

Standard Configurations

Part number	Input voltage range	Output Voltage	Output Current
M7017-101	18 to 48 V _{DC}	28.5 V _{DC}	7 A

Outline Drawing



NOTES:

- CONNECTORS:
J1: INPUT 15P PLUG CONNECTOR - "POSITRONIC" PIN DD15M4000C 50 OR EQ.
J2: OUTPUT 15P RECEPTACLE CONNECTOR - "POSITRONIC" PIN DD15S4000C 50 OR EQ.
- HEAT DISSIPATION AREA - TOTAL AREA 485 IN²
- WORKMANSHIP SHALL BE MIL-STD-454, REPT. 9
- DRILL TAP & COUNTERSINK PER MG-33537
- CONVERSION COATING PER MIL-C-5541 CL 1A