M7325 SERIES

DC/DC POWER SUPPLY

PRODUCT HIGHLIGHTS

- **MINIATURE**
- **HIGH DENSITY**
- **SINGLE OUTPUT**
- **DC/DC CONVERTER**
- **UP TO 500W**

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Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- Very Low output impedance (Typical: 50 mΩ@ 28V output)
- Input / Output isolation
- Remote sense
- More than 40db ripple reduction.
- Parallel connection with current share
- External On/Off Inhibit
- Fixed switching frequency (250 kHz)
- External synchronization capability
- EMI/RFI filters included
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

DC Input:
DC Input range: 18 to 48 V_{DC}, per MIL-STD-704E.
No damage for:
MIL-STD-1275A (100V for 50mSec)
MIL-STD-704A (80V for 0.1 Sec)

DC Output:
Output range – 3.3V to 50V
Output power – 450W (peak 500W)
Output current – max 21A.

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).

Efficiency:
76-86% - Typical 85% (full load, room temperature)

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

***Ripple and Noise*:**
Less than 50mVp-p, typical (max. 1%) without external capacitance. When connected to system capacitance ripple drops significantly.

Load Transient Overshoot and undershoot
Output resistance at load change of 10%-100% is 20-50 mΩ (depending on output voltage). Output back to steady stated within 50-100µSec

Ripple Reduction
More than 40db ripple reduction between input and output.

Turn on Transient
No turn on transient.

Protections **

Input
- **Inrush Current Limiter** – peak value of 5 x Iin for less than 50µSec.
- **Under voltage protection** – unit protects itself (no damage) below 16.5Vdc.
- **Over voltage protection** – unit protects itself (no damage) above 52Vdc

Output
- **Electronic over voltage protection** – Internal control protects unit (no damage) 10% above nominal voltage.
- **Passive transorb on outputs** – 20% above nominal voltage.
- **Current limiting** – Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).

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)

* EMC compliance achieved when tested with 5 µH LISNs, shielded harness and static resistive load.
** Thresholds and protections can be modified / removed – please consult factory.

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, 20g 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.

Environmental Stress Screening (ESS)

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

Pin Assignment

Pin Numbers	Pin Assignment
15,16,17,18, 33,34,35,36	+ VIN
11,12,13,14, 29,30,31,32	- VIN
9	Input SIG. RTN
8	INHIBIT IN
27	INHIBIT OUT
10	SYN. IN

Pin Numbers	Pin Assignment
1, 2, 3,4, 19,20,21	+ VOUT
5,6,7,22, 23,24,25	- VOUT
26	+ VOUT Sense
28	- VOUT Sense

* All output parallel pins should be connected together for best performance.

Functions and Signals

INHIBIT IN 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" – will turn off the power supply.

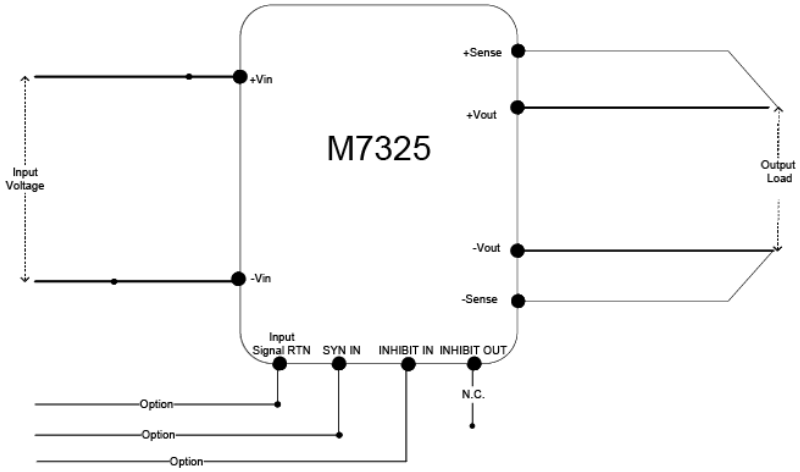
SYNC signal
The SYNC IN signal is used to allow the power supply frequency to sync with the system frequency.
The system frequency should be 250 kHz ± 10 kHz.
When not connected, the power supply will work at ~250 kHz

INHIBIT OUT signal
Used when connecting two units or more in parallel. (Please consult factory)
The signal is to be connected to the INHIBIT IN signal of the slave unit (see diagram below). The signal synchronizes the shutdown and startup of the units.
Note: During parallel connection, output voltage may drop by 1-2%.

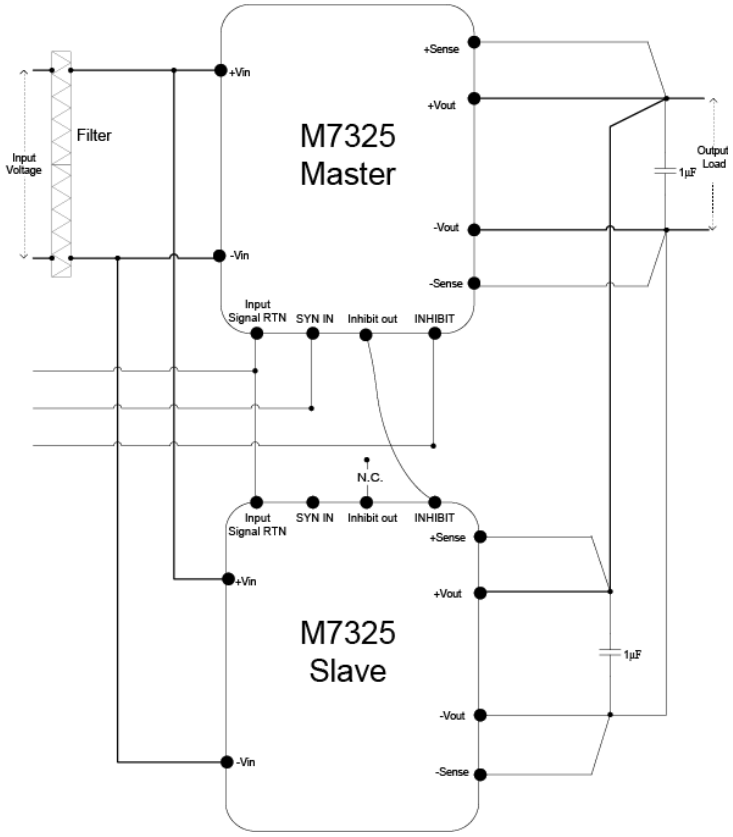
INPUT SIGNAL RTN
The INPUT SIGNAL RTN is referred to the input.
This is used as grounding for SYNC, INHIBIT IN and INHIBIT OUT signals.

VOUT 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 of 2-10% of voltage output.
When not used connect +VOUT SENSE (Pin #26) to +VOUT (Pin #1, 2, 3,4, 19,20,21) and –VOUT SENSE (Pin #28) to –VOUT (Pin #5,6,7,22, 23,24,25)

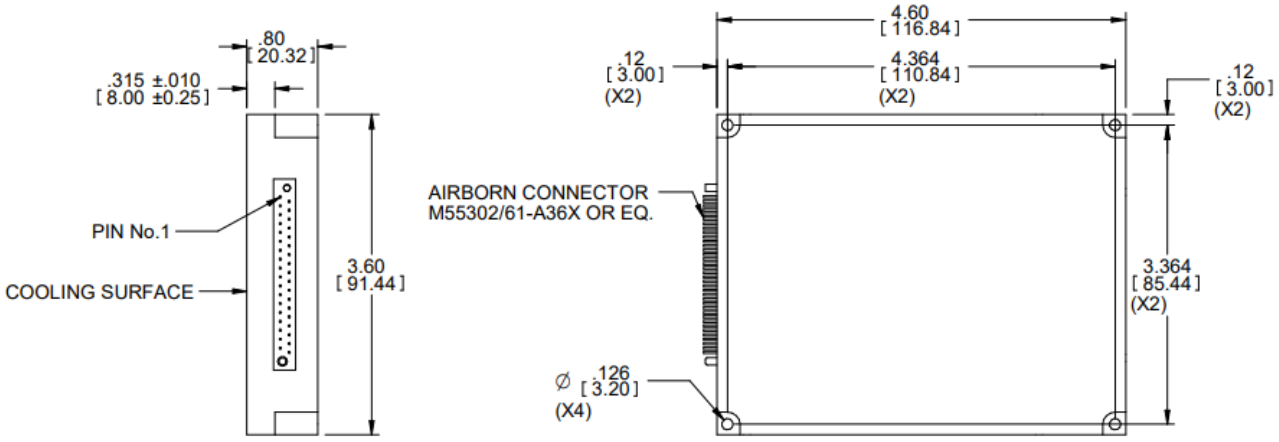
Typical connection



Parallel connection



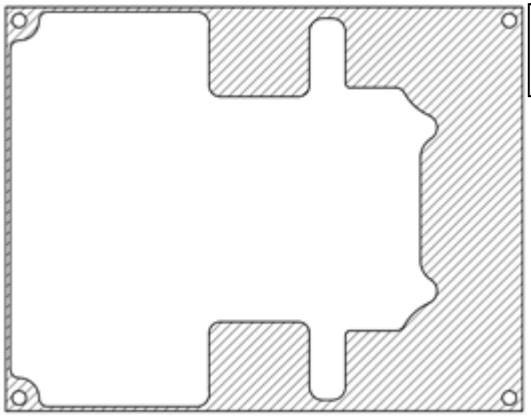
Outline Drawing



NOTES :

1. WORKMANSHIP SHALL BE MIL-STD-454, REQT. 9
2. DRILL. TAP & COUNTERSINK PER MS 33537
3. MTL. AL 6061-T651 PER QQ-A-250/11
4. CONVERSION COATING PER MIL -C-5541 CL 1A
5. BREAK SHARP EDGES
6. REMOVE ALL BURRS

Heat Dissipation Surface



Dissipation Area
6.0515 in²
(3904 mm²)

Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:
   .XX ± 0.01 IN
   .XXX ± 0.005 IN
3. Weight: Approx. 360g (12.7 oz)
4. Mounting holes can be modified – please consult factory.
5. Parasolid 3D module is available for download on site.

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