M7242 SERIES

AC+DC/DC POWER SUPPLY

PRODUCT HIGHLIGHTS

- **DUAL INPUT**
- **SINGLE OUTPUT**
- **WIDE INPUT RANGE**
- **HIGH DENSITY**
- **AC+DC/DC CONVERTER**
- **UP TO 500W**

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Applications

Military (Airborne, Mobile, Ground-Fix), Ruggedized, Telecom, Industrial

Special Features

- Universal AC Input
- Wide range DC Input
- High efficiency
- High power factor
- Inrush current limiting (AC & DC)
- Remote inhibit (ON/OFF)
- EMI filters included
- Hot Switch-Over on Input Failure
- Non-latching protections:
  - Overload/short-circuit
  - Over-voltage protection
  - Over temperature

Electrical Specifications

AC Input

Voltage range: 85 to 265 V_{AC}
Frequency range: 50 to 400 Hz
Single-Phase

Turn On Voltage > 100Vac

DC Input

Voltage Range: 12 to 36 V_{DC}
Surge protection: 80 V / 0.1 s
IAW MIL-STD-704A
Surge operation: 100V / 50ms
IAW MIL-STD-1275E

Isolation

AC input to output: 1000 V_{DC}
AC input to DC input: 1000 V_{DC}
AC input to Chassis: 1000 V_{DC}
DC input to Chassis: 100 V_{DC}
Output to Chassis: 100 V_{DC}

DC input is not isolated from output

Output

Voltage range: 12 to 36 V_{DC}
Current: Up to 20 A
Power: Up to 500 W

Output Voltage Regulation

Up to ±3% (Low to high line voltage, no load to full load, -40 °C to +85 °C).

Ripple and Noise

Typically better than 100 mV (max. 1%) without external capacitance. When connected to system capacitance ripple drops significantly.

Efficiency

AC input: Typical 90%, Min 85%
DC input: Typical 93%, Min 85%
(Full load, nominal line voltage, room temperature)

Transient Over-and-undershoot

Load step from 50% to 100% output voltage change less than 10% within 200-300 µs

Turn on Transient

No output voltages overshoot during startup.

Parallel Capability-Optional

Multiple identical units of M7242 can be connected in parallel- **Please consult factory for details.**

Protections *

Input

- **Inrush Current Limiter**
  Peak value of up to twice I_{IN} for AC and DC Inputs.
- **Under Voltage Lock-Out**
  Unit shuts down (no damage) below 75 V_{AC} or 10 V_{DC}.

Output

- **Active Over Voltage Protection**
  Internal control protects unit (no damage) ~10% above nominal voltage.
- **Passive Over Voltage Protection**
  Transorbs on outputs protect loads ~20% above nominal voltage.
- **Overload/Short Circuit Protection**
  Continuous protection (10-50% 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 +90 °C ± 5 °C.

Environmental Conditions

Designed to meet or exceed MIL-STD-810F

Temperature
Operating: –40°C to +85°C (base plate)
Storage: –55°C to +125°C

Altitude
Method 500.4
Procedure I – up to 70,000 ft.
Procedure II – up to 30,000 ft.

Salt Fog
Method 509-4

Humidity
Method 507.4 - Up to 95%.

Vibration
Figure 514.5C-17. General minimum integrity exposure. (1 hour per axis.)

Shock
Saw-tooth, 20g peak, 11 ms

EMC

Designed to meet† MIL-STD-461E

	CE102		
CS101	CS114	CS115	CS116
RS101	RS103		

Reliability

150,000 hours, calculated IAW MIL-HDBK-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.

† Compliance achieved when tested with shielded cables; DC input tested with 5 µH LISNs.

Functions and Signals

Output ON/OFF Control (Connector J3, Pins #1 and #2)

Connecting these pins together toggles the output ON or OFF, based on the following conditions:

- PSU will turn OFF when the output is currently ON and the connection of these control pins lasts for more than 3 seconds.
- The PSU will turn ON when the output is currently OFF and the connection of these control pins lasts for more than 100 ms seconds.
- To eliminate unwanted output toggling (if an external button is pushed too long) the PSU ignores additional change requests until the pins have been disconnected for 1 second.

(a continuous SHORT/OPEN version can be implemented – ***consult factory***).

Temperature Warning (Connector J3, Pins #3 and #5)

These pins are used to indicate when the unit is within 20 °C of the maximum temperature prior to execution of automatic thermal shutdown.
This signal can be used by an external monitoring system to indicate when the unit is operating fairly close to the thermal shut down temperature.

- This interface is isolated from any internal electronic connection or grounds.
- These pins are shorted together (CLOSED condition) when the baseplate temperature is within 20°C of the thermal shutdown threshold.
  The connection's resistance is 50 Ω or less, measured across these pins.
  The connection is capable of handling at least 40 mA from an external source in this condition
- These pins are disconnected (OPEN condition) when the baseplate temperature is below 20 °C of the thermal shutdown threshold.
  The connection resistance is higher than 100 kΩ measured across these pins.

Thermal Shutdown Warning (Connector J3, Pins #4 and #5)

These pins are used to indicate when the unit is within 10 °C of the maximum temperature prior to execution of automatic thermal shutdown.
This signal can be used by an external monitoring system to indicate when the unit is operating fairly close to the thermal shut down temperature.

- This interface is isolated from any internal electronic connection or grounds.
- These pins are shorted together (CLOSED condition) when the baseplate temperature is within 10°C of the thermal shutdown threshold.
  The connection's resistance is 50 Ω or less, measured across these pins.
  The connection is capable of handling at least 40 mA from an external source in this condition
- These pins are disconnected (OPEN condition) when the baseplate temperature is below 10 °C of the thermal shutdown threshold.
  The connection resistance is higher than 100 kΩ measured across these pins.

Pin Assignment

DC Input (Connector J1)

Connector type: Positronic CBM8W8M75000C-1062.0 or eq.
Mating connector type: Positronic CBM8W8S0000C
+ FS4012D/AA-15 X 8 (contacts ordered separately) or eq.

Pin #	Function	Polarity
A1	DC Input	+
A2	DC Input	+
A3	DC Input	+
A4	DC Input	+

Pin #	Function	Polarity
A5	DC Input RTN	–
A6	DC Input RTN	–
A7	DC Input RTN	–
A8	DC Input RTN	–

AC Input (Connector J2)

Connector type: Positronic CBM3W3M75000C-1062.0 or eq.
Mating connector type: Positronic CBM3W3S0000C
+ FS4012D/AA-15 X 3 (contact ordered separately) or eq.

Pin #	Function
A1	AC Line
A2	AC Neutral
A3	AC GND

DC Output & Control (Connector J3)

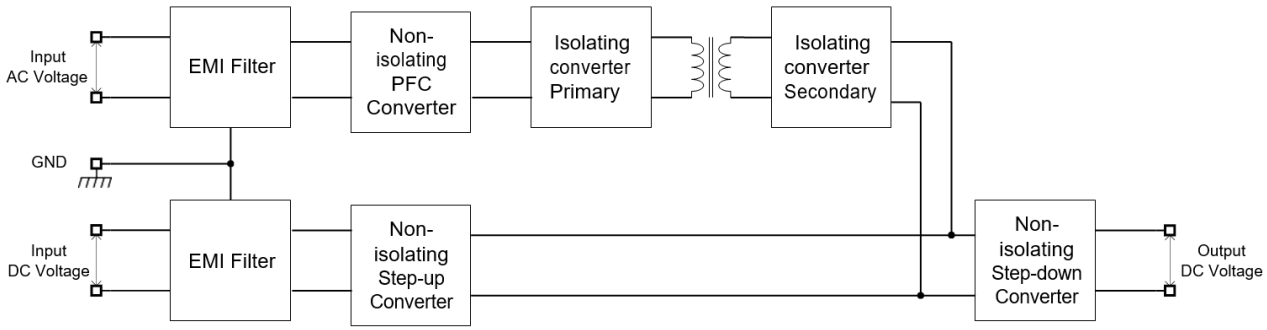
Connector type: Positronic CBM9W4S75000C-1062.0 or eq.
Mating connector type: Positronic CBM9W4M2000C
+ MS4012D/AA-15 X 4 or eq.

Pin #	Function	Polarity
A1	Output	+
A2	Output	+
A3	Output RTN	–
A4	Output RTN	–

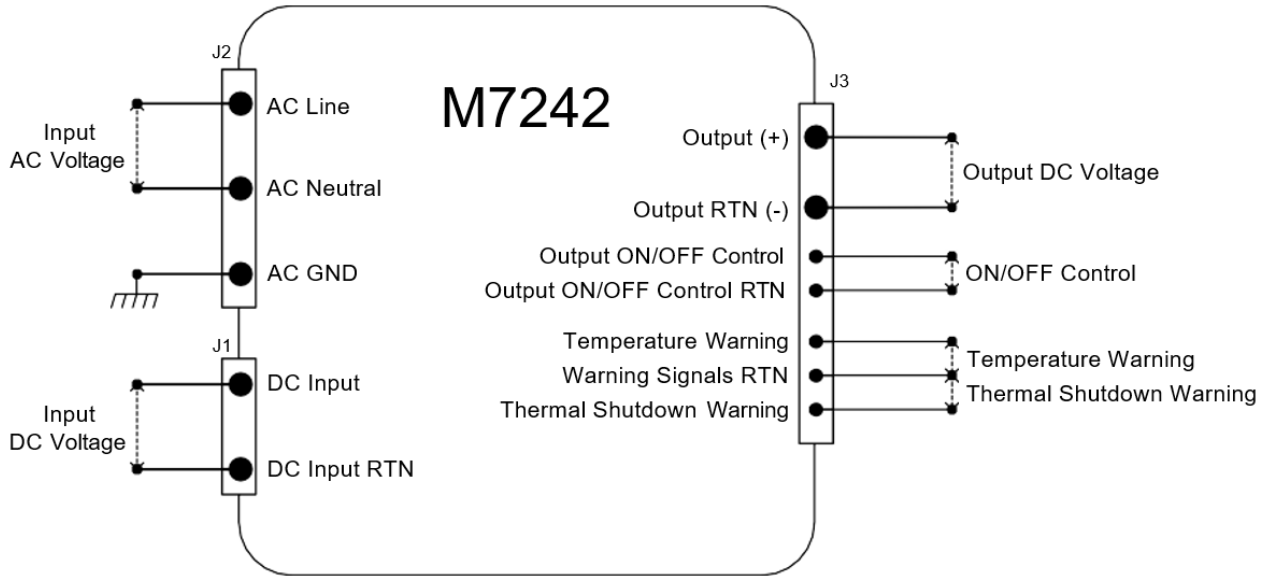
Pin #	Function
1	Output ON/OFF Control
2	Output ON/OFF Control RTN
3	Thermal Shutdown Warning
4	Temperature Warning
5	Warning Signals RTN

Note: All pins with identical function should be connected together for best performance.

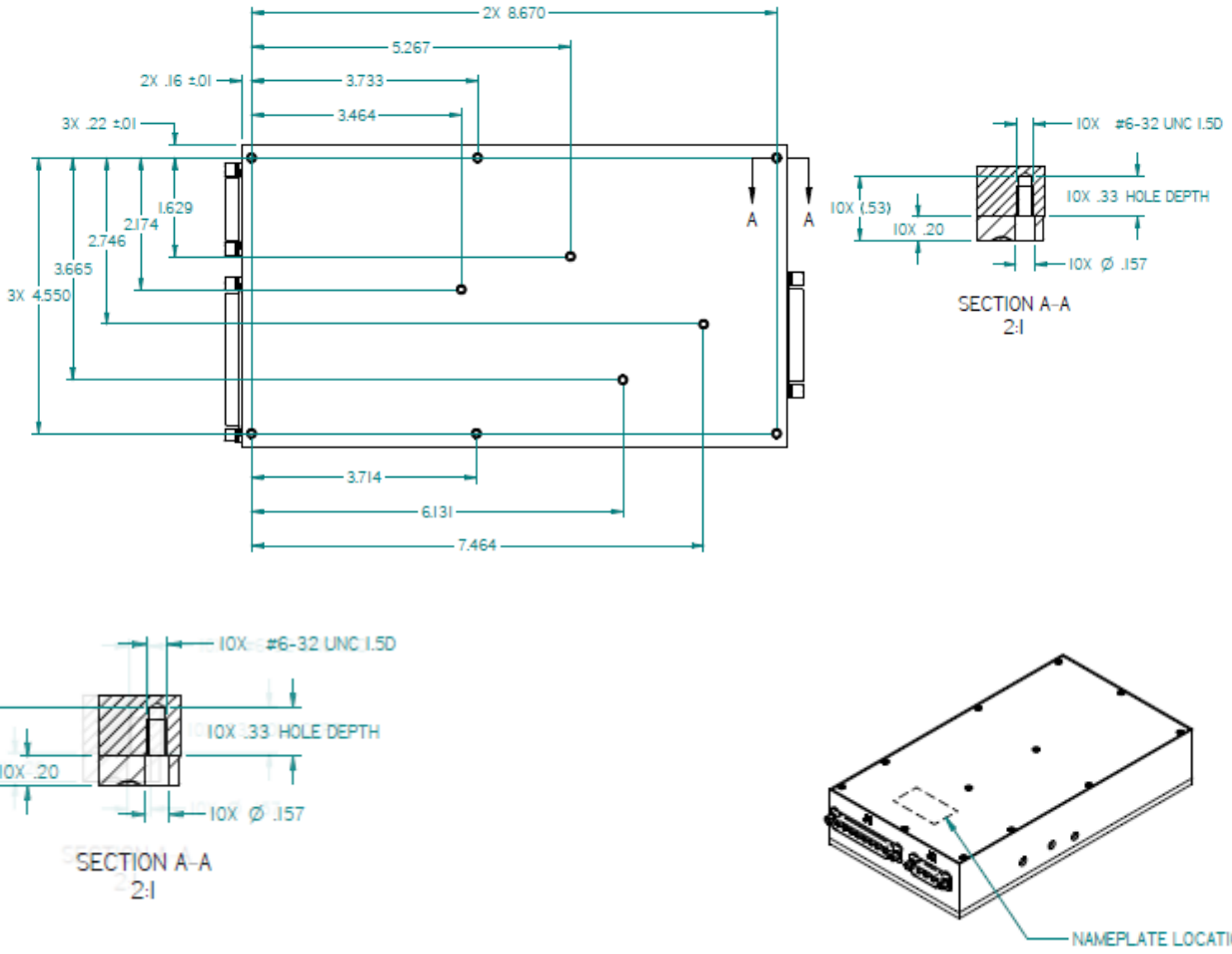
Functional Block Diagram

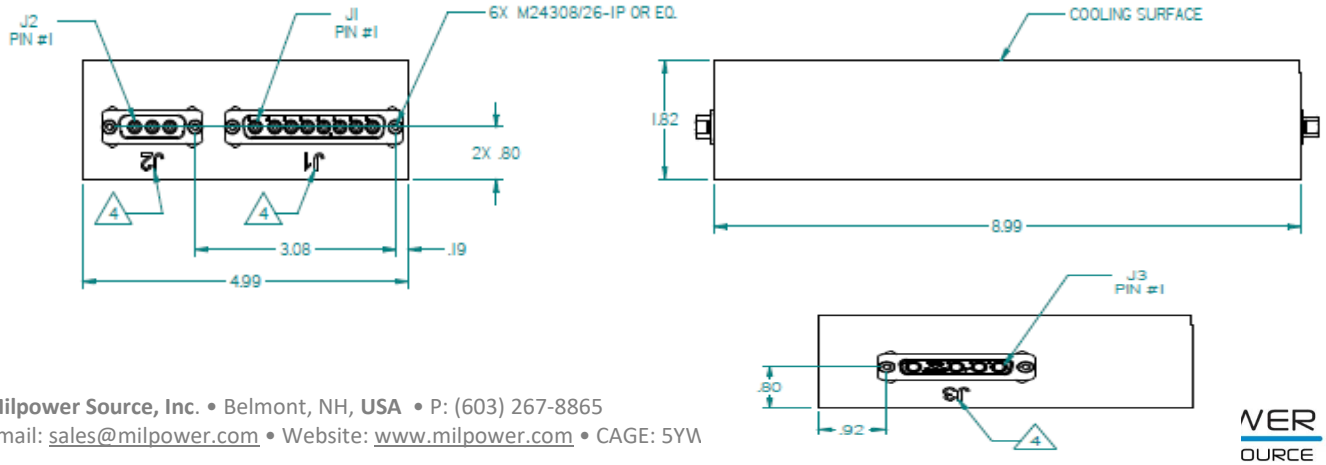


Typical Connection Diagram



Outline Drawing





NOTES :

1. CONNECTORS:
   1.1. J1- INPUT CONNECTOR - POSITRONIC P/N CBM8W8M75000C-1062.0 OR EQ.
   1.2. J2- INPUT CONNECTOR - POSITRONIC P/N CBM3W3M75000C-1062.0 OR EQ.
   1.3. J3- OUTPUT CONNECTOR -POSITRONIC P/N CBM9W4S75000C-1062.0 OR EQ.
2. MTL. AL 6061-T651& AL 5052-H32
3. FINISH:
   CONVERSION COATING PER MIL -C-5541 TYPE I, CL 1A
4. ENGRAVING:
   LINE THICKNESS : 0.02 INCH
   CHARACTER THICKNESS : 0.02 INCH
   LINE AND CHARACTER DEPTH : 0.02 INCH
   CHARACTER ARE CENTRALLY LOCATED,
   CHARACTER HEIGHT : 0.25 INCH
   FILL ENGRAVING WITH BLACK LUSTERLESS
5. WORKMANSHIP SHALL BE MIL-STD-454, REQT. 9
6. WEIGHT: 4.85 lbs (2.2 kg) MAX.

Standard Configurations

Part Number	Input		Output		Special features
	Dc Input	AC Input	Voltage	Current	
M7242-100	12 to 36 V_{DC}	85-265 V_{AC} /50/60/400Hz/ Single phase	12 V_{DC}	20 A	
M7242-101	12 to 36 V_{DC}	85-265 V_{AC} /50/60/400Hz/ Single phase	15 V_{DC}	20 A	
M7242-102	12 to 36 V_{DC}	85-265 V_{AC} /50/60/400Hz/ Single phase	24 V_{DC}	20 A	
M7242-103	12 to 36 V_{DC}	85-265 V_{AC} /50/60/400Hz/ Single phase	28 V_{DC}	18 A	

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