

EM-P350-AC/CC

3U VITA 62 Power Supply



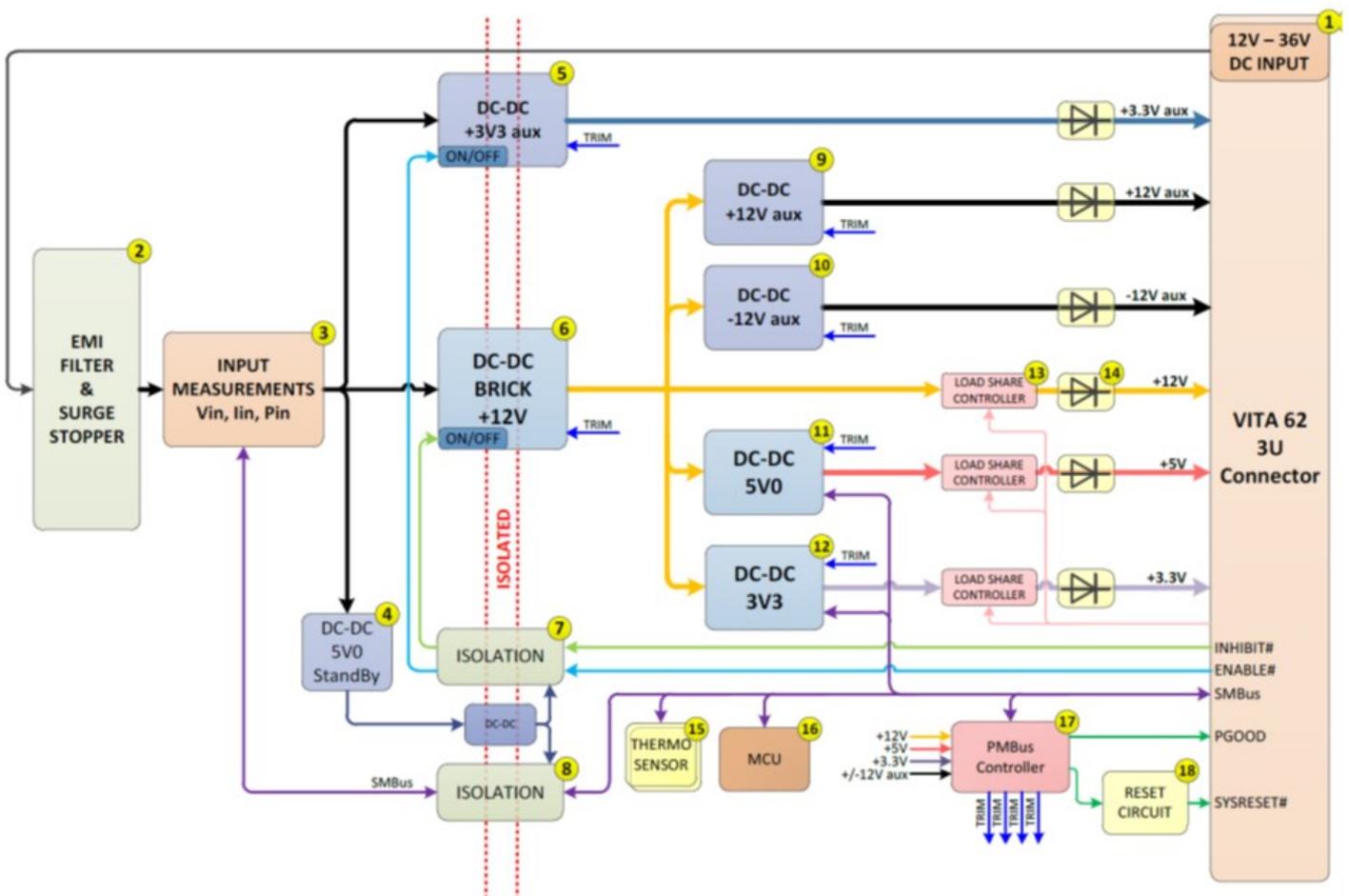
- 3U VITA 62 Power Supply suitable for VPX and OpenVPX systems
- Target markets: Avionics, Space, Defense, Industrial Automation
- Air-cooled and conduction cooled version
 - Air-cooled with 3U 8HP front panel
 - Conduction cooled 1" pitch
- 10V – 36V continuous input voltage
- 2300V Isolation between Input / Output
- Active input EMI filtering
- Transient look ahead/cut-off technology
- 6 voltage output rails
- Pinout as per VITA 62
- 500W maximum power
- 93% typical efficiency
- No electrolytic capacitors
- -40°C to 85°C operating temperature
- Conduction cooled version with -40°C to 85°C rail temperature and no derating up to max. temperature

Overview

This 3U power supply works with 12VDC to 36 VDC (28VDC nominal) input voltage and isolates the input voltage ground from the output voltage ground. The power supply is available in air-cooled and conduction cooled versions, uses polyphase technology on all voltage rails and can provide up to 500 watts. It is suitable for use in mission critical rugged applications and is already operating in space applications (e.g. onboard ISS).

The intelligent power supplies integrate a microcontroller (MCU) for a fully programmable and flexible solution. Intelligent power conversion allows configuration and reconfiguration for different applications. With intelligent power conversion, the power supply becomes a platform solution for Vita 46.11 system management based systems. The power supply can easily be reprogrammed to support different operating limits and control inputs.

EM-P350 AC/CC Power Supply Block Diagram



Functional Parameters

OUTPUTS (Total output not to exceed 500W)	
VS1, V@A	+12@40A
VS2, V@A	+3.3@20A
VS3, V@A	+5@40A
AUX, V@A	+3.3@4A
AUX, V@A	+12@1.5A
AUX, V@A	-12@1.5A

FEATURES	
Over-current Protection	YES
Over-voltage Protection	YES
Over-temperature Protection	YES
Current Sharing	VS1, VS2, VS3
Remote Sense	YES
Standard Control	YES, VITA62

COMPLIANCE	
Designed to meet the following standards, additional filter circuitry in the chassis may be required	
VITA62	YES
MIL-STD-704 (B-F)	YES
MIL-STD-461 E	YES
MIL-STD-810G	YES
* ESD Protection	YES
* Shock	YES
* Vibration	YES
* Rapid Decompression	YES
* Corrosion Resistance	YES
* Fungus Resistance	YES
* Altitude	YES
* Humidity	YES

INPUT CHARACTERISTICS					
Parameter	Min.	Typ.	Max.	Units	Notes
Absolute Maximum Ratings					
Input Voltage					
- Non-Operating	-60		60	V	Continuous
- Operating	-40		40	V	Continuous- Reverse input Protection
- Operating Transient Protection			100	V	50ms transient, square wave
Isolation Voltage			2300	V	
Operating Temperature	-55		95	C	
Storage Temperature	-55		105	C	
Electrical Characteristics					
Input Voltage					
- Continuous	10		40	V	
- Transient	12		50	V	100V Transient for 50ms -- MIL 1275D
Under-Voltage Lockout					
- Turn-On Input Voltage Threshold	9.5	10	10.5	V	

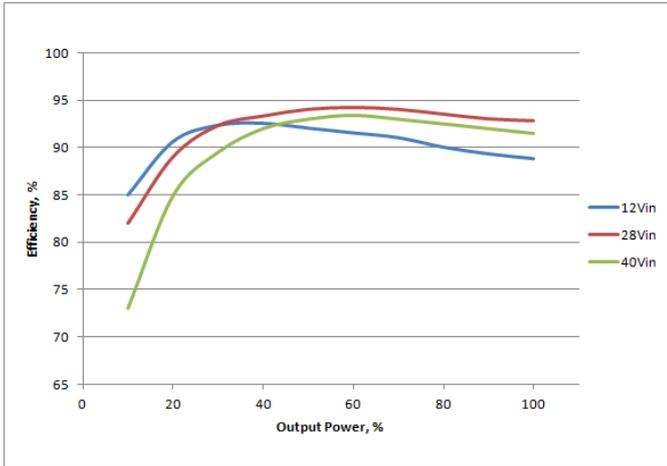
INPUT VOLTAGE SPIKES SUPPRESSION (Vin Centered)	
+/- 250V, 100 us	MIL-STD-1275D
+/- 200V, 10 us	MIL-STD-461C (CS06); DEF-STAN 61-5
+/- 400V, 5 us	MIL-STD-461C (CS06)
+/- 600V, 10 us	RTCA/DO-160E

OUTPUT CHARACTERISTICS							
Parameter	+12V	+5V	+3.3V	+3.3V aux	+12V aux	-12V aux	Notes
Output Voltage Set Point, V	12	5	3.3	3.3	12	-12	Vin = 28V
- Drift -40 deg.C to 85degC +/- %	0.01	0.01	0.01	0.01	0.01	0.01	Vin = 28V
Output Voltage Trim Range, V	12	5	3.3	3.3	12	-12	Over Line/load/temp.
	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	Over Line/load/temp.
Output Voltage Ripple (pk-pk), mV	80	50	40	40	80	80	Full load with 1 uF + 10 uF tantalum capacitor
Operating Current Range, A	0-40	0-40	0-20	0-4	0-1.5	0-1.5	500W Total, combinedOutput
Over-Voltage Protection, V	13	6	3.6	3.6	13	13	
Current Limit Inception, A	42	42	22	5	1.7	1.7	
Maximum Output Capacitance, mF	10	10	10	1	1	1	

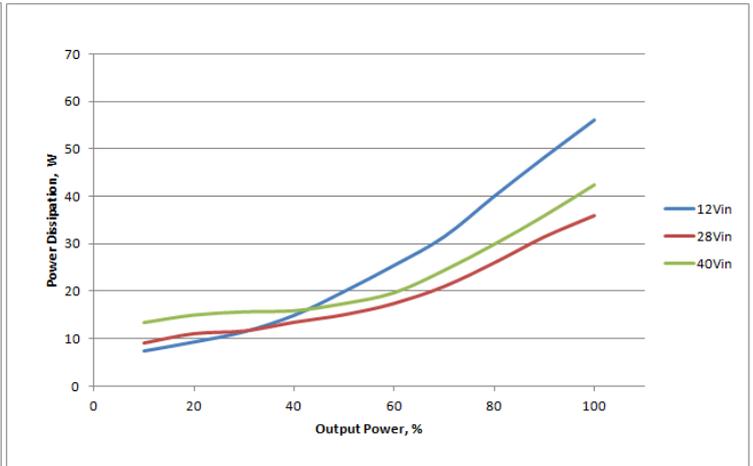
MODULE QUALIFICATION	
Designed to meet the following standards, additional filter circuitry in the chassis may be required	
Test Name	Method
Random Vibration	MIL-STD-810, 514.6 - Procedure I, Class V3
Shock	MIL-STD-810, 516.6 - Procedure I, VI, Class OS2
Altitude	MIL-STD-810, 500.5 - Procedure I, II, III Tested at 45.000 feet pressure
Fungus Resistance	MIL-STD-810, 508.6
Corrosion Resistance	ASTM G85, Annex A4
Humidity	MIL-STD-810, 507.5 - Procedure II
High Temperature	MIL-STD-810, 501.5 - Procedure I, II
Low Temperature	MIL-STD-810, 502.5 - Procedure I, II
Temperature Cycling	MIL-STD-202, 107 - Class C4
ESD	EN61000-4-2, Level 4; 15kV Air Discharge

RELIABILITY CHARACTERISTICS

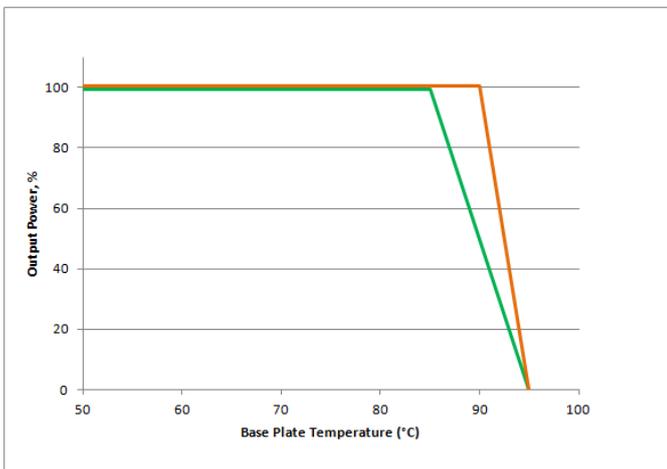
- ✱ Calculated MTBF per MIL-HDBK-217F (GB) at 70°C:
2.500.000 h
- ✱ Calculated MTBF per MIL-HDBK-217F (GM) at 70°C:
480.000 h



Efficiency vs. Output Power at 25°C



Power Dissipation vs. Output Power at module cover 25°C



Thermal derating Output Power vs. temp at module cover.
(ΔT to wedgelock 7°C)

Ordering Information

Configuration	Description	Order Code
EM-P350-AC	3U VITA 62 Power Supply, 500 Watt Output, 10 - 36 Vdc Input Range, air-cooled, 8HP front panel, -40 to +85°C operating temperature	A09178
EM-P350-AC-C	Air-cooled variant with conformal coating*	A09179
EM-P350-CC	Conduction cooled variant with conformal coating and wedgelocks*	A09211

*Humiseal 1A33, Nusil CV-1152 on request

Contact

EMCOMO Solutions AG
 Industriestr. 10
 89231 Neu-Ulm
 Germany

tel +49 (731) 880351-0
 psu@emcomo.de
 www.emcomo.de