寶虹電子 PCEC
Power-Con Electronics Corporation

NON ITAR

afaq EN/AS/JISQ 9100 Aéronautique AFNOR CERTIFICATION

Military Custom Off-The-Shelf Power Supply PC-MVM160-125K

160W 5 Isolated Outputs

DC-DC Converter for Anti-Missile Radar System

Main Features:

- Ideal for all rugged applications complying with MIL-STD-810 for altitude, humidity, temperature shocks & cycles
- Soft Start at input stage the input voltage will ramp on input capacitance after 1sec to 28VDC
- Meets MIL-STD-1275D/ MIL-STD-810G/ MIL-STD-461G/ MIL-STD-704F
- Fully protected for Over-Load/ Short/ Over-Voltage/ Over-Temperature
- Transients Voltage Range: 28VDC to 0VDC at duration of 500 uSec; 100Vdc/50ms (MIL-STD-1275); 50V/50ms (MIL-STD-704)
- -40°C to +85°C full load base plate operating temperature
- External Sync. Capability/ Synchronize Lock
- Sleep Indicator/ Remote Inhibit (on/off)
- Reverse polarity protection up to 100V
- High Efficiency – Typical 90%
- Pass 40G Mechanical Shock
- Built in EMI Filter
- Digital Controls and Sense.
- Modified Off-the-Shelf Solutions
- Max. Ripple and Noise Over 20 Hz – 20 MHz 30 mV p-p
- Low Profile Size – 13 mm (H) * 135 mm (L) * 135 mm (W)

Typical Applications:

- EW Systems
- RWR Receivers
- Missile
- Navigation Systems
- Outdoors Telecom
- Military Airborne/ Ground-Fix/ Shipboard
- Ground Vehicle Radar Communication
- UAV (Unmanned Aerial Vehicle)

Power-Con Electronics Corp.
Web: www.power-con.com.tw
No. 52, Lane 334, Sec. 3, Min Chuan Rd., Chungli District, Taoyuan City 320, Taiwan, R.O.C.
Tel: +886-3-427-5854
Fax: +886-3-427-5898

Military Custom Off-The-Shelf Power Supply PC-MVM160-125K

Main Specification:

Input Voltage Characteristics:

Input Voltage Range 18-33VDC

Reverse Polarity Protection

Protection from Transient at Input Voltage Going Down from 28VDC to 0VDC at Duration of 500 uSec

Soft Start at Input Stage – The Input Voltage will Ramp on Input

Capacitance after 1sec to 28VDC

Output Voltage Characteristics:

Line/ Load & Temperature Regulation < +/-2%

Max. Ripple and Noise Over 20 Hz – 20 MHz 30 mV p-p

Current Limit on each Output – 125-150% of Rated Current – Hick-Up

Over-Voltage on each Output – Non-latch Type

All Outputs will Maintain Regulation with No Load Applied.

Typical Power Supply Efficiency 90% at Operating Temperature.

Output Voltage and Currents:

Outputs	Voltage	Current
12 V Out_ESS_A2D	12V	10 A
15 V Out TGS	15V	0.5 A
5.5 V Out TGS	5.5V	4.0 A
3.3 V Out TGS	3.3V*	3.0 A
3.3 V Out MB	3.3V*	0.200 A

Digital Controls and Sense:

1. Logic Signals Characteristics

   All signals shall be referenced to the P.S. A2D_RTN.

   LVTTL level means – Low < 0.4V, High (3.6V > High > 2.4V)

2. All Digital outputs indication Signal (V_ALL_D_GOOD) output

   A LVTTL level, which monitors the voltage accuracy of all the regulated outputs.

   V_ALL_D_GOOD = HIGH, when the all regulated voltage outputs are > 95% of their Specified Nominal Voltage.

   V_ALL_D_GOOD = LOW, when at least one of the regulated voltage outputs is < 95% of its Specified Nominal Voltage.

3. All Analog outputs indication Signal (V_ALL_A_GOOD) output
   A LVTTL level, which monitors the voltage accuracy of all the regulated outputs.
   V_ALL_A_GOOD = HIGH, when the all regulated voltage outputs are > 95% of their Specified Nominal Voltage.
   V_ALL_A_GOOD = LOW, when at least one of the regulated voltage outputs is < 95% of its Specified Nominal Voltage.

4. Over Temperature Signal (PS_OVER_TEMP) output
   A LVTTL signal, which indicates that the power supply reached to the maximum allowed temperature.
   OVERTEMP = High. P.S. temperature is under 90℃
   OVERTEMP = Low. P.S. temperature is above 90℃

5. Synchronize Lock (SYNC_LOCK) output
   The SYNC_LOCK is a TTL logic signal indicates that the power supply is locked on the external synchronization signal. This signal is normally low and it driven high when the power supply is not locked on the external synchronization signal.

6. Sleep Indicator
   Sleep Indicator is a LVTTL logic signal that will provide a high output as long as the input voltage is above 12V and will go low when the input level goes below 12V.

7. ON/OFF input
   7.1 The power supply turn on shall be accomplished by activating “ON/OFF” line as described below. On/Off signal is RS422 differential
   7.2 The ON/OFF control will only control the main power supplies TGS and A2D. including the essential outputs, but the MB_3.3V will remain on regardless of the state of the on/off line.
   7.3 The ON/Off control shall be always fully functional including in the sleep mode.

Isolation Resistance:

Input – output: 100Mohm (100 VDC)
Input – case: 100Mohm (100 VDC)
Output – case: 100Mohm (100 VDC)
Vin Return – all internal returns 100Mohm (100 VDC)
A2D_RTN – MB_RTN <1 ohm
All other RTN to each other and case 100Mohm

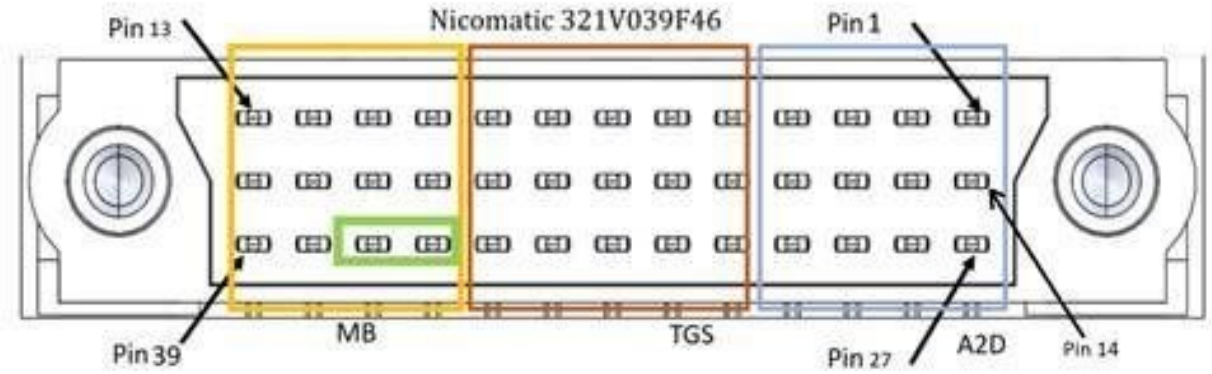
Environmental:

Units shall exhibit in-spec electrical and mechanical performance under all combinations of environmental conditions. And environmental type.

No.	Environment	Non-Operating	Operating	Applicable Standard
[1]	High Temperature	+71°C (ambient)	+85°C -Central Unit (ambient and on mounting slots)	MIL-STD-810F Method 501.4 Procedures I & II
[2]	Low Temperature	-40°C (ambient)	-40°C (ambient)	MIL-STD-810F Method 502.4 Procedures I & II
[3]	Altitude	-1,500 to 35,000 ft	16,000 feet	MIL-STD-810F, 500.4, Proc. II.
[4]	Humidity	Relative Humidity of 95%, at temperature of up to +60°C		MIL-STD-810F Method 507.4
[5]	Explosive atmosphere	N/A	The unit shall not cause explosion or ignition in fuel vapors Up to 16,000 feet	
[6]	Thermal Shock	-30°C - +71°C A rate of at least 20oC/min	MIL-STD-810C Method 503.1 Procedure I	
[7]	Fungus	Fungi-inert materials only shall be used		MIL-STD-810 F Method 508.1, Procedure I
[8]	Functional Vibration	N/A	Table provided next page	MIL-STD-810F, Method 514.5, Procedure I for Category 13 Figure 514.5C-9 & Table 514.5C-II
[9]	Functional Mechanical Shock	---	40G, sow tooth for 11 msec 3 axes.	MIL-STD-810F, 516.5, Proc. I.
[10]	Operational Accelerations	The Electronic Equipment when subjected to sustained 5g Up and Down & 3g in every other direction		MIL-STD-810F, Method 513.5, Procedure II
[11]	Structural Accelerations	The Electronic Equipment without operation shall withstand structural acceleration load levels shall be 50% higher than the corresponding operational levels		MIL-STD-810F, Method 513.5, Procedure I

Power Supply Input/Output Pinout:

Input/ Output connector – Nicomatic 321V039F46 or Eq.



Pinout Specification and Function:

Pin Number(s)	Name	Function	Comment
1,14,27,36	A2D_RTN	Return 12V out ESS (DIGITAL)	GNDD
2,15,28,29,31	12V_Out_ESS_A2D	12V supply DIGITAL	12V_D
3	Sync_Lock	Indicator for sync lock function	Sync_Lock
4	V_All_D_Good	Indicator for all digital supply function	V_ALL_D_GOOD
16	Sleep Indicatior	Indicator for low input voltage	
17	V_ALL_A_Good	Indicator for all analog supply function	
30	Overtemp	Indicator for over temperature condition	OVER_TEMP
5,9,18,22	TGS_RTN	Return for all ANALOG supplies	GNDA
6,19,32	3.3_Out_ TGS	3.3 V supply ANALOG	3.3V_A
7,20,33	5.5V_Out_ TGS	5.5V supply ANALOG	5.5V_A
8,21	15V_Out_ TGS	15V supply ANALOG	15V_A
11	Sync IN	external sycnhronization signal for switchers	
12,25,38	Vin_Return	Return for Input Power Source	
13,26,39	Vin_28V	Input Power Source	
37	3.3V_MB	3.3V Supply (Essential) DIGITAL	
10,35,23,24,34	Spare		

Military Custom Off-The-Shelf Power Supply PC-MVM160-125K

Mechanical Outline Size:

Weight – 600 gram

Size – 135 mm x 135 mm x 13 mm

Cooling – Base plate