Embedded TechTrends

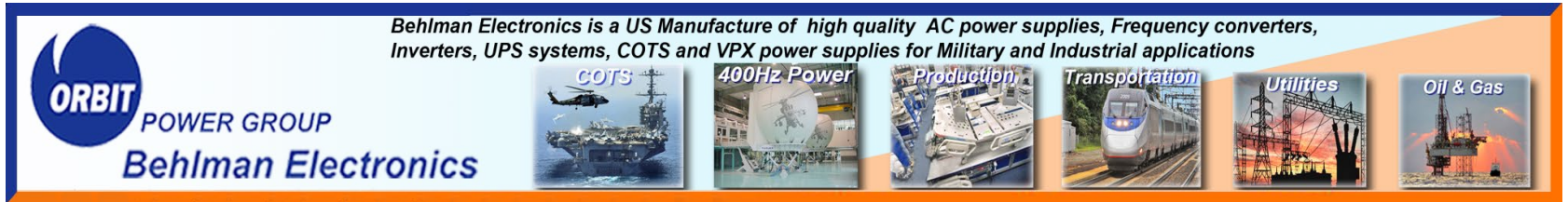
"The Business and Technology Forum for Critical Embedded Systems"

The Future is Now!

VPX POWER VITA 62
PAST PRESENT and FUTURE

THE FUTURE IS NOW

Embedded TechTrends



PRE VPX
VME POWER

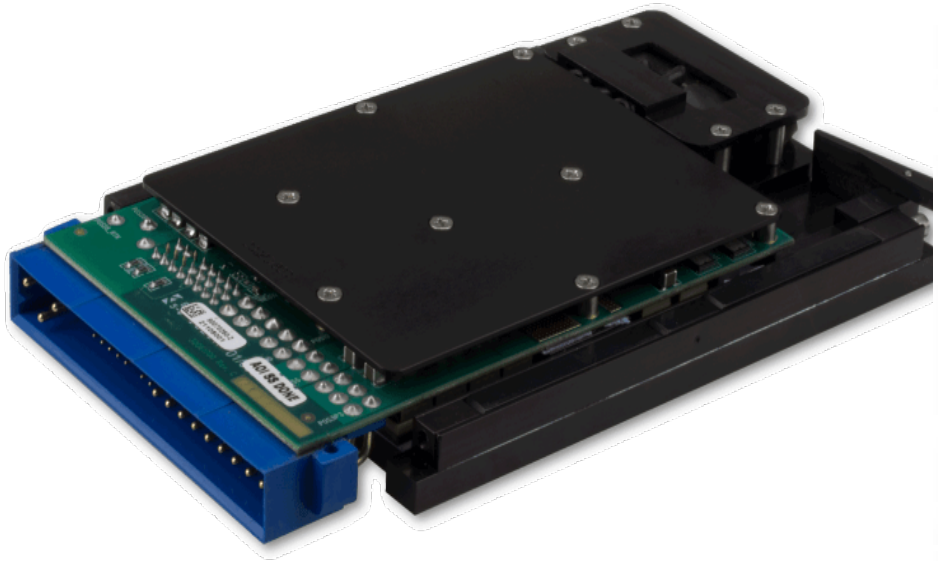
600W VME

Dual Redundant 500W

High Power 4000W

N+1 Redundant System

Early VPX



Conduction cooled 3U 200-300W

Air cooled 6U 400-600W 2” pitch

VITA 62 Power Supplies

3U VPX Power Goal 500W

6U VPX Power Goal 1000W

- Power Goals met and exceeded by multiple vendors
- Flexible supplies available with many different output power options currently available

Future Improvements and Limits

- 3U Power to approach 1000W
  - Limited by low line input current 40A-50A
  - Chassis cooling limits
  - Output mostly 12V (12V Centric) for maximum power
- 6U Power to approach 1500W
  - Limited by connector current rating on output pins - 120A
  - Chassis cooling limits

Cooling Challenges

Module Description	3U Heat Load Limit*	6U Heat Load Limit*	System Integration impact
48.2 conduction to air	up to 50W	up to 65W	non-proprietary and vehicle agnostic
48.8 Air Flow Through	50W to 100W	65W to 200W	
48.2 conduction to liquid	50W to 100W	65W to 200W	Drives additional vehicle cooling infrastructure with condensation mitigation to minimize use of exotic materials and proprietary solutions
48.4 Liquid Flow Through	Not applicable	above 200W	

Chart courtesy of David Vos; Lockheed

Potential power supply dissipation

3U 110W to 120W

6U 120W to 170W

System Management
VITA 46.11

Today

- no consistent standard
- IPMI and other I^2C formats offered
- No standard definition of sensors

Future

- Standard Format
- Defined commands
- Defined data structure
- Specify mandatory data
- Specify optional data

Intelligent PSU Reporting

- Reporting
  - Input Voltage
  - Input Current
  - Output Voltage
  - Output Current
  - Temperature
- Inventory Information
  - MFR
  - Part Number
  - Serial Number
  - Revision
- Fault Logging
- Time Totalizing Counter
- Output Voltage Turn-On/Off Sequencing
- Fault Detection Threshold Configuration
- SYSRESET* Generation Settings
  - Generation On/Off
  - Detection Levels
- Energy Storage Element Control/Reporting

VITA 62 Updates

- Adding 12V Centric 3U configuration
- Clarifying and better defining energy storage hold-up configurations
- Revising Keying
- Defining system management capability and commands
- Clarifying and correcting various electrical and mechanical issues and ambiguities
- Incorporating editorial comments

VITA 62
Related Specifications

- VITA 62.1 - 3Ø 3U Front End Card

  In progress
- VITA 62.2 – 270VDC Input Applications 3U and 6U

  In progress
- VITA 86 – 270VDC Input 3U; Sealed connector

  Approved

Questions?

Thank You