

VPX360DMS / VPX360EMS

pre-elementary



**-40°
85°C**
Operating
Temperature

10
Years
Availability



Cooling & Compliance

Conduction-cooled VPX power supply aligned with the SOSA® Technical Standard, compliant with ANSI/VITA 62.0 and VITA 46.0

Power & Efficiency

Up to 600 W total output power using high-efficiency, next-generation switching technology

Compact Form

3U x 5HP VPX module, fitting the standard VITA 46.0 mechanical envelope

Flexible Input

Supports 28 VDC and 48 VDC nominal inputs with a wide 12 V – 68 V DC input range

Monitoring & Standards

Embedded controller with dual I²C (VITA 46.11 / IPMI 2.0) and USB interface for monitoring and control, designed to meet MIL-STD 1275D, 704, 810, 461F

VPX360DMS / VPX360EMS

The Kontron Hartmann-Wiener VPX360xMS is a commercial off-the-shelf (COTS), conduction-cooled, SOSA® aligned VPX power supply designed in accordance with ANSI/VITA 62.0 and mechanically compliant with the VITA 46.0 envelope for 3U VPX systems.

The power supply delivers up to 600 W total output power using a 12 V centric SOSA® aligned architecture. High efficiency is achieved through state-of-the-art switching technology, while eliminating the use of wet electrolytic capacitors to enhance reliability and lifetime.

A wide DC input range from 12 V to 68 V DC supports both 28 VDC and 48 VDC nominal input platforms, enabling deployment across a broad range of defense and aerospace power architectures. The VPX360xMS integrates reverse polarity protection, input over-voltage protection, and internal temperature monitoring.

For system management and diagnostics, the module features an embedded microcontroller providing dual I²C interfaces compliant with VITA 46.11 (IPMI 2.0), as well as a USB 2.0 interface for configuration, monitoring, and firmware interaction.

The VPX360xMS is designed for operation in harsh environments and is engineered to meet MIL-STD-461F, MIL-STD-704F, and MIL-STD-1275D requirements. A standard acrylic conformal coating provides protection against moisture, dust, and salt atmosphere, supporting long-term operation in rugged SOSA-aligned systems.

Design & Components

Conduction-cooled 3U VPX power supply module
 SOSA® aligned, ANSI/VITA 62.0 compliant design
 Embedded microprocessor for monitoring and control
 No wet electrolytic capacitors used

Mechanical Dimensions

3U VPX, 5HP (1.0 inch pitch)
 Weight: approx. 0.82 kg (1.8 lbs)
 Fits VITA 46.0 mechanical envelope
 Designed for use with wedge-lock heat sink

Power & Efficiency

Maximum output power up to 600 W
 Nominal input voltage: 28 VDC or 48 VDC
 Wide input voltage range: 12 VDC ... 68 VDC
 Overall efficiency approx. 85 % ... 92 %, approx. 88 % at full 600 W load
 Reverse polarity protection included

Software Features

Remote ON / OFF control
 Global status and fault monitoring
 Per-output voltage, current and temperature monitoring
 Event and status reporting via I²C or USB interface
 Windows-based user software for monitoring, diagnostics and calibration

Protection Features

Input overvoltage protection
 (outputs disabled if Vin > 68 VDC for > 600 ms, auto-restart)
 Undervoltage lockout
 (Turn-ON at 12 V, Turn-OFF at 8 V)
 Overtemperature protection with internal temperature monitoring
 Input-to-output, input-to-case and output-to-case isolation: 500 V

Management & Control

Microprocessor-controlled power management
 Dual I²C communication interfaces (SM0 / SM1)
 VITA 46.11 compliant intelligent power management interface (IPMI 2.0)
 Monitoring of input voltage/current, output voltages, currents and temperatures
 USB-C 2.0 connector for service, monitoring and configuration

Compliance

Compliant with ANSI/VITA 62.0
 Designed to meet MIL-STD-461F (EMI)
 Designed to meet MIL-STD-704F (aircraft power)
 Designed to meet MIL-STD-1275D (vehicle power)
 Ruggedized design per MIL-STD-810 (shock, vibration, temperature)
 Standard acrylic conformal coating (alternative coatings on request)

Block Diagram pre-elementary

VPX360DMS – Output Table

Output	Voltage	Max. Current
VS1(P6)	+12 V	30 A
VS1(P3)	+12 V	30 A
VS2	+3.3 V	20 A

Input Voltage: 28 V DC

Total Power: 600 W

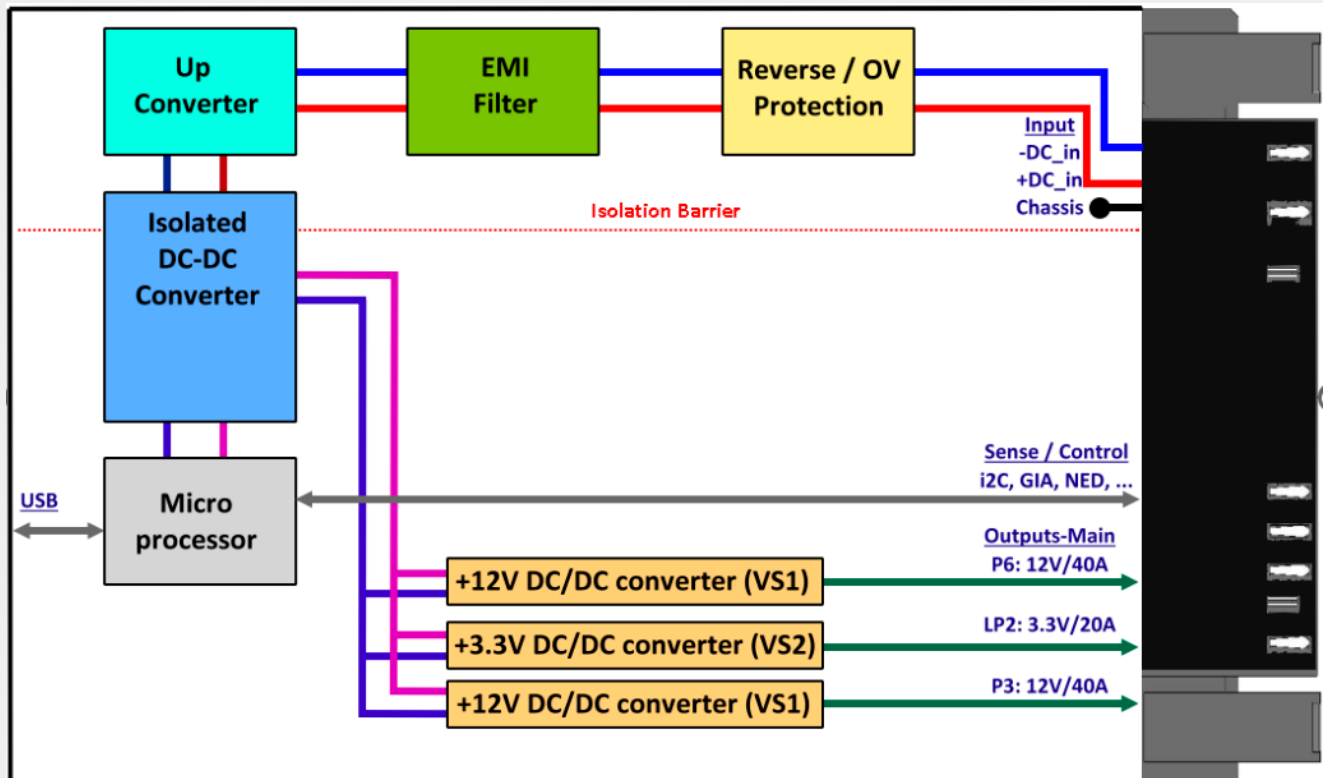
 Compliance: ANSI/VITA 62.0;
 designed for MIL-STD 1275D, 704, 810, 461F
 Conformal Coating: Standard acrylic

VPX360EMS – Output Table

Output	Voltage	Max. Current
VS1(P6)	+12 V	30 A
VS1(P3)	+12 V	30 A
VS2	+3.3 V	20 A

Input Voltage: 48 V DC

Total Power: 600 W

 Compliance: ANSI/VITA 62.0; designed for MIL-STD
 1275D, 704, 810, 461F Conformal
 Coating: Standard acrylic


Technical Information

Article	Description	Ordering Code	Variant
VPX360DMS	600W 3U VITA 62 VPX power supply Standard Version, 28V key, MIL-STD-461, -704, -1275 compliant, with standard acrylic conformal coating	OVPX-360DMS	Leaded soldering
		OVPX-360DMS1	RoHS
VPX360EMS	600W 3U VITA 62 VPX power supply Standard Version, 48V key, MIL-STD-461, -704, -1275 compliant, with standard acrylic conformal coating	OVPX-360EMS	Leaded soldering
		OVPX-360EMS1	RoHS

Technical Data

Form Factor	3U VPX CC	
Pitch	5 HP / 1.0 inch	
Weight	0.8 kg / 1.8 lbs	
Operating Temperature (at wedge lock)	-40 °C to 85 °C (relative humidity 95 %)	
Storage Temperature	-55 °C to 105 °C	
Isolation	Input to Output Isolation	500 V
	Input to Case Ground Isolation	500 V
	Output to Case Ground Isolation	500 V
Case Ground to Safety Ground Resistance	< 10 mΩ (TBC)	
Power	Maximum Output Power	600 W
	Maximum Input Power	~680W
	Maximum Dissipated Power @ max. Power	~80W
Nominal Input Voltage	28 V DC / 48V DC (different keys)	
Minimum Turn ON Voltage	12 V	
Minimum Turn OFF Voltage	8 V	
Maximum Continuous/Peak Input Voltage	68 V / ± 250 V (<1 ms spike)	
Input Overvoltage Protection:	Outputs disable if input voltage exceeds 68 VDC for > 600 ms (10 second auto-restart)	
Maximum Internal Working Temperatures	125 °C	

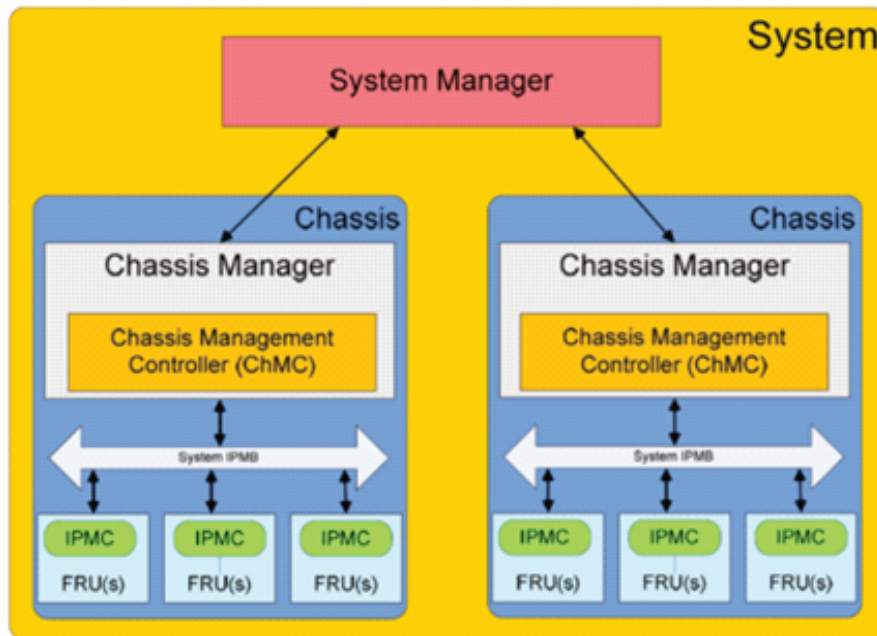
Technical Information

Temperature Protection Sensing Point (internal)	125 °C
Temperature Protection Sensing Point (internal)	125 °C (Outputs disable when internal PCB temperature exceeds threshold)
Maximum Currents 12V / 3V3	see tables in "variants" for different power configurations
Fixed Switching Frequencies 12V / 3V3	520 kHz / 520 kHz
Peak Efficiencies 12V / 3V3	93% / 82%
Max. Output Ripple and Noise: 12V / 3V3	< 120 mVpp / < 50 mVpp
(0-20 MHz Bandwidth)	< 30 mVpp / < 25 mVpp
Line Regulation: 12V / 3V3	< 10 mV / 10 mV
V_{in}=V_{in, min} to V_{in,max}, load and T_c fixed	< 0.1%
Load Regulation: 12V / 3V3	60 mV / 50 mV
12V / 3V3: Maximum Output Voltage (Sense Lines Open)	12.3 V / 3.45 V
Load Transient Recovery Time (50 % load change condition)	1 ms
MIL Standard Compliance	as per VITA 62 specification
MIL-STD-461F (EMI) Compliance	Designed (to be tested) in compliance with sections CE102, CS101, CS114, CS115, CS116. See user manual for more details.
MIL-STD-704F Compliance	Designed (to be tested) in compliance for normal transients (LDC105), abnormal transients (LDC302) and distortion spectrum (LDC103). External hold-up circuit optional. See user manual for more details.

IPMB Communication Protocol

The IPMB protocol is in compliance with VITA 46.11 and SOSA® for VPX power supplies. For further information, please refer to VITA 46.11 specification.

Overview



The Chassis Manager communicates inside the chassis with Intelligent Platform Management Controllers (IPMCs), each of which is responsible for local management of one or more Field Replaceable Units (FRUs).

Management communication within a chassis occurs primarily over the Intelligent Platform Management Bus (IPMB), which is implemented in an optionally dual redundant basis as the System IPMB in VITA 46.11. (If the IPMB is redundant you distinguish between IPMB A and IPMB B)

Every FRU has an own Hardware address (7 Bit). Every Hardware address should be unique within a chassis.

Aside from that, every FRU has its own physical address, which is build from a Site Type and a Site Number (detailed description in VITA 46.11 4.1.3.3)

IPMB Communication Protocol

IPMB Addressing

The IPMB Address is defined by the Hardware Address. There are three Geographical Address Pins GA0*, GA1* and GA2* available. (VITA46.11 Rule 4.1.3.1.2-1)

GA0*, GA1* and GA2* are inverted logic inputs with internal 10kOhm pullup.

The Hardware Address of a Module is given by adding 20h to the Geographical Address. (VITA46.11 Rule 4.1.3.1.1-7, Table 4.1.3.1-2)

To calculate the IPMB Address simply multiply the Hardware Address with 2 (or shift the bits 1 left) (VITA46.11 Rule 4.1.3.2-2)

GA2*	GA1*	GA0*	Hardware Address	IPMB Adresse
U	U	U	20h	40h
U	U	G	21h	42h
U	G	U	22h	44h
U	G	G	23h	46h
G	U	U	24h	4Eh
G	U	G	25h	4Ah
G	G	U	26h	4Ch
G	G	G	27h	4Eh

U = Unconnected; signal is pulled-up on the module and results in a logical "0"

G = Biased to Ground on the Backplane; results in a logical "1"

For programming use the following instruction:

20h = 0b0010 0000

For a 7-bit Address:

HARDWARE_MSB_ADDR = 0b01000 // 5 MSB bits from 20h, GA1, GA0

-> shift left

-> if GA2* 0, add 1

-shift left

-> if GA1* 0, add 1

-> shift left

-> if GA0 == 0 add 1

Physical Address

The physical Address is a description of the tangible location of a FRU within a Chassis. It is intended to aid an operator in locating a FRU within a Chassis.

It consists of a pair of Values: Site Type and Site Number.

IPMB Communication Protocol

Site Type

The Site Type describes the identity of the FRU (for example: The Site Type of a Front Loading VITA 62 Module is 0Dh)

A full list of Site Types can be found in VITA 46.11 Rule 4.1.3.3-1, Table 4.1.3.3-1

Site Number

The Site Number identifies a specific FRU within a chassis in case that multiple modules of the same type are installed. Therefore, the Site Number needs to be a unique Number for every FRU of a specific Site Type in the Chassis.

The Site Number is equivalent so the Geographical Address for the FRU, interpreted as a numeric field.

GA2*	GA1*	GA0*	Site Number
U	U	U	1
U	U	G	2
U	G	U	3
U	G	G	4
G	U	U	5
G	U	G	6
G	G	U	7
G	G	G	8

IPMB Commands

Global Commands

Command Name	CMD	Additional informations
Get Device ID	01h	
Cold Reset	02h	
Get Self-Test Result	04h	
Broadcast "Get Device ID"(3)	01h	

Event Commands

Command Name	CMD	Additional informations
Set Event Receiver	00h	
Get Event Receiver	01h	
Get Sensor Event Enable	29h	
Get Sensor Event Status	2Bh	
Platform Event ("Event Message")	02h	

IPMB Communication Protocol

Sensor Device Commands

Command Name	CMD	Additional informations
Get Device SDR Info	20h	
Get Device SDR	21h	
Reserve Device SDR Repository	22h	
Get Sensor Hysteresis	25h	
Get Sensor Threshold	27h	
Get Sensor Type	28h	
Get Sensor Reading	2Dh	

Command Name	CMD	Additional informations
Get FRU Inventory Area Info	10h	
Read FRU Data	11h	
Write FRU Data	12h	

[2] Additional constraints apply, see appropriate IPMI v1.5 section for details.

[3] This command is sent using the Broadcast format on IPMB. See command description for details.

VITA 46.11 Commands

Command Name	CMD	Additional informations
Get VSO Capabilities	00h	
Set IPMB State	09h	
Set FRU StatePolicy Bits	0Ah	
Get FRU State Policy Bits	0Bh	
Get Device Locator Record ID	0Dh	
FRU Control Capabilities	1Eh	
Get FRU Address Info	40h	
Get Mandatory Sensor Numbers	44h	

SOSA Commands

For the SOSA Standard a few additional Commands needs to be Implemented.
The List is down below.

The SOSA Standard also requires a redundant IPMB (IPMB-A and IPMB-B)
The match this requirement the second I2C Interface on the μ C needs to be accessible.
If the Hardware provides a redundant IPMB the Firmware needs to alternate

IPMI Messages between these two Interfaces.

Command Name	NetFn	CMD	Additional informations
FRU Control	2Ch	04h	
Set FRU StatePolicy Bits	2Ch	0Ah	
Get FRU State Policy Bits	2Ch	0Bh	
Set FRU Activation	2Ch	0Ch	
Get Mandatory Sensor Numbers	2Ch	44h	
Get SEL Info	0Ah	40h	
Reserve SEL	0Ah	42h	
Get SEL Entry	0Ah	43h	
Get SEL Time	0Ah	48h	
Set SEL Time	0Ah	49h	

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The Power of IoT

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