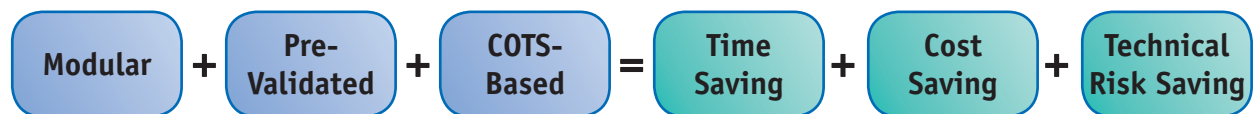# » ApexVX «

OpenVPX™

FMC

VXFabric™

VXControl™

Multi-Mission Rugged Computer System

» Pre-qualified Solution based on COTS Building Blocks

» Flexible Design for Easy Customization

» 5-slot 3U VPX Computer System

» Environmentally Sealed Enclosure

» PBIT System Test Innovative Learning Mode

» Support for Kontron VXFabric™ and VXControl™ Smart Technology

Pre-qualified Computer System for Rapid Deployment

Kontron ApexVX is a pre-validated computer system that can be easily modified and adapted to your application requirements. Based on Kontron COTS building blocks, it provides a cost-efficient, proven and technically stable solution to deploy your next generation systems. ApexVX modular design ensures fast customization features that allow the system to adapt to the specific requirements of multiple missions, helping secure ambitious deployment schedule.

ApexVX multi-mission rugged computer system is the union of battle-proven enclosure technology and leading edge 3U VPX computing technology. ApexVX is delivered fully functional and will run most Linux-based application without requiring code change. The specific version of ApexVX hardware and software described in this datasheet is an example of what the Kontron ApexVX technology can bring to its customers. Kontron's commitment to ongoing development of VPX next generation hardware ensures a robust product roadmap for the ecosystem along with seamless integration within the ApexVX product line.

Modular + **Pre-Validated** + **COTS-Based** = **Time Saving** + **Cost Saving** + **Technical Risk Saving**

Match your Application Needs in a two-step Approach

1. **Develop:** use ApexVX to develop and test your system application. Introduce minimal change from a pre-qualified ApexVX hardware and software configuration. Contact apexvx@kontron.com for all configuration changes.

   Use ApexVX to demonstrate system level capability and secure the right solution

2. **Deploy:** finalize the features to your exact configuration for deployment. apexvx@kontron.com will help you design your application-specific elements: custom I/O boards, cabling, information security solutions.

Unique Asset for Agile Procurement

ApexVX is a new generation of turnkey rugged computers aiming at smart development of multiple application concepts for military and transportation customers. ApexVX integrated hardware and software, based on COTS elements from Kontron, allow demonstrating the performance of combined cutting edge technology improvements provided by a set of conduction-cooled 3U VPX cards mounted into a ½ ATR style small form factor chassis.

ApexVX specifically aims at fulfilling the AGILE PROCUREMENT trend which promotes the use of very early field trials for new concepts. To achieve this, ApexVX has been designed to be used in the lab and then directly transferred in harsh environment for real life field trials.

Applications

ApexVX is fully sealed and has been qualified for harsh temperature, shock and vibration environments. It offers the ultimate performance for embedded rugged applications operating in stringent conditions. ApexVX is perfect for airborne applications, mobile military vehicles, precision-guided munitions, electronic warfare, unmanned vehicles and C4ISR.

Kontron Smart Technology for Secured System Application: VXFabric™ and VXControl™

ApexVX implements VXFabric™ and VXControl™ smart technology for a secure system deployment and maintenance.

VXFabric™ offers Multi Gigabyte bandwidth between boards thanks to a Linux low level software module interfacing the TCP/IP stack with PCIe fabric. All existing code works unmodified on VXFabric. VXControl™ is a solution for fine grained Out Of Band health management at the computer level. It relies on onboard controllers interfaced through the standard SMB (System Management Bus) of the VPX backplane.

PBIT System Test Solution

ApexVX implements Kontron Power-on Built-in Test (PBIT) system test solution to improve the reliability, safety and security of mission critical applications. Kontron PBIT implements a learning mode to record the status of all ports and buses connected to the processor, allowing a quick and extensive system configuration diagnostic. Compared to the complex procedure of programming system configuration, this capture mode supports OEMs and system integrators with drastically simplified and more reliable system configuration control. Its modular and scalable structure allows dedicated configuration and customization enabling easy adaption to the application-specific needs. Kontron PBIT is available as an option on all Kontron CPU boards.

Long Term Supply

ApexVX is the member of Extended Life Cycle product family, which offers a 15-year life cycle organization. ApexVX is the perfect computer system for long term programs in search of general purpose or compact high performance parallel computing solutions.

Dedicated support

A specific hotline for Kontron multi-mission rugged computer systems guarantees a single point of contact and an efficient support at both building blocks and system level. For ApexVX, contact **apexvx@kontron.com**

Technical Information

Physical Dimensions

Height	5.840" / 148.3 mm
Depth	13.930" / 353.82 mm (not including handle or connectors)
Width	4.880" / 123.9 mm
Weight	11 lbs / 5 kg (depends on payloads)

Environmental

Storage Temperature	-50°C to 100°C
Operating	-40°C to 71°C at sea level
Vibration	Per MIL-STD-810E, 0.1g2/Hz, 15-2000 Hz (without shock tray)
Shock	MIL-STD-810E, 40g, 20 ms, half sine wave (without shock tray)
Humidity	Per MIL-STD-810E, 95% NC for 240 hours
Salt Fog	Per MIL-STD-810E, 5% for 48 hours
Fungal Growth	Per MIL-STD-810E, No Growth
EMC	Per MIL-STD-461E, CE101, RE102, RS101, RS103

Electrical

Power supply	28 VDC/200W Input Std - 5V, +/-12V, 3.3V
Input transient protection	Meets or exceeds MIL-STD-704, MIL-STD-1275
Shutdown	Over-voltage shutdown with auto-recovery
Hold-up	50 msec power hold-up option available
Power Consumption Typical	Depends on payloads

Backplane Configuration

5-slots, system cards, 0.8 inch pitch
1 Slot Power Supply, blind mate type via Positronics connector
Compliant with:
» VPX baseline architecture: ANSI/VITA 46.0- 2007
» OpenVPX draft ANSI/VITA: 65-2010
» PCI-Express on VPX Fabric Connector: Draft 0.15 Vita46.4 July 21th 2010
» Rear Transition Module for VPX: ANSI/VITA 46.10 Dec.2009

I/Os

1 x Display Port
2 x Ethernet 10/100
24 x FPGA GPIO front or rear
16 x EIA-232 or 8 x EIA-422/EIA-485
2 x USB
1 x EIA-232
MIL-C-38999 connectors

Software support

Preloaded Linux Fedora 12

Configurations

Your choice of Single Board Computers, four 3U VPX payload slots compatible with:
» VX3230: 8544 PowerPC General Purpose SBC
» VX3030: 620LE Core i7 General Purpose SBC
» VX3035: 2655LE Core i7 2nd gen with AVX ™ (SANDY)
» soon Quad Core i7 3rd gen with AVX (IVY)
Your choice of Mezzanine carrier boards:
» VX3800 PMC/XMC carrier board
» VX3830 and VX3836 custom I/O FPGA Boards
» VX3840 MXM-GPU carrier board
Your choice of Switches:
» VX3905 PCI-Express and Ethernet hybrid switch
» VX3910 Ethernet switc
Your choice of storage:
» SATA flash on-board or SSD
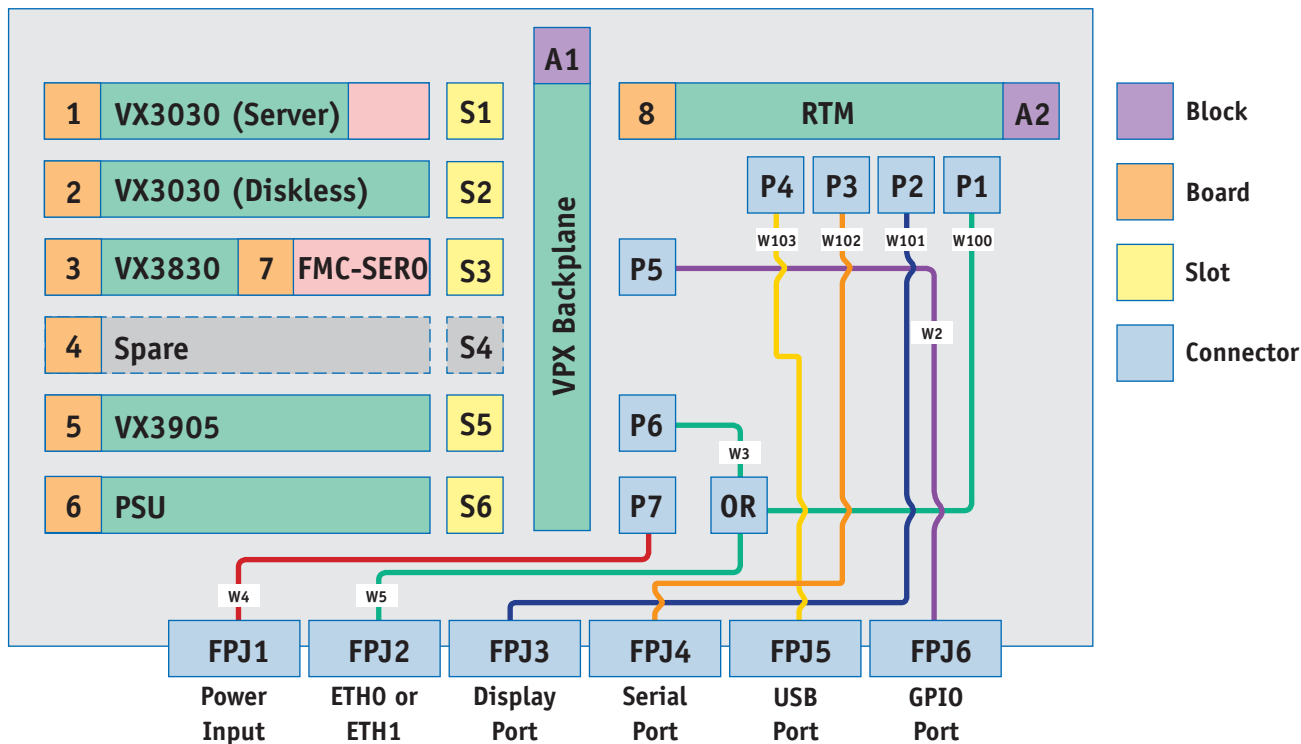Please contact apexvx@kontron.com for specific computer profiles

Integration Services

Environmental Stress Screening (ESS) including thermal and vibration cycling.
System configuration: Installation of system I/O wiring, and connectors and peripherals as required.
ATP: Functional testing of configured system using customer or Kontron developed test procedures.

Chassis modification

Can be modified to meet specifications, including: outline and mounting, I/O wiring, I/O panels, custom backplanes, environmental and thermal compliance, and power supplies.
Both fan-assist or fan-less solutions available

Block Diagram- 01010101 Configuration

Block Diagram showing:

1	VX3030 (Server)		S1
2	VX3030 (Diskless)		S2
3	VX3830	7 FMC-SER0	S3
4	Spare		S4
5	VX3905		S5
6	PSU		S6

A1 — VPX Backplane

8 RTM A2

P4 P3 P2 P1
W103 W102 W101 W100

P5
W2
P6
W3
P7 OR

FPJ1 — Power Input — W4
FPJ2 — ETH0 or ETH1 — W5
FPJ3 — Display Port
FPJ4 — Serial Port
FPJ5 — USB Port
FPJ6 — GPIO Port

Legend:
- Block
- Board
- Slot
- Connector

Ordering Information

Article	Order Code	Description
ApexVX	AP-5985-01010101	Generic multi-mission Core i7 ApexVX configuration: 2 SBC with Core i7 @ 2 GHz and 2 GB memory, 1 Virtex 5 FPGA Customisable I/O Board with FMC, 1 PCIe/GETH Switch, 1PSU. One 3U VPX slot available for extensions. Centralised PCIe x4 gen2 and GETH backplane
External cable KIT	P/N 5007400-1	External wire harness kit for ApexVX, includes GPIO, Power, Ethernet, USB, and RS232 interface cables.

ApexVX - Other Views

Rear Side

Inside

External Cable KIT

CORPORATE OFFICES

Europe, Middle East & Africa
Oskar-von-Miller-Str. 1
85386 Eching/Munich
Germany
Tel.: +49 (0)8165/ 77 777
Fax: +49 (0)8165/ 77 279
info@kontron.com

North America
14118 Stowe Drive
Poway, CA 92064-7147
USA
Tel.: +1 888 294 4558
Fax: +1 858 677 0898
info@us.kontron.com

Asia Pacific
17 Building,Block #1,ABP.
188 Southern West 4th Ring Road
Beijing 100070, P.R.China
Tel.: + 86 10 63751188
Fax: + 86 10 83682438
info@kontron.cn

intel Embedded Alliance Premier

www.kontron.com