

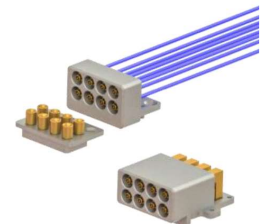
VITA COTS Range / Next Gen

VITA & Open VPX Technologies

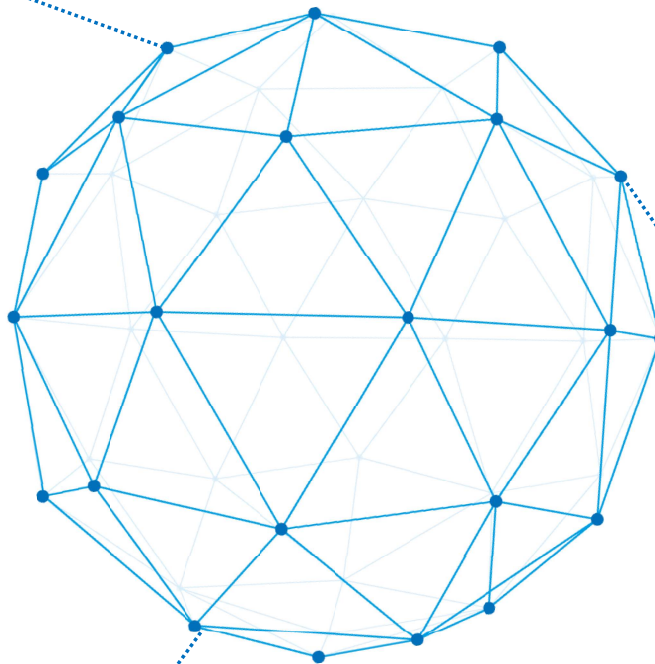
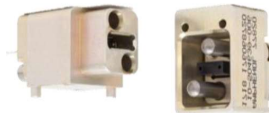
VITA 46 R-VPX



VITA 67 RF



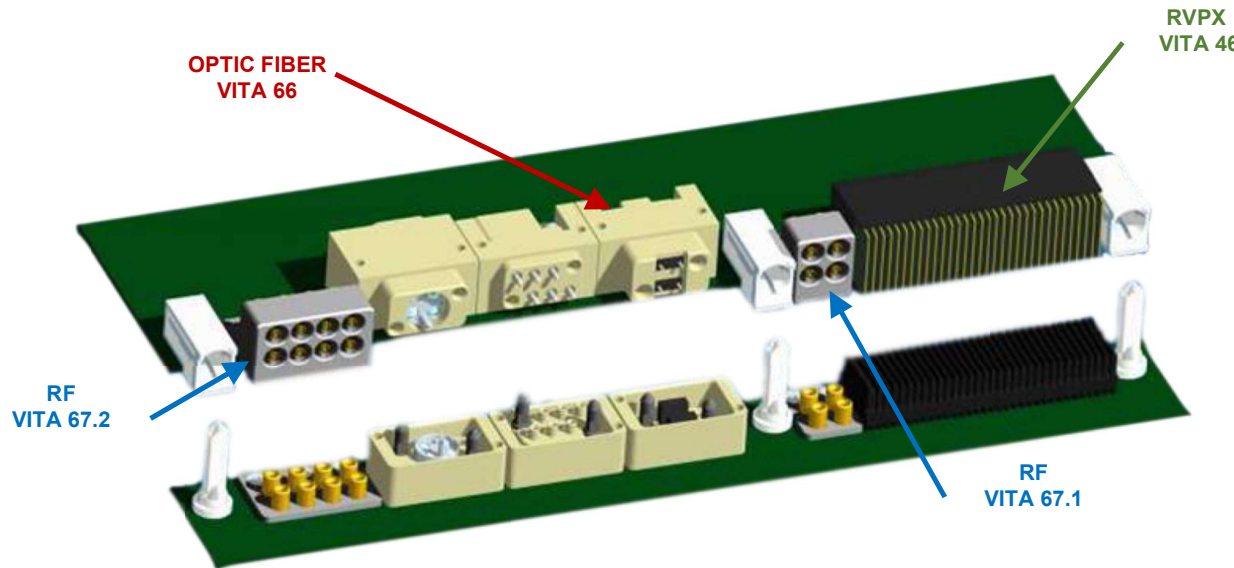
VITA 66 FIBER OPTIC



VITA & Open VPX



All Amphenol VITA products are compliant to VITA specs and can be designed for interoperability while meeting performance requirement



VPX VITA ANSI STANDARD

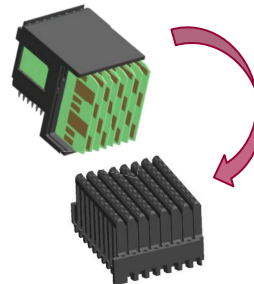


Extension of VME standards for rugged integrated systems
 → To deliver more robust, high-speed performance
 → dedicated for data-intensive, high bandwidth applications (intelligence, surveillance, reconnaissance...)

VITA 46 VPX™	VITA 65 OpenVPX™
Define entirely high speed connectors to → carry mapping for popular switched serial fabrics - Gigabit Ethernet - Serial Rapid IO - PCI Express - Infini Band - Aurora → Increase power envelope (including 48V profile & cooling methods)	→ Bring versatile system architectural solutions using - Module mechanical - Communication protocols - Connectors - Utility & power definitons - Thermal To design a serie of standard profiles that define slots, backplane, modules & development chassis

VPX Technologies includes :

- 3U and 6U formats
- 7-row high speed connector
- Choice of high speed serial fabrics
- PMC, FMC (VITA 57), and XMC (VITA 42) mezzanines
- Hybrid backplanes to accommodate VME64, VME320 VXS, and VPX boards
- VPX - bus to bus bridges



Advantages :

- Use of modular serial switched fabrics
- Deliver speeds up to 10.3 Gbps including PCI Express, Serial RapidIO & 10 Gigabit Ethernet
- Offers 160 high-speed differential pairs
- VME compatible
- Increase total I/O capacity

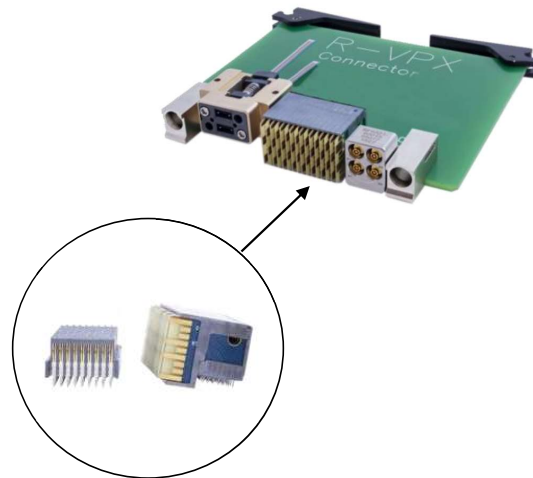
Get to know more : The Vita Standard Organization (VSO) <https://www.vita.com>

VITA 46 – R-VPX

Ruggedized VITA 46 connector up to 16 Gbps



High speed connector Inter-mateable and inter-mountable with any VITA 46 compliant connector

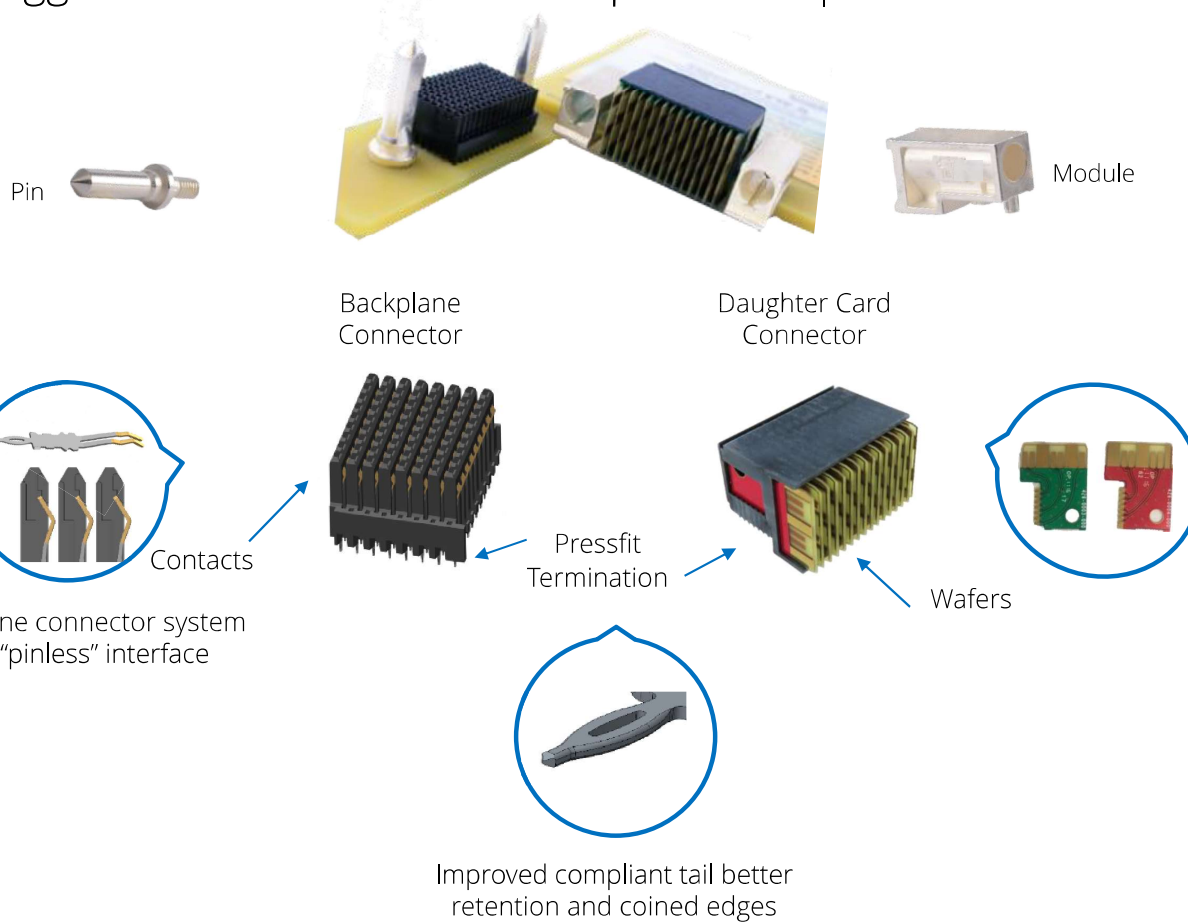


- Complete connector family includes
 - 3U & 6U configurations
 - Single ended, differential & power contacts
 - Upgrade for 32Gbps coming soon

- Meets all VITA 46 & 47 requirements
- 10 Gbps, 16 Gbps+ performance
- Optimized footprints for signal integrity and ease of board design
- 3 levels of signal contact sequencing
- Up to 140 signals per inch
- 4pt backplane contact supports high vibrate and shock
- Designed to be utilized in open architecture embedded computing systems

VITA 46 - R-VPX

Ruggedized VITA 46 connector up to 16 Gbps



Benefits over competition

- Improved backplane plastic housing and contact design
 - Lower insertion
 - Reduced electrical stub (higher impedance) Reduction in tip length allowed by preload ledge
 - Continuous closed entry
 - Eliminates opportunity for mechanical stub as well as
 - increased structural support for the top of the connector housing
- Improved compliant tail
 - Better retention via highly developed manufacturing controls and design
 - Coined edges improves contact interface with plated through hole

VITA 46 - R-VPX

Ruggedized VITA 46 connector up to 16 Gbps

QUALIFICATION MATRIX

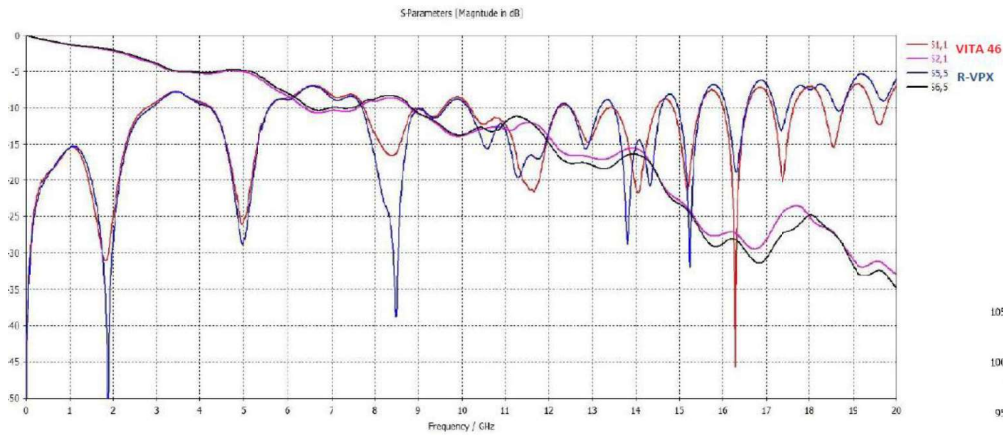
Group A1 R-VPX / RVPX R-VPX / VITA 46* VITA 46 / R-VPX*	Group A2 R-VPX / RVPX R-VPX / VITA 46* VITA 46 / R-VPX*	Group B R-VPX / RVPX R-VPX / VITA 46* VITA 46 / R-VPX*	Group C R-VPX / RVPX	Group D R-VPX / RVPX	Group E R-VPX / RVPX	Group F R-VPX / RVPX	Group G R-VPX / RVPX
Visual Exam	Visual Exam	Visual Exam	Visual Exam	Visual Exam	Visual Exam	Visual Exam	Visual Exam
LLCR	LLCR	LLCR	LLCR	LLCR	LLCR	ESD	LLCR
Safety Ground	Safety Ground	DWV	DWV	DWV	DWV	LLCR	DWV
Sine Vibration	Sine Vibration	Safety Ground	Safety Ground	Safety Ground	Safety Ground	DWV	Safety Ground
LLCR	LLCR	Bench Handling	Thermal Cycle w/Humidity	Salt Fog W/ SO2	Dust	Safety Ground	Current Overload
DWV	DWV	LLCR	LLCR	LLCR	LLCR	Mate/Unmate Force	LLCR
Safety Ground	Safety Ground	DWV	LLCR	DWV	Safety Ground	Durability	DWV
Mechanical Shock	Mechanical Shock	Safety Ground	DWV	Safety Ground	Sand	Mate/Unmate Force	Safety Ground
LLCR	LLCR	Vibration @ Temperature	Safety Ground	Salt Fog W/ SO2	LLCR	LLCR	
DWV	DWV	LLCR		LLCR	DWV	DWV	
Safety Ground	Safety Ground	DWV		DWV	Safety Ground	Safety Ground	
Random Vibration	HALT Vibration	Safety Ground		Safety Ground		Durability	
LLCR	LLCR					Mate/Unmate Force	
DWV	DWV					LLCR	
Safety Ground	Safety Ground					DWV	
						Safety Ground	
						ESD	

*Intermatability Testing Completed in subgroups A1, A2 & B

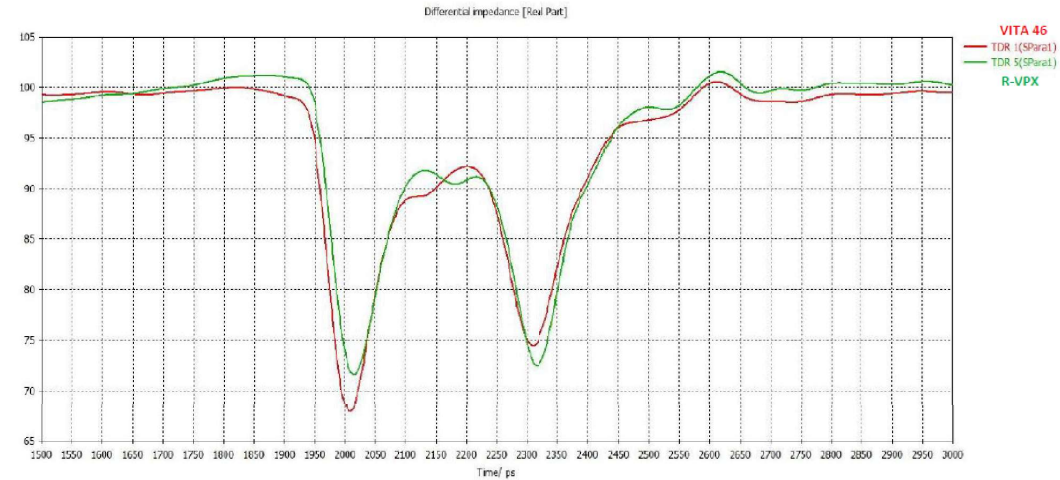
VITA 46 - R-VPX

Ruggedized VITA 46 connector up to 16 Gbps

SI Comparison: Insert & Return Loss



SI Comparison: Impedance



Note: ≈ 44 ps 10-90% TDR rise time

VITA 46 – RVPX

Ruggedized VITA 46 connector EVO 1 & 2



Our Evolution series connectors are designed to support the latest high speed protocols in backplane/module technology- capable of speeds up to 32Gb/s.

PCIe Gen 4
1000BASE-KX
10GBASE-KX4

100GBASE-KR4
Infiniband SDR, DDR, and QDR
Serial Rapid IO 12.5 Gbaud

R-VPX Evolution 1.0

- 16 Gb/s+ Performance
- Module connector has modified footprint- utilizes smaller compliant contacts for increased Si performance.
- Backplane connector is the legacy connector- no changes necessary on the backplane.
- Intermateable with existing/legacy VITA 46 connectors
- Production released
- Samples available
- Footprint compliant with 46.30 (VITA Draft Spec)

R-VPX Evolution 2.0

- 32Gb/s Performance
- Module AND Backplane connectors utilize smaller compliant contacts for increase Si performance
- Intermateable with existing/legacy VITA 46 connectors.
- In process of being added to the new 46.30 higher speed VITA 46 spec. 46.30 footprint compliant.
- In final stages of design/testing
- Production release target Q3 2019

VITA 66 – OPTIC FIBER

Optical Fiber Ruggedized VITA 66.1 & 66.4



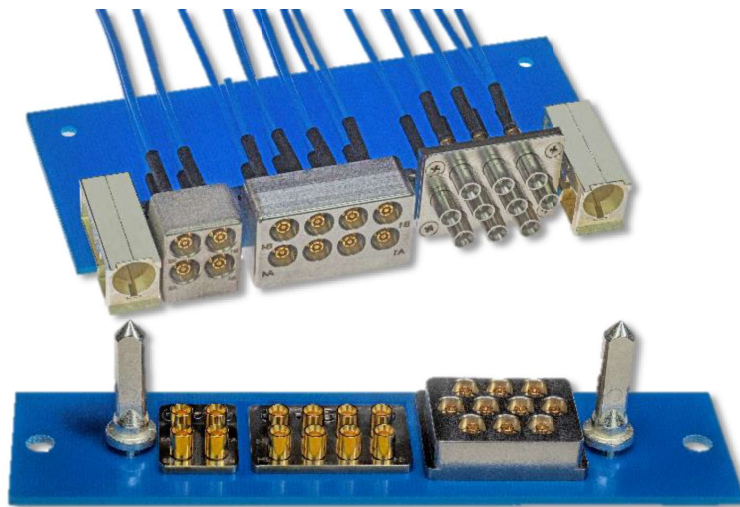
Ruggedized blind mate optical MT
Module/Backplane connector systems

- Supports up to two spring loaded floating MT ferrules
- Multiple alignment guide features
- No special tooling required for assembly
- Supports industry standard MT ferrules-up to 24 fiber optic channels per MT
- Customs & derivatives available : spring loaded, double density...

- VITA 66.1 : 2MT or Double density 4MT Standard or Spring loaded contacts
- VITA 66.4 : 1MT or Double density 2MT Standard or Spring Loaded contacts

VITA 67 – Radio Frequencies

VITA 67 coaxial interconnects



VITA 67.1 Half width 4 ports SMPM	VITA 67.2 Full width 8 ports SMPM	VITA 67.3 Increased density 10-12 ports SMPM
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High density and high-performance RF addition
VITA 67 compliant to the VPX Platform

- Use coaxial cables & contacts
- Floating SMPM coaxial pins ensure excellent RF performance in any mating condition
- Designed for side-by-side implementation with VITA 46 hardware
- Available in 3U and 6U configurations
- Minimal footprint of I/O slot & significant reduction in Mean-Time-To-Repair (MTTR) due to quick disconnect

- 4, 8, 10 or 14 ports configurations
- Ø1,1mm or Ø2,1mm Cable (OAL 12" / 6")

VITA 67 – Radio Frequencies

VITA 67 coaxial interconnects

<p>SMPM Motherboard VITA Connector</p> <p>VITA 67.1: 4 Position (3U) SV P/N: SF1132-6037</p> 	<p>SMPM Motherboard VITA Connector</p> <p>VITA 67.2: 8 Position (6U) SV P/N: SF1132-6036</p> 
<p>SMPM Daughtercard VITA Connector</p> <p>VITA 67.1: 4 Position (3U) SV P/N: SF9321-60015</p> 	<p>SMPM Daughtercard VITA Connector</p> <p>VITA 67.2: 8 Position (6U) SV P/N: SF9321-60013</p> 
<p>SMPM Female VITA Snap-In Float Mount Pins</p> <p>SV P/N: 3221-40019 (Ø.047 Cable) SV P/N: 3221-40022 (Ø.085 Cable)</p> 	<p>SMPM Female VITA Pin Removal Tool</p> <p>SV P/N: 500-32-022</p> 
<p>SMPM Female VITA to SMA Male Cable Assembly for Ø.047 Cable</p> <p>SV P/N: 7032-6728-060 (length 6.0") SV P/N: 7032-6728-120 (length 12.0")</p> 	<p>SMPM Female VITA to SMA Male Cable Assembly for Ø.085 Cable</p> <p>SV P/N: 7032-6729-060 (length 6.0") SV P/N: 7032-6729-120 (length 12.0")</p> 
<p>SMPM VITA 67.3C Backplane Module</p> <p>VITA 67.3 : 10 Position (3U) SV P/N : SF9321-60059</p> 	<p>SMPM VITA 67.3C Plug-in Module</p> <p>VITA 67.3 : 10 Position (3U) SV P/N : SF9311-60097</p> 
<p>SMPM VITA 67.3 SOSA Backplane module</p> <p>VITA 67.3 : 14 Position (6U) SV P/N : SF9321-60086</p> 	<p>SMPM VITA 67.3 SOSA plug-in module</p> <p>VITA 67.3 : 14 Position (6U) SV P/N : SF9311-60147</p> 

Markets & Platforms

RVPX products have been designed to service various markets based on key performance features and capabilities.

Key Features/Performance

- 10Gb/s+ Supports High Speed Protocols
- Modular
- COTS
- Open Architecture- Interoperability
- Performance- VITA 47
- Supports Ethernet, Fiber Channel and Infiniband applications.

Defense/Mil-Aero



Platforms

C4ISR
EW
Radar
UAV
Missile Management

Customers

Northrop Grumman
Lockheed-Martin
BAE Systems
Raytheon

Commercial Air



Platforms

In-Flight Entertainment
Cockpit/Aircraft Control
Collision Avoidance
Radar

Customers

Boeing
Airbus
Panasonic Avionics
Rockwell Collins
Federal Aviation Commission

Industrial Automation



Platforms

Control,
Visualization,
SCADA systems
Test and Measurement
Building Automation

Customers

Applied Materials
FANUC
Tetra Pak,
Rockwell Automation
Schneider Electric

Railway



Platforms

Critical Train Control
Signaling
Infotainment
Other Infrastructure

Customers

Siemens
Thales
Alstom
Bombardier,
GE Transportation
EMD

Medical



Platforms

Imaging Equipment
Diagnostic Devices
Bedside Care Devices
Therapy
Fitness Machines

Customers

GE Healthcare
Boston Scientific
Phillips healthcare
Johnson and Johnson