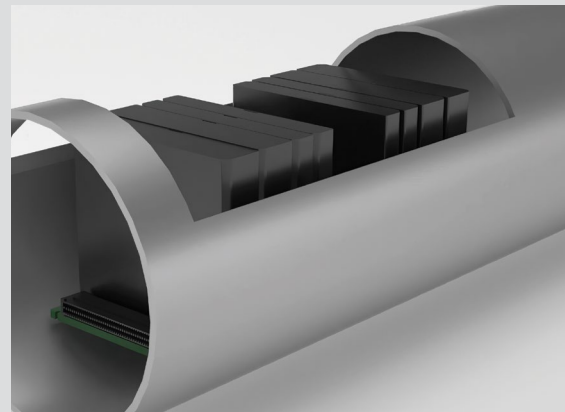
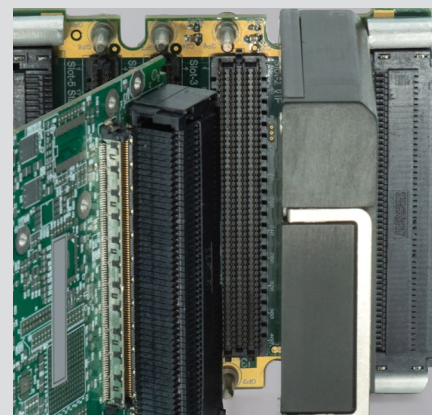
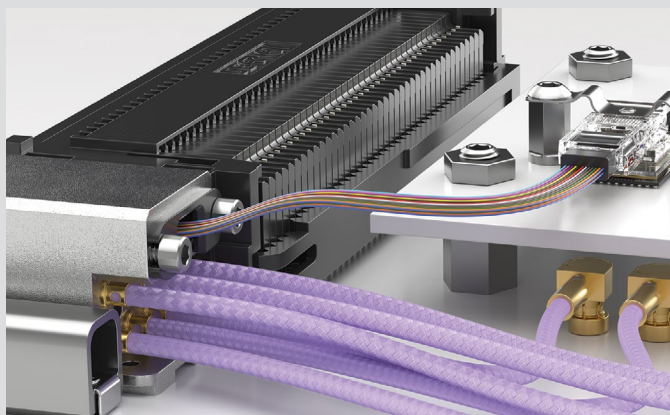




VITA™ 90 VNX+™ STANDARD INTERCONNECT SOLUTIONS



Next-generation small form factor standard designed to support reliable, modular embedded systems across defense, aerospace and industrial applications.



VITA™ 90 VNX+™ Industry Standard

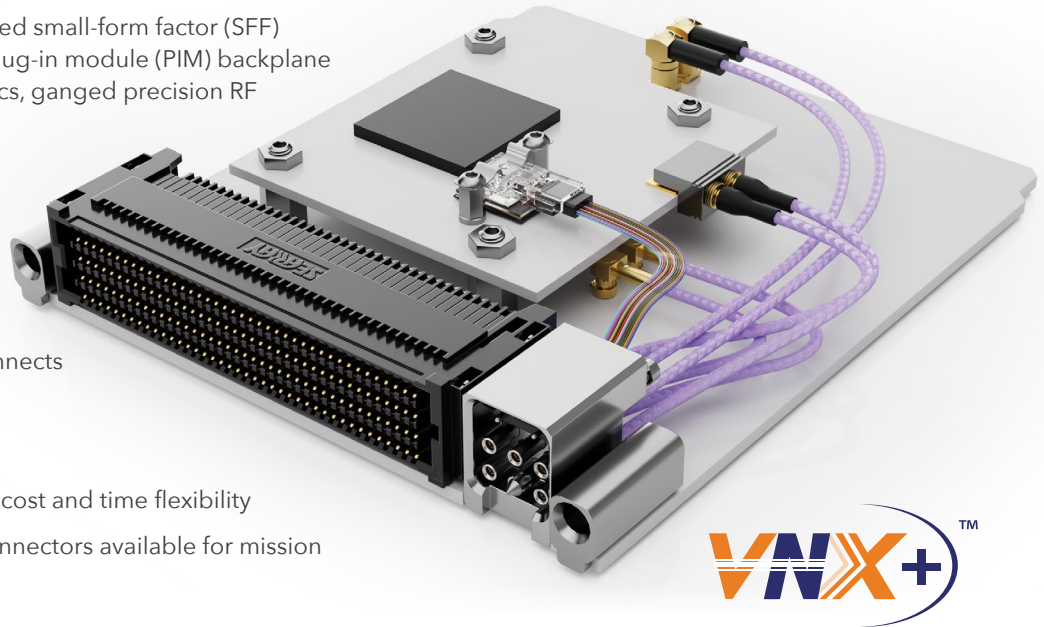
VITA 90.0 Base Standard establishes the mechanical and electrical foundation for VNX+, a next-generation small form factor standard that builds on the success of VITA 74 (VNX). VITA 90 modernizes system grounding, clocking, and management signal conventions to support reliable, modular embedded systems across defense, aerospace, and industrial applications.



Samtec VITA™ 90 VNX+™ Small Form Factor Solutions

Optimized for Mil/Aero and other rugged small-form factor (SFF) applications, Samtec's VITA 90 VNX+ plug-in module (PIM) backplane interface supports internal rugged optics, ganged precision RF and high-speed digital interconnects.

- Engineered as a full system to ensure reliability
- Supports analog signals to 110 GHz and digital signals to 56 Gbps PAM4
- Multiple connector module aperture profiles for optical and/or RF interconnects
- Highly configurable design
- SWaP-C optimized
- COTS or modified COTS solution for cost and time flexibility
- Scalable VITA 93 QMC mezzanine connectors available for mission specific I/O capabilities

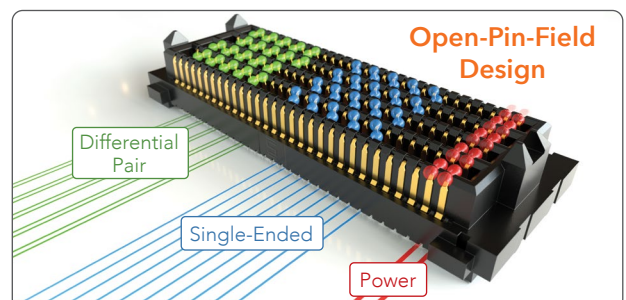


VITA™ 90 VNX+™ SPECIFIED HIGH-DENSITY CONNECTORS

VITA 90 VNX+ defines multiple Samtec SEARAY™ connectors for backplane and plug-in-modules in 13 mm and 19 mm stack heights.

SEARAY™ High-Density Arrays

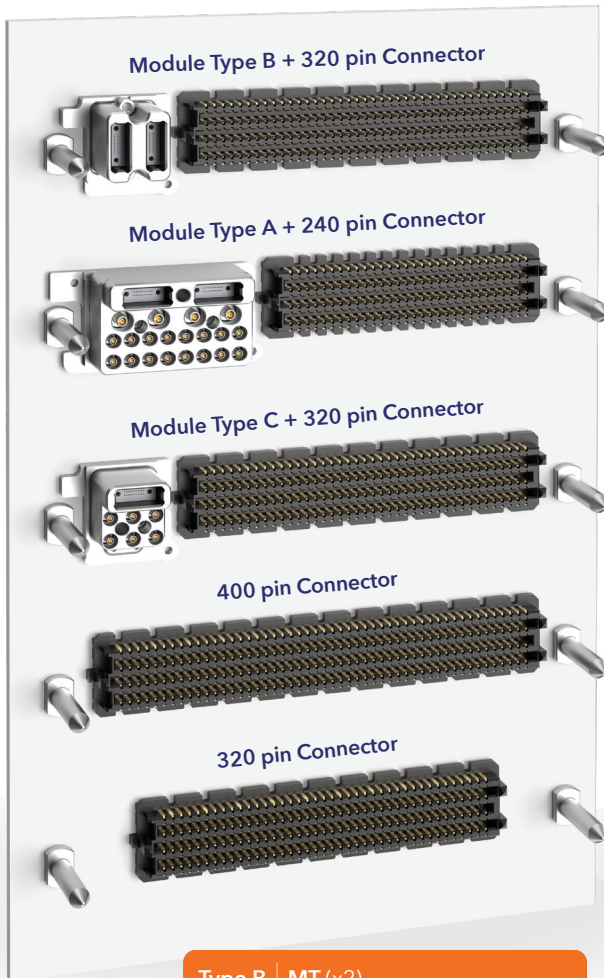
- 56 Gbps PAM4 performance
- Rugged, high-density, scalable connectors
- High-reliability contact system
- Open-pin-field design for routing flexibility used in each slot profile
- Available in a variety of pin counts to accommodate half and full VITA 90.2 optical/RF connector modules
- Also supports VITA 90.3 power supply units (right-angle connector in a 19 mm stack height with 240 or 320 pin counts)



VITA™ 90 VNX+™ CONNECTOR MODULES

Support for Multiple Slot Profiles

A variety of slot profiles are available to support a range of VNX+ configurations, including high-speed SEARAY™ connectors and optional RF or optical modules. For additional configuration options, contact VNX@samtec.com.



RF & Optical Connector Modules

Features & Benefits:

- Blind mating
- Precision machined aluminum
- Multiple-stage chamfered edges assure optimal self-alignment
- Up to 500 mating cycles
- Reliable mating with repeatable performance metrics
- Shrouded/siloed contacts protected from FOD and accidental damage
- Floating backplane connector module
- Ruggedized for extreme environments
- Environmental Qualification: VITA 47, DO-160 and MIL-STD-810

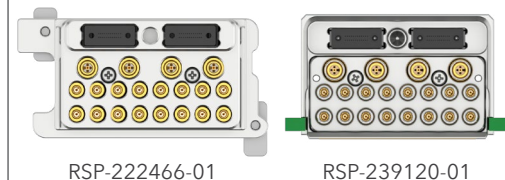
RF Interconnects

- Size 16 RF contact (50/75 Ω)
- Size 20 RF contact (50 Ω)
- .047" and .086" coax cable
- Frequency range to 110 GHz
- -90 dB isolation to 67 GHz

Optical Interconnects

- Industry standard MTs support Samtec's FireFly™ and FireHawk™ mid-board optical transceivers

Type A | MT (x2) + Size 16 (x4) + Size 20 (x16)



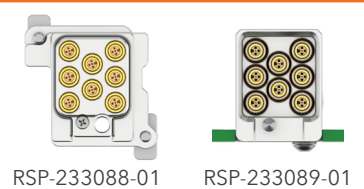
Type B | MT (x2)



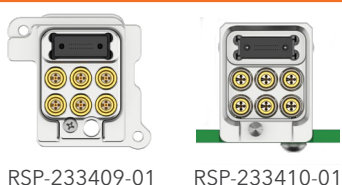
Type C | MT (x1) + Size 20 (x6)



Type D | Size 16 (x8)



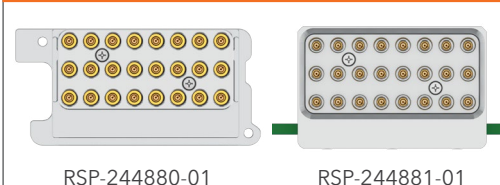
Type E | MT (x1) + Size 16 (x6)



Type F | Size 20 (x10)



Type G | Size 20 (x24)



COMPATIBLE INTERCONNECTS & COMPONENTS

Additional hardware is defined to facilitate high-density, high-speed, coaxial and optical I/O to support applications requiring RF, video or high-sensitivity sensor connectivity. VITA 90.0 (VNX+) also specifies guide hardware for alignment.

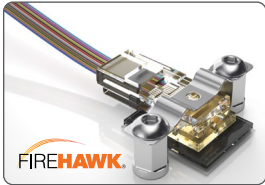
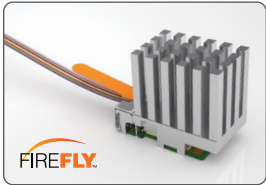
VITA™ 90.2 RF Contacts & Cables

- 110 GHz with high-density size 20 and size 16 contacts
- GPCC contacts provide improved density and performance for 50 Ω and 75 Ω applications



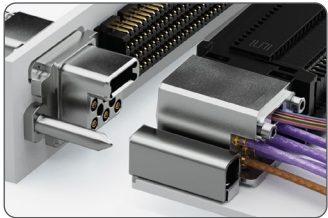
VITA™ 90.2 Rugged Optics

- FireFly™ mid-board optical transceivers support up to 28 Gbps per lane in x4 & x12 configurations; samtec.com/firefly
- FireHawk™ ruggedized mid-board optical transceivers support 10 Gbps per lane in a x4 configuration; samtec.com/firehawk



VITA™ 90.0 Guide Hardware

All VNX+ modules use common guide hardware for alignment with the guide pins on the backplane to the receptacles on the PIMs.



THE EXPANDING VITA™ 90 VNX+™ STANDARD

Standard	Title	Purpose	Key Benefits
VITA 90.0	Base Standard	Establishes the mechanical and electrical foundation for the Base Standard of VNX+, a next-generation small form factor standard that builds on the success of VITA 74 (VNX).	Modernizes system grounding, clocking, management signal conventions; designed for SWaP-constrained environments; provides reliable, modular embedded systems for defense, aerospace & industrial applications.
VITA 90.1	Profile Tables	Defines standardized slot profiles and introduces Advanced Module Pinout System (AMPS) naming convention.	Ensures consistent electrical mapping across VNX+ modules; simplifies system integration, supports scalable, interoperable designs.
VITA 90.2	Optical & Coax Connector Modules	Expands the platform with high-density optical and RF interconnects tailored for rugged small form factor systems; introduces blind-mate connector modules.	Wide range of configurations in full and half aperture sizes; supports up to 90 GHz with -90 dB isolation to 67 GHz; ensures robust alignment, FOD protection, and high-cycle mating reliability for extreme mil/aero environments.
VITA 90.3	Power Supply & Storage Modules	Defines power & storage modules; keys the connector position inside the slot profile.	Remapped connector and mechanical positioning ensures proper slot alignment, supports conduction & liquid-cooled environments for higher output applications, streamlines rugged system integration.
VITA 90.4	Cooling & Mounting Systems	Defines additional mechanical strategies for mounting & thermal management.	Non-electrical specification enhances system flexibility without altering connector definitions.
VITA 90.5	Space	Extends/enhances VNX+ architecture for space-grade systems (e.g. non-field-repairable platforms requiring enhanced redundancy, system management, thermal resilience).	Mechanical and electrical provisions support radiation tolerance, long-life reliability, and mission assurance in extreme environments.
VITA 90.6	Signal Integrity Compliance	Signal integrity compliance standard, to be modeled after VITA 68 for VPX systems.	Methods will ensure interoperability at ≥16 Gbaud, covering differential pair skew, clock distribution, connector performance; includes reference S-parameter models with COM criteria for end-to-end validation.

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