Amphenol-BSI VPX Datasheet
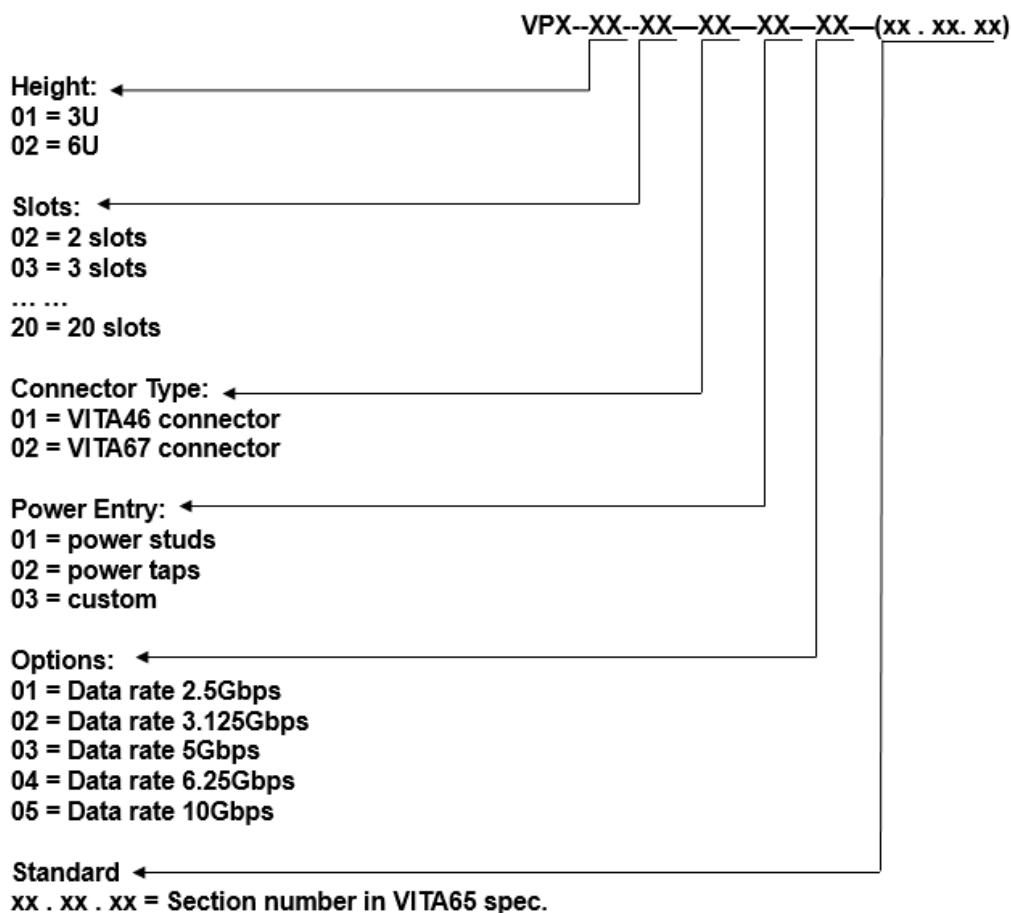
Amphenol-BSI VPX Backplanes

Amphenol-BSI's VPX high performance backplanes are available in both 3U & 6U form factors. All VPX backplanes are compliant to VITA VPX specifications. ABSI can customize the VPX backplane against our customer's specific requirements.

Amphenol-BSI VPX backplane order configuration part number table.

The following configuration table provides the part numbering structure applicable to the full range of VPX backplanes on offer from Amphenol-BSI. We can engage with you on any VPX backplane requirement that you may have. Please contact us for further details.

VPX--XX--XX—XX—XX—XX—(xx . xx. xx)

Height:
01 = 3U
02 = 6U

Slots:
02 = 2 slots
03 = 3 slots
… …
20 = 20 slots

Connector Type:
01 = VITA46 connector
02 = VITA67 connector

Power Entry:
01 = power studs
02 = power taps
03 = custom

Options:
01 = Data rate 2.5Gbps
02 = Data rate 3.125Gbps
03 = Data rate 5Gbps
04 = Data rate 6.25Gbps
05 = Data rate 10Gbps

Standard
xx . xx . xx = Section number in VITA65 spec.

Configuration part number example

VPX-01-06-01-03-02 (15.2.10) specifies a 3U 6 slot 3.125Gbps VPX J2 backplane, configured with VITA46 connectors and customer specific custom power entry requirements.
The backplane topology is described in VITA 46 specification section 15.2.10. See next page for details on Vita Spec

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OpenVPX™

VPX Topology.

Below are the sections of the VPX spec that define backplane architecture. The VPX Spec is only available to VITA members.

11.2	**6U BACKPLANE PROFILES USING VITA 46.0 CONNECTORS**
11.2.1	Common Section for 6U Backplanes Using VITA 46.0 Connectors
11.2.2	16 Slot BKP6-CEN16-11.2.2-n (14 Payload + 2 Switch)
11.2.3	20 Slot BKP6-CEN20-11.2.3-n (18 Payload + 2 Switch)
11.2.4	10 Slot BKP6-CEN10-11.2.4-n (9 Payload + 1 Switch)
11.2.5	5 Slot BKP6-CEN05-11.2.5-n (4 Payload + 1 Switch)
11.2.6	10 Slot BKP6-CEN10-11.2.6-n (8 Payload + 2 Switch)
11.2.7	10 Slot BKP6-CEN10-11.2.7-n (8 Payload + 2 Switch)
11.2.8	6 Slot BKP6-CEN06-11.2.8-n (5 Payload + 1 Switch)
11.2.9	12 Slot BKP6-CEN12-11.2.9-n (10 Payload + 2 Switch)
11.2.10	6 Slot BKP6-DIS06-11.2.10-n (5 Payload + 1 Switch)
11.2.11	17 Slot BKP6-HYB17-11.2.11-n (12 Payload + 3 VME + 2 Switch)
11.2.12	8 Slot BKP6-HYB08-11.2.12-n (1 Payload + 3 Peripheral + 1 VME Bridge + 3 VME)
11.2.13	9 Slot BKP6-CEN09-11.2.13-n (1 Payload + 8 Peripheral)
11.2.14	6 Slot BKP6-CEN06-11.2.14-n (1 Payload + 5 Peripheral)
11.2.15	6 Slot BKP6-DIS06-11.2.15-n (5 Payload + 1 Switch)
11.2.16	5 Slot BKP6-DIS05-11.2.16-n (5 Payload)
11.2.17	16 Slot BKP6-CEN16-11.2.17-n (14 Payload + 2 Switch)
11.2.18	6 Slot BKP6-DIS06-11.2.18-n (6 Payload)
11.2.19	9 Slot BKP6-DIS09-11.2.19-n (9 payload)
11.2.20	7 Slot BKP6-HYB07-11.2.20-n (3 Payload + 2 VME Bridge + 2 VME)
15.2	**3U BACKPLANE PROFILES USING VITA 46.0 CONNECTORS .**
15.2.1	Common Section for 3U Backplanes Using VITA 46.0 Connectors
15.2.2	6 Slot BKP3 CEN06 15.2.2-n (5 Payloads + 1 Switch)
15.2.3	7 Slot BKP3 CEN07 15.2.3-n (6 Payloads + 1 Switch)
15.2.4	10 Slot BKP3 CEN10 15.2.4-n (8 Payload + 2 Switch)
15.2.5	10 Slot BKP3 CEN10 15.2.5-n (8 Payload + 2 Switch)
15.2.6	12 Slot BKP3 CEN12 15.2.6-n (10 Payloads + 2 Switch)
15.2.7	6 Slot BKP3 DIS06 15.2.7-n (5 Payload + 1 Switch)
15.2.8	2 Slot BKP3 DIS02 15.2.8-n (1 Payload + 1 Peripheral)
15.2.9	3 Slot BKP3 CEN03 15.2.9-n (1 Payload + 2 Peripheral)
15.2.10	6 Slot BKP3 CEN06 15.2.10-n (1 Payload + 5 Peripheral)
15.2.11	9 Slot BKP3 CEN09 15.2.11-n (1 Payload + 8 Peripheral)
15.2.12	6 Slot BKP3 CEN06 15.2.12-n (1 Payload + 4 Peripheral + 1 Switch)
15.2.13	5 Slot BKP3 DIS05 15.2.13-n (3 Payload + 2 Peripheral)
15.2.14	6 Slot BKP3 DIS06 15.2.14-n (5 Payload + 1 Switch)
15.2.15	8 Slot BKP3 CEN08 15.2.15-n (6 Payloads + 2 integrated Switches)
15.2.16	8 Slot BKP3 CEN08 15.2.16-n (6 Payloads + 2 segregated Switches)
15.2.17	9 Slot BKP3 CEN09 15.2.17-n (8 Payload + 1 Switch)
15.3	**3U BACKPLANE PROFILES USING VITA 46.0 AND 67 CONNECTORS**
15.3.2	5 Slot BKP3 DIS05 15.3.2-n (2 Payload + 3 Payload with RF Cavities)
15.3.3	5 Slot BKP3 CEN05 15.3.3-n (2 Payload + 2 Payload with RF Cavities and 1 Switch)

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Description

VPX is an evolutionary step forward for the provision of high-speed interconnects in harsh-environment applications. VPX improves the network bandwidth by replacing DIN41612 connector with higher speed connectors. The maximum form factor expands to a 20slot backplane. VPX meets most system interconnects requirements including;

- Multi-gigabit differential technology
- Core computing cluster switched fabrics
- Serial Rapid IO, PCI Express, Hypertransport, Inifiniband or 10G Ethernet
- Sufficient ports to enable distributed switching or centralized switching

Open VPX defines 2 different backplane heights as 3U and 6U.
The 6U backplane configuration is defined in section 11 of ANSI/VITA 65-2010 (R2012) and the 3U backplane configuration is defined in section 15. In each sub-section, the specification provides the backplane topology for each communication plane and a slot interconnection definition for each slot type used. Each backplane profile references a slot profile for each slot position on the backplane and then defines how each pipe in each slot is interconnected and the electrical performance for each pipe. The backplane profiles defined in the OpenVPX standard are specifically targeted for use in standard development chassis profiles. The backplane profile defines which pins or set of pins are routed in the backplane, and which pins are available on RTM (Rear Transition Module) connectors at the rear of the backplane. The backplane profile also defines the slot-to-slot pitch. Amphenol-BSI's open VPX backplanes are compliant to VITA 65.
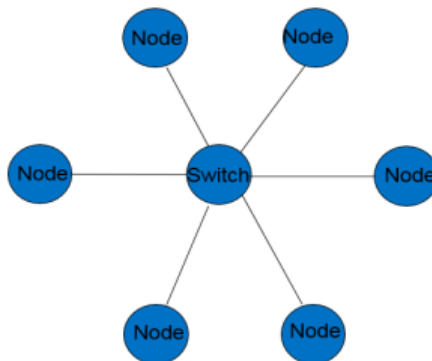
Amphenol-BSI VPX Datasheet

![OpenVPX logo]

Routing Topology

VPX supports 3 routing topology: single star, dual star and full mesh.

Star topology:
In single star topology, each node slot is connected
to a central switch slot with point-to-point connections.
All nodes connect to the switch through differential
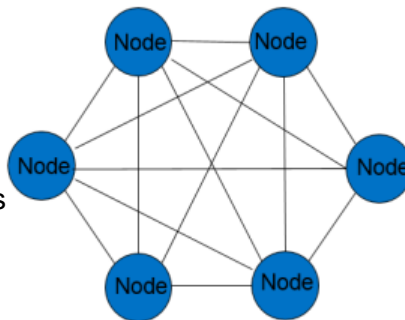pairs on the VPX backplane.

Dual Star topology:
Unlike the single star topology, the dual star topology contains 2
central switch slots. In dual star topology
the node slot is connected to a central 2 switch slots with
point-to-point connections.
All nodes connect to the switch through differential
pairs on the VPX backplane.
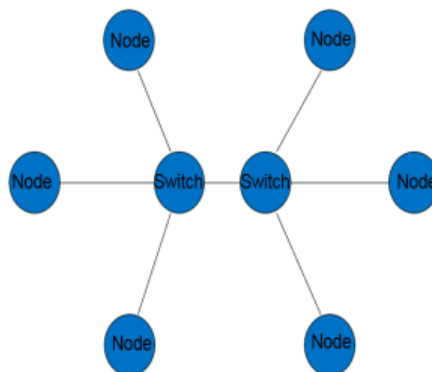
Full Mesh
In some applications, nodes require full connections between
each other. In this case each node makes connection with each
node in the system. In the full mesh VPX backplane, each node has
DIFF pairs connected to other nodes.

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Amphenol-BSI VPX Datasheet

Amphenol-BSI VPX Features:
- Compliant to VITA 65 Specification
- Compliant to the latest VITA 46 Specifications
- Centralized Star, Distributed configuration
- Rugged Eurocard 3U form factor
- 4 or 5 HP slot pitch
- High-speed Multi-gig/RVPX connectors
- Support RTMs (Rear Transition Module)-
- M3/M4 studs for power entry, Optional to use ATX connector
- Flexible keying and alignment mechanism
- System Management Interface
- JTAG interface
- RoHS and Halogen-Free

PCB information:
- 22 to 26 layers board
- Slot pitch 0.8"/1.0"
- Independent power and ground layers for power distribution
- Signal impedance Z0 SE 50 Ohms +/-10%, DIFF 100Ohms +/-10%
- Middle loss level material

Amphenol-BSI VPX Datasheet

Connector Type:

VITA 46 has introduced a single 8-wafer PCB 7-Row connector and six 16-wafer PCB 7-Row backplane connectors for J1~J6 The VPX connector is a high-speed board-to-board interconnect system capable of data rates in excess of 10 Gbps, meeting and exceeding VITA 46 standards. This connector system gives users modularity and flexibility by utilizing PCB wafer construction with customized wafer-loading patterns.

The connector is available from Amphenol AAO, TE, EPT etc.

Power entry solution

Amphenol-BSI VPX backplanes have a few power entry solutions to meet our customer's configuration requirements. Choose between power tags, screws or studs as the power input. We also offer industry standard power entry options on VPX backplanes to meet your power entry requirement.

Power tags example ERNI 214787:

Press-fit power tags is an option on the VPX backplane. Each power tap can carry 40A current.

Power Studs example PEM KFH-632-8-ET

Use of press-fit studs is also an option on VPX backplane. Each power tap can carry 30A current.

Custom

Our customers can also specify a custom power entry solution that they will use.

Amphenol-BSI VPX Datasheet

Amphenol-BSI VPX Backplane Sizes

3U Dimension Table on 0.8"slot pitch,

Slot Numbers	Height in Inch	Height in mm	Length in Inch	Length in mm
2	5.067	128.7	2.332	59.24
3	5.067	128.7	3.132	79.56
4	5.067	128.7	3.932	99.88
5	5.067	128.7	4.732	120.2
6	5.067	128.7	5.532	140.52
7	5.067	128.7	6.332	160.84
8	5.067	128.7	7.132	181.16
9	5.067	128.7	7.932	201.48
10	5.067	128.7	8.732	221.8
11	5.067	128.7	9.532	242.12
12	5.067	128.7	10.332	262.44
13	5.067	128.7	11.132	282.76
14	5.067	128.7	11.932	303.08
15	5.067	128.7	12.732	323.4
16	5.067	128.7	13.532	343.72
17	5.067	128.7	14.332	364.04
18	5.067	128.7	15.132	384.36
19	5.067	128.7	15.932	404.68
20	5.067	128.7	16.732	425

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Amphenol-BSI VPX Backplane Sizes

6U Dimension Table 1.0" slot pitch:

Slot Numbers	Height in Inch	Height in mm	Length in Inch	Length in mm
2	10.317	262.05	2.332	59.24
3	10.317	262.05	3.132	79.56
4	10.317	262.05	3.932	99.88
5	10.317	262.05	4.732	120.2
6	10.317	262.05	5.532	140.52
7	10.317	262.05	6.332	160.84
8	10.317	262.05	7.132	181.16
9	10.317	262.05	7.932	201.48
10	10.317	262.05	8.732	221.8
11	10.317	262.05	9.532	242.12
12	10.317	262.05	10.332	262.44
13	10.317	262.05	11.132	282.76
14	10.317	262.05	11.932	303.08
15	10.317	262.05	12.732	323.4
16	10.317	262.05	13.532	343.72
17	10.317	262.05	14.332	364.04
18	10.317	262.05	15.132	384.36
19	10.317	262.05	15.932	404.68
20	10.317	262.05	16.732	425

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Amphenol-BSI

Amphenol-BSI is an industry leader of backplane and system solutions. Amphenol-BSI has been a leading designer and manufacture of backplanes for more than 30 years.

Amphenol-BSI delivers:
- Industry leading interconnect technology
- Advanced printed circuit capabilities and partnerships
- Innovative backplane system design and manufacturing
- Integrated design / applications engineering services
- Flexible, global support and supply chain management
- Most extensively tooled Backplane Supplier in the industry
- Industry leading Mechanical and SI test solutions
- Lowest cost solution on highest performance backplane

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