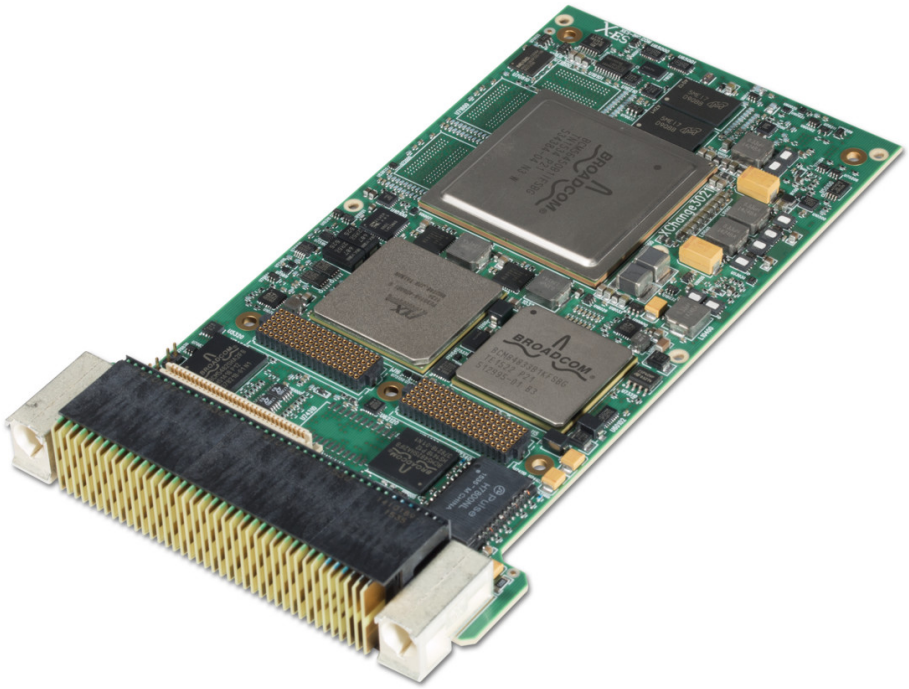
XChange3021

3U VPX PCI Express Gen3 and 10 Gigabit Ethernet Integrated Switch with XMC Support

- Up to six x4 PCI Express Gen3 interfaces
- One x8 PCI Express Gen3 interface to XMC (optional)
- Up to eight 10GBASE-KR or 1000BASE-BX/KX Ethernet ports
- Up to two 10GBASE-T Ethernet ports
- Up to three 10/100/1000BASE-T Ethernet ports to XMC site (optional)
- Layer 2 switching and Layer 3 routing management with extensive IEEE protocol and IETF RFC support (optional)
- VICTORY Infrastructure Switch and Router support (optional)
- Supports the XPedite5205 Cisco IOS® Embedded Services Router
- Compatible with multiple VITA 65 OpenVPX™ switch slot profiles
- Ruggedized Enhanced Design Implementation (REDI) per VITA 48
- Conduction or air cooling
- IPv4 and IPv6 support
- Support for jumbo frames up to 12 kB
- IEEE 1588v2 support (optional)
- NTP, SSH, SNMP, and DHCP server support (optional)
- Integrated dual-core ARM A9 management processor



XChange3021

The XChange3021 is a conduction- or air-cooled, 3U OpenVPX™ integrated switch module supporting both PCI Express and Ethernet protocols. The integrated PCI Express and Ethernet switch functionality allow XChange3021 to serve as the heart of inter-board communications inside a high-end OpenVPX™ system. Additionally, external Gigabit Ethernet and/or 10 Gigabit Ethernet links provide connectivity between the OpenVPX™ system and the outside world.

The XChange3021 supports x4 width Gen3 (backwards compatible with Gen1 and Gen2) PCI Express links between up to 6 slots in an OpenVPX™ backplane to facilitate high-bandwidth, memory mapped communications between the payload boards. An optional x8 PCI Express link to an XMC site allows for onboard I/O and protocol expansion.

The XChange3021's Ethernet switch supports various configurations of up to ten 10 Gigabit or Gigabit Ethernet ports. The Ethernet switch supports jumbo packets up to 12 kB, IPv6, Energy Efficient Ethernet (EEE), and a comprehensive set of IETF RFCs and IEEE protocols. The XChange3021 also supports compliance with the VICTORY specification as an Infrastructure Switch and Router.

When configured as a fully managed Layer 2 switch, support for features such as fast boot, flow control, MAC bridging (IEEE 802.1D), port mirroring, port authentication (IEEE 802.1x), VLANs (IEEE 802.1Q), Quality of Service (QoS), GVRP, MVRP, port and protocol classification (IEEE 802.1v), GARP, MRP, GMRP, MMRP, LACP, RMON, STP, RSTP, MSTP, RPVST+, AgentX, and IGMP are included. When configured as a Layer 3 router, support for Multicast and Unicast Routing features such as DVMRP, IGMP, PIM-DM, PIM-SM, PIM-SSM, MLD, RIP, BGP, OSPFv2/OSPFv3, and VRRP are added.

When paired with the optional XPedite5205 XMC/PMC router module, the XChange3021 includes Cisco IOS® IP routing and Cisco Mobile Ready Net capabilities. With this technology, the router provides highly secure data, voice, and video communications to stationary and mobile network nodes across both wired and wireless links. With the XPedite5205, Cisco IOS® security features are also supported, including hardware encryption, firewalls with integrated threat control, zone-based firewalls, Intrusion Prevention System (IPS), content filtering, identity management using Authentication, Authorization, and Accounting (AAA), and Public Key Infrastructure (PKI).

X-ES
Extreme Engineering Solutions

...Always Fast

Extreme Engineering Solutions
9901 Silicon Prairie Parkway • Verona, WI 53593
Phone: 608.833.1155 • Fax: 608.827.6171
sales@xes-inc.com • https://www.xes-inc.com

Compatible OpenVPX™ Switch Slot Profiles

- MOD3-SWH-6F6U-16.4.1-2
- MOD3-SWH-6F6U-16.4.1-3
- MOD3-SWH-6F6U-16.4.1-10
- MOD3-SWH-6F6U-16.4.1-11
- MOD3-SWH-6F8U-16.4.10-1
- MOD3-SWH-6F8U-16.4.10-2

Ethernet Switch Management Controller

- Integrated dual-core ARM A9 processor at up to 1.0 GHz
- Up to 1 GB DDR3 ECC SDRAM
- Up to 4 GB NAND flash
- Dual-redundant SPI boot flash
- RS-232 serial configuration interface
- NTP, SSH, SNMP, and DHCP server support (optional)

Ethernet Ports

- One 10-port, 10 Gigabit Ethernet switch
- Up to eight 10GBASE-KR or 1000BASE-BX/KX Ethernet ports
- Up to two 10GBASE-T Ethernet ports
- Up to three 10/100/1000BASE-T Ethernet ports to XMC site (optional)

Ethernet Features

- IPv4 and IPv6 support
- Support for jumbo frames up to 12 kB
- Advanced cable open/short detection
- Energy Efficient Ethernet™ support
- Non-blocking, full wire-speed Ethernet switch
- IEEE 1588v2 support (optional)

Example Ethernet Configurations

Some restrictions apply when mixing 10 Gigabit and Gigabit Ethernet ports within a configuration. Please contact X-ES for details.

- 6x 10GBASE-KR/1000BASE-BX/KX ports, 2x 10GBASE-T ports (default configuration)
- 8x 10GBASE-KR / 1000BASE-BX/KX ports, 3x 10/100/1000BASE-T ports (XPedite5205 router configuration)
- 8x 10GBASE-KR / 1000BASE-BX/KX ports, 1x 10GBASE-T port, 2x 10/100/1000BASE-T ports (PrXMC Ethernet configuration)

PCI Express

- One 12-port, 48-lane PCI Express Gen3 switch
- Six x4 PCI Express Gen3 interfaces to backplane
- One x8 PCI Express Gen3 interface to XMC site (optional)

Physical Characteristics

- 3U VPX form factor
- Dimensions: 100 mm x 160 mm, 10 mm stacking height

Environmental Requirements

Contact factory for appropriate board configuration based on environmental requirements.

- Supported ruggedization levels (see chart below): 3, 5
- Conformal coating available as an ordering option

Ruggedization Level	Level 1	Level 3	Level 5
Cooling Method	Standard Air-Cooled	Rugged Air-Cooled	Conduction-Cooled
Operating Temperature	0 to +55°C ambient †	-40 to +70°C ambient †	-40 to +85°C (board rail surface)
Storage Temperature	-40 to +85°C ambient	-55 to +105°C ambient	-55 to +105°C (maximum)
Vibration	0.002 g²/Hz (maximum), 5 to 2000 Hz	0.04 g²/Hz (maximum), 5 to 2000 Hz	0.1 g²/Hz (maximum), 5 to 2000 Hz
Shock	20 g, 11 ms sawtooth	30 g, 11 ms sawtooth	40 g, 11 ms sawtooth
Humidity	0% to 95% non-condensing	0% to 95% non-condensing	0% to 95% non-condensing

† Contact factory for airflow rate details.