

XS-2000

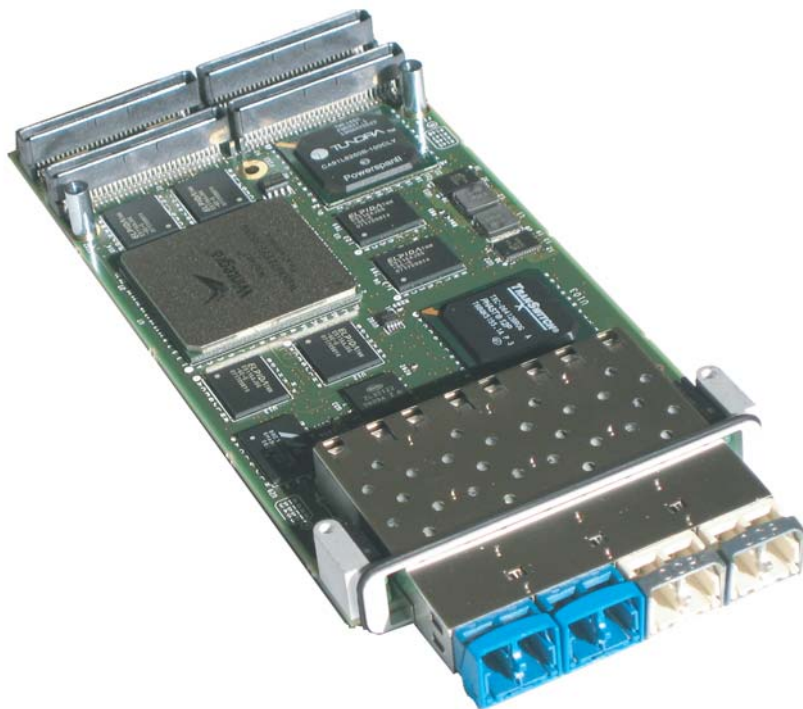
OC-3/OC-12/Gigabit Ethernet PMC

Applications

- ▶ 3G RNC, MSC & SGSN
- ▶ Voice over Packet
- ▶ Video Streaming
- ▶ Broadband Networks
- ▶ ATM to IP Gateways
- ▶ DSLAMs

Main Features

- ▶ ATM AAL0, AAL1, AAL2 & AAL5
- ▶ 4 x OC-3/STM1
- ▶ 1 x OC-12/STM-4
- ▶ 3 x Gigabit Ethernet
- ▶ POS
- ▶ Automatic Protection Switching
- ▶ PICMG® PT5MC
- ▶ WinPath2™ Network Processor
- ▶ On-board MIPS 24K™
- ▶ On-board Switching
- ▶ 384 MB SDRAM
- ▶ 16 MB Flash EPROM
- ▶ SFP Optical Transceivers
- ▶ Linux, Solaris™ & VxWorks®



XS-2000 is a PCI Telecom Mezzanine card (PTMC) which offers high-end ATM and IP services at an attractive price. XS-2000 provides termination, switching and interworking capabilities from any port to any port.

XS-2000 performance and features are ideally suited for applications such as Wireless networking, Voice over Packet, DSLAM and Media Gateways.

Using the state of the art Wintegra™'s WinPath2™ Network Processor, XS-2000 is the perfect interface to handle both ATM and IP simultaneously.

XS-2000 on-board MIPS processor can run advanced protocols (e.g. 3GPP, SS7, ATM, VoIP) while the Network Processor handles all the data path.

XS-2000 I/O ports are highly configurable and support a mix of: OC-3/STM-1, OC-12/STM-4, 1000BASE-T and 1000BASE-X.

Compliant with IEEE 1386.1 PCI Mezzanine card (PMC) and PICMG 2.15 PCI Telecom Mezzanine Card (PTMC), XS-2000 can be used in cPCI, cPSB, AdvancedTCA™, VME, PC, and proprietary applications.

XS-2000 architecture allows to bypass the bottleneck of current systems by handling all the processing on-board and performing segmentation and reassembly locally, which not only allows to offload the CPU on the carrier board but also optimizes bus transfers while doing termination.

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XALYO SYSTEMS

ATM

- ▶ AAL0, AAL1, AAL2 & AAL5 **1**
- ▶ ATM cell switching
- ▶ AAL2 CID switching
- ▶ Traffic management as per TM 4.1: CBR, VBR, GFR and UBR
- ▶ Per VC queueing
- ▶ Full UNI/NNI VPI/VCI range
- ▶ OAM F4 and F5 as per ITU-T I.610

PT5MC

- ▶ PICMG® PT5MC compliant **3**
- ▶ 2 x Gigabit Ethernet ports
- ▶ 8 x CT Bus lines
- ▶ UART
- ▶ Reference clock

Network Processor

- ▶ Wintegra™ WinPath2™ @ 600 MHz
- ▶ 128 MBytes Packet SDRAM **4**
- ▶ 128 MBytes Parameter SDRAM
- ▶ 128 MBytes Application SDRAM
- ▶ 32-bit / 200 MHz DDR2 SDRAM
- ▶ MIPS 24K™ CPU @ 600 MHz
- ▶ 6 WinGines @ 300 MHz
- ▶ Handles more than 18 data path protocols to date
- ▶ For more details see www.wintegra.com

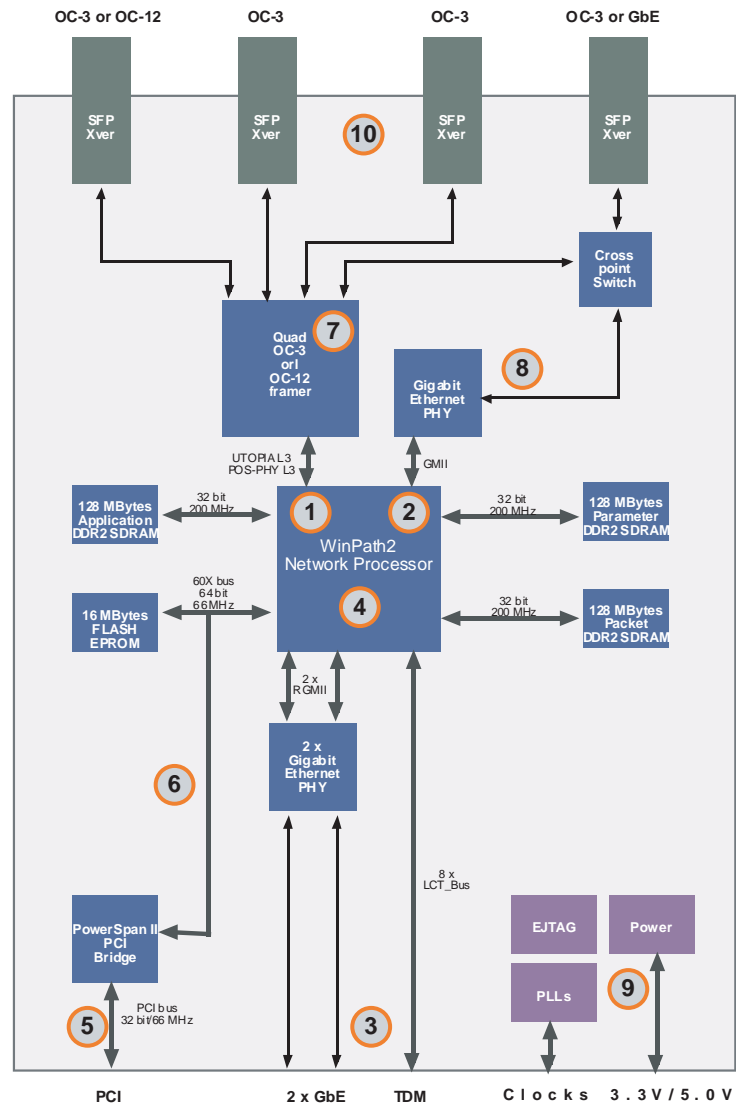
Interworking

- ▶ L2 interworking between ATM and Ethernet
- ▶ IP routing and forwarding over ATM (RFC 1483/2684/1577)
- ▶ IP routing and forwarding over PPP (RFC 1661)
- ▶ AAL2 to IP/UDP interworking
- ▶ GTP support
- ▶ and more ...

IP

- ▶ PPP support **2**
- ▶ HDLC support up to OC-12 rates
- ▶ Parsing of PPP over HDLC frames (RFC 2615 and RFC 1662)
- ▶ Packet scheduling

Block Diagram



System busses

- PCI bus **5**
- ▶ PCI 2.2 Specification compliant
 - ▶ 33 / 66 MHz operation
 - ▶ 32-bit interface
 - ▶ 3.3 V and 5 V signalling
- Host bus **6**
- ▶ PPC 60X @ 66 MHz
 - ▶ 64-bit interface
 - ▶ 16 MBytes Flash EPROM

Physical Layer

- SONET/SDH **7**
- ▶ Single OC-12 port or
 - ▶ Quad OC-3 ports
 - ▶ APS (Automatic Protection Switching)
 - ▶ ATM (ITU-T I.432)
 - ▶ POS (RFC 1619, RFC 1662)
- Front Gigabit Ethernet **8**
- ▶ 1 x 1000 BASE-X or
 - ▶ 1 x 1000 BASE-T (Through SFP adapter)

Telecom Clock

- ▶ Advanced PLL **9**
- ▶ Meets GR-1244-CORE for Jitter/Wander for Stratum 4/4E
 - ▶ Reference clock output to backplane (19.44 MHz)
 - ▶ Reference clock input from the backplane (2 kHz, N * 8 kHz up to 77.76 MHz)

I/O Port Configurations

Configuration	A	B	C	D	E	F
OC-3 Front Panel	4	3	2	0	0	0
OC-12 Front Panel	0	0	0	1	1	1
GbE Front Panel	0	1	2	0	1	2
GbE Backplane	2	1	0	2	1	0

Number and Type of I/O Ports fully configurable by software **10**

XS-2000

OC-3/OC-12/Gigabit Ethernet PMC

Specifications

Form factor	PMC
Dimensions	149.0 mm x 74.0 mm
PCI Bus	32 bit, 33/66 MHz
Host bus	64-bit, 66 MHz
Optical connector	LC (SFP)
Telecom reference clock	8 KHz
Communication ports	Quad OC-3/STM-1 Single OC-12/STM-4 Triple Gigabit Ethernet
UART	TTL
Protocols	ATM and IP
Flash memory	16 MBytes, 150 ns
Host memory	128 MBytes, 200 MHz
Parameter memory	128 MBytes, 200 MHz
Packet memory	128 MBytes, 200 MHz
Operating systems	Linux, Solaris and VxWorks®
Operating temperature	0 to 50°C
Storage temperature	-40 to 85°C
Relative humidity	5% to 90% non-condensing
Altitude	0 to 15'000 ft
Power consumption	15 W max (est.)
5.0 V	2 A (est)
3.3 V	1.5 A (est)

Standards compliance

PCI	PCI Local Bus Specification Rev. 2.2
IEEE P1386	CMC: Common Mezzanine Card
IEEE P1386.1	PMC: PCI Mezzanine Card
IEEE 1149.1	JTAG
IEEE 802.3	CSMA/CD (Ethernet)
PICMG® 2.15	PTMC: PCI Telecom Mezzanine Card (without POS-PHY interface)
MSA SFP	MultiSource Agreement SFP
RFC 1483	Multiprotocol Encapsulation over AAL5
RFC 1577	Classical IP and ARP over ATM
RFC 1619	PPP over SONET/SDH
RFC 1661	The Point-to-Point Protocol (PPP)
RFC 1662	PPP in HDLC-like Framing
RFC 2474	Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers
RFC 2475	An Architecture for Differentiated Services
RFC 2615	PPP over SONET/SDH
RFC 2684	Multiprotocol Encapsulation over AAL5
ITU-T I.432	B-ISDN User-Network Interface
ITU-T I.363.1	B-ISDN ATM Adaptation Layer Type 1
ITU-T I.363.2	B-ISDN ATM Adaptation Layer Type 2
ITU-T I.363.5	B-ISDN ATM Adaptation Layer Type 5
ITU-T I.366.1	Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2
ITU-T I.610	B-ISDN Operation and Maintenance Principles and Functions
ITU-T G.703	Physical/electrical Characteristics of Hierarchical Digital Interfaces
ITU-T G.707	Network Node Interface for the Synchronous Digital Hierarchy (SDH)
ITU-T G.781	Synchronization Layer Functions
ITU-T G.783	Characteristics of Synchronous Digital Hierarchy (SDH) Equipment Functional Blocks
GR-253-CORE	SONET Transport Systems: Common Generic Criteria.
GR-1244	Clocks for the Synchronized Network: Common Generic Criteria
ATM Forum TM4.1	Traffic Management

Why choose XS-2000 ?

XS-2000: A Flexible Solution

XS-2000 brings even more flexibility to the concept of PMC with the use of a network processor which is entirely re-configurable to support new standards. The PMC standard adds modularity to the way building blocks are connected together at the system level. Support for ATM, POS, Ethernet and IP provides the user with all the options on a very compact form factor. The use of SFP optical transceivers also gives more flexibility since the transceiver type can be chosen on a per application basis without any hardware modification. Modern SFP converters provide 10/100/1000 BASE-T and 100BASE-FX connectivity in addition to the default 1000BASE-X port.

XS-2000: A High Performance Solution

XS-2000 architecture improves the overall throughput by segmenting and reassembling packets on the PMC itself. This allows maximizing PCI bandwidth and reaching performance levels that are impossible to achieve on conventional designs. As all the resources are dedicated for the ATM and IP traffic in a deterministic way, XS-2000 data rates are more reliable, resulting in better quality of service.

XS-2000: A Reliable solution

XS-2000 supports Automatic Protection Switching (APS) for resilient networks.

XS-2000: A Modern Solution

Xalyo Systems' ATM and IP interfaces are based on a leading edge network processor handling all the data path in hardware while the control path is handled by a processor running VxWorks®, Linux or Solaris. An open API is provided on the PCI bus which makes the solution plug and play on virtually any platform, any processor, and any operating system. All the software and drivers are backward compatible with all the XS PMC family.

Ordering Information

XS-2000	Quad OC-3/STM-1, Single OC-12/STM-4, Triple Gigabit Ethernet ATM and IP PMC 300 MHz, 384 MB SDRAM, 16 MB Flash
XS-TP001	OC-3/STM-1 multi mode SFP transceivers
XS-TP002	OC-3/STM-1 single mode IR SFP transceivers
XS-TP004	OC-12/STM-4 single mode IR SFP transceivers
XS-TP007	Gigabit Ethernet single mode SFP transceivers

Other SFP transceiver types are available on request.

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