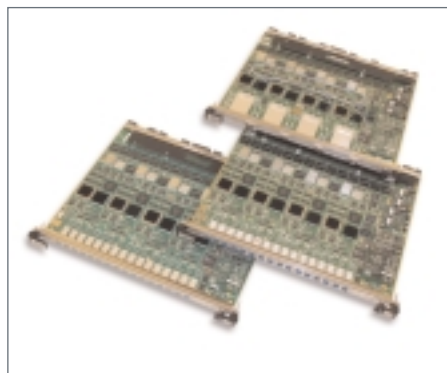


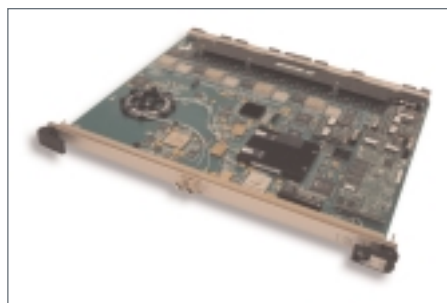


Superior, high-speed performance for multiservice infrastructures

OC-3c/STM-1 through OC-192c/STM-64 ATM for the BXR48000



Marconi's Asynchronous Transfer Mode (ATM) port cards for the BXR™48000 provide the most efficient, high-speed cell-based traffic management for services and transport. When equipped with ATM port cards, the BXR48000 enables operators to reduce costs and expand their ATM and Multiprotocol Label Switching (MPLS) infrastructures with the widest range of high-speed, optical-cell-based interfaces available.



The BXR48000 ATM port card family extends Marconi's leadership in supporting predictable services and transport on the industry's most versatile multiservice switch router. Marconi was first-to-market with OC-12c, OC-48c, and OC-192c ATM port cards, enabling the widest range of differentiated, cell-based services from best-effort Internet to services requiring the highest security and most stringent Quality of Service (QoS) assurances.

Operators can use the ATM port cards to offer high-speed cell-based services such as real-time encrypted video transmission, in addition to multiservice aggregation and trunking at rates from OC-3c/STM-1 to OC-192c/STM-64. Marconi ATM port cards also support Label-Controlled ATM (LC-ATM) functionality for MPLS transport, including the ability to tunnel traffic across the MPLS core.

The BXR48000 supports up to 48 ATM port cards (any port speed and protocol) at full line rate (full duplex) with deterministically non-blocking performance. With the superior performance and industry-leading scalability of the BXR48000, operators can grow their multiservice cell-based networks using a switch router that uniquely supports a smooth evolution to a next-generation, multiservice packet infrastructure.

Key benefits

- Protects investment in ATM technology through continued use and expansion of multiservice network infrastructures
- Enables growth of high-speed ATM service offerings from OC-3c/STM-1 to OC-192c/STM-64
- Enables aggregation of existing cell-based multiservice networks — Frame Relay, digital subscriber line (DSL), ATM, Transparent LAN Services (TLS) — into a high-speed, protocol- and payload-agnostic multiservice core
- Provides the necessary bandwidth and QoS guarantees for mission-critical applications such as encrypted, high-speed, real-time video transmission
- Protects services by providing carrier-class reliability of greater than 99.999 percent availability via comprehensive disaster recovery features

Data summary

ATM

- Permanent virtual connections (PVx), switched virtual connections (SVx), and smart PVx (SPVx)
- Point-to-point and point-to-multipoint connections
- Virtual path termination (VPT) and virtual user-to-network interface (UNI)
- UNI 3.0, 3.1, and 4.0; Interim Local Management Interface (ILMI) 4.0
- Private Network–Network Interface (PNNI), Hierarchical PNNI (H-PNNI), ATM Inter-Network Interface (AINI), Interim Interswitch Signaling Protocol (IISP)
- Transit network selection

MPLS label switched router (LSR)

- Open Shortest Path First, version 2, with Traffic Engineering (OSPFv2-TE), Intermediate System–to–Intermediate System with Traffic Engineering (IS-IS-TE), Border Gateway Protocol, version 4 (BGP-4)
- Label Distribution Protocol (LDP), Resource Reservation Protocol with Traffic Engineering (RSVP-TE)
- Layer 2 virtual private network (VPN): ATM over MPLS
- Layer 3 VPN: RFC 2547 P router

Traffic management

- 16 independent service classes with per–virtual circuit (VC) queuing/scheduling
- ATM Forum Traffic Management 4.x: constant bit rate (CBR), unspecified bit rate (UBR), real-time variable bit rate (rt-VBR), non-real-time VBR (nrt-VBR), available bit rate (ABR)
- MPLS DiffServ (class selector [CS], assured forwarding [AF], expedited forwarding [EF]) and MPLS IntServ (controlled load [CL], guaranteed service [GS])
- Per-connection queuing and scheduling (strict priority and/or weighted round robin)
- Connection admission control (CAC), dual leaky bucket policing
- Dynamic buffer management with frame discard (early packet discard [EPD] and partial packet discard [PPD]), cell loss priority (CLP) 0/1

Disaster recovery

- Port redundancy – Synchronous Optical Network (SONET) automatic protection switching (APS) and Synchronous Digital Hierarchy (SDH) multiplex section protection (MSP)
- Port card redundancy
- Redundant SPVx/label switched paths (LSPs)
- PNNI/MPLS traffic engineering rerouting

General

- Hitless software upgrades
- ITU I.610 operation, administration, and maintenance (OAM) support
- Level 4 hot-swappable (zero traffic loss in system upon insertion/removal with power)
- Connection preservation for ATM and MPLS connections
- Up to 256,000 bidirectional connections per port card

Compliance

- NEBS Level 3
- Emissions/immunity approvals: FCC/47CFR, ICES-003, EN300386, VCCI
- Safety approvals: UL/CSA 60950, EN60950, EN60825
- Environmental approvals: GR-63-CORE, GR-1089-CORE
- Specifications/standards: Telcordia GR-253-CORE; ITU-T G.691, G.707, G.709; ANSI T1.105

Optical interfaces

155 Mbps OC-3c/STM-1 multimode port card (BXRATM16/155MM1)

Clock source	Primary or secondary 8 kHz reference – line, Building Integrated Timing Supply (BITS), Stratum 3E
Connectors	LC
Data rate	155.52 Mbps
Framing	STS-3c/STM-1
Free-run clock accuracy	±20 ppm
Line encoding	Non-return to zero (NRZ)
Loopbacks	Line, terminal, diagnostic
Media	Multimode fiber, 62.5 µm/125 µm
Port capacity	16
Power	-14 to -20 dBm transmit power; -12 to -26 dBm receive sensitivity; 0 to 6 dB path attenuation
Statistics	Loss of signal (LOS), loss of frame (LOF), loss of pointer (LOP), far-end block error (FEBE), alarm indication signal (AIS), remote defect indication (RDI), bit interleaved parity (BIP) errors, header check sequence (HCS) errors, loss of cell delineation (LCD), path unequipped, path label mismatch (PLM)
Typical line length	500 m (1,640.42 ft)
Wavelength	Transmit: 1270–1380 nm; receive: 1100–1600 nm

155 Mbps OC-3c/STM-1 single mode port card (BXRATM16/155IR1)

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	LC
Data rate	155.52 Mbps
Framing	STS-3c/STM-1
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652
Port capacity	16
Power	-8 to -15 dBm transmit power; -8 to -28 dBm receive sensitivity; 0 to 12 dB path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	15 km (9.32 mi)
Wavelength	Transmit: 1274–1356 nm; receive: 1270–1570 nm

Data summary (continued)**622 Mbps OC-12c/STM-4 and OC-3c/STM-1 multimode port card (BXRATM16/622MM1)**

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	LC
Data rate	622.08 Mbps
Framing	STS-12c/STM-4c
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Multimode fiber, 62.5 µm/125 µm
Port capacity	16
Power	-14 to -20 dBm transmit power; -12 to -26 dBm receive sensitivity; 0 to 6 dB path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	OC-12c/STM-4: 2 km (1.24 mi); OC-3c/STM-1: 500 m (1,640.42 ft)
Wavelength	Transmit: 1270–1380 nm; receive: 1100–1600 nm

622 Mbps OC-12c/STM-4 and OC3c/STM-1 single mode port card (BXRATM16/622SR1)

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	LC
Data rate	622.08 Mbps
Framing	STS-12c/STM-4c
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652
Port capacity	16
Power	-8 to -15 dBm transmit power; -8 to -28 dBm receive sensitivity; 0 to 7 dB path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	2 km (1.24 mi)
Wavelength	Transmit: 1274–1356 nm; receive: 1270–1570 nm

622 Mbps OC-12c/STM-4 and OC3c/STM-1 single mode port card (BXRATM16/622IR1)

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	LC
Data rate	622.08 Mbps
Framing	STS-12c/STM-4c
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652
Port capacity	16
Power	-8 to -15 dBm transmit power; -8 to -28 dBm receive sensitivity; 0 to 12 dB path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	15 km (9.32 mi)
Wavelength	Transmit: 1274–1356 nm; receive: 1270–1570 nm

2,488 Mbps OC-48c/STM-16 single mode port card (BXRATM4/2488SR1)

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	SC
Data rate	2,488.32 Mbps
Framing	STS-12c/STM-16
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652
Port capacity	4
Power	-3 to -10 dBm transmit power; -3 to -18 dBm receive sensitivity; 0 to 7 dBm path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	2 km (1.24 mi)
Wavelength	Transmit: 1266–1360 nm; receive: 1260–1570 nm

2,488 Mbps OC-48/STM-16c single mode port card (BXRATM4/2488LR1)

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	SC
Data rate	2,488.32 Mbps
Framing	STS-48c/STM-16
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652, G.654
Port capacity	4
Power	+3 to -2 dBm transmit power; -9 to -28 dBm receive sensitivity; 10 to 24 dBm path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	80 km (49.7 mi)
Wavelength	Transmit: 1500–1580 nm; receive: 1260–1570 nm

Data summary (continued)**9,952 Mbps OC-192c/STM-64 single mode port card (BXRATM1/9952SR1)**

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	SC
Data rate	9,953.28 Mbps
Framing	STS-192c/STM-64
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652
Port capacity	1
Power	0 to -4 dBm transmit power; -1 to -11 dBm receive sensitivity; 0 to 6 dBm path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	12 km (7.45 mi)
Wavelength	Transmit: 1290–1330 nm; receive: 1250–1600 nm

9,952 Mbps OC-192c/STM-64 single mode port card (BXRATM1/9952LR1)

Clock source	Primary or secondary 8 kHz reference – line, BITS, Stratum 3E
Connectors	SC
Data rate	9,953.28 Mbps
Framing	STS-192c/STM-64
Free-run clock accuracy	±20 ppm
Line encoding	NRZ
Loopbacks	Line, terminal, diagnostic
Media	Single mode fiber, 10 µm/125 µm G.652
Port capacity	1
Power	+1 to -2 dBm transmit power; -9 to -26 dBm receive sensitivity; 10 to 22 dBm path attenuation
Statistics	LOS, LOF, LOP, FEBE, AIS, RDI, BIP, HCS, LCD, path unequipped, PLM
Typical line length	80 km (49.7 mi)
Wavelength	Transmit: 1530–1565 nm; receive: 1250–1600 nm

Ordering information

BXRATM16/155MM1	16-port OC-3c/STM-1 ATM port card, multimode fiber, LC connectors
BXRATM16/155IR1	16-port OC-3c/STM-1 ATM port card; single mode fiber, intermediate reach – 1310 nm; LC connectors
BXRATM16/622MM1	16-port OC-12c/STM-4 and/or OC-3c/STM-1 ATM port card, multimode fiber, LC connectors
BXRATM16/622SR1	16-port ATM OC-12c/STM-4 and/or OC-3c/STM-1 port card; single mode fiber, short reach – 1310 nm; LC connectors
BXRATM16/622IR1	16-port ATM OC-12c/STM-4 and/or OC-3c/STM-1 port card; single mode fiber, intermediate reach – 1310 nm; LC connectors
BXRATM4/2488SR1	4-port OC-48c/STM-16 ATM port card; single mode fiber, short reach – 1310 nm; SC connectors
BXRATM4/2488LR1	4-port OC-48c/STM-16 ATM port card; single mode fiber, long reach – 1550 nm; SC connectors
BXRATM1/9952SR1	1-port OC-192c/STM-64 ATM port card; single mode fiber, short reach – 1310 nm; SC connector
BXRATM1/9952LR1	1-port OC-192c/STM-64 ATM port card; single mode fiber, long reach – 1550 nm; SC connector

Please note that this data sheet provides a summary of the BXR48000's planned features and functionality.
Contact Marconi for specific availability information.

**Marconi**

5000 Marconi Drive
Warrendale PA 15086-7502
USA
Phone: 724-742-4444
Toll free: 1-866-MARCONI (1-866-627-2664)
www.marconi.com

Product information

Phone: 724-742-6466
Toll free: 1-866-MARCONI (1-866-627-2664)
Fax: 724-742-6464
www.marconi.com

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