METRObility optical systems

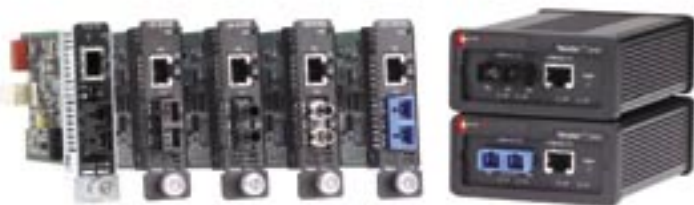*Simply Brilliant Optical Ethernet*

Ethernet and Fast Ethernet

Flexible 10Mbps and 100Mbps media, speed, and distance solutions

NEW *Layer 1 to Layer 1 10Mbps **or** 100Mbps unit (R141)*

- *Copper-to-fiber and fiber-to-fiber*
- *2km, 20km, 40km and 100km*
- *NEBS Level 3 certified (R133 line cards)*
- *Fully IEEE 802.3 compliant*

Flexible Managed Solutions for Mixed-Media Networks

Metrobility's Ethernet and Fast Ethernet interface products offer versatile speed, media, distance, and redundancy options to cost-effectively distribute fiber optic connections. These units provide seamless connectivity within the LAN, or between the LAN and public or private networks. The devices are available as a preconfigured 10Mbps unit, a selectable 10 or 100Mbps unit, a preconfigured 100Mbps unit, or an autonegotiating 10/100Mbps unit.[1]

These mixed-media devices offer seamless integration of copper and fiber connections providing full signal restoration for accurate data transmission and maximum cable length support. Singlemode-to-multimode fiber conversion also provides distance extension capabilities which enable network builders to leverage existing multimode infrastructure while taking advantage of the distance capabilities of singlemode fiber.

Metrobility Ethernet and Fast Ethernet devices are available as interface line cards or standalone units for flexibile integration into your network.

The interface line cards are supported in all Metrobility's Radiance chassis and can be managed when configured with a management card. DC versions of the R5000 and R1000 are NEBS certified. The R200 and R400 are standalone chassis that also can be rackmounted either as single units or two units.

The standalone options utilize a rugged fabrication to offer superior reliability for the most demanding environments. Each standalone is equipped with an external, universal AC power supply.

[1]Information on the 10/100Mbps product line is available in a separate datasheet. The 10/100Mbps product is configured with a switch chip which allows it to support both media conversion and autonegotiation. As a Layer 2 device, the device offers additional troubleshooting capabilities including LLCF, LLR and AutoRecovery.

10Mbps - Preconfigured

The Radiance R111 and 2111 preconfigured media converter offers transparent integration of fiber optic connectivity or copper-to-coaxial integration for 10Mbps Ethernet networks.

Key features include:

- 820nm multimode fiber support
- Transparency mode for automatic link loss detection at both ends of the link (x111-xx-B only) or Link Loss Carry Forward
- Full or half-duplex support
- Distances up to 2km

10 and 100Mbps - DIP-switch or software settable

The Radiance R141 is a transparent two-port, copper-to-fiber media converter that can be set to either 10Mbps on both ports or 100Mbps on both ports. Offered only as an interface line card, standalone versions require either an R200 or R400 chassis.

Key features include:

- 1310nm multimode and singlemode fiber support
- Transparency mode for automatic link loss detection at both ends of the link
- Duplex autonegotiation
- Single-strand, bi-directional wavelength multiplexing (BWDM) option
- Distances up to 20km

100Mbps Fast Ethernet - Preconfigured

The R133, R131, 2133, 2131 and M133 family of media converters offers the widest range of options for Fast Ethernet connectivity.

Key features include:

- Copper-to-fiber and fiber-to-fiber options, 1310nm and 1550nm
- Software-controlled or DIP-switch enabled remote loopback and Far End Fault (x133 only)
- Link Loss Carry Forward
- Full or half duplex, or autonegotiation (x133 only)
- Single-strand, bi-directional wavelength multiplexing (BWDM) option
- Distances up to 100km

The Metrobility® Difference

Managed options - NetBeacon® and WebBeacon™ - when configured with a management card in a Radiance chassis

Unique troubleshooting features

High-quality, reliable design lowers long term cost of ownership

Full signal restoration - with low bit delay - allows for maximum segment length

Class B certified models
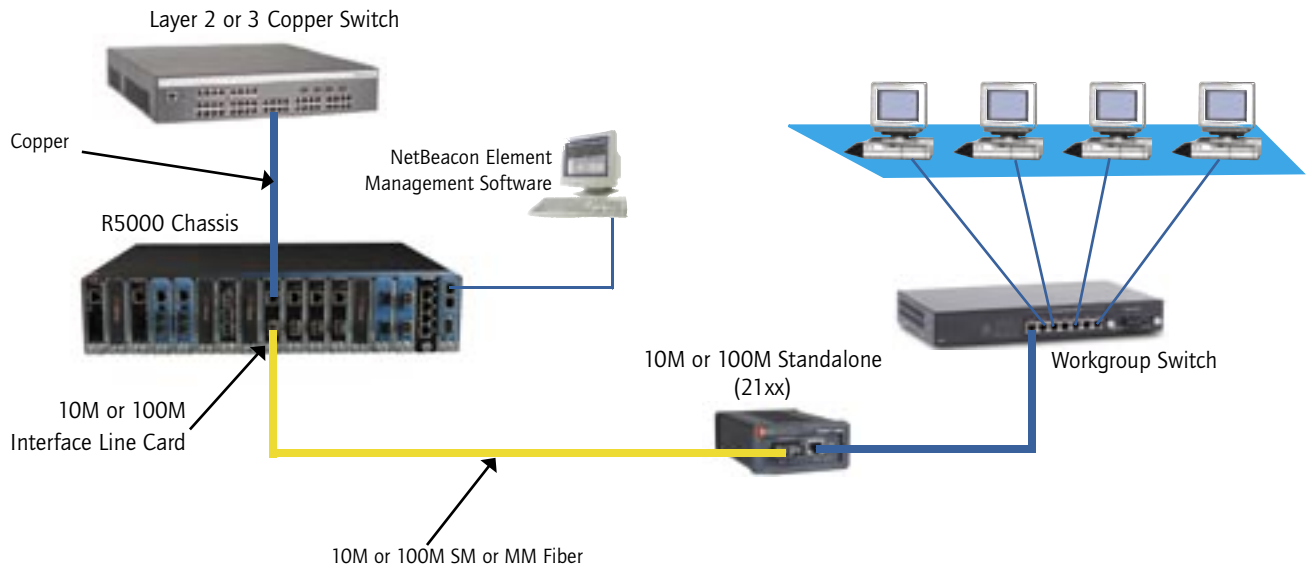
Product Highlights

Complete range of fiber optic connector types provide network design flexibility

Interoperates with half-duplex or full-duplex mode devices

Strict standards compliance ensures compatibility with other vendors' equipment for flexible connectivity

Network Configuration

Layer 2 or 3 Copper Switch

Copper

NetBeacon Element
Management Software

R5000 Chassis

10M or 100M
Interface Line Card

10M or 100M Standalone
(21xx)

Workgroup Switch

10M or 100M SM or MM Fiber

Management

- *Comprehensive monitoring and control
  for flexible management*

- *Real-time data collection*

- *Workstation-based and browser-based options*

- *RADIUS (Remote Authentication Dial-In Service) enables
  authentication, authorization and accounting of multiple users*

Workstation-Based Element Management Software

NetBeacon® Element Management Software (EMS) supports complete monitoring and control for all of Metrobility's Radiance chassis-based line cards. NetBeacon utilizes an R502-M management card which is connected through the backplane to the line cards in the chassis.

As an alternative to the command line interface (CLI) and/or SNMP-based applications, NetBeacon enables network managers to perform all platform configuration updates, maintenance, and diagnostics from a central management station.

NetBeacon can be used to:

- Display device information
- Configure a device
- Monitor the chassis
- Ping a device
- Open a telnet session
- Download software to a device
- Send email notifications

An SNMP agent embedded in the management card communicates with the NetBeacon software to provide management statistics, control functions, and alert network administrators to alarm conditions. Extensive real-time information on MIB-II and Metrobility-specific MIB objects — plus alarm thresholds and notification procedures — enable early problem identification, fast fault isolation and proactive management.

Browser-Based Element Management Software

WebBeacon Element Management System is a web browser-based element and service provisioning software enabled through an embedded kernel which resides on the management card. (See Management Hardware data sheet). WeBeacon offers the same features found in NetBeacon and provides an efficient, user-friendly way to manage and configure a single Metrobility® chassis through an Internet connection.

10Mbps and 100Mbps Single Interface Connectivity Solutions

LINE CARD	SPEED 10Mbps	100Mbps	WAVELENGTH 820nm	1310nm	1550nm	DISTANCE PORT 1	PORT 2	CONNECTOR PORT 1	PORT 2	FIBER TYPE PORT 1	PORT 2	Class B	NEBS Level 3	Link Loss Carry Forward	Far End Fault	Transparency Mode	Remote Loopback	Duplex Auto-Negotiation	STANDALONE OPTIONS
10Mbps - Pre-configured																			
R111-12	x					100m	185m	RJ-45	BNC	-	-								2111-12-01
R111-13-B	x		x			100m	2km	RJ-45	SC	-	mm	x					x		2111-13-B
R111-15-B	x		x			100m	2km	RJ-45	ST	-	mm	x					x		2111-15-B
10 and 100Mbps - DIP-switch or Software Settable																			
R141-13	x	x		x		100m	2km	RJ-45	SC	-	mm	x					x		Use line card in R200 chassis
R141-14	x	x		x		100m	20km	RJ-45	SC	-	sm	x					x		Use line card in R200 chassis
R141-15	x / x			x		100m	5km / 2km	RJ-45	ST	-	mm	x					x		Use line card in R200 chassis
R141-16	x	x		x		100m	20km	RJ-45	ST	-	sm	x					x		Use line card in R200 chassis
R141-1X	x	x		x	x	100m	20km	RJ-45	SC	-	sm/bwdm	x					x		Use line card in R200 chassis
R141-1Y	x	x		x	x	100m	20km	RJ-45	SC	-	sm/bwdm	x					x		Use line card in R200 chassis
100Mbps Copper-to-Fiber - Pre-configured																			
R133-13		x		x		100m	2km	RJ-45	SC	-	mm	x	x	x	x		x	x	2133-13-01 or M133-13
R133-14		x		x		100m	20km	RJ-45	SC	-	sm	x	x	x	x		x	x	2133-14-01 or M133-14
R133-15		x		x		100m	2km	RJ-45	ST	-	mm	x	x	x	x		x	x	2133-15-01 or M133-15
R133-16		x		x		100m	20km	RJ-45	ST	-	sm	x	x	x	x		x	x	2133-16-01 or M133-16
R133-17		x		x		100m	40km	RJ-45	SC	-	sm	x	x	x	x		x	x	2133-17-01 or M133-17
R133-1E		x		x		100m	2km	RJ-45	MTRJ	-	mm	x	x	x	x		x	x	2133-1E-01 or M133-1E
R133-1J		x			x	100m	100km	RJ-45	SC	-	sm	x	x	x	x		x	x	2133-1J-01 or M133-1J
R133-1K		x		x		100m	2km	RJ-45	LC	-	mm	x	x	x	x		x	x	2133-1K-01 or M133-1K
R133-1M		x		x		100m	20km	RJ-45	LC	-	sm	x	x	x	x		x	x	2133-1M-01 or M133-1M
R133-1X		x		x	x	100m	20km	RJ-45	SC	-	sm/bwdm	x	x	x	x		x	x	2133-1X-01
R133-1Y		x		x	x	100m	20km	RJ-45	SC	-	sm/bwdm	x	x	x	x		x	x	2133-1Y-01
100Mbps Fiber-to-Fiber - Pre-configured																			
R131-33		x		x		2km	2km	SC	SC	mm	mm					x			2131-33-01
R131-34		x		x		2km	20km	SC	SC	mm	sm					x			2131-34-01
R131-36		x		x		2km	20km	SC	ST	mm	sm					x			2131-36-01
R131-44		x		x		20km	20km	SC	SC	sm	sm					x			2131-44-01
R131-47		x		x		20km	40km	SC	SC	sm	sm					x			2131-47-01
R131-54		x		x		2km	20km	ST	SC	mm	sm					x			2131-54-01
R131-55		x		x		2km	2km	ST	ST	mm	mm					x			2131-55-01
R131-56		x		x		2km	20km	ST	ST	mm	sm					x			2131-56-01
R131-66		x		x		20km	20km	ST	ST	sm	sm					x			2131-66-01
R131-77		x		x		40km	40km	SC	SC	sm	sm					x			2131-77-01
R131-4J		x		x	x	20km	100km	SC	SC	sm	sm					x			2131-4J-01
R131-JJ		x			x	100km	100km	SC	SC	sm	sm					x			2131-JJ-01

Other 10Mbps and 100Mbps Solutions

See separate data sheets for the following options:

10/100Mbps AutoTwister with rate adaption

The AutoTwister is a Layer 2 device which provides media conversion and 10/100 rate adaption in a single unit, extending copper-based networks up to 100km over singlemode fiber.

100Mbps Access Line Cards

Access Line Cards provide the ability to reach across a metropolitan area network to communicate, test and reconfigure a remote device, without reducing the available bandwidth to the customer site.

Patented Line Protection and Restoration

Metrobility's patented dual port interface line cards and standalone units offer redundant data paths for line protection and restoration (LPR) to prevent data loss due to cable failure, port failure, or catastrophic switch failures.

Delta Class "twister" (M133)

The 100Mbps Delta Class "twister" is a standalone devices that incorporates a lightweight, impact resistant enclosure that is made of high durability, fade resistant engineered plastic. The unit is wall mountable and provides channels for cable and power cord management and cable protection. Link and activity LEDs are easily viewed on the top cover.

For Delta Class "twister" specifications, see the Delta Class "twister" data sheet or user manual.
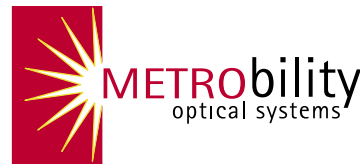
Radiance Chassis Options

- **R200:** Single slot unit with an internal AC or DC power supply for continuous uptime
- **R400:** Two-slot unit with an optional second power supply for continuous uptime
- **R1000:** Two-slot 19" 1U rack-mount with single or dual AC or DC power options
- **R5000:** 17-slot 2U rack-mount with an optional redundant AC or DC power supply for continuous uptime
- For industrial applications, see Metrobility's RD20 DIN-rail chassis

Accessories

2100-WM	Wall-mount kit for 21xx standalone
R200-WM-1	Wall-mount kit for the R200 or R400
R200-RM-1A	19" rack-mount kit (ears) for single R200 or R400
R200-RM-2A	19" rack-mount kit (tray) for two R200 or R400
R200-RM-EXT23	23" rack-mount extension kit (ears) for the R200-RM-1A and R200-RM-2A

Specifications

Environmental

Operating Temperature	0°C to 50°C
	-20°C to 70°C (R133 only)
Operating Humidity	5% to 95% non-condensing
Storage Temperature	-25°C to 70°C
	-30°C to 70°C (R133 only)

Standalone (21xx)

Dimensions	4.8"L x 3.3"W x 1.7"H
	12.3cm x 8.3cm x 4.3cm
Weight	1 lb; .45 kg

Power, Universal 90-250V AC 50/60Hz

Standards Compliance   IEEE 802.3/IEEE 802.3u

Safety and EMC Compliance

UL
CE
CSA
CB
EN60950 (safety)
FCC Part 15, Class A (x111, x133, x131)
FCC Part 15, Class B (R141)
EN55022 Class A emissions (x111, x133, x131)
EN55022 Class B emissions (R141)
ICES-003 Class A emissions (x111, x133, x131)
ICES-003 Class B emissions (R141)
EN55024: 1998 (immunity)
IEC 825-1 Classification
Class 1 Laser Product

Metrobility Optical Systems is an innovative next generation optical networking company whose focus is on delivering optical access platforms and to harness the power of Ethernet and fiber optics to deliver superior network edge access, connectivity and wavelength multiplexing solutions.

A6285   ISO 9001

Metrobility Optical Systems,Inc.