

# Gigabit Ethernet Interface

*Managed Distance Extension and Conversion at 1000Mbps*



- Complete signal retiming and regeneration to maintain cable segments up to 100km
- Link Loss Carry Forward and Link Loss Return for remote troubleshooting
- Fiber-to-fiber and copper-to-fiber conversion
- SFP optics for maximum versatility and BWDM/CWDM support
- Extensive proactive element management

## Flexible Media, Distance and Speed

Metrobility's Gigabit Ethernet interface line cards for the R5000 managed 17-slot chassis and standalones models meet the demands of today's high-speed networks as they migrate from copper to fiber infrastructures and from low-cost SX (short wavelength) to the longer distances supported by LX (long wavelength). These products deliver high availability, performance and manageability, maximizing network uptime through proactive and intuitive network management.

Metrobility® offers one of the most complete lines of Gigabit connectivity products in the industry with support for copper, and both multimode and singlemode fiber, single-strand bi-directional wavelength multiplexing and wavelength conversions from 850nm to 1310nm and 1550nm. Gigabit line cards are also available with small form-factor pluggable (SFP) optics that can support up to 16 distinct wavelengths for CWDM applications. (See Metrobility's CWDM datasheet for additional information on Coarse Wave Division Multiplexing products).

## Extended Distance Support with Retiming

Metrobility's Gigabit Ethernet solutions support copper to fiber, multimode to singlemode, and singlemode to singlemode to extend Gigabit Ethernet distances up to 70km per segment. Gigabit Ethernet units may be cascaded to achieve extended distances over 200km.

All models incorporate signal retiming to ensure that crucial data travels the maximum cable distance without degradation.

Signal retiming restores incoming data and clock information allowing retransmission of data with improved signal quality. This important feature is a cost-effective method for extending the distance capabilities of the network by allowing the cascading of units.

## Troubleshooting Remote Connections

Metrobility's Link Loss Carry Forward (LLCF) and Link Loss Return (LLR) features also assist in troubleshooting remote connections. When LLCF is enabled, ports do not transmit a signal until they receive a signal from the opposite port. So, if the connection breaks, the line card carries the lost link information to the switch or hub which generates a trap to the management station. Link Loss Return (LLR) senses the loss of link on the fiber port and returns a trap to the management station. This feature rapidly notifies IT managers of a failed link to a remote site, even if the remote site is unmanaged.

The copper-to-fiber Gigabit models incorporate Copper Loss Carry Forward (CLCF) for identifying a lost copper connection. When CLCF is enabled, the copper port continually transmits link signals even if the fiber port loses the signal.

SFP optics include digital diagnostics to enable real-time monitoring of internal temperature and optical receive and transmit levels.

## Superior SNMP Management

All SNMP information is transmitted via a Management Card installed in the Radiance platform.

The Management Card gathers real-time data to provide critical, up-to-the-minute statistics. This information may be accessed from the management station through Metrobility's NetBeacon® Element Management System or most SNMP-based management systems. Using the WebBeacon™ kernel embedded in the management card, all data may also be accessed via the web using a standard web browser.

## The Metrobility Difference

Signal retiming and regeneration ensures maximum network distance  
Link Loss Return and Link Loss Carry Forward aid in troubleshooting remote network connections

Real-time monitoring of SFP's internal temperature and optical receive/transmit laser levels

Supports point-to-point, ring and OADM topologies using SFP optics  
High MTBF for reliable, long-term operation

Optional advanced SNMP-based monitoring and management features for interface line cards

Designed to meet NEBS Level 3 compliance

## Product Highlights

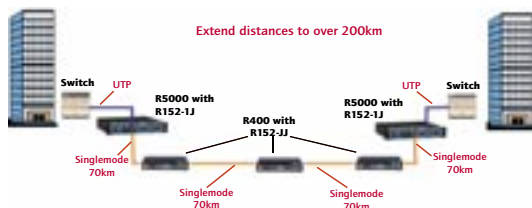
Reliable data transmission over singlemode fiber

Extensive connection options for flexible network configurations

Full and half duplex support

Activity, power and link LEDs

Simple to install with minimal configuration requirements



## 1000Mbps Interface

Line Card	Standalone	Port 1 Description	Typ1 Pwr Budget	Max Seg Length <sup>2</sup>	Port 2 Description	Typ Pwr Budget	Max Seg Length <sup>2</sup>
R152-1A	2152-1A-01	1000BASE-T RJ-45	--	100m	1000BASE-SX multimode-SC	12dBm	500m
R152-1D	2152-1D-01	1000BASE-T RJ-45	--	100m	1000BASE-LX singlemode-SC	14dBm	10km
R152-1F	2152-1F-01	1000BASE-T RJ-45	--	100m	1000BASE-LX singlemode-SC	20dBm	25km
R152-17	2152-17-01	1000BASE-T RJ-45	--	100m	1000BASE-LH singlemode-SC	21dBm	40km
R152-1J	2152-1J-01	1000BASE-T RJ-45	--	100m	1000BASE-EX singlemode-SC	24dBm	70km
	2152-1K-01	1000BASE-T RJ-45	--	100m	1000BASE-SX multimode-LC	17dBm	500m
	2152-1M-01	1000BASE-T RJ-45	--	100m	1000BASE-LX singlemode-LC	23dBm	10km
R152-AA	2152-AA-01	1000BASE-SX multimode-SC	12dBm	220m	1000BASE-SX multimode-SC	12dBm	500m
R152-AD	2152-AD-01	1000BASE-SX multimode SC	12dBm	220m	1000BASE-LX singlemode SC	14Bm	10km
R152-AF	2152-AF-01	1000BASE-SX multimode-SC	12dBm	220m	1000BASE-LX singlemode-SC	20dBm	25km
R152-A7	2152-A7-01	1000BASE-SX multimode-SC	12dBm	220m	1000BASE-LH singlemode-SC	21dBm	40km
R152-AJ	2152-AJ-01	1000BASE-SX multimode-SC	12dBm	220m	1000BASE-EX singlemode-SC	24dBm	70km
R152-DD	2152-DD-01	1000BASE-LX singlemode-SC	14dbm	10km	1000BASE-LX singlemode-SC	14dBm	10km
R152-DF	2152-DF-01	1000BASE-LX singlemode-SC	14dBm	10km	1000BASE-LX singlemode-SC	20dBm	25km
R152-D7	2152-D7-01	1000BASE-LX singlemode-SC	14dbm	10km	1000BASE-LH singlemode-SC	21dBm	40km
R152-DJ	2152-DJ-01	1000BASE-LX singlemode-SC	14dBm	10km	1000BASE-EX singlemode-SC	24dBm	70km
R152-77	2152-77-01	1000BASE-LH singlemode-SC	21dBm	40km	1000BASE-LH singlemode-SC	21dBm	40km
R152-JJ	2152-JJ-01	1000BASE-EX singlemode-SC	23dBm	70km	1000BASE-EX singlemode-SC	24dBm	70km
R152-1X*	2152-1X-01*	1000BASE-T RJ-45	--	100m	1000BASE-X singlemode SC 1550nm/1310nm BWDM	16dBm	20km
R152-1Y*	2152-1Y-01*	1000BASE-T RJ-45	--	100m	1000BASE-X singlemode SC 1310nm/1550nm BWDM	16dBm	20km
R152-AX*	2152-AX-01*	1000BASE-T MM-SC	12dBm	100m	1000BASE-X singlemode SC 1550nm/1310nm BWDM	16dBm	20km
R152-AY*	2152-AY-01*	1000BASE-T MM-SC	12dBm	100m	1000BASE-X singlemode SC 1310nm/1550nm BWDM	16dBm	20km

### Line Cards with SFP<sup>1</sup> (Small Form Factor Pluggable) Optics

R153-1S	1000BASE-T RJ-45	100m	1000BASE-X SFP LC	see optics
R153-SS	1000BASE-X SFP LC	see optics	100BASE-X SFP LC	see optics

### SFP Optics

O211-M5	LC/MM	500m
O211-10	LC/SM	10km
O211-25	LC/SM	25km
O211-40	LC/SM	40km
O211-70	LC/SM	70km
O211-1A	LC/SM	100km
O311-10-31	SC/SM/BWDM/1310	10km
O311-10-49	SC/SM/BWDM/1490	10km

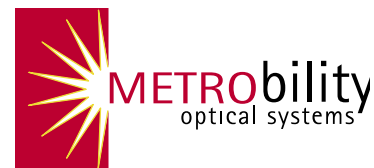
### SFP Optics, CWDM, 80km

O411-80-31	LC 1310nm	O411-80-47	LC 1470nm
O411-80-33	LC 1330nm	O411-80-49	LC 1490nm
O411-80-35	LC 1350nm	O411-80-51	LC 1510nm
O411-80-37	LC 1370nm	O411-80-53	LC 1530nm
O411-80-39	LC 1390nm	O411-80-55	LC 1550nm
O411-80-41	LC 1410nm	O411-80-57	LC 1570nm
O411-80-43	LC 1430nm	O411-80-59	LC 1590nm
O411-80-45	LC 1450nm	O411-80-61	LC 1610nm

<sup>1</sup>SFP Optics: Metrobility products using SFP optics were only designed and tested with the SFP optics offered for sale by Metrobility. Metrobility can only warrant the safety, performance, and quality of our products when used with SFP optics from Metrobility. The buyer assumes the complete risk when using SFP optics not sold by Metrobility.

<sup>2</sup>Distance: The distances noted in the descriptions are for reference purposes only. The most important factor to achieve the desired distance is the "optical power budget" or fiber optic light measured in dB. The Metrobility descriptions generally indicate the typical transmit power budget for 9/125µm SM; 50/125 or 62.5/125µm MM. Use of enhanced fiber is recommended for all CWDM applications.

\*Each end of the link must be configured with a different receive and transmit wavelength. Order a -1X for one end and a -1Y for the opposite end.



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**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.**

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### Specifications

#### Environmental

Oper. Temp.	0°C to 55°C
Oper. Humidity	5% to 95% non-condensing
Storage Temp.	-25°C to 70°C

#### Safety and EMC Compliance

UL, CSA, CB, EN60950 (safety), FCC Part 15, Class A, EN55022 Class A (emissions), EN55024: 1998 (immunity), IEC 825-1 Classification, Class 1 Laser Product, DOC Class A (emissions)

Standards Compliance IEEE 802.3z

#### Standalone

Dimensions 1.7"H x 3.3"W x 4.8"L  
 12.3cm x 8.3cm x 4.3cm

Weight 1 lb; .45 kg

Power 90-250V AC 50/60Hz

Refer to user manual for additional technical specifications.



**Metrobility Optical Systems, Inc.**