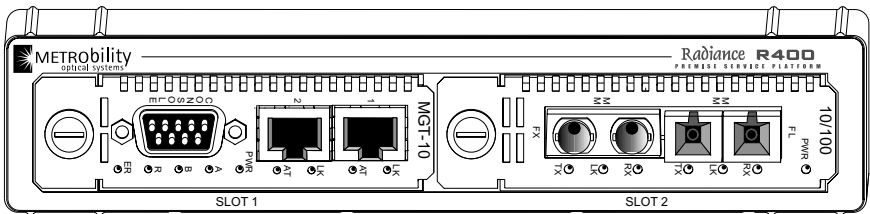METRObility
optical systems

RADIANCE
R400
PREMISE SERVICE PLATFORM

Installation & User Guide
Model: R400-2HS-1A

Radiance Series

R400 Premise Service Platform:
R400-2HS-1A _____ 2-slot platform; single external AC power supply

Accessories:
R400-AC _____ AC power supply and line cord

The following is a listing of available Radiance products. Refer to each product's specific installation and user guide for operational features.

Platforms:
R200 Premise Service Platform
R1000 Premise Service Platform
R5000 Central Service Platform
RD20-24 DIN Rail Mounted Chassis

Line Cards:

10Mbps	Gigabit
Copper to coax	Fiber to fiber
Copper to fiber	Copper to fiber
Redundant	Redundant
100Mbps	SONET
Copper to fiber	Fiber to fiber
Fiber to fiber	T1/E1
Redundant	Copper to fiber
Access	T3/E3
10/100Mbps	Coax to fiber
Copper to copper	
Copper to fiber	
Fiber to fiber	

Management:
R502-M _____ Management card with dual Ethernet interfaces
NetBeacon® _____ Element Management software

Table of Contents

Radiance R400 Premise Service Platform Installation & User Guide

The information contained in this document is assumed to be correct and current. The manufacturer is not responsible for errors or omissions and reserves the right to change specifications at any time without notice.

Overview

The Radiance R400 Premise Service Platform is the ideal solution for the management of remote sites where a small platform is preferred. The R400 supports all Radiance single-slot line cards and gives you the flexibility to mix and match cards to meet your specific network requirements. Use both slots for connectivity, or use one slot for connectivity and the other for management. With their compact design, two platforms fit into a standard 19-inch rack with an added tray.

For mission-critical applications, the R400 supports two AC power supplies to enable continuous network operation. If one power supply fails, the other supply automatically replaces it without any data loss.

To increase reliability and reduce troubleshooting time, Metrobility® offers several management options. The SNMP management card collects a variety of network statistics and link information including the unit's voltage and temperature. NetBeacon® element management software provides proactive management support including automatic e-mail notification. For web-based management using a standard web browser, Metrobility provides the WebBeacon kernel embedded into the management card.

Metrobility's carrier class solutions provide seamless connectivity with all major switch and router manufacturers and offer a flexible solution for fiber connectivity while reducing costs and adding functionality.

The Radiance R400 Premise Service Platform provides the following key features:

- Support for two hot-swappable, load-sharing AC power supplies.

- Optional management card for obtaining statistical information via Metrobility's NetBeacon or WebBeacon management software.

- Two units fit into a standard 19-inch rack with an added tray.

- Support for any combination of single-slot, hot-swappable Radiance line cards.

- Strict standards compliance ensuring compatibility with other vendors' equipment for flexible connectivity.

Related Documentation
Refer to the following documents for additional information:

- *Radiance 10Mbps Single Interface Line Cards Installation & User Guide*
- *Radiance 100Mbps Single Interface Line Cards Installation & User Guide*
- *Radiance 10Mbps Redundant Interface Line Cards Installation & User Guide*
- *Radiance 100Mbps Redundant Interface Line Cards Installation & User Guide*
- *Radiance 1000Mbps Redundant Interface Line Cards Installation & User Guide*
- *Radiance 10/100Mbps Interface Line Cards Installation & User Guide*
- *Radiance Gigabit Single Interface Line Cards Installation & User Guide*
- *Radiance 1Gbps Interface Line Cards with SFP Optics Installation & User Guide*
- *Radiance SONET Single Interface Line Cards Installation & User Guide*
- *Radiance Access Line Cards Installation & User Guide*
- *Radiance T1/E1 Single Interface Line Cards Installation & User Guide*
- *Radiance T3/E3 Single Interface Line Cards Installation & User Guide*
- *Radiance Chassis Stacking Line Card Installation & User Guide*
- *Command Line Interface Reference Guide*
- *NetBeacon Element Management Software Installation & User Guide*
- *WebBeacon Management Software Installation & User Guide*

Installation Guide

Follow the simple steps outlined in this section to install and start using the Radiance R400 Premise Service Platform.

NOTE: Electrostatic discharge precautions should be taken when handling any line card. Proper grounding is recommended (i.e., wear a wrist strap).

1 Unpack the Platform and Accessories

Check that the following components have been included:
- Radiance R400 Premise Service Platform
- 1 AC power supply
- 1 power cord
- 4 rubber feet

The following items are available separately:
- AC power supply
- Management card
- NetBeacon element management software
- Radiance line cards

Your order has been provided with the safest possible packaging, but shipping damage does occasionally occur. Inspect it carefully. If you discover any shipping damage, notify the carrier and follow their instructions for damage and claims. Save the original shipping carton if return or storage of the unit is necessary.

2 *Choose an Appropriate Location*

The Radiance R400 is intended for use in office and industrial environments. Attach the four rubber feet to the bottom of the unit and place it on a flat surface. The feet provide a space for air circulation.

The R400 may be oriented in any manner that allows you to make the physical connection to the power source and leaves a minimum of six (6) inches of space around it for proper ventilation.

The R400 must be located within six (6) feet of the AC power source(s) being used and placed as far away as possible from electrical noise generating equipment such as copiers, electrostatic printers and other motorized equipment. If exposed twisted-pair wiring is used nearby, the wiring should be routed as far away as possible from power cords and data cables to minimize interference.

3 Install the Line Cards

The R400 Premise Service Platform supports two single-slot Radiance line cards in any combination. These cards offer the ease of plug-and-play installation and are hot-swappable. Refer to each card's documentation for detailed installation instructions.

Before installing any card, note the following:
• Remove the temporary slot protectors by turning the thumb screws counterclockwise and removing the blank panels.

• Line cards can be installed into either slot.

• All switches and jumpers on the cards must be set prior to installation. Refer to each card's documentation for a complete description of its settings.

• Proper grounding is recommended (i.e., wrist strap).

• Both line cards must be firmly secured to the platform before network connections are made.

Follow the simple steps outlined below to install the line cards:
• Grasp the card by the front panel as shown (thumb screw to the left).
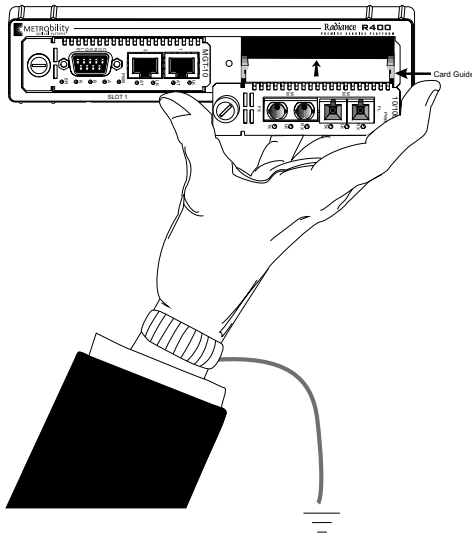
- Line the edges of the board with the slot guides and slide the card in until the edges are flush and even with the front of the unit. Do not force the card into the slot unnecessarily. It should slide in easily and evenly.

- Secure to the platform by turning the thumb screw clockwise until snug. The line card is now ready for connection to the network.

4 Connect to the Network

Connecting the Management Card

The management card supports 10Base-T Ethernet.

- Using a standard Category 3, 4, or 5 UTP cable, connect the management card to your network. The port can be configured for either full or half duplex, however, half duplex is recommended. Refer to the *Command Line Interface Reference Guide* for a detailed description of configuration commands.

- Using the supplied null-modem console cable, connect the male DB-9 port on the management card to the serial port on your PC.

Connecting the Line Cards

To connect the individual cards to the network, refer to their corresponding installation and user guides.

5 Attach the Grounding Lug (Optional)

On its back panel, the R400 has a small hole where a grounding lug can be installed. The hole is marked with the grounding symbol. Use a 6-32 screw to fasten the lug (not provided) to the platform. Connect the other end of the grounding lug wire to the grounding point at your site.
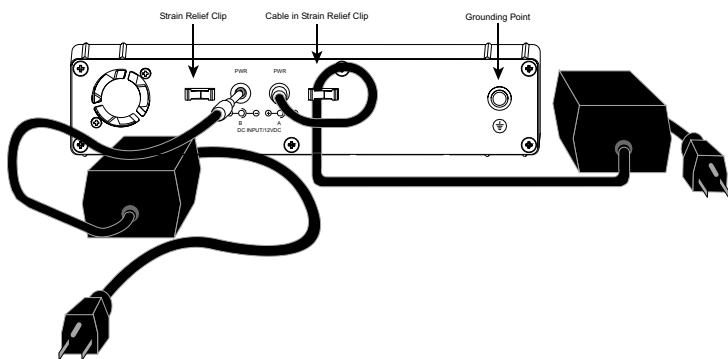
6 *Apply Power to the Platform*

Power is provided to the platform from the desktop power supply. Each R400 is shipped with one 90-264V AC external power supply. The power supply is equipped with an S760 hollow-type plug for insertion into the power input jack located on the back of the platform. To connect to the power source, the AC power supply provides a standard IEC 320-type AC power receptacle.

The R400 supports a secondary power supply if redundant power is required. Refer to Operating Features of the Load-Sharing Power Supply in the User Guide section for further information regarding redundant power.

*IMPORTANT: Connect the power cord to the input jack located on the back panel **before** connecting to the power source.*

Follow the steps outlined below to apply power to the platform.
• Insert the end of the power cord into the primary jack labeled "A."

• If using two power supplies, insert the end of the second power cord into the secondary input jack labeled "B."

• Connect to the power source by plugging the AC power receptacle into an outlet. If a second power supply is being used, connect each power supply to a separate power source.

• To prevent accidental disconnections, seat the power cord(s) into the strain relief clip(s).

- Verify proper power connection and operation via the LEDs labeled "A" and "B" on the management card. These LEDs correspond to the primary and secondary power supplies, respectively. A steady green light indicates the platform is receiving power. When two power supplies are installed and active, both LEDs are lit simultaneously. Refer to Operating Features of the Load-Sharing Power Supply in the User Guide section for further details.

Without a management card, verify proper power connection and operation via the power (PWR) LEDs on the installed line cards. The LED is lit when one or both power supplies are active. Refer to Operating Features of the Load-Sharing Power Supply in the User Guide section for more information.

If an additional extension cord is used to connect the power supply to the outlet, follow the guidelines below. While one end of the power cord can be fitted with a plug standard for the country of operation, the end that connects to the platform's power supply must have a female plug that fits the standard IEC 320-type AC receptacle.

- AC 115V (North American): Use a UL-listed and CSA-certified cord set consisting of a minimum No. 18 AWG, type SVT or SJT three-conductor cord (15 ft. maximum length) and a parallel blade, grounding-type attachment plug rated 15A, 125V.

- AC 230V (USA): Use a UL-listed cord set consisting of a minimum No. 18 AWG, type SVT three-conductor cord (15 ft. maximum length) and a Tandem blade grounding-type attachment plug rated 15A, 250V.

- 240V (outside USA): Use a cord set consisting of a minimum No. 18 AWG cord and grounding-type attachment plug rated 15A, 250V. The cord set should have the appropriate safety approvals for the country in which the platform is installed and marked HAR.

7 Boot the Management Card

Management of the Premise Service Platform is provided through a local console, Metrobility's NetBeacon or WebBeacon software, or any SNMP network management application via a PC. WebBeacon is embedded in the management card. SNMP is supported on many general network platforms: SunNet Manager, HP OpenView for UNIX, HP OpenView for NT, SNMPc and others.

Following power-up of the platform, the boot image is automatically executed. It starts by performing a system initialization, followed by diagnostic tests. During this process, the RUN LED will be off and the ERROR LED will blink. After diagnostics are complete, if a failure has occurred, the ERROR LED will remain on. The RUN LED will not be lit until the operating system has started successfully.

The PC terminal session parameters for the management card are as follows:
9600 Baud / 8 data bits / 1 stop bit / no parity / no flow control

Refer to the *Command Line Interface Reference Guide* for a detailed description of how to boot for SNMP management and a complete listing of configuration commands.

User Guide

This section contains information regarding certain operating features and maintenance instructions for the Radiance R400 Premise Service Platform.

Management Card

The management card is the Simple Network Management Protocol (SNMP) agent for the Radiance R400. Connected via the backplane to the cards in the platform, the management card reports individual board status to a local console, Metrobility's NetBeacon software or any SNMP application. Thus, the network administrator receives immediate information on network operations via a PC. Metrobility also provides the WebBeacon kernel, embedded into the management card, for Web-based management via the Internet using browsers such as Netscape® Navigator® or Microsoft® Internet Explorer. Refer to the *Command Line Interface Reference Guide*, *NetBeacon Element Management Software Installation & User's Guide* or *WebBeacon Management Software Installation & User's Guide* for detailed software commands.

Line Cards

Metrobility's line cards deliver carrier-class media, speed and distance solutions to address the needs of today's telecommunications networks. An extensive line of plug-and-play, hot-swappable cards support IP/Ethernet interfaces at 10, 100, 1000Mbps, SONET OC-3/STM-1, OC-12/STM-4, T1, E1, T3 and E3. For mission-critical applications, Metrobility's Ethernet, Fast Ethernet, and Gigabit Ethernet redundant line cards feature network-on-demand accessibility, reliability and enhanced security.

One or two line cards can be installed in the Radiance R400 Premise Service Platform. Maximum segment lengths are supported on either side of the device, and all signal activity is reliably propagated from one cable to the other assuring accurate data flow across the network.

Automatic half- or full-duplex operation ensures compatibility with devices from other leading network technology providers.

Refer to the each line card's specific installation and user guide for additional information.

Platform Technical Specifications

Power

Input _____ 90-264V AC, 50-60Hz
Output _____ 12V DC, 2.5A, 30W

Environmental

Operating Temperature _____ 0° to 50° C
Storage Temperature _____ -25° to 70° C
Relative Humidity _____ 5% to 95% non-condensing
Physical Case _____ Fully enclosed metal construction
Dimensions _____ 5.75"L x 7.5"W x 1.75"H
_____ (1.22 cm x 19 cm x 0.37 cm)
Weight _____ 2.5 lb (1.13 kg)

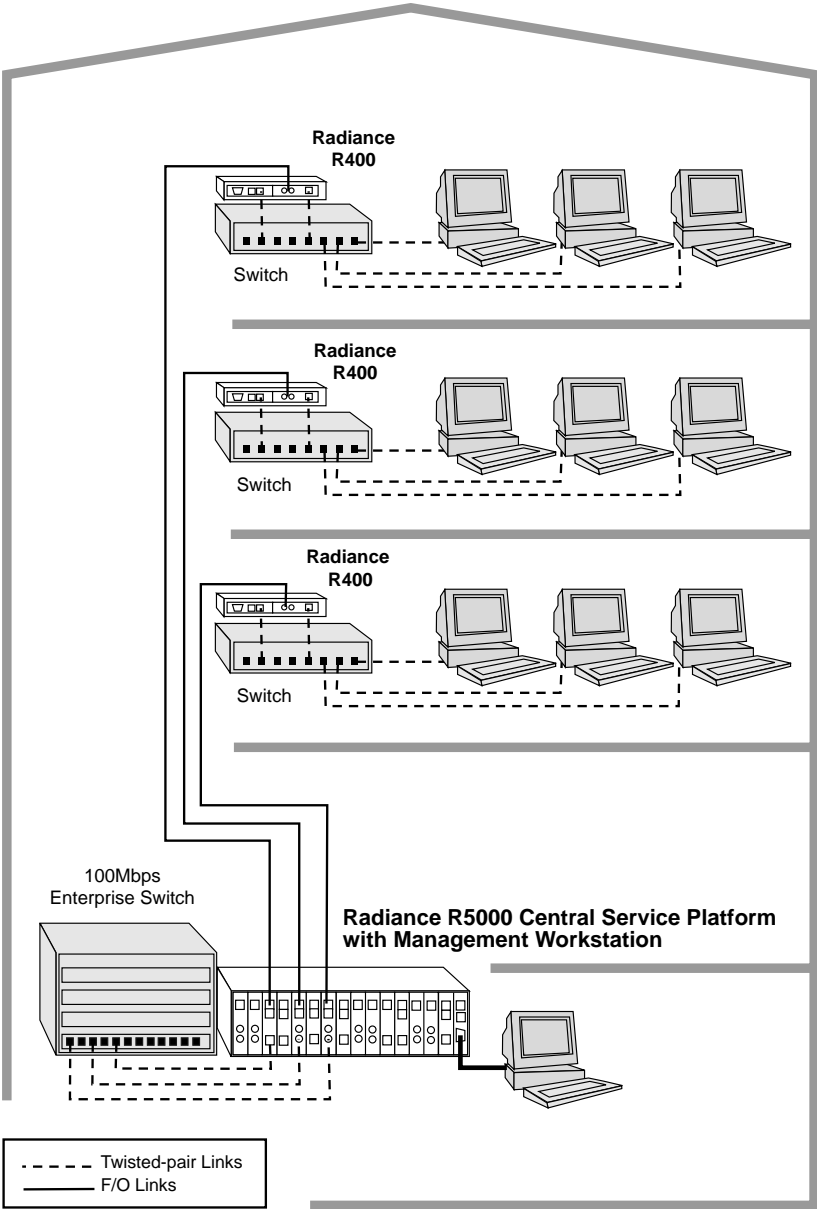## *Operating Features of the Load-Sharing Power Supply*

The R400-AC load-sharing AC power supply is designed for use with the R400 platform and provides 30W of power. The R400-2HS-1A is shipped with one power supply, however, the unit can be upgraded with a second power supply.
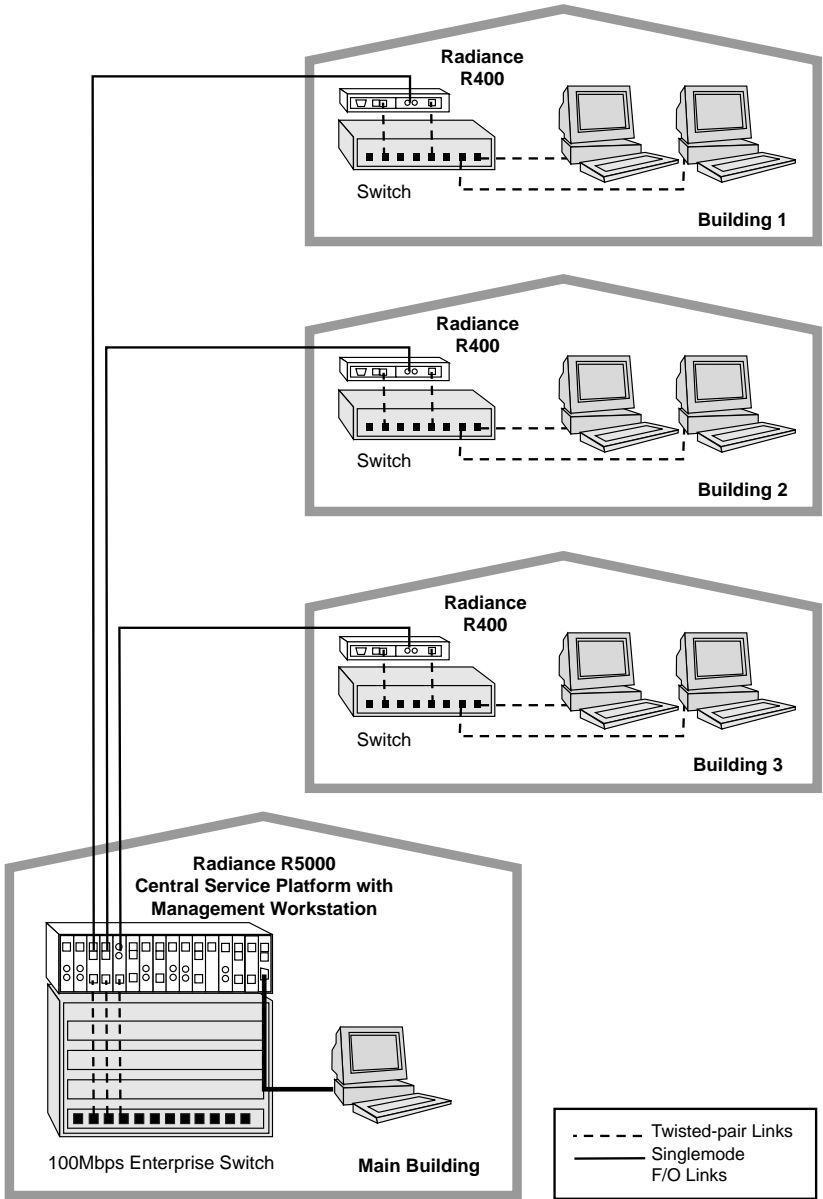
When an R400 platform is equipped with two load-sharing power supplies, they operate in tandem and share the load. If the power source to one of the supplies fails or is removed, the remaining power supply automatically provides the entire power load to the platform. This setup provides both the platform and the network with uninterrupted service. It also decreases the demand placed upon each individual power supply unit thus prolonging its life.

For visible verification of the operating status of the power supplies, the management card provides two LEDs labeled "A" and "B." When lit, the LED indicates that its corresponding power supply is connected to an active power source and providing power to the platform backplane. When two power supplies are installed, both LEDs are lit simultaneously. If one of the power supplies fails, it can easily be identified by the unlit LED.

If the R400 does not have a management card installed, verify power to the platform via the status of the power (PWR) LED on the installed line card(s). The PWR LED is lit while the platform is receiving power from one or both power supplies. When using redundant power, the PWR LED remains lit even if one of the power supplies fails; it turns off only if both power connections fail. To optimize redundant power capability, installment of a management card is recommended.

Topology Solutions

Radiance
R400

Switch

Radiance
R400

Switch

Radiance
R400

Switch

100Mbps
Enterprise Switch

**Radiance R5000 Central Service Platform
with Management Workstation**

- - - - - Twisted-pair Links
———— F/O Links

Radiance R400

Switch

Building 1

Radiance R400

Switch

Building 2

Radiance R400

Switch

Building 3

**Radiance R5000
Central Service Platform with
Management Workstation**

100Mbps Enterprise Switch

Main Building

- - - - - Twisted-pair Links
———— Singlemode
F/O Links

Product Safety, EMC and Compliance Statements

This equipment complies with the following requirements:

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

This product shall be handled, stored and disposed of in accordance with all governing and applicable safety and environmental regulatory agency requirements.

The following *FCC* and *Industry Canada* compliance information is applicable to North American customers only.

USA FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Radio Frequency Interference Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Warranty and Servicing

Three-Year Warranty for the Radiance R400 Premise Service Platform

Metrobility Optical Systems, Inc. warrants that every Radiance product will be free from defects in material and workmanship for a period of THREE YEARS from the date of Metrobility shipment. This warranty covers the original user only and is not transferable. Should the unit fail at any time during this warranty period, Metrobility will, at its sole discretion, replace, repair, or refund the purchase price of the product. This warranty is limited to defects in workmanship and materials and does not cover damage from accident, acts of God, neglect, contamination, misuse or abnormal conditions of operation or handling, including overvoltage failures caused by use outside of the product's specified rating, or normal wear and tear of mechanical components.

To establish original ownership and provide date of purchase, complete and return the registration card or register the product online at www.metrobility.com. This warranty will not go into effect until the warranty registration has been received by Metrobility.

To return a defective product for warranty coverage, contact Metrobility Customer Service for a return materials authorization (RMA) number. Send the defective product postage and insurance prepaid to the address provided to you by the Metrobility Technical Support Representative. Failure to properly protect the product during shipping may void this warranty. The Metrobility RMA number must be clearly on the outside of the carton to ensure its acceptance.

Metrobility will pay return transportation for product repaired or replaced in-warranty. Before making any repair not covered by the warranty, Metrobility will estimate cost and obtain authorization, then invoice for repair and return transportation. Metrobility reserves the right to charge for all testing and shipping costs incurred, if test results determine that the unit is without defect.
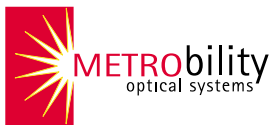
This warranty constitutes the buyer's sole remedy. No other warranties, such as fitness for a particular purpose, are expressed or implied. Under no circumstances will Metrobility be liable for any damages incurred by the use of this product including, but not limited to, lost profits, lost savings, and incidental or consequential damages arising from the use of, or inability to use, this product. Authorized resellers are not authorized to extend any other warranty on Metrobility's behalf.

Product Manuals
The most recent version of this manual is available online at
http://www.metrobility.com/support/manuals.htm

Product Registration
To register your product, go to
http://www.metrobility.com/support/registration.asp

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