

RIC-155L

Gigabit Ethernet over STM-1/OC-3 Converter



Connects Gigabit Ethernet LANs over STM-1/OC-3 links

- Gigabit Ethernet connectivity over SDH/SONET networks.
- QoS per VLAN priority bit, with four priority queues based on Strict Priority scheduling
- Standard GFP encapsulation per ITU-T G.7041
- SDH/SONET to Ethernet Fault propagation
- Inband and out-of-band management for configuration, monitoring and diagnostics

RIC-155L is a convertor that bridges between Gigabit Ethernet networks and STM-1/OC-3c networks, providing simple, efficient, and cost-effective Gigabit Ethernet connectivity over SDH/SONET. The unit offers a migration path for connecting future-ready IP devices to existing SDH/SONET networks. The device enables cost-effective deployment of the SDH/SONET infrastructure for internet access and LAN connectivity. RIC-155L supports encapsulation using GFP per ITU-T G.7041 or ANSI T1-105.02, providing efficient bandwidth utilization. RIC-155L can be managed for configuration, monitoring and diagnostics.

Typical applications include enabling IP DSLAM, IP Node B and WiMAX BTS backhauling (*Figure 1*), and connecting point-to-point Ethernet Private Line over SDH/SONET (*Figure 2*).

The unit supports frame size of 64–10000 bytes, including VLAN-tagged frames.

RIC-155L operation is based on VC-4/STS-3c.



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MANAGEMENT

The unit can be monitored, configured, and tested using the following ports and applications:

- Out-of-band via the local Ethernet management port
- Inband via the network STM-1 port using a dedicated VLAN
- Using a highly scalable, Java-based multiplatform; RADview-EMS carrier-class element management system, for network configuration, provisioning, monitoring and management.

WEB APPLICATION

The Web-based management application provides remote device configuration and maintenance and is embedded into RIC-155L. This application can be accessed from any standard Web browser and is provided at no extra cost.

DIAGNOSTICS

Remote (RLB) and local loopbacks (LLB) are used for physical layer troubleshooting.

LOS AND FAULT PROPAGATION

RIC-155L provides user configurable, unidirectional fault propagation. The LAN link is deactivated if one of the following user-defined alarms is issued:

- LOS (Loss of signal)
- AIS (Alarm indication signal)
- RDI (Remote defect indication).

ENCAPSULATION

RIC-155L employs standard GFP encapsulation as per Generic Framing Procedure (ITU-T G.7041/Y.1303).

QUALITY OF SERVICE – QOS

For prioritizing user traffic, RIC-155L features up to four separate queues.

The queues handle traffic for different services based on VLAN priority (802.1p), which enables mapping the 8 priority levels of VLAN to 4 traffic classes.

SDH/SONET TIMING OPTIONS

The user can define the following SDH/SONET clock sources:

- Internal
- Recovered from STM-1/OC-3 interface.

FLEXIBILITY

RIC-155L operates with the following devices using standard encapsulation:

- RAD's RICi-155GE (Central Ethernet gateway)
- RAD's FCD-155E
- Third-party devices that employ standard GFP encapsulation.

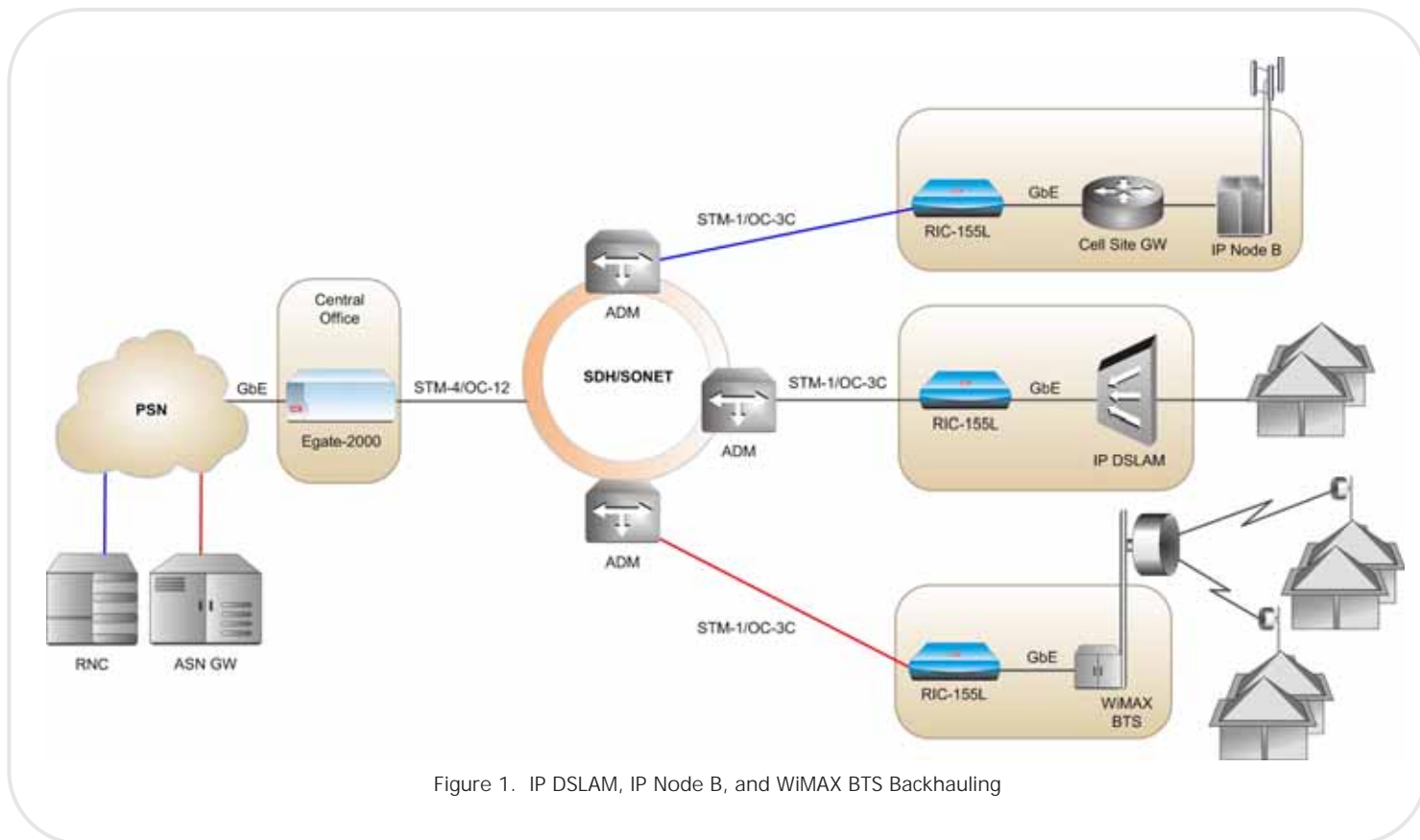


Figure 1. IP DSLAM, IP Node B, and WiMAX BTS Backhauling

Specifications

SDH/SONET INTERFACE

Number of Ports

1 optical (STM-1/OC-3)

Data Rate

155.52 Mbps

Operation Mode

SDH/SONET

Framing

SDH: ITU-T G.708, G.709
SONET: GR-253-core, OC-3

Compliance

SDH: ITU-T G.7041, G.957
SONET: GR-253-core

Encapsulation

Generic Framing Procedure
(ITU T G.7041/Y.1303)

Timing

Internal
Recovered from STM-1/OC-3 interface

SFP Transceivers

For full details, see the SFP Transceivers data sheet at www.rad.com

Note: It is strongly recommended to order this device with **original RAD SFPs installed**. This will ensure that prior to shipping, RAD has performed comprehensive functional quality tests on the entire assembled unit, including the SFP devices. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs.

Note: There is no DDM SFP support.

Connector

SFP

ETHERNET INTERFACE (DATA)

Number of Ports

2

Type

100/1000BaseT
100/1000BaseFX

Operation Modes

Full/half duplex, autonegotiation

Data Rate

100 Mbps or 1 Gbps

Frame Size

Up to 10 kbytes

Compliance

Conforms to the relevant sections of IEEE 802.3

Connector

RJ-45
SFP

ETHERNET INTERFACE (MANAGEMENT)

Number of Ports

1

Type

10/100BaseT, full/half duplex, autonegotiation

Data Rate

100 Mbps

Compliance

Conforms to the relevant sections of IEEE 802.3

Connector

RJ-45

TERMINAL CONTROL PORT

Type

RS-232/V.24 (DCE asynchronous)

Data Rate

115.2 Kbps

Connector

DB-9, female

GENERAL

Diagnostics

Remote and local loopbacks on SDH/SONET and Gigabit Ethernet interfaces

Indicators

PWR (green) – Power status
TST/ALM (red) – Test/alarm status
ETH/LINK (green) – Ethernet status
ETH/ACT (yellow) – Ethernet activity status
LOS (red) – Loss of signal
SDH/SONET ON (green) – Frame sync/loss status

Power

Wide-range power supply:
AC/DC: 100 to 240 VAC or 48 to 60 VDC

Power Consumption

AC: 5W
DC: 4.5W

Physical

Height: 43.7 mm (1.7 in)
Width: 220 mm (8.6 in)
Depth: 170 mm (6.7 in)
Weight: 0.5 kg (1.1 lb)

Environment

Temperature: 0 to 50°C (32 to 122°F)
Humidity: Up to 90%, non-condensing



Figure 2. Point-to-Point Ethernet Private Line over SDH/SONET

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Ordering

STANDARD CONFIGURATION

RIC-155L/NULL/NULL

Notes: RIC-155L is supplied with the following:

- 1x10/100/1000 Mbps UTP Ethernet data port
1x100/1000 Mbps SFP Ethernet data port
1x10/100 Mbps Ethernet management port.
- Wide-range power supply:
AC/DC: 100 to 240 VAC or 48 to 60 VDC

SFP Transceivers

SFPs for SDH/SONET and Ethernet interfaces are to be ordered separately.

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Note: It is strongly recommended to order this device with **original RAD SFPs installed**. This will ensure that prior to shipping, RAD has performed comprehensive functional quality tests on the entire assembled unit, including the SFP devices. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs.

Note: There is no DDM SFP support.

SUPPLIED ACCESSORIES

Wide range 100–240 VAC/48–60 VDC cable

OPTIONAL ACCESSORIES

RM-33-2

Hardware kit for mounting one RIC-155L unit into a 19-inch rack

CBL-DB9F-DB9M-STR

Control port cable

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