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.

PulseSupply
pulsesupply.com

RAD
data communications
The Access Company

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.

FLEXIBILTY

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

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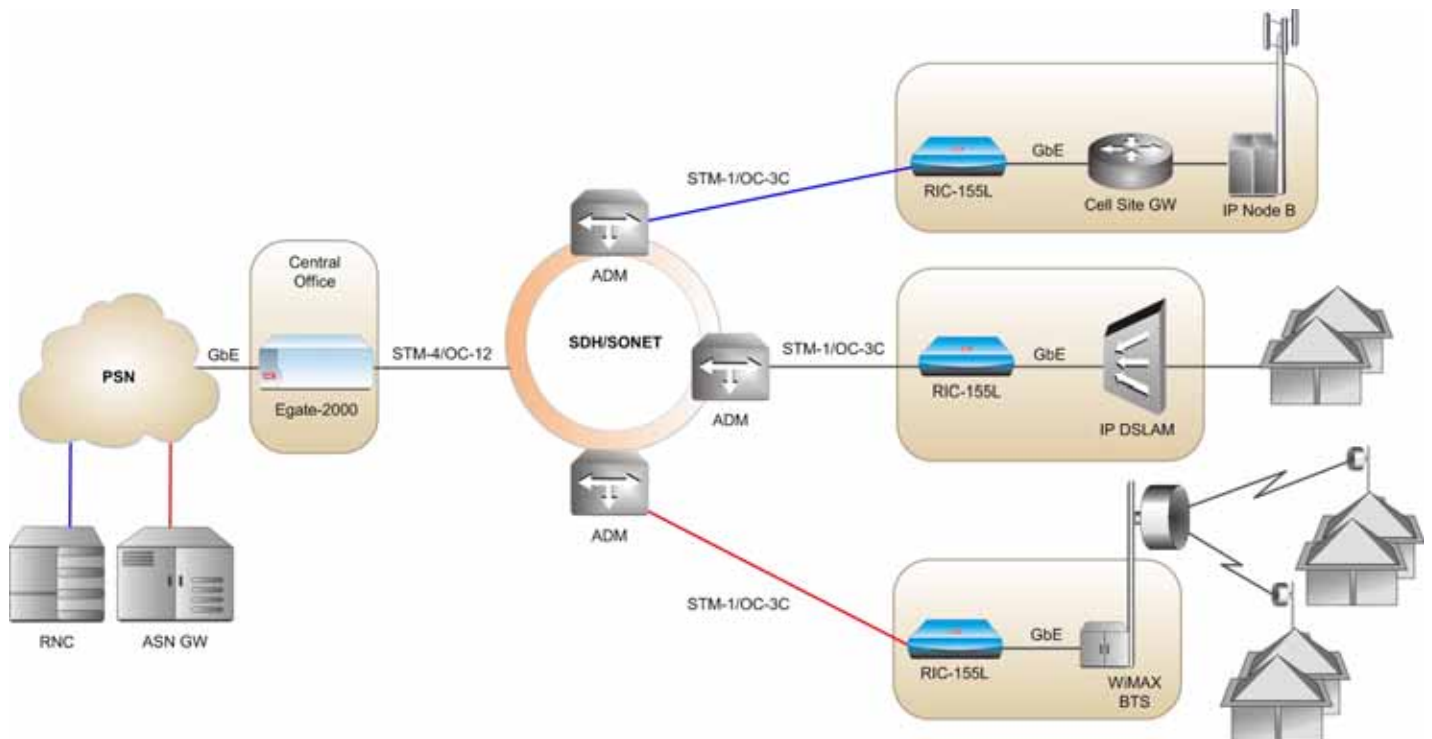- Third-party devices that employ standard GFP encapsulation.

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

Ordering

STANDARD CONFIGURATION

RIC-155L/NULL/NULL

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

- *1×10/100/1000 Mbps UTP Ethernet data port*

  1×100/1000 Mbps SFP Ethernet data port
  1×10/100 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.

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.

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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