Data Sheet

RIC-622GE

Gigabit Ethernet over STM-4/OC-12c Network Termination Unit

Simple and efficient connection between two remote LANs over an SDH or SONET infrastructure

EtherAccess

- Connecting Gigabit Ethernet LANs over SDH/SONET links
- VLAN tagging and stacking for secure separation of management traffic, transparent to customer VLAN settings
- Four levels of Quality of Service (QoS) according to 802.1p
- Fault propagation of STM-4/OC-12c error conditions to Ethernet port and SDH loop detection
- 64,000 MAC address table

RIC-622GE is a Network Termination Unit (NTU) offering a migration path for connecting future-ready Ethernet/IP devices over existing SDH/SONET networks at 622 Mbps access rates.

RIC-622GE is part of RAD's unique set of EtherAccess product family. These products enable service provisioning and carrier backhaul applications over low and high speed SDH/SONET and PDH circuits from fractional and full E1/T1, E3/T3 over STM-1/STM-4 to Gigabit Ethernet.

Typical applications include IP DSLAM backhaul, inter-POP connectivity, or high-bandwidth private line services.

RIC-622GE is equipped with an STM-4/OC-12c SFP-based optical interface, and an optical 1000BaseSX/LX or electrical 1000BaseT interface.

The bridge filters and forwards traffic, enabling optimum utilization of the high-priced WAN circuit. Low device latency results in a high throughput of TCP/IP applications.

Large traffic bursts are handled by a large 3150 frame buffer, reducing SDH/SONET congestion.

RAD
data communications
Innovative Access Solutions

RIC-622GE
Gigabit Ethernet over STM-4/OC-12c Network Termination Unit

RIC-622GE features fault propagation. If a link failure is detected on either the Ethernet or SDH port, RIC-622GE forwards an alarm to the appropriate interface, and shuts it down.

Redundant hot-swappable power supplies provide carrier-class reliability.

The unit is supplied in a 1U, 19" box, with a rack-mount option.

BRIDGE

The RIC-622GE bridge is a learning bridge with a MAC table consisting of 64,000 entries.

The RIC-622GE bridge operates in two forwarding modes:

- VLAN-unaware MAC address learning
- VLAN-aware mode; internal double tagging ensures transparency of user VLAN and traffic separation between Gigabit Ethernet user traffic and Fast Ethernet management traffic.

QUALITY OF SERVICE (QoS)

The device classifies Ethernet packets into four strict priority egress queues on the network port. Based on VLAN priority tagging (802.1p), different traffic flows are differentiated and prioritized according to the application.

PROTOCOLS

RIC-622GE utilizes native HDLC for encapsulating Ethernet traffic over SDH/SONET STM-4/OC12c circuits.

DIAGNOSTICS AND STATISTICS

Comprehensive diagnostic and performance monitoring capabilities include:

- Ping tests for IP connectivity checks
- Statistics collection at the Ethernet physical layer
- STM-4/OC-12c interface frame counters
- Alarms and events log
- Loopback tests.

LOOP DETECTION

RIC-622GE features mechanisms to detect SDH loopbacks, and thus avoid resulting Ethernet loopbacks by disabling the bridge port. When the loopback is released, RIC-622GE automatically recovers.

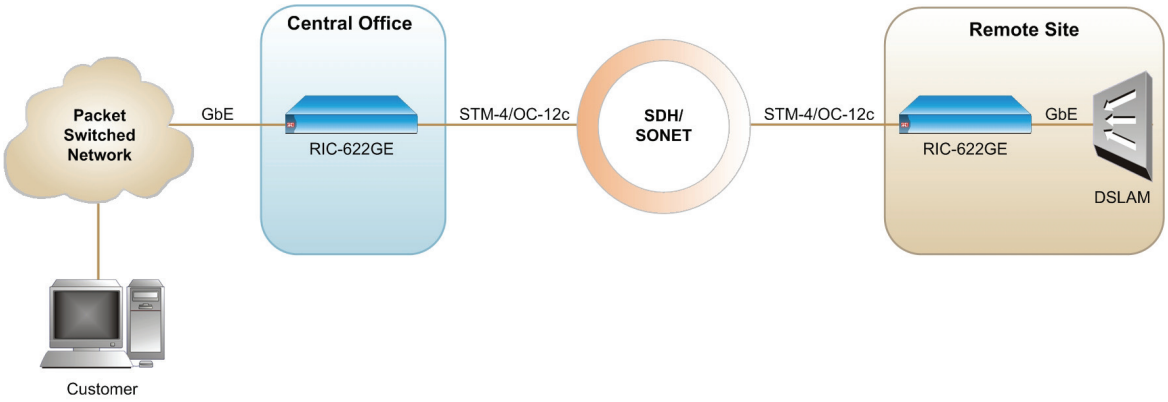
MANAGEMENT

Management options include:

- ASCII terminal
- Dedicated 10/100BaseT management port
- Telnet server
- ConfiguRAD via a Web browser
- RADview-Lite SNMP based fault management service package, with ConfiguRAD element manager.

Software upgrades and configuration files are downloaded/uploaded to/from the RIC-622GE via TFTP or XMODEM.

Access to the unit's management software is password-protected. The unit can be managed by up to 16 different managers simultaneously. This enables viewing the network status and managing the unit from different locations.



Transferring Gigabit Ethernet Traffic over STM-4/OC-12c

Specifications

STM-4/OC-12C INTERFACE

Number of Ports
1

Interface Type
SFP
***Note**: For a detailed description of SFP interface modules, see the SFP Transceivers datasheet.*

Data Rate
622 Mbps

Operation Mode
SDH/SONET

Mapping
VC-4-4C

GIGABIT ETHERNET INTERFACE

Number of Ports
1

Interface Type
1000BaseSx, 1000BaseLx or 1000BaseT

Optical Output Power
0 to -9.5 dBm for 1000BaseSx
-3 to -11 dBm for 1000BaseLx

Optical Input Range
-17 to 0 dBm for 1000BaseSx
-19 to -3 dBm for 1000BaseLx

Typical Range
270 m (1000 feet) for 1000BaseSx
5 km (3 miles) for 1000BaseLx

Compliance
Relevant sections of IEEE 802.3

Data Rate
1000 Mbps

Max Frame Size
1664 bytes

Connectors
LC (SFF) for optical
RJ-45 for electrical (1000BaseT)

FAST ETHERNET INTERFACE

Number of Ports
1

Interface Type
100BaseT

Compliance
Relevant sections of IEEE 802.3

Data Rate
100 Mbps

Max Frame Size
1664 bytes

Connectors
RJ-45 for electrical (100BaseT)

CONTROL INTERFACE

Interface Type
RS-232/V.24 (asynchronous DCE)

Data Rate
9.6, 19.2, 38.4, 57.6, 115.2 kbps

Connector
9-pin, D-type, female

INTERNAL BRIDGE

Number of Ports
4 (host, SONET/SDH, GbE, FE)

Compliance
Relevant sections of 802.1Q

LAN Table
Up to 64,000 MAC addresses (learned, with automatic aging check)

Buffer
3150 frames

Filtering and Forwarding
Up to 946,000 pps (VLAN-unaware)
Up to 856,000 pps (VLAN-aware)

GENERAL

Power
AC: 100–240 VAC (±10%), 50–60 Hz
DC: –48 VDC (–40 to –60)

Power Consumption
25W max

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

Physical
Height: 43.7 mm (1.7 in) 1U
Width: 430 mm (19.0 in)
Depth: 240 mm (9.4 in)
Weight: 3.5 kg (7.7 lb)

Product Comparison Table

Feature	RIC-155GE	RIC-622GE
Frame Size (Bytes)	64–1664	64–1664
MAC Address Table	16,384	64,000
QoS	802.1p	802.1p
Number of Queues	4 (strict)	4 (strict)
Fault Propagation	Yes, in both SDH and GbE directions: • SDH link failure sends alarm to unit, which as a result disconnects GbE link • GbE link failure sends alarm to unit, which sends alarms towards SDH	Yes, in both SDH and GbE directions: • SDH link failure sends alarm to unit, which as a result disconnects GbE link • GbE link failure sends alarm to unit, which sends alarms towards SDH
Hot-Swappable Power Supplies	Yes	Yes

Data Sheet

RIC-622GE

Gigabit Ethernet over STM-4/OC-12c Network Termination Unit

Ordering

RIC-622GE/!/^/+/S

Gigabit Ethernet to STM-4/OC-12c converter

! Power Supply:

AC	Single 100 to 230 VAC
ACR	Dual 100 to 230 VAC (for redundancy)
48	single –48 VDC
48R	Dual –48 VDC (for redundancy)

^ Specify SFP optical interface type for STM-4 port:

SFP-14D	1310 nm multimode, 0.5 km (0.3 miles), LC connector
SFP-15	1310 nm single mode, 15 km (9.3 miles), LC connector
SFP-16	1550 nm single mode, 80 km (49.7 miles), LC connector
Null	Empty SFP slot

Notes:

- *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.*
- *For a detailed description of SFP interface modules, see the SFP Transceivers datasheet.*

+ Specify Gigabit Ethernet interface type:

13L	1000BaseLX, 1310 nm single mode, 5 km (3.1 miles), LC connector
85	1000BaseSX, 850 nm multimode, 270m (1000 ft), LC connector
UTP	built-in 1000BaseT, RJ-45 connector

S NEBS-3 compliancy:

N3	NEBS-3 compliant
Null	Not NEBS-3 compliant

SUPPLIED ACCESSORIES

AC Power cord

DC connection kit (if a DC-powered unit is ordered)

RM-34
Hardware kit for mounting one RIC-622GE unit in a 19" rack

OPTIONAL ACCESSORIES

CBL-DB9F-DB9M-STR
DB9-to-DB9 control port cable

International Headquarters
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel. 972-3-6458181
Fax 972-3-6498250, 6474436
E-mail market@rad.com

North America Headquarters
900 Corporate Drive
Mahwah, NJ 07430, USA
Tel. 201-5291100
Toll free 1-800-4447234
Fax 201-5295777
E-mail market@radusa.com

www.rad.com

RAD data communications
Innovative Access Solutions