

# MIRICi-155

## Intelligent Miniature GbE over STM-1/OC-3 NTU



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

- Gigabit-to-STM-1/OC-3 bridge
- Gigabit Ethernet connectivity over SDH/SONET networks
- Standard GFP encapsulation
- Fault propagation to LAN link
- Inband and out-of-band management for configuration, monitoring and diagnostics
- I<sup>2</sup>C management interface for simple management integration with host devices

MIRICi-155 is a state-of-the-art network termination unit that bridges between Gigabit Ethernet networks and STM-1/OC-3 networks, providing simple, efficient, and cost-effective Gigabit Ethernet connectivity over SDH/SONET networks.

MIRICi-155 offers a migration path for connecting future-ready IP devices to existing SDH/SONET networks.

Typical applications include connecting Gigabit Ethernet LANs over STM-1/OC-3 lines (*Figure 1*), and connecting Gigabit Ethernet LANs over wireless STM-1/OC-3 links (*Figure 2*).

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

### MANAGEMENT

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

- Out-of-band via the I<sup>2</sup>C channel (off the SFP edge connector)
- Inband via the Ethernet port using a Web browser.

To facilitate integration of a new device into an IP network, if no IP address has been manually configured, MIRICi-155

automatically requests one from the DHCP server upon booting.

Application software can be downloaded to MIRICi-155 via the central server, using TFTP.

### DIAGNOSTICS

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

### LOS AND FAULT PROPAGATION

The LAN link is deactivated if one of the following user-defined alarms is issued and fault propagation is enabled:

- LOS (Loss of Signal)
- AIS (Alarm Indication Signal)
- RDI (Remote Defect Indication).

In addition, the above-listed error conditions are propagated towards the host by sending an electrical signal via the LOS pin on the MSA edge connector.

### ENCAPSULATION

MIRICi-155 uses standard GFP encapsulation according to ITU-T G.7041/Y.1303 requirements.



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### QUALITY OF SERVICE – QOS

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

The queues handle traffic with different services based on VLAN priority (802.1p), which enables to map 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.

### SFP ENCLOSURE

Housed in a Small Form Factor Pluggable (SFP) package (Figure 3), MIRICi-155 complies with the Multi-Source Agreement (MSA).

Running on power derived from the host device, it requires no additional power supply.

MIRICi-155 is hot swappable and features a special release mechanism for easy extraction from the SFP socket.

### SFP CONFIGURATION ADAPTER

An optional configuration adapter module, SFP-CA (Figure 4), is available for configuring MIRICi-155 by connecting it to a PC via a USB port. The configuration adapter is used for preliminary configuration such as assigning an IP address for first use or specifying the mode of operation. It is also used to download software to the MIRICi-155 units.

### POSSIBLE APPLICATIONS

Possible applications include Gigabit Ethernet LANs over STM-1/OC-3 lines (Figure 1) and Gigabit Ethernet LANs over wireless STM-1/OC-3 links (Figure 2).

### FLEXIBILITY

MIRICi-155 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.

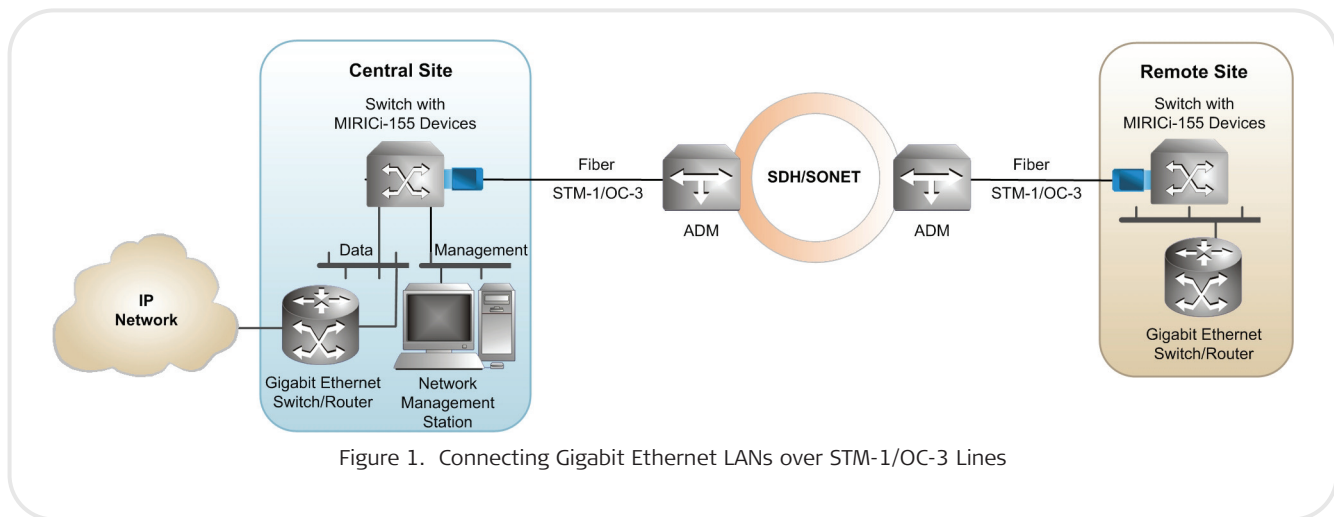


Figure 1. Connecting Gigabit Ethernet LANs over STM-1/OC-3 Lines

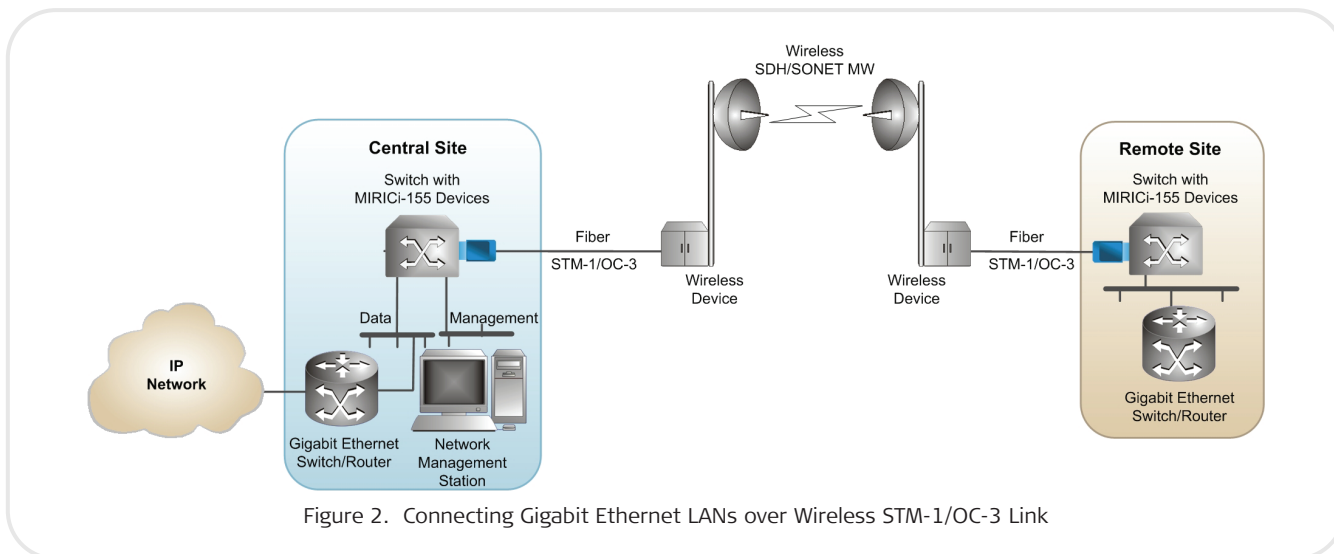


Figure 2. Connecting Gigabit Ethernet LANs over Wireless STM-1/OC-3 Link

## Specifications

### STM-1/OC-3 INTERFACE

**Number of Ports**

1, optical

**Data Rate**

155.52 Mbps

**Operation Mode**

SDH/SONET

**Compliance**

SDH: ITU-T G.957

SONET: GR-253-core

**Framing**

SDH: ITU-T, G.707

SONET: GR-253-core, OC-3

**Encapsulation**

Generic Framing Procedure

(ITU T G.7041/Y.1303)

**Timing**

Internal

Recovered from STM-1/OC-3 interface

**Interface Type**

Laser 1310 nm, single mode

**Connector**

LC

### GIGABIT ETHERNET INTERFACE

**Type**

Gigabit Ethernet

**Edge Connector**

SFP-based, MSA-compliant

**Data Rate**

1000 Mbps

**Frame Size**

64 bytes–10,000 bytes (jumbo frames)

**Compliance**

Conforms to the relevant sections of IEEE 802.3

### GENERAL

**Power**

3.3V

**Power Dissipation**

1.5W

**Environment**

Temperature:

Ambient: -10 to 65°C (50 to 149°F)

Case: -10 to 80°C (50 to 176°F)

Humidity: Up to 90%, non-condensing

**Physical**

Height: 12.2 mm (0.48 in)

Width: 13.7 mm (0.53 in)

Depth: 76.2 mm (3 in)

Weight: 15g (0.5 oz)

Table 1. Fiber Optic Gigabit Ethernet Characteristics

Ordering Name	Wavelength, Fiber Type [nm], [μm]	Transmitter Type	Input Power [dBm]		Output Power [dBm]		Typical Max. Range	
			[min]	[max]	[min]	[max]	[km]	[miles]
<b>MIRIGI-155</b> Gigabit Ethernet/STM-1, LC, Internal calibration	1310, 9/125 single mode	Laser	-28	-8	-15	-8	15	9.3

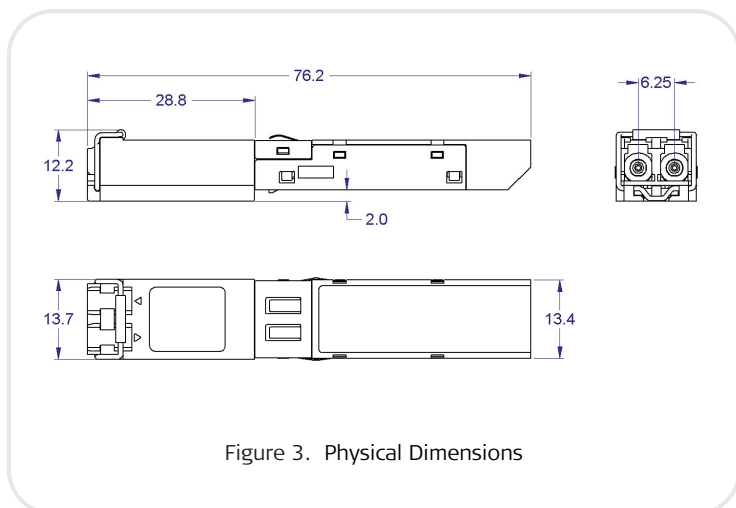


Figure 3. Physical Dimensions

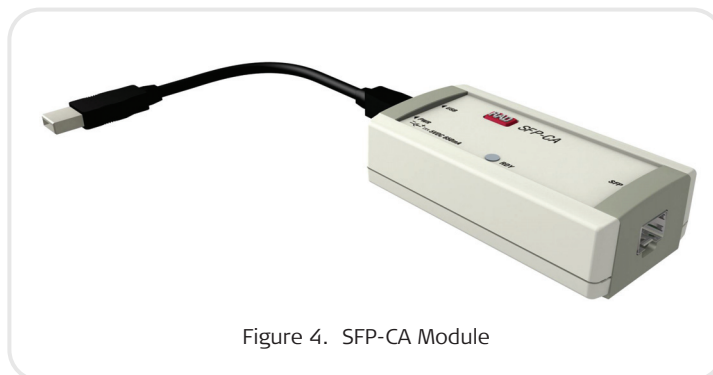


Figure 4. SFP-CA Module

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### Ordering

MIRICi-155

#### OPTIONAL ACCESSORIES

##### SFP-CA

Configuration adapter module for configuring MIRICi-155 by connecting it to a PC

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