

# MiRiCi-155

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



- 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
- I2C management interface for simple management integration with host devices

**System™**  
on an **SFP**

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.

### MARKET SEGMENTS AND APPLICATIONS

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*)
- Wireless STM-1/OC-3 links (*Figure 2*).

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

### INTEROPERABILITY

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.

### GIGABIT ETHERNET

#### Encapsulation

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

#### 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.

### TIMING AND SYNCHRONIZATION

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

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

### MANAGEMENT AND SECURITY

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

- Out-of-band via the I2C 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.

### ARCHITECTURE

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.

### OPERATION AND MAINTENANCE

#### SFP Configuration Adapter

An optional configuration adapter module, SFP-CA.2, is available for configuring MiRiCi-155 by connecting it to a PC via a USB port. The configuration adapter is used for



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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.

### MONITORING AND DIAGNOSTICS

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

### 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.

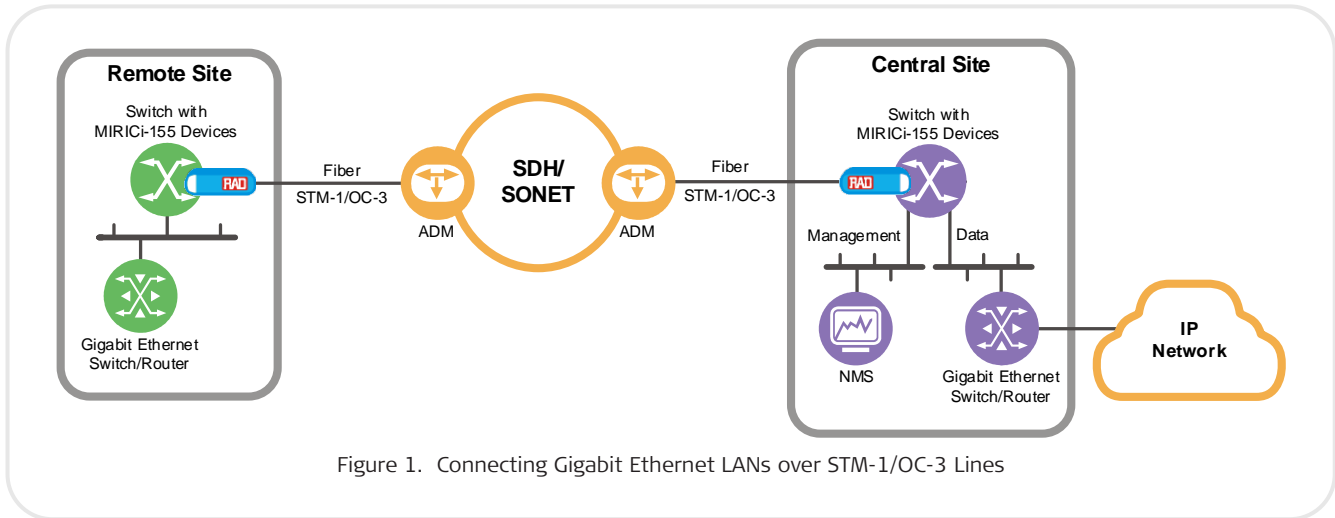


Figure 1. Connecting Gigabit Ethernet LANs over STM-1/OC-3 Lines

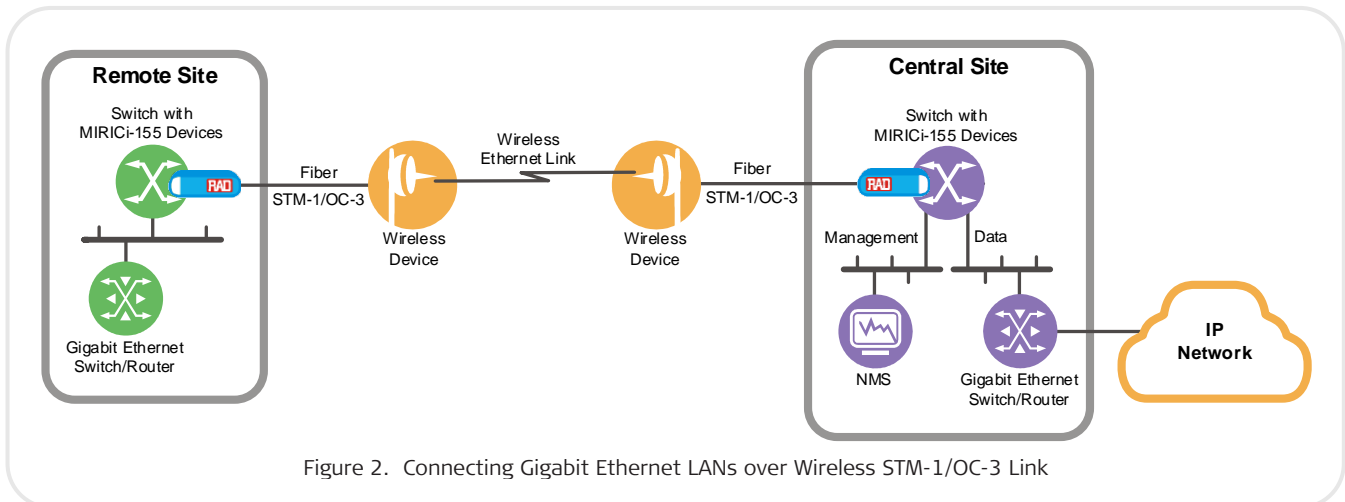


Figure 2. Connecting Gigabit Ethernet LANs over Wireless STM-1/OC-3 Link

## 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

**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)

**Power**

3.3 V

**Power Consumption**

1.5 W

**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

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

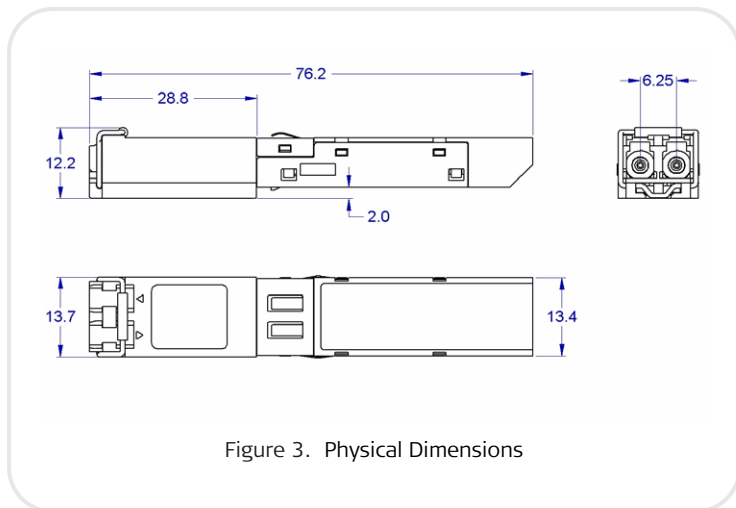


Figure 3. Physical Dimensions

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### Ordering

#### RECOMMENDED CONFIGURATIONS

**MiRiCi-155**

#### OPTIONAL ACCESSORIES

##### **SFP-CA.2**

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

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