Afar communications

"We Go The Distance …"

Long Range Wireless Ethernet Bridge

- **Point-to-point, Point-to-Multipoint, and Linear Network topologies**
- **Fixed wireless links in excess of 50 miles (80 Km)**
- **Spread Spectrum operation at 2.4 GHz. No license required in most countries**
- **Outdoor enclosure with Power over Ethernet mounts in close proximity to antenna, reduces RF losses and cost**
- **Narrow RF bandwidth allows operation in crowded spectrum**
- **Large number of non-overlapping channels**
- **Remote management through Telnet, SNMP or "Afar Ethernet Console"**
- **Remote software updates**
- **Synchronized RF transmissions allow deployment of large number of co-located radios**
- **Optional serial synchronous interface supported by pairing with Afar NetCrossing™ Gateways**

With the proliferation of unlicensed radio devices it can be a challenge to deploy and operate a reliable, fixed based RF network in the 2.4 GHz band. At Afar Communications we went to great extents to design a radio from the ground up that can provide robust links under very adverse conditions. This includes the following features:

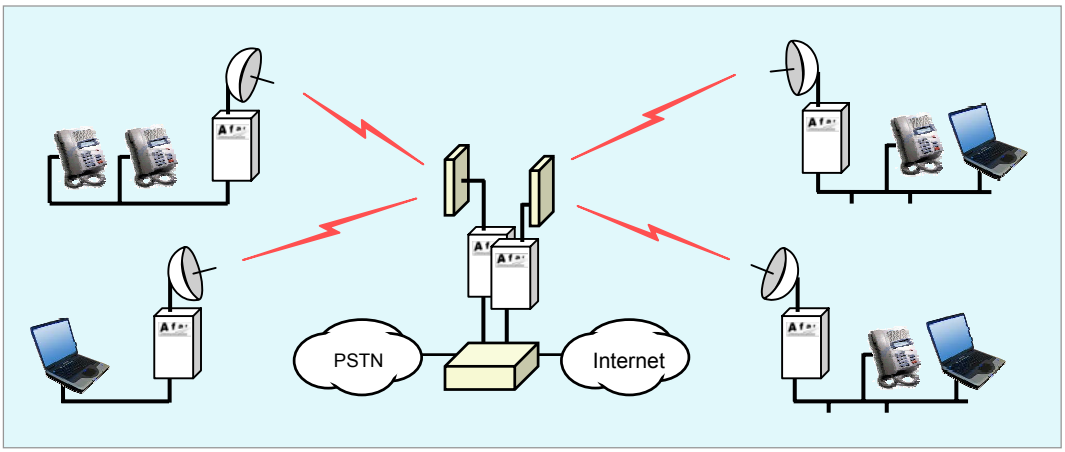
1. All the electronics are housed in an environmentally sealed enclosure rated for outdoor installation. You can mount the unit in close proximity to the antenna, which increases system performance by avoiding RF cable losses or expensive rigid coax cables.

2. The radio RF bandwidth is much narrower than other unlicensed devices in the 2.4 GHz band. This has several advantages, namely (i) the radio sensitivity is greatly improved allowing longer ranges, (ii) there is a much larger number of non-overlapping channels to choose from, and (iii) it is much easier to find an unused gap in a crowded spectrum.

3. For long range links in a crowded spectrum the most desirable receive frequencies at each end of the link are often different. In the Afar radio the transmit and receive frequencies can be selected independently of each other.

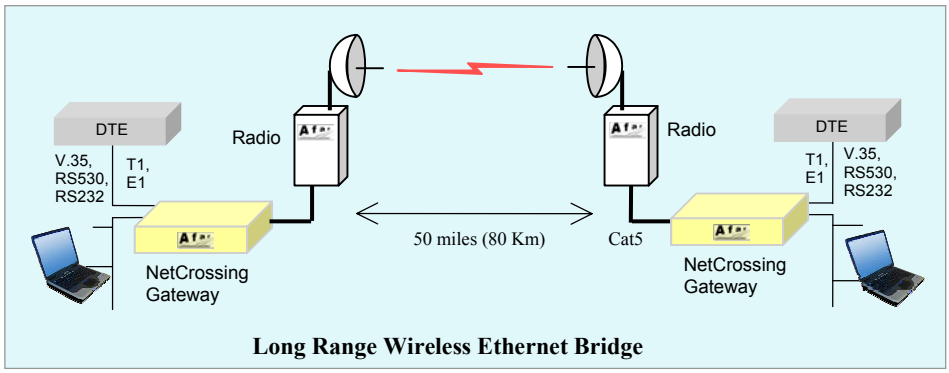
4. The radio incorporates spectrum analysis and timing analysis tools, which allow the operator to quickly perform a survey of the RF environment without the need for expensive or heavy spectrum analyzers.

5. Unique antenna alignment aid provides audio feedback proportional to the RSSI, freeing the installer's hands to adjust



and tighten the antenna without having to hold or look at other instrumentation.

The same radio can be used to deploy a back-haul point-to-point link, a point-to-multipoint network, or, using the radio dual antenna ports, a linear-network ideal for deploying multiple nodes alongside a highway, pipeline, or railway track.



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The radios operate in Time Division Duplex (TDD) mode and feature the Afar **pulsar technology** that automatically synchronizes the burst transmissions of all co-located radios. You can grow your central site with up to 24 co-located hub radios without worrying about self-interference. With each hub serving up to 32 remote radios, you can expand the network to serve 768 subscribers with an aggregate throughput in excess of 50 Mbps.

In a point to multipoint network the hub radios allocate the available bandwidth dynamically among the remote radios that are currently active. You can also configure the maximum and committed information rates separately for each remote radio.

If your application requires a serial synchronous interface, the radios can be paired with one of the Afar NetCrossing™ Gateway units to provide both an Ethernet and a serial link of up to 1.024 Kbps across the same wireless connection (see figure). Two separate NetCrossing Gateway models cover all physical interfaces from V.35, RS530, RS232 or TDM circuits (T1 or E1). In this last case you configure the gateways to extract any combination of up to 16 time slots (DS1) from the full TDM frame. When paired with the NetCrossing™ Gateway, the gateway provides both the power and data to the radio across the single CAT5 cable.

Specifications

AR24027 - Long Range Wireless Ethernet Bridge

Radio:

RF Band:	2.400 to 2.483 GHz 2.400 to 2.500 GHz option
RF Bandwidth:	4.6 MHz
RF Channels:	34 in steps of 2 MHz 12 non-overlapping channels (independent transmit and receive)
Transmit Power:	adjustable in 1 dB steps 0 to 23 dBm (FCC) 0 to 10 dBm (CE)
Modulation:	direct sequence spread spectrum

RF Data rates and Receiver Sensitivity (10^{-6} BER):

0.25 Mbps:	-97 dBm
0.50 Mbps:	-94 dBm
1.37 Mbps	-93 dBm
2.75 Mbps	-90 dBm

Power/Ethernet Port:

10/100 Base T, full/half duplex, auto-negotiate	
Connector:	8 pin circular - Lumberg 0321-08 (RJ45 at the power inserter)

Console Port:

Connector:	3 pin circular - Lumberg 0321-03 (DE9 with adapter cable)
Interface:	RS-232 / V.24
Baud Rate:	9600 to 115.2 Kbaud

Power:

Input Voltage:	8 to 28 Volts DC 110 to 220 VAC (external supply)
Consumption:	5 Watt

Environment:

Operating Temperature:	- 40 to +70 deg C - 40 to +158 deg F
Humidity:	up to 95% non-condensing

Physical:

Dimensions:	4.72" (W) x 8.66" (H) x 2.20" (D) 12.0 x 22.0 x 5.6 cm
Weight:	2.4 lb, 1.1 Kg

Specifications subject to change without notice

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