



The SONABeam M series is designed with carriers' needs in mind. Featuring a rugged, cast-aluminum, environmentally-sealed housing and up to 50 times the power of competing products, the SONABeam M series is the toughest, most powerful system on the market today. Quadruple-redundant transmitters, combined with the largest receiver in the industry, further ensure transmission integrity. The SONABeam M's high-powered laser transmitters are able to penetrate heavy rain, snow and fog far more effectively and consistently than any other available FSO technology. SONABeam M supports Fast or Gigabit native Ethernet as well as custom datarates when run in protocol transparent mode.

Typical Applications

Mobile Wireless

- » 3G/4G Backhaul
- » Backhaul Redundancy
- » Remote Antenna Extension

Enterprise, Government, Military

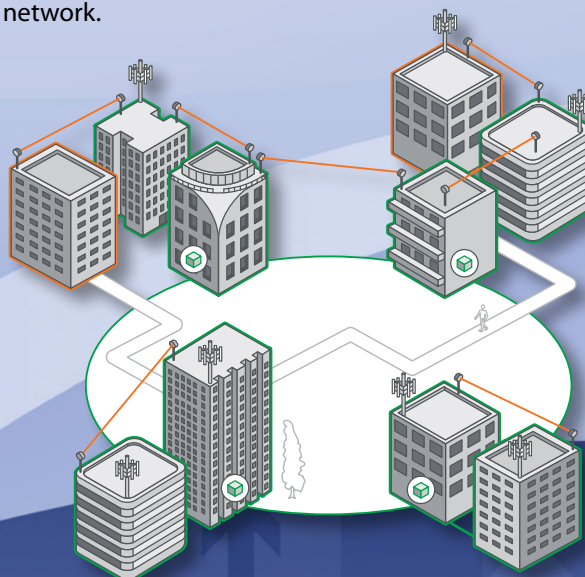
- » High-bandwidth campus
- » Fiber-line replacement
- » Secure links

Service Provider

- » High-speed backbone
- » RF/Wi-Fi-WiMax aggregation
- » Private lines

The SONABeam Advantage

By transmitting through the atmosphere, the SONABeam eliminates the substantial costs of digging up streets and sidewalks required to install fiber, and unlike other wireless solutions, the SONABeam is immune to electro-magnetic (EM) and radio-frequency (RF) interference which means no licensing is required. Plus, the SONABeam's narrow, highly directional transmission all but eliminates eavesdropping or interception. Key to SONABeam's breakthrough laser technology is its operational wavelength of 1550 nm, which provides a broad spectrum of safety and performance advantages. The SONABeam's high-powered laser transmitters are able to penetrate heavy rain, snow and fog far more effectively and consistently than any other available FSO technology. SONABeam's protocol transparent technology gives service provider, enterprise and government customers the ability to integrate free space optics (FSO) quickly and easily into any existing network.



- | | |
|--------------------|---------------------------|
| ➤ RAPID DEPLOYMENT | ➤ 1550 NM TRANSMISSION |
| ➤ HIGH CAPACITY | ➤ FULL-RATE, FULL-DUPLEX |
| ➤ NON INTERFERING | ➤ SECURE & UNDETECTABLE |
| ➤ UNLICENSED | ➤ LOW LATENCY/PACKET LOSS |

Free-Space Optical

Datarate/protocol:

Range: 3 dB/km (clear air):

10 dB/km (extreme rain):

Laser output power:

Receive aperture:

155-M¹

Fast Ethernet: 125 Mbps, full duplex

OC-3/STM-1: 155 Mbps, full duplex

300 m to 5400 m (980 ft to 3.4 mi)

300 m to 2400 m (980 ft to 1.5 mi)

640 mW peak (4 x 160 mW)

20 cm (8 in) diameter, effective clear

1250-M²

Gigabit Ethernet: 1.25 Gbps, full duplex

OC-12/STM-4: 622 Mbps, full duplex

400 m to 4800 m (1310 ft to 3.0 mi)

400 m to 2200 m (1310 ft to 1.4 mi)

640 mW peak (4 x 160 mW)

20 cm (8 in) diameter, effective clear

Interface Options

1000-Base-SX (850 nm)

1000-Base-LX (1310 nm)

Data physical interface:

Fiber xmtr/rcvr wavelength:

Fiber xmtr output power:

Fiber rcvr input power:

Multimode fiber, LC

850 nm nominal

-9 dBm (min), -3 dBm (max)

0 dBm (min), -17 dBm (max)

Singlemode fiber, LC

1310 nm nominal

-11 dBm (min), -3 dBm (max)

-20 dBm (min), -3 dBm (max)

Mechanical / Electrical / Environmental

Operating temperature:

Solar filters:

Pointing stability:

Environmental seal:

*Dimensions (W*H*D):*

-40°C to 60°C (-40°F to 140°F)

2 spatial, 2 spectral

120 kmh/75 mph operating,
>160 kmh/100 mph survival

Water-tight, IP66/NEMA-4 Cert.

41 x 41 x 46 cm; 16 x 16 x 18 in

Weight:

Input voltage:

Power consumption:

Head: 20 kg (44 lbs);

Yoke: 8 kg (17 lbs)

-48 VDC (-40 V to -57 V) or
100-240 VAC

Transceiver: 60 watts

Heater: 200 watts

Carrier-Class Reliability and Durability

Heating:

Laser cooling:

Redundant transmitters:

Power supply:

Structure:

Internal, to 30°C (86°F), prevents optics fogging, snow/sleet accumulation

Active solid state cooling to 35°C (95°F)

4 independent lasers, drivers, coolers & cooler controllers

Telco grade, >550,000 hour

Cast aluminum housing, yoke & mount

Element Management and Control

Management interface:

SNMP:

Key parameters monitored:

Historical logging:

USB, Serial & 10/100-baseT

Embedded v.1 agent

Receive signal strength; Power supply currents & voltages; Laser currents, power levels & temperatures; Internal temperature; Clock recovery / sync status; Network interface signal status

Internal data and event logging

GUI control program:

Command line interface:

SONAbeam Terminal Controller

Via USB, RS232 or IP address

Certifications & Classifications

International

US/Canada

Laser safety

EMC

Electrical

IEC 60825-1, Class 1M

EN 55022 - emissions

EN 55024 - immunity

EN 60950 (CB scheme)

CDRH 21 CFR including Laser Notice 50, Class 1M;

ANSI Z136.1 & Z136.6, Class 1

FCC - Pat 15 / ICES - 003

UL 60950 / CSA 60950