



The SONABeam E series is extremely versatile. Its compact, yet rugged aluminum housing is equally at home outdoors in challenging weather as it is indoors operating through a window. The SONABeam E can be easily transported to installation sites making it ideal for situations that require rapid deployment. The E can be ordered as a Flyaway kit complete with carbon-fiber tripods and water-tight carrying cases, ideal for disaster recovery operations. Like all SONABeams, the E series offers full-rate, full-duplex bandwidth. The E Series supports native Ethernet and offers the added flexibility of protocol transparent operation to support custom datarates.

## 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.

## TYPICAL APPLICATIONS

### Mobile Wireless

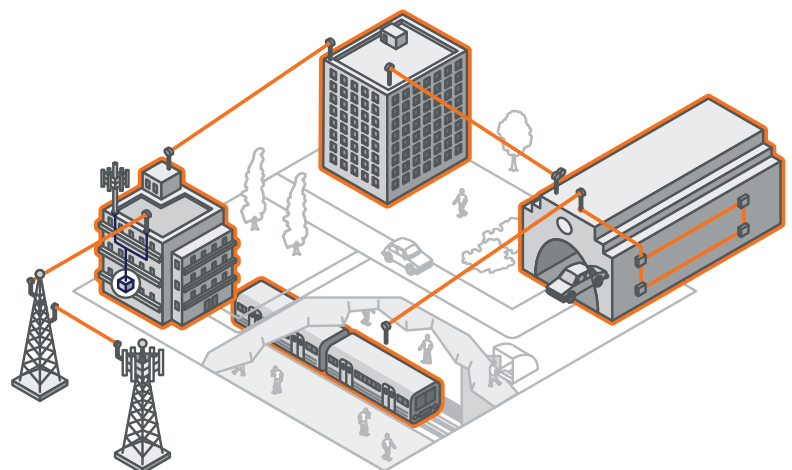
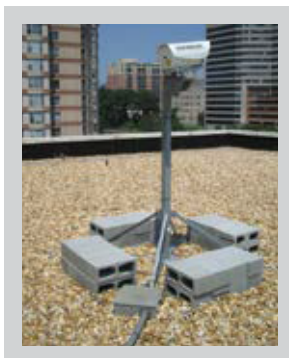
- 3G/4G/LTE Backhaul
- Backhaul Redundancy
- Remote Antenna Extension

### Enterprise, Government, Military

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

### Service Provider

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



RAPID DEPLOYMENT • HIGH CAPACITY • NON INTERFERING • UNLICENSED • 1550 NM TRANSMISSION

Free-Space Optical	1250-E <sup>+</sup>	2500-E <sup>+</sup>	10G-E <sup>+</sup>
<i>Datarate/protocol:</i>	1.25 Gbps, full duplex	2.5 Gbps, full duplex	10 Gbps, full duplex
<i>Range: 3 dB/km (clear air):</i>	50 m to 4500 m (160 ft to 2.8 mi)	50 m to 3400 m (160 ft to 2.1 mi)	50 m to 1100 m (160 ft to 0.7 mi)
<i>10 dB/km (extreme rain):</i>	50 m to 2000 m (160 ft to 1.25 mi)	50 m to 1600 m (160 ft to 0.9 mi)	50 m to 700 m (160 ft to 0.4 mi)
<i>Laser output power:</i>	800 mW peak (2 x 400 mW)	800 mW peak (2 x 400 mW)	800 mW peak (2 x 400 mW)
<i>Receive aperture:</i>	10 cm (4 in) diameter	10 cm (4 in) diameter	10 cm (4 in) diameter
<i>Free-space wavelength:</i>	1550 nm	1550 nm	1550 nm
<i>Interface options:</i>	1000-Base-SX (850 nm) 1000-Base-LX (1300 nm)	1000-Base-SX (850 nm) 1000-Base-LX (1310 nm) 2.5 Gbps SPF (1310 nm)	10 Gbps SPF+ (1310 nm)

Mechanical / Electrical / Environmental			
<i>Operating temperature:</i>	-40°C to 50°C (-40°F to 122°F)	<i>Dimensions (W*H*D):</i>	25 x 33 x 46 cm; 10 x 13 x 18 in
<i>Pointing stability:</i>	120 kmh/75 mph operating, >160 kmh/100 mph survival	<i>Weight:</i>	8 kg (18lbs)
<i>Environmental seal:</i>	Water-tight, IP66/NEMA-4 Cert.	<i>Input voltage:</i>	-48 VDC or PoE
		<i>Power consumption:</i>	40 watts max (w/ heater)

Carrier-Class Reliability and Durability			
<i>Window heating:</i>	Prevents optics fogging, snow/sleet accumulation	<i>Laser cooling:</i>	Active solid state cooling to 35°C (95°F)
<i>Redundant transmitters:</i>	2 independent lasers, drivers, coolers & cooler controllers	<i>Power supply:</i>	Telco grade, >550,000 hour
		<i>Structure:</i>	Aluminum housing/mount

Element Management and Control			
<i>Management interface:</i>	USB & 10/100-baseT	<i>GUI control program:</i>	SONAbeam Terminal Controller
		<i>Command line interface:</i>	Via USB or IP address
<i>Key parameters monitored:</i>	Receive signal strength; Power supply currents & voltages; Laser currents, power levels & temperatures; Internal temperature; Clock recovery / sync status; Network interface signal status		
<i>Historical logging:</i>	Internal data and event logging		

Certifications & Classifications International		US/Canada	
<i>Laser safety</i>	IEC 60825-1, Class 1M EN 55022 - emissions	CDRH 21 CFR including Laser Notice 50, Class 1M; ANSI Z136.1 & Z136.6, Class 1	
<i>EMC</i>	EN 55024 - immunity	FCC - Pat 15 / ICES - 003	
<i>Electrical</i>	EN 60950 (CB scheme)	UL 60950 / CSA 60950	