



Tsunami.GX 90

Wireless Point-to-Point Ethernet Bridges

Fast, Cost-Effective Extension of IP Networks

Tsunami™.GX is a full-duplex point-to-point wireless Ethernet bridge with an innovative split-box design. This latest generation of high-capacity wireless bridges is designed to reduce the expense of extending IP networks and to simplify installation. Secure wireless technology significantly reduces total cost of ownership and speeds deployment, while a split-box design adds installation flexibility. The Tsunami.GX also provides best-in-class system performance with native IP interfaces by eliminating the overhead associated with DS3-to-Ethernet connections.

- Perfect for data and data/voice network backhaul applications and for replacing, extending or backing up leased lines
- Indoor-only installation facilitates quick maintenance and easier upgrades
- Indoor/outdoor installation improves system gain and reduces total cost of ownership

Easily Manage and Troubleshoot Your Wireless Network

Tsunami.GX bridges offer sophisticated, preventative management tools to simplify network maintenance and eliminate downtime. Advanced diagnostic tools identify and isolate potential issues before they impact the network.

- Standards-based SNMP management and web-based GUI simplifies remote management and integrates easily into existing software platforms
- Built-in spectrum analyzer and an alarm log facilitate RF planning and post-deployment tuning

The Speed of DS-3 with the Ease of Ethernet

Backed by more than 20 years of wireless design innovation, Tsunami wireless bridge family

easily and affordably enables network extension, redundancy and backhaul. Tsunami wireless bridges eliminate fiber installation costs and leased line fees to bring you the capacity of DS-3 with the TCO of Ethernet.

- High capacity for bandwidth-intensive applications such as PBX extension, data backhaul and critical link redundancy
- No expensive recurring leased line costs
- Superior system gain ensures consistent, high quality network operation

Deploy in Days

Because Tsunami bridges operate in license-exempt ISM frequency bands, they can be deployed quickly – eliminating the long lead times associated with leasing lines or trenching new fiber optic cable. This is especially useful in network redundancy and contingency planning.

- Rapid device deployment and flexible re-deployment
- ISPs maintain business continuity, even in severe conditions
- Enterprises minimize costly business application downtime

Reliable and Secure

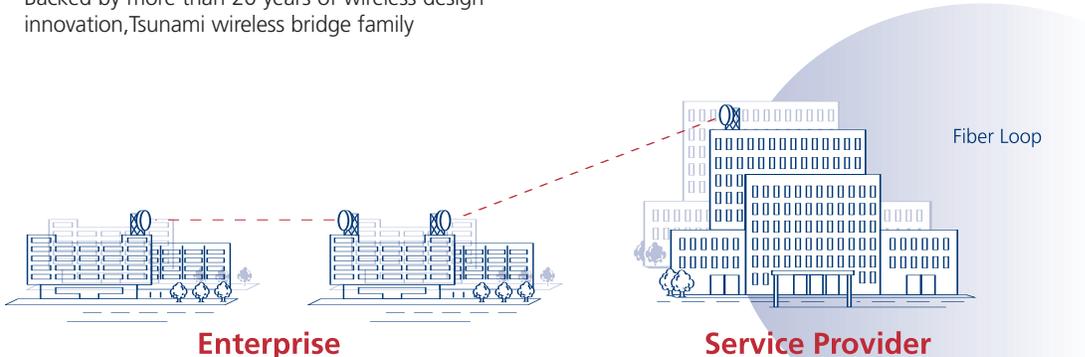
A wireless alternative to a wired network yields quality as well as flexibility. Tsunami bridges offer the highest security and reliability available in networking today.

- Over 99.999% reliable RF transmission
- Meets or exceeds wired network security
- Proprietary encryption methods ensure secure data transmission



APPLICATIONS

- Enterprise LAN and PBX extension
- WAN connection redundancy
- ISP remote POP
- ISP direct customer connections using point-to-point
- Multipoint backhaul at DS-3 performance
- Extension of an existing fiber network



Tsunami.GX 90 Specifications

FREQUENCY	DIGITAL CAPACITY	CHANNEL PAIRS	FCC EMISSION DESIGNATOR	THRESHOLD (BER=1X10 ⁻⁶)	OUTPUT POWER	SYSTEM GAIN	DISTANCE (MILES/KM)
5725-5850 MHz	98 Mbps ⁴	1	28M1G7D	≥-80 dBm	≥+23.5 dBm ¹	≥103.5 dB, 106 dB typ.	0 to >33.7/54.4 ³
5250-5350 MHz	98 Mbps ⁴	1	32M5G7D	≥-80 dBm	≥+13.0 dBm	≥93 dB, 96 dB typ.	0 to >8.4/13.5

SYSTEM		POWER/ENVIRONMENT	
Configuration	Split-box: IDU, RF Unit	Input Voltage Range	-20 to -60 Vdc or +20 to +60 Vdc
Modulation	DSSS; QPSK	Power Consumption	<70 Watts
Frequency Stability	±10 ppm	Power Connector	3-pin terminal block
RF Attenuation Range ¹	≥20 dB	Operating Temperature	
Maximum Receive Signal	-20 dBm error free; 0 dBm no damage	IDU	0°C to +50°C
Error Floor	<10 ⁻¹¹	RF Unit	-30°C to +55°C
Latency (T1) ² , one-way	325 μsec ±10%	Humidity	
Error Correction	Reed-Solomon	IDU	95%, non-condensing
Security	12 character Link ID (48 bits)	RF Unit	100%, condensing
Regulatory Compliance	FCC Part 15.247; IC RS210	Altitude	up to 15,000 ft/5000 m
FCC ID		Wind Loading (RF unit)	up to 110 mph/96 kts
Tsunami.GX 90	HZB-S58-GX1	MTBF IDU	>100,000 Hours
Tsunami.GX 90 5.3 GHz	HZB-US5358-GX1	MTBF RF Unit	>100,000 Hours
Industry Canada ID	1856A-U5358GX1		

DIGITAL LINE INTERFACES		PHYSICAL DIMENSIONS	
Main Data Channel ⁴	96 Mbps aggregate 48 Mbps full duplex	IDU	RF Unit
10/100 Base T	RJ-45 modular jack Auto-sense MDI/MDI-X	Size (in/cm)	17.2 X 10.9 X 1.72/ 43.6 X 27.6 X 4.4
10/100 Base FX	SC-Type, multi-mode fiber, 1300 nm	Weight (lbs/kg)	6.5/2.9
Compliance	IEEE 802.3		12.0/5.4
Maximum Packet Size	1536 bytes		
Wayside Data Channels			
T1/E1	DSX-1 (2 each) or CEPT-1 (2 each), software selectable RJ-48C modular jack		
Compliance			
T1	ANSI-1987-T1, CCITT G.823		
E1	G.703		
Orderwire (DTMF)	RJ-11, 100 addresses		
VF	8 pin modular jack, 4-wire 0dBm @ 600 ohm, balanced		
Aux Data (serial)	8 pin modular jack, EIA-561 ≤19.2kbps, selectable, DCE		

FAULT AND CONFIGURATION MANAGEMENT		MECHANICAL	
Network Management	SNMP v2c (MIB II, enterprise MIBs), embedded HTML server, Telnet, VT-100 terminal	RF Unit	
Far End Management	Via NMS (embedded router, gateway address, subnet mask), front panel display	Antenna Port (outdoor RF cable not provided)	Type-N female
Interfaces		IDU Port	TNC female
NMS 1	10/100BaseT, RJ-45, auto-sense	Cable to IDU	LMR-240 or equiv. <100m; LMR-400 or equiv. <200m; LMR-600 or equiv. <300m
NMS 2	10/100BaseT, RJ-45, auto-sense		
Configuration (serial)	EIA-574, 9600bps, 9-pin Sub-D, DTE		
External Alarm Interface			
Connector	9-pin Sub-D female		
Outputs	2 Form C Relays (Major, Minor)		
Inputs	2 TTL with internal pull-ups		

ORDERING INFORMATION		FREQUENCY CHANNEL PAIR	
67255	Tsunami.GX Low Band Terminal, 301-57710-61H0	Channel Plan 5.8 GHz Model	5745/5830 MHz
67254	Tsunami.GX High Band Terminal, 301-57710-61L0	Channel Plan 5.3 GHz Model	5274/5350 GHz
66722	Tsunami.GX 5.3 GHz Low Band Terminal, 301-57750-51L0		
66723	Tsunami.GX 5.3 GHz High Band Terminal, 301-57750-51H0		
ACC-GX-RF-2	Optional RF Unit Outdoor Mounting Kit		
201-31075-1	Optional AC Adapter 110/220 VAC with cable and connector		
Call for details	ServPak 24x7 Enhanced Service and Support contracts (1yr-3yr)		

SHIPPING CONFIGURATION	
Tsunami.GX 90 IDU (Indoor Unit); 5.8 ISM or 5.3 UNII Low Band or High Band RF Unit; IDU Indoor Rack Mounting Kit; RF Unit Indoor Rack Mounting Kit (includes 12" IDU to RFU TNC-to-TNC cable); Quick Install Guide; CD-ROM User Documentation	

¹ Output power is specified at zero attenuation

² Does not include air latency of approximately 5.4 μsec/mile

³ RF Unit installed outdoors with 6ft. parabolic antenna, 99.995% one-way RF link availability, average climate/terrain, no multipath reflection. Assumes FCC regulations for EIRP

⁴ No waysides enabled