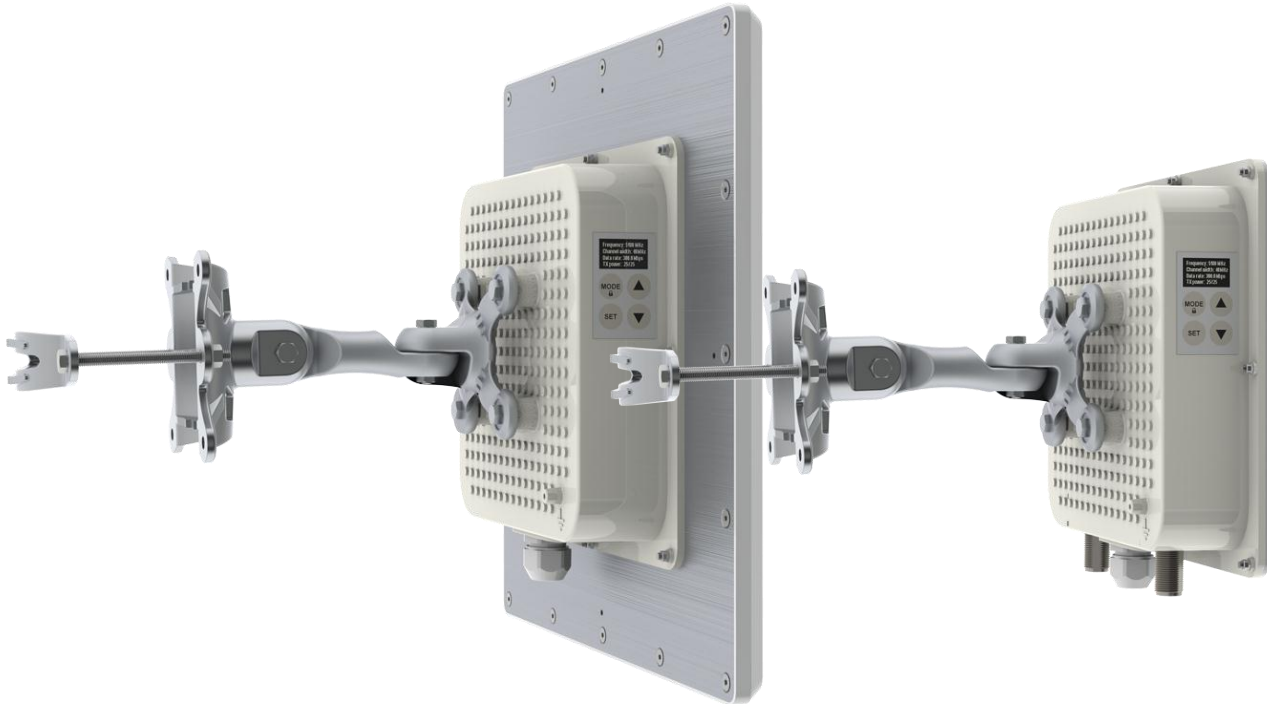


Ligo PTP 5-23/5-N MiMo

5 GHz point-to-point integrated/connectorized backhaul device



Product Overview

LigoWave unleashes its highest capacity, license-free PTP device with the release of the LIGO PTP 5 MIMO series product line. Making use of ground breaking 2x2 MIMO technology, the LigoPTP 5-23/5-N MIMO delivers aggregate TCP throughput capability of up to 180 Mbps (90 Mbps full-duplex) combined with high packets-per-second performance.

This product enables carrier-class point-to-point capability, ideal for dedicated access or backhaul applications (including VOIP or other small packet applications). The LigoWave PTP MiMo product family couples flexible channel width capability (20 or 40 MHz) and industry-leading proprietary software mechanisms to set the utmost standard in spectral efficiency. The LigoPTP 5-23/5-N MIMO product features an integrated dual-polarized antenna (or 2 N-type connectors for the 5-N product) and is housed in a rugged, cast aluminum enclosure.

Combining digital signal processing, dual polarization antennas and proprietary W-Jet protocol these bridges have a high spectral efficiency of 7.5bit/Hz.

The LigoPTP 5-23/5-N MIMO showcases an array of advanced software mechanisms that provide optimal point-to-point connectivity for high-throughput, long distance links. LigoWave's proprietary PTP mechanisms utilize techniques such as Dynamic Time Division Duplexing (TDD) to dynamically allocate bandwidth in the direction needed, thus increasing link efficiency and greatly decreasing the impact that distance has on throughput of the link.

The LigoWave point-to-point products also feature selective repeat ARQ technology, an enhanced error-correction software mechanism that optimizes data traffic to provide very high throughput over high-bandwidth, long-range links even in the presence of interference.

The LigoPTP 5-23/5-N MIMO is also compatible with LigoWave online link calculator and WNMS, a centralized configuration, firmware, and statistics server offered by LigoWave for carrier class diagnostic and configuration.

Ligo PTP 5-23/5-N MiMo

5 GHz point-to-point integrated/connectorized backhaul device

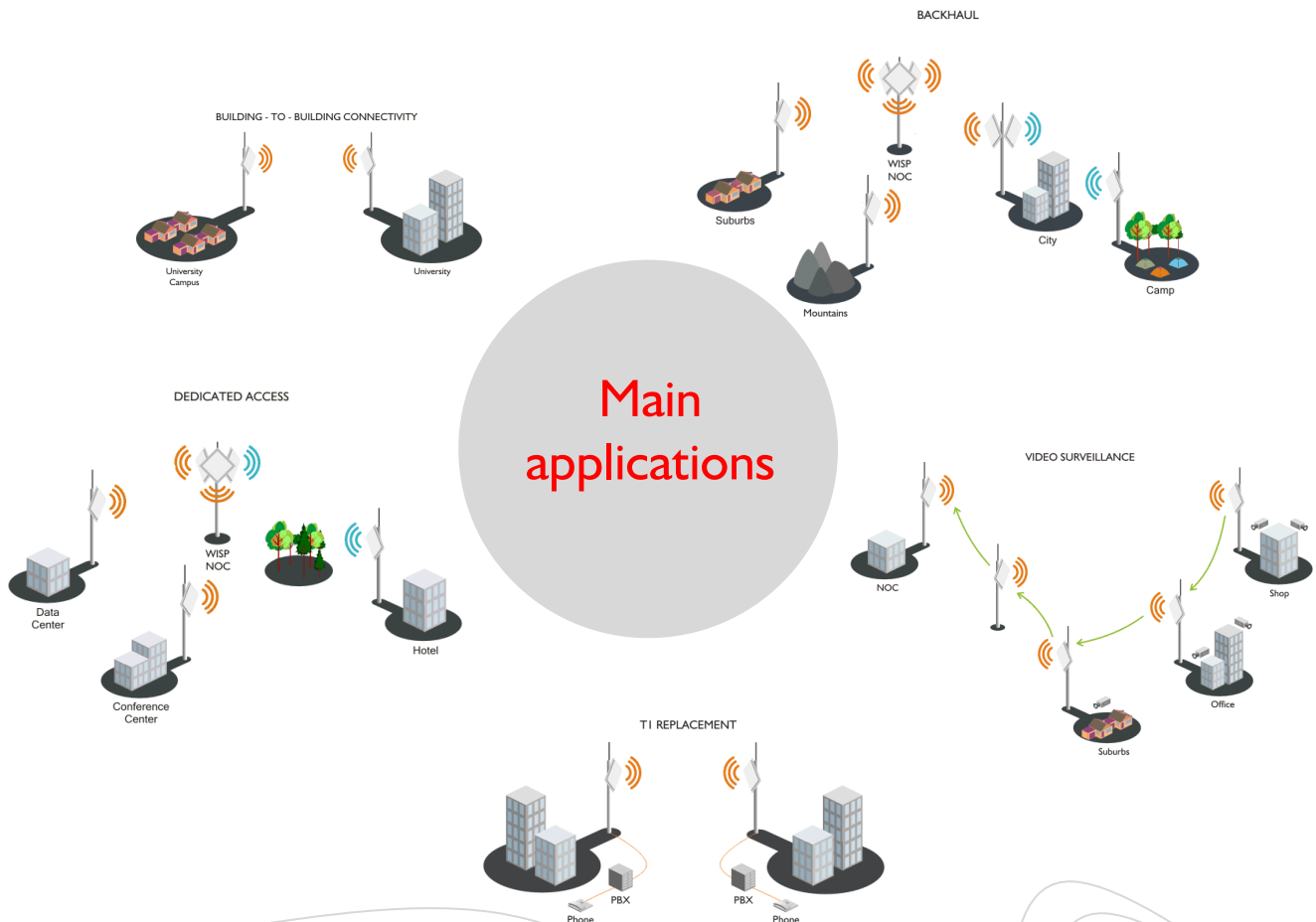


Key Features

- 5 GHz PTP bridge, ideal for:
 - Dedicated Access
 - Backhaul
 - Private networks
- Flexible center channel and channel width capability (20/40 MHz) for throughput optimization
- Radio rate of up to 300Mbps
- True TCP throughput up to 180 Mbps
- Advanced proprietary W-jet wireless protocol
- High packet-per-second (PPS) rate - ideal for VOIP backhaul applications
- Low packet latency (2ms)
- Great spectral efficiency (7.5 bit/ Hz)
- ARQ (Selective Repeat) for very high throughput
- Dynamic TDD for allocating bandwidth in real-time to the direction needed
- Integrated dual-polarized antenna (2 N-type connectors for the LigoPTP 5-N MiMo product)
- PoE built-in for single cable installation
- Advanced security technologies
- Comprehensive management features
 - Web GUI
 - Command line management via SSH
 - WNMS server support for configuration
 - SNMP V1/2/3 with traps supporting MIBs: 802.11, 802.1x, MIBII
 - Syslog support
 - Compatible with LigoWave link calculator
 - Real-time alerts
- Rugged articulating bracket solution for multi-facet mounting
- Oled screen and beeper for alignment
- IP-67 compliant



W-jet is LigoWave's proprietary wireless protocol that combines special techniques to achieve great performance and reliability even over long distances. The W-jet protocol is the result of years of development and gives LigoWave PTP products the ability to outperform other products on the market while simultaneously optimizing ROI for the customer.



Ligo PTP 5-23/5-N MiMo

5 GHz point-to-point integrated/connectorized backhaul device



Summary

- Easy and quick planning;
- Free online application and can be used with all wireless equipment;
- Has integration with Google maps;
- Allows storing, downloading and publishing data about the links online.
- PDF results can even be used by installation teams!

LigoWave's link calculator is a link planning tool available online at <http://www.ligowave.com/linkcalc/>. The link calculator allows LigoPTP users to calculate link performance expectations taking into account geographical information, distance between the units, antenna height and gain, transmit power, and other factors in order to choose the most suitable product available from LigoWave's extensive product portfolio. In addition, custom calculations using other vendors' equipment specs can be used, making the LigoWave link calculator the ultimate link planning tool. At the same time, this tool is offered free of charge, and users only need to register to get quick and easy access to this very helpful tool. On top of that, each user is able to save and create a database of links, download a PDF document that contains all the necessary information about the link, and publish a hyperlink online so that it could be shown to other people during the evaluation process.

Package contents:



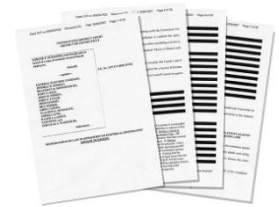
48 V PoE with grounding and lightning protection



LigoPTP 5-N/5-23 MiMo outdoor unit

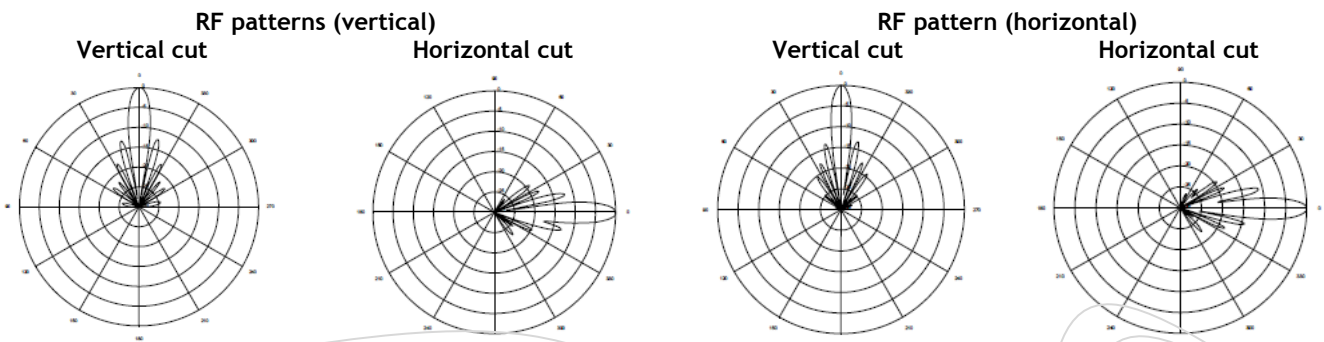


Professional mounting kit



Quick install guide

Antenna patterns (only for LigoPTP 5-23 MiMo product):



Ligo PTP 5-23/5-N MiMo

5 GHz point-to-point integrated/connectorized backhaul device



Sales offices:

EMEA:

Veiveriu 150-IIIa. Kaunas,
LT-46931, Lithuania

Sauletekio al. 15-610, Vilnius,
LT-20000, Lithuania

Americas:

138 Mountain Brook Dr.
Canton, GA 30115, USA

984 Shetland Ave. Winter
Springs, FL 32708 USA

Asia Pacific:

China-Beijing

Room 602, Everlast Plaza, No.
39, Anding Road,
Chaoyang District, Beijing, China
100029

China-Shanghai

4H, No. 92, Guiping Road, Zuhui
District, Shanghai, China 200233

China-Huizhou

No. 6, Huifeng East 2 Road,
Zhongkai Hi-Tech Industrial
Development Zone
Huizhou, Guangdong, China

China-Shenzhen

No. 9, Dragon Jade Industrial
District, Bantian Village Buji
Town Longgang District,
Shenzhen, China

Hong-Kong

B7, 6F., Chung Mei Centre, 15B
Hing Yip Street,
Kwun Tong, Kowloon, Hong
Kong

Singapore

60 Kaki Bukit Place, #08-04/05
Eunos Tech Park, Singapore
415979

Indonesia

Gedung Starpage Jl. Salemba
Tengah No. 5 Lt. 3, Jakarta
Pusat, Indonesia

Taiwan

12F., No.33 Sec. 2, Roosevelt
Road, Taipei, Taiwan

Malaysia

No. 17 Jalan P2/12, Bandar
Teknologi Kajang, 43500
Semenyih, Selangor, Malaysia

Philippines

3rd Floor. ETPI Bldg. #2161 Soler
St, Conner Calero St. Sta Cruz,
Manila City, Philippines

Thailand

169 Soi Sirindhorn 7,
Charansanitwong Road,
Bangbamru, Bangplad, Bangkok
10700, Thailand

India

New No. 6, Old No. 16,
Rajagopalan Street, Valmiki
Nagar, Thiruvanniyur, Chennai
600041, India

Radio specifications

Wireless technology	Proprietary W-Jet protocol, 2x2 MIMO
Operating mode	Point-to-point
Radio frequency band	4.920 - 5.915 GHz*
Channel size	Configurable 20, 40 MHz
Max transmit power	2 chains x 25 dBm
Modulation schemes	BPSK, QPSK, 16QAM, 64QAM
Receive sensitivity	Varying between -94 and -72 dBm depending on modulation and channel size
Error correction	FEC, Selective ARQ
Duplexing scheme	Dynamic time division duplex

Antenna

Type	Integrated directional panel (LigoPTP 5-23 MIMO) or 2 N-Type connectors (LigoPTP 5-N MIMO)
Polarization	Dual (LigoPTP 5-23 MIMO)
Gain V/H	23/23 dBi (LigoPTP 5-23 MIMO)
3dB Beam-width V/H	8/8 degrees (LigoPTP 5-23 MIMO)

Data Interface

Physical interface	10/100 BaseT
Protocol	Ethernet IEEE 802.3
Connector type	RJ45
Surge protection	Built-in

Link performance

Real data (TCP) throughput	180 Mbps aggregate (90 Mbps full-duplex)
Max packets per second	35,000
Packet latency	2 ms (64 bytes packet)
Recommended link distance	Up to 35 km (21.7 mi)

Security

Data encryption	Hardware based AES
-----------------	--------------------

Physical

Dimensions (PTP 5-N MIMO)	Width 218 mm (8.5 "), height 218 mm (8.5 "), depth 70 mm (2.7 ")
Dimensions (PTP 5-23 MIMO)	Width 335 mm (13 "), height 335 mm (13 "), depth 90 mm (3.5 ")
Weight (PTP 5-N MIMO)	2 kg (4.4 lb) (mount included)
Weight (PTP 5-23 MIMO)	3.3 kg (7.3 lb) (mount included)
Power supply	9 - 48 VDC, passive PoE
Power source	100 - 240 VAC via included adapter
Power consumption	15 W

Environmental

Operating temperature	-20° C (-4 F) - +60° C (+140 F)
Humidity	0 - 90 % (non-condensing)

Management

Installation assistant	OLED screen
System configuration interfaces	User-friendly web GUI, SSH CLI, SNMP v1/2c/3 with traps, centralized Wireless Network Management System

Regulatory

Certification	FCC/IC/CE
Ingress protection	IP-67
Safety	RoHS compliant

*Country dependent

Copyright © 2007-2009 LigoWave LLC. All rights reserved. LigoWave, the LigoWave logo, are trademarks of LigoWave LLC. All other company and product names may be trademarks of their respective companies. While every effort is made to ensure the information given is accurate, LigoWave does not accept liability for any errors or mistakes which may arise. Specifications and other information in this document may be subject to change without notice.

To learn more about LigoWave products, visit www.ligowave.com.