

Ligo PTP 24

24 GHz Digital Microwave Point-to-Point Device



Product Overview

The LigoPTP 24-series product family is the next generation LigoWave product line targeting the growing demand for carrier-grade data transmission over microwave radio. Operating in the 24 GHz unlicensed spectrum, this product delivers seamless connectivity at true full-duplex TCP payload of 108 Mbps. The LigoPTP 24-series is a perfect building block for any modern future-proof wireless network, including mobile service providers, fixed data service operators, enterprise customers, and municipal and governmental networks, among others. Apart from the full system capacity of 216 Mbps, the LigoPTP 24-series is loaded with feature-rich configuration options, including adjustable channel sizing (3.5 MHz, 7 MHz, 14 MHz, 28 MHz) and adjustable modulation schemes to match any application.

The LigoPTP 24 product is also capable of providing up to 4 E1/T1 interfaces for legacy connectivity or other use.

The LigoPTP 24-series products showcase an array of advanced software mechanisms that provide optimal point-to-point connectivity for high throughput-demand links. In this product line, LigoWave features proprietary PTP mechanisms, incorporating techniques such as hitless Adaptive Code and Modulation (ACM) technology, allowing operators to achieve high-capacity data transmission and improve link utilization. This reduces both operational and capital expenditures for maintaining high-capacity links and also maintains the highest possible spectral link efficiency and data availability, even at the most challenging of link conditions.

Ligo PTP 24

24 GHz Digital Microwave Point-to-Point Device



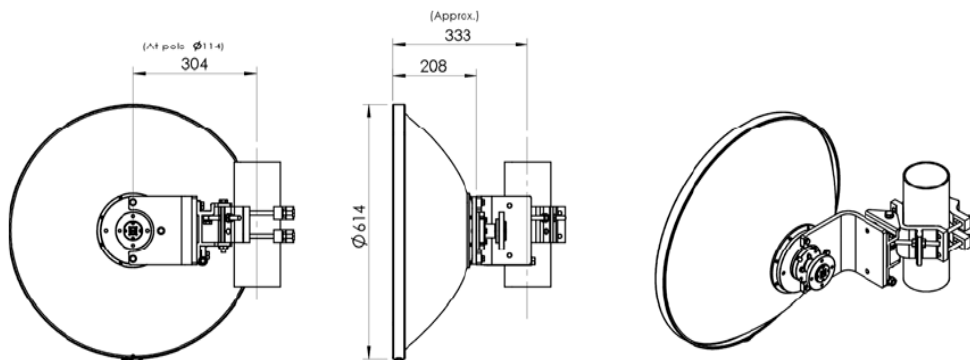
Key Features

- Full system capacity of 216 Mbps (with 4E1)
- Operates on the uncrowded, license-free 24 GHz spectrum
- Antennas included:
 - PTP 24-1: includes 1 ft. diameter, 35 dBi gain, slip-fit waveguide antenna
 - PTP 24-2: includes 2 ft. diameter, 40
- Full outdoor unit architecture - no IDU needed
- Adjustable channel sizing and modulation schemes
- Up to 4 E1/T1 interfaces
- Hitless Adaptive Code and Modulation (ACM) technology for throughput optimization
- Adjustable channel width capability (3.5 / 7 / 14 / 28 MHz)
- Flexible modulation settings (QPSK, 16APSK, 32APSK)

Test results

RSL at 10^{-6} BER (dBm) and total payload capacity (Mbps, aggregate)*				
Modulation	Channel bandwidth (MHz)			
	3.5	7	14	28
QPSK	-93 dBm at 8.8 Mbps	-88 dBm at 20.8 Mbps	-85 dBm at 42.6 Mbps	-82 dBm at 85.4 Mbps
16APSK	-85 dBm at 17.2 Mbps	-82 dBm at 41.6 Mbps	-79 dBm at 85.2 Mbps	-76 dBm at 170.8 Mbps
32APSK	-81 dBm at 19.4 Mbps	-78 dBm at 52.4 Mbps	-74 dBm at 110.8 Mbps	-75 dBm at 216 Mbps

*Preliminary data - actual data may vary slightly.



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.

Ligo PTP 24

24 GHz Digital Microwave Point-to-Point 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, Hui Feng 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	Microwave
Operating mode	Point-to-point, 1+0, 2+0 frequency diversity
Radio frequency band	24.05 -24.25 GHz
Channel size	Configurable 3.5, 7, 14, 28 MHz
Modulation schemes	QPSK, 16APSK, 32APSK
Transmit power	5@QPSK, 4@16APSK, 3@32APSK
Receive sensitivity	At 3.5 MHz channel -97@QPSK, -90@16APSK, -87@32APSK At 7 MHz channel -93@QPSK, -86@16APSK, -84@32APSK At 14 MHz channel -90@QPSK, -83@16APSK, -82@32APSK At 28 MHz channel -87@QPSK, -80@16APSK, -77@32APSK
Error correction	FEC, LDPC
Duplexing scheme	FDD

Antenna

Type	Selectable
Gain	35, 40 dBi
Diameter	30 (1), 60 (2) cm (ft)
3 dB Beamwidth	2.9 , 1.7 °
Weight	2.3 (5), 4.4 (9.7) kg (lb.)

Data Interface

Ethernet interface	10/100 BaseT, RJ45
E1/T1 interface	18-pin connector
VLAN	IEEE 802.1q supported

Link performance

Real data (TCP) throughput	200 Mbps aggregate ethernet (100 Mbps full-duplex), + 16 Mbps E1
Packet latency	2 ms (64 bytes packet)
Recommended link distance	Up to 7 km (4 mi) with 60 cm (2 ft) antennas, LOS

Physical

Dimensions (device)	Width 288 (11), height 288 (11), depth 80 (3) mm (")
Weight (device)	3.5 kg (7.7 lb.)
Power supply	48 V DC, PoE
Power source	100 - 240 V AC via included adapter
Power consumption	19 W

Environmental

Operating temperature	-33°C (-27 F) ~ +55°C (+131 F)
Humidity	0 - 90 % (non-condensing)

Management

Configuration, monitoring interfaces	Web GUI, Telnet CLI, SNMP BNC connector for RSSI measurement Additional BNC connector for terminal access
--------------------------------------	---

Regulatory

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