



ETSI

Wireless without
Boundaries

KyMaNet IP Pro Microwave Radio System



1000BaseT
Traffic Port
+ 100BaseT
NMS Port



Indoor or
Outdoor
mounted PoE
-48VDC
(watertight
cover/seals
removed)



Total Outdoor
Radio with
Common
Antenna /
Waveguide port

6-38
GHz

L

300+
Mbps

LOS

FD

PTP

PoE

Over 300/600+ Mbps Ethernet

Features & Benefits

- Licensed Frequency Bands
- Point to Point Pure IP Link
- Very Low Latency Ethernet
- Adaptive Modulation for increased availability
- Jumbo Frames up to 9720 Bytes
- Built-in Link Monitor
- Power over Ethernet (PoE)
- Low Power Consumption
- Wide Operating Temperature Range
- SNMP Management
- Up to 100 meter separation between PoE and ODU
- Smallest profile
- Lowest installed cost!
- Carrier-class performance

KyMaNet IP Pro Overview

This full duplex (FD) point to point all-outdoor microwave full duplex radio system is a flexible, low-cost, feature-rich solution for microwave radios in the global telecommunications market.

This Ethernet ONLY radio system is a full-featured compact digital radio offering full duplex committed data rates over 300 Mbps (>600 Mbps aggregate) in IP based networks. The radio supports software configurable capacity selection from 11 to over 300 Mbps using from 7 to 56 MHz channel bandwidths. By utilizing advanced Forward Error Correction (FEC) provides superior link performance and reliability at a low cost.

This complete outdoor solution is ideally suited for backhaul networks, WiMAX operators, ISPs, next generation mobile, and enterprise/campus networks requiring a low cost highly competitive Gigabit IP scalable radio system that exceeds carrier-grade standards for reliability, quality, and environmental compliance.

The ODU incorporates a unique, single-chip ASIC modem featuring integrated FEC with selectable coding rates. Modulation and data throughput rates are QPSK to 256 QAM. Standard interfaces include link traffic 1000BaseT, NMS 100/1000BaseT and Serial port.

The simplified all-outdoor solution:

- incorporates digital filtering for the various data bandwidths.
- offers volume capacity and proven performance for applications worldwide.
- represents a new generation of roof/tower installation at the most competitive price.
- with easy installation using only CAT5e/6 Ethernet cable to be run.
- is designed to simplify product logistics and overall product life cycle costs.
- all-outdoor architecture reduces capital and operating expenditures for field installation, maintenance, training, and spares while maximizing product reliability.
- includes advanced features such as support for ring/consecutive point configurations. This creates a self-healing redundancy that is more reliable than traditional point-to-point routed networks.
- connects directly to antennas from many manufacturers.
- Protected (1+1), 2x (2+0) Capacity, FD and other configurations possible with compatible router



Technical Information

The **KymaNet IP** is a low-cost point to point FD providing all IP digital microwave radio system for Ethernet payload.

The **KymaNetIP** meets carrier-grade standards for performance, reliability, and quality.

The **KymaNetIP** supports capacities over 300 Mbps using the widest channel spacing.

The **KymaNetIP** operates in the standard ETSI band frequencies from 7 to 38 GHz (for 6 GHz, contact the factory). Refer to the chart below:

KEY FEATURES

- Single ODU for simplified operation
- Browser based GUI for easy setup and management
- Standard IP and Serial Interfaces
- Supports NMS and SNMP
- Adaptive Coding Modulation Option

BENEFITS

- Low Cost Means - More Cost Effective
- Quick to Deploy
- Lowest cost licensed deployments
- Easily Setup and Activated

APPLICATIONS

- Ethernet IP
- IP Radio Networks
- G3/G4 Backhaul
- WiMAX / LTE backbones

SERVICES

AVAILABLE

- Technical Support
- Installation and Setup
- Maintenance
- Application Support
- Hardware Support
- Extended Warranty

For more information on any of our products or services please visit us on the Web at:

www.wniglobal.com

Transmit Power / Receiver Thresholds

7/8 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	30 / -91	28 / -85	28 / -81	25 / -79	25 / -75	N/A
14 MHz	30 / -88	28 / -82	28 / -78	25 / -76	25 / -72	N/A
28 MHz	30 / -85	28 / -80.5	28 / -76	25 / -74	25 / -70.5	23 / -66.5
56 MHz	N/A	30 / -77.5	28 / -73	25 / -71	25 / -67.5	23 / -63.5
11 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	28 / -91.5	26 / -85.5	26 / -81.5	22 / -79.5	22 / -75.5	N/A
14 MHz	28 / -88.5	26 / -82.5	26 / -78.5	22 / -76.5	22 / -72.5	N/A
28 MHz	28 / -86	26 / -81	26 / -76.5	22 / -74.5	22 / -71	20 / -67
56 MHz	N/A	26 / -78	26 / -73.5	22 / -71.5	22 / -68	20 / -64
13/15 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	26 / -91.5	24 / -85.5	24 / -81.5	20 / -79.5	20 / -75.5	N/A
14 MHz	26 / -88.5	24 / -82.5	24 / -78.5	20 / -76.5	20 / -72.5	N/A
28 MHz	26 / -86	24 / -81	24 / -76.5	20 / -74.5	20 / -71	18 / -67
56 MHz	N/A	24 / -78	24 / -73.5	20 / -71.5	20 / -68	18 / -64
18 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	26 / -91.5	23 / -85.5	23 / -81.5	19 / -79.5	19 / -75.5	N/A
14 MHz	26 / -88.5	23 / -82.5	23 / -78.5	19 / -76.5	19 / -72.5	N/A
28 MHz	26 / -86	23 / -81	23 / -76.5	19 / -74.5	19 / -71	17 / -67
56 MHz	N/A	23 / -78	23 / -73.5	19 / -71.5	19 / -68	17 / -64
23 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	25 / -91	23 / -85	23 / -81	19 / -79	19 / -75	N/A
14 MHz	25 / -88	23 / -82	23 / -78	19 / -76	19 / -72	N/A
28 MHz	25 / -85.5	23 / -80.5	23 / -76	19 / -74	19 / -70.5	17 / -66.5
56 MHz	N/A	23 / -77.5	23 / -73	19 / -71	19 / -67.5	17 / -63.5
26 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	25 / -91	22 / -85	22 / -81	19 / -79	19 / -75	N/A
14 MHz	25 / -88	22 / -82	22 / -78	19 / -76	19 / -72	N/A
28 MHz	25 / -85.5	22 / -80.5	22 / -76	19 / -74	19 / -70.5	17 / -66.5
56 MHz	N/A	22 / -77.5	22 / -73	19 / -71	19 / -67.5	17 / -63.5
32 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	23 / -90	21 / -84	21 / -80	17 / -78	17 / -74	N/A
14 MHz	23 / -87	21 / -81	21 / -77	17 / -75	17 / -71	N/A
28 MHz	23 / -84.5	21 / -79.5	21 / -75	17 / -73	17 / -69.5	15 / -65.5
56 MHz	N/A	21 / -76.5	21 / -72	17 / -70	17 / -66.5	15 / -62.5
38 GHz	QPSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM
7 MHz	23 / -83	20 / -79	20 / -77	17 / -73	17 / -75	N/A
14 MHz	23 / -80	20 / -76	20 / -74	17 / -70	17 / -69	N/A
28 MHz	23 / -78.5	20 / -74	20 / -72	17 / -68.5	17 / -64.5	15 / -66
56 MHz	N/A	20 / -77.5	20 / -69	17 / -65.5	17 / -61.5	15 / -63.5

RF/ODU Specifications

Description	Specifications - Typical															
	6L*	6U*	7	8	11	13	15	18	23	26	28	32	38			
Frequency Range	Frequency Bands (GHz)															
	5.9 to 6.4	6.5 to 6.9	7.1 to 7.9	7.9 to 8.5	10.7 to 11.7	12.7 to 13.3	14.4 to 15.4	17.7 to 19.7	21.2 to 23.6	24.2 to 25.3	27.5 to 29.5	31.8 to 33.4	38.6 to 40.0			
T/R Spacing (MHz)	*Future 240, 252.04	*Future 160, 170	154, 160, 161, 168, 196, 245	119, 126, 151, 614, 208, 266, 311, 320	490, 500, 530	266	315, 420, 475, 490, 640, 644, 728	1008, 1010, 1560	1008, 1200, 1232	800, 1008	TBA	812	700, 1260			
Transmitter																
Type	Dual Conversion – Transmitter Power by Modulation Type															
Xmit Pwr	Refer to Chart – Page 2															
Xmtr Attn Step (dB)	5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5			
Tx Power Accuracy	Over Command Range ± 2.0 dB (max)															
Output Power Muted	< -50 dBm															
ATPL Range	24 dBm															
Frequency Accuracy	± 7 ppm maximum, includes temp variation and aging, ± 8 ppm for 8GHz TR31 1.32 and TR151 .614, ± 9 ppm for 6GHzTR252.04															
Modulation	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM															
Receiver																
Typical Threshold	Refer to Chart – Page 2															
CW Interferences*	Meets ETSI Requirements															
ODU Interface																
Connector Type	Sealed 3xRJ45 (Traffic, NMS and Serial)															
Cable Type	CAT5/6e (Outdoor/UV)															
Primary Power																
Power Dissipation max. -30 to -60 VDC	58 W				50 W				56 W							
Protection Circuit	Power and protected by IDU (inrush current – ETS 300 132-2)															
Power Dissipation (per Frequency Bands, per Model) 2x CAT5/6e																
RACH-x0	N/A	58 W max.				50 W max.				56 W max.						
RACH-x1	N/A	62 W max.				54 W max.				60 W max.						
Environmental, Etc.																
Operating	ETS 300 019-2-4 Class 4M5 to (-33 +55°C)															
Cold Start Conditions	Power Supply Operational @ -45°C, ODU will transmit, no guarantee of quality of service.															
Storage	ETS 300-019-2-1															
Transport	ETS 300-019-2-2															
Mechanical	Weight (5.6 kg), Size (276mm Diameter x 140mm Depth)															
Finish	(Corro-Coat PE 71-190Z (Powder Coat), Gloss White)															
Ground Lug	M5 x .8 x 9.5 long															
Antenna Interface (Circular dia. inch)	***	***	1.025	1.025	.740	.620	.560	.455 WR-51	.375	.370	N/A	250	.219			
Rectangular Waveguide	***	***	WR112	WR112	WR-75	WR-75	WR-62	WR-42	WR-42	WR-42	WR-28	WR-28	N/A			

Throughput*/Modulation/Bandwidth

Modulation Type	Channel Bandwidth (MHz)			
	7	14	28	56
QPSK	10 Mbps	21 Mbps	42 Mbps	
16 QAM	20 Mbps	42 Mbps	85 Mbps	172 Mbps
32 QAM	25 Mbps	52 Mbps	106 Mbps	215 Mbps
64 QAM	32 Mbps	65 Mbps	133 Mbps	268 Mbps
128 QAM	37 Mbps	77 Mbps	156 Mbps	316 Mbps
256 QAM			180 Mbps	364 Mbps



PoE with weather-proof cover

* Throughput in each direction—for Full Duplex Link capacity, double the throughputs in the chart above.

Compliance - Summation

Outdoor Unit (ODU) Interface

Emissions Bandwidths FCC
Command Interface ODU specific

Modem Capability

Capacity Options Throughput can exceed 300 Mbps
Modulation Programmable: QPSK, 16-QAM, 32-QAM, 64-QAM, 128-QAM, 256-QAM
FEC (Trellis Coded Modulation concatenated with Reed-Solomon Coding)

Network Management

Support SNMP
Connector 10/100/1000BaseTX

Payload Parameters

IP Interface 1x100/1000BaseT, RJ-45 connector,
Standards Compliance IEEE 802.3ab (100/100BaseT), 802.1Q (VPN)

Configuration

Radio Protection and East-West Repeater can be managed with 2x install and router managed failover

Environmental

Operating Temperature PoE and ODU: -33° to +55°C (ODU)
Altitude 4500 meters
Humidity IDU: 95% non-condensing, ODU: 100% all-weather
Power Input -48V DC (-30 to -60 VDC)
Power Consumption: ≤58 watts
Power Connection is Power over Ethernet (PoE)
Cooling Natural Convection

Management

Protocol SNMPv2
Local Access Ethernet 100/1000Base-T, RJ-45
Remote Access In/Out-of-band integrated routing over link and interconnected LANs
Craft Interface: RS-232/RJ-45 port or remote via telnet session

Standards Compliance ETSI EN 302 217-2, ETSI EN 301 489, ETSI EN 300 132-2, IEC EN 60950

Customer Network Data Interface Options

Physical Ports

- Ethernet Full Duplex 1000BaseTx—Traffic Port
- Ethernet Full Duplex 100BaseTx—NMS Port
- Serial RS-232—Serial Port

Connector Type

- RJ-45 x 3

Compliance

- Ethernet IEEE 802.3
- RS-232C

Auxiliary Connections

- RS232 port for high-level management

Options

- Can use Third-party E1 to IP products to carry a few legacy circuits

Network Interface

Standard Configuration

Scalable Ethernet
Traffic In/Out-band NMS
10/100/1000 BaseTx

Options

Can handle legacy E1s with third part E1 over IP products

Adaptive Coding & Modulation (ACM)

Network Processor

Standard Configuration

Flexible Platform Processor
OAM&P
Security
Built-in Web Server

Supports

NMS Protocols:
SNMPv2, SNMPv3, SSH, Telnet & TFTP
QoS Performance Features:
VLAN Tagging per 802.1q, Priority queuing per 802.1p, Flow Control per 802.3x

Modem

Standard Configuration

Flexible modulation:
QPSK - 256QAM
Selectable Error -
Correction Coding
Equalization
Pre-distortion
Built-in Link Support: BER

Option

Adaptive Modulation available as a selectable mode of operation

Indoor or Outdoor PoE

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Specifications and availability are subject to change without notice.

Contact Factory for Test Conditions and Specification Changes

Performance specifications are for 1+0 configurations and optimum conditions and may be affected by location, environment, and other operating conditions.

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