

SkyLink Microwave Radios

Delivering Scalable Bandwidth through Licensed Microwave Solutions

Cielo Networks' SkyLink point-to-point microwave radios are available in all FCC/NTIA & ETSI licensed bands from 6 to 39 GHz. SkyLink terminals have a "split mount" configuration with an Outdoor Unit (ODU) mounted directly to the antenna, an Indoor Unit (IDU) mounted inside a structure or outdoor weatherproof cabinet, and a single inexpensive coaxial cable connecting those units. The SkyLink system uses advanced software defined radio technology to optimize link bandwidth scalability, payload interface options, RF operating parameter flexibility, and in-service QOS. Specifically, SkyLink terminals are software key configurable for capacities ranging from 20 Mbps to 600 Mbps. Set capacity is modularly allocated to Fast Ethernet and/or Gigabit Ethernet IP ports, TDM circuits from 2 x T1/E1 to 63 x T1/E1 and/or 1 x OC-3/STM-1 to 2 x OC-3/STM-1, and a variety of IP + TDM modes.

Software configuration of capacity and assigned channel bandwidth automatically adjusts the modem's modulation (QPSK, 16, 32, 64, & 128 QAM) to the level maximizing link system gain. High TX power outputs and integrated Automatic Transmit Power Control (ATPC) and Automatic Dynamic Modulation capability features further insure maximum link robustness and high QOS. SkyLink supports star, cascade ("daisy chain"), ring/consecutive point, or hybrid network topologies as required.

The remarkable capacity scalability, payload interface flexibility, and IP switching & N x T1 ADM drop/insert capability of the SkyLink system makes it the ideal "future proof" PTP microwave system for new IP networks, hybrid IP & TDM networks, and legacy N x T1 and/or OC-3 TDM networks' gradual transition to all IP transport. Cielo's SkyLink is easily adaptable to evolving network requirements.

FEATURES:

- Point to point (PTP) digital microwave systems all FCC/NTIA/ETSI compliant
- Available in all global licensed PTP bands: 6/7/8/11/13/15/18/23/26/39 GHz
- Scalable FE/GigE IP & TDM bandwidth: 20 - 600 Mbps IP & 0 - 63x T1/E1
- Up to 600 Mbps Ethernet in a single IDU with 2+0 ODU configuration
- Up to 63 x T1/E1 on a single IDU with add/drop & ring protection capability
- Provides 10/100/1000Base-TX and SFP optical Ethernet interfaces
- Scalable modulation: QPSK-16 QAM- 32 QAM-64QAM-128QAM
- Simple capacity upgrades w/ software key
- 1+1 protected and 2+0 configurations available in single IDU
- OC-3/STM-1 plus Ethernet
- Advanced forward error correction (FEC) technology for improved link performance
- Common compatible IDU for all ODU RF bands; all interfaces modular
- Compact split mount design
- SNMP remote management with full-featured MIB
- User friendly SkyView Web GUI management
- High performance at unrivaled cost effectiveness

Product Datasheet



Applications:

- Fixed Wireless Access
- Cellular, WiMAX, and WISP Backhaul
- Enterprise and Private Networks
- Fixed Wireless Access & Fiber Network Extension
- Government, Defense, and Public Safety Networks
- Critical Infrastructure Communications Redundancy
- Star, Cascade ("daisy chain"), or Ring/Consecutive Point Network Topologies

Product Datasheet



Technical Specifications

General Info	7 GHz	8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	32 GHz	38 GHz
Frequency Range	7.1 - 7.9 GHz	7.9 - 8.5 GHz	12.7 - 13.3 GHz	14.4 - 15.4 GHz	17.7 - 19.7 GHz	21.2-23.6 GHz	24.2-26.5 GHz	31.8-33.4 GHz	37.0-40.0 GHz
T-R Spacing	154/160/161/168/196/245 MHz	119/126/151.614/208/266/311.32 MHz	266 MHz	315/420/475/490/640/644/728 MHz	1008/1010 MHz	1008/1232 MHz	800/1008 MHz	812 MHz	700/1260 MHz
RF Channel Spacing	14/28/56 MHz								
Frequency Accuracy	7 PPM								

Radio Information	7/8 GHz					13/15/18 GHz				
Modulation	QPSK	16QAM	32QAM	64QAM	128QAM	QPSK	16QAM	32QAM	64QAM	128QAM
Transmit Power	30 dBm	28 dBm	28 dBm	24 dBm	24 dBm	26 dBm	23 dBm	23 dBm	18 dBm	18 dBm
Automatic Power Control (APC)	+8 to +30	+6 to +28	+6 to +28	+2 to +24	+2 to +24	+4 to +26	+2 to +23	+2 to +23	+2 to +18	+2 to +18
Receiver Sensitivity (BER 10e-6)	-86 dBm	-82 dBm	-76 dBm	-72 dBm	-69 dBm	-86 dBm	-82 dBm	-76 dBm	-72 dBm	-69 dBm
Receiver Overload (BER 10e-6)	-20 dBm	-20 dBm	-20 dBm	-28 dBm	-28 dBm	-20 dBm	-20 dBm	-20 dBm	-28 dBm	-28 dBm

Radio Information	23/26 GHz					32/38 GHz				
Modulation	QPSK	16QAM	32QAM	64QAM	128QAM	QPSK	16QAM	32QAM	64QAM	128QAM
Transmit Power	25 dBm	23 dBm	22 dBm	17 dBm	17 dBm	23 dBm	21 dBm	21 dBm	16 dBm	16 dBm
Automatic Power Control (APC)	+3 to +25	+2 to +22	+2 to +22	+2 to +17	+2 to +17	+2 to +23	+2 to +21	+2 to +21	+2 to +16	+2 to +16
Receiver Sensitivity (BER 10e-6)	-86 dBm	-82 dBm	-76 dBm	-72 dBm	-69 dBm	-86 dBm	-82 dBm	-76 dBm	-72 dBm	-69 dBm
Receiver Overload (BER 10e-6)	-20 dBm	-20 dBm	-20 dBm	-28 dBm	-28 dBm	-20 dBm	-20 dBm	-20 dBm	-28 dBm	-28 dBm

		Capacity Bandwidth																	
		Ethernet		20 Mbps		50 Mbps		100 Mbps		150 Mbps		200 Mbps		250 Mbps		300 Mbps			
		T1/E1	0	2	16	0	2	16	0	2	16	0	2	16	0	2	0	2	
RF Channel Size	10 MHz		16QAM		128QAM														
	20 MHz		QPSK	16QAM	32QAM														
	30 MHz		QPSK	16QAM		32QAM	64QAM	128QAM											
	40 MHz		QPSK		16QAM		64QAM	128QAM											
	50 MHz		QPSK		16QAM		32QAM	64QAM	128QAM										
	56 MHz		QPSK		16QAM		32QAM	64QAM	128QAM										

PAYLOAD

Ethernet	20/50/100/150/200/250/300/400/500/600 Mbps
T1/E1	0/2/16/32/41/63
	155 Mbps SONET OC-3/SDH STM-1

PHYSICAL INTERFACES

GigE Module	Ethernet: 4xRJ-45 10/100/1000Base-TX, SFP	T1/E1: 2xRJ-48c
FE Module	Ethernet: 2xRJ-45 10/100Base-TX 64 kbps: RS232/RS422, RJ-45	T1/E1: 2xRJ48c, Molex DB60F (14xT1/E1) VOW: RJ-45
155 Mbps Module	Optical: OC3/STM-1: Type SC	Electrical: STM-1: BNC
Modem/IF Module	IDU: TNC - Female Frequency: TX: 350 MHz / RX: 140 MHz	ODU: N - Female IDU supports 2 modules for 1+1/2+0

MANAGEMENT

Remote Access	SNMP, Full Featured MIB, Web-Based GUI, Telnet - Command Line Interface Interface: 2x10/100Base-TX, RJ-45
Local Access	Serial: Command Line Interface Interface: HDB-15
Alarms	Input: 4 x TTL-level Output: 2 x Form C contacts, 2 x TTL-level Interface: HDB-15
Topology	Out-of-Band Management with embedded 2x10/100 switch allows ring and cascaded network management topology
RSL Measurement	Voltage output at ODU with BNC Interface and Web-GUI

ENVIRONMENTAL

Indoor Unit	Operating Temperature: -5° to +55°C Relative Humidity: 0 to 95%, non-condensing Altitude: 4,500 m
Outdoor Unit	Operating Temperature: -33° to +55°C Relative Humidity: 0 to 100% Altitude: 4,500 m

MECHANICAL

Indoor Unit	Size: 17.5W x 9.4D x 1.8H inches (1RU) Weight: 7.5 pounds
Outdoor Unit	Size: 10.5 dia x 3.5 deep inches Weight: 10.1 pounds

POWER

Input Voltage	-48VDC: -36 to -72 VDC Interface: 2 Pin Phoenix Contact
Power Consumption	1+0: 82W 1+1/2+0: 149W

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