

ROCKHILL

Telecom Point to Point Radio

Point to Point Radio Family 7-38GHz RADTR-P2P-7-38-IP300-AOD-a9



1000BaseT
Traffic Port
+ 100BaseT
NMS Port

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

Total Outdoor
Radio with
Common
Antenna /
Waveguide port

Over 300/600 Mbps, Ethernet, Point to Point Radio

Features & Benefits	
<ul style="list-style-type: none"> • Licensed Frequency Bands • Point to Point 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 	<p><u>Overview</u></p> <p>This is a Full Duplex (FD), Point to Point, All Out Door (AOD) microwave, radio link.</p> <p>An IP based Ethernet Radio system, offering Full Duplex (FD) data rates up to 300 Mbps (>600 Mbps aggregate). The radio supports software configurable capacity selection from 11 to over 300 Mbps using from 7 to 56 MHz channel bandwidths. Advanced, integrated forward Error correction (FEC) provides superior link performance and reliability.</p> <p>This FULLY integrated outdoor RADIO is ideally suited for: Backhaul networks; including: WiMAX backhaul, ISPs, next generation mobile, and enterprise/campus networks requiring the best solution that exceeds Carrier-Grade Class standards for highest reliability, quality, and environmental compliance at a relatively low price.</p> <p>The Radio incorporates a unique, single-chip ASIC modem with integrated FEC with selectable code rates and Modulations: from QPSK to 256 QAM. Standard interfaces include link traffic: 1000BaseT, NMS 100/1000BaseT and a Serial port.</p> <p>The simplified all-outdoor solution:</p> <ul style="list-style-type: none"> • Incorporates digital Channel 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 prices • Easy installation uses only CAT5e/6 Ethernet cable interface. • Designed to minimize 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. • Supports ring and consecutive point configurations. • Creates a self-healing redundancy, more reliable than traditional Pt-to-Pt routed networks. • Connects directly to antennas from many (other) manufacturers. • Optional: Protected (1+1), 2 x (2+0) Capacity, Full Duplex and other configurations possible with compatible router

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Key Feature	Technical Information																																																																																																																																																																																																																																																																																													
<ul style="list-style-type: none"> Single ODU for simplified operation Browser based GUI for easy setup and management Standard IP and Serial Interfaces Supports NMS & SNMP Adaptive Modulation Option <p>Benefits</p> <ul style="list-style-type: none"> Low Cost Means More cost effective Quick to Deploy Lowest cost Licensed deployments Easily Setup and Activated <p>Applications</p> <ul style="list-style-type: none"> Ethernet IP IP Radio Networks G3/G4 Backhaul WiMAX /LTE Back bones <p>Services available</p> <ul style="list-style-type: none"> Technical Support Installation and Setup Maintenance Application Support Hardware Support Extended Warranty 	<p>Technical Information</p> <p>RADTR-P2P-7-38-IP300-AOD-a9</p> <p>-Meets Carrier-Class standards for performance, reliability, and quality. -Supports capacities to over 300 Mbps with the widest channel spacing. It operates in the standard ETSI band frequencies from 7 to 38 GHz (for 6 GHz, contact the factory). Refer to the chart below:</p> <p>Transmit Power / Receiver Thresholds</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>7/8 GHz</th> <th>QPSK</th> <th>16 QAM</th> <th>32 QAM</th> <th>64 QAM</th> <th>128 QAM</th> <th>256 QAM</th> </tr> </thead> <tbody> <tr><td>7 MHz</td><td>30 / -91</td><td>28 / -85</td><td>28 / -81</td><td>25 / -79</td><td>25 / -75</td><td>N/A</td></tr> <tr><td>14 MHz</td><td>30 / -88</td><td>28 / -82</td><td>28 / -78</td><td>25 / -76</td><td>25 / -72</td><td>N/A</td></tr> <tr><td>28 MHz</td><td>30 / -85</td><td>28 / -80.5</td><td>28 / -76</td><td>25 / -74</td><td>25 / -70.5</td><td>23 / -66.5</td></tr> <tr><td>56 MHz</td><td>N/A</td><td>30 / -77.5</td><td>28 / -73</td><td>25 / -71</td><td>25 / -67.5</td><td>23 / -63.5</td></tr> <tr> <th>11 GHz</th> <th>QPSK</th> <th>16 QAM</th> <th>32 QAM</th> <th>64 QAM</th> <th>128 QAM</th> <th>256 QAM</th> </tr> <tr><td>7 MHz</td><td>28 / -91.5</td><td>26 / -85.5</td><td>26 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Point to Point Radio Family 7-38GHz RADTR-P2P-7-38-IP300-AOD-a9

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	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 TR3I 1.32 and TRI51 .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		58Wmax.			50Wmax.			56Wmax.						
RACH-x1	N/A		62Wmax.			54Wmax..			60Wmax.						
Environmental, Etc															
Operating	ET S 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

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

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Specifications may be subject to change

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Outdoor Unit (ODU) Interface -Emissions Bandwidths FCC -ODU Command Interface ODU specific	Modem Capability *Capacity Options Throughput over 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 10/100BaseTX
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		

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 Base TX

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* future

Options

Adaptive Modulation available as a selectable mode of operation
 Indoor or Outdoor PoE