



RDL-5000

POWERFUL. VERSATILE. RELIABLE.

Datasheet RDL-5000 Packet Microwave Radio Platform

The RDL-5000 is a microwave radio with an integrated gigabit Ethernet switch that provides the highest point-to-point (PTP) pure packet capacity and longest range in its class. Operating in the 6 GHz to 38 GHz licensed bands, the all-outdoor RDL-5000 delivers a throughput of up to 800 megabits per second (Mbps), or 400 Mbps in full-duplex mode, without compression. Thus, it maintains complete transparency for all your IP-based applications. Telecom service providers, local and state governments, private enterprises and oil and gas companies throughout the world are realizing the value of the RDL-5000's pure packet microwave technology to support advanced applications such as a transparent local area network (LAN), voice-over-Internet protocol (VoIP), high-resolution video, Multi Protocol Label Switching (MPLS) and Metro Ethernet services.

AT A GLANCE

Licensed Microwave Radio 6 to 38 GHz, ETSI and ANSI support up to 56 MHz channel size

Full IP, pure packet traffic

Software upgradeable speed keys from 200 to 800 Mbps throughput

Zero footprint, all-outdoor design

Integrated gigabit switch supports ring and mesh topologies

Dual data ports – optical and electrical

Multi-level QoS and advanced IP functionality (mobility, VoIP, video)

Hitless Adaptive Coded Modulation (ACM)

Deploy and manage from any location with ClearView NMS

Low power consumption

Environmentally hardened

This lightweight radio is available in a high power version that boasts 27 dBm of output power and as a standard radio with 19 dBm of power. It covers the 6 / 7 / 8 / 10 / 11 / 13 / 15 / 18 / 23 / 26 / 38 GHz bands with channel bandwidths from 20 MHz to 56 MHz, conforming to both American National Standards Institute (ANSI) and European Telecommunications Standards Institute (ETSI) specifications. The RDL-5000's high power and better sensitivity allow you to use smaller antennas. Its high capacity results in fewer links. The RDL-5000's superior performance generates significant CAPEX and OPEX savings.

The integrated 2-port gigabit switch is the most powerful and versatile available in any radio. Electrical (RJ-45 connector) and optical data (SM or MM) interfaces are standard on the RDL-5000 unit, providing complete site-specific flexibility. The switch supports standard redundancy, ring and mesh topologies, and link aggregation for 1.6 Gbps total throughput. The unit also supports virtual LAN (VLAN), eight-level quality of service (QoS), Q-in-Q, spanning tree, and jumbo frames, thus providing total deployment flexibility. The switch operates with half the latency and four times the packet processing speed (PPS) of other solutions, ensuring all your IP applications work seamlessly over wireless.

With a "green" power consumption of 35 watts and high reliability, the high capacity RDL-5000 provides the ultimate in licensed band PTP connectivity for pure packet networks.



STABLE AND HITLESS ADAPTIVE CODED MODULATION

Redline's ACM eliminates the impact of fading delivering:
Zero dropped packets—zero change in BER
Zero change in latency and jitter

POWERFUL

Longest range Redline custom tunes each frequency diplexer to the radio head-end, allowing the RDL-5000 to outperform any other microwave system, in any frequency. Redline delivers more power and better sensitivity, resulting in a better range at each modulation.

Highest throughput The RDL-5000 uses higher modulation rates to achieve higher throughput at longer ranges versus the competition. Support more applications and connect more sites with fewer radios with the RDL-5000.

Lowest latency Integrated gigabit switch processes at wire-speed, ensuring consistent latency regardless of the interface implemented (copper or fiber), packet size or network loading.

Manage services ClearView NMS provides centralized monitor and control facilities to manage services across multiple Redline networks.

VERSATILE

Advanced switching The integrated switch provides more functionality than any other all-outdoor radio. It has the fastest processing speed, handling 1.5 million PPS per port, it supports jumbo frame sizes up to 9,728 bytes, and it has unparalleled functionality with eight-level QoS, spanning tree, link aggregation, and VLAN.

Any service The RDL-5000 achieves its high throughput without compression, ensuring existing applications continue working seamlessly over wireless. Transparent mapping for MPLS and Metro Ethernet services are supported through "double VLAN-tagging" (Q-in-Q).

Future proof The RDL-5000 is available in an economic 200 Mbps version that can be upgraded via software to a speed of 800 Mbps. Purchase the throughput performance you need today; upgrade tomorrow without replacing hardware.

RELIABLE

Stable and Hitless ACM With stable and hitless ACM, the RDL-5000 eliminates the effects of rain fade and complex selective and multipath fading, ensuring zero lost packets, zero change in bit error rate, zero increase in latency, and zero increase in jitter. Redline's ACM ensures applications keep running despite the weather.

Ring/Mesh redundancy The integrated switch can reroute traffic via spanning tree (802.1d protocol) in less than 10 msec, allowing ring and mesh topologies to deliver consistent performance and reliability to pure packet microwave.

Quality assured The RDL-5000 is certified hardened from -45 °C to 60 °C (-49 °F to 140 °F) and it is certified submersible to IP67 (NEMA-6P), delivering reliable performance in any environment.

RADIO SPECIFICATIONS

RADIO TRANSMIT POWER

High Power Radio

Modulation	6, 7, 8 GHz	10, 11, 13, 15 GHz
QPSK	+27	+25
16APSK	+26	+24
32APSK	+25	+23
64QAM	+23	+21
128QAM	+23	+21
256QAM	+20	+17

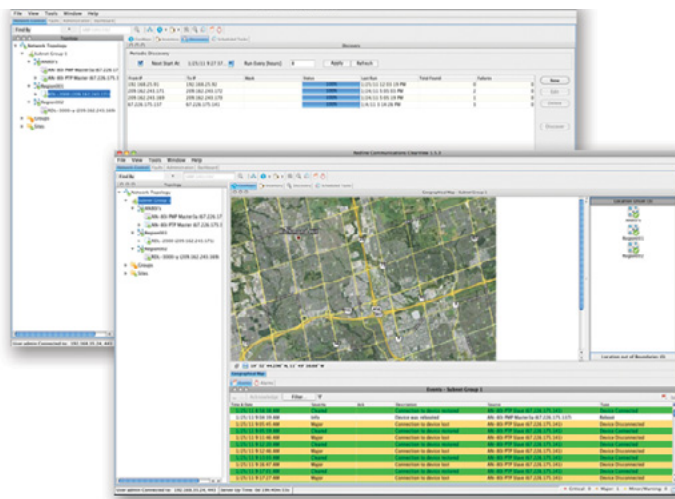
Standard Power Radio

	6, 7, 8 GHz	10, 11, 13, 15 GHz	18, 23, 26, 38 GHz
	+19	+19	+19
	+18	+18	+18
	+17	+17	+17
	+15	+15	+15
	+15	+15	+15
	+12	+12	+12

RECEIVE SENSITIVITY AND DATA THROUGHPUT

CHANNEL SIZE

Modulation	FEC	56 MHz		50 MHz		40 MHz		30 MHz		28 MHz		20 MHz	
		L2	Rx Sen	L2	Rx Sen	L2	Rx Sen	L2	Rx Sen	L2	Rx Sen	L2	Rx Sen
		Mbps	dBm	Mbps	dBm	Mbps	dBm	Mbps	dBm	Mbps	dBm	Mbps	dBm
QPSK	High	75	-87	64	-87	50	-87	38	-89	35	-90	24	-91
QPSK	Low	86	-84	73	-85	58	-86	44	-87	40	-88	30	-89
16APSK	High	147	-80	126	-81	98	-82	75	-82	69	-82	49	-85
16APSK	Low	174	-78	148	-78	114	-79	87	-80	82	-80	59	-82
32APSK	High	185	-77	159	-77	127	-78	96	-80	88	-80	62	-82
32APSK	Low	213	-76	181	-76	146	-76	110	-77	103	-77	73	-79
64QAM	High	244	-75	208	-75	164	-75	124	-77	115	-77	82	-79
64QAM	Low	270	-72	230	-72	180	-74	135	-75	128	-75	92	-76
128QAM	High	293	-71	250	-71	196	-73	148	-74	139	-74	98	-76
128QAM	Low	321	-69	271	-69	212	-71	159	-72	151	-71	109	-73
256QAM	High	345	-68	292	-68	229	-69	173	-70	162	-71	115	-72
256QAM	Low	387	-65	314	-66	245	-67	185	-68	175	-68	125	-70



ClearView NMS

Information technology professionals can quickly deploy and manage the RDL-5000 from any location with Redline's ClearView NMS network management software. ClearView NMS is easy to deploy and runs on most Windows®, UNIX® and LINUX® operating systems. The strong network discovery capability quickly locates all devices throughout the network and presents them in an easy-to-read topology map. Clicking on a device on the map reveals its status and performance indicators and allows you to drill down to view detailed device configuration parameters. Redline's ClearView application provides centralized management for all wireless products in the RDL family.

The numbers behind the RDL-5000 tell the story: higher power and better sensitivity at every modulation; greater capacity and lower latency at any frequency; more switching functionality without added latency—all of this with the lowest power and the industry’s lightest all-outdoor microwave packet radio. Once again, Redline delivers a radio system to use when everything else falls short.

RDL-5000: Powerful. Versatile. Reliable.

REDCARE SUPPORT

Redline’s products are backed by RedCARE, one of the best support programs in the industry, providing responsive customer and solution support wherever Redline’s products are available. RedCARE ensures consistent, broadband wireless connectivity for our customers.

ABOUT REDLINE COMMUNICATIONS

Redline Communications (www.rdlcom.com) is a leading provider of specialized broadband wireless systems used to cost-effectively deploy distributed applications and services. Redline systems are used by local and state governments to quickly and easily deploy or extend their public safety networks; by oil and gas companies to connect their digital oil fields; by service providers and enterprises to bring dedicated Internet access to business users; and by the military to rapidly deploy secure networks. For more than 10 years, Redline has been delivering powerful, versatile and reliable wireless solutions through certified partners in the Americas, the Middle East, and Africa.

TECHNICAL SPECIFICATIONS

Frequency Bands (GHz)	6 / 7 / 8 / 10 / 11 / 13 / 15 / 18 / 23 / 26 / 38
Channel Size (MHz)	20 / 28 / 30 / 40 / 50 / 56
Duplex Method	FDD
Modulation Levels	QPSK / 16APSK / 32APSK 64QAM / 128QAM / 256QAM
Tx Power (dBm)	+27 dBm @ QPSK +20 dBm @ 256QAM
Rx Sensitivity (dBm)	-91 dBm @ BPSK -64 dBm @ 256QAM
Latency (µs)	<100 µs
System Gain (dB)	82 dB BER10-6, 56 MHz, 256QAM
Hitless ACM 0 ms Jitter	Yes
ATPC	Yes
Adaptive Equalizer	Yes
Polarization Indicator	Yes
DC Alignment port	Yes
Constellation Diagram Diagnostics	Yes
Layer 2 Throughput (on 56 MHz Channel)	200 Mbps Base System SW upgrade to 800 Mbps
VLAN Support	802.1Q / 4094 VLANS / QinQ
QoS	64 level DiffServ (DSCP) 8 Level 802.1p in 4 queues Fixed or Weighted (WRR)
Spanning Tree	802.1D-2004 RSTP
Ethernet Packet Size	up to 9728 Bytes
Ethernet Aggregation	2 + 0
Data Interfaces (two)	1 RJ-45 Gig-E copper 1 fiber SM or MM
Management	Web / SNMP (v1, v2c) Serial / Telnet
Advanced Management	ClearView NMS
DC Power Input	36 – 57 VDC
Power Consumption max	35 Watt standard radio 41 Watt high power radio
Operating Temperature Range	15 GHz and lower: -45 °C to 55 °C [-49 °F to 131 °F] 18 GHz and higher: -45 °C to 60 °C [-49 °F to 140 °F]
Outdoor Rating	IP67 (NEMA-6P)
Dimensions	288x288x80 mm 11.2x11.2x3.1 in
Weight	3.9 Kg (8.6 lbs)

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