RDL-5000

Datasheet
RDL-5000
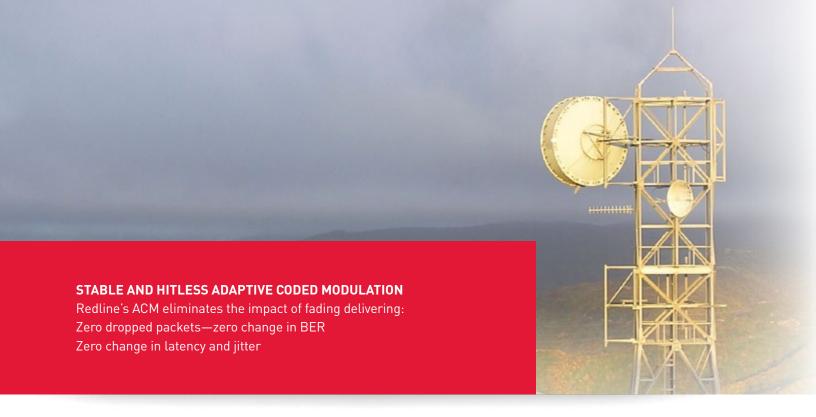## Packet Microwave Radio Platform

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 making it ideal for next generation 3G and 4G / LTE network backhaul. 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.

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.

AT A GLANCE

Optimized for 4G / LTE networks

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

redline
communications

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 submergible to IP67 (NEMA-6P), delivering reliable performance in any environment.
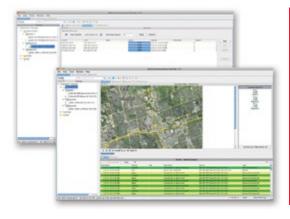
RADIO SPECIFICATIONS | RADIO TRANSMIT POWER

Modulation	Tx Power (dBm)		
	6, 7, 8 GHz	10, 11, 13, 15 GHz	18, 23, 26, 38 GHz
QPSK	+27	+25	+19
16APSK	+26	+24	+18
32APSK	+25	+23	+17
64QAM	+23	+21	+15
128QAM	+23	+21	+15
256QAM	+20	+18	+12

RECEIVE SENSITIVITY AND DATA THROUGHPUT

BW (MHz)	Modem Mode	CHANNEL SIZE											Capacities (Mbps)
		6 GHz	7 GHz	8 GHz	10 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	38 GHz	
20	64QAM StrongFEC	-80.0	-79.0	-78.5	-78.5	-79.0	-79.0	-78.5	-79.5	-78.5	-81.0	-74.5	82
	128QAM StrongFEC	-77.0	-76.0	-75.5	-75.0	-76.0	-76.0	-75.5	-76.5	-75.5	-77.5	-71.5	98
	256QAM StrongFEC	-73.5	-72.0	-72.0	-71.5	-72.0	-73.0	-72.0	-73.0	-72.0	-74.0	-68.0	115
	256QAM WeakFEC	-70.0	-66.0	-65.5	-66.5	-67.0	-67.0	-66.5	-67.5	-68.5	-68.5	-64.5	125
28	32APSK StrongFEC	-81.5	-80.0	-80.0	-80.0	-80.5	-80.5	-80.5	-80.5	-80.0	-82.0	-76.0	88
	64QAM StrongFEC	-79.0	-77.5	-77.5	-77.0	-78.0	-77.5	-77.0	-78.0	-77.5	-79.5	-73.5	115
	128QAM StrongFEC	-75.5	-74.5	-74.0	-73.5	-74.5	-74.5	-74.0	-75.5	-74.0	-76.5	-70.0	139
	256QAM StrongFEC	-72.5	-71.0	-70.5	-70.5	-71.0	-71.0	-70.5	-72.0	-71.0	-73.0	-67.0	162
	256QAM WeakFEC	-69.0	-67.0	-66.0	-66.0	-67.0	-67.0	-66.5	-69.0	-67.5	-70.0	-63.5	175
30	32APSK StrongFEC	-81.0	-80.0	-80.0	-79.5	-80.5	-80.5	-80.0	-80.5	-79.5	-81.5	-75.5	95
	64QAM StrongFEC	-78.5	-77.0	-77.0	-76.5	-77.5	-77.5	-77.0	-78.0	-77.0	-79.0	-73.0	123
	128QAM StrongFEC	-75.5	-74.0	-74.0	-73.5	-74.5	-74.5	-74.0	-75.0	-74.0	-76.0	-70.0	147
	256QAM StrongFEC	-72.0	-70.5	-70.5	-70.5	-71.0	-71.0	-70.5	-71.5	-70.5	-72.5	-66.5	172
	256QAM WeakFEC	-69.0	-68.5	-65.5	-65.5	-67.0	-66.5	-66.5	-69.0	-67.5	-70.0	-63.5	184
40	16APSK StrongFEC	-82.5	-81.5	-81.5	-81.0	-82.0	-82.0	-81.5	-82.5	-81.0	-83.5	-77.0	98
	32APSK StrongFEC	-80.0	-78.5	-79.0	-78.5	-79.5	-79.5	-79.0	-79.5	-78.5	-80.5	-74.5	127
	64QAM StrongFEC	-77.0	-76.0	-75.5	-75.5	-76.5	-76.0	-76.0	-77.0	-75.5	-78.0	-71.5	164
	128QAM StrongFEC	-74.0	-73.0	-72.5	-72.5	-73.5	-73.0	-72.5	-73.5	-72.5	-74.5	-68.5	196
	256QAM StrongFEC	-70.5	-69.5	-69.0	-68.5	-69.5	-69.5	-69.0	-70.5	-69.0	-71.0	-65.0	229
	256QAM WeakFEC	-68.0	-67.0	-64.5	-64.5	-65.5	-65.0	-65.0	-67.5	-66.5	-68.5	-62.5	245
50	16APSK StrongFEC	-81.5	-80.5	-80.5	-80.0	-81.0	-81.0	-80.5	-81.5	-80.0	-82.5	-76.0	125
	32APSK StrongFEC	-79.0	-77.5	-78.0	-77.5	-78.5	-78.0	-78.0	-78.5	-77.5	-79.5	-73.5	158
	64QAM StrongFEC	-76.0	-75.0	-74.5	-74.5	-75.5	-75.0	-75.0	-76.0	-74.5	-77.0	-70.5	207
	128QAM StrongFEC	-73.0	-72.0	-71.5	-71.5	-72.5	-72.0	-71.5	-72.5	-71.5	-73.5	-67.5	249
	256QAM StrongFEC	-69.5	-68.0	-68.0	-67.5	-68.5	-68.5	-68.0	-69.5	-68.0	-70.5	-64.0	290
	256QAM WeakFEC	-66.0	-64.5	-63.5	-63.5	-64.5	-64.5	-64.0	-66.0	-64.5	-67.0	-60.5	313
56	16APSK StrongFEC	-81.0	-80.0	-79.5	-79.5	-80.5	-80.0	-79.5	-80.5	-79.5	-82.0	-75.5	145
	32APSK StrongFEC	-78.0	-77.0	-77.5	-77.0	-78.0	-77.5	-77.0	-77.5	-76.5	-79.0	-72.5	186
	64QAM StrongFEC	-75.5	-74.5	-74.0	-73.5	-74.5	-74.5	-74.0	-75.5	-74.0	-76.0	-70.0	241
	128QAM StrongFEC	-72.0	-71.0	-71.0	-70.5	-71.5	-71.5	-71.0	-72.0	-70.5	-73.0	-66.5	289
	256QAM StrongFEC	-68.5	-67.5	-67.0	-66.5	-68.0	-67.5	-67.0	-68.5	-67.0	-69.5	-63.0	337
	256QAM WeakFEC	-64.0	-63.0	-63.0	-62.5	-63.5	-63.0	-62.5	-64.5	-62.5	-65.0	-58.5	366

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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