

RADIO AND CELLULAR ROUTER IN ONE

RipEX

Private

Mission-Critical

Mesh

RipEX is a radio modem platform providing a 24/7 reliable service for wireless data transfer in mission-critical applications like SCADA & Telemetry at critical infrastructure such as Power and Water Utilities, Oil & Gas and many others.



MARKET LEADER

- 1.7 Mb/s, 256QAM
- Dynamic routing
- PCIe extension – Cellular, Wi-Fi, GPS...
- Unlimited coverage without Base stations

PERFORMANCE

- 160, 300, 400, 800, 900 MHz
- 2CPFSK – 256QAM
- 6.25 – 300 kHz channels
- 10 W, Half or Full duplex

RELIABILITY

- Industrial hardened design, -40 to +70 °C
- Each unit tested in climatic chamber
- MTBF > 100 years, Made in Czechia, EU
- Backup routes, 1+1 Redundancy

SECURITY

- IPsec, OpenVPN, AES256
- RADIUS, Firewall, VLAN
- Digitally signed FW, Secure Boot
- HW tamper



RACOM

www.racom.eu

TECHNICAL PARAMETERS

	RipEX2	RipEX2e	RipEX
Max Speed	1.7 Mb/s @ 256QAM	250 kb/s @ 64QAM	166 kb/s @ 16DEQAM
Speed @ 25 kHz	167 kb/s	125 kb/s	83 kb/s
Channel size	6.25 – 300 kHz	6.25 – 50 kHz	6.25 – 50 kHz
Interfaces	4× ETH, 1× SFP, 2× COM, 1× USB	2× ETH, 2× COM, 1× USB	1× ETH, 2× COM, 1× USB
mPCIe	Yes	No	No
Full-duplex	Yes	No	No

Radio parameters	RipEX2		RipEX2e		RipEX	
Frequency bands	135–175; 285–335; 335–400; 400–470; 450–520; 803 – 897; 860 – 960 MHz				135–154; 154–174; 215-240; 300–320; 320–340; 340–360; 368–400; 400–432; 432–470; 470-512; 928–960 MHz	
Channel spacing	6.25; 12.5; 25; 50; 100; 150; 200; 250; 300 kHz		6.25; 12.5; 25; 50 kHz		6.25; 12.5; 25; 50 kHz	
Frequency stability	+/- 0.5 ppm				+/- 1.0 ppm	
Modulations	QAM: 256QAM, 64QAM, 16DEQAM, D8PSK, π/4DQPSK, DPSK FSK: 4CPFSK, 2CPFSK		QAM: 64QAM, 16DEQAM, D8PSK, π/4DQPSK, DPSK FSK: 4CPFSK, 2CPFSK		QAM: 16DEQAM, D8PSK, π/4DQPSK, DPSK FSK: 4CPFSK, 2CPFSK	
FEC (Forward Error Correction)	2/3; 3/4; 5/6; Off				3/4; Off	
Gross data rate	up to 1.7 Mb/s		up to 250 kb/s		up to 167 kb/s	
RF Output power	20-40 dBm PEP (0.1-10 W RMS), 1 dB step programmable				20-40 dBm PEP (0.1-10 W RMS), 9 levels programmable	
Duty cycle	Continuous					
Rx to Tx Time	< 0.7 ms @ 25 kHz; < 1 ms @ 12.5 kHz channel				< 1.5 ms	
Sensitivity	- 97 dBm (256QAM; 12.5 kHz; BER 10-6; 2/3 FEC) -117 dBm (2CPFSK; 12.5 kHz BER 10-6; 3/4 FEC)		- 101 dBm (64QAM; 12.5 kHz; BER 10-6; 2/3 FEC) -117 dBm (2CPFSK; 12.5 kHz BER 10-6; 3/4 FEC)		- 99 dBm (16DEQAM; 12.5 kHz; BER 10-6; 3/4 FEC) -111 dBm (2CPFSK; 12.5 kHz BER 10-6; 3/4 FEC)	
Electrical						
Primary power	10 to 30 VDC, negative GND					
Rx	8.3 W @ 24 V				4.8 W @ 24 V	
Tx	12 – 55 W @ 24 V				13 – 38 W @ 24 V	
Sleep mode	0.01 W				0.1 W	
Interfaces						
Ethernet	4x 10/100/1000 Base-T Auto MDI/MDIX	4x RJ45	2x 10/100/1000 Base-T Auto MDI/MDIX	2x RJ45	1x 10/100 Base-T Auto MDI/MDIX	1x RJ45
SFP	1x 10/100/1000 Base or T/1000Base-SX or 1000Base-LX	1x SFP	No		No	
Serial	1x RS232/RS485 SW configurable 1x RS232 600 b/s – 1 Mb/s	1x DB9F	1x RS232/RS485 SW configurable 1x RS232 600 b/s – 1 Mb/s	1x DB9F	1x RS232 1x RS232/RS485 SW configurable 300 b/s – 115 kb/s	1x DB9F 1x DB9F
USB	USB 3.0 / Host A				USB 1.1 / Host A	
Antenna	2x TNC female @ 50 ohms SW configurable: 1x Tx/Rx or 1x Rx + 1x Tx		1x TNC female @ 50 ohms, Tx/Rx		1x TNC female @ 50 ohms (Tx/Rx) or 2x TNC (1x Rx + 1x Tx) - different HW model	
Inputs/Outputs	1x HW alarm input, 1x HW alarm output, 1x Sleep input, 2x DI, 2x DO, 1x DiffDI		1x HW alarm input, 1x HW alarm output, 1x Sleep input		1x HW alarm input, 1x HW alarm output, 1x Sleep input	
Optional Extensions	1x mPCIe: Cellular module, Wi-Fi, GPS...		No		GPS	
Indication LEDs						
LED panel	5x tri-color status LEDs (SYS, AUX, RX, TX, COM)				7x tri-color status LEDs (Power, ETH, COM1, COM2, Rx, Tx, Status)	
ETH	4x RJ45 (Link and Activity LEDs), 1× SFP (Status LED)		2x RJ45 (Link and Activity LEDs)			
Environmental						
IP Code (Ingress Protection)	IP41, IP42, IP52				IP40, IP51	
MTBF (Mean Time Between Failure)	> 900 000 hours (> 100 years)					
Operating temperature	- 40 to +70 °C (- 40 to +158 °F)					
Operating humidity	5 to 95% non-condensing					
Mechanical						
Casing	Rugged die-cast aluminium					
Dimensions	60 H x 185 W x 125 D mm (2.34 x 7.2 x 4.9 in)				50 H x 150 W x 118 D mm (1.97 x 5.9 x 4.65 in)	
Weight	1.55 kg (3.4 lbs)				1.1 kg (2.4 lbs)	
Mounting	DIN rail, L-bracket, Flat-bracket, 19" Rack chassis					
Radio channel						
Radio protocols	Transparent @ Bridge; Flexible, Base driven @ Router (RipEX2e does not support Base station in Base driven)				Transparent @ Bridge; Flexible, Base driven @ Router	
Routing (both, Radio and Ethernet)	Static, Dynamic - Babel, OSPF, BGP, Link management				Static, Nomadic, Backup routes	
Multi master applications	Yes					
Report by exception	Yes					
Collision Avoidance Capability	Yes					
Remote to Remote communication	Yes					
Repeaters	Store-and-forward; Every unit; Unlimited number					
Data integrity control	CRC32					
Optimization	Intelligent payload data and header (Eth / IP / TCP / UDP) compression					
QoS	8 levels on all interfaces, Radio included					
SCADA protocols						
Serial	DNP3, DF1, IEC101, Modbus RTU, PR2000, RDS, Siemens 3964(R), COMLI, SAIA S-bus, Mars-A, UNI, Async Link...					
Ethernet	Modbus TCP, IEC104, DNP3 TCP, Comli TCP...					
Serial to IP converters	Modbus RTU / Modbus TCP, DNP3 / DNP3 TCP, Terminal server					
Security						
Management	HTTPS (Web), SSH (CLI)					
Role-based access control (RBAC)	4 levels (Guest, Tech, SecTech, Admin)				2 levels (Guest, Admin)	
Encryption	AES256 - CCM					
VPN	IPsec, OpenVPN, GRE					
VLAN	IEEE 802.1Q (tagging), Q-in-Q for Transparent mode					
AAA protocol	RADIUS				No	
Firewall	Layer 2 - MAC, Layer 3 - IP, Layer 4 - TCP/UDP					
FW	Digitally signed, Secure boot					
HW tamper	Case opening evidence				No	
Diagnostics						
Radio link testing	Ping with RSS, MSE (DQ)					
Logs	Status, Event log				Status	
Statistics	Historical and differential statistics (Rx/Tx packets etc.) for all interfaces, for Radio channel in adition RSS, MSE (DQ), Repeats etc.					
Monitoring	Real time analysis of all interfaces (Radio, ETH 1-5 , COM 1-3, Cellular...)					
NTP	Client, Server					
SNMP	SNMPv1, SNMPv2c, SNMPv3, SNMP Trap / Inform alarms generation as per settings					
SMS	SMS alarms generation as per settings		No		No	
Approvals	CE (RED), FCC, ... Ask for others					

Technical parameters are subject to change without prior notification. For more details see [User manuals](#).

