

# The Fastest Radio Modems

# RipEX

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, 256 QAM
- Dynamic routing
- Radio and Cellular in one
- Unlimited coverage without Base stations

## Performance

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

## Reliability

- Industrial hardened design -40 to +70 °C
- Each unit tested in climatic chambre
- MTBF > 100 years
- Backup routes

## Security

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



# RipEX

RipEX, 1st generation, is a best-in-class compact radio modem. This native IP device with Linux has been designed with attention to detail, performance and quality. It is proven within the market since 2011 and used in thousands of installations.

RipEX2, 2nd generation, was introduced in 2018. This more powerful radio and cellular modem in one provides significant improvements, especially in terms of data speed, security and number of interfaces while all relevant state-of-the-art concepts have been carefully implemented.

	RipEX2	RipEX
Max. Speed	1.7 Mb/s @ 256QAM	166 kb/s @ 16DEQAM
Speed @ 25 kHz	167 kb/s	83 kb/s
Channel size	6.25 – 300 kHz	6.25 – 50 kHz
Interfaces	4x ETH, 1x SFP, 1x COM, 1x USB	1x ETH, 2x COM, 1x USB
IPsec	Yes	Yes
AES256	Yes	Yes
RADIUS	Yes	No
Firewall	Yes	Yes
Access	4 levels	2 levels
Full-duplex	Yes	No

## Connectivity



## Support

- Free HelpDesk for everyone
- Design, Radio path studies, Bids...
- Tests & Commissioning live assistance
- All technical information on the web

# Technical parameters

Radio parameters		RipEX		RipEX2	
Frequency bands	135–154; 154–174; 215-240; 300–320; 320–340; 340–360; 368–400; 400–432; 432–470; 470-512; 928–960 MHz		135–175; 285–335; 335–400; 400–470; 450–520; 803 – 897; 868 – 960 MHz		
Channel spacing	6.25; 12.5; 25; 50 kHz		6.25; 12.5; 25; 50; 100; 150; 200; 250; 300 kHz		
Frequency stability	+/- 1.0 ppm		+/- 0.5 ppm		
Modulations	QAM: 16DEQAM, D8PSK, $\pi$ /4DQPSK, DPSK FSK: 4CPFSK, 2CPFSK		QAM: 256QAM, 64QAM, 16DEQAM, D8PSK, $\pi$ /4DQPSK, DPSK FSK: 4CPFSK, 2CPFSK		
FEC (Forward Error Correction)	3/4; Off		2/3; 3/4; 5/6; Off		
Gross data rate	up to 167 kb/s		up to 1.7 Mb/s		
RF Output power	20-40 dBm PEP (0.1-10 W RMS), 9 levels programmable		20-40 dBm PEP (0.1-10 W RMS), 1 dB step programmable		
Duty cycle	Continuous				
Rx to Tx Time	< 1.5 ms		< 0.7 ms @ 25 kHz; < 1 ms @ 12.5 kHz channel		
Sensitivity	- 99 dBm (16DEQAM; 12.5 kHz; BER 10-6; 3/4 FEC) -111 dBm (2CPFSK; 12.5 kHz BER 10-6; 3/4 FEC)		- 93 dBm (256QAM; 12.5 kHz; BER 10-6; 2/3 FEC) -117 dBm (2CPFSK; 12.5 kHz BER 10-6; 3/4 FEC)		
<b>Electrical</b>					
Primary power	10 to 30 VDC, negative GND				
Rx	4.8 W @ 24 V		8.3 W @ 24 V		
Tx (dependent on RF power and modulation)	13 – 38 W @ 24 V		12 – 40 W @ 24 V		
Sleep mode	0.1 W		0.01 W		
Save mode	2 W		5 W		
<b>Interfaces</b>					
Ethernet	1x 10/100 Base-T Auto MDI/MDIX	1x RJ45	4x 10/100/1000 Base-T Auto MDI/MDIX		4x RJ45
SFP	No		1x 10/100/1000 Base or T/1000Base-SX or 1000Base-LX		1x SFP
Serial	1x RS232 1x RS232/RS485 SW configurable 300 b/s – 115 kb/s	1x DB9F 1x DB9F	1x RS232/RS485 SW configurable 2x RS232 (mPCIe expansion board) 600 b/s – 1 Mb/s		1x DB9F 1x RJ45
USB	USB 1.1 / Host A		USB 3.0 / Host A		
Antenna	1x TNC female @ 50 ohms (Rx/Tx) or 2x TNC (1x Rx + 1x Tx) - different HW model		2x TNC female @ 50 ohms SW configurable: 1x Rx/Tx or 1x Rx + 1x Tx		
Inputs/Outputs	1x HW alarm input, 1x HW alarm output, 1x Sleep input		1x HW alarm input, 1x HW alarm output, 1x Sleep input, 2x DI, 2x DO, 1x diffDI (when mPCIe-COMS is not used)		
<b>Optional Expansions</b>		GPS		1x mPCI: Cellular module or 2x RS232 or GPS	
<b>Indication LEDs</b>					
LED panel	7x tri-color status LEDs (Power, ETH, COM1, COM2, Rx, Tx, Status)		5x tri-color status LEDs (SYS, AUX, RX, TX, COM)		
ETH			4x RJ45 (Link and Activity LEDs), 1x SFP (Status LED)		
<b>Environmental</b>					
IP Code (Ingress Protection)	IP40, IP51		IP41, IP42, IP52		
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				
<b>Mechanical</b>					
Casing	Rugged die-cast aluminium				
Dimensions	50 H x 150 W x 118 D mm (1.97 x 5.9 x 4.65 in)		60 H x 185 W x 125 D mm (2.34 x 7.2 x 4.9 in)		
Weight	1.1 kg (2.4 lbs)		1.55 kg (3.4 lbs)		
Mounting	DIN rail, L-bracket, Flat-bracket, 19" Rack chassis				
<b>Radio channel</b>					
Radio protocols	Transparent @ Bridge; Flexible, Base driven @ Router				
Routing (Radio channel included)	Static, Backup routes		Static, Dynamic		
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				
QoS	8 levels on all interfaces, Radio included				
<b>SCADA protocols</b>					
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 convertors	Modbus RTU / Modbus TCP, DNP3 / DNP3 TCP, Terminal server				
<b>Security</b>					
Management	HTTPS (Web), SSH (CLI)				
Role-based access control (RBAC)	2 levels (Guest, Admin)		4 levels (Guest, Tech, SecTech, Admin)		
Encryption	AES256 - CCM				
VPN	IPsec, GRE				
VLAN	IEEE 802.1Q (tagging), Q-in-Q for Transparent mode				
AAA protocol	No		RADIUS		
Firewall	Layer 2 - MAC, Layer 3 - IP, Layer 4 - TCP/UDP				
FW			Digitally signed, Secure boot		
HW tamper	No		Case opening evidence		
<b>Diagnostics</b>					
Radio link testing	Ping with RSS, MSE (DQ)				
Logs	Status		Status, Event log		
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...)				
NTP	Client / Server				
SNMP	SNMPv1, SNMPv2c, SNMPv3, SNMP Trap / Inform alarms generation as per settings				
Approvals	CE (RED). FCC. .... Ask for others				

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

