

# Base Driven Protocol

Collision free

Info sheet

# RipEX

**Base Driven protocol** is primarily optimized for **TCP/IP (IEC104)**, but it is also suitable for collision networks when a remote (**Hidden remote**) is not to be heard by other remotes and/or different Rx and Tx frequencies are used.

**RACOM** has **20 years of experience** developing protocols on the Radio channel within narrowband networks. We always used **anti-collision protocols** (branded Flexible protocol) where all units communicate spontaneously competing for the Radio channel against each other with collisions managed.

**Many** anti-collisions **algorithms** were simulated and **tested, including access request** when the base station reserves time slots based on **request** by remotes. The **results** were still **unsatisfactory**, especially for TCP/IP applications with short SCADA packets where request packet is numbers of collisions increased further.

**RACOM developers**, in cooperation with Technical University in Prague, found after two years dedicated research that **the only way** to successfully **manage TCP/IP** traffic is a **collision free protocol**.

Why? Because when the **number of collisions exceeds a certain limit** and/or stable response times are required, fully organised and managed traffic makes more efficient use of Radio channel capacity! I.e. remotes can't communicate spontaneously and **everything must be managed** by the local **base station**.

**Base Driven protocol** provides **optimal data throughput and stability for TCP/IP** applications, especially when high numbers of remotes with wide ranging RSS are connected.



RipEX2

- 1.1 Mbps / 200 kHz / 256QAM
- 6.25 - 200 kHz
- 4×ETH,1×SFP,1×COM,1×USB



RipEX

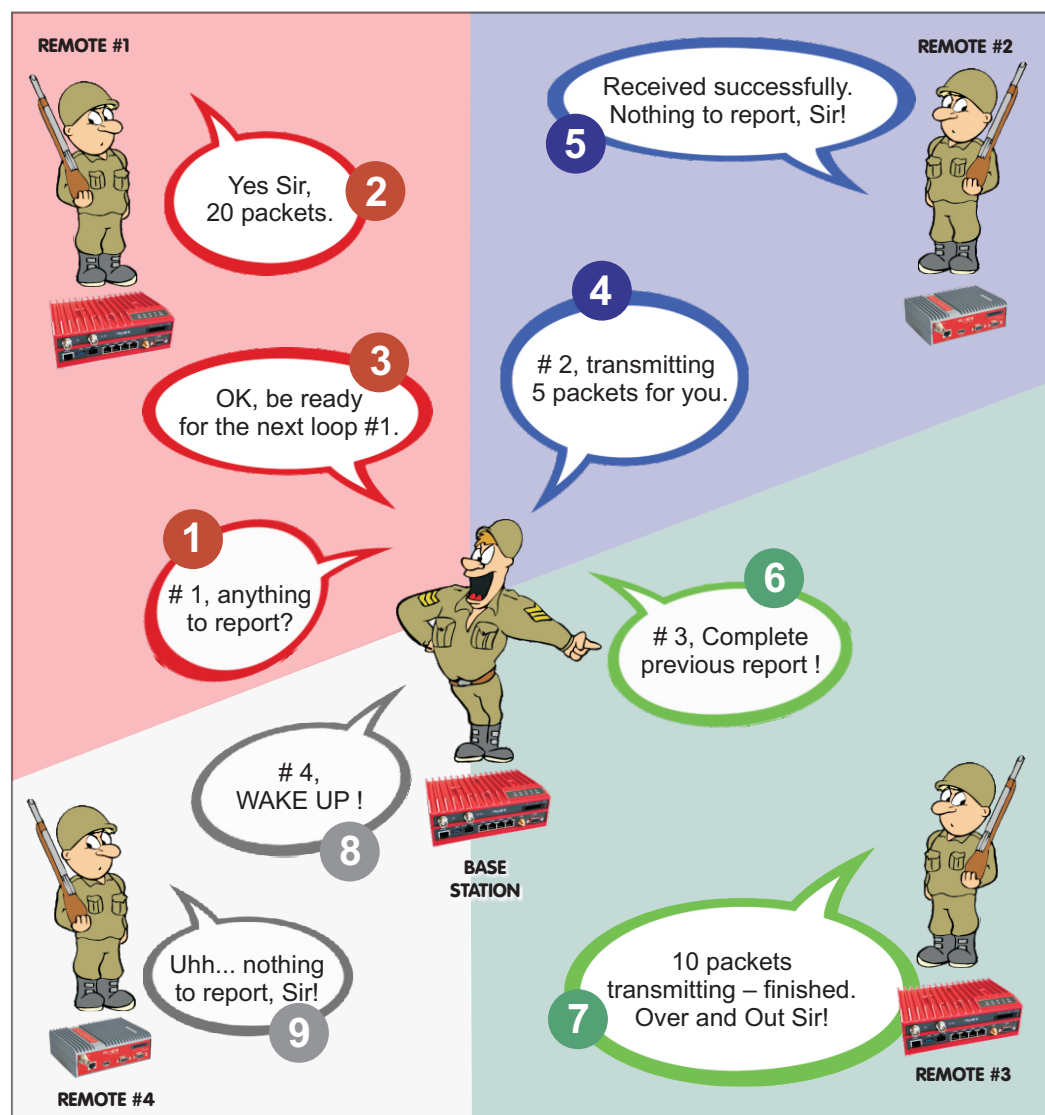
- 166 kbps / 50 kHz / 16DEQAM
- 6.25 - 50 kHz
- 1× ETH, 2× COM, 1× USB

## Common features

- 0.1 - 10 watts, - 40 to +70 °
- Solar ready
- Wifi management
- Customized protocols
- Fast remote access
- IPsec

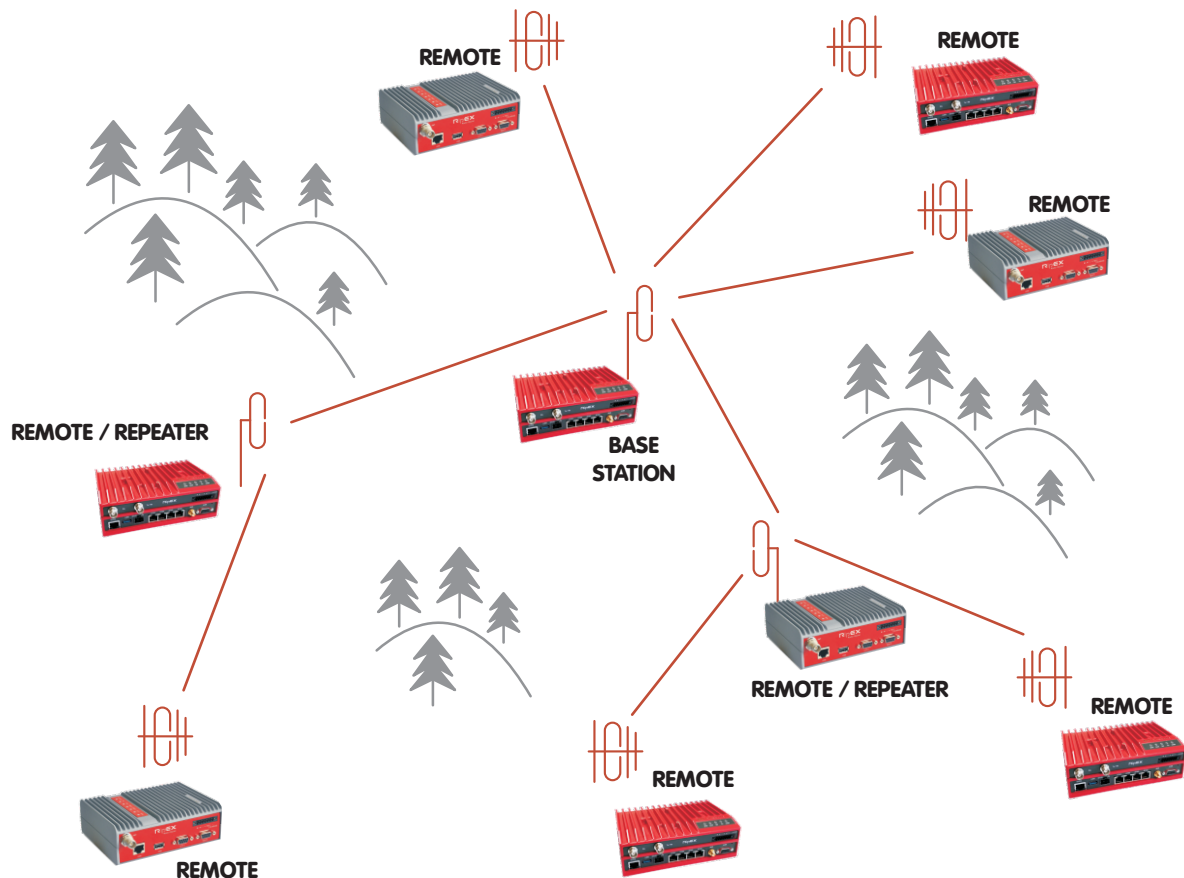
## RipEX networks

- Future proofed
- Exceptional Data throughput
- Optimized Radio protocols
- Unlimited Network design
- Backup routes
- Native IP environment
- 3 year warranty



## FEATURES

- More than 90% of Radio channel capacity dedicated for user data
- Designed for Star topology, Repeaters and Hidden remotes supported
- Traffic managed and optimized by Base station
- There are never collisions in the network
- Up to 255 remotes under one Base station
- Stable response times with minimum jitter
- Fair distribution of channel capacity among all remotes
- High reliability - acknowledged unicast packets on Radio channel



## TCP / IP

TCP/IP protocols like IEC104, used by modern RTUs, create challenging problems because of unstable response times and limited data throughput.

**Base Driven protocol Solution:**

- TCP/IP transparent
- Optimized for IEC104
- No TCP errors
- No TCP disconnections

Tests confirm that Base Driven protocol handles 5-10x more remotes under one base station and with higher reliability compared to others.

## Hidden remotes

Radio protocols using Listen Before Transmit principles, create collisions with 'hidden remotes'. Different Rx and Tx frequencies create the same issues.

**Base Driven protocol Solution:**

- No collisions even in difficult terrain
- Suitable when different Rx and Tx frequencies are used
- Fair access to Radio channel for all remotes
- Channel capacity distributed fairly amongst all remotes

Base Driven protocol provides significantly higher user data throughput and creates much improved levels of stability and reliability !