

RailBox Wave 2

Rugged WiFi 5 multifunction router for railways



C-KEY READY



Top «C-KEY» for quick configuration, save & restore

- Access point, client & repeater for onboard network
- Single or dual radio
- Dual band radio 802.11 ac Wave2 :
 - 2.4 GHz MU-MIMO technology, up to 800 Mbps
 - 5 GHz MU-MIMO technology, up to 1,73 Gbps
- EN50155 compliant
- 24 VDC to 110 VDC or PoE + power supply
- Robust design – IP66 – Industrial T° range – Rugged aluminum enclosure
- Centralized management software (WaveManager)



Introduction

RailBox Wave 2 is a rugged device designed for railway and light rail applications. It can be mounted in trains, subways, trams or in any equipment that requires robustness and high bandwidth for innovative services on the move.

RailBox Wave 2 can be implemented by system integrators and rail vehicle manufacturers who are seeking to establish reliable, efficient and agile network for:

- Train and carriage coupling to establish an end-to-end Ethernet and IP backbone
- Passenger services like onboard WiFi, videostreaming, entertainment, infotainment...

RailBox Wave 2 supports MU-MIMO technology, an innovative breakthrough that enables simultaneous communication to multiple devices, improving overall speed and enabling network multitasking.

It fulfills the most severe requirements in terms of operating environment: from -40°C to +70°C, shock and vibration proof, protection against dust and water projections (IP66).

Technical characteristics overview

Ethernet interface	2-port Gigabit Ethernet 10/100/1000 auto-sensing, 2 Gbps link aggregation, water and vibration proof rapid connect 8-point M12 X-coded connectors (CAT-6A) plug & play mode & auto MDI/MDIX cross-over, optional Ethernet bypass that redirects the network traffic in case of device or power supply failure (for daisy chain topologies)
WiFi interface	1 or 2 radios IEEE 802.11a/b/g/n/ac Wave 2, MU-MIMO 4T4R, 2.4 or 5 GHz, ANI (Adaptive Noise Immunity)
WiFi radio data rate	802.11a: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps 802.11b/g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 and 54 Mbps 802.11n: MCS0-7, 3 streams (6.5 to 450 Mbps) 802.11ac wave2: MCS0-9, 4 streams (6.5 Mbps to 1.73 Gbps)
Operating frequencies	ISM : 2.4-2.483 GHz (up to 14 channels) UNII : 5.15-5.25 GHz (up 4 channels) UNII-2 : 5.25-5.35 GHz (up to 4 channels) UNII-2 ext : 5.470-5.725 GHz (up to 11 channels) UNII-3 : 5.725-5.825 GHz (up to 4 channels) Supports DFS and TPC
Output power	2,4 GHz : 26 dBm (aggregate) / 5 GHz : 25 dBm (aggregate)
Radio connectors	4 or 8 QMA connectors (no antenna provided)
Security	Firewall, DoS, https, MAC filtering, WPA/WPA2-Personal & Enterprise (IEEE 802.1X/RADIUS), WEP, tunnels L2 (GRE), VPN (OpenVPN), SNMP V3
WiFi Modes	AP, client, MESH (IEEE 802.11s), infrastructure, AD-HOC, fast roaming (less than 30 ms), WMM QoS
Ethernet networking	Frames filtering, bridging, repeater, STP/RSTP, VLAN, DHCP (server & client), DNS relay
Ethernet routing	Multicast (PIM), IP redundancy (VRRP), static routes, NAT router, router, carriage coupling system (SRCC)
Administration	HTTP(S), SNMP agent (v1, v2c, v3), WaveManager administration software, backup/restore configuration key (C-Key)
LEDs Signaling	Radio : quality, activity and status Ethernet : link 10/100/1000, activity Power : on-off
Alarms & Inputs	A 3-pin Waterproof M8 connector with : - one solid state relay output warning (with configurable action), 1 Form A, 60VDC 80mA max - one input for external device control 24VDC max
Power supply	Dual insulated redundant input (1500V insulation, M12 connectors 4-pole A-coded) 24 to 110 VDC (EN50155 nominal) PoE+ (IEEE 802.3at Type 2 Class 4) model with ground lug also available.
Consumption	22W typical power consumption (dual radio), 28W max
Dimensions & weight	Product : compact shockproof rugged aluminum enclosure, (L: 80 x l: 175 x h: 57 mm), 900g Removable fixing plate : 4-point fixing plate with ground lug (L: 80 x l: 225 x h: 4 mm), 200g
Standards and certifications	CE (RED) Safety : EN 62368-1:2014+A11, EN62311 EMC : EN 301 489 [-1], [-17] Radio : EN 300 328 (2.4 GHz), EN 301 893 (5 GHz, DFS) Railway EMC : EN 50155, EN 50121-3-2 Environmental : • Shocks and vibration : EN 61373 (CAT 1 CLASS B) • Climatic : EN60068-2 [-1, -2, -30] Fire/smoke : EN45545-2 (HL3), NF F16-101 (M1F1), NFPA 130
Environment	IP66 seal rating - GORE® protective vent (dehumidifying membrane) Operating : -40°C to +70°C (+85°C for 10 mn, EN 50155 class TX), storage: -40°C to +80°C

Ordering references

RailBox/RRXB Single or dual WiFi Access Point, Ethernet Bridge, Repeater and MESH point (802.11ac - WiFi 5) for railway and mobile applications, shipped with a fixing plate (already mounted).

RailBox/RRXB			
Radio 1 coding	Radio 2 coding	Power supply coding	Bypass coding
6 = WiFi 802.11ac wave 2, -40°C to +70°C (+85°C for 10 mn, EN 50155 class TX)	0 = No radio 6 = WiFi 802.11ac wave 2, -40°C to +70°C (+85°C for 10 mn, EN 50155 class TX)	A = +24VDC to +110VDC (EN 50155 nominal) P = PoE+ (IEEE 802.3at Type 2 Class 4)	0 = No Bypass Y = Bypass <i>The Ethernet bypass redirects the network traffic in case of device or power supply failure (useful for daisy chain network topologies)</i> Bypass is not compatible with PoE model.

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