RAILWAY-CERTIFIED ROUTER

POWERFUL MODULAR ONBOARD ROUTING PLATFORM FOR SECURE IOT COMMUNICATION, FLEET MANAGEMENT & INFOTAINMENT APPLICATIONS

PRODUCT DESCRIPTION

The wireless railway router from Mission Embedded is a versatile onboard routing platform specifically designed for rail environments. Its high modularity in terms of performance, functionality, extensions and services make it an ideal solution for any customer-specific requirements.
The ruggedized router is compliant with EN 50121, EN 50155 and can be utilized for a variety of use cases – from Mission-critical Applications to Passenger WiFi or Infotainment Systems.

APPLICATIONS

- Mission critical communication like Telemetry or remote-control applications
- Passenger Wi-Fi
- Video Surveillance
- Passenger Infotainment

KEY FEATURES AND ADVANTAGES

HIGH MODULARITY

- Customer-specific performance and functionality features
- Wide range of optional services and extensions
- Large variety of Radio Modules (e.g. 5G, LTE, SDR)
- Extended storage (SSD)

RELIABLE AND SECURE IP COMMUNICATION

- Multi-link aggregation for high availability and increased Bandwidth
- Certifiable to IEC 62443-4-2 SL2 Security-Level
- Hardened Linux Platform
- Trusted Platform Module (TPM) for secure applications
- Software Defined Networking (SDN) capability

RUGGED RAILWAY-CERTIFIED DESIGN

- Compliant with EN 50121/50155/45545 Railway Standards
- Suitable for versatile Railway Applications
- Wide operating temperature: -25° to +70°C
- Wide input voltage range
- Aluminium housing with fan-less cooling

COST-EFFECTIVE AND SAFE OPERATION

- Fleet Management Tool
- Easy configuration and maintenance (fail-safe software update)
- Retrofittable on existing fleets
- Short time to market
- Optional Safety Extensions

MISSION EMBEDDED
MEMBER OF THE FREQUENTIS GROUP

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SPECIFICATIONS

SYSTEM

CPU	Multiple CPUs available (ARM, Intel) Standard: Intel Atom® Quad-Core Processor - 1.6 GHz
Flash Memory	Depending on customer requirements
Mission Embedded Technologies	▪ ME Enhanced Linux Platform ▪ ME Routing Platform
User Applications	Support for user applications and scripts
Software Update	▪ Remote Software and Firmware Update ▪ ME fail-safe Over-the-Air Software Update (on request)
Parameterization	Switchless via USB / remote via Management GUI or SSH
Reliabilty	MTBF depending on configuration

SOFTWARE

Network Services		▪ IP Address Assignment statically or via DHCP ▪ Port- and tag-based VLAN, VLAN configurable ▪ Prioritization of Data Streams/QoS levels (high/medium/low) ▪ ME LTE Link Bandwidth Aggregation (optional) ▪ NTP Client/Server
Security	Firewall	▪ Flexible configuration via web interface or CLI ▪ Flexible handling of zones ▪ SPI, Anti-DoS Attack ▪ Filtering Multicast, Ping package, Access Control List (ACL) ▪ NAT, PAT, DMZ, Port Mapping, Virtual Server
	Multi Level Authority	
	AAA	▪ IEEE 802.1x Authentication ▪ Authentication via PSK (WPA/WPA2 Enterprise) and certificate-based (optional) ▪ RADIUS Client Functionality (optional) ▪ Network Authentication and Authorization EAP-TLS (optional)
	Data Security	▪ IPSec, OpenVPN, WireGuard, PPTP, GRE (optional)
Reliability		▪ ME Mobile Link Monitoring - for monitoring of mobile radio links (optional) ▪ ME Mobile Fast Link Fail-Over - in case of interruptions or failure of mobile radio link (optional) ▪ Auto-recovery from failure ▪ Watchdog ▪ ME Automatic changeover between radio connections (optional)
Wi-Fi		▪ Wi-Fi Captive Portal ▪ Flexible Wi-Fi Hotspot Configuration ▪ ME Traffic Shaping / Fair Bandwidth Distribution for Wi-Fi Clients
Routing		▪ Static / Extended / Multipath / Multipath TCP Routing ▪ Virtual Router Redundancy Protocol (VRRP) for Router Redundancy (optional) ▪ ME GEO based Routing (optional)

FLEET MANAGEMENT (OPTIONAL)

- Web-based application
- Hosting on Mission Embedded‘s cloud or on the operator‘s infrastructure

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CONNECTORS AND INTERFACES (STANDARD CONFIGURATION)

All connectors are protected against polarity reversal.

Power Supply	M12 S-coded 4-pin male connector
Gigabit Ethernet Interface	2 x M12 X-coded 8-pin female connector. Depending on configuration up to 2 GbE interfaces supported.
USB Interface	1 x M12 A-coded 5-pin female USB 2.0 connector
Antenna Connections	Wireless Interface Connector Type: Standard 4 x TNC female Mobile Main: Mobile Antenna Connector Mobile Aux: Mobile Antenna Connector WIFI A1: WiFi 1 Antenna Connector WIFI A2: WiFi 2 Antenna Connector
Input/Output Interface	1 x SUB-D female 9-pin with ▪ 2 x Digital Outputs (potential-free) ▪ 4 x Digital Inputs
LED Indicators	8 LEDs ▪ 1 x Router Power Status Indicator (PWR) ▪ 7 x Customized Status LEDs
Modularity	Combination of up to 6 wireless modules per router possible
Wi-Fi	Up to 2 modules Standard: IEEE 802.11a/b/g/n/ac (Wi-Fi 5) / Dual-band 2.4 or 5 GHz
Mobile (4G/5G)	Up to 2 WWAN modules Standard: LTE with up to 150 Mbps DL / 50 Mbps UL per module
SIM Holder	4 x SIM Card Holders front side (WWAN details on request)
GNSS Positioning	On request

POWER SUPPLY

Input Voltage (nominal)	24 VDC - according to EN 50155 Standard
Voltage Range	9 to 36 VDC Additional ranges on request (18 to 75 / 40 to 160 VDC)
Power Consumption	Maximum: 20 W (depending on configuration) Standby: 5 W
Galvanic Isolation	Compliant with EN 50155
Interruptions of Voltage Supply	EN50155 Class S2, no battery installed
Protective Earthing	Supported
Power Connector	M12 S-coded male
Reverse Polarity Protection	Supported

CUSTOMIZATION

Extensions	▪ SSD (up to 1 TB), e.g. for caching of online data ▪ IBIS Interface ▪ CAN Interface ▪ RS-422/485 Interface, SUB-D 9-pin ▪ SCEP Support ▪ Mobile IP Support

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ENVIRONMENTAL CONDITIONS

Operating Temperature	-25 to 70°C - EN 50155 class T3
Storage Temperature	-40 to 85°C
Ambient Relative Humidity	10 to 95% (non-condensing)
Shock and vibration	Conform to EN 50155 (testing according to EN 61373)
IP Level	IP20
Railway Fire Protection	EN 45545-2 HL2

STANDARDS AND CERTIFICATIONS

Shock and Vibration	EN 61373:2010
EMC	EN 61000-6-2 EN 61000-6-4
EMS	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6
Radio	Depending on configuration
CE	2014/30/EU (Electromagnetic Compatibility Directive) 2014/35/EU (Low Voltage Directive) 2011/65/EU (RoHS)
Railway	EN 50155, EN 50121-3-2
Railway Fire Protection	EN 45545-1, EN 45545-2 HL3, EN 45545-5

MECHANICAL DATA

Dimensions (W/L/H)	225 × 190 × 95 mm (housing) 200 x 95 mm (front panel)
Housing	Anodized Aluminum
Weight	2.8 kg (depending on configuration)
Installation	360° mounting option using 4 screws. Minimum distances: 20 cm to front, 10 cm to other sides

THERE IS ALWAYS A **MISSION EMBEDDED**

Mission Embedded develops and supplies highly reliable embedded systems for professional applications in safety-critical areas such as railway and transportation, special vehicles, industry, medical technology as well as aerospace and defense. Our high-quality tailor-made solutions enable our customers to turn their innovation projects into reality within the shortest possible time.

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