

5G EDGE ANTENNA FOR RAIL

For Cellular 5G, Wi-Fi 5 and GNSS train-to-ground services.

Connection provided via a single PoE input.
Includes integrated connected compute board for EDGE applications.

Rugged design meeting the EN 50155 Railway Standard.

Fire retardant according to EN 45545-2/NFPA-130.

Compliant to high-voltage and high-current standards for use under catenary lines.

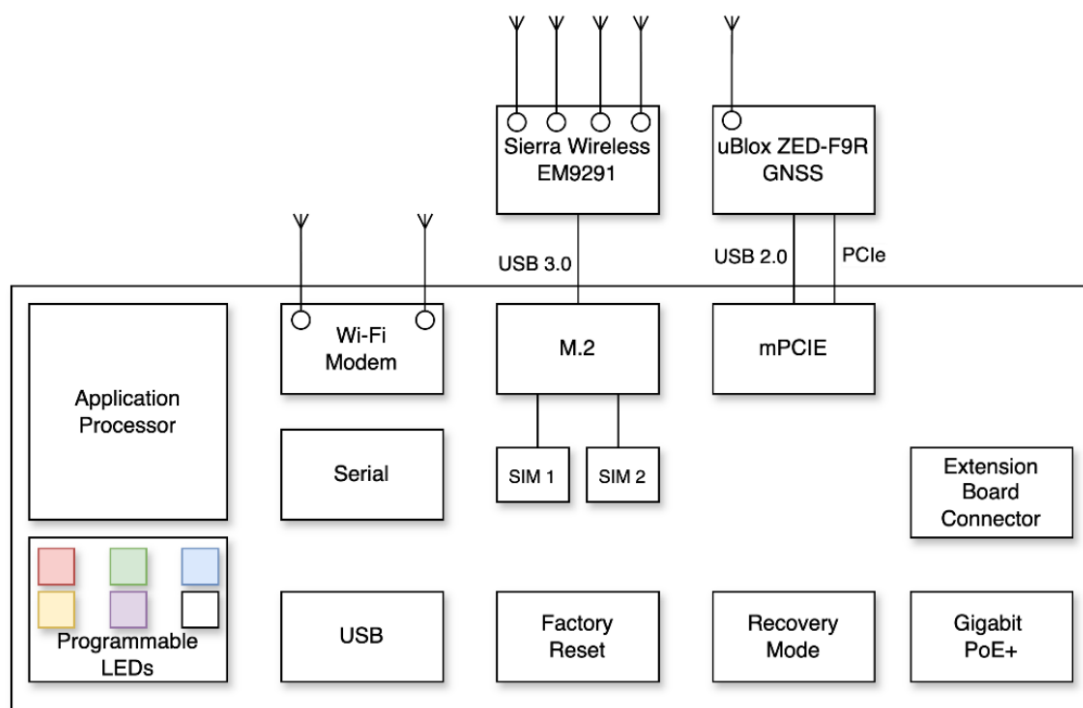


MPN: 1499.00.0005-H

KEY FEATURES

- Includes Cellular 5G and Wi-Fi radio modules
- EDGE Compute platform
- Connection via a single POE input LAN M12 X-xode female 300mm pigtail.
- Supports up to 4x4 MIMO Cellular 5G with 4G/3G fallback
- Supports 2x2 MU-MIMO Wi-Fi 5 dual-band 2.4 / 5 GHz.
- GNSS receiver supports GPS L1, Galileo E1, BeiDou B1, GLONASS G1 constellations.
- eSIM ready, dual physical eSIM option
- Application Software: Pre-installed with Motion Applied software, separate Licence terms apply.

Block diagram



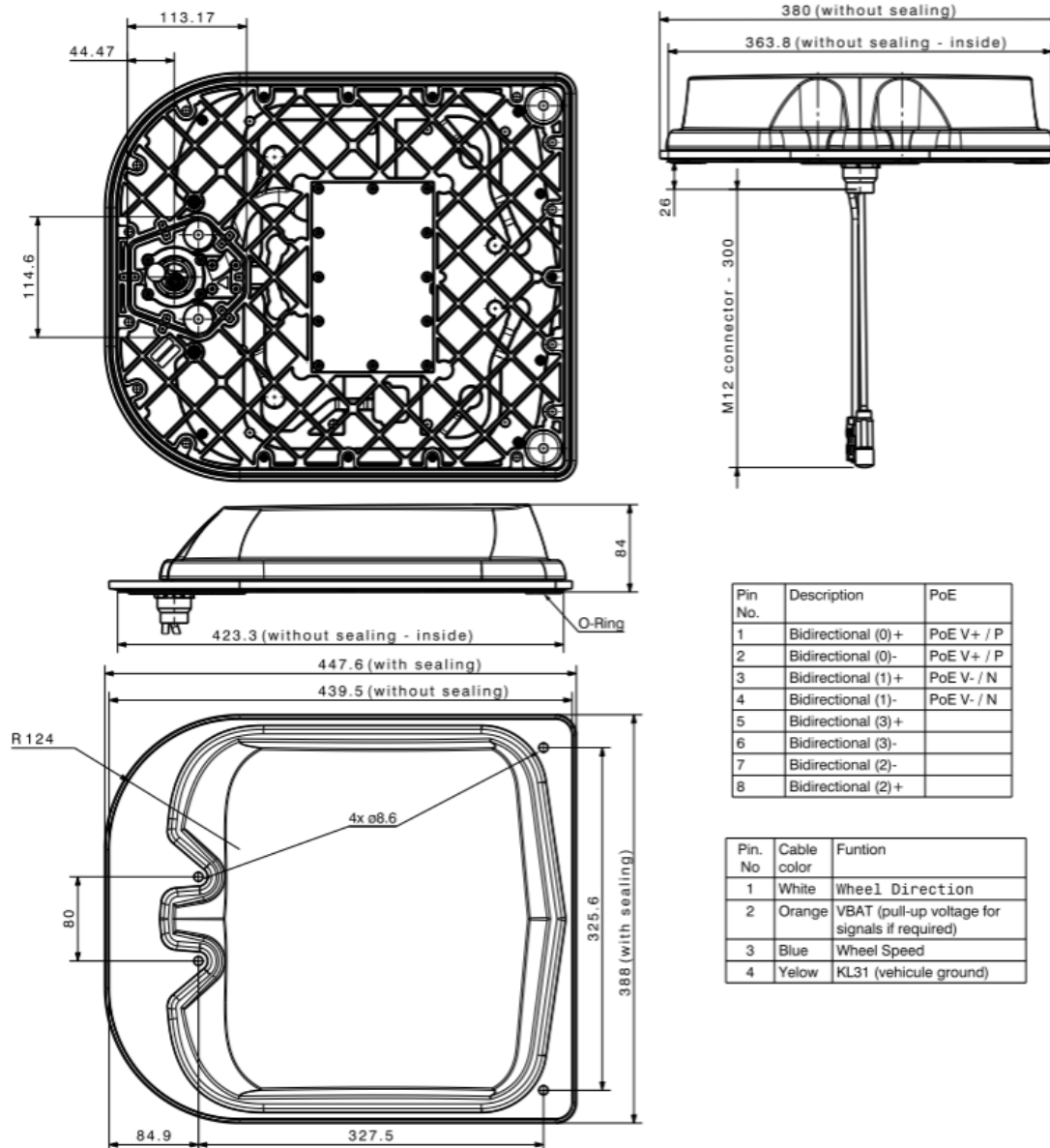
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Communication services		
Radio Module:	Sierra Wireless© 5G Module EM9291	
Supported Bands	5G NR	n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79 (617-5000 MHz)
Communication services		
	2x2 MIMO	All FR1 bands
	4x4 MIMO	1, 2, 3, 4, 7, 25, 30, 38, 40, 41, 48, 66, 70, 75, 76, 77, 78, 79
	LTE Cat 20	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B18, B19, B20, B21, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	WCDMA	1, 2, 3, 4, 5, 8, 19
	Wi-Fi	802.11ac Wave 2, 2x2 MU-MIMO (5150-5850 MHz) 802.11n Wave 1 (2400-2500 MHz)
	GNSS	GPS L1C/A L2C, GLO L1OF L2OF, GAL E1B/C E5b, BDS B1I B2I and QZSS L1C/A L1S L2C + Automotive Dead Reckoning
Note	Supported bands also valid for installations on non-metallic surfaces (no specific ground plane requirements). For band 71 an additional ground plane of at least 500x500mm is recommended.	
Electrical data		
Processor	2x ARM Cortex-A72 1.6GHz, 4x ARM Cortex-A53 1.26GHz, 2x ARM Cortex-M4F 266MHz	
Memory	4GB RAM	
Storage	16GB eMMC	
Operating system	Embedded Linux Debian 12, Linux 5.4 kernel operating system	
Ethernet	1x LAN M12 X-code female 300mm pigtail	
Power input	PoE+ Class 4 (802.3at)	
Interfaces	1x M.2 key B, USB 3.0, 2x SIM slots (2FF) 1x mPCIe , USB 2.0, PCIe	
Note	Self-powered embedded Real time clock included on the electronic board. 6x LED status indicators 2x integrated SIM slots (2FF form factor), remote SIM module connection possible. Preinstalled firmware Debian 12, Linux 5.4 kernel operating system, preconfigured for basic connectivity.	
Electrical remarks		
Remarks	High-voltage-protection: no voltage on RF port, if the catenary line touches the antenna (EN 50124-1, 3.8 kVDC, 27.5 kVAC, 1min). High-current-protection: Designed acc. to UIC 533, DC- grounded antenna element (protection against lightning and short circuit with catenary lines(40kA/0.125s).	

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Carrier compliance	
Mobile network standards	PTCRB (US and Canada)
Mobile network certifications	Verizon AT&T, T-Mobile
Mechanical data	
Weight	7.5 kg
Dimensions	84 mm x 380 mm x 439.5 mm (Height x Width x Depth)
Remarks	Mounting: Shall be installed in longitudinal position to the wind/driving direction. Suitable for installation on high-speed trains with a maximum speed of 500 km/hr. 4x composite sealing washers included for silicone-free sealing of the mounting screws.
Interface and material data	
Radome material	PC (Polycarbonate)
Radome colour	RAL 7043 (dark grey)
Back plate/base plate material	Aluminium
Back plate/base plate colour	Grey
Environmental data	
Operation temperature	-40 °C ... 85°C
Storage temperature	-40 °C ... 85°C
Transport temperature	-40 °C ... 85°C
Environment (application)	Outdoor
Ingress protection (IP Rating)	IP69K
Flammability rating	EN 45545-2 R24 HL3
Solar radiation	UL 746C, F1
Environmental remarks	
Flammability rating: EN45545-2:2013 + A1:2015, NFPA-130:2017 Tested according to ISO 4589-2:2017, NFX 70-100-1:2006, ISO 5659-2:2011.	
Environmental tests: EN 50155:2018-05	
§13.4.6 EN 60068-2-1:2008-01 Cold temperature test Ab, -40°C, 16h §13.4.5 EN 60068-2-2:2008-01 Dry heat test Be +85°C, 16h §13.4.7 EN 60068-2-30:2006-06 Damp heat cyclic test Db, +25/55°C, 2 cycles §13.4.10 EN 60068-2-11:2000-02 Salt mist test, 96h §13.4.11 EN 61373:2011-04 § 8, Cat. 1B Broadband Random Vibration §13.4.11 EN 61373:2011-04 § 9, Cat. 1B Increased Random Vibration §13.4.11 EN 61373:2011-04 § 10, Cat. 1B Mechanical shock §13.4.12 Ingress Protection EN 60529:2014-09 IP6X, IPX7, IPX9, IPX9K Corrosion: Low corrosion design acc. to MIL-DTL-14072(E), 96 hours Salt Spray test.	
Additional Information	
Note: No application software included.	
The antenna needs a customer specific bracket when mounted on a curved roof (not part of the delivery content of the antenna). A standard bracket is available for the antenna mounting above an existing cable breakthrough on a flat roof (Article Numbers 9091.99.0269, 9091.99.0270).	
Protected by Patents: DE202015009331(U1), US10116056(B2), CN106663861B, US7327320B2, CN1765030B, AU2003218856A1, CA2521771C, SG114406, ZA200508290.	

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Waiver: It is exclusively in written agreements that we provide our customers with warrants and representations as to the technical specifications and/or the fitness for any particular purpose. The facts and figures contained herein are carefully compiled to the best of our knowledge, but they are intended for general information purposes only.

