

SENCITY® Rail MIMO Antenna with GNSS/LNA

1399.99.0148

Properties

- Railway rooftop antenna for Cellular and Wi-Fi bands
- Supports 2x2 Cellular MIMO for 3G, 4G and 5G
- Supports 2x2 Wi-Fi MIMO in all Wi-Fi 6E bands
- Embedded GNSS antenna with integrated LNA supports GPS L1, Galileo E1, BeiDou B1 and GLONASS G1
- Rugged design, meets EN 50155 Railway Standard
- Fire retardant according to EN 45545-2 and NFPA-130
- Dedicated grounding contact and Cable conduit support (sold separately)



Electrical data

	Band 1	Band 2	Band 3	Band 4
Name				
Frequency	617 MHz ... 694 MHz	694 MHz ... 790 MHz	790 MHz ... 960 MHz	1350 MHz ... 2700 MHz
Impedance	50 Ω	50 Ω	50 Ω	50 Ω
VSWR	1.7	1.7	1.7	1.8
Gain	6 dBi	5 dBi	6 dBi	7.5 dBi
Isolation between Ports	15 dB	15 dB	15 dB	25 dB
Ambient Temperature	25 °C	25 °C	25 °C	25 °C
Composite Power max	80 W	80 W	80 W	80 W

	Band 5	Band 6	Band 7	Band 8
Name				GNSS
Frequency	2700 MHz ... 3300 MHz	3300 MHz ... 4900 MHz	4900 MHz ... 7125 MHz	1559 MHz ... 1610 MHz
Impedance	50 Ω	50 Ω	50 Ω	50 Ω
VSWR	2	2.1	1.9	1.8
Gain	6.5 dBi	6.5 dBi	7.5 dBi	

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	Band 5	Band 6	Band 7	Band 8
Isolation between Ports	25 dB	25 dB	35 dB	
Ambient Temperature	25 °C	25 °C	25 °C	25 °C
Composite Power max	80 W	80 W	80 W	

Electrical remarks

Remarks	Indicated VSWR values are valid for a metallic ground plane of 0.5 x 0.5m or larger. In the 790-7125 MHz band, Indicated VSWR values are also valid for installations on non-metallic surfaces (no specific ground plane requirements). Indicated gain values will be achieved on a metallic ground plane of 1 x 1 m or larger. 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, 70kA/0.05s).
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Ports

	Port 1	Port 2	Port 3
Connector	N, jack (female)	N, jack (female)	TNC, plug (male)
Cable type	RADOX_RF_142	RADOX_RF_142	RADOX_RF_316_D
Cable length	0.2 m	0.2 m	0.17 m
Polarization	vertical	vertical	circular right
DC grounded	Yes	Yes	No

Connections

	Port 1	Port 2	Port 3
Band 1	✓	✓	
Band 2	✓	✓	
Band 3	✓	✓	
Band 4	✓	✓	
Band 5	✓	✓	
Band 6	✓	✓	
Band 7	✓	✓	
Band 8			✓

Electrical data LNA

LNA is connected to	Port 3
Input voltage	3 V ... 5 V
Current consumption	30 mA
Noise figure	2 dB
Total gain @90° elevation	30 dBic
Remarks	Values for LNA power consumption, noise figure and gain are given for a 5V operating voltage and may differ slightly for a lower voltage. Antennas with production date prior to 01-Oct-2020 support only GPS and GLONASS bands between 1574 - 1610 MHz

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Mechanical data	
Weight	2.1 kg
Dimensions	81.6 mm x 102.5 mm x 352.5 mm (Height x Width x Depth)
Windload	Wind Speed survival: 500 km/h
Remarks	Corrosion: Low corrosion design acc. to MIL-DTL-14072(E), 96 hours Salt Spray test. 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.

Material data	
Radome material	PC (Polycarbonate)
Radome colour	RAL 7043 (dark grey)
Back plate/base plate material	Aluminum
Back plate/base plate plating	Passivated (Plating)
Back plate/base plate colour	Grey

Environmental data	
Operation temperature	-55 °C ... 85 °C
Storage temperature	-55 °C ... 85 °C
Transport temperature	-55 °C ... 85 °C
Environment (application)	Outdoor
Ingress protection (IP Rating)	Mated / IP67, IP69
Flammability rating	EN 45545-2 R24 HL3
Solar radiation	UL 746C, FI

Environmental remarks

Environmental tests: EN 50155:2018-05
 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.

Additional Information

This product meets the Deutsche Bahn specifications for rolling stock equipment. Protected by Patents: DE202015009331(U1), US10116056(B2), CN106663861B.

This Antenna is compliant with the Radio Equipment Directive 2014/53/EU

EMC: EN50121-3-2 (2016)
 ETSI EN 303 413 V1.1.1 (2017-06)
 ETSI EN 301 489-1 V2.2.3 (2019-03)
 ETSI EN 301 489-19 V2.1.1 (2019-04)

Antenna accessories		
Item description	Item number	Product name
9091.99.0261	85079842	Sencity Rail antenna mounting plate
9091.99.0256	85068236	Sencity Rail - M8 sealing washer kit
9091.99.0236	84079593	Sencity Rail antenna conduit support Kit
9091.99.0235	84079030	Sencity Rail antenna grounding kit

Ordering information		
Item description	Item number	Product name
1399.99.0148	85085125	SENCITY® Rail MIMO Antenna with GNSS/LNA

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