

SENCITY® Rail MULTI 13-Port Antenna

1399.99.0133

Properties

- 13-Port Railway rooftop antenna for Cellular and Wi-Fi bands
- Supports 8x8 Cellular MIMO for 3G, 4G and 5G. Supports 4x4 Wi-Fi MIMO in all Wi-Fi 6E bands.
- 8 radiators for Cellular bands
- 4 radiators for Wi-Fi/ WiMAX 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



Electrical data

	Band 1	Band 2	Band 3	Band 4
Name	Cellular 1-8	Cellular 1-8	Cellular 1-8	Cellular 1-8
Frequency	617 MHz ... 694 MHz	694 MHz ... 960 MHz	1350 MHz ... 3300 MHz	3300 MHz ... 4900 MHz
Impedance	50 Ω	50 Ω	50 Ω	50 Ω
VSWR	1.7	1.6	1.8	1.9
Gain	3.5 dBi	5 dBi	6 dBi	6 dBi
Isolation between Ports	13 dB	13 dB	20 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	Cellular 1-8	Wifi 1-4	Wifi 1-4	GNSS
Frequency	4900 MHz ... 7125 MHz	2400 MHz ... 2500 MHz	4900 MHz ... 7125 MHz	1559 MHz ... 1610 MHz
Impedance	50 Ω	50 Ω	50 Ω	50 Ω
VSWR	1.7	1.7	1.5	1.8
Gain	6 dBi	7 dBi	7 dBi	

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	Band 5	Band 6	Band 7	Band 8
Isolation between Ports	25 dB	22 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

The antenna provides 8 separate cable leads defined as "Port 1".
 The antenna provides 4 separate cable leads defined as "Port 2".
 Ground plane: VSWR and gain values are also valid for installations on non-metallic surfaces (no specific ground plane requirements). Please refer to the outline drawing for cable pigtail length of each port
 High-voltage-protection: no voltage on RF port, if the catenary line touches antenna (EN 50124-1, 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 (EN50388, EN 50122-1, 40kA/0.1sec)

Ports			
	Port 1	Port 2	Port 3
Port name	Cellular 1-8	Wi-Fi 1-4	GNSS
Connector	N, jack (female)	N, jack (female)	TNC, plug (male)
Cable type	RADOX_RF_316_D	RADOX_RF_316_D	RADOX_RF_316_D
Polarization	vertical	vertical	circular right
DC grounded	Yes	Yes	

Connections

	Port 1	Port 2	Port 3
Port name	Cellular 1-8	Wi-Fi 1-4	GNSS
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	20 mA
Noise figure	1.6 dB
Total gain @90° elevation	30 dBic

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Electrical data LNA	
Remarks	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) 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

Mechanical data	
Weight	11 kg
Dimensions	84 mm x 368 mm x 862 mm (Height x Width x Depth)
Remarks	Corrosion: Low corrosion design according to MIL-F-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.

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

Environmental data	
Operation temperature	-40 °C ... 85 °C
Storage temperature	-55 °C ... 85 °C
Transport temperature	-40 °C ... 85 °C
Environment (application)	Outdoor
Ingress protection (IP Rating)	Mated / IP69
Flammability rating	EN 45545-2 R24 HL3
Solar radiation	UL 746C, FI

Environmental remarks	
Environmental tests: EN 50155:2008-05 §12.2.3 EN 60068-2-1 Cold temperature test Ad, -55°C, 16h §12.2.4 EN 60068-2-2 Dry heat test Bd +85°C, 16h §12.2.5 EN 60068-2-30 Damp heat cyclic test Db, +25/55°C, 2 cycles §12.2.10 EN 60068-2-11 Salt Mist test Ka, 96h §12.2.11 EN 61373 § 9 Random Vibration (Long life) test, Cat. 1 class B §12.2.11 EN 61373 § 10 Mechanical shock test, Cat. 1 class B §12.2.12 DIN EN 60529 Ingress protection test, IP69 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	
The antenna needs a customer specific bracket when mounted on a curved roof (not part of the delivery content of the antenna). Standard brackets are available for the antenna mounting above an existing cable breakthrough on a flat roof: Product ID 9091.99.0263 (for aluminum train bodies) or 9091.99.0264 (for steel train bodies). Protected by Patents: DE202015009331(U1), US10116056(B2), CN106663861B, US7327320B2, CN1765030B, AU2003218856A1, CA2521771C, SG114406, ZA200508290	

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Antenna accessories		
Item description	Item number	Product name
9091.99.0264	85101560	Steel Mounting Plate for Sencity Rail MULTI 13-Port

Ordering information		
Item description	Item number	Product name
1399.99.0133	85010652	SENCITY® Rail MULTI 13-Port Antenna

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