

SENCITY® Rail MIMO Antenna with Dualband GNSS/LNA

1399.99.0152

Description

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 with integrated LNA supports GPS L1+L2+L5, Galileo E1+E5a+E5b, BeiDou B1+B2+B3, and GLONASS G1+G2 bands.
 Rugged design, meets EN 50155 Railway Standard.
 Fire retardant according to EN 45545-2 and NFPA-130.
 Dedicated grounding contact (optional).
 Cable conduit support (optional).



Product Configuration

Technical Data

Electrical Data

	Band 1	Band 2	Band 3	Band 4
Frequency (MHz)	617 - 694	694 - 790	790 - 960	1350 - 2700
VSWR	1.7	1.5	1.5	1.8
Impedance (Ohm)	50	50	50	50
Gain (dBi)	5	5	5	6.5
Composite power max (W)	80	80	80	80
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	15	15	30	25

	Band 5	Band 6	Band 7	Band 8
Band Name			GNSS 1	GNSS 2
Frequency (MHz)	2700 - 4900	4900 - 7125	1164 - 1279	1555 - 1610
VSWR	1.8	1.6	1.5	1.5
Impedance (Ohm)	50	50	50	50
Gain (dBi)	6	7		
Composite power max (W)	80	80		
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	35	35		

Ports

	Port 1	Port 2	Port 3
Port name	Cell / WiFi 1	Cell / WiFi 2	GNSS
Connector	N, jack (female)	N, jack (female)	TNC, plug (male)
Cable Type	RADOX_RF_142	RADOX_RF_142	RADOX_RF_316_D
Cable Length (m)	0.24	0.12	0.17
Polarization	vertical	vertical	circular right
DC grounded	Yes	Yes	No

Connections

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

General Data

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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.

Electrical Data LNA

LNA gain (dB)	38
LNA noise figure dB	2
LNA current consumption (mA)	45
LNA is connected to	Port 3

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

EMC: EN50121-3-2 (2016)

LNA input voltage range: 3..5.5V

Total gain @90° elevation: 38 dBiC

Values for LNA power consumption, noise figure and gain are given for a 5V operating voltage and may differ slightly for a lower voltage

Mechanical Data

Dimensions (mm)	81.6 x 102.5 x 352.5 (Height x Width x Depth)
Weight (kg)	1.5

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).

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.

Environmental Data

Environmental conditions	outdoor
Operation temperature (°C)	-55 to 85
Storage temperature (°C)	-55 to 85
Transport temperature (°C)	-55 to 85
IP rating	IP67, IP69
Flammability rating	EN 45545-2 R24 HL3
Solar radiation	UL 746C, F1
2011/65/EU (RoHS - including 2015/863 and 2017/2102)	compliant acc. Annex III
Lead-free soldered	yes
WEEE 2012/19/EU	no special marking needed
ELV 2000/53/EC	compliant
REACH 1907/2006/EC	compliant

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.

Material Data

Radome colour	RAL 7043 (dark grey)
Radome material	PC (Polycarbonate)
Back plate/base plate colour	grey
Back plate/base plate material	Aluminium
Plating	Passivated (Plating)

Related Products

9091.99.0235 Sencity Rail antenna grounding kit

9091.99.0236 Sencity Rail antenna conduit support Kit

9091.99.0256 Sencity Rail - M8 sealing washer kit

9091.99.0261 Sencity Rail antenna mounting plate

Related Documents

Mounting instruction	DOC-0000443802
Painting instruction	DOC-0000256180

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Security instruction	DOC-0000278984
Outline drawing	DOU-00456931
3D-model	DOC-0000889053
CE compliancy	DOC-0000889243

Additional Information

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