

## SENCITY® Rail MIMO Antenna 1399.99.0148

### 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 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 (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	1.7	1.7	1.8
Impedance (Ohm)	50	50	50	50
Gain (dBi)	6	5	6	7.5
Composite power max (W)	80	80	80	80
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	15	15	15	25

	Band 5	Band 6	Band 7	Band 8
Band Name				GNSS
Frequency (MHz)	2700 - 3300	3300 - 4900	4900 - 7125	1559 - 1610
VSWR	2	2.1	1.9	1.8
Impedance (Ohm)	50	50	50	50
Gain (dBi)	6.5	6.5	7.5	
Composite power max (W)	80	80	80	
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	25	25	35	

##### 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 (m)	0.2	0.2	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	X	
Port 2	X	X	X	X	X	X	X	
Port 3								X

##### General Data

## SENCITY® Rail MIMO Antenna 1399.99.0148

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 noise figure dB	2
LNA current consumption (mA)	30
LNA is connected to	Port 3

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

EMC: EN50121-3-2 (2016)

ETSI EN 303 413 V.1.1.1 (2017-06)

ETSI EN 301 489-1 V2.2.3 (2019-03)

ETSI EN 301 489-19 V2.1.1 (2019-04)

LNA input voltage range: 3...5V

Total gain @90° elevation: 30 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.

Antennas with production date prior to 01-Oct-2020 support only GPS and GLONASS bands between 1574 - 1610 MHz.

### Mechanical Data

Dimensions (mm)	81.6 x 102.5 x 352.5 (Height x Width x Depth)
Weight (kg)	2.1

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 conduit Support Kit

9091.99.0256 Sencity Rail - M8 sealing washer kit

9091.99.0261 Sencity Rail antenna mounting plate

## SENCITY® Rail MIMO Antenna 1399.99.0148

### Related Documents

Mounting instruction	DOC-0000897046
Painting instruction	DOC-0000256180
Security instruction	DOC-0000278984
Outline drawing	DOU-00334266
3D-model	DOC-0000776041
CE compliancy	DOC-0000896955

### Additional Information

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