Data Sheet

HUBER+SUHNER

SENCITY® Rail MULTI 13-Port
1399.99.0133

Description

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.



Product Configuration

Technical Data

Electrical Data

	Band 1	Band 2	Band 3	Band 4
Band Name	Cellular 1-8	Cellular 1-8	Cellular 1-8	Cellular 1-8
Frequency (MHz)	617 - 694	694 - 960	1350 - 3300	3300 - 4900
VSWR	1.7	1.6	1.8	1.9
Impedance (Ohm)	50	50	50	50
Gain (dBi)	3.5	5	6	6
Composite power max (W)	80	80	80	80
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	13	13	20	25

	Band 5	Band 6	Band 7	Band 8
Band Name	Cellular 1-8	Wifi 1-4	Wifi 1-4	GNSS
Frequency (MHz)	4900 - 7125	2400 - 2500	4900 - 7125	1559 - 1610
VSWR	1.7	1.7	1.5	1.8
Impedance (Ohm)	50	50	50	50
Gain (dBi)	6	7	7	
Composite power max (W)	80	80	80	
Ambient temperature (°C)	25	25	25	25
Port Isolation (dB)	25	22	35	

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

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

General Data

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The antenna provides 8 separate cable leads definited as "Port 1".
The antenna provides 4 separate cable leads definited 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.

Electrical Data LNA

LNA noise figure dB	1.6
LNA current consumption (mA)	20
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)	84 x 368 x 862 (Heigth x Width x Depth)
Weight (kg)	11

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)
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.

Environmental Data

Environmental conditions	outdoor
Operation temperature (°C)	-40 to 85
Storage temperature (°C)	-55 to 85
Transport temperature (°C)	-40 to 85
IP rating	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 50155:2008-05
§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.

Material Data

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

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Related Products

9091.99.0263 Aluminium Mounting Plate for Sencity Rail MULTI 13-Port
9091.99.0264 Sencity Rail mounting plate (steel)

Related Documents

Mounting instruction	DOC-0000774998
Painting instruction	DOC-0000256180
Security instruction	DOC-0000278984
Outline drawing	DOU-00336607
3D-model	DOC-0000763441
CE compliancy	DOC-0000896954

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 aluminium 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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