DATA SHEET

# SENCITY® Rail MIMO 5-Port Antenna with GNSS/LNA

1399.99.0157

## Properties

- Railway rooftop antenna for 2G/3G/4G/5G cellular and Wi-Fi 6E bands
- Cellular 2x2 MIMO with two separate broadband integrated antennas and Wi-Fi 2x2 MIMO with two separate antennas
- Rugged design, meets EN 50155 Railway Standard
- Fire retardant according to EN 45545-2 and NFPA-130
- GNSS receiver supports GPS L1, Galileo E1, BeiDou B1, GLONASS G1 constellations

| Electrical bands | | | | |
|---|---|---|---|---|
| | **Band 1** | **Band 2** | **Band 3** | **Band 4** |
| Name | Cell/Wi-Fi 1 | Cell/Wi-Fi 2 | Cell/Wi-Fi 3 | Cell/Wi-Fi 4 |
| Frequency (MHz) | 617 MHz ... 960 MHz | 1350 MHz ... 2700 MHz | 2700 MHz ... 3300 MHz | 3300 MHz ... 4900 MHz |
| Impedance | 50 Ω | 50 Ω | 50 Ω | 50 Ω |
| VSWR | 1.7 | 1.7 | 1.7 | 1.8 |
| Gain (dBi) | 5 dBi | 7 dBi | 5.5 dBi | 5.5 dBi |
| Isolation between Ports | 15 dB | 25 dB | 45 dB | 35 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 | Cell/Wi-Fi 5 | Wi-Fi 1 | Wi-Fi 2 | GNSS |
| Frequency (MHz) | 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 | 1.8 | 1.7 | 2.3 | 1.8 |
| Gain (dBi) | 7 dBi | 6 dBi | 6.5 dBi | |
| Isolation between Ports | 40 dB | 15 dB | 15 dB | |
| Ambient Temperature | 25 °C | 25 °C | 25 °C | |
| Composite Power max | 80 W | 80 W | 80 W | |

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| Electrical remarks | |
|---|---|
| Remarks | Indicated VSWR values are valid for a metallic ground plane of 0.5 x 0.5m or larger. In the 1350-7125 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.<br><br>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). |

| Ports | | | | |
|---|---|---|---|---|
| | **Port 1** | **Port 2** | **Port 3** | **Port 4** |
| Port name | Cell/Wi-Fi 1 | Cell/Wi-Fi 2 | Wi-Fi 1 | Wi-Fi 1 |
| Connector | N, jack (female) | N, jack (female) | N, jack (female) | TNC, jack (female) |
| Cable type | RADOX_RF_142 | RADOX_RF_142 | RADOX_RF_316_D | RADOX_RF_316_D |
| Cable length | 0.24 m | 0.12 m | 0.36 m | 0.3 m |
| Polarization | vertical | vertical | vertical | vertical |
| DC grounded | Yes | Yes | Yes | Yes |

| | **Port 5** |
|---|---|
| Port name | GNSS |
| Connector | plug (male) |
| Cable type | RADOX_RF_316_D |
| Cable length | 0.17 m |
| Polarization | circular right |
| DC grounded | |

| Connections | | | | | |
|---|---|---|---|---|---|
| Port number | Port 1 | Port 2 | Port 3 | Port 4 | Port 5 |
| Band 1 | ✓ | ✓ | | | |
| Band 2 | ✓ | ✓ | | | |
| Band 3 | ✓ | ✓ | | | |
| Band 4 | ✓ | ✓ | | | |
| Band 5 | ✓ | ✓ | | | |
| Band 6 | | | ✓ | ✓ | |
| Band 7 | | | ✓ | ✓ | |
| Band 8 | | | | | ✓ |

| Mechanical data | |
|---|---|
| Weight | 2.3 kg |
| Dimensions | 81.6 mm x 102.5 mm x 352.5 mm (Heigth x Width x Depth) |
| Windload | Wind Speed survival: 500 km/h |
| Remarks | 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. |

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| Interface and material data | |
|---|---|
| Radome material | PC (Polycarbonate) |
| Radome colour | RAL 7043 (dark grey) |
| Back plate/base plate material | Aluminium |
| Back plate/base plate plating | Passivated (Plating) |
| Back plate/base plate colour | Grey |
| Housing material and surface treatment | 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) | IP67, IP69 |
| Flammability rating | EN 45545-2 R24 HL3 |
| Solar radiation | UL 746C, F1 |
| Standards | Railway EN 50155 |
| | Railway EN 45545 |
| | Railway NFPA130 |

## 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.

Corrosion: Low corrosion design acc. to MIL-DTL-14072(E), 96 hours Salt Spray test.

## Additional Information

This product meets the Deutsche Bahn specifications for rolling stock equipment. Protected by Patents: DE202015009331(U1), US10116056(B2), CN106663861B, US7327320B2, CN1765030B, AU2003218856A1, CA2521771C, SG114406, ZA200508290.

# SENCITY® Rail MIMO 5-Port Antenna with GNSS/LNA

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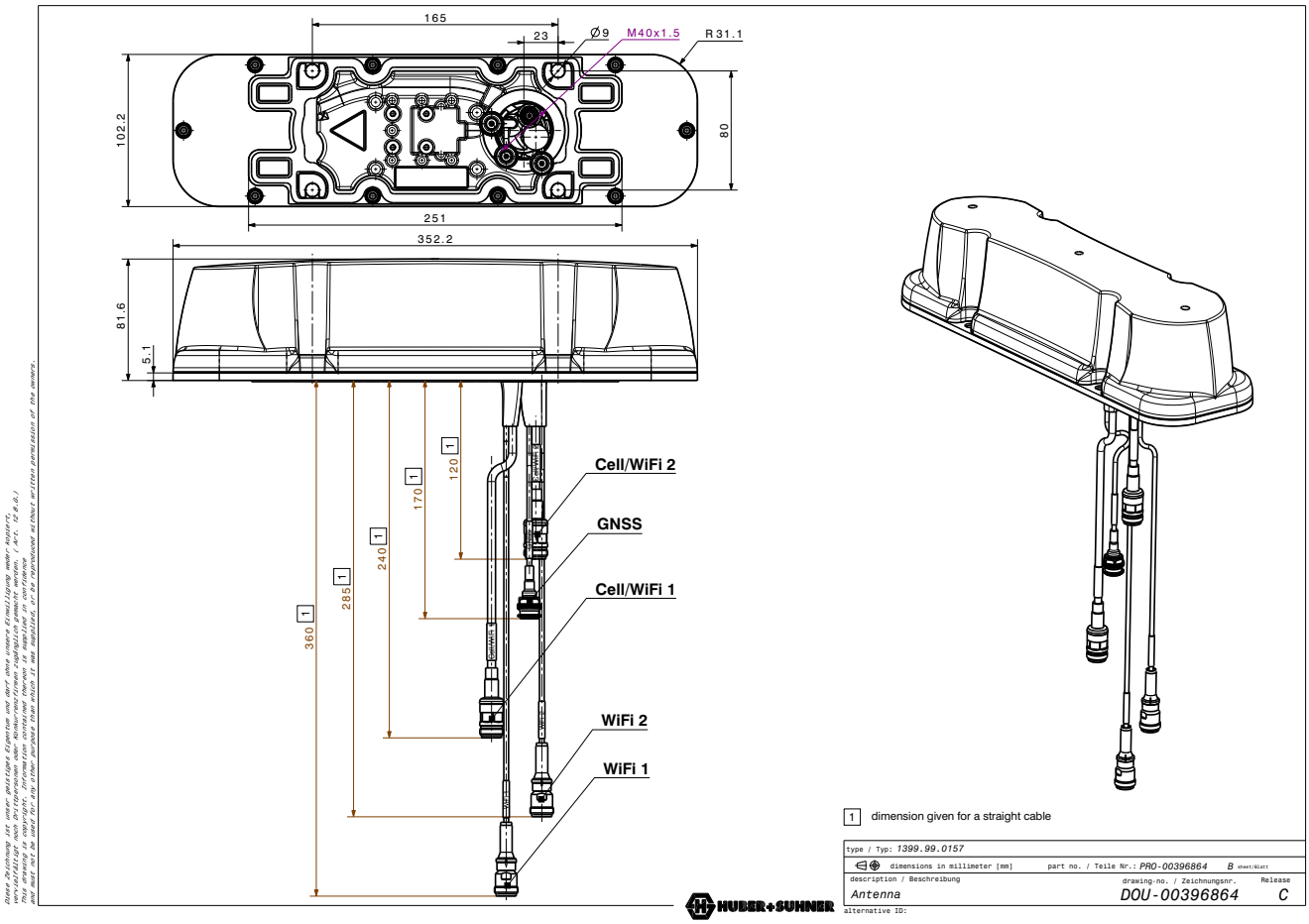
## Outline drawing

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