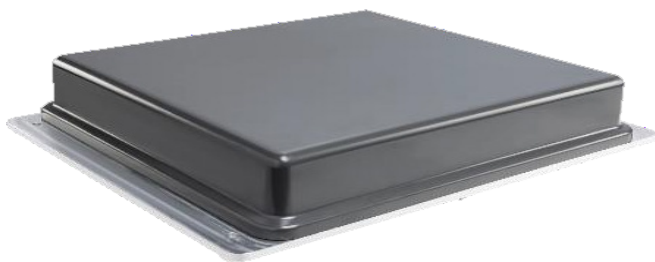


Antenna

FUNKWERK TRAIN ANTENNA



Dual-Polarised, Omni-directional Cellular 2x2 rooftop antennas are designed for wireless applications to meet special requirements of railway applications including high current and high voltage protection.

HIGHLIGHTS

- » 2-Port Railway rooftop antenna for cellular bands.
- » Optionally available with GNSS (3-Port).
- » Enables 2x2 MIMO with true polarisation diversity for high data throughput.
- » Supporting 2G/3G/4G/5G bands between 694-4200 MHz.
- » Average combined condition number on the supported cellular bands of <10 dB.
- » Embedded Dual-Band GNSS antenna with integrated LNA.
- » Rugged design, meets EN 50155 railway standard.
- » Fire retardant acc. to EN 45545-2 and NFPA130.
- » High Voltage and High Current protection for use under catenary lines.
- » Suitable for installation on high speed trains with a maximum speed of 500 km/h.
- » 4x composite sealing washers included for silicone-free sealing of the mounting screws.

TECHNICAL DATA

ENVIRONMENTAL DATA

Operation temperature	-55 to 85 °C
Storage temperature	-55 to 85 °C
Transport temperature	-55 to 85 °C
Degree of protection	IP69
Flammability rating	EN 45545-2 R24 HL3

MECHANICAL DATA

Dimensions (H x W x D)	90 x 489 x 392 mm
Weight	7.5 kg (without packaging)

MATERIAL DATA

Radome colour	RAL 7004 (signal grey)
Radome material	PC (Polycarbonate)
Back plate/base plate colour	grey
Back plate/base plate material	Aluminium

GENERAL DATA

High-voltage-protection	no voltage on RF port, if the catenary line touches the antenna
High-current-protection	Designed acc. to UIC 533, DC-grounded antenna element
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.

TECHNICAL DATA

ELECTRICAL DATA LNA (OPTIONAL)

LNA gain*	38 dB
LNA noise figure dB*	2
LNA current consumption*	45 mA
LNA is connected to	Port 3
EMC	EN50121-3-2 (2016)
LNA input voltage range	3 to 5.5 V
Total gain @90° elevation	Total gain @90° elevation

* The values are given for a 5 V operating voltage and may differ slightly for a lower voltage.

PRODUCT CONFIGURATION / ELECTRICAL DATA

	Band 1	GSM-R	Band 2	Band 3	Band 4
Polarisation	Vertical	Vertical	Vertical	Vertical	Horizontal
Frequency (MHz)	617 - 960	873 - 925	1425 - 2690	3300 - 4200	694 - 960
VSWR typ.	1.9	<1.6	2.0	1.9	1.9
Impedance (Ohm)	50	50	50	50	50
Gain (dBi)	7	7	8	9	7
Composite power max. (W)	80	80	80	80	80
Ambient temperature (°C)	25	25	25	25	25
Port Isolation (dB)	35	35	31	40	35

TECHNICAL DATA

PRODUCT CONFIGURATION / ELECTRICAL DATA

	GSM-R	Band 5	Band 6	Band 7	Band 8
Polarisation	Horizontal	Horizontal	Horizontal	GNSS 1	GNSS 2
Frequency (MHz)	873 - 925	1425 - 2690	3300 - 4200	1164 - 1279	1555 - 1610
VSWR typ.	<1.6	2.0	1.9	1.7	1.7
Impedance (Ohm)	50	50	50	50	50
Gain (dBi)	7	9	9		
Composite power max. (W)	80	80	80		
Ambient temperature (°C)	25	25	25	25	25
Port Isolation (dB)	35	31	40		

PORTS

	Port 1	Port 2	Port 3 (optional)
Port Name	Vertical	Horizontal	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	0.3 m	0.3 m	0.27 m
Polarization	vertical	horizontal	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					
Port 2				X	X	X		
Port 3							X	X