

Topcon's UR-S1 is a robust, dual-band UHF/FH915 external radio receiver designed for machine control applications.

The UR-S1 radio is used to receive RTK corrections.

The UR-S1 is a multifrequency and multimode transceiver.



Key Features

- Bolt-on, rugged aluminum enclosure (IP69K)
- UHF/FH915 radio compatibility (FH915 unavailable in Europe)
- Deutsch® connector (DT04-6P) with connection for machine power, CAN 2.0, RS232 serial connection
- RP-TNC RF connector for optional whip antenna
- LEDs for power, radio signal, and CAN status

Specifications

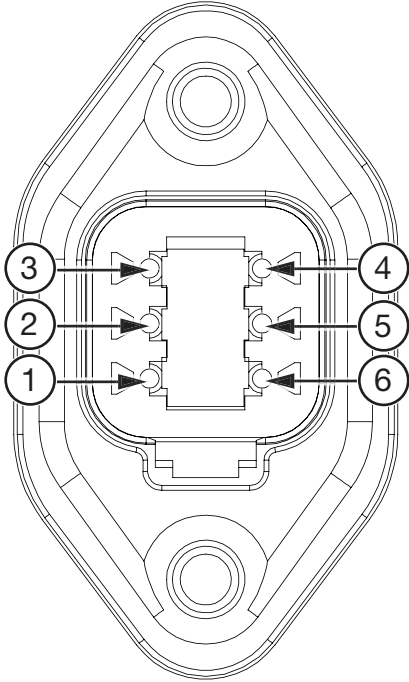
Electrical	
Supply Voltage	9-32 V
Supply Current	Typical current: 0.07 A @ 24 V
Power Consumption	1.68 W
Electromagnetic Compatibility	Applicable Standards: Emissions: Applicable regulation: ISO 13766-1:2018; ISO 13766-2:2018; EN 55032:2015; ICES-003; FCC Part 15B Immunity: Applicable regulation: ISO 13766-1:2018, ISO 13766-2:2018, EN 301 489-1; -5
Radio Frequency Spectrum	Applicable regulation: EN 300 113, FCC Part 90, FCC Part 15C, ISED RSS119, ISED RSS247
Physical	
Housing	Aluminum
Housing Dimensions	6.8 in x 4.1 in x 1.65 in (176 mm x 104 mm x 42 mm)
Connectors	Deutsch DT04-6P-CL09 TNC, Female
Weight	1.27 lbs. (574g)

Environmental	
Operating Temperature	-40 °F to 158 °F (-40 °C to 70 °C)
Storage Temperature*	-40 °F to 185 °F (-40 °C to 85 °C) *Short-term storage that can be tolerated without damage to unit operation
Humidity Test	240 hours, 149 °F (65 °C) at 95%RH
Ingress Protection	IP67K
Shock Test	25G 11 ms ½ sine wave 6X each axis
Salt Fog Test	ASTM B117-03
Vibration Test	10-2000Hz Random, 1.5 G _{rms}
Communications	
Ports	CAN 2.0 up to 1MB RS-232
Radio Frequency Spectrum Use	
Performance	
Selectable Frequency Bands	Licensed 403 ... 473 MHz License-free 902 ... 928 MHz
Receiver Sensitivity (for BER=<10 ⁻²)	UHF frequency range: <ul style="list-style-type: none"> GMSK, 12.5kHz channel spacing: -119 dBm GMSK, 25kHz channel spacing: -116 dBm 4 level FSK, 12.5kHz channel spacing: -113 dBm 4 level FSK, 25kHz channel spacing: -110 dBm
Dynamic Range	UHF: -110 to -10 dBm FH915: 90 dB
Adjacent Channel Selectivity	>-33 dBm to -45 dBm
Co-Channel Rejection	UHF: 8 dB to 21 dB FH915: Not specified
Frequency Characteristics	
Operational Frequency Range	UHF: 403-470 MHz; FH915: 902.2...927.8 MHz
Channel Spacing (Occupied Bandwidth)	12.5 kHz 25 kHz
Number of Channels	Depends on channel spacing

The UR-S1 provides the following radio compatibility options:

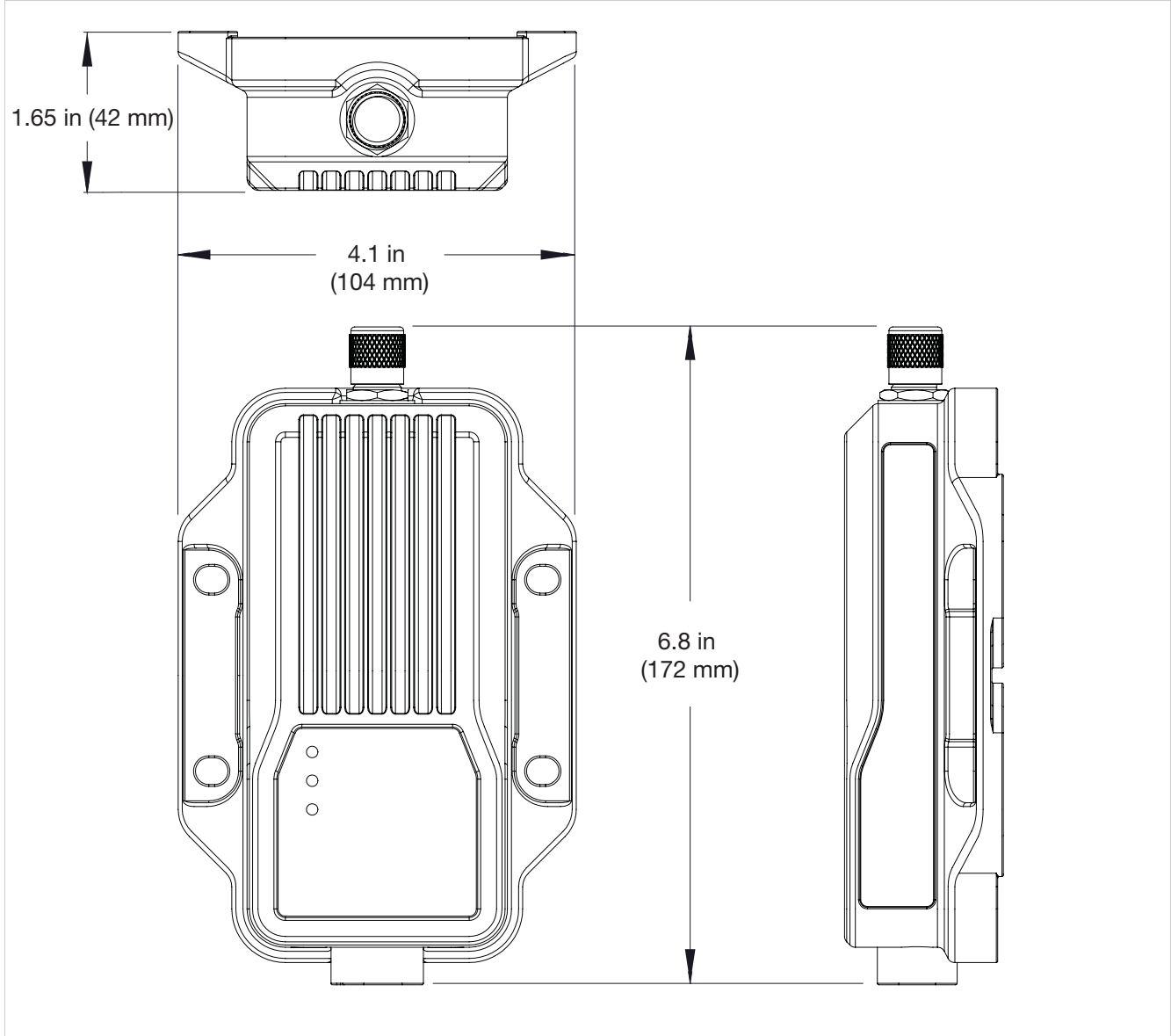
403...473 MHz mode:		902...928 MHz mode:	
Protocol	Modulation	Protocol	Modulation
RTCM-135	4FSK	Topcon FH915	2FSK
SATEL-3AS	4FSK	Topcon FH915+	2FSK
SATEL	8FSK		
SATEL	16FSK		
PDL	4FSK		
PDL	GMSK		
TrimTalk (P)	GMSK		
TrimTalk (T)	GMSK		
PacCrest FST	GMSK		

Connector Pinouts



Connector A - 6-pin Deutsch DT04-6P-CL09	
1	Power
2	CANH
3	CANL
4	TX D
5	RX D
6	Ground

Envelope Dimensions



LED Indicators

LED Indicators		
Solid	Blinking	Off

LED Statuses			
Power	Color	State	Indication
		Solid Red	UR-S1 is powered on
		Blinking Yellow	UR-S1 Bootloader running
		No Light	UR-S1 is powered off
		Blinking Green	Radio activity
		Blinking Red	Radio Firmware upgrading
		Blinking Yellow	UR-S1 Bootloader running
		No Light	No radio activity
		Blinking Yellow	UR-S1 Bootloader running
		No Light	No CAN BUS activity

