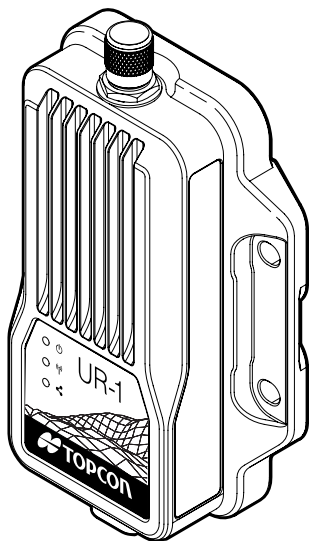


UR-1

Radio Receiver

Quick Reference Card

UR-1 Operator's Quick Reference



Product Description

The Topcon UR-1 is a dual-band UHF/FH 915 radio receiver designed to convert/digitize RTK correction data from an RTK base transmitter.

Product Specifications

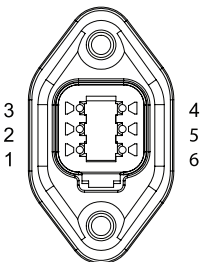
Electromagnetic Compatibility and Radio Frequency Spectrum Use	
Supply Voltage	9-32V
Supply Current	Typical current: 0.1A Standby current: 0.8W Maximum current: 0.2A
Electromagnetic Compatibility	Applicable Standards Emissions: Applicable regulation: EN 55032:2012 Immunity: Applicable regulation: EN 301 489-1 and EN 301 489-5, Radio Frequency Spectrum EN 300 113
Ports	CAN 2.0 up to 1MB RS-232

Parameter	Units	Specification
Performance		
Receiver sensitivity (for BER=<10 ⁻²) UHF frequency range:		
GMSK, 12.5KHz channel spacing	dBm	-119
GMSK, 25KHz channel spacing	dBm	-116
4 level FSK, 12.5KHz channel spacing	dBm	-113
4 level FSK, 25KHz channel spacing	dBm	-110
Dynamic Range	dBm	-110 to -10
Adjacent Channel Selectivity	dBc	>54
Co-Channel Rejection for 12.5KHz channel spacing	dB	-15
for 25KHz channel spacing	dB	-15
Power Consumption (Typical)		
at 90% Receive Duty Cycle	Watts	1.2
Frequency Characteristics		
Operational Frequency Range (UHF)	MHz	410...470
Channel Spacing (Occupied Bandwidth)	KHz	12.5, 25 (Europe)
Number of Channels		Depends on channel spacing
Modulation Technique		
Modulation Type (user selectable)	Type	GMSK, 4 level FSK
Packet Protocols	Type	PDL/TPS, Trimble, Satel 3AS
Data Rate (user selectable) for GMSK	bps	4800, 9600 (Europe)
for 4 level FSK	bps	9600, 19200
Power		
Operating Voltage	V	+3.3
Max Power Consumption (typical) In Receiver mode	Watts	1.2

Environmental	
Operating Temp.	-40°C (-40°F) to +70°C (158°F)
Storage Temp.*	-40°C (-40°F) to +85°C (185°F) *Short-term storage that can be tolerated without damage to operation of the unit.
Humidity Test	240 hours, 65°C (149°F) at 95%RH
Ingress Protection	IP69K
Shock Test	25G 11 ms ½ sine wave 6X each axis
Salt Fog Test	ASTM B117-03
Vibration Test	10-2000Hz Random, 1.5 GRMS

Physical	
Housing	Aluminium
Housing Dimensions	176 mm x 104 mm x 42 mm (6.8 in x 4.1 in x 1.65 in)
Connectors	Deutsch DT04-6P-CL09 TNC, Female
Weight	550 gm (1.2 lb)









Connector Pinouts



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

LED Status Key			
	Solid - Lit	Blinking	Off - No Light
LED Pattern			

LED Status		
Power LED		
Icon	Color	Status
	Solid Red	UR-1 is powered On
	Blinking Yellow	UR-1 Bootloader running
	No Light	UR-1 is powered Off

Radio LED		
Icon	Color	Status
	 Blinking Green	Radio activity
	 Blinking Red	R2C is upgrading
	 Blinking Yellow	UR-1 Bootloader running
	 No Light	No radio activity
CAN Bus LED (Future Support)		
Icon	Color	Status
	 Blinking Yellow	UR-1 Bootloader running
	 No Light	No CAN BUS activity

Recommendations for Highly Reliable Radio Link:

- Maintain the use of Forward Error Correction (FEC) in challenging radio environments such as urban areas. FEC is the default option in the 'R2CR Radio Data Receiver' firmware.
- Use of Received Signal Strength Indication (RSSI) to measure the radio environment before using GNSS receivers in a job site. RSSI value is available to our end users through our GNSS field application software, which is an integral part of all GNSS systems. For more sensitive job sites like airport construction, our customers and professional service team are trained to use a spectrum analyzer and other typical radio tools to ensure the environment is free from radio signal jamming or interference.
- Cooperation with the local radio-governing authorities to determine the optimum free radio channel.
- Avoid using channels nearby local TETRA or television frequencies, which generally are not recommended for use in this application.
- Use a repeater in an intermediate position, to extend the length of the link and/or increase the receive signal level at the rover.

Regulatory and Safety Warnings

Product Conformity

Hereby, Topcon declares that the UR-1 radio modem is in compliance with the essential requirements (radio performance, electromagnetic compatibility, and electrical safety) and other relevant provisions described in Directive 2014/53/EU.

Therefore, the equipment is labeled with the CE-marking. The operating frequency range of the device is not harmonized throughout the market area and the local spectrum authority should be contacted prior to use.

Class A Digital Device Statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is powered.
- Consult the dealer or an experienced radio/television technician for additional suggestions.

Restrictions on Use

The UR-1 radio modem has been designed to operate only at specific frequencies. The exact frequency in use differs from one region and/or country to another. The user of a radio modem must take care that the said device is not operated without the permission of the local authorities on frequencies other than those specifically reserved and intended for use without a specific permit.

FH915 radio is disabled and not for sale in Europe.

Thermal Exposure Warning



WARNING

If used in ambient temperatures over 55°C, the unit must be located where it cannot be touched in normal operation.

Technical Documentation and Utility Software

On the Topcon Support website (www.topconpositioning.com/support), you can download manuals, technical documentation, training material, and various utility software to help you set up and use your Topcon product. The website also offers registration resources, training, and technical assistance.

Register for a free account at <https://www.topconpositioning.com/support> today to download this material.

Your local authorized dealer is:



www.topconpositioning.com

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Specifications subject to change without notice.

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