

Aprisa SR

SMART, SECURE POINT-TO-MULTIPOINT RADIO VHF, UHF and 900 MHz licensed bands



Aprisa SR: smart, secure, point-to-multipoint SCADA communications for oil, gas and utility monitoring and control

- **Secure:** with its defence in depth approach, including AES encryption, authentication, address filtering and user access control, the Aprisa SR protects against vulnerabilities and malicious attacks.
- **Future-proof:** the Aprisa SR supports serial, Ethernet and IP interfaces in a single, compact form factor, and is standards-based for long term incorporation into SCADA networks while protecting the legacy investment in serial devices.
- **Advanced L2/L3 capabilities:** selectable L2 Bridge or L3 Router modes, with VLAN, QoS and filtering attributes to support narrow bandwidth channels and mission critical traffic while meeting increasing security and IP network policy requirements.
- **Efficient:** the ability to configure detailed radio parameters means that network performance and efficiency can be optimized for the exact network topology, however complex.
- **Flexible:** the Aprisa SR integrates into a range of network topologies, with each unit configurable as a base station, repeater or remote unit.
- **Easily managed:** an easy to use GUI supports local element management via HTTPS and remote element management over the air, and SNMP support allows network-wide monitoring and control via a third party network management system.
- **Reliable and robust:** the Aprisa SR requires no manual component tuning and maintains its high power output and performance over a wide temperature range.



The Aprisa SR in brief

- VHF, UHF and 900 MHz licensed bands
- RS-232 and IEEE 802.3 protocols
- 12.5 kHz, 25 kHz channel sizes
- Up to 19.2 kbit/s data rate
- 256, 192 or 128 bit AES encryption
- 4-CPFSK modulation
- Transparent to all common SCADA protocols
- Dual antenna port option
- Protected station options
- -40 to +70 °C operational temperature
- 177 mm (W) x 110 mm (D) x 41.5 mm (H)
- Single or dual frequency, half duplex
- ETSI, FCC and IC standards compliant
- Seamlessly integrates with Aprisa XE point-to-point radio

Aprisa SR applications

- Offshore rigs and onshore pump jacks
- Transmission pipelines
- Electricity generation plants and turbines
- Power storage and distribution
- Water and waste processing plants

SYSTEM SPECIFICATION

GENERAL				
NETWORK TOPOLOGY	Point-to-multipoint; Repeater			
NETWORK INTEGRATION	Serial and Ethernet (router or bridge mode)			
PROTOCOLS				
ETHERNET	IEEE 802.3, 802.1d/q/p			
SERIAL	Legacy RS-232 transport			
WIRELESS	Proprietary			
SCADA	Transparent to user traffic; e.g. Modbus, IEC 60870-5-101/104, DNP3 or similar			
RADIO		FREQ BAND	TUNING RANGE	SYNTH STEP
FREQUENCY RANGE		136 MHz	135 – 175 MHz	3.125 kHz
	(Note 2,4)	320 MHz	320 – 400 MHz	6.25 kHz
		400 MHz	400 – 470 MHz	6.25 kHz
	(Note 3,4)	928 MHz	928 – 960 MHz	6.25 kHz
CHANNEL SIZE	12.5 kHz, 25 kHz			
DUPLEX	Single frequency, half duplex Dual frequency, half duplex			
SYNTHESIZER LOCK TIME	< 1.5 ms (5 MHz step)			
FREQUENCY STABILITY	± 1.0 ppm			
FREQUENCY AGING	< 1 ppm / annum			
TRANSMITTER				
POWER OUTPUT	0.01 – 5.0 W (+10 to +37 dBm, in 1 dB steps)			
ADJACENT CHANNEL POWER	< -60 dBC			
TRANSIENT ADJACENT CHANNEL POWER	< -50 dBC			
SPURIOUS EMISSIONS	< -37 dBm			
ATTACK TIME	< 1.5 ms			
RELEASE TIME	< 1.5 ms			
DATA TURNAROUND TIME	< 10 ms			
RECEIVER				
		12.5 kHz	25 kHz	
SENSITIVITY (BER < 10 ⁻⁹)	9.6 kbit/s	-113 dBm		
	14.4 kbit/s	-108 dBm		
	19.2 kbit/s	-108 dBm	-110 dBm	
ADJACENT CHANNEL SELECTIVITY		-47 dBm	-37 dBm	
	(Note 1)	[> 48 dB]	[> 58 dB]	
CO-CHANNEL REJECTION	9.6 kbit/s	> -12 dB		
	14.4 kbit/s	> -17 dB		
	19.2 kbit/s	> -17 dB	> -12 dB	
INTERMODULATION RESPONSE REJECTION	> -35 dBm [> 60 dB Note 1]			
BLOCKING OR DESENSITIZATION	> -17 dBm [> 78 dB Note 1]			
SPURIOUS RESPONSE REJECTION	> -32 dBm [> 63 dB Note 1]			
MODEM				
GROSS DATA RATE	12.5 kHz	9.6 kbit/s, 14.4 kbit/s (Note 2)		
		12.5 kHz	19.2 kbit/s (Note 3)	
		25 kHz	19.2 kbit/s	
MODULATION	4-CPFSK			
FORWARD ERROR CORRECTION	¾ trellis code			
SECURITY				
DATA ENCRYPTION	128, 192 or 256 bit AES			
DATA AUTHENTICATION	CCM			

INTERFACES	
ETHERNET	2-port RJ45 10/100Base-T switch
SERIAL	1 x RJ45 RS-232 Additional RS-232 port via USB converter (optional)
MANAGEMENT	1 x USB micro type B (device port) 1 x USB standard type A (host port)
ANTENNA	1 x TNC 50 ohm female (2 x TNC for dual antenna port)
LEDS	Status: OK, DATA, CPU, RF, AUX Diagnostics: RSSI
TEST BUTTON	Toggles LEDs between diagnostics / status
PRODUCT OPTIONS	
DUAL ANTENNA PORT	Separate transmit and receive antenna ports
PROTECTED STATION	Provides redundant hardware switching
POWER & ELECTRICALS	
INPUT VOLTAGE	10 – 30 VDC (13.8 VDC nominal)
RECEIVE	< 430 mA (< 6 W), Full Ethernet activity < 330 mA (< 4.5 W), No Ethernet activity
TRANSMIT	< 1630 mA (< 22.5 W), 5 W output < 540 mA (< 7.5 W), 1 W output
MECHANICAL	
DIMENSIONS	177 mm (W) x 110 mm (D) x 41.5 mm (H) 7" (W) x 4.3" (D) x 1.6" (H)
WEIGHT	720 g (1.7 lbs)
MOUNTING	Wall, rack or DIN rail
ENVIRONMENTAL	
OPERATING TEMPERATURE	-40 to +70 °C (-40 to +158 °F)
HUMIDITY	Maximum 95 % non-condensing
MANAGEMENT & DIAGNOSTICS	
LOCAL	Web server with full control / diagnostics Partial diagnostics via LEDs and test button Software upgrade via USB flash drive
REMOTE	Over-the-air remote element management with control / diagnostics Network software upgrade over-the-air
NETWORK	SNMPv2 and SNMPv3 security support for integration with external network management systems
COMPLIANCE	
RF	EN 300 113 FCC CFR47 Part 24 / 90 / 101 RSS 119
EMC	EN 301 489 Parts 1 and 5 FCC CFR 47 Part 15 ICES-003
SAFETY	EN 60950 Class 1 div 2 for hazardous locations
ENVIRONMENTAL	ETS 300 019 Class 3.4 Ingress Protection code IP51

- Notes:**
- The receiver figures are shown in typical fixed interference dBm values and dB values [in brackets] relative to the sensitivity.
 - ETSI compliant only
 - FCC / IC compliant only
 - Please consult 4RF for availability.



ABOUT 4RF

Operating in more than 130 countries, 4RF provides radio communications equipment for critical infrastructure applications. Customers include utilities, oil and gas companies, transport companies, telecommunications operators, international aid organisations, public safety, military and security organisations. 4RF point-to-point and point-to-multipoint products are optimized for performance in harsh climates and difficult terrain, supporting IP, legacy analogue, serial data and PDH applications.

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