

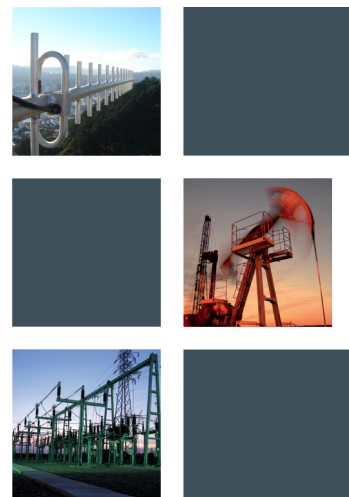
# Aprisa SR

## SMART, SECURE POINT-TO-MULTIPOINT RADIO VHF and UHF 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 and UHF licensed bands
- RS-232 and IEEE 802.3 protocols
- 6.25 kHz, 12.5 kHz and 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			
FREQUENCY RANGE	FREQ BAND	TUNING RANGE	SYNTH STEP
	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
CHANNEL SIZE	6.25 kHz, 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			
	6.25 kHz	12.5 kHz	25 kHz
SENSITIVITY (BER < 10 <sup>-9</sup> )	4.8 kbit/s	–115 dBm	
	9.6 kbit/s	–113 dBm	
	19.2 kbit/s	–110 dBm	
ADJACENT CHANNEL SELECTIVITY (Note 1)	4.8 kbit/s	–47 dBm [> 60 dB]	
	9.6 kbit/s	–47 dBm [> 60 dB]	
	19.2 kbit/s	–37 dBm [> 65 dB]	
CO-CHANNEL REJECTION	4.8 kbit/s	> –12 dB	
	9.6 kbit/s	> –12 dB	
	19.2 kbit/s	> –12 dB	
INTERMODULATION RESPONSE REJECTION	> –37 dBm [> 70 dB <sup>Note 1</sup> ]		
BLOCKING OR DESENSITIZATION	> –17 dBm [> 90 dB <sup>Note 1</sup> ]		
SPURIOUS RESPONSE REJECTION	> –32 dBm [> 75 dB <sup>Note 1</sup> ]		
MODEM			
GROSS DATA RATE	6.25 kHz	4.8 kbit/s (Note 3)	
	12.5 kHz	9.6 kbit/s (Note 2)	
	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 from PC or 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 90
	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, with a gross data rate of 9.6 kbit/s
- ETSI compliant only
- Channel size of 6.25 kHz is only for FCC VHF band
- 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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