

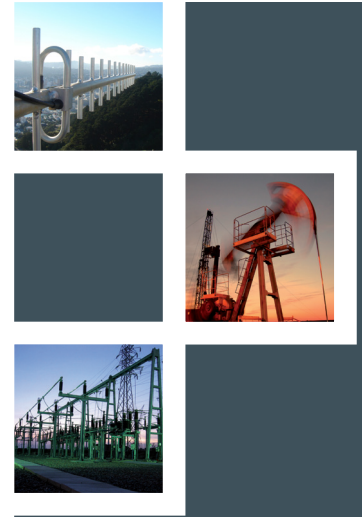
Aprisa SR

SMART, SECURE POINT-TO-MULTIPOINT RADIO VHF, 220 MHz, and UHF licensed bands



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, advanced QoS, filtering and IP header and payload compression attributes to support narrow bandwidth channels and mission critical traffic while meeting increasing security and IP network policy requirements. Advanced payload and Ethernet / IP / TCP / UDP header compression.
- **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.
- **Link efficiency:** Forward error correction maintains the integrity of the wireless connection while an effective channel access scheme and IP routing ensures efficient transfer of data across the Aprisa SR network.
- **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, 220 MHz, and UHF licensed bands
- RS-232 and IEEE 802.3 protocols
- Software selectable 12.5 kHz, 20 kHz, 25 kHz and 50 kHz channel sizes
- Single or dual frequency
- Gross data rate of 80 kbit/s
- 256, 192 or 128 bit AES encryption
- QPSK modulation
- Selectable error correction of min, max or no FEC
- Ethernet and IP / TCP / UDP header compression (ROHC) and payload compression
- Dual / single antenna port product options
- Transparent to all common SCADA protocols
- Dedicated alarm port
- Hot standby / swappable protected station option
- Radio GPS coordinates
- -40 to +70 °C operational temperature
- 210 mm (W) x 130 mm (D) x 41.5 mm (H)
- RED compliant
- Fully compatible with Aprisa SR+ in 'SR mode'
- Enhanced traffic management
- Enhanced file transfer and activation of new firmware

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 (PMP), Base, Remote, 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 all common SCADA protocols such as Modbus, IEC 60870-5-101/104, DNP3 or similar			
RADIO				
FREQ BAND	TUNING RANGE	TUNE STEP		
FREQUENCY RANGE	135 MHz	135 – 175 MHz	0.625 kHz	
	(Note 2) 220 MHz	215 – 240 MHz	0.625 kHz	
	320 MHz	320 – 400 MHz	6.25 kHz	
	400 MHz	400 – 470 MHz	1.25 kHz	
	450 MHz	450 – 520 MHz	6.25 kHz	
CHANNEL SIZE	12.5 kHz, 20 kHz, 25 kHz and 50 kHz software selectable			
DUPLEX	Single frequency half-duplex Dual frequency half-duplex Half duplex remote with SR+ full duplex base station			
FREQUENCY STABILITY	± 0.5 ppm			
FREQUENCY AGING	< 1 ppm / annum			
TRANSMITTER				
MAX PEAK ENVELOPE POWER (PEP)	10.0 W (+40 dBm)			
AVERAGE POWER OUTPUT	0.01 – 5.0 W (+10 to +37 dBm, in 1 dB steps)			
ADJACENT CHANNEL POWER	< –60 dBc			
TRANSIENT ADJACENT CHANNEL POWER	< –60 dBc			
SPURIOUS EMISSIONS	< –37 dBm			
ATTACK TIME	< 1.5 ms			
RELEASE TIME	< 0.5 ms			
DATA TURNAROUND TIME	< 2 ms			
RECEIVER				
	12.5 kHz	20 kHz	25 kHz	50 kHz
SENSITIVITY (BER < 10 ⁻⁶) max coded	–115 dBm	–112 dBm	–112 dBm	–109 dBm
ADJACENT CHANNEL SELECTIVITY	> –47 dBm	> –37 dBm	> –37 dBm	> –37 dBm
	(Note 1) [> 48 dB]	[> 58 dB]	[> 58 dB]	[> 58 dB]
CO-CHANNEL REJECTION max coded	> –10 dB			
INTERMODULATION RESPONSE REJECTION	> –35 dBm [> 60 dB Note 1]			
BLOCKING OR DESENSITISATION	> –17 dBm [> 78 dB Note 1]			
SPURIOUS RESPONSE REJECTION	> –32 dBm [> 63 dB Note 1]			
MODEM				
	12.5 kHz	20 kHz	25 kHz	50 kHz
GROSS DATA RATE	20 kbit/s	28 kbit/s	40 kbit/s	80 kbit/s
OCCUPIED BANDWIDTH	12.3 kHz	16.9 kHz	24.7 kHz	44.3 kHz
FORWARD ERROR CORRECTION	Variable Reed Solomon plus convolutional code			
ADAPTIVE BURST SUPPORT	Adaptive FEC			

SECURITY		
DATA ENCRYPTION	256, 192 or 128 bit AES	
DATA AUTHENTICATION	CCM	
INTERFACES		
ETHERNET	2 port RJ45 10/100Base-T switch	
SERIAL	1 or 2 ports RJ45 RS-232 (specified at order) Additional RS-232 / RS-485 port via USB converter (optional)	
MANAGEMENT	1 x USB micro type B (device port) 1 x USB standard type A (host port) 1 x Alarm port RJ45	
ANTENNA	1 x TNC 50 ohm female (2 x TNC for dual antenna port)	
LEDs	Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status	
TEST BUTTON	Toggles LEDs between diagnostics / status	
PRODUCT OPTIONS		
DATA PORT CONFIGURATION	2 x Ethernet ports + 2 serial ports 2 x Ethernet ports + 1 serial port	
DUAL ANTENNA PORT	Separate transmit and receive antenna ports	
PROTECTED STATION	Aprisa SR+ Protected Station providing hot-swappable / hot-standby redundant hardware switching (13.8 VDC or 48 VDC)	
SERIAL ONLY TRAFFIC	Providing an option of RS-232 serial traffic only	
GPS RECEIVER	Support for NMEA GPS receiver with radio coordinates	
POWER		
INPUT VOLTAGE	10 – 30 VDC (13.8 V nominal)	
RECEIVE	All bands except 320 MHz	< 3 W in active receive state < 2 W in idle receive state, < 0.5 W in sleep mode
	320 MHz	< 7 W
TRANSMIT	135 and 220 MHz	< 26 W
	400 and 450 MHz	< 28 W
	320 MHz	< 35 W
MECHANICAL		
DIMENSIONS	210 mm (W) x 130 mm (D) x 41.5 mm (H) 8.27" (W) x 5.12" (D) x 1.63" (H)	
WEIGHT	1.25 kg (2.81 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 ELEMENT	Web server with full control / diagnostics Partial diagnostics via LEDs and test button Software upgrade from PC or USB flash drive	
REMOTE ELEMENT	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	12.5 kHz	EN 300 113
	25 kHz and 50 kHz	EN 302 561
EMC	EN 301 489-1 and 5	
SAFETY	EN 60950 Class 1 division 2 for hazardous locations	
ENVIRONMENTAL	ETS 300 019 Class 3.4, IEEE 1613 Class 2 IEC 61850-3, Ingress Protection IP51	

Notes:

- The receiver figures are shown in typical fixed interference dBm values and dB values [in brackets] relative to the sensitivity. Relative values are given for QPSK modulation and max coded FEC. Refer to the Aprisa New SR User Manual for a complete list of modulation and coding levels.
- Please consult 4RF for availability.

ABOUT 4RF

Operating in more than 140 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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