

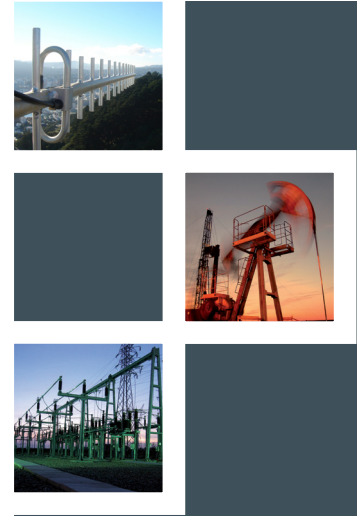
Aprisa SR

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

| 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 ⁻⁹) 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 port RJ45 RS-232 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 | | |
| DUAL ANTENNA PORT | Separate transmit and receive antenna ports | |
| 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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