



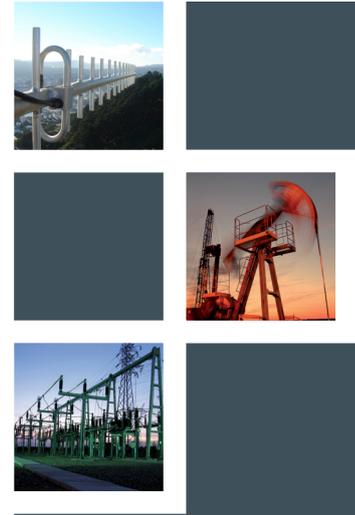
Aprisa SR+

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



Smart, secure, industry-leading speed licensed point-to-point for linking and backhaul of industrial monitoring and control – now with 256 QAM

- **High capacity:** to meet the growing number of data-intensive applications in the SCADA environment, the Aprisa SR+ PTP provides data rates of up to 1,024 kbit/s full duplex in 100 kHz licensed channels.
- **Secure:** with its defense in depth approach, including AES encryption, authentication, address filtering and user access control including RADIUS, the Aprisa SR+ PTP protects against vulnerabilities and malicious attacks.
- **Future-proof:** the Aprisa SR+ PTP supports dual serial and dual Ethernet ports in a single, compact form factor, designed to cryptographically secure legacy serial, protect existing device investment, and enable new applications. Old and new application protocols can be run side by side.
- **Advanced L2 / L3 capabilities:** selectable L2 bridge, L3 router, or advanced gateway router combination L2 / L3 modes with VLAN, QoS, NAT, and filtering attributes to maximize capacity in constrained bandwidth and prioritize mission critical traffic while meeting tough security and IP network policy imperatives.
- **Flexible interfaces:** the data interfaces can be configured for serial or Ethernet operation; a range of options are supported, including two serial and two Ethernet, one serial and three Ethernet, or four Ethernet ports. Support for NMEA GPS receiver option.
- **Link efficiency:** Adaptive Coding and Modulation (ACM) and 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 a Aprisa SR+ PTP link. Automatic Transmit Power Control maintains the minimum transmit power required for effective communications enhancing both frequency reuse and power savings. Advanced payload and Ethernet / IP / TCP / UDP header compression.
- **Reliable and robust:** the Aprisa SR+ PTP requires no manual component tuning and maintains its performance over a wide temperature range using full specification industrially rated components and shared Aprisa family heritage.
- **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 variety of supported third party network management systems.



The Aprisa SR+ PTP in brief

- VHF, 220 MHz, and UHF licensed bands
- RS-232 and IEEE 802.3 with multiple port options
- Software selectable 12.5 kHz, 20 kHz, 25 kHz, 50 kHz, and 100 kHz (note 2) channel sizes (frequency band dependent)
- Full duplex operation
- Data rates of up to 1024 kbit/s full duplex
- 256, 192 or 128 bit AES encryption
- AES-CCM to NIST SP 800-38C
- Adaptive Coding and Modulation: QPSK to 256 QAM
- Automatic Transmit Power Control: reduces interference in large networks, improves power savings
- Advanced forward error correction
- Ethernet and IP / TCP / UDP header compression (ROHC) and payload compression
- Transparent to all common SCADA protocols
- Dedicated alarm port and optional USB connected GPS receiver
- Protected station option
- Layer 2 bridge (VLAN aware), layer 3 router, and advanced gateway router combination L2/ L3 modes
- VLAN tagging and Q-in-Q
- Flexible QoS priority enforcement – by port or traffic type, VLAN, PCP/DSCP, rule including SMAC/DMAC, IP address and IP protocol, and EtherType
- L2 / L3 / L4 filtering
- MEMS accelerometer motion sensing anti-tamper option
- Substation hardened to IEEE 1613 class 2 and IEC 61850-3
- 30 kV ESD antenna protection
- Class 1, Division 2 for hazardous protection
- -40 to +70 °C operational temperature without fans
- 210 mm (W) x 130 mm (D) x 41.5 mm (H)
- Complies with EU RED (2014/53/EU)

Aprisa SR+ PTP applications

- Electricity grid: distribution automation control and protection in MV / HV distribution / transmission
- Smart grid, DA, DFA, DER, cap bank control
- Oil & Gas: production metering, lift pump automation
- AMI / AMR: high density data concentrator backhaul
- Renewables: wind farm, tidal, hydro automation
- Water and wastewater: flow, level, pressure modulation automation and pump status
- Ultra low latency for feeder protection – 6 ms at 100 kHz and 8 ms at 50 kHz

GENERAL																																																																																													
NETWORK TOPOLOGY	Point-To-Point (PTP) Full Duplex																																																																																												
NETWORK INTEGRATION	Serial and Ethernet (router or bridge mode)																																																																																												
PROTOCOLS																																																																																													
ETHERNET	IEEE 802.3, 802.1d/q/p																																																																																												
SERIAL	Legacy RS-232 transport, SLIP and Terminal Server support																																																																																												
WIRELESS	Proprietary																																																																																												
SCADA	Transparent to all common SCADA protocols such as Modbus, IEC 60870-5-101/104, DNP3 or similar																																																																																												
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SECURITY							
DATA ENCRYPTION	256, 192 or 128 bit AES						
DATA AUTHENTICATION	CCM						
INTERFACES							
ETHERNET PORTS	RJ45 10/100Base-T auto-neg MDI/MDIX						
SERIAL PORTS	RJ45 RS-232 Additional RS-232 / RS-485 port via USB converter (optional)						
GPS RECEIVER	Support for optional USB connected GPS receiver						
MANAGEMENT	1 x USB micro type B (device port) 1 x USB standard type A (host port)						
ANTENNA	2 x TNC 50 ohm female						
ALARM I/O	1 x RJ45 Alarm I/O interface 2 x inputs + 2 x outputs						
LEDs	Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status						
TEST BUTTON	Toggles LEDs between diagnostics / status						
PRODUCT OPTIONS (specified at order)							
DATA PORT CONFIGURATION OPTIONS	2 x Ethernet ports + 2 serial ports 3 x Ethernet ports + 1 serial port 4 x Ethernet ports						
PROTECTED STATION OPTION	Providing hot-swappable / hot-standby redundant hardware switching (13.8 VDC or 48 VDC)						
POWER							
INPUT VOLTAGE	10 – 30 VDC						
RECEIVE	<table border="1"> <tbody> <tr> <td>All bands except 320 MHz</td> <td>< 3 W (217 mA at 13.8 VDC)</td> </tr> <tr> <td>320 MHz</td> <td>< 7 W (507 mA at 13.8 VDC)</td> </tr> </tbody> </table>	All bands except 320 MHz	< 3 W (217 mA at 13.8 VDC)	320 MHz	< 7 W (507 mA at 13.8 VDC)		
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WEIGHT	1.25 kg						
MOUNTING	Wall, Rack or DIN rail						
ENVIRONMENTAL							
OPERATING TEMPERATURE	-40 to +70 °C						
HUMIDITY	Maximum 95 % non-condensing						
MANAGEMENT & DIAGNOSTICS							
LOCAL ELEMENT	SSH and HTTP/S web servers with full control / diagnostics Partial diagnostics via LEDs and test button Software upgrade from PC or USB flash drive						
REMOTE ELEMENT	SSH and HTTP/S 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							
RED COMPLIANCE	Tested to Radio Equipment Directive 2014/53/EU ^(Note 3)						
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EMC	EN 301 489-1 and 5						
SAFETY	EN 60950 Class 1 division 2 for hazardous locations						
ENVIRONMENTAL	ETS 300 019 Class 3.4, Ingress Protection IP51 Substation hardened to IEEE 1613 class 2 and IEC 61850-3						

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 SR+ User Manual for a complete list of modulation and coding levels.
- Please consult 4RF for availability.
- 100 kHz subject to EU RED verification
- For 256 QAM on 100 kHz channel size, please consult 4RF for availability.
- 50 kHz, RX compliance to 64 QAM inclusive

ABOUT 4RF

Operating in more than 150 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 applications.

Made in USA from local and imported parts.

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