Aprisa SR

SMART, SECURE
SCADA RADIO COMMUNICATIONS

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 box, and is standards-based for long term incorporation into SCADA networks while protecting the legacy investment in serial devices.

- **Efficient**: the ability to configure in depth radio parameters means that network performance and efficiency can be optimised for the exact network topology, however complex.

- **Flexible**: the Aprisa SR integrates into any network topology, with each unit configurable as a base station, repeater or remote unit.

- **Easily managed**: an easy to use GUI supports local element management via IP and remote element management over the air, and an SNMP proxy 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 Licensed bands
- RS-232 and IEEE 802.3 protocols
- 12.5 kHz channel size
- 9.6 kbit/s data rate
- 256 bit AES encryption
- 4-CPFSK modulation
- −40 to +70 °C operational temperature
- 177W x 110D x 41.5H mm form factor
- Single or dual frequency half duplex
- ETSI 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

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SYSTEM SPECIFICATION

GENERAL	
NETWORK TOPOLOGY	Point-to-multipoint (PMP); Repeater
NETWORK INTEGRATION	Serial and / or L2 Ethernet

PROTOCOLS	
ETHERNET	IEEE 802.3
SERIAL	Legacy RS-232 transport
WIRELESS	Proprietary

RADIO	FREQ BAND	TUNING RANGE	SYNTH STEP
FREQUENCY RANGE	136 MHz	136 - 174 MHz	3.125 kHz
	400 MHz	400 – 470 MHz	6.25 kHz
CHANNEL SIZE	12.5 kHz		
DUPLEX	Single frequency half-duplex		
	Dual frequency half-duplex		
SYNTHESISER LOCK TIME	< 1.5 ms (5 MHz step)		
FREQUENCY STABILITY	± 1.0 ppm		
FREQUENCY AGING	< 1 ppm / annum		

TRANSMITTER	
POWER OUTPUT	0.1 – 5.0 W (20 – 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	
SENSITIVITY	–117 dBm (9.6 kbit/s, BER < 10^{-2})
ADJACENT CHANNEL SELECTIVITY	> 60 dB
CO-CHANNEL REJECTION	> –12 dB
INTERMODULATION RESPONSE REJECTION	> 70 dB
BLOCKING OR DESENSITISATION	> 84 dB
SPURIOUS RESPONSE REJECTION	> 75 dB

MODEM	
GROSS DATA RATE	9.6 kbit/s
MODULATION	4-CPFSK
FORWARD ERROR CORRECTION	¾ Trellis code

SECURITY	
DATA ENCRYPTION	256 bit AES
DATA AUTHENTICATION	CCM

INTERFACES	
ETHERNET	2-port RJ45 10/100Base-T switch
SERIAL	1 x RJ45 RS-232
MANAGEMENT	1 x USB micro type B (device port)
	1 x USB standard type A (host port)
ANTENNA	1 x TNC, 50 ohm, female
LEDS	5 x red / orange / green
	Status: OK, DATA, CPU, RF, AUX
	Diagnostics: RSSI
TEST BUTTON	Toggles LEDs between diagnostics / status

POWER & ELECTRICALS	
INPUT VOLTAGE	10 – 30 VDC (13.8 V nominal)
RECEIVE	< 430 mA (< 6 W), Full Ethernet activity
	< 330 mA (< 4.5 W), No Ethernet activity
TRANSMIT	< 1630 mA (< 22.5 W), 5W output
	< 540 mA (< 7.5 W), 1W output

MECHANICAL	
DIMENSIONS	W= 177 mm, D= 110 mm, H= 4
WEIGHT	720 g
MOUNTING	Wall, Rack or DIN rail 1.5 mm

ENVIRONMENTAL	
OPERATING TEMPERATURE	–40 to +70 ˚C
HUMIDITY	Maximum 95% non-condensing

MANAGEMENT & DIAGNOSTICS	
LOCAL ELEMENT	Web server with full control / diagnostics
	Partial diagnostics via LEDs and test button
	Firmware upgrade via USB memory stick
REMOTE ELEMENT	Over-the-air remote element management
	with control / diagnostics

COMPLIANCE	
RF	EN 300 113
EMC	EN 301 489 Parts 1 and 5
SAFETY	EN 60950
ENVIRONMENTAL	ETS 300 019 Class 3.4

ABOUT 4RF COMMUNICATIONS

Operating in more than 110 countries, 4RF solutions are deployed by utilities, oil and gas companies, transport companies, telecommunications operators, broadcasters, international aid organisations, and public safety, military and security organisations. All 4RF products are optimised for performance in harsh climates and difficult terrain, and support legacy analogue, serial data, PDH and IP applications.

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