

FCC / IC licensed bands VHF, 220 MHz, UHF, 900 MHz

Datasheet







The Aprisa SR in brief

- Frequency bands of 135 175, 215 240, 400 520, 896 902 and 928 960 MHz
- RS-232 and IEEE 802.3 protocols
- Software selectable 12.5 kHz, 15 kHz, 25 kHz, 30 kHz, 50 kHz, and 100 kHz ^{te 2)} channel sizes (frequency band dependent)
- Data rates of up to 144 kbit/s
- QPSK modulation with adaptive coding
- Mixed network operation with the Aprisa SR+
- Automatic Transmit Power Control: reduces interference in large networks, improves power savings
- Selectable error correction of min, max or no FEC
- AES-CCM to NIST SP 800-38C
- Ethernet and IP / TCP / UDP header compression (ROHC) and payload compression
 - Transparent to all common SCADA protocols
- Dedicated alarm port
- Optional USB connected GPS receiver
- Power optimized option
- 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
- 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 +158 °F operational temperature
- 8.27" (W) x 5.12" (D) x 1.63" (H)
- FCC and IC standards compliant

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

Aprisa SR

SMART, SECURE POINT-TO-MULTIPOINT RADIO

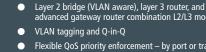
FCC and IC licensed bands



Aprisa SR: smart, secure, point-to-multipoint SCADA communications for oil, gas and utility monitoring and control

- Secure: with its defense in depth approach, including AES encryption, authentication, address filtering and user access control including RADIUS, the Aprisa SR protects against vulnerabilities and malicious attacks.
- Future-proof: the Aprisa SR 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. New Modem 2 firmware allows mixed network operation with Aprisa SR+ at full speed – facilitating a seamless upgrade to 256 QAM operation.
- 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: the Aprisa SR integrates into a range of network topologies, with each unit configurable as a base station, repeater or remote unit. Support for NMEA GPS receiver option.
- 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. 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 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. Modem 2 performance brings new levels of robust QPSK demodulation and large network improvements.
- 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.

4RF



- - L2 / L3 / L4 filtering



FCC and IC licensed bands

Datasheet

SYSTEM SPECIFICATION

NETWORK TOPOLOGY Point-to-multipoint (PMP), Master, Remote, Repeater NETWORK INTEGRATION Serial and Ethermet (router or bridge mode) PROTOCOLS ETHERNET IEEE 802.3, 82.1 d/q/p SERIAL Legacy RS-232 transport USE SERIAL Legacy RS-232 transport USE SERIAL Legacy RS-232 transport USE SERIA Legacy RS-232 transport USE SCADA TUNING RANGE UUE STEP RADO FREQ BAN TUNING RANGE USE STEP FREQUENCY RANGE 135 MHz 135 - 175 MHz 0.625 kHz 0.625 kHz FREQUENCY RANGE 135 MHz 400 – 470 MHz 6.25 kHz 0.625 kHz GUENCY STABLITY 400 MHz 400 – 470 MHz 6.25 kHz 0.000 MHz MANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 Hz software select-able 0.000 MHz 400 – 470 MHz 6.25 kHz DUPLEX Single frequency half-duplex Half duplex remote with SR+ full duplex base station 0.25 kHz 0.25 kHz ARX PEAK ENVELOPE POWER (PEP) 10.0 W (+40 dBm) 1.0 W (+10 to +37 dBm, in 1 dB steps) 0.0 Hz ADIACENT CHANNEL POWER <-60 dBc 1.2 kHz <th>GENERAL</th> <th></th> <th></th> <th></th> <th></th> <th></th>	GENERAL						
PROTOCOLS IEEE 802.3, 802.1 d/g/p ETHERNET IEEE 802.3, 802.1 d/g/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 REG BAND TUNING RANCE RADIO REG BAND TUNING RANCE 200 MHz 215 – 240 MHz 0.625 kHz 400 MHz 400 – 470 MHz 1.25 kHz 400 MHz 400 – 470 MHz 1.25 kHz 450 MHz 896 MHz 896 – 902 MHz 6.25 kHz 208 MHz 928 – 960 MHz 6.25 kHz 200 MHz 450 MHZ 896 MHz 896 – 902 MHz 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex DUPLEX Single frequency half-duplex Half duplex remote with SR+ full duplex base station FREQUENCY STABILITY ± 0.5 ppm FREQUENCY STABILITY ± 0.5 ppm Itemative selectable Single frequency half-duplex AVERAGE POWER OUTPUT 0.01 – 5.0 W(+10 to +37 dBm, in 1 dB steps) <td>NETWORK TOPOLOGY</td> <td>Point-to-mu</td> <td>ultipoint (PM</td> <td>P), Master,</td> <td>Remote, Re</td> <td>peater</td>	NETWORK TOPOLOGY	Point-to-mu	ultipoint (PM	P), Master,	Remote, Re	peater	
ETHERNET IEEE 802.3, 802.1d/g/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 RANCE RADIO FREQ BAND TUNING RANCE TUNE STEP FREQUENCY RANGE 135 - 175 MHz 0.625 kHz 0.625 kHz 200 MHz 400 - 470 MHz 0.625 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 200 MHz 896 MHz 896 - 902 MHz 6.25 kHz 928 MHz 928 – 960 MHz 6.25 kHz 0.625 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 20, 100 kHz software selectable DUPLEX Single frequency half-duplex bual frequency half-duplex bual frequency half-duplex bual frequency half-duplex bual frequency half-duplex buase station FREQUENCY STABILITY ± 0.5 ppm FREQUENCY GAING 1 pm / anum AZPEAKE ENVELOPE POWER (PEP) 10.0 W (+40 dBm) AZPEAKE ENVELOPE POWER (PEP) 10.0 W (+40 dBm) AZPEAKE ENVELOPE POWER (PEP) 0.01 - 5.0 W (+10 to +37 dBm, in 1 dB steps) ADIACENT CHANNEL POWER <-60 dBc	NETWORK INTEGRATION	Serial and Ethernet (router or bridge mode)					
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 BAN TUNING RANGE TUNE STEP FREQUENCY RANGE 135 MHz 135 – 175 MHz 0.625 kHz 220 MHz 215 – 240 MHz 0.625 kHz 0.625 kHz 400 MHz 400 – 470 MHz 1.25 kHz 0.625 kHz 400 MHz 450 – 520 MHz 6.25 kHz 0.625 kHz 400 MHz 450 – 520 MHz 6.25 kHz 0.625 kHz 60 MHz 896 MHz 896 – 902 MHz 6.25 kHz 0.625 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable 0.01 kHz software selectable 0.01 kHz software selectable DUPLEX Single frequency half-duplex base station Half duplex remote with SR+ full duplex base station 1.5 kHz 1.0 kHz FREQUENCY STABILITY ± 0.5 ppm 1.0 W (+40 dBm) ADIACENT CHANNEL POWER <-60 dBc	PROTOCOLS						
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 RADIO FREQ BAND TUNING RANGE 0.625 kHz 220 MHz 215 - 240 MHz 0.625 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 928 MHz 928 - 902 MHz 6.25 kHz 0.625 kHz CHANNEL SIZE 1.25 kHz, 250, 100 kHz software selectable 0.01 mercent builts and two preverse selectable DUPLEX Single frequency half-duplex Dual frequency half-duplex Not set to the	ETHERNET	IEEE 802.3, 802.1d/q/p					
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 220 MHz 215 - 240 MHz 0.625 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 215 - 240 MHz 6.25 kHz 6.25 kHz 400 MHz 400 - 470 MHz 6.25 kHz 928 MHz 928 - 902 MHz 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex base station FREQUENCY STABILITY ± 0.5 ppm FREQUENCY STABILITY ± 0.5 ppm FREQUENCY AGING < 1 pm / annum	SERIAL	Legacy RS-232 transport					
Modus, 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 0.625 kHz 220 MHz 215 - 240 MHz 0.625 kHz 0.625 kHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 0.625 kHz 0.625 kHz 450 MHz 450 - 520 MHz 6.25 kHz 0.625 kHz 0.625 kHz 928 MHz 928 - 960 MHz 6.25 kHz 0.625 kHz 0.625 kHz 125 KHz, 25 kHz, 25 kHz, 25, HD0 kHz software selectable 0.00 WHz 6.25 kHz 0.55 kHz DUPLEX Single frequency half-duplex member with SR+ full duplex base station Half duplex member with SR+ full duplex base station FREQUENCY STABILITY ± 0.5 ppm - 10 MBm, in 1 dB steps) ADJACENT CHANNEL POWER <-60 dBc	WIRELESS	Proprietary					
FREQUENCY RANGE 135 MHz 135 -175 MHz 0.625 kHz 220 MHZ 215 -240 MHz 0.625 kHz 400 MHZ 400 -470 MHz 0.625 kHz 400 MHZ 400 -470 MHz 6.25 kHz 450 MHZ 450 -520 MHz 6.25 kHz 928 MHZ 928 960 MHZ 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable 6.25 kHz 50 kHz DUPLEX Single frequency half-duplex Dual frequency half-duplex Half duplex remote with SR+ full duplex base station 78 FREQUENCY STABILITY ± 0.5 ppm 10.0 W (+40 dBm) 10.0 W (+40 dBm, in 1 dB steps) ADJACENT CHANNEL POWER < -60 dBc	SCADA						
220 MHz 215 - 240 MHz 0.625 kHz 400 MHz 400 - 470 MHz 1.25 kHz 450 MHz 450 - 520 MHz 6.25 kHz 896 MHz 896 - 902 MHz 6.25 kHz 928 MHz 928 - 960 MHz 6.25 kHz 928 MHz 928 - 960 MHz 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex Dual frequency half-duplex Malf duplex remote with SR+ full duplex base station FREQUENCY STABILITY ± 0.5 ppm FREQUENCY STABILITY ± 0.5 ppm TRANSMITTER 0.01 - 5.0 W (+10 to +37 dBm, in 1 dB steps) ADJACENT CHANNEL POWER <-60 dBc	RADIO	FREQ BAND	TUNING	RANGE	TUNE STEP)	
400 MHz 400 - 470 MHz 1.25 kHz 450 MHz 450 - 520 MHz 6.25 kHz 896 MHz 896 - 902 MHz 6.25 kHz 928 MHz 928 - 960 MHz 6.25 kHz 12.5 kHz, 25 kHz, 50, 100 kHz software selectable 6.25 kHz DUPLEX Single frequency half-duplex Dual frequency half-duplex Malf duplex remote with SR+ full duplex base station FREQUENCY STABILITY ± 0.5 ppm FREQUENCY AGING <1 ppm / annum	FREQUENCY RANGE	135 MHz	135 – 1	75 MHz	0.625 kHz		
450 MHz 450 - 520 MHz 6.25 kHz 896 MHz 896 - 902 MHz 6.25 kHz 928 MHz 928 - 960 MHz 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex Dual frequency half-duplex Single frequency half-duplex Maif duplex remote with SR+ full duplex base station + FREQUENCY STABILITY ± 0.5 ppm + 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		220 MHz	215 – 2	40 MHz	0.625 kHz		
896 MHz 896 – 902 MHz 6.25 kHz 928 MHz 928 – 960 MHz 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex Dual frequency half-duplex Sungle frequency half-duplex Max PEAK ENVELOPE OWER (PEP) 0.0 W (+40 dBm) - AVERAGE POWER OUTPUT 0.01 – 5.0 W (+10 to +37 dBm, in 1 dB steps) - ADJACENT CHANNEL POWER <-60 dBc		400 MHz	400 - 4	70 MHz	1.25 kHz		
928 MHz 928 - 960 MHz 6.25 kHz CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex Dual frequency half-duplex Dual frequency half-duplex Dual frequency half-duplex Build frequency half-duplex Single frequency half-duplex FREQUENCY STABILITY ± 0.5 ppm FREQUENCY AGING < 1 ppm / annum		450 MHz	450 - 5	20 MHz	6.25 kHz		
CHANNEL SIZE 12.5 kHz, 25 kHz, 50, 100 kHz software selectable DUPLEX Single frequency half-duplex Dual 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		896 MHz	896 – 9	02 MHz	6.25 kHz		
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		928 MHz	928 – 9	60 MHz	6.25 kHz		
Dual frequency half-duplex Half duplex remote with SR+ full duplex base station FREQUENCY STABILITY ± 0.5 ppm FREQUENCY AGING < 1 ppm / annum	CHANNEL SIZE	12.5 kHz, 25 kHz, 50, 100 kHz software selectable					
FREQUENCY STABILITY ± 0.5 ppm FREQUENCY AGING < 1 ppm / annum	DUPLEX	Dual frequency half-duplex					
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	FREQUENCY STABILITY						
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	FREQUENCY AGING	< 1 ppm / a	annum				
AVERAGE POWER OUTPUT 0.01 - 5.0 W (+10 to +37 dBm, in 1 dB steps) ADJACENT CHANNEL POWER <-60 dBc	TRANSMITTER						
ADJACENT CHANNEL POWER < -60 dBc	MAX PEAK ENVELOPE POWER (PEP)	10.0 W (+40 dBm)					
TRANSIENT ADJACENT CHANNEL POWER < -60 dBc	AVERAGE POWER OUTPUT	0.01 - 5.0 W (+10 to +37 dBm, in 1 dB steps)					
SPURIOUS EMISSIONS < -37 dBm	ADJACENT CHANNEL POWER	<-60 dBc					
ATTACK TIME < 1.5 ms	TRANSIENT ADJACENT CHANNEL POWER	<-60 dBc					
RELEASE TIME < 0.5 ms	SPURIOUS EMISSIONS	< 37 dBm					
DATA TURNAROUND TIME < 2 ms	ATTACK TIME	< 1.5 ms					
RECEIVER 12.5 kHz 25 kHz 50 kHz 100 kHz SENSITIVITY (BER < 10 ⁻⁶) max coded QPSK -115 dBm -112 dBm -100 dBm -106 dBm ADJACENT CHANNEL SELECTIVITY >-47 dBm >-37	RELEASE TIME	< 0.5 ms					
SENSITIVITY (BER < 10.6)	DATA TURNAROUND TIME	< 2 ms					
ADJACENT CHANNEL SELECTIVITY >-47 dBm >-37 dBm >-3	RECEIVER		12.5 kHz	25 kHz	50 kHz	100 kHz	
(Nete: 1) [> 48 dB] [> 58 dB] [> 58 dB] [> 58 dB] CO-CHANNEL REJECTION max coded > -10 dB -	SENSITIVITY (BER < 10 ⁻⁶) max coded	QPSK	–115 dBm	–112 dBm	–109 dBm	-106 dBm	
CO-CHANNEL REJECTION max coded > -10 dB [> 36 db]	ADJACENT CHANNEL SELECTIVITY		>47 dBm	> −37 dBm	>37 dBm	>-37 dBm	
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 25 kHz 50 kHz 100 kHz GROSS DATA RATE QPSK 20 kbit/s 32 kbit/s 72 kbit/s 144 kbit/s OCCUPIED BANDWIDTH 11.8 kHz 19.8 kHz 43.0 kHz 88.0 kHz	(Note 1)		[> 48 dB]	[> 58 dB]	[> 58 dB]	[> 58 dB]	
BLOCKING OR DESENSITISATION > -17 dBm [> 78 dB Note 1] SPURIOUS RESPONSE REJECTION > -32 dBm [> 63 dB Note 1] MODEM 12.5 kHz 25 kHz 50 kHz 100 kHz GROSS DATA RATE QPSK 20 kbit/s 32 kbit/s 72 kbit/s 144 kbit/s OCCUPIED BANDWIDTH 11.8 kHz 19.8 kHz 43.0 kHz 88.0 kHz	CO-CHANNEL REJECTION max coded	>-10 dB					
SPURIOUS RESPONSE REJECTION > -32 dBm [> 63 dB Note 1] MODEM 12.5 kHz 25 kHz 50 kHz 100 kHz GROSS DATA RATE QPSK 20 kbit/s 32 kbit/s 72 kbit/s 144 kbit/s OCCUPIED BANDWIDTH 11.8 kHz 19.8 kHz 43.0 kHz 88.0 kHz	INTERMODULATION RESPONSE REJECTION	> -35 dBm [> 60 dB Note 1]					
MODEM 12.5 kHz 25 kHz 50 kHz 100 kHz GROSS DATA RATE QPSK 20 kbit/s 32 kbit/s 72 kbit/s 144 kbit/s OCCUPIED BANDWIDTH 11.8 kHz 19.8 kHz 43.0 kHz 88.0 kHz	BLOCKING OR DESENSITISATION	> -17 dBm [> 78 dB Note 1]					
GROSS DATA RATE QPSK 20 kbit/s 32 kbit/s 72 kbit/s 144 kbit/s OCCUPIED BANDWIDTH 11.8 kHz 19.8 kHz 43.0 kHz 88.0 kHz	SPURIOUS RESPONSE REJECTION	> -32 dBm [> 63 dB Note 1]					
OCCUPIED BANDWIDTH 11.8 kHz 19.8 kHz 43.0 kHz 88.0 kHz	MODEM		12.5 kHz	25 kHz	50 kHz	100 kHz	
	GROSS DATA RATE	QPSK	20 kbit/s	32 kbit/s	72 kbit/s	144 kbit/s	
FORWARD ERROR CORRECTION Variable Reed Solomon plus convolutional code	OCCUPIED BANDWIDTH		11.8 kHz	19.8 kHz	43.0 kHz	88.0 kHz	
	FORWARD ERROR CORRECTION	Variable Reed Solomon plus convolutional code					

SECURITY DATA ENCRYPTION 256, 192 or 128 bit AES DATA AUTHENTICATION CCM INTERFACES ETHERNET PORTS 2 port RJ45 10/100Base-T auto-neg MDI/MDIX SERIAL PORTS 2 port RJ45 R5-232 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) 1 x Alarm port RJ45 ANTENNA 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 0.5 W (36 mA at 13.8 VDC) 400, 450, 896, 928 MHz < 28 W (2028 mA at 13.8 VDC) 400, 450, 896, 928 MHz < 28 W (2028 mA at 13.8 VDC) 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	
DATA AUTHENTICATION CCM INTERFACES ETHERNET PORTS 2 port RJ45 10/1008ase-T auto-neg MDI/MDIX SERIAL PORTS 2 port 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) 1 x USB standard type A (host port) 1 x USB standard type A (host port) 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON TEST BUTTON Toggles LEDs between diagnostics / status INPUT VOLTAGE 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 0.5 W (36 mA at 13.8 VDC)	
INTERFACES ETHERNET PORTS 2 port RJ45 10/100Base-T auto-neg MDI/MDIX SERIAL PORTS 2 port RJ45 RS-232 Additional RS-232 / RS-485 port via USB converter (optional) GPS RECEIVER 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) 1 x USB standard type A (host port) 1 x Alarm port RJ45 ANTENNA 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER 10 – 30 VDC INPUT VOLTAGE 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 2 W (145 mA at 13.8 VDC) in sleep mode	
ETHERNET PORTS 2 port RJ45 10/1008ase-T auto-neg MDI/MDIX SERIAL PORTS 2 port 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) 1 x USB standard type A (host port) 1 x USB standard type A (host port) 1 x Alarm port RJ45 ANTENNA 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state	
SERIAL PORTS 2 port RJ45 R5-232 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) 1 x VSB micro type B (device port) 1 x VDS micro type B (device port) 1 x Alarm port RJ45 ANTENNA 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER INPUT VOLTAGE 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state	
MANAGEMENT 1 x USB micro type B (device port) 1 x USB micro type B (device port) 1 x USB standard type A (host port) 1 x USB standard type A (host port) 1 x Alarm port RJ45 ANTENNA 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status POWER INPUT VOLTAGE 10 - 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state	
1 x USB standard type A (host port) 1 x Alarm port RJ45 ANTENNA 1 x TNC 50 ohm female LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER INPUT VOLTAGE 10 - 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 2 W (145 mA at 13.8 VDC) in idle receive state < 0.5 W (36 mA at 13.8 VDC) in sleep mode	
LEDs Status: OK, MODE, AUX, TX, RX Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER INPUT VOLTAGE 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state	
Diagnostics: RSSI, traffic port status TEST BUTTON Toggles LEDs between diagnostics / status POWER INPUT VOLTAGE 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 2 W (145 mA at 13.8 VDC) in idle receive state < 0.5 W (36 mA at 13.8 VDC) in sleep mode	
POWER 10 - 30 VDC INPUT VOLTAGE 10 - 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 2 W (145 mA at 13.8 VDC) in idle receive state < 0.5 W (36 mA at 13.8 VDC) in sleep mode	
INPUT VOLTAGE 10 – 30 VDC RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 2 W (145 mA at 13.8 VDC) in idle receive state < 0.5 W (36 mA at 13.8 VDC) in idle receive state < 0.5 W (36 mA at 13.8 VDC) in sleep mode	
RECEIVE All bands < 3 W (217 mA at 13.8 VDC) in active receive state < 2 W (145 mA at 13.8 VDC) in idle receive state < 2 W (145 mA at 13.8 VDC) in idle receive state < 0.5 W (36 mA at 13.8 VDC) in sleep mode TRANSMIT 135 and 220 MHz < 26 W (1884 mA at 13.8 VDC)	
< 2 W (145 mA at 13.8 VDC) in idle receive state	
400, 450, 896, 928 MHz < 28 W (2028 mA at 13.8 VDC) 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	
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	
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	
8.27" (W) x 5.12" (D) x 1.63" (H) WEIGHT 1.25 kg (2.81 lbs) MOUNTING Wall, Rack or DIN rail	
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 SSH and HTTP/S web servers with full control / diagno Partial diagnostics via LEDs and test button Software upgrade from PC or USB flash drive	stics
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	
RF 12.5 kHz, 25 kHz, 50 kHz FCC CFR47 Part 90, IC RSS 119	
100 kHz FCC CFR47 Part 24, IC RSS 119	
EMC FCC CFR47 Part 15, EN 301 489-5, ICES-003	
SAFETY UL / EN 60950 Class 1 div 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 SR User Manual for a complete list of modulation and coding levels.
- The gross data rate for the 12.5 kHz channel size in the 896 / 928 MHz bands varies with regulatory compliance.

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 and PDH applications.

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