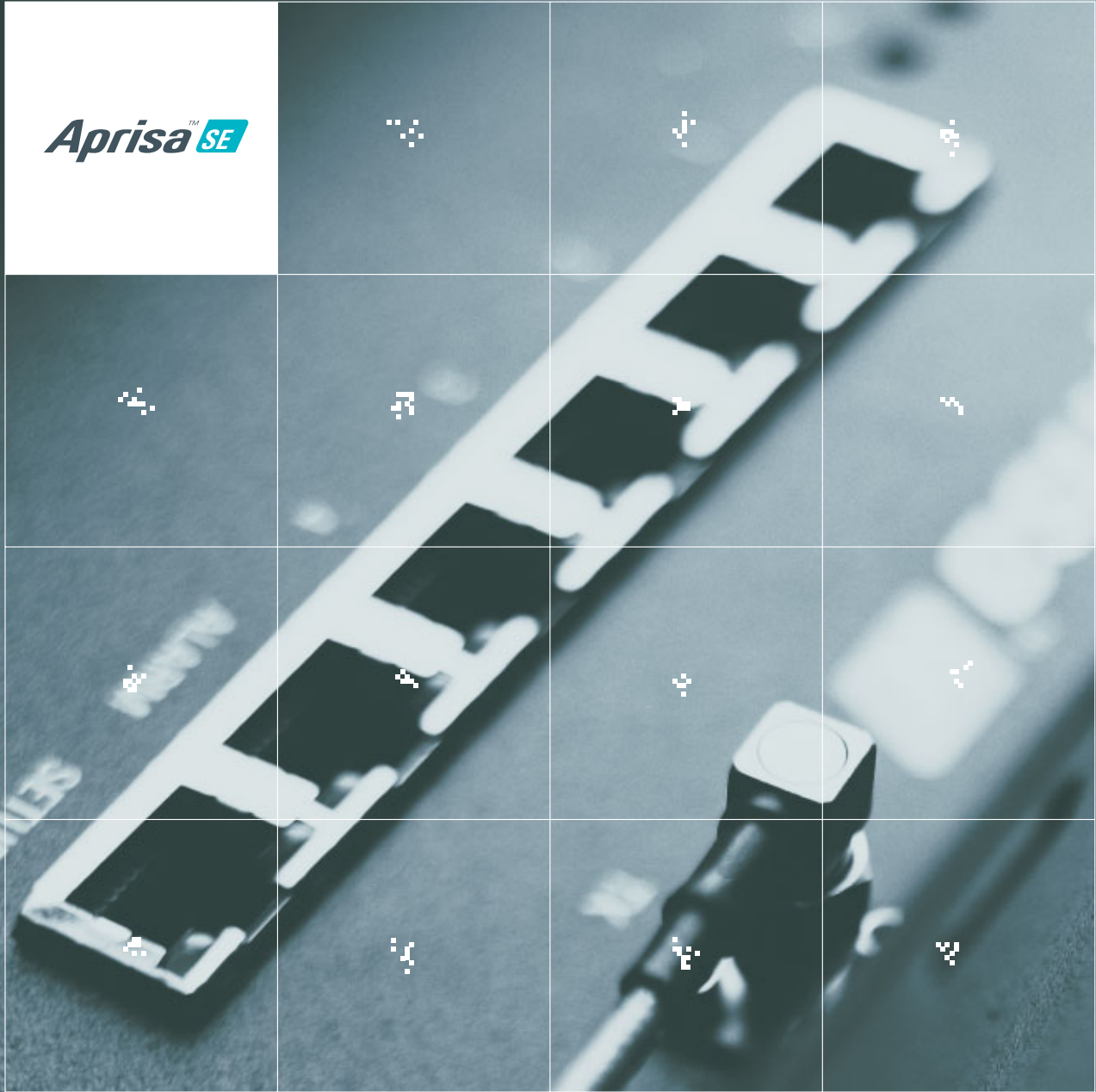


Aprisa™ SE



ADVANCED POINT-TO-POINT WIRELESS SOLUTIONS





WHEREVER IN THE WORLD you find a 4RF wireless solution, you will recognise the strength of our design philosophy. Our Aprisa™ point-to-point digital access solutions deliver superior spectral performance, customizable interfaces and simplified integration for high-performance Internet, voice and data transport by carriers, mobile phone operators, utility companies, emergency services organizations, and the military. Aprisa solutions deliver greater control and enhanced operational independence: they are a catalyst for creating competitive advantage and building value opportunities in today's wireless world.

APRISA SE is the simple, cost-effective solution to a wide range of low capacity point-to-point digital radio applications. Compact and simple to install at any site, Aprisa SE is also easy to use, reducing user expertise requirements, and minimizing the need for additional equipment.

Aprisa SE incorporates a single customer interface card (CIC), with a specific mix of interfaces optimized for the application needs, such as simple fractional E1 and Ethernet, or a complex combination of analog voice and digital data circuits.

SIMPLE SETUP Aprisa SE is intuitive to configure and control through Aprisa Setup, facilitating rapid commissioning and maintenance. Graphical and intuitive, Aprisa Setup requires no ongoing training.

COMPREHENSIVE MANAGEMENT Full network monitoring and logging of alarms and performance is provided by Aprisa View, a simple stand-alone application. Aprisa View includes SNMP connectivity for easy integration to higher-level management systems.

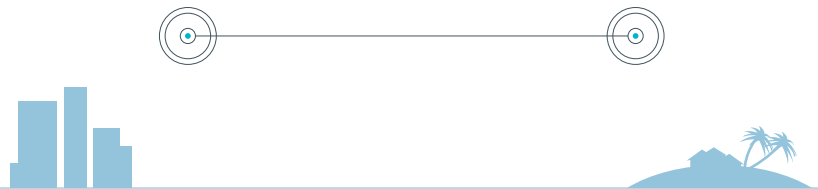


SPECIFICATION OVERVIEW

RF	330–400 400–470 1350–1550 MHz
CAPACITY	64 –1200 kbps
INTERFACE OPTIONS	FRACTIONAL E1 2-WIRE FXO/FXS 4-WIRE E&M V.24/RS-232 HIGH SPEED SYNCHRONOUS 10Base-T
CONFIG/NMS	WINDOWS BASED PC CONFIGURATION TOOL NMS PLATFORM WITH SNMP

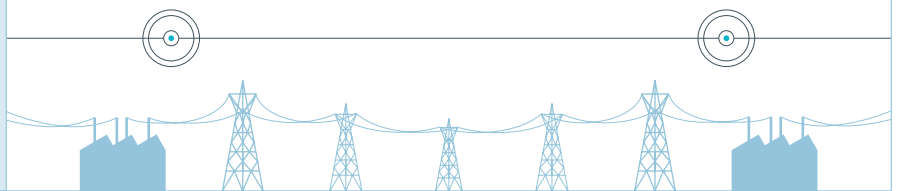


PUBLIC NETWORKS



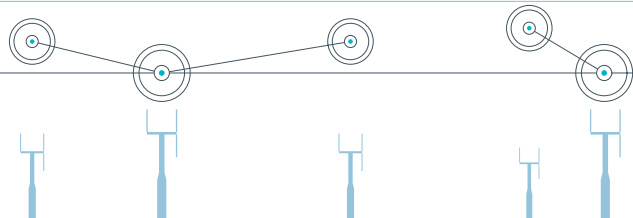
CONNECTIVITY TO REMOTE AND LOW-SUBSCRIBER-DENSITY LOCATIONS Aprisa SE provides high system gain transporting voice circuits over long distances and rugged terrain for public network operators who maintain high Quality of Service (QoS) Internet, voice, and data services to domestic and corporate customers. It does so reliably and robustly using advanced QAM modulation techniques, Reed-Solomon Forward Error Correction (FEC), equalization and interleaving. • The Aprisa SE single interface card architecture supports twin telephone circuits and Ethernet within an optimized unit. Rack or wall-mounted, the radio is an ideal CPE device for operators wanting high-quality connectivity to remote and low-subscriber-density locations. No other equipment is needed: the functionality integrated in the Aprisa SE reduces requirements for additional equipment, network planning, management platforms and training.

PRIVATE NETWORKS



SOLVE COMPLEX COMMUNICATION CHALLENGES By providing an optimal combination of interfaces on a single CIC, Aprisa SE enables single-equipment solutions to complex private network challenges. • Aprisa SE makes network ownership a true alternative to leasing bandwidth, even where complex transport requirements and high quality had previously directed operators to choose leasing. • Aprisa SE delivers industry standard interfaces removing the need to engineer, provision and commission another piece of equipment, and reducing the overall network cost. • Aprisa SE delivers product longevity and reliability providing assurance of service for mission-critical applications. With the digital micro-cross-connect, full control of network circuit provisioning is guaranteed. Aprisa SE will grow with the network, enabling years of reliable service for one or many applications.

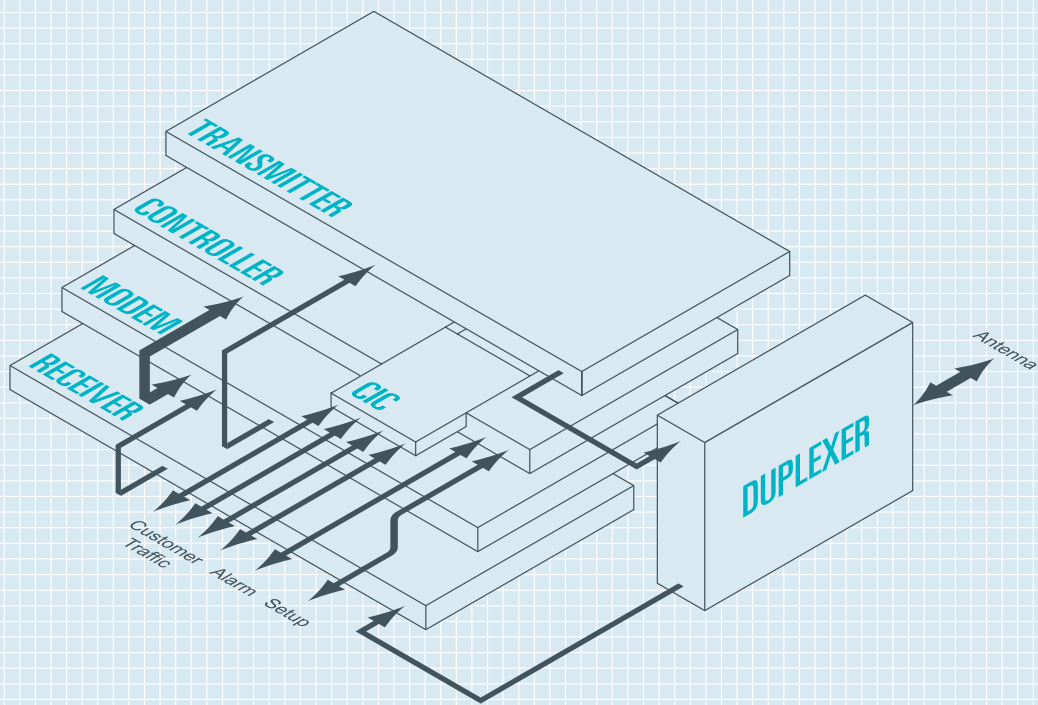
MOBILE RADIO NETWORKS



OPTIMIZED, LOW-CAPACITY LINKING Mobile radio networks transport voice and control signals over analog or digital interfaces from node to site. Transporting low numbers of circuits from site to node can be complex and time-consuming to engineer and expensive to lease. • Aprisa SE CIC cards meet the specifications of mobile radio equipment manufacturers such as Tait Electronics. With multiple voice connections and a data interface integrated into a single CIC, Aprisa SE addresses trunking network applications and provides a high-performance alternative to leased circuits. • For professional and public-access mobile radio networks requiring advanced digital inter-site linking, Aprisa SE supports digital and analog infrastructures through the selection of an optimized CIC. • The Aprisa family is suited to all mobile radio infrastructures — Aprisa SE provides optimized low capacity linking while Aprisa XE allows flexible and functional core-network linking.



Aprisa™ SE



TRANSMITTER / RECEIVER	CONTROLLER	MODEM	CUSTOMER INTERFACE CARD (CIC)
<p>HIGH PERFORMANCE RF PROVIDES RELIABLE RADIO TRANSMISSION PATHS.</p> <p>SYNTHESIZED RF ALLOWS FREQUENCY ADJUSTMENT OVER FULL BAND.</p> <p>EXCELLENT C/I PERFORMANCE FOR BUSY OR CONGESTED RADIO SITES.</p> <p>COMPLIANCE TO RECOGNISED ETSI AND ITU STANDARDS, AND CE CERTIFICATION.</p>	<p>INTEGRATED DIGITAL MICRO-CROSS-CONNECT ALLOWS CUSTOMER FULL CONTROL OF BANDWIDTH TO 8 kbps RESOLUTION.</p> <p>12/24/48 VDC POWER SUPPLY, WITH AC OPTION.</p> <p>LOW POWER CONSUMPTION.</p>	<p>MAXIMUM SPECTRUM USABILITY IN NARROW CHANNELS (25–250 kHz).</p> <p>QPSK DELIVERS HIGH SYSTEM GAIN FOR LONG PATHS.</p> <p>FORWARD ERROR CORRECTION (FEC), INTERLEAVING AND EQUALIZATION PROVIDE ROBUST END-TO-END RADIO PERFORMANCE.</p>	<p>APPLICATION OPTIMISED INTERFACE CARD FOR ALL-IN-ONE SOLUTION.</p> <p>CIC CARDS AVAILABLE:</p> <ul style="list-style-type: none"> • CIC 2: 2 x 4-WIRE E&M, V.24, 10Base-T • CIC 3: FRACTIONAL E1, 10Base-T • CIC 4: 2 x 2-WIRE FXO, V.24, 10Base-T • CIC 5: 2 x 2-WIRE FXS, V.24, 10Base-T • CIC 6: 6 x 4-WIRE VF, V.24 • CIC 7: 2 x FRACTIONAL E1, V.24, 10/100Base-T • CIC 8: 4 x 4-WIRE E&M • CIC 9: FRACTIONAL E1, 4 x 4-WIRE VF, V.24 • CIC 10: 2 x FRACTIONAL E1, HSS SERIAL 10/100Base-T
CHASSIS	SOFTWARE	PROTECTED OPTION	
<p>SMALL FOOTPRINT, IDEAL FOR CPE SITES SUPPORTS 19" RACK, WALL AND DESK MOUNTING OPTIONS.</p> <p>TEMPERATURE CONTROLLED FAN PROVIDES LONG LIFE.</p> <p>EXCELLENT MTBF AND MTTR FIGURES.</p>	<p>APRISA SETUP SOFTWARE IS AN EASY-TO-USE, WINDOWS-BASED CONFIGURATION SOFTWARE THAT OFFERS INTUITIVE SIMPLE SETUP.</p> <p>APRISA VIEW NMS PLATFORM CAN OPERATE AS A STANDALONE APPLICATION OR INTEGRATE WITH LARGER SNMP BASED NETWORK MANAGERS.</p>	<p>OPTIONAL MHSB 1+1 PROTECTION SWITCH OFFERS EQUIPMENT REDUNDANCY AND PROTECTION AGAINST ANY SINGLE POINT OF FAILURE.</p> <p>MICROPROCESSOR CONTROLLED WITH INTEGRATED SOFTWARE SETUP OPTIONS IN APRISA SETUP AND APRISA VIEW</p>	



GENERAL RF							
Frequency Ranges ¹	330 – 470 MHz 1350 – 1550 MHz			Frequency Selection	Synthesized 12.5 kHz steps		
Modulation	16/32/64 QAM and QPSK (software configurable)			Frequency Stability	±1.5 ppm		
				Antenna Connection	N-type female 50 ohm		
SYSTEM PERFORMANCE							
Channel Spacing			25 kHz	50 kHz	75 kHz	150 kHz	250 kHz
Capacity (data rate)	QPSK	Gross rate	–	–	–	240 kbps	400 kbps
		E1 + wayside	–	–	–	3DSO + 48 kbps	6DSO + 16 kbps
	16 QAM	Gross rate	72 kbps	152 kbps	240 kbps	480 kbps	800 kbps
		E1 + wayside	DSO + 8 kbps	2DSO + 24 kbps	3DSO + 48 kbps	7DSO + 32 kbps	12DSO + 32 kbps
	32 QAM	Gross rate	96 kbps	200 kbps	296 kbps	592 kbps	1000 kbps
		E1 + wayside	DSO + 32 kbps	3DSO + 8 kbps	4DSO + 40 kbps	9DSO + 16 kbps	15DSO + 40 kbps
	64 QAM	Gross rate	120 kbps	240 kbps	360 kbps	720 kbps	1200 kbps
		E1 + wayside	DSO + 56 kbps	3DSO + 48 kbps	5DSO + 40 kbps	11DSO + 16 kbps	18DSO + 48 kbps
Receiver Sensitivity ^{2,3}	16 QAM		-104 dBm	-102 dBm	-100 dBm	-97 dBm	-94 dBm
System Gain ^{2,4}	16 QAM		135 dB	133 dB	131 dB	128 dB	125 dB
TRANSMITTER				INTERFACE OPTIONS ⁶			
Power Output ²	+35 dBm (QPSK) ⁵ +31 dBm (16 QAM) +30 dBm (32 QAM) +29 dBm (64 QAM)			Ethernet	10Base-T, 10/100Base-TX		
Power Control	15 dB (in 1 dB steps)			Fractional E1	G.703/4 (120 ohm balanced)		
				Data	Asynchronous V.24/RS232 Synchronous V.11/X.21/V.35		
				Analog	2-Wire FXS/FXO (POTS) 4-Wire E&M		
RECEIVER				AUXILIARY INTERFACES			
Maximum Input Level	-30 dBm			Alarms	2 outputs, 2 inputs		
Dynamic Range	74 – 58 dB (10 ⁻⁶ BER)			Setup (RS-232)	Aprisa Setup™ configuration via PC/laptop Aprisa View™ network management with SNMP via RS-232 over Ethernet		
C/I Ratio							
Co-channel	> 16 dB (QPSK) > 20 dB (16, 32 QAM) > 27 dB (64 QAM)						
1st Adj. Channel	> -5 dB						
2nd Adj. Channel	> -30 dB						
DUPLEXER (BANDPASS) ¹				PROTECTED OPERATION			
330 – 400 MHz	2 MHz passband	> 15 MHz TX/RX split		Equipment Redundancy	Monitored hot standby (MHSB)		
400 – 470 MHz	2 MHz passband	> 5/9 MHz TX/RX split		RX Splitter Loss	3.5 dB		
1350 – 1550 MHz	5 MHz passband	> 48 MHz TX/RX split		TX Switch Loss	1.5 dB		
POWER SUPPLY				ENVIRONMENTAL			
Input Range	±12 V (11 – 15 VDC) ±24 V (20.5 – 30 VDC) ±48 V (40 – 60 VDC)			Operating	-10 to +50° C		
Power Consumption	50 W (typical)			Storage	-20 to +70° C		
				Humidity	Max. 95% non-cond.		
				Altitude	Up to 5000 m		
MECHANICAL				ETSI PERFORMANCE			
19-inch Rack Mount	3 U high (1400 MHz - side mounted duplexer) 4 U high (top mounted duplexer)			Radio	EN 300 630		
Wall Mount (mm)	165 wide x 350 high x 260 deep			EMI/EMC	EN 300 385, EN 301 489 Parts 1 & 4		
Weight	10 kg (typical)			Safety	EN 60950		
				Environmental	ETS 300 019 Class 3.2		

Specifications are typical unless stated otherwise and are subject to change without notice.

¹ Contact 4RF for other duplexer and frequency options.

² Performance specified at the antenna port for 10⁻⁶ BER. Figures for 10⁻³ BER are typically 2 dB better.

³ Receiver sensitivities reduce by 3 dB for 32 QAM and 6 dB for 64 QAM. Receiver sensitivities increase by 6 dB for QPSK.

⁴ System gains reduce by 4 dB for 32 QAM and 8 dB for 64 QAM. System gains increase by 10 dB for QPSK (8 dB for QPSK in 1350 – 1550 MHz band).

⁵ Power output for 330 – 470 MHz frequency ranges. Power output for 1350 – 1550 MHz is +33 dBm.

⁶ A mix of up to four ports on a Customer Interface Card (CIC). Please consult 4RF for standard and custom configurations.

4RF.COM

ABOUT 4RF COMMUNICATIONS

SOLUTION LEADERSHIP

To ensure 4RF systems remain at the fore-front of point-to-point wireless solutions, we're committed to substantial ongoing investment in engineering expertise and R&D.

QUALITY ASSURANCE

To ensure our products' performance is second to none, we invest in high-quality manufacturing and testing resources, leveraging New Zealand's engineering expertise and low cost-base.

COMPREHENSIVE SUPPORT

To assure your success, our internationally-recognized engineering and technical expertise is available to support you via consultancy, business case advice, network design and path planning. Our worldwide distributor and support infrastructure provide prompt communication, technical support and training.

BUSINESS INTEGRITY

New Zealand, our home base, has a safe political and financial environment from where we manage our company based on international best practice.

JUST CALL US

We invite you to tell us about your network and what you would like to achieve. We'd be pleased to visit and present our credentials, table our reference sites and testimonials, demonstrate our solutions, and help you prepare a network design plan.

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