

Aprisa[™] XE



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 XE is the flexible, functional answer to the low/medium capacity challenges in today's wireless networks. Easy to use and customer configurable, Aprisa XE provides solutions from simple trunking applications to complete complex network designs.

APRISA XE includes an embedded management application, SuperVisor™, which allows easy connection from any browser-enabled computer or laptop.

SuperVisor is graphical and intuitive, requiring no ongoing training and no software to ship with the radio. SNMP connectivity is standard with SuperVisor, allowing easy integration of Aprisa XE into higher level management systems.

APRISA XE is built small and powerful, with eight interface slots and up to 16 Mbps of capacity – ideal for use in busy network sites where vertical rack space is limited.

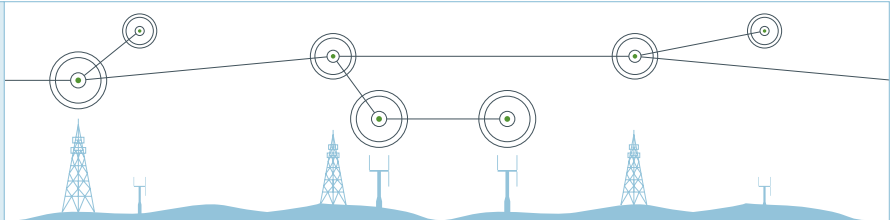


SPECIFICATION OVERVIEW

| | |
|-------------------|---|
| RF | 300, 400, 700, 800, 900, 1400, 2000, AND 2500 MHz BANDS |
| CAPACITY | 102 kbps–17 Mbps |
| INTERFACE OPTIONS | E1/T1/J1 2-WIRE FXO/FXS 4-WIRE E&M V.24/RS-232 HIGH SPEED SYNCHRONOUS 10/100Base-T |
| CONFIG/NMS | EMBEDDED WEB-SERVER APPLICATION WITH SNMP |

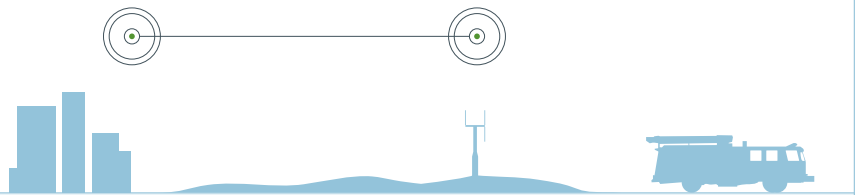


NETWORK TRUNKING



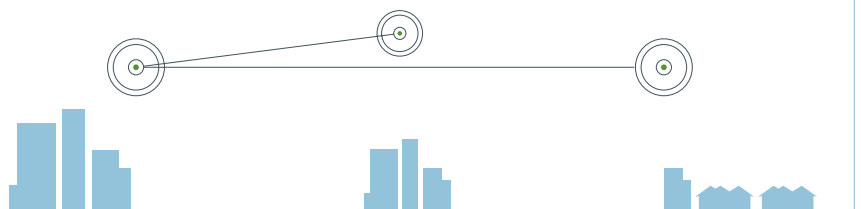
INCREASED OPERATIONAL CONTROL AND OPTIMIZED RESOURCES Aprisa XE provides an intelligent and flexible system for transporting single and multiple E1 streams throughout a communications network. • While public network operators have a wealth of network linking infrastructure available, private network operators must choose between leasing network capacity or owning their own network. Aprisa XE can carry a full E1 within a 500 kHz radio channel providing the operator with E1 linking in cost-effective narrow radio channels. The modular interface architecture allows Aprisa XE to connect up to 32 E1 trunks to the terminal • Aprisa XE also offers the capability to groom within an E1 and cross-connect between multiple E1 streams. This ensures operators have total control over their radio network and can make best use of their available network capacity.

EMERGENCY SERVICES



CONTROL WITH FLEXIBILITY Emergency services networks transport voice and control signals over analog or digital interfaces. These signals may be amalgamated, but are often kept discrete to satisfy protocol requirements. This may be complex and expensive in larger networks — often the total ongoing cost of leasing inter-site connections exceeds the upfront costs of the mobile network. • Multiple interface cards allow Aprisa XE to carry different circuit types individually from node to site. Support of mixed digital and analog infrastructures is simple with the modular interface card architecture enabling the user to service a mix of circuit types. • Advanced cross-connect and timeslot management allows Aprisa XE to efficiently route single and multiple timeslots from congested network cores to remote single sites.

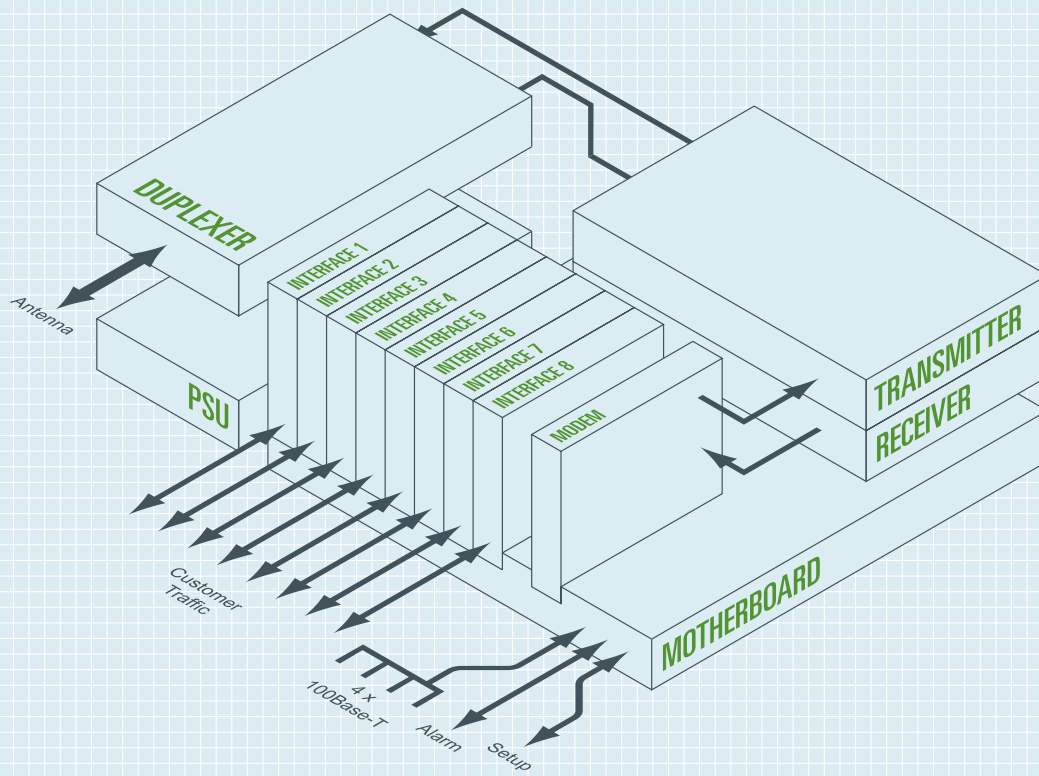
PUBLIC NETWORKS



FLEXIBLE AND FUNCTIONAL CORE-NETWORK LINKING Aprisa XE provides high system gain transporting voice circuits over long distances and rugged terrain for public network operators maintaining 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, and Reed-Solomon Forward Error Correction (FEC), equalization and interleaving. • The multiple interface card architecture allows larger numbers of circuits to be supported through eight option slots; it provides a cost-effective link where a mix of high-quality voice circuits and Ethernet data is transported to remote and low-subscriber-density locations. No other equipment is needed: this functionality is integrated in the Aprisa XE reducing requirements for additional equipment, network planning, management platforms and training.



Aprisa™ XE



| TRANSMITTER / RECEIVER | MODEM | MOTHERBOARD | INTERFACE CARD |
|---|--|---|---|
| <p>HIGH PERFORMANCE RF PROVIDES RELIABLE RADIO TRANSMISSION PATHS.</p> <p>SYNTHESIZED RF ALLOWS FREQUENCY ADJUSTMENT OVER FULL BAND.</p> <p>COMPLIANCE WITH ETSI SPECIFICATIONS ENSURES EXCELLENT C-I RATIOS IDEAL FOR CONGESTED RADIO SITES.</p> | <p>HIGH ORDER QAM MODULATION PROVIDES MAXIMUM SPECTRUM USABILITY IN 75 kHz–3.5 MHz CHANNELS.</p> <p>FORWARD ERROR CORRECTION (FEC), INTERLEAVING AND EQUALIZATION PROVIDE ROBUST END-TO-END RADIO PERFORMANCE.</p> | <p>INTEGRATED DIGITAL CROSS-CONNECT ALLOWS EASY CUSTOMER CONTROL OF BANDWIDTH TO 64 kbps RESOLUTION.</p> <p>ON-BOARD 4-PORT HUB PROVIDES TRANSPORT FOR NETWORK WAN OR LAN, AND APRISA XE NMS.</p> | <p>MULTIPLE INTERFACE CARDS SUPPLY INDUSTRY-STANDARD CONNECTIONS (ANALOG OR DIGITAL), 8 SLOTS AVAILABLE PER XE.</p> <p>INTERFACE CARDS AVAILABLE:</p> <ul style="list-style-type: none"> • QE1: QUAD JET (J1, E1, T1) • DFX0: DUAL 2-WIRE FX0 • DFXS: DUAL 2-WIRE FXS • Q4W: QUAD 4-WIRE E&M • QV24: QUAD V.24 • HSS: HIGH-SPEED SYNCHRONOUS SERIAL • LAN: 4-PORT HUB 10/100Base-T |
| CHASSIS | SOFTWARE | PROTECTED OPTION | |
| <p>24 OR 48 VDC OR 110/230 VAC POWER SUPPLY.</p> <p>LOW HEIGHT RACK PROFILE IDEAL FOR NETWORK SITE INSTALLATION.</p> <p>DUAL FAN FOR LONG LIFE THERMAL STABILITY.</p> | <p>EASY-TO-USE, EMBEDDED WEB-SERVER CONFIGURATION WITH SNMP AS STANDARD.</p> <p>JAVA™-ENABLED INTUITIVE APPLICATIONS REQUIRE NO TRAINING.</p> | <p>INTELLIGENT PROTECTION SWITCH OPTION SUPPORTS MHSB AND DIVERSITY CONFIGURATIONS.</p> <p>HITLESS AND ERRORLESS RECEIVE SWITCHING PROVIDES THE HIGHEST LEVEL OF AVAILABILITY.</p> | |

**GENERAL RF**

| | | |
|-------------------------------|--|-----------------|
| Frequency ranges ¹ | 300 MHz band | 330 – 400 MHz |
| | 400 MHz band | 400 – 470 MHz |
| | 700 MHz band | 698 – 806 MHz |
| | 800 MHz band | 805 – 890 MHz |
| | 900 MHz band | 850 – 960 MHz |
| | 1400 MHz band | 1350 – 1550 MHz |
| | 2000 MHz band | 2000 – 2300 MHz |
| | 2500 MHz band | 2300 – 2700 MHz |
| Modulation | 16/32/64 QAM and QPSK, software configurable | |
| Frequency selection | Synthesized 25 kHz steps | |
| Frequency stability | ±3 ppm | |
| Antenna connection | N-type female 50 ohm | |

TRANSMITTER

| | |
|---------------------------|-----------------------------|
| Power output ² | +35 dBm (QPSK) ³ |
| | +31 dBm (16 QAM) |
| | +30 dBm (32 QAM) |
| | +29 dBm (64 QAM) |
| Power control | 15 dB (in 1 dB steps) |

RECEIVER

| | | |
|---------------------|-----------------------------------|----------------------|
| Maximum input level | -20 dBm | |
| Dynamic range | 82 – 58 dB (10 ⁻⁶ BER) | |
| 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

| | | |
|------------------|---------------------------|--------------------|
| 2 MHz passband | 9.45 – 15 MHz TX/RX Split | 300, 400 MHz bands |
| | > 15 MHz TX/RX Split | 300, 400 MHz bands |
| 3.5 MHz passband | > 20 MHz TX/RX Split | 300, 400 MHz bands |
| | > 30 MHz TX/RX Split | 700 MHz band |
| 7 MHz passband | > 45 MHz TX/RX Split | 800, 900 MHz bands |
| | > 49 MHz TX/RX Split | 1400 MHz band |
| | > 91 MHz TX/RX Split | 2000 MHz band |
| 14 MHz passband | > 74 MHz TX/RX Split | 2500 MHz band |

POWER SUPPLY

| | |
|-------------------|--|
| Input range | 115/230 VAC |
| | ±12 V (10.5 – 18 VDC, consult 4RF) |
| | ±24 V (20.5 – 30 VDC) |
| Power consumption | ±48 V (40 – 60 VDC) |
| | 75 – 220 W (dependant on interface cards fitted) |

MECHANICAL

| | |
|--------------------|------------------------------|
| 19-inch rack mount | 2 U high (internal duplexer) |
| | 3 U high (external duplexer) |
| Weight | < 8 kg |

ETHERNET INTERFACE (FOR IP TRAFFIC AND MANAGEMENT)

| | |
|--------------|---|
| 10/100Base-T | Integrated 4-port switch with port-based rate limiting, VLAN tagging, and QoS support |
|--------------|---|

OPTIONAL INTERFACE CARDS (8 SLOTS)

| | |
|--------|-----------------------------------|
| E1/T1 | Quad G.703/4 (120 ohm) |
| Data | Quad asynchronous V.24/RS232 |
| | Single synchronous V.11/X.21/V.35 |
| Analog | Dual 2-Wire FXS/FXO (POTS) |
| | Quad 4-Wire E&M |

AUXILIARY INTERFACES

| | |
|---------------|--------------------------------------|
| Alarms | 4 outputs, 2 inputs |
| Configuration | Embedded web server with SNMP |
| Management | Via Ethernet interface or V.24 Setup |
| RSSI | Front panel test point |

ENVIRONMENTAL

| | |
|-----------|--------------------|
| Operating | -10 to +50° C |
| Storage | -20 to +70° C |
| Humidity | Max. 95% non-cond. |
| Altitude | Up to 5000 m |

PROTECTED OPTIONS

| | |
|----------------------|---|
| MHSB/space diversity | 3 dB RX splitter loss, 1.5 dB TX relay loss |
|----------------------|---|

COMPLIANCE

| | |
|---------------|---------------------------------------|
| Radio | EN 302 217, EN 301 751, EN 300 630 |
| EMI/EMC | EN 301 489 Parts 1 & 4 |
| Safety | EN 60950 |
| Environmental | ETS 300 019 Class 3.2, EN 50385, WEEE |

SYSTEM PERFORMANCE

| Channel Spacing | | Capacity ⁴ | | | | Receiver sensitivity ^{2,5} | System gain ^{2,6} |
|----------------------|--------------|-----------------------|-----------------|-----------------|-----------------|-------------------------------------|----------------------------|
| | | QPSK | 16 QAM | 32 QAM | 64QAM | 16 QAM | 16 QAM |
| 75 kHz | Gross | 102 kbps | 248 kbps | 312 kbps | 376 kbps | -101 dBm | 132 dB |
| | E1 + wayside | DSO + 38 kbps | 3DSO + 24 kbps | 4DSO + 56 kbps | 5DSO + 56 kbps | | |
| 150 kHz | Gross | 240 kbps | 488 kbps | 616 kbps | 736 kbps | -98 dBm | 129 dB |
| | E1 + wayside | 3DSO + 48 kbps | 7DSO + 40 kbps | 9DSO + 40 kbps | 11DSO + 32 kbps | | |
| 200 kHz ⁷ | Gross | 312 kbps | 632 kbps | 792 kbps | - | -96 dBm | 127 dB |
| | E1 + wayside | 4DSO + 56 kbps | 9DSO + 56 kbps | 12DSO + 24 kbps | - | | |
| 250 kHz | Gross | 408 kbps | 824 kbps | 1032 kbps | 1240 kbps | -95 dBm | 126 dB |
| | E1 + wayside | 6DSO + 24 kbps | 12DSO + 56 kbps | 16DSO + 8 kbps | 19DSO + 24 kbps | | |
| 500 kHz | Gross | 824 kbps | 1656 kbps | 2072 kbps | 2488 kbps | -93 dBm | 124 dB |
| | E1 + wayside | 12DSO + 56 kbps | 25DSO + 56 kbps | 32DSO + 24 kbps | E1 + 400 kbps | | |
| 1 MHz | Gross | 1624 kbps | 3256 kbps | 4072 kbps | 4888 kbps | -90 dBm | 121 dB |
| | E1 + wayside | 25DSO + 24 kbps | E1 + 1168 kbps | E1 + 1984 kbps | 2E1 + 712 kbps | | |
| 1.75/2 MHz | Gross | 2872 kbps | 5752 kbps | 7192 kbps | 8632 kbps | -88 dBm | 119 dB |
| | E1 + wayside | E1 + 784 kbps | 2E1 + 1576 kbps | 3E1 + 928 kbps | 4E1 + 280 kbps | | |
| 3.5 MHz | Gross | 5720 kbps | 11448 kbps | 14312 kbps | 17176 kbps | -84 dBm | 115 dB |
| | E1 + wayside | 2E1 + 1544 kbps | 5E1 + 1008 kbps | 6E1 + 1784 kbps | 8E1 + 472 kbps | | |

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 1 dB better.

3 Power output for 300, 400, 700, 800, and 900 MHz bands. Power output for 1400, 2000, and 2500 MHz bands is +34 dBm.

4 E1 capacities specified as unframed.

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

6 System gains reduce by 4 dB for 32 QAM and 8 dB for 64 QAM. System gains increase by 10 dB for QPSK (9 dB for QPSK in 1400, 2000, and 2500 MHz bands).

7 200 kHz channel sizes are only available in the 700 and 900 MHz bands.

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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