

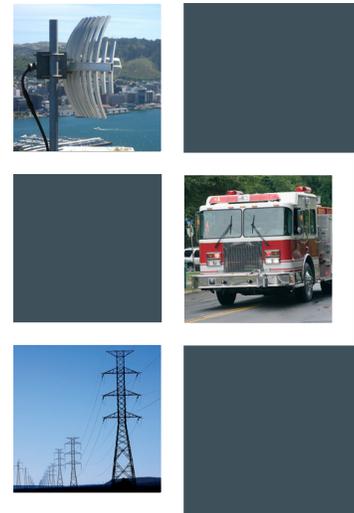
# Aprisa XE

## POINT-TO-POINT DIGITAL MICROWAVE LINKS FCC 700 MHz licensed band



### Aprisa XE: maximizing spectrum use and making challenging long distance links possible

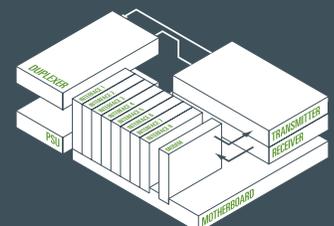
- **Efficient future-proof single-box architecture:** the Aprisa XE's built-in multiplexer and cross-connect eliminate external equipment and minimize the over-the-air requirements, with customer-configurable interface slots integrating all IP, voice and data traffic. Configuration, performance monitoring and diagnostics are easy with the 4RF embedded web-based element management system, SuperVisor.
- **High capacity:** class-leading spectral efficiency and up to 64 QAM modulation make the maximum use of the available spectrum, with industry leading capacity of up to 8632 kbit/s in a 1.75 MHz channel.
- **Long range:** a single 700 MHz Aprisa XE can link distances in excess of 120 miles, overcoming the problems of water, environmental conditions and topographical obstacles.
- **Carrier-class performance:** Aprisa XE links are engineered to achieve 'five 9s' availability, benefiting from state of the art forward error correction and inherent low latencies, for unrivaled quality of service.
- **Cost effective:** the Aprisa XE has a low total cost of ownership, providing a rapid return on investment by minimizing both capital and operational expenditure.
- **Redundancy options:** Monitored Hot Standby and Hitless Space Diversity are available for protection in mission-critical applications.
- **Reliable:** the Aprisa XE has an actual MTBF of 95.72 years. It can be relied upon to perform in the harshest and most remote environments.



### The Aprisa XE in brief

- Licensed 700 MHz lower and upper block A frequency bands
- Built-in cross-connect and multiplexer
- Up to 8632 kbit/s capacity
- 100 kHz, 200 kHz, 500 kHz, 1.0 MHz and 1.75 MHz channel sizes
- QPSK to 64 QAM modulation
- Range of 120+ miles
- Industry-leading reliability
- Web server and SNMP management
- All voice, data and IP applications
- MHSB and HSD protection options

### Future-proof single-box architecture



SYSTEM SPECIFICATION

RF	BAND	TUNING RANGE	SYNTHESIZER STEP	
FREQUENCIES	Lower 700 MHz	698 – 746 MHz	12.5 kHz	
	Upper Block A 700 MHz	757–758 & 787–788 MHz	12.5 kHz	
MODULATION TYPES	Software configurable: QPSK/16/32/64 QAM			
FREQUENCY STABILITY	Short term ± 1 ppm (environmental effects and power supply variations) Long term ± 2 ppm (aging of crystal oscillators ≈ over 5 years)			
ANTENNA CONNECTION	N-type female 50 ohm			
TRANSMITTER POWER OUTPUT		LOWER 700 MHz	UPPER 700 MHz	
QPSK		+21 to +35 dBm	+21 to +31 dBm	
16 QAM		+17 to +31 dBm	+17 to +31 dBm	
32 QAM		+16 to +30 dBm	+16 to +30 dBm	
64 QAM		+15 to +29 dBm	+15 to +29 dBm	
RECEIVER				
MAXIMUM INPUT LEVEL	-20 dBm			
DYNAMIC RANGE	58 to 87 dB at 10 <sup>-6</sup> BER			
C/I RATIO	Co-channel	QPSK	better than 16 dB	
		16 QAM	better than 20 dB	
		32 QAM	better than 23 dB	
		64 QAM	better than 27 dB	
		First adjacent channel	better than -5 dB	
	Second adjacent channel	better than -30 dB		
DUPLEXER (bandpass)		PASSBAND	TX / RX SPLIT	TUNING RANGE
E0	7 MHz	≥ 30 MHz		698 – 806 MHz
POWER SUPPLY				
INPUT RANGE	115 /230 VAC, 50/60 Hz ±12 VDC (10.5 – 18 VDC), ±24 VDC (20.5 – 30 VDC), ±48 VDC (40 – 60 VDC)			
POWER CONSUMPTION	53 – 180 W input power (dependent on interface cards fitted and transmitter output power level)			

INTERFACES	
ETHERNET	Integrated 4-port 10/100Base-T switch with port-based rate limiting, VLAN tagging and QoS Support
E1 / T1	Quad 120 ohm G.703/4
DATA	Quad V.24 asynchronous, synchronous and over sampling mode Single synchronous X.21 / V.35 / RS-449 / RS-530
ANALOG	Dual 2-wire FXS / FXO (POTS); Quad 4-wire E&M
AUXILIARY INTERFACES	
ALARMS	4 external alarm outputs, 2 external alarm inputs
CONFIGURATION	Embedded web server with SNMP
MANAGEMENT	Ethernet interface for SuperVisor and SNMP; V.24 setup port
RSSI	Front panel test point
ENVIRONMENTAL	
OPERATING	+14° F to +122° F (-10° C to +50° C)
STORAGE	-4° F to +158° F (-20° C to +70° C)
HUMIDITY	Maximum 95 % non-condensing
MECHANICAL	
RACK MOUNT	19" 2U high (internal duplexer)
WEIGHT	23 lbs (10 kg) typical
PROTECTED OPTIONS	
MHSB	≤ 4 dB splitter / cable loss, ≤1 dB TX relay / cable loss (system gain reduced by a maximum of 5 dB)
HSD	≤ 1 dB TX relay / cable loss, < 25 ms TX switching / hitless RX switching
COMPLIANCE	
RADIO	FCC CFR 47 Part 27
EMI / EMC	FCC CFR 47 Part 15, EN 301 489 Parts 1 & 4
SAFETY	EN 60950 CSA 253147 applicable for AC, 48 VDC and 24 VDC product variants
ENVIRONMENTAL	ETS 300 019 Class 3.2, WEEE

SYSTEM PERFORMANCE

	Channel	Modulation	Capacity (gross)				
			100 kHz	200 kHz	500 kHz	1.0 MHz	
Upper Block A 700 MHz	100 kHz CHANNEL	QPSK	168 ( 2 TS + 40 ) kbit/s	344 ( 5 TS + 24 ) kbit/s	432 ( 6 TS + 48 ) kbit/s	520 ( 8 TS + 8 ) kbit/s	
		16 QAM					
		32 QAM					
Upper Block A 700 MHz	200 kHz CHANNEL	QPSK	336 ( 5 TS + 16 ) kbit/s	680 ( 10 TS + 40 ) kbit/s	840 ( 13 TS + 8 ) kbit/s	1024 ( 16 TS + 0 ) kbit/s	
		16 QAM					
		32 QAM					
Lower 700 MHz	500 kHz CHANNEL	QPSK	792 ( 12 TS + 24 ) kbit/s	1592 ( 1 T1 + 8 ) kbit/s	1992 ( 1 T1 + 408 ) kbit/s	2392 ( 1 T1 + 808 ) kbit/s	
		16 QAM					
		32 QAM					
Lower 700 MHz	1.0 MHz CHANNEL	QPSK	1656 ( 1 T1 + 72 ) kbit/s	3320 ( 2 T1 + 152 ) kbit/s	4152 ( 2 T1 + 984 ) kbit/s	4984 ( 3 T1 + 232 ) kbit/s	
		16 QAM					
		32 QAM					
Lower 700 MHz	1.75 MHz CHANNEL	QPSK	2872 ( 1 T1 + 1288 ) kbit/s	5752 ( 3 T1 + 1000 ) kbit/s	7192 ( 4 T1 + 856 ) kbit/s	8632 ( 5 T1 + 712 ) kbit/s	
		16 QAM					
		32 QAM					
			RECEIVER SENSITIVITY <sup>2</sup>				
			SYSTEM GAIN <sup>2</sup>				

NOTES

- T1 capacities are specified as unframed. The management Ethernet capacity must be subtracted from the gross capacity (default 64 kbit/s).
- Performance specified at the antenna port for 10<sup>-6</sup> BER. Figures for 10<sup>-3</sup> BER are typically 1 dB better.

ABOUT 4RF

Operating in more than 140 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 analog, serial data and PDH applications.

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Version 9.3.0