



High performance

UHF, Long range, Point to Point Transceiver

300 MHz to 2.5 GHz (Licensed ETSI Bands)

RADLINK-P2P-300M-2500M (split bands)

Features:

- 300 MHz, 400 MHz, 600 MHz.... to 2.5GHz (licensed bands)
- Supports voice, data and IP applications
- Range (over land and water) of up to 150+ km (100+ miles)
- Built-in cross-connect and multiplexer
- Up to 65.4 Mbit/s capacity
- 25 kHz, 50 kHz, 75 kHz...to 14MHz channel sizes
- QPSK to 128 QAM modulation
- Web server and SNMP management
- MHSB (Hot stand by) and HSD (Space diversity) protection options
- To 5 x "9s" availability and over 90 years MTBF!



This superbly reliable range of Point to Point transceivers, provide a long range (up to 150km) solution to allow high availability to 0.99999 (5 x "9s"), IP data and voice. It can supply up to 65.4MBps in up to a 14MHz channel.

The *Monitored Hot Standby* (MHSB) and *Hitless Space Diversity* (HSD) are available options. This product has a calculated MTBF of over 90 years! The radio needs mounting towers and physically large antennas to work.

This radio product was developed to replace the hugely spectrally inefficient *Tropo-scatter*, for example. Anyone needing a point to point application requiring long range voice and data should seriously consider using this.

		Channel													
		25 kHz	50 kHz	75 kHz	125 kHz	150 kHz	200 kHz	250 kHz	500 kHz	1 MHz	1.35 MHz	1.75 MHz	3.5 MHz	7 MHz	14 MHz
FREQUENCY BAND MHz	300 MHz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	400 MHz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	600 MHz											✓	✓		
	800 MHz			✓				✓	✓	✓		✓	✓		
	900 MHz	✓	✓	✓		✓	✓	✓				✓			
	1400 MHz			✓		✓		✓	✓	✓		✓	✓	✓	
	1800 MHz							✓	✓	✓		✓	✓	✓	✓
	2000 MHz								✓	✓		✓	✓	✓	✓
	2500 MHz							✓	✓	✓		✓	✓	✓	✓

RADLINK-P2P-300M-2500M-a20

Specifications may be subject to change

09/13/14

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RF FREQUENCIES	BAND	TUNING RANGE	SYNTHESIZER STEP SIZE
	300 MHz	330 – 400 MHz	6.25 kHz
	400 MHz	394 – 460 MHz	5.0 kHz
	400 MHz	400 – 470 MHz	6.25 kHz
	600 MHz	620 – 715 MHz	12.5 kHz
	800 MHz	805 – 890 MHz	12.5 kHz
	900 MHz	850 – 960 MHz	12.5 kHz
	1400 MHz	1350 – 1550 MHz	12.5 kHz
	1800 MHz	1700 – 2100 MHz	62.5 kHz
	2000 MHz	1900 – 2300 MHz	62.5 kHz
	2500 MHz	2300 – 2700 MHz	62.5 kHz
MODULATION TYPES	QPSK / 16 / 32 / 64 / 128 QAM (Software configurable)		
FREQUENCY STABILITY	Short term ± 1 ppm (environmental effects and power supply variations) Long term ± 2 ppm (aging of crystal oscillators $\approx$ over 5 years)		
ANTENNA interface	N-type f/m (50 Ω)		

Tx POWER O/P versus modulation	300 – 1800 MHz	2000 – 2500 MHz
QPSK	+21 to +35 dBm	+20 to +34 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
128 QAM	+15 to +29 dBm	+15 to +29 dBm

RECEIVER			
MAXIMUM INPUT LEVEL	–20 dBm		
DYNAMIC RANGE	58 to 87 dB at 10 ⁻⁶ 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
		128 QAM	better than 30 dB
	First adjacent channel		better than –5 dB
	Second adjacent channel		better than –30 dB

DUPLEXER (bandpass)	TX / RX SPLIT MHz	FREQUENCY BANDS (MHz)
500 kHz	≥ 5	300, 400
2.0 MHz	≥ 9.45	300, 400
	≥ 20	300, 400
7.0 MHz	≥ 45	600
	≥ 40	800, 900
	≥ 48	1400
14.0 MHz	≥ 47.5	1800
	≥ 91	2000
	≥ 74	2500

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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)
	+12 VDC (10.5 – 18 VDC) Low Power Option
POWER CONSUMPTION	40 – 166 W input power (dependent on frequency band, interface cards fitted and transmitter output power level)
LOW POWER OPTION (12 VDC)	29 – 53 W input power (dependent on frequency band, 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	4 x E1/T1, 120Ω G.703 / G.704
DATA	Quad V.24 asynchronous, synchronous and over sampling mode Single synchronous X.21 / V.35 / RS-449 / RS-530
ANALOGUE	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 SNMP Management, V.24 setup port
RSSI	Front panel test point
ENVIRONMENTAL	
OPERATING	–10° C to +50° C (+14° F to +122° F)
STORAGE	–20° C to +70° C (–4° F to +158° F)
HUMIDITY	Maximum 95 %, non-condensing
MECHANICAL	
RACK MOUNT	19" wide, 2 RU high (internal duplexer)
WEIGHT	~10 kg (23 lbs)
PROTECTED OPTIONS	
MHSB (Hot Stand By)	≤ 4 dB splitter / cable loss, ≤1 dB TX relay / cable loss (system gain reduced by up to a maximum of 5 dB)
HSD (Space Diversity)	≤ 1 dB TX relay and cable loss, < 25 ms TX switching. hitless RX switching
COMPLIANCE	
RADIO	EN 302 217
EMI /EMC	EN 301 489 Parts 1 & 4
SAFETY	EN 60950-1:2006
ENVIRONMENTAL	ETS 300 019 Class 3.2, EN 50385, WEEE

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NOTES:

1 Capacities are specified as unframed. The management Ethernet capacity must be subtracted from the gross capacity (default 64 kbit/s).

2 Performance specified at the antenna port for 10-6 BER. Figures for 10-3 BER are typically 1 dB better.

3 Unreleased: Please contact Raditek for availability.

PRODUCT RANGE:

25 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	N / A	72 (1 TS + 8) kbit/s	96 (1 TS + 32) kbit/s	112 (1 TS + 48) kbit/s	136 (2 TS + 8) kbit/s
RECEIVER SENSITIVITY ²		N / A	-105 dBm	-102 dBm	-99 dBm	-96 dBm
SYSTEM GAIN ²		N / A	136 dB	132 dB	128 dB	125 dB
50 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	80 (1 TS + 16) kbit/s	168 (2 TS + 40) kbit/s	208 (3 TS + 16) kbit/s	256 (4 TS + 0) kbit/s	296 (4 TS + 40) kbit/s
RECEIVER SENSITIVITY ²		-109 dBm	-103 dBm	-100 dBm	-97 dBm	-94 dBm
SYSTEM GAIN ²		144 dB	134 dB	130 dB	126 dB	123 dB
75 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	128 (2 TS + 0) kbit/s	264 (4 TS + 8) kbit/s	312 (4 TS + 56) kbit/s	400 (6 TS + 16) kbit/s	440 (6 TS + 56) kbit/s
RECEIVER SENSITIVITY ²		-107 dBm	-101 dBm	-98 dBm	-95 dBm	-92 dBm
SYSTEM GAIN ²		142 dB	132 dB	128 dB	124 dB	121 dB
125 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	208 (3 TS + 16) kbit/s	424 (6 TS + 40) kbit/s	536 (8 TS + 24) kbit/s	640 (10 TS + 0) kbit/s	744 (11 TS + 40) kbit/s
RECEIVER SENSITIVITY ²		-105 dBm	-99 dBm	-96 dBm	-93 dBm	-90 dBm
SYSTEM GAIN ²		140 dB	130 dB	126 dB	122 dB	119 dB
150 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	(4 TS + 8) 264 kbit/s	(8 TS + 24) 536 kbit/s	672 (10 TS + 32) kbit/s	808 (12 TS + 40) kbit/s	944 (14 TS + 48) kbit/s
RECEIVER SENSITIVITY ²		-104 dBm	-98 dBm	-95 dBm	-92 dBm	-89 dBm
SYSTEM GAIN ²		139 dB	129 dB	125 dB	121 dB	118 dB
200 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	(5 TS + 16) 336 kbit/s	(10 TS + 40) 680 kbit/s	840 (13 TS + 8) kbit/s	1024 (16 TS + 0) kbit/s	1168 (18 TS + 16) kbit/s
RECEIVER SENSITIVITY ²		-102 dBm	-96 dBm	-93 dBm	-90 dBm	-87 dBm
SYSTEM GAIN ²		137 dB	127 dB	123 dB	119 dB	116 dB
250 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	(6 TS + 24) 408 kbit/s	(12 TS + 56) 82 kbit/s	(16 TS + 8) 1032kbit/s	1240 (19 TS + 24) kbit/s	1448 (22 TS + 40) kbit/s
RECEIVER SENSITIVITY ²		-101 dBm	-95 dBm	-92 dBm	-89 dBm	-86 dBm
SYSTEM GAIN ²		136 dB	126 dB	122 dB	118 dB	115 dB
500 kHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	(12 TS + 24) 792kbit/s	(24 TS + 56) 1592 kbit/s	1992 (31 TS + 8) kbit/s	2392 (1 E1 + 304) kbit/s	2792 (1 E1 + 704) kbit/s
RECEIVER SENSITIVITY ²		-99 dBm	-93 dBm	-90 dBm	-87 dBm	-84 dBm
SYSTEM GAIN ²		134 dB	124 dB	120 dB	116 dB	113 dB
1.0 MHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	(E1 + wayside)	(25 TS + 24) 1624 kbit/s	(1 E1 + 1168) 3256 kbit/s	4072 (1 E1 + 1984) kbit/s	4888 (2 E1 + 712) kbit/s	5704 (2 E1 + 1528) kbit/s
RECEIVER SENSITIVITY ²		-96 dBm	-90 dBm	-87 dBm	-84 dBm	-81 dBm
SYSTEM GAIN ²		131 dB	121 dB	117 dB	113 dB	110 dB

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1.35 MHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	E1 + wayside	2200 (1 E1 + 112) kbit/s	4408 (2 E1 + 232) kbit/s	5512 (2 E1 + 1336) kbit/s	6616 (3 E1 + 352) kbit/s	7720 (3 E1 + 1456) kbit/s
RECEIVER SENSITIVITY ²		-95 dBm	-89 dBm	-86 dBm	-83 dBm	-80 dBm
SYSTEM GAIN ²		130 dB	120 dB	116 dB	112 dB	109 dB
1.75 MHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	E1 + wayside	2872 (1 E1 + 784) kbit/s	5752 (2 E1 + 1576) kbit/s	7192 (3 E1 + 928) kbit/s	8632 (4 E1 + 280) kbit/s	10072 (4 E1 + 1720) kbit/s
RECEIVER SENSITIVITY ²		-94 dBm	-88 dBm	-85 dBm	-82 dBm	-79 dBm
SYSTEM GAIN ²		129 dB	119 dB	115 dB	111 dB	108 dB
3.5 MHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	E1 + wayside	5720 (2 E1 + 1544) kbit/s	11448 (5 E1 + 1008) kbit/s	14312 (6 E1 + 1784) kbit/s	17176 (8 E1 + 472) kbit/s	20040 (9 E1 + 1248) kbit/s
RECEIVER SENSITIVITY ²		-90 dBm	-84 dBm	-81 dBm	-78 dBm	-75 dBm
SYSTEM GAIN ²		125 dB	115 dB	111 dB	107 dB	104 dB
7.0 MHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	E1 + wayside	11832 (5 E1 + 1392) kbit/s	23672 (11 E1 + 704) kbit/s	29592 (14 E1 + 360) kbit/s	35512 (17 E1 + 16) kbit/s	41432 (19 E1 + 1760) kbit/s
RECEIVER SENSITIVITY ²		-87 dBm	-81 dBm	-78 dBm	-75 dBm	-72 dBm
SYSTEM GAIN ²		122 dB	112 dB	108 dB	104 dB	101 dB
14.0 MHz CHANNEL		QPSK	16 QAM	32 QAM	64 QAM	128 QAM ³
Gross Capacity ¹	E1 + wayside	23992 (11 E1 + 1024) kbit/s	47992 (22 E1 + 2056) kbit/s	59992 (28 E1 + 1528) kbit/s	65464 (28 E1 + 7000) kbit/s	65400 (28 E1 + 6936) kbit/s
RECEIVER SENSITIVITY ²		-84 dBm	-78 dBm	-75 dBm	-72 dBm	-69 dBm
SYSTEM GAIN ²		119 dB	109 dB	105 dB	101 dB	98 dB

NOTES:

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R- E1 / T1-QIFC 	E1 / T1 framed / unframed Quad interface card The Quad E1/T1 card is a quad port, 2 Mbit/s E1 / T1 digital interface providing unframed (G.703) and framed (G.704) interfaces. Unframed (G.703) E1 is typically used for transport of an entire E1 / T1 over the radio link. Framed (G.704) E1 / T1 timeslots can be cross connected to: 1. Any other E1 / T1 timeslot on any other E1 / T1 interface providing transport, timeslot grooming and drop and insert functionality. 2. Analogue interface cards providing digital trunk interface connection to PBX and telephone exchanges. 3. QV24 interface cards providing synchronous over sampling circuits.
RV24QC 	V.24 serial interface Quad card The QV24 is a quad port serial interface card providing asynchronous and synchronous V.24 data transmission. Asynchronous mode provides V.24 circuits at data rates of 300, 600, 1200, 2400, 4800, 7200, 9600, 12800, 14400, 19200, 23040, 28800, 38400, 57600 and 115200 bit/s. In synchronous mode, interface data is synchronously mapped to radio capacity using proprietary subrate multiplexing providing data rates of 300, 600, 1200, 2400, 4800, 9600 and 19200 bit/s. QV24 interfaces are required at both ends of the circuit. In over sampling mode, the interface data is sampled at a fixed 64 kHz. This timeslot can be cross connected to an E1 or T1. This over sampling mode can be operated up to 19200 bit/s.
RSSIC 	Single synchronous serial interface card The RSSIC is a single port high speed serial interface card providing V.35, X.21, RS-449 and RS-530 synchronous data transmission as either a DTE or a DCE. It supports data rates of 8 to 2048 kbit/s in 8 kbit/s steps (dependent on rate selected). 8 kbit/s is used for control lines. The interface card provides an LFH 60 connector and uses standard Cisco WAN port serial interface cables to provide the correct data interface connector. The interface specification (X.21 / V.35 etc) is automatically changed by simply changing the type of interface cable connected to the HSS.
RQ4EM 	, 4 wire E&M Quad interface card The RQ4EM is a quad port analogue interface card providing a 4 wire analogue circuit and single E&M signalling. The Q4EM digitizes analogue signals using either 64 kbit/s PCM (G.711-compliant) or 32, 24 or 16 kbit/s ADPCM compression (G.726-compliant), providing phone-quality voice transmission. Channel Associated Signalling (A bit) is used to signal between the interfaces. The RQ4EM E&M signalling leads are optically isolated, bi-directional lines which can be externally referenced to meet any of the EIA-464 connection types I, II, IV or V.

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RFXO	Dual 2 wire loop signaling foreign exchange office (FXO) interface card  The function of FXO / FXS two wire loop interface circuits is to transparently extend the 2 wire interface from the exchange line card to the telephone / PBX, ideally without loss or distortion. These circuits are known as 'ring out, dial in' 2 wire loop interface circuits. The RFXO interface simulates the function of a telephone. The RFXO digitizes analogue signals using either 64 kbit/s PCM (G.711-compliant) or 32, 24 or 16 kbit/s ADPCM compression (G.726-compliant), providing phone-quality voice transmission. Channel Associated Signalling (ABCD bits) is used to signal the remote RFXS. Line and balance impedances are synthesized with high-performance DSP architecture.
RFXS	Dual 2 wire loop signalling foreign exchange subscriber (FXS) interface card  The function of FXO / FXS two wire loop interface circuits is to transparently extend the 2 wire interface from the exchange line card to the telephone / PBX, ideally without loss or distortion. These circuits are known as 'ring out, dial in' 2 wire loop interface circuits. The RFXS interface simulates the function of an exchange line card. The RFXS digitizes analogue signals using either 64 kbit/s PCM (G.711-compliant) or 32, 24 or 16 kbit/s ADPCM compression (G.726-compliant), providing phone-quality voice transmission. Channel Associated Signaling (ABCD bits) is used to signal the remote RFXO. Line and balance impedances are synthesized with high-performance DSP architecture.