

# Tel-Link Radio Specifications

FREQUENCY	15 GHz	18 GHz	23 GHz	38 GHz
Frequency Range	14.5 to 15.35 GHz	17.7 to 19.7 GHz	21.2 to 23.6 GHz	38.6 to 40.0 GHz
Tuning Range	Up to 160 MHz	Up to 440 MHz	600 MHz	350 MHz
Transmit Receive Spacing	475 MHz	340 or 1560 MHz	1200 MHz	700 MHz
Capacities & RF Channel Spacing			<u>2 FSK</u> <u>4 FSK</u>	<u>2FSK</u> <u>4FSK</u>
1 x T1			5 MHz	5 MHz
4 x T1	5 MHz	5 MHz	15 MHz	15 MHz   7.5 MHz
8 x T1	10 MHz	10 MHz	15 MHz	15 MHz
16 x T1	20 MHz	20 MHz	30 MHz	30 MHz
1 x DS3	40 MHz	40 MHz	40 MHz	40 MHz

## TRANSMITTER

Power Output				
Standard Power	+17 dBm	+17 dBm	+17 dBm	+17 dBm
High Power	+22 dBm	+22 dBm	+22 dBm	+21 dBm
Very High Power	+27 dBm			
Frequency Stability	±0.0005%	±0.0005%	±0.0005%	±0.0005%
Attenuation Range	30 dB	30 dB	30 dB	25 dB

## RECEIVER (1 X 10<sup>-6</sup> BER)

Overload		-20 dBm	-20 dBm	-20 dBm	-15 dBm (std) -20 dBm with LNA option
Sensitivity					<u>Std.</u> <u>LNA option</u>
1 x T1   2 FSK				-90 dBm	-88 dBm   -94 dBm
4 x T1   2 FSK				-84 dBm	-82 dBm   -88 dBm
4 x T1   4 FSK	-81 dBm	-81 dBm			-78 dBm   -84 dBm
8 x T1   4 FSK	-79 dBm	-79 dBm		-80 dBm	-76 dBm   -82 dBm
16 x T1   4 FSK	-76 dBm	-76 dBm		-77 dBm	-73 dBm   -79 dBm
1 x DS3   4 FSK	-74 dBm	-74 dBm		-74 dBm	-69 dBm   -75 dBm

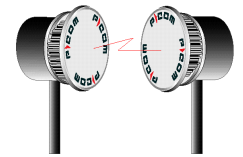
## SYSTEM GAIN (1 X 10<sup>-6</sup> BER)

Standard Power					
1 x T1	2 FSK			107 dB	105 dB
4 x T1	2 FSK			101 dB	99 dB
4 x T1	4 FSK	98 dB	98 dB		95 dB
8 x T1	4 FSK	96 dB	96 dB	97 dB	93 dB
16 x T1	4 FSK	93 dB	93 dB	94 dB	90 dB
1 x DS3	4 FSK	91 dB	91 dB	91 dB	86 dB
High Power					
1 x T1	2 FSK			112 dB	115 dB
4 x T1	2 FSK			106 dB	109 dB
4 x T1	4 FSK	*103 dB	103 dB		105 dB
8 x T1	4 FSK	*102 dB	101 dB	102 dB	103 dB
16 x T1	4 FSK	*98 dB	98 dB	99 dB	100 dB
1 x DS3	4 FSK	*96 dB	96 dB	96 dB	96 dB

\*Add 5 dB For Very High Power Power

Unless otherwise noted, specifications reflect typical performance of a non-protected terminal connected back-to-back, and are subject to change without notice.

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## GENERAL

Compatible Standards	FCC Parts 15 & 101	Digital I/O Connectors	
Frequency Source	Synthesizer	T1	100 balanced DB-25
Systems Configurations	Non-Protected (1+0), Protected (1+1)	DS3	75 unbalanced BNC
RF Channel Selection	IDU Controlled or via NMS	T1 wayside (optional)	100 balanced DB-15
Modulation Type	FSK	Receiver Type	Dual Conversion
Digital Interface Type		Intermediate Frequency	140 MHz
T1	ITU-T G.703 & Bellcore	Unfaded BER	10 <sup>-11</sup> or better
DS3	GR-499-CORE	Loopbacks	Indoor Unit, Outdoor Unit, Local Line, Remote Line
Digital Line Code		Relay Outputs	Five Form "C" Relays
T1	AMI or B8ZS		
DS3B3ZS			

## MECHANICAL

Dimension		IDU-ODU Interconnection	
Outdoor Unit	10" dia. x 8" depth	No. of Cables	One
Indoor Unit		Type	RG-8
1x, 4x, DS3	1.75" x 19" x 9.5"	Impedance	50 unbalanced
8x, 16x	3.5" x 19" x 10.5"	Recommended Cable	Belden 9913
Weight		Maximum Distance	Up to 1000 Ft. (300 m)
Outdoor Unit	10 lbs.	Connector Type	"N" Male
Indoor Unit			
1x, 4x, DS3	9 lbs.		
8x, 16x	14 lbs.		

## ENVIRONMENTAL

Temperature Range		Relative Humidity	
Indoor Unit	-10°C to +50°C	Indoor Unit	95% at +50°C
Outdoor Unit	-30°C to +60°C	Outdoor Unit	100% all weather operation
NEBS Compliant	SR-3580 Levels 1 & 2	Altitude	15,000 ft. (4,500 m)

## SERVICE CHANNELS

Number of Service Channels	Three	NMS Data Channel	
Engineering Orderwire		Bit Rate	Customized
Frequency Response	300-3400 Hz	Protocols	Customized
Impedance	600 balanced	User Interface	DB-9
User Interface	RJ-11		
Digital Data Channel			
Bit Rate	0 - 9600 bps		
Protocol	RS-232C, RS-422/423		
User Interface	DB-9		

## POWER SUPPLY

Standard Input	±20VDC to ±60VDC
Power Consumption	
1T1- 4T1	50 watts
8T1- 16T1	60 watts
1DS3	50 watts

## FCC DATA

18 GHz

23 GHz

38 GHz

18 GHz

23 GHz

38 GHz

### FCC Identifier

### Emission Designator

Standard Power						
1 x T1		KINTL23S-1T	KINTL38S-1T		3M60F7W	5M00F7W
4 x T1	KINTL18S-4T	KINTL23S-4T	KINTL38S-4T	5M00F7W	14M4F7W	20M0F7W
8 x T1	KINTL18S-8T	KINTL23S-8T	KINTL38S-8T	10M0F7W	15M0F7W	15M0F7W
16 x T1	KINTL18S-16T	KINTL23S-16T	KINTL38S-16T	20M0F7W	30M0F7W	30M0F7W
1 x DS3	KINTL18S-45	KINTL23S-45	KINTL38S-45	40M0F7W	40M0F7W	40M0F7W
High Power						
1 x T1		KINTL23-1T			3M60F7W	
4 x T1	KINTL18-4T	KINTL23-4T		5M00F7W	14M4F7W	
8 x T1	KINTL18-8T	KINTL23-8T		10M0F7W	15M0F7W	
16 x T1	KINTL18-16T	KINTL23-16T		20M0F7W	30M0F7W	
1 x DS3	KINTL18-45	KINTL23-45		40M0F7W	40M0F7W	