

Tel-Link Radio Specifications

GENERAL

Applicable Standards	ITU-R 385, 386, 497, 636, 595, 637, 749	Receiver Type	Dual Conversion
Frequency Source	Synthesizer	Intermediate Frequency	140 MHz
Systems Configurations	Non-Protected (1+0), Protected (1+1)	Unfaded BER	10 ⁻¹¹ or better
RF Channel Selection	IDU Controlled or via NMS	Loopbacks	IDU, ODU, Local Line, Remote Line
Modulation Type	2/4 FSK	Relay Outputs	Five Form "C" Relays
Digital Interface Type	E1 per ITU-T G.703	EMC/EMI	Per ETS 300 385 EC
Digital Line Code	HDB3	Directive 89/336/EC	
Digital I/O Connectors	75 unbalanced BNC or 120 balanced DB-25 (optional)		

MECHANICAL

Dimension		DU-ODU Interconnection	
Outdoor Unit	250 mm diameter	No. of Cables	One
200 mm depth		Type	RG-8
Indoor Unit		Impedance	50 unbalanced
1 RU	44 mm x 483 mm x 245 mm	Recommended Cable	Belden 9913
2 RU	89 mm x 483 mm x 267 mm	Maximum Distance	Up to 300 m. (1000 ft.)
Weight		Connector Type	"N" Male
Outdoor Unit	4.5 kg		
Indoor Unit			
1 RU	4.5 kg		
2 RU	6.3 kg		

SERVICE CHANNELS

Number of Service Channels	Three	Digital Data Channel	
Capacity (each channel)	64 kbps	Bit Rate	0 - 9600 bps
Engineering Orderwire		Protocol	RS-232C, RS-422/42
Frequency Response	300-3400 Hz	User Interface	DB-9
Impedance	600 balanced	NMS Data Channel	
User Interface	RJ-11	Bit Rate	Customized
		Protocols	Customized
		User Interface	DB-9

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
		Altitude	4500 m

POWER SUPPLY

Standard Input	±20VDC to ±60VDC	
Power Consumption	Non Protected	Protected
Low Capacity	50W	110W
High Capacity	65W	140W

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FREQUENCY	7 GHz	13 GHz	15 GHz
Frequency Range	7.125 to 8.5 GHz	12.75 to 13.25 GHz	14.25 to 15.35 GHz
Tuning Range	112 MHz	125 MHz	150 MHz
Capacities & RF			
Channel Spacing			
1 x E1	3.5 MHz	3.5 MHz	3.5 MHz
2 x E1	3.5 MHz	3.5 MHz	3.5 MHz
4 x E1	7 MHz	7 MHz	7 MHz
8 x E1	14 MHz	14 MHz	14 MHz
16 x E1	28 MHz	28 MHz	28 MHz

TRANSMITTER

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

RECEIVER (1 X 10⁻⁶ BER)

Overload	-20 dBm	-20 dBm	-20 dBm
Sensitivity			
3 x 64 Kbps 2 FSK			
1 x E1	2 FSK	-90 dBm	-89 dBm
2 x E1	2 FSK		
2 x E1	4 FSK	-87 dBm	-86 dBm
4 x E1	2 FSK		
4 x E1	4 FSK	-84 dBm	-83 dBm
8 x E1	4 FSK	-81 dBm	-80 dBm
16 x E1	4 FSK	-78 dBm	-77 dBm

SYSTEM GAIN (1 X 10⁻⁶ BER)

Standard Power			
3 x 64 Kbps 2 FSK			
1 x E1	2 FSK	112 dB	106 dB
2 x E1	2 FSK		
2 x E1	4 FSK	109 dB	103 dB
4 x E1	2 FSK		
4 x E1	4 FSK	106 dB	100 dB
8 x E1	4 FSK	103 dB	97 dB
16 x E1	4 FSK	100 dB	94 dB
High Power			
1 x E1	2 FSK	117 dB	*111 dB
2 x E1	2 FSK		
2 x E1	4 FSK	114 dB	*118 dB
4 x E1	2 FSK		
4 x E1	4 FSK	111 dB	*105 dB
8 x E1	4 FSK	108 dB	*102 dB
16 x E1	4 FSK	105 dB	*99 dB

* Add 5 dB for Very High Power



18 GHz	23 GHz	26 GHz	38 GHz	50 GHz
17.7 to 19.7 GHz	21.2 to 23.6 GHz	24.5 to 26.5 GHz	37.0 to 39.5 GHz	49.2 to 50.2 GHz
490 MHz	672 MHz	448 MHz	560 MHz	250 MHz
			<u>2 FSK</u>	<u>4 FSK</u>
3.5 MHz	3.5 MHz	3.5 MHz	7 MHz	3.5 MHz
3.5 MHz	3.5 MHz	3.5 MHz	7 MHz	3.5 MHz
7 MHz	7 MHz	7 MHz	14 MHz	7 MHz
14 MHz	14 MHz	14 MHz	14 MHz	14 MHz
28 MHz	28 MHz	28 MHz	28 MHz	28 MHz
+17 dBm	+17 dBm	+17 dBm	+17 dBm	+8 dBm
+22 dBm	+22 dBm	+ 22 dBm	+21 dBm	
±0.0005%	±0.0005%	±0.0005%	±0.0005%	±0.0005%
30 dB	30 dB	30 dB	50 dB	25 dB
-20 dBm	-20 dBm	-20 dBm	-15 dBm	-15 dBm
			-20 dBm LNA (Option)	
			Std.	LNA (Option)
			-87 dBm	
-88 dBm	-89 dBm	-88 dBm	-87 dBm	-93 dBm
	-86 dBm		-84 dBm	-90 dBm
-85 dBm	-83 dBm	-85 dBm	-81 dBm	-87 dBm
	-83 dBm		-81 dBm	-87 dBm
-82 dBm	-80 dBm	-82 dBm	-78 dBm	-84 dBm
-79 dBm	-77 dBm	-79 dBm	-75 dBm	-81 dBm
-76 dBm	-74 dBm	-76 dBm	-72 dBm	-78 dBm
			104 dB	
105 dB	106 dB	105 dB	104 dB	92 dB
	103 dB		101 dB	89 dB
102 dB	100 dB	102 dB	98 dB	
	100 dB		98 dB	86 dB
99 dB	97 dB	99 dB	95 dB	
96 dB	94 dB	96 dB	92 dB	
93 dB	91 dB	93 dB	89 dB	
			114 dB	
110 dB	111 dB	110 dB	111 dB	
	108 dB		108 dB	
107 dB	105 dB	107 dB	108 dB	
	105 dB		108 dB	
104 dB	102 dB	104 dB	105 dB	
101 dB	99 dB	101 dB	102 dB	
98 dB	96 dB	98 dB	99 dB	