

DXL8000

High Performance Short Haul Radio

OVERVIEW

The DXL8000 6 to 23 GHz Short Haul Radio is a compact, high performance, split mount digital duplex microwave radio designed for Studio to Transmitter, Transmitter to Studio and “last mile” point to point applications. The DXL8000 delivers aggregate data rates up to 170 Mbps at 64QAM modulation.

The DXL8000 supports from 1 – 4 independent, user selectable transport streams, and includes Web Browser Management Interface to optimize transmission parameters for maximum spectral efficiency. Transport stream options include ASI, SMPTE 310M, in support of ATSC, DVB-T, ISDB-T BTS and DS3 / E3, 100BaseTX Ethernet, and T1/E1. The advanced digital modulator includes Viterbi error correction for ultra-robust performance under adverse path conditions, while the adaptive equalizer at the receiver automatically compensates for multipath errors.

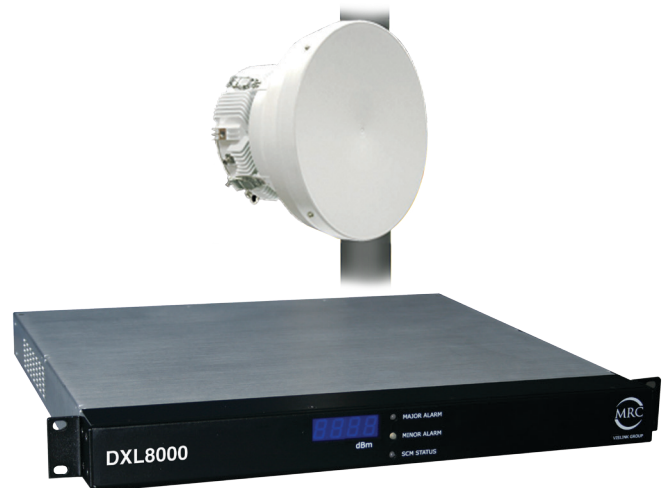
The DXL8000 is built for easy installation, setup, and management. The split mount design enables the use of economical coaxial interconnects between the Indoor Unit and the rooftop or tower mounted Outdoor Unit. The radio’s advanced control processor with embedded web server provides a rich set of control and configuration options both locally, and remotely, over a secure IP connection.

All operating parameters are monitored by the control processor which immediately reports alarm conditions via the graphical interface and relay contacts. Alarms may be customized to suit user preferences, and a wayside serial port is included for service channel support.

The DXL8000 Short Haul Radio delivers industry leading throughput performance, an extensive range of interface options and advanced configuration and control to meet broadcasters’ present requirements and future growth plans.

Key Features

- Send up to 3 ASI Signals Simultaneously
- Part 74 FCC Compliant
- Easy to Use Web Browser Monitor & Control
- Fully Enabled Out of the Box (no additional licenses to purchase)
- Duplex Mode Enables High-Speed Ethernet



High Performance 6 to 23 GHz Short Haul Radios

FEATURES

- High Performance
 - Up to 170 Mbps throughput
 - Integrated Multiplexer & Modulator
 - Duplex and Simplex configurations
- Multiple Transport Streams
 - ATSC, DVB-T, ISDB-T BTS
 - SMPTE 310M, ASI
 - 10/100 Ethernet
 - Telco DS3/E3 and T1/E1
- Advanced Management functionality
 - Browser based local and remote configuration/monitoring
 - Firmware upgrades in the field
 - Embedded Wayside data channel
- Designed for Reliability
 - Transmitter provides ultrarobust performance under adverse path conditions
 - Receiver automatically compensates for multi-path errors
 - Versatile 1 RU split mount design configurations
- IF Only option for use with external 70 MHz modems
- ANSI and ETSI Versions

Typical Applications

- “Last Mile” Point-to-Point Microwave
- Studio to Transmitter Link
- Short to Medium Range Transmission

GENERAL

Frequency Range (GHz)

- 5.9 to 6.4
- 6.4 to 7.1
- 7.1 to 7.9
- 7.9 to 8.5
- 10.7 to 11.7
- 12.7 to 13.25
- 17.7 to 19.7
- 21.2 to 23.6

Channel Bandwidths:

- 10, 20, 30, & 40 MHz

Modulation:

- QPSK, 16QAM, 32QAM, 64 QAM

Data Rates:

- Up to 45 Mbps in 10 MHz (Std)
- Up to 90 Mbps in 20 MHz (Std)
- Up to 135 Mbps in 30 MHz (optional)
- Up to 170 Mbps in 40 MHz (optional)

Symbol rate range:

- 1 to 20 Mbps (standard)
- 1 to 33 Msps (optional)

USER DEFINABLE SIGNAL INTERFACE OPTIONS

ASI, ATSC, ATSC-H, ISDB-T

- Impedance: 75 Ω Unbalanced, ± 5%
- Data Rate: Any transport stream rate up to 90 Mbps
- MPEG Support: 188 byte Auto Detection or 204 byte packets
- Standards Compliance: DVB-ASI per EN 50083-9

- ppm
- Line Coding: T1AMI or B8ZS (user selectable, each channel)
- Line Coding E1: AMI or HDB3 (user selectable, each channel)

DS3:

- Impedance: 75 Ω unbalanced, ± 5%
- Line Rate: 44.736 Mbps, ± 20 ppm
- Line Coding: B3ZS

E3:

- Impedance: 75 Ω unbalanced, ± 5%
- Line Rate: 34.368 Mb/s ± 20 ppm
- Line Coding: HDB3

10/100BaseT:

- Protocol: User Programmable HDLC and LAPS mapping

Interface Rate:

- 10/100 BaseT limited to ASI rate setting

SMPTTE 310M, ATSC, ATSC-H

- Impedance: 75 Ω Unbalanced, ± 5%
- Data Format: Biphasic Mark Coding
- Clock Rate: 19.39265 Mbps, ± 2.8 ppm
- Data Rate: 19.39265 Mbps (same as clock rate)
- Standards Compliance: SMPTTE 310M

T1/E1:

- Impedance: 100 Ω Balanced, ± 5%
- Line Rate T1: 1.544 Mbps ± 32 ppm
- Line Rate E1: 2.048 Mb/s ± 32 ppm

POWER & POWER CONSUMPTION

- 90-132V and 180-264V at 47-63 Hz
- Consumption: 120 W Max.
- Line & load regulation: ± 2% over AC input range and 0 to 100% load change.

ENVIRONMENTAL:

- ODU Operational: -22° to +131° F [-30° to +55° C] (Cold start at -45° C [-49° F])
- IDU Operational: 0° to +50° C [32° to +122° F]

PHYSICAL

IDU:

- Weight: 7.6 lbs [3.45 kg]
- Dimensions:
 - 1 RU 19" EIA Rack Mount
 - 15.5" Deep (from mounting brackets)

ODU:

- Weight: 10.1 lbs [4.6 kg]
- Dimensions:
 - 10.5" Dia x 3.5" Depth [26.7 cm x 8.9 cm]

IDU/ODU INTERFACE

- Interconnecting Cable: 850 ft. Max
- Connector Type: Type N (both ends)
- Cable Type: LDF4-50A, LMR-400 or equivalent

STANDARDS COMPLIANCE:

- IEEE 802.3-2002, RFC1662, RFC2615, X.86, RMII

MANAGER INTERFACE

- 10 BaseT (Web browser)

IF ONLY OPTION

(EXTERNAL MODEM REQUIRED)

- Input/Output Frequency: 70 MHz
- IF Levels: -10 dBm nominal

SUMMARY ALARM/ALERT:

- Two independent Form C relay closures via DB-9 connector on rear panel.

RF PERFORMANCE

RF Band (GHz)	Regulatory Standard	Frequency Tolerance	Channel B/W MHz	Duplex T/R Spacing MHz	Typ RF O/P QPSK dBm	Typ RF O/P 16QAM dBm	Typ RF O/P 32QAM dBm	Typ RF O/P 64QAM dBm	Rx Threshold 16QAM	Typical Noise Figure
5.9 to 6.4	FCC Part 101	0.001	30	252.04	30	28		24	-76	<2.5
6.4 to 7.1 **	ETSI Plan	0.001	7, 14, 28, 40	340	30	30		24	-76	<2.5
7.1 to 7.9	*ETSI	0.001	7, 14, 28, 40	154, 160, 161, 168, 196, 245	30	28	28	24	-77	<3.0
7.9 to 8.5	*ETSI	0.001	7, 14, 28, 40	154, 160, 161, 168, 196, 245	30	28	28	24	-77	<3.0
10.7 to 11.7	FCC Part 101	0.001	30, 40	490/500	28	26		21	-77	<3.0
12.7 to 13.25	FCC Parts 74 and 101	.001	10, 20, 30, 40	266	26	23	23	18	-77	<3.0
17.7 to 19.70	FCC Parts 74 & 101	0.001	10, 20, *30, 40	1560	25	22		17	-77	<6.0
21.2 to 23.6	FCC Part 101	0.001	10, 20, 30, 40	1200	25	22		17	-76	<6.0

* Part 101 only; 30 MHz channels not available in Part 74 FCC at 18 GHz

** ETSI -Export applications only, not available in US

DATA RATES

Channel B/W MHz	Max Symbol Rate Msps	Max Baseband Data Rate - Mbps				FCC Emission Designator
		QPSK	16QAM	32QAM	64QAM	
7	5.7	11.0	22.0	28.0	N/A	N/A
10	8.2	14.8	29.9	37.3	N/A	10M0D7W
14	11.5	22.0	44.0	56.0	N/A	N/A
20	16.4	29.5	59.8	74.6	N/A	20M0D7W
28	23.0	44.0	89.0	112.0	132.0	N/A
30	24.6	44.3	89.7	111.9	134.0	30M0D7W
40	32.8	59.0	119.6	149.2	178.6	40M0D7W

Note: All specifications subject to change without notice.

AVAILABLE ANTENNAS

Model*	Band (GHz)	Diameter	Gain	FCC Category	ETSI Category
HP6-59R**	5.9 - 6.4	6(1.8 M)	39.0	A	300883 R1 C2
HP6-64R**	6.4 - 7.1	6(1.8 M)	39.1	A	300883 R1 C2
HP2-7	7.1 - 7.8	2' (60)	30.7		300883 R1 C2
HP3-7		3' (90)	33.9		300883 R1 C2
HP4-7		4' (120)	36.3		300883 R1 C2
HP6-7		6' (180)	39.9		300883 R1 C2
HP2-77*	7.75 - 8.5	2' (60)	31		300883 R1 C2
HP3-77*		3' (90)	34.5		300883 R1 C2
HP4-77*		4' (120)	37		300883 R1 C2
HP6-77*		6' (180)	40.3		300883 R1 32
HP2-11R	10.7 - 11.7	2 (0.6 M)	33.4	B	300883 R1 C2
HP3-11R		3 (0.9 M)	36.9	B	300883 R1 C3
HP4-11R		4 (1.2 M)	39.4	A	300883 R1 C2
HP6-11R		6 (1.8 M)	42.5	A	300883 R1 C2
HP2-13R	12.7 - 13.25	2 (0.6M)	35.9		300833 R1 C2
HP3-13R		3 (0.9M)	38.7		300833 R1 C2
HP4-13R		4 (1.2M)	41.9	B	300833 R1 C2
HP6-13R		6 (1.8M)	44.4	A	300833 R1 C3
HP2-18R	17.7 - 19.7	2 (0.6 M)	38.6	A	300883 R2 C3
HP3-18R		3 (0.9 M)	42.0	A	300883 R2 C3
HP4-18R		4 (1.2 M)	44.5	A	300883 R2 C3
HP6-18R		6 (1.8 M)	48.0	A	300883 R2 C2
HP2-23R	21.2 - 23.6	2 (0.6 M)	40.2	A	300883 R2 C3
HP3-23R		3 (0.9 M)	43.7	A	300883 R2 C3
HP4-23R		4 (1.2 M)	46.2	A	300883 R2 C3
HP6-23R		6 (1.8 M)	49.2	A	300883 R2 C2

Notes: * All antennas include snap mount for ODU

** 5.9 - 6.4 & 6.4 - 7.1 GHz antennas are rectangular W/G feed. All others are circular interface.

