

# DXL5000 Series

## Long-Haul Radio

### OVERVIEW

The DXL5000 is a compact high performance, digital microwave system designed for STL, ATSC, ISDB-T, inner city relay, statewide networks, and other point-to-point applications. The digital platform provides highly reliable long-term operation. Combined with a user-friendly, web-based command, control, and diagnostic interface, the DXL5000 radio is loaded with features that simplify installation, optimization, and monitoring.

The system can be equipped with up to four user definable transport tributaries fed from a variety of interface connectors. Available interface types include three 75 BNCs, four RJ-45s, and a serial port. All coaxial inputs can be configured as ASI or DS3/E3, with one having the capability of SMPTE310. The selection is made via an intuitive web based GUI. One of the RJ45s is for 10/100 Ethernet Data traffic through the link, two support T1/E1 traffic, and one is dedicated to web browser management. An integrated multiplexer combines all signals for transport. A wayside serial port is available for additional service channel needs.

The advanced digital modulator includes adjustable Viterbi error correction to provide ultra-robust performance under adverse path conditions, and the adaptive equalizer in the receiver automatically compensates for multipath. The DXL5000 systems web based set-up software allows a user to optimize transmission parameters for the most efficient spectral use of the authorized channel balanced against path conditions.

All of the operating parameters are monitored by an on board processor that immediately reports alarm conditions through either the web interface, or relay contacts. The same web GUI may be used to set-up and change the radio configuration using a browser connected via ethernet. Alarms may be customized to suit user preferences. Critical signal error conditions can be designated as major alarms while non-critical errors can be designated as alerts.

Each DXL5000 transmitter or receiver is completely self contained in a single rack unit chassis that includes digital



*Digital Video/Data Microwave System*

baseband processing, RF subsystems, shelf processor, and a power supply. Available configurations include: simplex or duplex, non-protected, hot-standby protected, space diversity receiver, terminals, with models from 6 to 13 GHz.

### BENEFITS

- High Performance Digital STL/ICR/Backbone, ATSC, ISDB-T
- Integrated Multiplexer / Modem
- ASI, SMPTE 310M, DS3/E3, T1/E1 ISDB-T BTS
- Non-protected and Hot-Standby terminals
- Compatible with DXL8000
- 10/100 Ethernet traffic support
- Wayside serial data
- Powerful Viterbi error correction
- Highly effective multipath equalizer

### CONFIGURATIONS

- Simplex
- Duplex
- Non-protected
- Hot-Standby Tx, Rx, Duplex
- Space Diversity Rx

### 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

### Typical Applications

- Fixed Point-to-Point Microwave
- Studio to Transmitter Link
- Inner City Relay
- Statewide Systems
- Medium to Long Range Transmission

## GENERAL

### Modulation Capability:

- QPSK, 16QAM, 32QAM 64QAM

### Data Rates:

- Up to 110 Mbps in 25 MHz Channel
- 155 Mbps in 30 MHz Channel
- 178 Mbps in a 40 MHz channel

### Symbol rate range:

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

### ASI, ATSC, ISDB-T, DVB-T

- Impedance: 75 Ω Unbalanced, ± 5%
- Data Rate: Any transport stream rate up to 105 Mbps
- MPEG Support: 188 byte or 204 byte packets, auto detection
- Standards Compliance: DVB-ASI per EN 50083-9

### SMPTE 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: SMPTE 310M

### T1/E1

- Impedance: 100 Ω nominal, Balanced, ± 5%
- Line Rate T1: 1.544 Mbps ±32 ppm
- Line Rate E1: 2.048 Mb/s ±32 ppm
- Line Coding T1: AMI or B8ZS (user selectable, each channel)
- Line Coding E1: AMI or HDB3 (user selectable, each channel)

### DS3:

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

### E3:

- Impedance: 75 Ω unbalanced
- Line Rate: 34.368 Mb/s +/-20 ppm
- Line Coding: HDB3

### 10/100 BaseT:

- Protocol: User Programmable HDLC & LAPS mapping
- Interface Rate: 10/100 BaseT limited to ASI rate setting
- Standards Compliance
  - IEEE 802.3-2002, RFC1662
  - RFC2615, X.86, RMII

## CONTROL AND ALARMS

### Web Browser Management Interface:

- 10 BaseT (Web Browser)

### Summary Alarm/Alert:

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

## POWER & POWER CONSUMPTION

- AC input: 90 to 132V & 180 to 264V at 47 to 63 Hz
- Line & load regulation:
  - ±2% over AC input range
  - and 0 to 100% load change.
- DC input: ± 24Vdc, ± 48Vdc
- Transmitter: 130 W Max.
- Receiver: 60 W Max.

## ENVIRONMENTAL

### Operating to full specifications:

- 0° to +50° C [32° to 122° F]
- Humidity up to 95% non-condensing

### Operational:

- -10° to +60° C [14° to 140° F]

### Storage:

- -40° to +70° C [-40° to 158° F]

## PHYSICAL

### Mounting:

- 19" EIA Rack Mount

### Height:

- 1RU

### Depth with Branching:

- 12.7"

### Depth without Branching:

- 16.75"

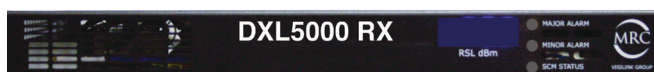
## RF PERFORMANCE

Model	RF Bands	Power O/P* (dBm)	Rx Sens** (dBm)	Stability
DXL5000 2 GHz Rx	2.0 to 2.7 GHz		-80	0.0005%
DXL5000 2 GHz Tx	2.3 to 2.7 GHz	+31		0.0005%
DXL5000 2 GHz Tx	2.0 to 2.11 GHz & 2.45 to 2.5 GHz	+31		0.0005%
DXL5000 6 GHz	5.9 to 7.1 GHz	+28	-80	0.0005%
DXL5000 6 GHz HiPwr	5.9 to 7.1 GHz	+33	-80	0.0005%
DXL5000 7 GHz	7.6 to 8.5 GHz	+28	-80	0.0005%
DXL5000 12 GHz	10.5 to 13.25	+27	-79	0.0005%

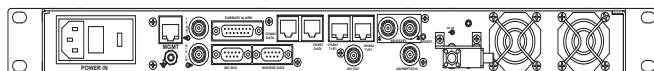
\* O/P power reference is 16QAM, measured prior to branching.

\*\* Rx Threshold referenced to 10<sup>-6</sup> BER in 16QAM mode, measured at the channel filter input

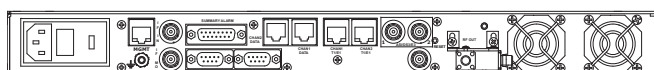
Note: RF output and receiver threshold vary in relationship to symbol rate and modulation constellation.



DXL Receiver Front Panel Controls



DXL Receiver Rear Panel Connections



DXL Transmitter Rear Panel Connections

