

# Millennium PML-DR

Portable Digital Microwave Radio Links

## Applications

- Fixed or Portable Links
- News or Sporting Event Coverage

## Features

- Transmitters and receivers from 1.7 to 15 GHz, in 500 MHz bands
- Convertible: Analog Video + 4 Audio Channels, or 34 Mbps Digital Datastream
- Separate RF Unit from control unit by up to 250 meters/800 feet (standard configuration)
- 70 MHz intermediate frequency
- Digital frequency synthesizers
- Integral LNA standard
- Alarms and indicators at RF unit and control unit
- Audible & visual panning aid for antenna alignment
- Linear AGC with direct read RCL in dBm on front panel
- Quick connect antenna feeds
- Up to 4 RF Heads can be placed on a single tripod and configured as either simplex or duplex links
- Built-in AC/DC power:
  - ◆ Universal AC Inputs, 105 to 260 Vac
  - ◆ Standard DC Input, 24 or 48 Vdc
  - ◆ Optional Automatic Switch, AC/DC
- Direct reading RCL in dBm
- Optional hot standby configuration



## Overview

The MRC Millennium PML-DR two-box microwave radios are designed for international applications, in compliance with CCIR recommendations, requiring widely separated RF units and control units. In a standard configuration, the RF unit can be separated from the control unit by up to 250 meters (800 feet), with a standard 70 MHz IF signal feeding the RF unit through a single triax cable.

For outstanding flexibility, the Millennium PML-DR can be reconfigured quickly from the standard analog video plus audios configuration to a digital radio featuring a full 34 Mbps (E3) datastream. This optional PML-DR configuration can be setup quickly in the field by merely replacing modules in the control unit. The RF unit is the same for all configurations.

The Millennium PML-DR radio series include both transmitters and receivers. Up to four RF Heads can be placed on a single heavy duty tripod, and configured for either simplex or duplex operation.

The Millennium PML-DR features an internal AC/DC power supply, with universal AC inputs and DC inputs. The radio also offers up to four audio subcarriers.

# SPECIFICATIONS

## CONFIGURATIONS

Choice of Frequency Bands  
 1.99 to 2.5 or 2.3 to 2.7 GHz  
 3.25 to 3.75 GHz  
 4.4 to 4.9 GHz  
 5.8 to 6.4 GHz  
 6.4 to 7.0 or 6.5 to 7.1 GHz  
 7.1 to 7.7 GHz  
 7.7 to 8.2 or 8.2 to 8.5 GHz  
 10.25 to 10.75 GHz  
 12.7 to 13.2 GHz  
 14.0 to 14.5 or 14.7 to 15.2 GHz  
 Preprogrammed Channels: ..... Up to 100 are available  
 Modulation: ..... FM  
 Video Deviation: ..... 8 MHz  
 Power Supply: ..... 0 to 60 Vdc & 105 to 260 Vac  
 (50 to 60 Hz)  
 Optional Auto Switchover: ..... From AC to DC  
 on loss of AC  
 DC Power Consumption, TX or RX: ..... 80 W, typical

## TRANSMITTER

Type: ..... Dual conversion, superheterodyne  
 Power Output (without branching)  
 2, 3, 4 & 5 GHz Models, typical: ..... 4 Watts  
 6, 7 & 8 GHz Models, typical: ..... 2 Watts  
 10, 13 & 14 GHz Model, typical: ..... 1 Watt  
 IF Input Level: ..... 0.2 to 1.0 Vrms  
 Frequency Stability: .....  $\pm 0.002\%$

## DIGITAL SYSTEM PERFORMANCE

All measurements at -40 dBm RCL.  
 System Gain  
 10-3 BER: ..... 112 dB  
 10-6 BER: ..... 109 dB  
 Capacity: ..... E3, 34 Mbps  
 Modulation: ..... 4FSK  
 Interface: ..... G.703  
 Line Code: ..... HDB3  
 Bit Error Rate (10-6), 34 Mbps: ..... -75 dBm RCL  
 Jitter: ..... per CCITT Rec. G.823 & G.824  
 Local Orderwire: ..... Control Unit to RF Unit

## RECEIVER

Type: ..... Dual conversion, superheterodyne  
 Frequency Stability: .....  $\pm 0.002\%$   
 Noise Figure: .....  $\leq 4$  dB min  
 Intermediate Frequency: ..... 70 MHz  
 IF Output Level: ..... 0.5 Vrms

## INTERCONNECTION

Coax, Cable Length: ..... Up to 250 meters/800 feet

## OPERATING ENVIRONMENT

**RF UNIT**  
 Temperature: ..... -30° to +55°C  
 Relative Humidity: ..... up to 100%  
**CONTROL UNIT**  
 Temperature: ..... 0° to +45°C  
 Relative Humidity: ..... up to 95%

## PHYSICAL

**RF UNIT**  
 Size: ..... 4.75" h x 8" w x 11" d  
 (12.1 x 20.3 x 27.9 cm)  
 Weight: ..... 17 lbs (7.7 kg)  
**CONTROL UNIT**  
 Size: ..... 5.2" (h) x 17.25" (w) x 11.5" (d)  
 (13.2 x 43.8 x 29.2 cm)  
 Weight: ..... Approx. 23 lbs (10.4 kg)

## METERS AND INDICATIONS

RF Head Metering, Transmitter: ..... Output Power  
 Receiver: ..... Received Carrier Level (RCL)  
 Control Unit Metering: ..... System Voltages  
 External Indicators: ..... Summary Alarm LEDs  
 Internal Indicators: ..... Subcarrier Alarms, AFC,  
 Local Oscillator Lock



*Millennium PML-DR: Up to four RF Units can be placed on the heavy-duty tripod.*

