Pro-Line

18/23 GHz Analog/Digital Short Haul Radio

Applications

- Dual Carrier ENG Back Hauls
- Dual or Single Carrier ENG Back Hauls
- Inter-City Relay Links (ICR)
- Repeaters
- Cable Head-End Distribution Links
- “Last/First Mile” Video and Data Links
- Digital Short Haul

Features

- Single or Dual Carrier
- Frequency Bands:
  17.7 to 19.7 GHz
  21.2 to 23.6 GHz
- Analog NTSC/PAL with up to 4 audio channels
- Supports QPSK, 16/32/64 QAM
- Data rates up to 90mbps

Pro–Line Radio with
MRC Variable Rate Modem

Overview

The Pro-line system is the newest member of MRC’s analog and digital products. The Pro-Line is a dual carrier or single carrier digital microwave system for high-performance short-haul applications. The system is designed to deliver broadcast-quality digital signals in the 17.7 to 19.7 and 21.2 to 23.6 GHz frequency bands. The Pro-Line series radio offers a wide varity of configurations and capacity by utilizing MRC's Variable Rate Modem (VRM). The adoption of the VRM allows the design engineer to select the most robust modulation, depending on customer needs. In many cases link budget requirements are more easily met with this approach versus costly options employing high power and or diversity solutions. This platform supports modulation rates from QPSK to 64QAM. The flexibilty is ideal in areas where frequency spectrum is at a premium, or for users who need to expand data thruput, yet are restricted within a specified assigned bandwidth.

The Pro-Line offers a unique and cost effective solution for any short haul application whether it is an analog only or digital high capicty platform capable of up to 90 Mbps. The sytem can be configured to carry simultaneous analog NTSC/PAL (with up to 4 audio sub-carriers), and a digital signal within the same RF channel capable of carrying up to 45 Mbps (DS3).

MICROWAVE RADIO COMMUNICATIONS

SPECIFICATIONS

GENERAL

Standard Frequency Bands, TwinHaul 18/23Ghz
17.7 to 19.7 and 21.2 to 23.6 GHz

TRANSMITTER

Type: ..... Single conversion at microwave, both carriers IF upconversion, proprietary
Local Oscillators: ..... Ultra-low phase noise,phase-locked sources
Frequency Stability: ..... ±0.0005%, both carriers
Power Output: ..... See Operating Specifications Summary

RECEIVER

Type: ..... Single conversion at microwave, both carriers IF downconversion, proprietary
Local Oscillators: ..... Ultra-low phase noise, phase-locked sources
Noise Figure: ..... 3.5 dB max
IF Bandwidth: ..... 15 MHz Analog, 10 MHz Digital
Threshold: ..... See Operating Specifications Summary

ANALOG CHANNEL, VIDEO PERFORMANCE

(Internal FM modulator and demodulator)
Deviation: ..... 8 MHz P-P
Video Signal/Noise: ..... 67 dB min
Video Signal/Hum: ..... 60 dB min
Frequency Response: ..... ±0.25 dB, 10 kHz to 4.5 MHz
±0.75 dB, 4.5 to 7.5 MHz
Field Tilt: ..... 3 IRE max
Line Tilt: ..... 0.5 IRE max
Differential Phase: ..... ±0.75° max
Differential Gain: ..... 3% max

ANALOG CHANNEL, AUDIO PERFORMANCE

(Internal FM modulator and demodulator)
Capacity: ..... 4 FM subcarriers up to 7.5 MHz max
Frequency Response: ..... ±1.0 dB, 40 Hz to 12 kHz
–1.5 dB, 12 to 15 kHz
Audio Signal/Noise: ..... 66 dB min
Distortion: ..... 1% max
Input/Output Levels: ..... 0 to +9 dBm, adjustable
Input/Output Impedance: ..... 600 Ω

DIGITAL SPECIFICATIONS

Digital Video Channel
Data Rate: ..... 19.39 Mbps (ATSC transport stream)
Interface: ..... SMPTE 310M, typical

WAYSIDE DATA CHANNEL

Data Rate (DS1): ..... 1.544 Mbps
Interface: G.703

ASYNCHRONOUS SERVICE CHANNEL

Data Rate: ..... 9.6 kbps
Interface: RS-232
Modulation: ..... 16 QAM
FEC: ..... Reed-Solomon (204/188) and depth 12 interleaving

ELECTRICAL

POWER CONSUMPTION
Transmitter, unprotected terminal: ..... 75 Watts typical
Receiver, unprotected terminal: ..... 55 Watts typical
Power Supply Voltages: ..... 110/240 Vac

ENVIRONMENTAL

Operating Temperature Range: ..... 0° to +50°C
Relative Humidity: ..... 0 to 95%, non condensing

PHYSICAL

Height: ..... 3 rack units: 5.25" (13.34 cm)
Depth: ..... 15.0" (38.1 cm)
Weight: ..... 22 lbs (10 kg)

INTERCONNECTIONS

Video: ..... 75 Ω coax, female
Baseband: ..... 75 Ω coax, female
Audio: ..... 600 Ω barrier strip with screw terminals
ATSC Data: ..... 75 Ω coax, female
Wayside DS1: ..... DB9, female
Service Channel: ..... DB9, female

ANTENNAS

18 GHz Band ..... 18 GHz High Performance Antenna
23 GHz Band ..... 23 GHz High Performance Antenna

Microwave Radio Communications
101 Billerica Avenue, Building #6
North Billerica, MA USA
01862-1256

Tel: +1.978.671.5700
Fax: +1.978.671.5800
e-mail: info@mrcbroadcast.com
web site: www.mrcbroadcast.com