Pac Subcarriers

PAC-10/PAC-12 Program Audio Channel

Applications

- Drop or Insert Audio Subcarriers
- Studio-to-Transmitter Links and Transmitter-to-Studio Links

Features

- Outstanding headroom and very low harmonic distortion
- Four channels in a single rack unit
- Plug-in circuit card expansion
- Front panel accessible
- Optional 220 Vac or Vdc supplies
- Optional hot standby protection

Overview

MRC offers a line of audio and auxiliary subcarrier equipment for use with its full range of video microwave radio systems. The PAC series is compatible with most other microwave radio systems as well.

The PAC series is designed to carry program audio or wide-band data transmission signals. Many other subcarriers, such as composite stereo and T1, are available through MRC from third party vendors.

As a specialist in microwave, MRC can help you select the right combination of subcarriers to fit your exact needs.

PAC-10/PAC-12 Program Audio Channels

The PAC-10/PAC-12 system allows the insertion of audio subcarriers above the video channel in conventional microwave systems. In addition to transmitting and receiving program audio sources, it can be used to carry telephone channels, engineering orderwire, remote control, or alarm signals.

The full system consists of a PAC-10 Subcarrier Modulator and a PAC-12 Subcarrier Demodulator. Each one-rack chassis can accommodate up to four subcarriers.

The outstanding headroom of the system lets the user handle “hot” program sources, keeping harmonic distortion to a minimum. And it conforms to RS-250C differential phase and gain standards for individual left and right stereo transmission.

Carrier alarm detectors are equipped as standard, with four red LEDs on the front panel to indicate which module has failed. In addition, a summary alarm attaches to a rear-mounted 9-pin D-type connector. This alarm is configured for fail safe operation and provides a Form-C interface.

MICROWAVE RADIO COMMUNICATIONS

The PAC-10/PAC-12 operates on its own internal 115 Vac power supply. Optional power sources are 220 Vac or Vdc power supply. A barrier strip is provided in the DC format for easy connection.

PAC-10 MODULATOR

Audio input is 600-ohm balanced, and is attenuated by the deviation control. This control is accessible on the front edge of the printed circuit card, so that deviation can easily be reset in the field without expensive test equipment.

Audio input and output preamplifiers isolate the pre-emphasis. They also provide the necessary level to the variactor-controlled VCO for proper deviation.

The ECL voltage-controlled oscillator (VCO) derives its stability from a phase-locked loop frequency synthesizer. The reference oscillator is crystal controlled.

The tuned subcarrier amplifier filters the desired frequency. A subcarrier level adjust also is provided on the front edge of the printed circuit card. The output is high impedance for easy bridging on the video line.

An alarm detector samples the output level and compares it to a preset threshold. When a fault occurs, a red LED on the front panel is lit. There also is a saturated collector and Form-C interface available on the rear panel for remote alarming.

PAC-12 DEMODULATOR

The demodulator input filter is fed composite baseband through a high impedance bridging bus on the back panel of the PAC-12 chassis. The bandpass filter is pre-tuned to the desired subcarrier frequency. A tuned buffer amplifier increases the desired level, and provides an additional pole to the overall bandpass characteristic.

The filtered signal is fed to a quadrature detector, which contains limiting, detection, signal level sensing and audio preamplification. The detected audio is fed through an emitter follower to the de-emphasis network. The “raw audio” is then filtered by an active low-pass filter before going to the audio output amplifier. The output amplifier is matched to provide a 600 ohm balanced output up to +18 dBm.

A DC signal proportional to the subcarrier level is supplied to an alarm comparator. This level is compared to a preset threshold, and when a fault occurs, a red LED on the front panel is lit. An alarm interface connector on the rear panel provides a saturated collector or Form-C contacts for remote alarming.

SPECIFICATIONS

GENERAL

Subcarrier Frequencies
- U.S.: ..... 4.83, 5.2, 5.8, 6.2, 6.8, 7.5, and 8.3 MHz
- CATV Special: ..... 4.5 MHz (25 kHz deviation, modulator only available)
- CCIR: ..... 7.020, 7.5, 8.065, and 8.59 MHz

Alarms
- Fault: ..... Loss of subcarrier or prime power
- Indication: ..... Front panel LED 1 to 4
- Output: ..... Form-C contact; all connections available

ENVIRONMENTAL CONDITIONS

Ambient Temperature
- Operating: ..... –5° to +55°C
- Meets All Specifications: ..... +10° to +40°C

Relative Humidity: ..... 0 to 95% (+10° to +40°C)

POWER REQUIREMENTS

AC
- Voltage: ..... 105 to 130 Vac or 210 to 260 Vac
- Frequency: ..... 47 to 63 Hz
- Power: ..... 10 watts

DC
- Voltage: ..... –21 to –32 Vdc or –42 to –56 Vdc
- Power: ..... 10 watts

PHYSICAL

Size: ..... 1.75" h x 19" w x 7.5" d (4.5 x 48.2 x 19.0 cm)
Weight: ..... 7 lbs (3.2 kg)

SYSTEM PERFORMANCE

(Meets all RS-250C and CCIR standards)
Frequency Response (Ref 400 Hz @ 20 dB below TT)
- 40 Hz to 100 Hz: ..... +0.5 dB, –1.0 dB
- 100 Hz to 7.5 kHz: ..... +0.5 dB, –0.5 dB

7.5 kHz to 15 kHz: ..... +0.5 dB, –1.5 dB
Distortion (THD) @ 75 kHz Peak Deviation: 1%
Signal-to-Noise Ratio: ..... 70 dB

PAC-10

Audio, Input Level: ..... +8 dBm
- Adjustable: ..... 0 to +18 dBm
- Impedance: ..... 600 Ω balanced
- Return Loss: ..... 26 dB
- Pre-emphasis (can be strapped flat), Standard: ..... 75 µs
- Optional: ..... 50 µs

RF Subcarrier Output, Modulation: ..... FM
- Level (p-p): ..... 100 mV nominal
- Adjustable (p-p): ..... 50 to 150 mV
- Impedance: ..... High-Z bridging
- Deviation (1 kHz TT): .....75 kHz

PAC-12

Audio, Output Level: ..... +8 dBm
- Adjustable: ..... 0 to +18 dBm
- Impedance: ..... 600 Ω balanced or strappable to less than 50 Ω
- Return Loss: ..... 26 dB

RF Subcarrier Input, Level (p-p): ..... 50 to 150 mV
- Impedance: ..... High-Z bridging

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