



Digital Subcarrier System for Microwave Transmission

FEATURES AND BENEFITS

- Four CD quality audio and two voice channels in one subcarrier
- AES/EBU interface available for digital audio equipment
- 80 dB SNR, 0.05% T.H.D., 80 dB channel separation
- Front panel dial in subcarrier frequencies 1 to 10 MHz in 10 kHz steps
- 600 kHz channel spacing
- Co-exists with video modulation
- Accepts external clock for easy interface to external digital data sources

GENERAL DESCRIPTION

The DSS93 Digital Subcarrier System can provide four 15 kHz, CD quality audio channels and two 3 kHz voice grade channels (or a data channel) all on a single FM subcarrier. Multiple subcarriers can be spaced 600 kHz apart from 1.0 MHz to 10 MHz in the baseband of a microwave system. A 70 MHz IF interface is also available for frequency converters. Each of the four

15 kHz program audio channels is digitally encrypted and multiplexed with a 32 kbps data channel into a data stream to which forward error correction is added. TFT's spectrally efficient duobinary modulation technique generates a "digital composite" analog signal which frequency modulates a TFT Model 8500D Composite Subcarrier Generator. The resultant FM subcarrier can be combined with video and other subcarriers onto baseband or a 70 MHz IF.

At the receiving end, the subcarrier is demodulated by a Model 8501D for delivery to the DMM93 Decoder, which derives the CD quality audio and auxiliary channels.

80 dB SNR AUDIO PERFORMANCE

Audio program channels offer 80 dB SNR, 0.05% THD and 80 dB channel separation and frequency response of 20 Hz to 15 kHz.

OPTIONAL DATA OR VOICE CHANNELS

A 32 kbps synchronous (0-9600 baud asynchronous) data channel can be field configured for two voice grade audio channels.

APPLICATIONS

Increase channel capacity to four 15 kHz high quality program audio channels per subcarrier for video STL, TSL, ENG, EFP, and intercity relays.

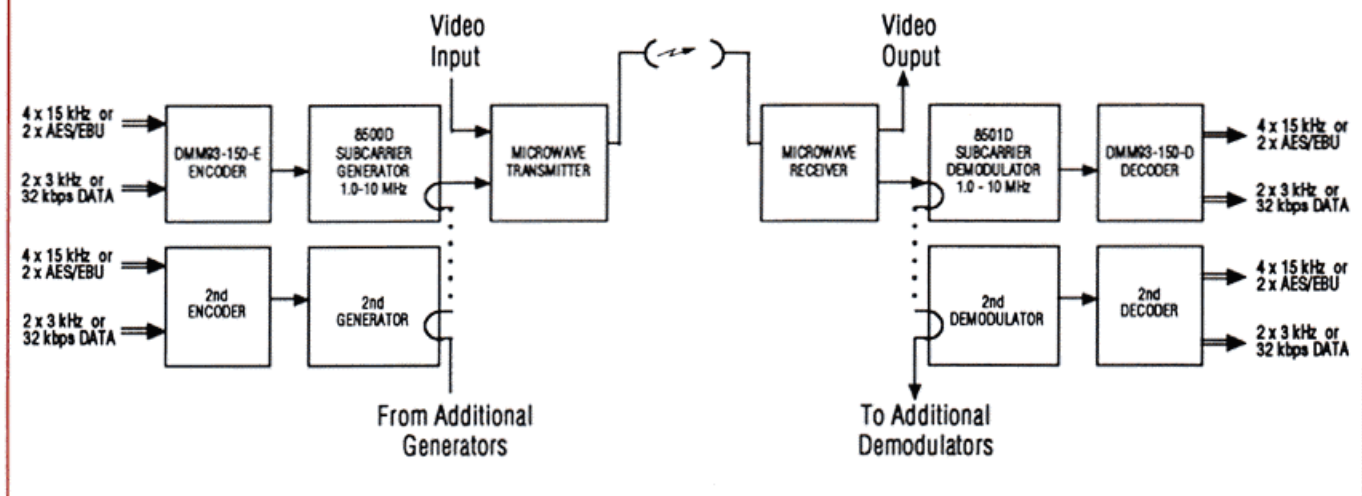
Add data for linking newsroom terminals, printers, etc. from a remote van or two 3 kHz audio channels for intercom, IFB, cueing, or control functions.

Return multiple audio channels from remote broadcast applications to the studio where processing, equalization, and mixing can be accomplished in a more suitable environment.

DIGITAL INTERFACE AVAILABLE

A standard AES/EBU interface allows direct connections to digital audio equipment. Optional 256 kbps digital interfaces are available in RS-422 or V.35 standards for connection to fractional T1, CEPT1, fiber optics and other digital equipment. These features make the DSS93 an ideal solution for transmission of multiple data channels on microwave subcarriers.

DSS93 DIGITAL SUBCARRIER SYSTEM TYPICAL CONFIGURATION



SPECIFICATIONS

DMM93-150 ENCODER/DECODER

Program Audio Channels	20 Hz to 15 kHz, ± 0.1 dB
Optional 3 kHz Channels	300 Hz to 3.4 kHz, ± 0.5 dB
Program Channel T.H.D.	< 0.05%
Signal to Noise Ratio	>80 dB
Subcarrier to Noise	>24 dB required
Analog Models	Internal encryption, XLR connectors
Digital Models	External 256, 64 or 32 kbps inputs and outputs via RS-422 or V.35
Audio Delay	Less than 4 msec (audio codec dependent)
System Clock	Internal or external
Audio Input Level	0 dBm balanced, 600 ohms, front panel adjustable ± 6 dB
Encoder Output Level	Digitally coded composite signal adjustable from 0.5 to 6 Vp-p, 10K ohms
Decoder Input Level	1-4 Vp-p into 600 ohm load

8500D AND 8501D SUBCARRIER GENERATOR/DEMODULATOR

Subcarrier Frequencies	1.0 MHz to 10 MHz
IF Interface	70 MHz, -1 dBm, 75 ohms
Generator Output Level	20 mV to 150 mVp-p, 75 ohms
Demodulator Input Levels	20 mV to 500 mVp-p, 1K ohms

PHYSICAL AND ENVIRONMENTAL FOR EACH UNIT

AC power (each unit)	115/230 VAC 50 or 60 Hz, 15 VA maximum each unit
Operating temperature	Zero to +50°C
Dimensions	19" (48.3 cm) W, 18" (45.7 cm) D, 1.75" (4.5 cm) H
Shipping weight (each unit)	Approximately 28 lbs. (13.7kg)

ORDERING INFORMATION

DSS93 Digital Subcarrier System consists of at least:

1 ea. DMM93-150-E	Digital Modem and Multiplexer, Encoder with 4 x 15 kHz program channels
1 ea. DMM93-150-D	Digital Modem and Multiplexer, Decoder with 4 x 15 kHz program channels
1 ea. 8500D	Subcarrier Generator for use with DMM93-150D (specify frequency)
1 ea. 8501D	Subcarrier Demodulator for use with DMM93-150D (specify frequency)
Option 03 for DMM93-150-E	32 kbps digital encoder module. User programmable for two voice channels or 0-9600 baud RS-232 input
Option 04 for DMM93-150-D	32 kbps digital decoder module. User programmable for two voice channels or 0-9600 baud RS-232 output

TFT INC