



9200/9205/9205N Series Monaural Studio-To-Transmitter Link

**Features**

- Frequency Synthesized Transmitter and Receiver
- Optimized for stereo or dual mono with redundancy.
- 0.2% T.H.D., 70 dB SNR, 70 dB channel separation.
- Internal phase and gain matching for excellent stereo performance.
- Designed for channel allocations as little as 100 kHz and 200 kHz.
- Spurious free, on-channel power amplification.
- Economical built-in subcarrier generator and demodulator(optional).
- Built-in automatic changeover in receiver.
- External interface to transmitter automatic changeover.

**Benefits**

- Field-programmable for ease of set-up and frequency change
- Excellent separation and on-air reliability
- High quality/low distortion operation
- Superior stereo separation through precise matching of units
- Spectrum efficient for operation in congested areas
- Wide bandwidth operation provides excellent performance
- Enhanced capability for remote control and data applications
- Less hardware for hot standby for even greater reliability
- Back-up, hot-standby operation easily accomplished

The optional built-in 39 kHz FM subcarrier generator and demodulator may be utilized for either data transmission or a supervisory channel.

When two STL transmitters and receivers are used for stereo, provision is made for properly matching phase and gain characteristics between the two pairs.

Both the transmitter and receiver feature comprehensive front panel metering for monitoring system performance including forward and reverse power and other important diagnostic functions.

**Frequency Synthesized**

The TFT patented frequency synthesized design provides very low phase noise and low spurious output so that the STL system can achieve greater than 70 dB SNR with only  $\pm 22$  kHz of FM deviation, which makes efficient use of the RF spectrum. The "on channel" amplification technique instead of crystal modulation/multiplication eliminates the errors inherent in a crystal frequency multiplication STL system. The 9200/9205 is an ideal narrow band STL system which is optimized for operation in congested RF environments. It has excellent protection against adjacent channel interference and delivers broadcast quality sound without degradation.

**General Description**

The Model 9200 Series Monaural STL System is an economical, frequency-synthesized STL system which is designed for either single, redundant dual channel or stereo program transmission for studio to

transmitter links or inter-city relays. Both the transmitter and receiver utilize state-of-the-art Very Large Scale Integrated (VLSI) circuits to achieve low component count for high reliability and reduced manufacturing costs.

## Stereo Operation

For stereo or dual mono installations in which the transmitter and receiver pairs share common antennas, TFT can furnish a transmitter combiner/isolator which eliminates intermodulation products and a receiver low noise antenna splitter.

## Spectrum Efficient Channel Spacing

The 9200/9205 is available in two different RF channel spacing configurations. The standard is for a minimum 200 kHz channel spacing with a deviation of  $\pm 22$  kHz for the program channel and  $\pm 3$  kHz deviation for a 39 kHz subcarrier for data or remote control. The 9200/9205N is a narrow band system which incorporates a phase-linear crystal filter for a minimum 100 kHz channel spacing with a deviation of  $\pm 15$  kHz for a 15 kHz program channel only.

## Hot-Standby Operation

Model 7770 Transmitter Automatic Changeover unit is an optional 1-3/4" high rack mount unit which monitors critical parameters of two transmitters. If a fault is detected, it automatically switches the antenna to the hot standby transmitter. Changeover can also be accomplished by a front panel switch or relay contact closure in remote equipment.

The 9205 receiver has a built-in failure sensing and changeover circuit. When the primary receiver fails, it automatically switches the output to the hot-standby unit. No optional receiver changeover is required.

## Options

SCA/MUX Encoder (7100-4227) = Plug in SCA/MUX generator board for subcarrier frequency of 39 kHz.

SCA/MUX Decoder (7100-3572) = Plug in SCA/MUX decoder board for demodulation of the 39 kHz subcarrier channel. Please specify audio or subcarrier output.

## Specifications

### SYSTEM

#### Frequency Range

MHz	800-960	400-480	300-340	200-240	140-180
Tx Model No.	9200	9240	9230	9220	9210
Rx Model No.	9205	9245	9235	9225	9215
Power Output	5-8 W	15-20 W	15-20 W	15-20 W	15-20 W

Other frequencies available on request

Frequency Response ..... Audio program:  $\pm 0.2$  dB or better, 30 Hz to 15 kHz.  
MUX:  $\pm 3$  dB, 50 Hz to 5 kHz.

Distortion (THD & IMD) ..... 0.2% or less at 1 kHz.

Signal-to-Noise Ratio ..... 70 dB or better below 100% modulation, de-emphasized.

Stereo Channel Separation .... 70 dB.

### TRANSMITTER

RF Power Output ..... See table above.

RF Output Connector ..... Type N Female, 50 ohms.

Deviation for 100%

Program Modulation .....  $\pm 22$  kHz for 200 kHz Ch. spacing (standard).  
 $\pm 15$  kHz for 100 kHz Ch. spacing.

Subcarrier Frequency ..... 39 kHz.

Subcarrier Deviation .....  $\pm 3$  kHz FM.

Subcarrier Injection .....  $\pm 3$  kHz.

Frequency Stability ..... Better than .00025%, 0° C to +50° C.

Spurious and

Harmonic Emission ..... 60 dB or more below carrier level.

Modulation capability ..... One monaural program and one subcarrier (built-in or external).

Modulation Inputs ..... Program: 3.0 Vp-p for 100% modulation, 2k ohms, balanced and unbalanced, BNC and terminal strip.  
MUX audio: 1.2 Vp-p for 100% modulation of internal subcarrier generator, 2k ohms.  
External Subcarrier: 1.2 Vp-p for 100% injection, 2k ohms.

Automatic Changeover ..... Provision for interface with Model 7770 Transmitter Automatic Changeover.

Power Source ..... 115/230 VAC  $\pm 10\%$ , 50/60 Hz, 75 watts.  
+12 VDC optional.

Monitoring Capability ..... One 2-1/2" analog meter for monitoring forward and reflected RF power, power supply current, multiplex and program modulation, and VCO bias.

Dimensions and weight ..... 5.25" (13.3 cm) H x 19" (48.2 cm) W x 12" (30.5 cm) D  
34.5 lbs. (15.7 kg) shipping weight.

FCC Emission Designator .... 122K9E6F with 39 kHz subcarrier.  
60K3EGN without subcarrier.

FCC ID ..... BI09200.

### RECEIVER

RF Input Connector ..... Type N Female, 50 ohm.

Sensitivity ..... 15 microvolts required for 50 dB SNR, de-emphasized.  
100 microvolts for 65 dB SNR, de-emphasized.

Selectivity ..... (standard) ("N" version)

Channel Spacing	200 kHz	100 kHz
3 dB BW	$\pm 65$ kHz	$\pm 30$ kHz
40 dB BW	$\pm 400$ kHz	$\pm 100$ kHz

Modulation Outputs ..... Program: 7.0 Vp-p, 600 ohm balanced and 3.5 Vp-p 75 ohm unbalanced, BNC, terminal strip.  
Multiplex: 2.2 Vp-p, 600 ohm BNC.  
Multiplex Audio: 600 ohms, unbalanced.

Automatic Changeover ..... Built-in loop through circuit standard.

Power Source ..... 115/230 VAC  $\pm 10\%$ , 50/60 Hz, 50 watts.  
+12 VDC optional.

Monitoring Capability ..... One 2-1/2" analog meter for monitoring power supply, 1 to 120% modulation for program and multiplex channels, RF input level, and VCO bias.

Dimensions and Weight ..... 3.25" (8.3 cm) H x 19" (48.2 cm) W x 14" (35.6 cm) D  
15 lbs. (6.8 kg) shipping weight.

Operating Temperature ..... 0°C to +50°C



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