



Composite Aural STL and IF Repeater System

Features & Benefits

- Patented IF Modulation Circuits
Professional audio quality
- Wide Baseband Bandwidth
Accommodates stereo composite, RDS, 67 kHz, 92 kHz, and FM subcarriers for voice and data
- IF Repeater Option maintains signal integrity in multi-hop relay links
- Digital Ready with TFT's DMM92 Series of digital modems/multiplexers
- Reciter®/Booster Compatible
Use with TFT's Reciter® for the highest audio performance available
- Hot Standby option
Automatic switchover to hot standby

The Leader in STL Technology

TFT Model 8300 broadcast quality aural Studio-to-Transmitter Links (STL) and Inter-City Relays (ICR) embody a new generation of superior STL technology keyed to the increasing demand for system performance and versatility. They are the result of 20 years of research and development in STL and FM transmitter monitoring technology.

To meet today's demands for improved signal-to-noise ratio, better stereo separation, reliable operation in dense RF signal environments, and automatic "hot standby" switchover, state-of-the-art features are incorporated into the revolutionary design of the TFT 8300 Series. Without modification it can accommodate the DMM92 Digital STL System to fit digital audio program channels and SCA/MUX channels into existing channel allocations.

Accessories and Options

92 kHz Wideband Option

Optional baseband filter to convey a 92 kHz SCA with composite signal in addition to RDS/MBS and 67 kHz SCA. Also for use with TFT's DMM92-100 digital STL modem multiplexer.

Stereo Decoder Module

Plug-in board which decodes L and R channels from a stereo composite for local monitoring and AM stereo applications.

IF Repeater Options

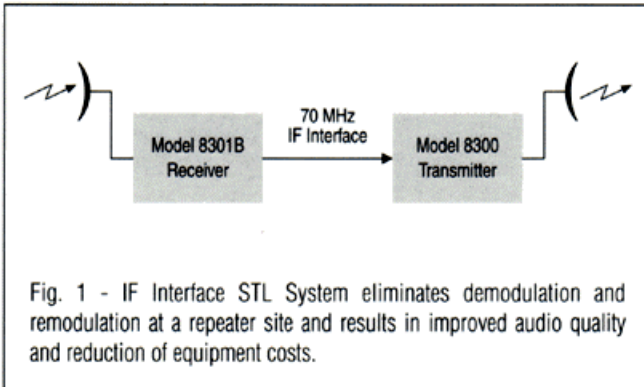
Provides an IF input for the transmitter and IF output from the receiver (see Fig. 1) to eliminate signal degradation due to demodulation and subsequent remodulation. The IF repeater options apply to digital as well as analog applications.

IF Interface Options

For applications in which the FM exciter is moved to the studio, as shown in Fig. 2, the 8300 with the IF Interface option can accept an input from an FM exciter for superior performance when used in conjunction with a TFT Reciter®.

Model 7770 Transmitter Automatic Changeover

Monitors critical parameters in the transmitters. If a fault is detected, it automatically switches to the "Hot Standby" transmitter. Changeover can also be accomplished by a front panel switch or relay contact closure (from the remote control equipment). Built-in RF relay eliminates the use of an expensive transmitter combiner.



Model 7773 Receiver Automatic Changeover

Monitors critical parameters in the receivers. The unit switches the program channel output as well as both subcarrier outputs when a fault is detected. Built-in receiver splitter.

Model SCA-1

Stand-alone Subcarrier Generator for data or voice transmission. Specify operating frequency (67, 92, 152, 185 kHz standard).

Model SCA-2

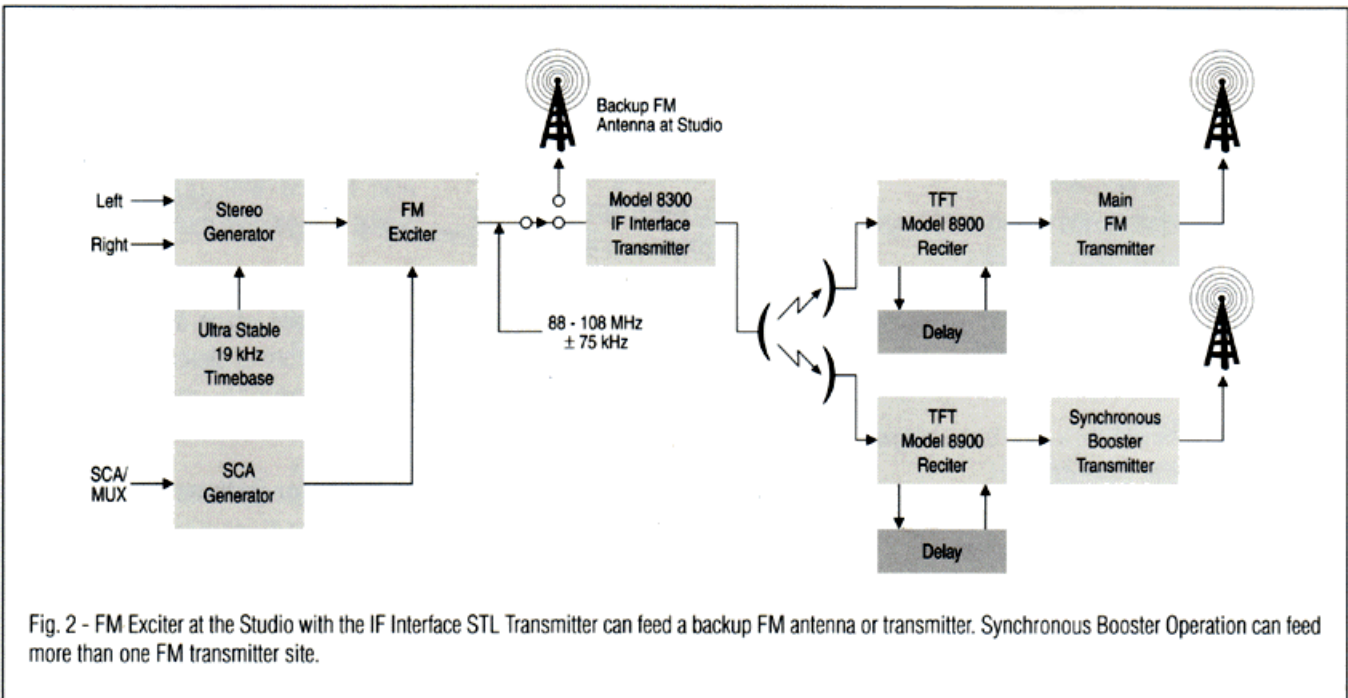
Stand-alone Subcarrier Demodulator for data or voice. Specify frequency.

Model SCA-3

Stand-alone Subcarrier Generator/Demodulator for data or voice. Specify frequency.

Model DMM92 Digital STL

The DMM92 Series of Digital Modems and Multiplexers can be used with the 8300 and 8301B to transmit digital signals in a composite format and still allow baseband space for SCA/MUX channels for remote control or other applications. The DMM92 can convey up to 6 audio channels—four program and two voice-grade.



Applications

- **Dense RF Environments** - Designed to meet the stringent requirements of top-market stations which are located in congested RF environments.
- **Inter-City Relay Systems** - By interconnecting a number of STL systems in series, broadcast quality audio links between cities may be achieved, providing high quality stereo or multichannel audio service to each city. Unique IF repeater capability ensures minimal signal degradation.
- **Multiple Program Channels** - In addition to the normal stereo composite signal, the 8300 and 8301B can convey a 57 kHz RDS/MBS signal, 67 or 92 kHz SCA (with extended

baseband response option), and in addition MUX subcarriers from 100 kHz - 200 kHz for remote control and other purposes. With the DMM92 Digital Series, up to 6 audio channels can be transmitted for LMA, duopoly applications, and other situations requiring the flexibility of multiple audio channels.

- **Local Monitoring and AM Stereo** - With the optional stereo decoder module (option 15), the 8301B receiver provides L and R channel outputs for AM stereo applications.
- **Multihops** - To overcome long path lengths and to circumvent physical obstructions, unique IF repeater maintains highest quality.

The Transmitter

The TFT 8300 STL transmitter uses a patented* IF modulation circuit. The RF carrier is generated by an output VCO which is phase-locked to a modulating VCO operating at an intermediate frequency (IF) of approximately 70 MHz. Composite modulation takes place at the IF VCO which is also frequency synthesized to the crystal time base. Because no frequency multiplier is used in the entire transmitter, the RF carrier is therefore the exact reproduction of the IF VCO. Degradation of SNR and stereo performance due to frequency multiplication is avoided.

Features

- **Directly Generated RF Carrier** - Directly from a UHF VCO without degradation from multiplication
- **IF Modulation** - Excellent signal-to-noise ratio and stereo performance
- **Fully Protected** - Output can withstand short and open circuits
- **Wide Baseband Bandwidth** - Accommodates two FM subcarriers and a supervisory channel
- **Direct Connection to DMM92 Digital Modem and Multiplexer**

The Receiver

The 8301B is a triple conversion superheterodyne receiver that incorporates several unique features to provide low noise, high gain and SAW filter selectivity for congested RF environments. Furthermore, when used in conjunction with Model 7773, it allows for automatic changeover to a "Hot Standby" in the event of a detected malfunction.

Features

- **Variable Gain RF Amplifier** - Protects front end overload
- **Selectable IF Bandwidth** - Two IF bandwidths are available. The wide band is used in 500 kHz channel allocation and the narrow band is used where adjacent channel interference is high
- **Surface Acoustic Wave (SAW) Filter** - A SAW filter is used at the first IF amplifier to provide superior selectivity, and at the same time, to eliminate phase distortion. This yields excellent stereo performance and frequency response
- **Pulse-Counting Discriminator** - A unique pulse-counting discriminator circuit provides ultra-linear FM demodulation to achieve low harmonic and inter-modulation distortion
- **Direct connection to DMM92 Digital Modem and Multiplexer**

Specifications

SYSTEM

Frequency Range	800 - 960 MHz
Frequency Response.....	± 0.1 dB or better, 30 Hz to 53 kHz; ± 0.3 dB or better, 53 kHz to 75 kHz or 53 kHz to 100 kHz
Distortion (THD & IMD)	0.2% or less 30 Hz to 75 kHz (typically less than 0.1% at 1 kHz)
Stereo Separation	50 dB or better, 400 Hz to 10 kHz; 45 dB or better, 50 Hz to 400 Hz and 10 kHz to 15 kHz; (minimum 45 dB, Narrow Selectivity)
Multiplex to SCA Channel Crosstalk	50 dB or better
SCA Channel to Multiplex Crosstalk	50 dB or better
Signal-to-Noise Ratio	75 dB or better below 100% modulation de-emphasized
Operation Temperature.....	0°C to + 50°C

TRANSMITTER

RF Power Output	10 - 14 Watts (front panel adjustable to approximately 4 Watts minimum)
RF Output Connector.....	Type N Female, 50 ohms
Deviation for 100% Modulation	± 50 kHz (± 37.5 kHz when used with Reciter®)
Frequency Stability	Better than .0001%, 0°C to + 50°C
Spurious and Harmonic Emission.....	60 dB or more below carrier level
Modulation Capability	One stereo composite program and two subcarrier channels (SCA or MUX)
Modulation Inputs	Composite: 3.5V peak-to-peak, 10K ohms balanced and unbalanced, BNC and terminal strip. MUX: 1.5V peak- to-peak, 10K ohms BNC, (2 each), frequency range 130 kHz to 220 kHz

Power Requirements.....	115/230 VAC ± 10%, 50/60 Hz, 80 Watts
Monitoring Capability.....	One 2" analog meter for monitoring power output, power supply, bias voltages, multiplex and program modulation. LED bargraph for monitoring 70 to 120% program channel modulation peaks
Dimensions and Weight.....	5 ¹ / ₄ " (13.3 cm) H x 19" (48.3 cm) W x 12 ¹ / ₂ " (31.8 cm) D; 34 lbs. (15.5 kg)

RECEIVER

RF Input Connector	Type N Female, 50 ohms
Sensitivity.....	40 µV or less for 60 dB SNR left or right channel demodulated
Selectivity (wide)	3 dB IF bandwidth ± 200 kHz 60 dB IF bandwidth ± 700 kHz 80 dB IF bandwidth ± 1.2 MHz
Selectivity (narrow).....	3 dB IF bandwidth ± 150 kHz 60 dB IF bandwidth ± 500 kHz 80 dB IF bandwidth ± 1.2 MHz
Modulation Outputs.....	Composite: 3.5V peak-to-peak, 75 ohms balanced and unbalanced, BNC and barrier strip (50 Hz to 75 kHz standrd; 50 Hz to 92 kHz optional). Multiplex: 1.5V peak-to-peak, 75 ohms BNC and barrier strip (130 kHz to 220 kHz)
Power Requirements.....	115/230 VAC ±10%, 50/60 Hz, 10 Watts
Monitoring Capability.....	One 2" analog meter for monitoring power supplies, 0 to 120% modulation for program and multiplex channels. LED bargraph for simultaneous monitoring of input RF level and modulation 70 to 120%
Dimensions and Weight.....	3 ¹ / ₂ " (8.9 cm) H x 19" (48.3 cm) W x 14" (35.5 cm) D; 24 lbs. (11 kg)

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