

BTR-700 Transmitter Theory of Operation

A. Mixer

Audio from various inputs arrive at the transmit mixer U22A where they are summed into one audio signal.

B. Modulation Limiter

U23A is configured as a variable gain amplifier and U24 is configured as a window detector. When the audio fed from U24 exceeds the pre-set threshold, U24A pulls low on negative peaks and U24B pulls low on positive peaks. This discharges C48 and reduces the gain of U23A until the input to U24 is just at the threshold of limiting.

C. Compressor

U23C is a linear compressor that is used to improve the system signal to noise ratio. A complimentary expander is used at the receiver.

D. Pre-emphasis

U24B provides pre-emphasis which begins at 100 microseconds and ends at 15 microseconds. The output of U23B feeds the modulation limiter

E. Low Pass Filter

U23D is a 3 pole low pass filter with a cutoff frequency of 10 KHz.

F. PLL

HY801 is a VCO operating at the transmitter output frequency. U802 is a phase locked loop that controls HY801. U802 is serially loaded with frequency data . The modulating signal is fed into the loop via VR801 which is used to set the frequency deviation.

G. Output Amplifiers

Q802, 803, 807 and 809 amplify the signal from HY801 and provide reverse isolation. Q806 is used to turn these stages on only after the loop has achieved lock. C831, 832, 833, L809 and L810 provide impedance matching and harmonic suppression.

END

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Telex Model BTR-700 Technical Specifications

Input Power.....100-240 VAC, 50-60 Hz.

Transmitter:

Frequency Range.....518 to 608 MHz.
(within 3 TV Channels, 18 MHz blocks)

RF Channels, one, frequency agile, 25 KHz steps.

RF Power Output.....50 to 100 mW Typical,
Switchable down to 5 to 10 mW Typical.

Frequency Deviation.....40 KHz Peak.

Frequency Stability.....0.005%

Modulation Limiter.....Peak-Responding Compressor

Audio Frequency Response.....200 Hz to 10 KHz Nominal.

Microphone Input Level.....7.75 mV for 40 KHz Deviation.

Receiver:

Frequency Range..... 614 to 746 MHz.
(within 3 TV Channels, 18 MHz Blocks)

RF Channels, four, frequency agile, 25 KHz steps.

Sensitivity..... 0.8 uV for 12 dB SINAD

Squelch (internal).....Open at 20 dB SINAD.

Modulation Acceptance.....40 KHz Nominal.

Audio Frequency Response.....200 Hz to 10 KHz Nominal.

Audio Output (local headset).....200 mW, 600 Ohm Load.

Intercom:

One intercom XLR Loop-Thru and a 4 Wire “RJ11” Loop-Thru wire connection is available. The user can select either 2 wire or 4 wire (but not both) from the front panel. The input and output levels are independently adjustable from the front panel. An Auxiliary XLR Input and XLR Output is also available.

Local Headset:

A 4 wire XLR connector is located on the front panel with Headset Volume, Microphone Gain Control, and Press to Talk/Lock to Talk switch.

Approvals:

The Telex BTR-700 Transmitter/Receiver is Type Accepted Under Federal Communications Commission Part 74.

FCC ID: B5DM516

The Telex BTR-700 is also approved under Industry Canada RSS123.

END