



Laboratory Standard Series

DIGITAL FREQUENCY SYNTHESIZED FM STEREO TUNER

New circuit techniques bring greatly improved FM Tuner accuracy at 50 kHz increments.

T-14

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Archiv Michael-Otto*



LUXMAN

Circuit: Due to its unique synthesized circuitry, the T-14 tuner is able to cope particularly well where FM station congestion is apparent. It uses a digital frequency synthesizer system, where the frequency synthesized oscillator is controlled by the PLL (phase locked loop) and the receiving frequency is directly determined by a digital code, giving a tuning accuracy and stability hitherto not associated with conventional manual tuners.

The system also makes possible an electronic station memory store and a digital readout display.

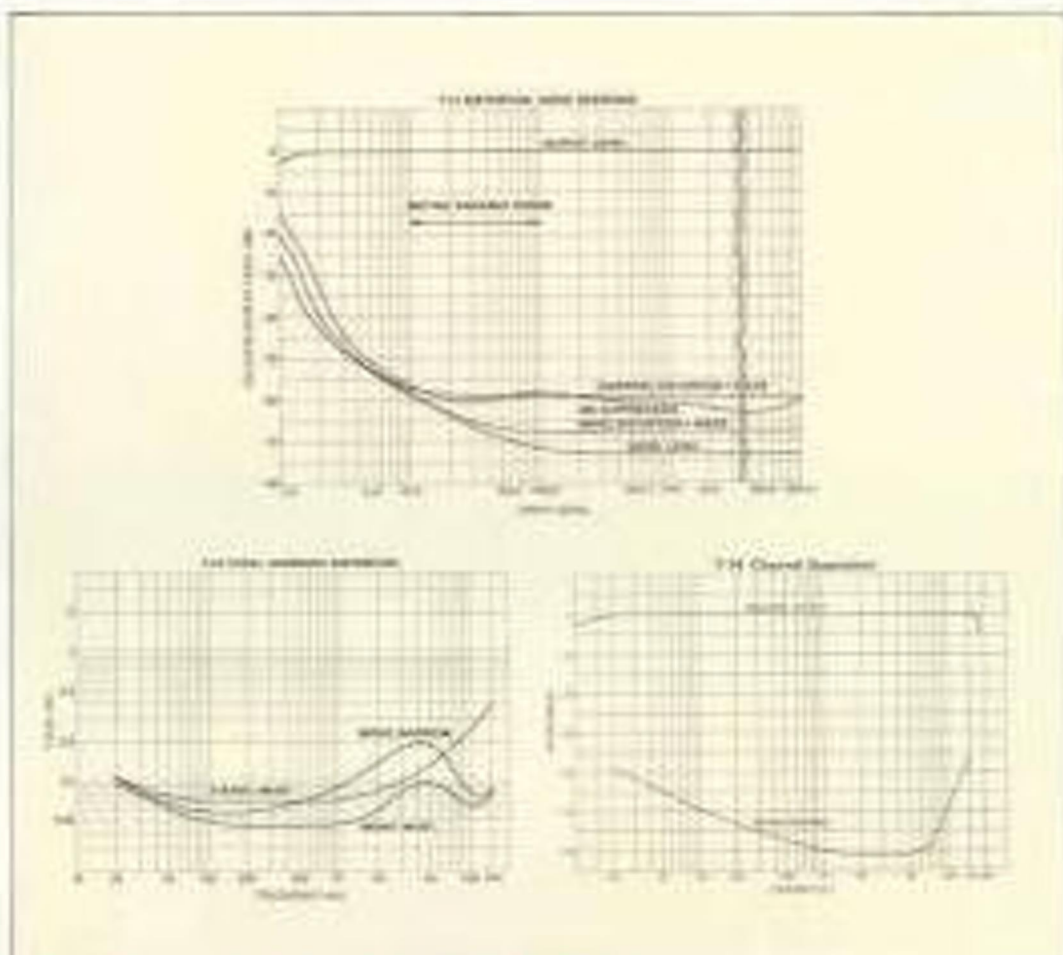
The entire circuitry is optimized towards the highest sound quality. The front end includes five MOS-FETs in the RF and mixer stages, giving excellent input-referred stability. A buffer amp follows the low-distortion local oscillator in order to reduce the various interference characteristics, such as image ratio, spurious response, IF rejection etc. An IF bandwidth selector is provided at the IF amp for an optimum combination of low distortion and high selectivity. To achieve low distortion in the 'wide' position, two pairs of wide bandwidth ceramic filters are activated, whilst in the 'narrow' mode two further pairs of narrow bandwidth filters are added to ensure good selectivity and intercept with 'anti-alias' filters. A new quadrature IC at the detector stage effectively lowers distortion whilst improving S/N ratio.

The MPX circuit includes low distortion PLL ICs and low pass filters independently in both right and left channels, giving excellent separation. Stereo quality is enhanced by an audio amp of wide dynamic range. The power supply is a constant voltage type giving excellent stability to all circuits.

Features: The most salient feature of the frequency synthesized tuner lies in its memory storage ability, enabling pre-selected tuning to be accomplished without the drawbacks of drift and instability which accompany a standard mechanical pre-selector system.

The electronic memory circuits are able to store a desired receiving frequency in digital code via MOS ICs. Station selection then becomes fast and entirely stable. 12 different stations can be selected by this electronic method and they will be unaffected by ambient fluctuations of temperature or moisture. An 'auto-tune' or search facility is also provided, enabling the user to 'cruise' up and down the frequency range, stopping automatically at every broadcast frequency reached. This facility is activated by depressing the 'release' 'up' or 'down' key.

Thanks to the anti-alias filter, so called 'beats' (interference noise triggered by FM stations adjacent to the desired one) can be thoroughly removed when the IF bandwidth is switched to the 'narrow' position.



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* Tuning Frequency:	87.5MHz - 108MHz
* Bandwidth:	12.5kHz (12.5kHz)
* IF Bandwidth Selectivity:	10.3dB (11.5dB)
* Signal to Noise Ratio:	72dB
* Frequency Response:	30Hz - 15kHz (±1dB)
* Total Harmonic Distortion:	(none) (inter)
100Hz	0.03% (wide) 0.2% (wide)
1kHz	0.03% (wide) 0.15% (wide)
6kHz	0.15% (wide) 0.2% (wide)
10kHz	0.2% (narrow) 0.3% (narrow)
* Capture Ratio:	1.0dB (wide), 2.0dB (narrow)
* Alternate Channel Selectivity:	80dB (narrow + 300kHz), 60dB (narrow 40kHz DEV. + 300kHz)
* Adjacent Channel Selectivity:	10dB (narrow + 200kHz)
* Spurious Response Ratio:	95dB
* IF Response Ratio:	95dB
* Image Response Ratio:	100dB
* AM Suppression Ratio:	60dB
* Stereo Separation:	100Hz 45dB (wide)
1kHz 45dB (wide), 30dB (narrow)	
10kHz 35dB (wide)	
* Subcarrier Frequency Ratio:	60dB
* SCA Rejection Ratio:	60dB
* Output Impedance:	100 ohms
* Matching Threshold:	10µV - 100µV (variable)
* Dimensions:	438(W) x 350(D) x 78(H) (17.1" x 13.7" x 3.1") Including legs and rear protrusion
* Weight:	Net 6.5kg (14.3 lbs.) Gross 8.0kg (17.6 lbs.)

Specifications and appearance design subject to change without notice

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Printed in Japan

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