

**TANDBERG**

# 3001 3011

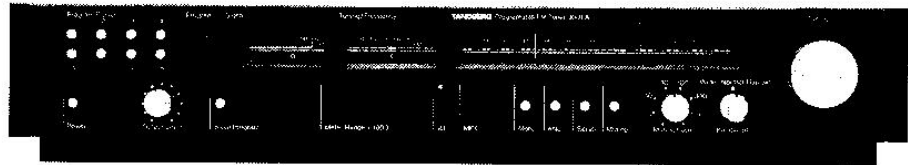
## TUNERS

The new analog tuners TPT 3001A and TPT3011A are the result of a long term development in the Tandberg labs.

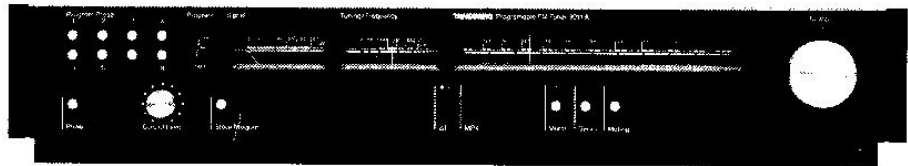
Although they are designed for different market segments they do have one major common denominator: The musi-

quality of the reproduced sound. This is ensured by their many design similarities.

## TPT 3001A



## TPT 3011A



## The front end

The front ends employ ganged, tuned circuits where DC voltage controlled capacitance diodes are used as tuning elements, and Dual-Gate MOSFETs are used in the RF

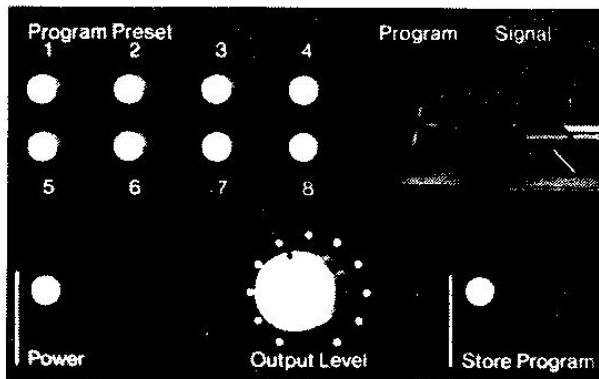
and Mixer stages. This achieves respectively; stable, accurate tuning and excellent sensitivity combined with superior headroom.

The TPT 3001A utilizes 8 tuned circuits, the TPT 3011A, 5, to prevent Mirror image (21,4 MHz) and other out of band distortion.

## Programming unit

Both tuners employ the same ingenious tuning system.

In addition to the main tuning, there is a second stage which stores 8 pre-tuned FM stations in an electronic memory. This pre-tuning system is based on a voltage synthesis principle combined with a fast analog servo loop to achieve maximum S/N ratio and frequency stability.



## IF selectivity

The IF amplifier of the tuners is where the adjacent and the alternate channel selectivity is created.

In TPT 3001A the selectivity can be switched to three different band-widths; WIDE, NORMAL and NARROW, each one optimum for its particular combination of station density and conditions of reception.

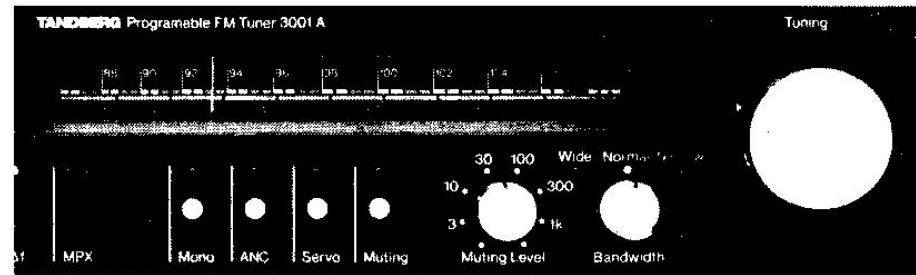
In WIDE and NORMAL the fil-

ters are discrete LC types with 6 and 20 poles respectively.

In NARROW two symmetrical high selectivity ceramic filters are added to the 20 pole LC filter of the NORMAL position, resulting in an unsurpassed combination of selectivity and distortion free sound reproduction.

In TPT 3011A the selectivity of the IF circuits is determined by

a computer designed filter whose characteristics are slightly narrower than the NORMAL position of TPT 3001A with four, selected, high quality ceramic filters of constant group delay. This to take advantage of a high selectivity combined with a bandwidth that permits undistorted reception also of strongly modulated broadcasts.



## The limiter

Both limiters have exceptionally good AM suppression and interference rejection. Moreover they guarantee a constant

signal level output over a very wide range of signal input level.

## The detector

Important for the overall quality of a tuner is the performance of the detector both with respect to linearity, bandwidth and signal to noise ratio.

In TPT 3001A a fully discrete,

modified "Foster Seeley" detector is used having a bandwidth of more than 4 MHz, to avoid any distortion caused by bandwidth limitations.

In TPT 3011A the detector is

part of the limiter with adjustable LC filters for perfect matching to the IF amplifier.

## The stereo decoder

Equally important as all other stages is the stereo decoder for the final result. The most common deficiency of a stereo decoder is the generation of beat tones on heavy modulated signals. This property is never specified for a tuner, but

very well audibly annoying for a discerning listener.

To avoid this beat tone generation and to allow use of Tandberg's unique Automatic Noise Cancelling circuit, a discrete stereo decoder is used in

the TPT 3001A, more complex in design than most complete tuners.

In TPT 3011A a specially selected IC is used for optimal performance.

## The audio circuit

To make a good tuner takes a special knowledge of radio frequency technology, but in many cases the audio section is neglected in terms of component quality and design criteria.

It is often in the audio stage

that the inferior sound quality of FM is generated, and not as is commonly believed that FM is inherently an inferior source.

This is dealt with in TPT 3001A and TPT 3011A by using the same high standards of component selections (polyester

and polypropylene caps, metal film resistors) and design philosophies (minimum negative feedback applied in short loops, etc.). As in the series 3000 audio components

**Technical Data****Tandberg Programmable  
Tuner TPT 3001A**

<b>Power requirements:</b>	230/115 V $\pm$ 10%, 50/60 Hz
<b>Power consumption:</b>	34 W
<b>Outlets:</b>	Fixed Output, Variable Output, FM-Multipath and Detector Output
<b>Dimensions:</b>	Width: 17 1/8" (43.5 cm) Depth: 13 3/4" (35.0 cm) Height: 3 1/4" ( 8.3 cm) Weight: 15.3 lbs (7 kg)

**Technical Data according to  
IHF-T-200, 1975  
IEEE Std. 185, 1975**

<b>Tuning range:</b>	87.5 – 108 MHz
<b>Antenna impedance:</b>	75 ohms unbalanced
<b>Usable sensitivity</b> (measured with notch filter): Mono	Wide 0.8 $\mu$ V ( 7.5 dBf)    Normal 0.8 $\mu$ V ( 6.8 dBf)    Narrow 0.9 $\mu$ V ( 8.2 dBf)
<b>50 dB quieting sensitivity:</b>	Mono 1.0 $\mu$ V (11.25 dBf)    0.9 $\mu$ V (10.3 dBf)    0.8 $\mu$ V ( 9.3 dBf) Stereo 11.0 $\mu$ V (32.1 dBf)    11.0 $\mu$ V (32.1 dBf)    11.0 $\mu$ V (32.1 dBf)
With noise filter ANC 10 dB channel separation:	5.0 $\mu$ V (25.2 dBf)    5.0 $\mu$ V (25.2 dBf)    5.0 $\mu$ V (25.2 dBf)
<b>Signal to noise ratio</b> at 65 dBf, 0.5 mV:	Mono 95 dB    95 dB    95 dB Stereo 82 dB    82 dB    82 dB
<b>Signal to noise ratio at 85 dBf, 5 mV:</b>	Stereo 92 dB    92 dB    92 dB
<b>Muting threshold:</b>	Mono 1 $\mu$ V – 3 mV    1 $\mu$ V – 3 mV    1 $\mu$ V – 3 mV Muting hysteresis 3 dB (11.25 – 81.0 dBf)    (11.25 – 81.0 dBf)    (11.25 – 81.0 dBf)
<b>Stereo threshold:</b>	5 $\mu$ V    5 $\mu$ V    5 $\mu$ V (25.2 dBf)    (25.2 dBf)    (25.2 dBf)
<b>Stereo hysteresis 3 dB:</b>	+0.2 dB – 0.5 dB    +0.2 dB – 0.5 dB    +0.2 dB – 0.5 dB
<b>Frequency response 30 Hz to 15 kHz:</b>	Mono +0.2 dB – 0.5 dB    +0.2 dB – 0.5 dB    +0.2 dB – 0.5 dB Stereo +0.2 dB – 0.5 dB    +0.2 dB – 0.5 dB    +0.2 dB – 0.5 dB
<b>Distortion at 50 dB quieting:</b>	Mono < 0.1 %    0.2 %    0.9 % Stereo 0.3 %
<b>Distortion at 65 dBf: Mono</b>	100 Hz 0.03 %    0.06 %    0.12 % 1 kHz 0.03 %    0.06 %    0.25 % 6 kHz 0.03 %    0.055 %    0.45 % 10 kHz 0.025 %    0.025 %    0.035 %
<b>Distortion at 65 dBf: Stereo</b>	100 Hz 0.04 %    0.05 %    0.08 % 1 kHz 0.04 %    0.05 %    0.2 % 6 kHz 0.1 %    0.25 %    1.0 % 10 kHz 0.1 %    0.7 %    2.0 %
<b>Intermodulation distortion:</b>	Mono < 0.1 %    0.15 %    0.5 % 14 kHz mod. 50%, 15 kHz mod. 50% Measured 1 kHz in % Stereo < 0.1 %    0.15 %    0.8 %
<b>Capture ratio:</b>	0.4 dB    1 dB    3 dB
<b>Adjacent channel selectivity <math>\pm</math> 200 kHz:</b>	3 dB    12 dB    40 dB
<b>Alternate channel selectivity <math>\pm</math> 400 kHz:</b>	30 dB    90 dB    < 90 dB
<b>Spurious response ratio:</b>	> 135 dB    > 135 dB    > 135 dB
<b>Image response ratio:</b>	> 135 dB    > 135 dB    > 135 dB
<b>IF-response ratio, balanced;</b>	135 dB    135 dB    134 dB
<b>RF intermodulation:</b>	72 dB    72 dB    72 dB
<b>AM suppression ratio:</b>	> 70 dB    > 70 dB    > 70 dB
<b>Stereo separation:</b>	100 Hz 60 dB    60 dB    55 dB 1 kHz 70 dB    60 dB    55 dB 6 kHz 60 dB    50 dB    40 dB 50 dB    45 dB    35 dB
<b>Subcarrier product ratio:</b>	95 dB    95 dB    95 dB
<b>19 kHz suppression:</b>	95 dB    95 dB    95 dB
<b>38 kHz suppression:</b>	> 103 dB    > 103 dB    > 103 dB
<b>Signal meter autorange I:</b>	0.3 $\mu$ V – 1000 $\mu$ V    0.3 $\mu$ V – 1000 $\mu$ V    0.3 $\mu$ V – 1000 $\mu$ V
<b>Signal meter autorange II:</b>	1.0 mV – 3000 mV    1.0 mV – 3000 mV    1.0 mV – 3000 mV

**Technical Data**  
**Tandberg Programmable**  
**Tuner TPT 3011A**

<b>Power requirements:</b>		230/115 V $\pm$ 10%, 50/60 Hz
<b>Power consumption:</b>		23 W
<b>Dimensions:</b>	<b>Width:</b>	17 1/8" (43.5 cm)
	<b>Depth:</b>	13 3/4" (35.0 cm)
	<b>Height:</b>	3 1/4" ( 8.3 cm)
	<b>Weight:</b>	12.6 lbs (5.8 kg)

**Technical Data according to**  
**IHF-T-200, 1975**  
**IEEE Std. 185, 1975**

<b>Tuning range:</b>		87.5 – 108 MHz
<b>Usable sensitivity:</b>	Mono	0.85 $\mu$ V/75 ohms
<b>50 dB quieting sensitivity:</b>	Mono	1.5 $\mu$ V/75 ohms
	Stereo	20.0 $\mu$ V/75 ohms
<b>Signal to noise ratio:</b>	Mono	78 dB
	Stereo	75 dB
<b>Muting threshold:</b>		3 $\mu$ V/75 ohms
<b>Muting hysteresis:</b>		6 dB
<b>Stereo threshold:</b>		7.5 $\mu$ V/75 ohms
<b>Stereo hysteresis:</b>		8 dB
<b>Frequency response 30 Hz to 15 kHz:</b>	Mono	+ 0.5 dB – 1 dB
	Stereo	+ 0.5 dB – 1 dB
<b>Distortion at 50 dB quieting:</b>	Mono	0.3%
	Stereo	0.3%
<b>Distortion at 65 dBf</b> <b>(0.5 mV/75 ohms at 1 kHz):</b>	Mono	0.2%
	Stereo	0.3%
<b>Distortion at 65 dBf</b> <b>(30 Hz to 15 kHz)</b>	Stereo	0.4%
<b>Intermodulation distortion:</b>	Mono	0.2%
	Stereo	0.2%
<b>Capture ratio, selectively measured:</b>		0.9 dB
<b>Adjacent channel selectivity <math>\pm</math> 200 kHz:</b>		14 dB
<b>Alternate channel selectivity <math>\pm</math> 400 kHz:</b>		> 100 dB
<b>Spurious response ratio:</b>		> 70 dB
<b>Image response ratio, balanced:</b>		> 95 dB
<b>RF intermodulation:</b>		> 70 dB
<b>AM suppression ratio:</b>		> 70 dB
<b>Stereo separation:</b> <b>(60 Hz to 10 kHz, selectively measured):</b>		> 40 dB
<b>Subcarrier product ratio:</b>		60 dB
<b>19 kHz suppression:</b>		70 dB
<b>38 kHz suppression:</b>		60 dB
<b>Dynamic range of signal meter:</b>		0.5 $\mu$ V – 100 mV/75 ohms

- Specifications are subject to change without notice.

Tandberg Audio A.s  
P.O. Box 49  
N-2007 Kjeller  
Norway  
Tel.: (02) 71 58 61  
Telex: 71886 tand n