

 **KENWOOD™**

**KT-1000**  
**KT-900**  
**KT-800**

# Sales Manual



**TUNER**

# Product policy

For over three decades, Kenwood has continually introduced innovations in tuner design and engineering. The name Kenwood has thus become universally recognized for excellence in tuner technology, and many satisfied users will testify that for them, the tuner *is* Kenwood. But there's a whole lot more to tuners than the technology, these days. The average, non-audiophile also wants to be in on the high quality FM and AM broadcast scene, even though the budget is usually rather restricted. For such customers, Kenwood has the answer. At the top of this year's line-up is

the KT-1000 incorporating the latest in tuner technology, but packaged without the frills to attract a wider market. A bit under in terms of features and price range comes the KT-900, but still offering the superb sound quality expected of Kenwood. Finally, there's the totally new-style KT-800, an automatic computer-guided tuner that combines excellent sound quality with unrivalled ease of operation. Here's a rundown of these three great new tuners, and the sales points and facts to help you sell them.

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## New Pulse Count Detector IC

Conventional FM detection circuits using an analog method allow a lot of chances for noise or distortion to be introduced to the original FM signals. In order to faithfully preserve the original characteristics of the FM signals, Kenwood has developed a new Pulse Count Detector IC, which uses a digital method to detect the FM signals. Following is a simplified explanation of how it works.

The wave shapes of the individual FM signals are sampled and the basic wave shape of each are converted into digital equivalents in the form of pulses of equal width and amplitude. Since only the basic shape of the signals are con-

verted into digital equivalents, any minor deviations or ripples caused by noise or distortion are simply ignored — the result is a digital equivalent of the pure original FM signal, free from distortion or noise and remarkably stable against changes in temperature, humidity and age. When converted back into an analog signal, the signal at output is exactly the same as originally input. Any noise or distortion that might have affected the signal during the detection process has been completely eliminated. This system is utilized in the KT-1000 and KT-900.

## Direct RF Conversion

When there are many powerful FM stations and other sources competing for air space, extraneous signals are all too easily picked up by the FM antenna and amplified, introducing a great deal of noise and distortion. To eliminate such interference, Kenwood has developed a Direct RF Conversion technique. This by-passes the RF amplifier stage, sending signals instead directly to the mixer stage,

where the intermodulation products produced by the interference of extraneous signals are attenuated rather than amplified. Either Direct RF Conversion or normal conversion can be selected by a switch, allowing the choice of the method most suitable to the particular reception conditions. This system is utilized in the KT-1000.

# Independent Power Supply For Local Oscillator

One consequence of the relatively high impedance of power supplies is that leakage from the +B line of the power supply unit can feed back to the local oscillator to modulate the local oscillator frequency. This causes tuning inaccuracies by deflecting the tuned frequency above and below its optimum level. Kenwood engineers solved this

problem by eliminating the source itself — the +B line to the oscillator, giving the local oscillator its own independent power supply. With two power supplies, noise due to leakage is virtually non-existent, even at 100% modulation. In the KT-1000, this is perfectly utilized.

## High Quality AM Section

In the past, AM sections of FM/AM stereo tuners have tended to be neglected because of the generally inferior quality of AM broadcasts. Now, Kenwood tuners are fully able to reproduce the upgraded AM broadcast quality, with

AM sections that are as carefully designed as FM sections. In the KT-1000 an IF band selector is provided for the AM section.

## Sample-And-Hold MPX Circuit

As with the Pulse Count Detector, Kenwood engineers have taken advantage of the exceptional accuracy of digital processing with the introduction of the Sample-and-Hold multiplex decoder. This circuit cleanly extracts the left and right channel signals from the composite FM signal carried by the 38 kHz subcarrier frequency. The wave peaks are converted into digital equivalents in the form of pulses. Since only the basic shape of the waves are converted into digital equivalents, transient deflections in the shape of waves

caused by noise or distortion are ignored. This greatly reduces the need for filtering, which vastly improves channel separation, because filtering can obscure important information in the composite signal, interfering with the ability to isolate left and right channel signals. The peak pulses are sampled then held in a capacitor until the next peak arrives; thus, the average peak value can be instantly adjusted for precise representation of the original 38 kHz subcarrier. The KT-1000 employs this superior type of MPX decoder.

## Quartz Synthesizer Preset Tuning

Kenwood's quartz-PLL tuning circuit uses the ultra-stable oscillating frequency of a quartz crystal to keep the frequency generated by the local oscillator locked to the exact tuning frequency. The quartz-PLL circuit can be preset to automatically tune to any one of any combination of as many as eight different FM or AM stations. To preset, the

desired station is manually tuned in, and then the preset button is pressed, after which any one of eight station buttons may be pressed. Whenever that station is desired, pressing the station button previously selected will automatically tune the station. This system is fully utilized in the KT-800.

# Sales Points

# Key Specs

## KT-1000

- Pulse Count FM Detector
- Direct RF Conversion with Selector
- Dual-gate MOS-FET front-end with 5-gang tuning capacitor
- Sample-and-Hold multiplex decoder
- Independent local oscillator power supply
- Servo-lock tuning
- High quality design AM section
- Narrow and Wide IF band selection for both FM and AM

- FM usable sensitivity: **23.3 dBf** (8.0 $\mu$ V) in Direct RF Conversion mode **10.3 dBf** (1.8 $\mu$ V) in normal mode
- FM THD at 1 kHz: **0.03%** (mono), **0.04%** (stereo)
- Alternate channel selectivity: **65 dB** at 300 kHz (NARROW) **45 dB** (WIDE)
- Stereo separation at 1 kHz: **60 dB** (WIDE), **50 dB** (NARROW)
- Signal-to-noise ratio: **90 dB** (mono), **85 dB** (stereo)
- Frequency response: **15 Hz to 15 kHz**  $\pm$ 0.5 dB

## KT-900

- Pulse Count FM Detector
- Dual-gate MOS-FET front-end with 4-gang tuning capacitor
- Servo-lock tuning
- High quality design AM section
- Dual-color signal strength and fine-tuning LED indicators
- Digital frequency display
- Clean reception filter
- Narrow and Wide IF band selection for FM

- FM usable sensitivity: **10.8 dBf** (1.9 $\mu$ V)
- FM THD at 1 kHz: **0.03%** (mono), **0.04%** (stereo)
- Alternate channel selectivity: **65 dB** at 300 kHz (NARROW) **45 dB** (WIDE)
- Stereo separation at 1 kHz: **55 dB** (WIDE), **47 dB** (NARROW)
- Signal-to-noise ratio: **88 dB** (mono), **83 dB** (stereo)
- Frequency response: **30 Hz to 15 kHz** +0.2 dB, -0.8 dB

## KT-800

- New, clean panel with store-away control pocket
- Quartz synthesizer tuning
- 8-station FM/AM preset memory bank with illuminated indicator panels
- Preset automatic selection of up to 8 FM or AM stations
- FM/AM preset station random access
- 2-ganged AM tuning capacitor for high AM reception quality
- Operational convenience and flexibility
- Switchable digital display of frequency or time as needed
- New signal strength and fine-tune display
- Automatic stereo muting

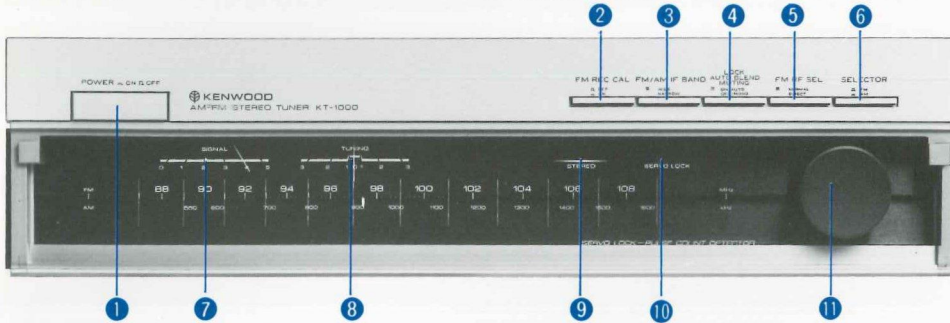
- FM usable sensitivity: **10.8 dBf** (1.9 $\mu$ V)
- FM THD at 1 kHz: **0.07%** (mono), **0.09%** (stereo)
- Alternate channel selectivity: **60 dB**
- Stereo separation at 1 kHz: **50 dB**
- Signal-to-noise ratio: **74 dB** (mono), **71 dB** (stereo)
- Frequency response: **30 Hz to 15 kHz** +0.2 dB, -2 dB

# Operating Features

- 1 **Power switch**
- 2 **FM REC CAL switch.** Built-in tone oscillator helps achieve accurate record level settings on tape deck.
- 3 **FM/AM IF BAND selector.** With Wide and Narrow band settings. Wide-band indicator.

- 4 **LOCK/AUTO BLEND/MUTING switch.** Activates servo-lock system simultaneously with automatic muting for weak stations to maintain minimum acceptable noise level. Indicator for "Muting On"
- 5 **FM RF selector.** Direct or Normal RF conversion, with indicator for Normal

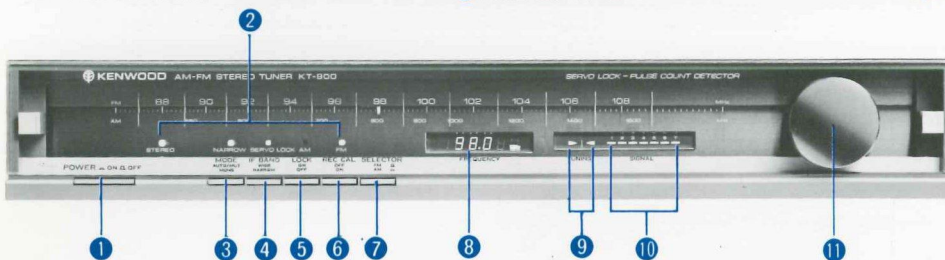
- setting.
- 6 **FM/AM selector**
- 7 **Signal strength meter**
- 8 **Tuning meter**
- 9 **STEREO indicator**
- 10 **SERVO-LOCK indicator.** Shows lock-tuned status after hand is released from tuning knob.
- 11 **Touch-sensor tuning knob.** May be deactivated for normal tuning.



- 1 **POWER switch**
- 2 **LED mode indicators.** Stereo, Narrow IF band, servo-lock, AM, FM.
- 3 **AUTO/MUT and MONO mode selector.** Auto-muting automatically maintains acceptable minimum noise level for weak stations.

- 4 **IF BAND WIDE and NARROW selector**
- 5 **LOCK switch.** Selects between servo-lock tuning and normal fine-tuning.
- 6 **REC CAL selector.** Oscillator tone establishes reference for correct tape recording levels.
- 7 **FM/AM selector**

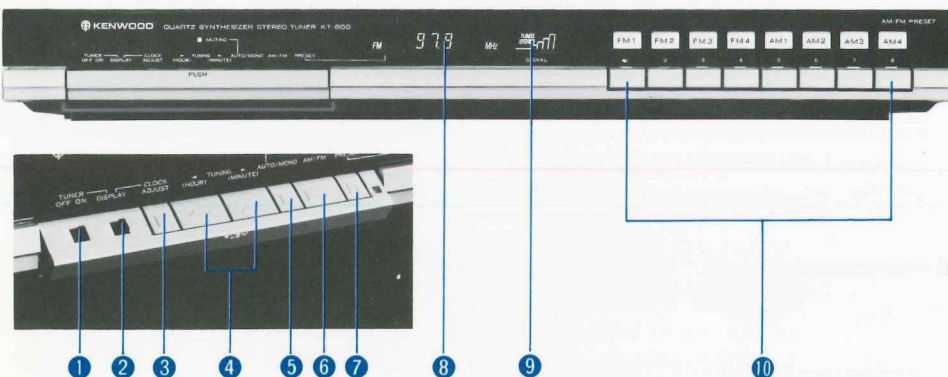
- 8 **Digital frequency display.**
- 9 **Tuning direction indicator.** Red indicates off-tuned status, green indicates precise tuning point.
- 10 **Signal-strength display.** Shows relative strength of tuned signal.
- 11 **Touch-sensor tuning knob.** May be deactivated for normal tuning.



- 1 **TUNER OFF/ON switch.** Selects between tuner operation or digital clock only. Power is supplied constantly to digital clock.
- 2 **DISPLAY switch.** Selects between display of frequency being tuned in and time.

- 3 **CLOCK ADJUST button.** Used together with nearby Hours and Minutes buttons to set correct time.
- 4 **TUNING buttons.** To tune automatically up or down the frequency bands. These buttons double as clock-adjustors.
- 5 **MUTING selector with LED indicator.**

- To activate automatic muting mode to maintain acceptable minimum noise threshold at all times in both FM and AM.
- 6 **FM/AM selector**
- 7 **PRESET control button.** Preliminary switch to activate preset station memory for storage.



- 8 **Digital frequency/time display.** With FM or AM displays
- 9 **TUNED, STEREO indicators, New vertical signal strength display**
- 10 **Preset station keys.** 8-station bank allows instant random access to preset FM and AM are used with Preset control button for memory storage.

# Specifications

	KT-1000		KT-900		KT-800
	NORMAL	DIRECT			
<b>FM TUNER SECTION</b>					
Usable Sensitivity .....	10.3dBf (1.8 $\mu$ V)	23.3dBf (8.0 $\mu$ V)	10.8dBf (1.9 $\mu$ V)	10.8dBf (1.9 $\mu$ V)	10.8dBf (1.9 $\mu$ V)
50dB Quieting Sensitivity					
(Mono) .....	16.4dBf (3.6 $\mu$ V)	29.3dBf (16 $\mu$ V)	16.4dBf (3.6 $\mu$ V)	16.4dBf (3.6 $\mu$ V)	16.4dBf (3.6 $\mu$ V)
(Stereo) .....	37.3dBf (40 $\mu$ V)	49.5dBf (166 $\mu$ V)	37.3dBf (40 $\mu$ V)	37.3dBf (40 $\mu$ V)	38.4dBf (46 $\mu$ V)
Signal to Noise Ratio					
(Mono) .....	90dB		88dB		74dB
(Stereo) .....	85dB		83dB		71dB
Total Harmonic Distortion	<b>WIDE</b>	<b>NARROW</b>	<b>WIDE</b>	<b>NARROW</b>	
Mono 100Hz .....	0.03%	0.04%	0.03%	0.04%	0.07%
1,000Hz .....	0.03%	0.15%	0.03%	0.15%	0.07%
6,000Hz .....	0.05%	0.3%	0.05%	0.4%	0.11%
15,000Hz .....	0.04%	0.07%	0.05%	0.07%	
50 — 10,000Hz .....	0.08%	0.3%	0.09%	0.4%	0.12%
Stereo 100Hz .....	0.04%	0.3%	0.05%	0.3%	0.15%
1,000Hz .....	0.04%	0.3%	0.04%	0.3%	0.09%
6,000Hz .....	0.06%	0.3%	0.07%	0.3%	0.14%
15,000Hz .....	0.4%	1.0%	0.5%	1.0%	
50 — 10,000Hz .....	0.12%	0.6%	0.18%	0.6%	0.4%
Capture Ratio .....	0.8dB	2.0dB	1.0dB	2.0dB	1.5dB
Alternate Channel Selectivity .....	45dB	65dB (300kHz)	45dB	65dB (300kHz)	60dB
Stereo Separation					
1,000Hz .....	60dB	50dB	55dB	47dB	50dB
50 — 10,000Hz .....	47dB	35dB	45dB	35dB	40dB
15,000Hz .....	40dB		37dB		36dB
Frequency Response .....	15Hz to 15,000Hz $\pm$ 0.5dB		30Hz to 15,000Hz + 0.2dB, -0.8dB		30Hz to 15,000Hz + 0.2dB, -2dB
Spurious Response Ratio .....	120dB		120dB		110dB
Image Response Ratio .....	90dB		90dB		80dB
IF Response Ratio .....	110dB		100dB		90dB
AM Suppression Ratio .....	70dB		70dB		60dB
Subcarrier Product Ratio .....	73dB		68dB		
Antenna Impedance .....	75 ohms unbalanced		300 ohms balanced		300 ohms balanced
			& 75 ohms unbalanced		& 75 ohms unbalanced
FM Frequency Range .....	88MHz to 108MHz		88MHz to 108MHz		88MHz to 108MHz
Output Level Fixed .....	0.75V, 2.2k ohms		0.75V, 1.8k ohms		0.75V, 5.6k ohms
1,000Hz 100% Modulation Variable .....	0 to 1.5V, 2.2k ohms				
<b>AM TUNER SECTION</b>					
Usable Sensitivity .....	10 $\mu$ V		13 $\mu$ V		18 $\mu$ V
Signal to Noise Ratio .....	52dB		52dB		50dB
Total Harmonic Distortion .....	0.2%		0.4%		
Image Rejection .....	70dB		45dB		40dB
Selectivity .....	30dB (WIDE), 50dB (NARROW)		58dB		50dB
Output Level Fixed .....	0.25V, 2.2k ohms		0.15V, 2k ohms		0.25V, 5.6k ohms
400Hz 30% Modulation Variable .....	0 to 0.5V, 2.2k ohms				
<b>GENERAL</b>					
Power Requirements .....	60Hz 120V (U.S.A. & Canada Model) or 50/60Hz 110 — 120/220 — 240V switchable		60Hz 120V (U.S.A. & Canada Model) or 50/60Hz 110 — 120/220 — 240V switchable		60Hz 120V (U.S.A. & Canada Model) or 50/60Hz 110 — 120/220 — 240V switchable
Power Consumption .....	0.18A		0.25A		0.1A
Dimensions (W $\times$ H $\times$ D) .....	440 $\times$ 123 $\times$ 388mm (17-5/16" $\times$ 4-27/32" $\times$ 15-9/32")		440 $\times$ 78 $\times$ 390mm (17-5/16" $\times$ 3-1/16" $\times$ 15-11/32")		440 $\times$ 52 $\times$ 247mm (17-5/16" $\times$ 2-1/32" $\times$ 9-23/32")
Weight (Net) .....	6.5kg (14.3lbs)		5.1kg (11.2lbs)		2.2kg (4.8lbs)

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

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