

# KENWOOD

## COMMUNICATIONS RECEIVER

# R-5000



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The R-5000 is a competition class communications receiver with superior dynamic range, having every conceivable feature, and is designed to receive all modes (SSB, CW, AM, FM, FSK) from 100 kHz to 30 MHz. With the optional VC-20 "VHF Converter Unit" coverage of the 108–174 MHz frequency range is provided.

Advanced microprocessor technology controls various features, including dual digital VFOs, 100 memory channels, memory scroll, memory and programmable band scan, superb interference reduction and other features for ease of operation to enhance the excitement of listening to stations around the world.

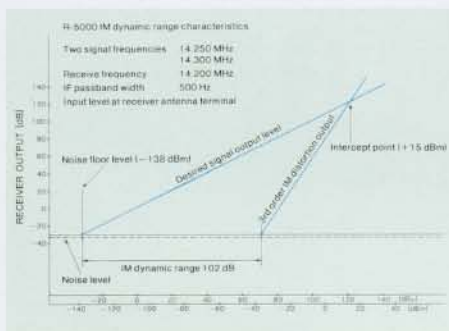
### <Features>

#### Covers 100 kHz to 30 MHz in 30 Bands, Optional 108 to 174 MHz Coverage (VC-20)

The R-5000 covers 100 kHz to 30 MHz in 30 bands. An innovative digital PLL synthesizer system provides outstanding frequency stability and accuracy. Through the use of advanced microprocessor technology, frequency, band and mode data of stations in the 108 to 174 MHz range may be tuned, displayed, stored in memory, recalled, and scanned. This is accomplished by using the R-5000 front panel controls and frequency display, which allows maximum convenience and ease of operation.

#### Superior Dynamic Range Receiver Circuit

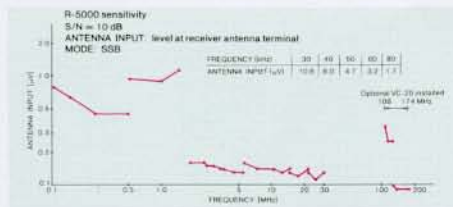
The RF circuits have been specifically designed to provide superior dynamic range. Use of 2SK125 junction-type FETs in the high sensitivity direct balanced mixer circuit results in outstanding two-signal characteristics accompanied by a substantially improved noise floor level. Kenwood's exclusive DynaMix high sensitivity mixing design ensures true intermodulation dynamic range of 102 dB. The overall intercept point is 15 dBm, noise floor level -138 dBm (14 MHz, 500 Hz band width, 50 kHz spacing).



#### Outstanding Receiver Performance and Sensitivity Specifications

The R-5000 has been specifically designed to provide high performance receiver

specifications in sensitivity, selectivity and stability with superior dynamic range, using the latest technology. This assures reliable reception across its wide frequency range, in every modes.



#### High Stability Frequency Control

The R-5000 uses a microcomputer controlled digital PLL circuit which controls frequency in 10 Hz steps using a single crystal oscillator providing accurate and stable frequency control. This reference frequency is accurate to  $\pm 10$  ppm between  $-10^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$ .

#### All-Mode Operation

Modes of operation include SSB, CW, AM, FM and FSK. Mode selection is quickly accomplished through use of front panel mode keys. An LED and International Morse Code confirms the selected mode. ["L" for LSB, "U" for USB, "C" for CW "A" for AM, "F" for FM, and "R" for FSK (RTTY)]

#### 10 Hz Step Dual Digital VFOs

Built-in 10 Hz (100 Hz in AM, FM mode) step dual digital VFOs operate independently of each other, allowing ease of operation in different modes or frequencies without the need for separate VFO.

An "A/B" switch selects either the VFO A or VFO B. An "A=B" switch makes it possible to quickly duplicate the tuning data programmed into the active VFO, and the data banks of the inactive VFO. Selection of the frequency step is accomplished by utilizing the "STEP" switch, as illustrated in the following table:

MODE	STEP	
	OFF	ON
SSB/CW/FSK	10 Hz	100 Hz
AM	1 kHz	100 Hz
FM	5 kHz	2.5 kHz

DIM (Dimmer) switch

TIMER switch  
Controls the time operation.

VOICE switch:  
Announces the frequency when an optional VS-1 is installed inside the cabinet.

CLOCK 1/OFF/CLOCK 2  
CLOCK 1: Display local time  
CLOCK 2: A second time zone may be entered for display

Program keys  
M▶V: Used to transfer memory data to the active  
SCAN: Used to activate or stop scan  
(Programmable band scan: VFO operation  
Memory scan: memory channel operation)  
CLEAR: Used to cancel the memory storage or "EN  
operation

#### Dual High and Low Impedance Antenna Terminals (high/low)

A low impedance (50 ohms) terminal and a high impedance (50/500 ohms) connector is provided. The selector switch is located on the front panel. The antenna terminal selection information may be stored in any of the 100 memory channels.

#### Superb Interference Reduction (1) Dual IF Crystal Filter Improves SSB Operation

The optional YK-88SN SSB filter improves the already excellent signal-to-noise ratio and selectivity.

#### (2) IF Shift Circuit

Allows the IF passband to be moved away from interfering signals while keeping the desired signal optimally placed for best gain and signal-to-noise ratio.

#### (3) Built-in Tuneable NOTCH Filter

A sharp notch filter is built into the audio circuit. The KENWOOD notch filter is tuneable, to permit adjustment for best interference rejection. In CW mode, the notch filter is operated as a peak filter.

#### Selectable IF Filters

The R-5000 offers a fully flexible system of IF filter selection when optional filters are installed. The front panel selectivity switch may be set to "AUTO", in which case the optimum filter bandwidth is automatically chosen for the mode selected, e.g. YK-88A-1 for AM, YK-88SN for SSB, YK-88C or YK-88CN for CW, or the selectivity switch may be used to select filters manually. These selections allow the operator to choose alternative bandwidths for optimum reception.

keys  
 selection is accomplished through use of mode keys,  
 an adjacent LED. International Morse Code confirms  
 selection mode.  
 antenna 1

ANT2: Antenna 2  
 PG.S: Programmable band scan.  
 Depress the PG.S to scan from the frequency stored in  
 CH-8 to CH-9.  
 Ten keys: Direct keyboard frequency entry.

**Function switches**  
 HOUR: Sets the hours  
 MINUTE: Sets the minutes  
 A/B: Selects VFO A or VFO B.  
 F. LOCK: Press this switch to lock the frequency and  
 mode  
 STEP: Selects the VFO frequency step.  
 A=B: Equalizes the frequency and mode of the  
 idle VFO to that of the active VFO.



VFO: VFO/M: Used to switch alternately between VFO and memory  
 channel.  
 M.IN: Used to store data in memory channel  
 ENT: Directly entered frequency using the front panel  
 number keys.

### Dual-Mode Noise Blanker ("Pulse" or "Woodpecker")

The noise blanker consists of two circuits, NB-1 and NB-2, each activated by its own front panel switch. NB-1 is most effective in suppressing pulse-type (ignition) noise. NB-2 is most effective in suppressing noise of a longer duty cycle nature, such as the so-called "woodpecker" type interference.

### Keyboard Frequency Selection

The VFO frequency may be directly entered by using the front panel number keys. Simply press the "ENT" key, followed by the desired frequency.

### 100 Memories Store Frequency, Band, Mode and Antenna Terminal

100 memory channels allow storage of frequency, band, mode and antenna terminal selection information, providing increased convenience with simplicity of operation. They are divided into 10 groups of 10 channels each.

### Memory Scroll

A convenient "memory scroll" function may be used to check memory channel data or to find the vacant channel data without changing operating frequency and mode.

### Memory Scan and Programmable Band Scan

During memory scan or programmable band scan, scanning may be programmed to stop automatically on a busy channel. The scanning will stop on the channel, hold for approximately 6 second, and then resume scanning.

### (1) Memory Scan Plus Programmable Memory Channel Lock-Out

Any or all 100 memory channels may be scanned. Programmable memory channel lock-out allows selected channels to be skipped during scan without loss of data stored in that channel.

### (2) Programmable Band Scan Plus Center Stop Function

Scanning any frequencies between channels 8 or 9 is possible. During band scan, scanning action will stop in the center of the selected channel (5 kHz step), making it easy to listen to the correct frequency without the need for programming the scan steps.

### Dual 24-hour Quartz Clocks, with Timer

Dual 24-hour quartz clocks are built in for two different time zones, such as local and universal (UTC) time. A built-in timer provides ON and OFF programming, and remote control output from the timer (does not control AC power) is provided on the rear panel remote terminal.

### Optional VS-1 "Voice Synthesizer Unit"

The optional VS-1 "Voice Synthesizer Unit", announces the operating frequency on demand by depressing the front panel "VOICE" key.

### Optional Personal Computer Control (IF-232C/IC-10)

The interface unit is compatible with computers with an accessible RS-232C port. The computer interface allows computer control of all digital front panel controls. Software is not available from KENWOOD.

### Rechargeable Memory Back-Up Battery

Memory and VFO information is powered by a long life rechargeable lithium battery.

### Built-In AC Power Supply and Optional 13.8 VDC Operation

AC power supply voltages of 120, 220 and 240 VAC, 50/60 Hz, may be selected (USA version 120 VAC 50/60 Hz only). The R-5000 may also be operated from a 13.8 VDC supply, using the optional DCK-2 DC power cable kit.

### Large Top-Mounted Speaker

A large, 4-inch (10 cm) speaker is top-mounted, providing excellent sound quality.

### Switchable AGC Switch (Fast/Slow)

The automatic gain control (AGC) is activated by a 2 position (FAST/SLOW) switch, to provide optimum receiver operation in CW, SSB and AM modes, and under all signal strength conditions.

### RF Attenuator

The front end includes a 4 step (0, 10, 20 or 30 dB) RF attenuator, for optimum rejection of intermodulation distortion.

### "F.LOCK" Switch

The "F.LOCK" switch protects against accidental frequency shift that might occur if the tuning knob were accidentally bumped.

## OPTIONAL ACCESSORIES

### VC-20 VHF Converter Unit



The VC-20 covers VHF frequency range of 108—174 MHz which includes AIR Band, 2-m Amateur Band, Marine Band, and weather channels, as well as Business Band. The converter unit mounts into the R-5000, and using high stability PLL synthesizer of the R-5000,  $\pm 10$  ppm stability is provided. The built-in 4 position attenuator may be used to eliminate interference from strong local stations, and can be selected from the ATT switch of R-5000. (The VC-20 may not be available, depending on the regulations of each specific country). (West Germany Version covers 144—146 MHz Amateur Band only).

### YK-88A-1 6 kHz AM Filter



### YK-88SN 1.8 kHz Narrow SSB Filter



### YK-88C 500 Hz CW Filter



### YK-88CN 270 Hz Narrow CW Filter



### DCK-2 DC power cable kit with cigar lighter plug



### AL-1/AL-2 Lightening & Static Protector

\* AL-1/AL-2 is not available in U.S.A.



### HS-5 Deluxe Headphones



### HS-6 Small-size Headphones



### HS-7 Micro Headphones



### MB-430 Mobile Mount



### SP-430 External Speaker



### VS-1 Voice Synthesizer Unit



### IF-232 C/IC-10 Interface Unit

\* Software is not available from KENWOOD.



## SPECIFICATIONS

Frequency Range: 100 kHz — 30 MHz  
(except West Germany and Australia)  
150 kHz — 26.2 MHz (West Germany)  
2 MHz — 30 MHz (Australia)

Mode: A1 [A1A] (CW), A3J [J3E] (SSB), A3 [A3E] (AM), F3 [F3E] (FM), F1 [F1B] (FSK)

Circuitry SSB/CW/AM/FSK: Double conversion system  
FM: Triple conversion system

Intermediate Frequency: 1st IF = 58, 1125 MHz, 2nd IF = 8.83 MHz, 3rd IF = 455 kHz (FM).

#### Sensitivity

Mode	Frequency	100 kHz — 150 kHz	150 kHz — 500 kHz	500 kHz — 1.8 MHz	1.8 MHz — 30 MHz	*108 MHz — 123 MHz	*123 MHz — 174 MHz
SSB/CW/FSK (S + N/N = 10 dB)		Less than 2.5 $\mu$ V	Less than 1 $\mu$ V	Less than 4 $\mu$ V	Less than 0.25 $\mu$ V	Less than 0.5 $\mu$ V	Less than 0.25 $\mu$ V
AM (30% modulation) (S + N/N = 10 dB)		Less than 25 $\mu$ V	Less than 10 $\mu$ V	Less than 32 $\mu$ V	Less than 2 $\mu$ V	Less than 4 $\mu$ V	Less than 2 $\mu$ V
FM 12 dB SINAD		—	—	—	Less than 0.5 $\mu$ V	Less than 1 $\mu$ V	Less than 0.5 $\mu$ V

#### Selectivity

Mode	—6 dB	—50 dB	—60 dB
SSB/CW/FSK	2.4 kHz	—	4.4 kHz
AM	6 kHz	20 kHz	—
FM	12 kHz	25 kHz	—

Image Ratio: Better than 60 dB (100 kHz — 1.8 MHz) 80 dB (1.8 — 30 MHz)  
IF Rejection: Better than 60 dB (100 kHz — 1.8 MHz) 70 dB (1.8 — 30 MHz)  
Operating Temperature:  $-10^{\circ}\text{C}$  —  $+50^{\circ}\text{C}$   
Frequency Accuracy:  $\pm 10 \times 10^{-6}$  or better ( $-10^{\circ}\text{C}$  —  $+50^{\circ}\text{C}$ )

#### Squelch Sensitivity

Mode	Frequency	100 kHz — 150 kHz	150 kHz — 500 kHz	500 kHz — 1.8 MHz	1.8 MHz — 30 MHz	*108 MHz — 123 MHz	*123 MHz — 174 MHz
SSB/CW/AM/FSK		Less than 20 $\mu$ V	Less than 10 $\mu$ V	Less than 20 $\mu$ V	Less than 2 $\mu$ V	Less than 10 $\mu$ V	Less than 2 $\mu$ V
FM		—	—	—	Less than 0.32 $\mu$ V	Less than 1 $\mu$ V	Less than 0.32 $\mu$ V

Audio Load Impedance: 8  $\Omega$

Audio Output Power: 1.5 W (8  $\Omega$  load, 10% distortion)

Antenna Impedance: 50  $\Omega$ /500  $\Omega$

Power Consumption: 40 W AC, 13.8 VDC, 2A (with optional DCK-2)

Power Requirements: 120/220/240 V AC, 50/60 Hz  
U.S.A. version 120 V AC 50/60 Hz only  
13.8 VDC (with optional DCK-2.)

Dimensions: 270 (10.6) W  $\times$  96 (3.78) H  $\times$  270 (10.6) D mm (inch)

Weight: 5.6 kg (12.3 lbs.) approx.

\* With option VC-20 VHF Converter Unit

Note: Circuit and ratings are subject to change without notice due to developments in technology

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