

ICOM

COMMUNICATIONS RECEIVER

# IC-R9000



Expand your horizons with Icom's top-of-the-line, super wide range receiver.

Icom Inc.

# The advanced worldwide information receiver.

## FULL, CONTINUOUS 100 kHz~1999.8 MHz\* COVERAGE

Tune into world news agencies that use FAX and RTTY, aircraft, marine and business contacts, emergency services, government, satellite, amateur, CB (Citizen's Band) and many other stations near your home or on the other side of the planet. With an advanced range like this, you will have no trouble hearing the rich diversity of the world.

\* Some versions do not cover the entire range. Refer to frequency coverage in specifications.

## ALL MODE CAPABILITY

The IC-R9000's versatile receive capability allows you to receive many different mode signals.

Listen to AM used by broadcasting stations and VHF air band. Use SSB (USB, LSB) and CW to receive marine band, aircraft and amateur stations on shortwave. Tune into many businesses, emergency services, government and amateur stations using FM on VHF and UHF. Or use wide FM to receive FM broadcasts and TV stations. FSK (frequency shift keying) is also built in for receiving RTTY from news agencies.

Watch the IC-R9000? Yes! Using your TV set or video recorder with a video input connector, you can watch VHF and UHF TV broadcasts.\* The built-in CRT display shows NTSC system video signals from the video input connector. The IC-R9000 also receives ATV (amateur television) on both the 430 and 1200 MHz amateur bands.\*

\* NTSC or PAL system. Some versions do not have these capabilities.

## MULTI-FUNCTIONAL CRT DISPLAY

Icom's unique, state-of-the-art multi-functional CRT display is built into the IC-R9000. The display is superior to all conventional-type spectrum scopes on the market. Receive frequencies, modes, and additional useful data are displayed for your operating convenience. The CRT display has the following advanced features:

### • SPECTRUM SCOPE FOR VISUAL SIGNAL CONFIRMATION

You can use the spectrum scope like a professional spectrum analyzer. At a glance, you can observe the signal spectrum of nearby receive frequencies. The span of the spectrum scope can be selected for  $\pm 25$ ,  $\pm 50$  or  $\pm 100$  kHz according to your needs.

### • MEMORY LIST

Using the memory list function, you can see the contents of 10 memory channels at once. Memory channels can be scrolled for viewing other memory channels.

### • TERMINAL MONITOR

This function allows you to monitor RTTY or packet radio on the CRT display. ASCII (RS-232C level) code data from the RTTY terminal unit or TNC (Terminal Node Controller) can be monitored.

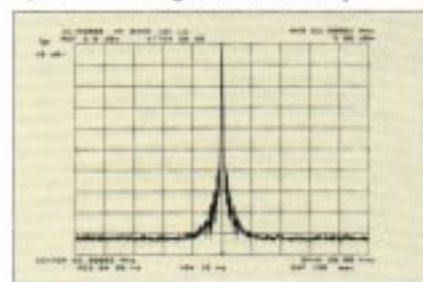
## WIDE VARIETY OF TUNING STEPS

10 Hz, 100 Hz, 1 kHz, 5 kHz, 9 kHz, 10 kHz, 12.5 kHz, 20 kHz, 25 kHz or 100 kHz steps are provided for operation with all stations. The IC-R9000's MHz up and down switches allow you to change the receive frequency in 1 MHz steps. An automatic dial click function is included for tuning convenience when using tuning steps greater than 5 kHz. This function is convenient for selecting FM mode stations.

## ICOM'S EXCLUSIVE DDS SYSTEM

Icom's state-of-the-art DDS (Direct Digital Synthesizer) System is built into the PLL circuits. The circuit ensures high-speed PLL lockup times and tremendous high-speed scanning. Minimum tuning steps of 10 Hz for frequency coverage make SSB, CW and FSK tuning easy.

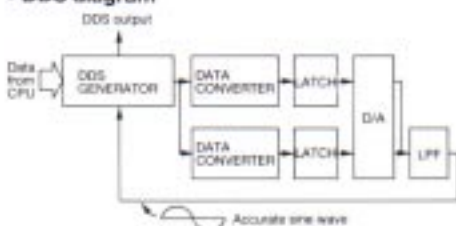
### • PLL C/N characteristics (when receiving at 14.1000 MHz)



### • DDS unit



### • DDS diagram



(1) Menu 1 screen



Calls up the scan condition screen, memory list screen, spectrum scope screen or the clock and timer screen.

(2) Menu 2 screen



Calls up terminal monitor screen, C-V condition screen, FSK mode setting screen or bank status screen.

(3) Spectrum scope screen



Performing like a professional spectrum analyzer, this screen allows you to observe the signal spectrum of  $\pm 25$ ,  $\pm 50$  or  $\pm 100$  kHz around a receive frequency.

(4) Daily timer set screen



Displays the on/off conditions for six programmed daily timers. Programmable contents you want to receive in such as the day, on/off time and memory channel are displayed.

# Full, super wideband range coverage in all modes.

## SUPER HIGH FREQUENCY STABILITY — EVEN IN THE GHz RANGE!

Another Icom achievement is the IC-R9000's very high frequency stability in the difficult-to-manage GHz range. Frequency stability is  $\pm 0.25$  ppm\* in ranges greater than 30 MHz and  $\pm 25$  Hz\* in ranges less than 30 MHz.

\* 0°C—+50°C: +32°F—+122°F

• Reference crystal oscillator CR-228



## DIRECT KEYBOARD ENTRY

Receive frequencies and memory channels can be selected via the keyboard. This function is very convenient when the desired frequency or memory channel number is already known.

## STORES ALL REQUIRED FREQUENCIES — 1000 MEMORY CHANNELS

A total of 1000 memory channels store frequencies, modes, filter width and tuning steps. 1000 memory channels are grouped in 10 memory banks. You can use different memory banks according to station type, mode, frequency ranges, or whatever your preference is. And up to eight character notes can be written on all memory channels for your reference.

## EXCELLENT SENSITIVITY IN ALL FREQUENCIES

Advanced RF circuits ensure an improved dynamic range of 103.5 dB.\*<sup>1</sup> The IC-R9000 can receive desired weak signals even when strong signals appear on nearby frequencies.

For frequencies higher than 30 MHz, the front end circuits have tuned bandpass filters with GaAs FETs and other high-performance circuits.

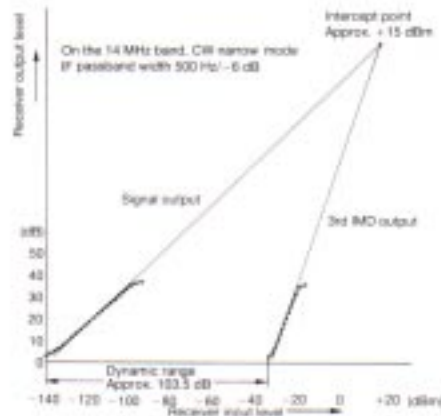
Sensitivity is less than  $0.16\mu\text{V}^{*2}$  for 10 dB S/N (SSB, CW, FSK) and less than  $0.5\mu\text{V}^{*3}$  for 12 dB SINAD (FM). See what high sensitivity in all frequencies is like with the IC-R9000.

\*<sup>1</sup> On 14 MHz band, CW-narrow mode, IF passband width 500 Hz/ -6 dB

\*<sup>2</sup> 1.80000—29.99999 MHz

\*<sup>3</sup> 30.00000—999.99999 and 1240.00000—1299.99999 MHz

• Dynamic range characteristics



## CONVENIENT MEMORY EDITOR FUNCTION

The advanced, super convenient memory editor function answers that nagging question: "With 1000 memory channels, why can't the IC-R9000 move programmed memories to more convenient locations?" It can. The editor function allows you to easily move, copy, or delete the memories at any time on the CRT display.

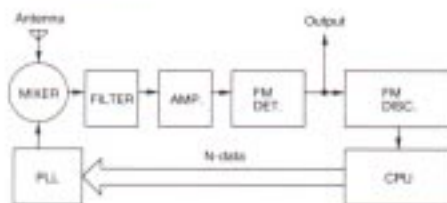
## DUAL CLOCKS AND TIMER FUNCTIONS

A 24-hour system of dual clocks with two kinds of sleep timers and six different daily timers are included. Timer settings can be performed very easily using the CRT display.

## AFC FUNCTION TO COMPENSATE FOR FREQUENCY DRIFT

Icom's advanced AFC function automatically and immediately tunes to the frequency of the signal in each FM mode. This is especially useful, for example, when receiving amateur stations in the 1200 MHz band. This function also compensates for frequency shifts in weather satellite signals due to the Doppler Effect.

• AFC diagram



(5) Memory list screen



Displays 10 of 1000 memory channels at one time. Desired memory contents can be conveniently found and confirmed.

(6) Memory edit screen



An advanced function for editing any of the 1000 memory channels. Can be used to copy, move or clear any memory channel.

(7) Scan condition screen



Each scan condition can be immediately checked and set on the CRT display.

(8) Bank status screen



Sets memory bank status such as memory scan edges or priority channels in a memory bank.

# Scans quickly and effectively.

## MULTI-SCAN FUNCTIONS

**• Programmed scan**

**• Memory scan**

**• Selected number memory scan**

**• ΔF scan**

**• Selected mode memory scan**

**• Auto memory write scan**

M ch	Freq.
900	---
901	---
902	---
903	---
904	---
905	---
906	---
907	---
908	---
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**• Priority scan**

## MULTI-SCAN FUNCTIONS

The IC-R9000 is equipped with numerous scan functions to search desired stations quickly in wide frequency bands. The scan speed is very fast — 13 channels per sec. or more. Also, the scan speed is continuously adjustable to suit your operating needs.

### • PROGRAMMED SCAN

Repeatedly scans between two programmable scan edges. Up to 10 groups of scan ranges can be specified.

### • ΔF SCAN

Repeatedly scans  $\pm 2.5$ ,  $\pm 5$ ,  $\pm 10$ ,  $\pm 20$  or  $\pm 50$  kHz pre-selected frequency widths around your receiving frequency. This scan function is very useful for searching signal details in a narrow frequency range.

## SELECTABLE SCAN RESUME CONDITIONS

The IC-R9000 provides versatile scan resume and scan clear conditions when a signal is received: pauses until a signal disappears, pauses for pre-selected time, and pauses for the mixed condition of "signal disappears" and "adjustable time."

The resume time can be pre-selected and varied freely between approx. 3–20 sec. according to your purposes.

### • PRIORITY SCAN

Monitors the desired memory channels while you listen to your main operating channel. Your most-required memory channel can be programmed as a priority channel for each memory bank.

### • MEMORY SCAN

Repeatedly scans all memory channels or a pre-programmed memory channel range (i.e., memory channels 155–238). In addition, required memory banks can be specified for each memory bank. For example, only channels 100–199 are searched. A total of 11 memory channel ranges — 10 memory banks plus an ignored memory bank — can be set.

### • SELECTED MODE MEMORY SCAN

Scans memory channels which contain the same specified mode.

### • SELECTED NUMBER MEMORY SCAN

A group number (\*1~\*9) can be assigned for all 1000 memory channels. Searches only memory channels that contain the same group number.

### • AUTO MEMORY WRITE SCAN

Scans between two programmable scan edges. When a signal is received, the frequency is automatically written in memory channels 900–999 sequentially. The received date times are also written in the memory note area.

### • VSC (Voice Scan Control) FUNCTION

The scan resumes immediately when it has paused for signals that do not include voice components. Unlike conventional receivers, the advanced IC-R9000 ignores beat signals and noise.

CONDI- TION FUN- CTION	When a signal appears	Within pre-selected time		After pre-selected time	
		When the signal continues	When the signal disappears	When the signal continues	When the signal disappears
PAUSE	Pauses	Still pauses	Resumes approx. after 3 sec.	Still pauses	Resumes approx. after 3 sec.
TIMER-A	Pauses	Still pauses	Still pauses	Resumes	Resumes
TIMER-B	Pauses	Still pauses	Resumes approx. after 3 sec.	Resumes	Resumes
SCAN CLEAR	Aborts	Already aborted	Already aborted	Already aborted	Already aborted

# Built for consistently high performances.



## IMPROVED CI-V SYSTEM FOR COMPUTER CONTROL

Using an optional CT-17 CI-V LEVEL CONVERTER, many control functions such as frequency and memory channel selection can be carried out from a personal computer equipped with an RS-232C port.

AF gain control, RF gain control, squelch level control, and many other functions can also be controlled via your personal computer.

(9) CI-V condition screen



Sets the CI-V System remote control conditions.

## ADVANCED S-METER SQUELCH

Icom's all-mode S-meter squelch is built-in for receiving only signals stronger than the pre-set level.

## RF ATTENUATOR AGAINST STRONG SIGNALS

A 10, 20 and 30 dB level-selectable RF attenuator prevents saturation of the RF circuit from very strong signals such as broadcast station signals.

## COMPLETE INTERFERENCE AND NOISE ELIMINATION CIRCUIT

The IF shift circuit shifts the center frequency of the passband to effectively reject nearby interfering signals in SSB, CW, FSK and AM modes.

A threshold-adjustable, width-selectable noise blanker is included for eliminating long duration pulse-type noises such as "woodpecker."

The deep notch filter can be tuned to a particular frequency in the IF passband, eliminating interfering beat signals. These functions ensure you clear reception even during crowded band conditions.

## FREQUENCY READING FOR LATER REVIEW

An optional UT-36 VOICE SYNTHESIZER UNIT announces receive frequencies in English. Use the scan function while you are out for recording signals on a tape recorder. Synthesized voice readings can also be recorded for later review.

## ADDITIONAL OUTSTANDING FEATURES

- A dial lock function is included to ensure that no accidental frequency changes occur.
- Combined S-meter and center meter for tuning convenience.
- All mode squelch and S-meter squelch.
- Rack mounting handles supplied for mounting with a 19-inch rack.
- Bass and treble tone controls for comfortable, enjoyable audio.
- Four antenna connectors that accept many kinds of antennas.

• IC-R9000 rear panel



## SPECIFICATIONS

## • Frequency coverage

VERSION	FREQUENCY COVERAGE
U.S.A., Europe, Australia	0.10000~1999.80000 MHz
Germany	13.95000~ 14.50000 MHz
	28.00000~ 29.70000 MHz
	144.00000~ 146.00000 MHz
	430.00000~ 440.00000 MHz
France	1240.00000~1300.00000 MHz
	0.10000~ 87.49999 MHz
	108.00000~1999.80000 MHz

- Modes : SSB (USB, LSB), CW, FSK, AM, FM, Wide FM
- Receive system : Superheterodyne  
0.10000~999.99999 MHz  
SSB, CW, FSK Quadruple conversion  
FM Triple conversion  
30.00000~999.99999 MHz  
Wide FM Double conversion  
1000.00000~1999.80000 MHz  
SSB, CW, FSK Quintuple conversion  
FM Quadruple conversion  
Wide FM Triple conversion

## • Intermediate frequencies

Rx	FREQUENCY		
IF	0.10000~29.99999	30.00000~499.99999	500.00000~999.99999
1st	48.79376~48.80000	778.60001~778.70000	278.60001~278.70000
2nd	10.70000	10.70000	10.70000
3rd	0.45000	0.45000	0.45000
4th	10.70000	10.70000	10.70000

Unit: MHz

The above 1000.00000 MHz uses a crystal conversion system.

- Selectivity : SSB, CW, FSK More than 2.4 kHz/-6 dB  
AM More than 6 kHz/-6 dB  
FM More than 15 kHz/-6 dB  
Wide FM More than 150 kHz/-6 dB

- Sensitivity : Maximum sensitivity values are indicated in each range below.

MODE	FREQUENCY (MHz)	SSB, CW, FSK	AM	FM	Wide FM
0.50000~ 1.79999	1.0 $\mu$ V	6.3 $\mu$ V	—	—	
1.80000~ 29.99999	0.16 $\mu$ V	1.0 $\mu$ V	—	—	
30.00000~ 999.99999	0.32 $\mu$ V	1.4 $\mu$ V	0.5 $\mu$ V	1.4 $\mu$ V	
1000.00000~1239.99999	0.63 $\mu$ V	4.0 $\mu$ V	1.0 $\mu$ V	4.0 $\mu$ V	
1240.00000~1299.99999	0.32 $\mu$ V	2.0 $\mu$ V	0.5 $\mu$ V	2.0 $\mu$ V	
1300.00000~1599.99999	0.63 $\mu$ V	4.0 $\mu$ V	1.0 $\mu$ V	4.0 $\mu$ V	
1600.00000~1999.80000	1.0 $\mu$ V	5.6 $\mu$ V	1.4 $\mu$ V	5.6 $\mu$ V	

10 dB S/N for SSB, CW, FSK and AM

12 dB SINAD for FM and Wide FM

The IC-R9000 receives below 29.9999 MHz in FM mode. FM specification guaranteed 30.0000~1999.7000 MHz (except wide FM).

- Audio output power : More than 2.5 W at 10% distortion with an 8  $\Omega$  load
- Audio impedance : 4~8  $\Omega$
- Power supply requirement : 100~120 V AC (U.S.A. version)  
220~240 V AC (Australia, Europe and France versions)  
220 V AC (Germany version)
- Antenna impedance : 50  $\Omega$  (unbalanced)  
High impedance for a long-wire antenna
- Power consumption : Less than 110 VA
- Usable temperature range : -10  $^{\circ}$ C~+50  $^{\circ}$ C (+14  $^{\circ}$ F~+122  $^{\circ}$ F)
- Frequency stability : 0.10000~29.99999 MHz  $\pm$ 25 Hz  
30.00000~1999.80000 MHz  $\pm$ 0.25 ppm  
(0  $^{\circ}$ C~+50  $^{\circ}$ C; +32  $^{\circ}$ F~+122  $^{\circ}$ F)
- Dimensions : 424(W)  $\times$  150(H)  $\times$  365(D) mm  
16.7(W)  $\times$  5.9(H)  $\times$  14.4(D) in  
(projections not included)
- Weight : 20.0 kg (44.1 lb)

All stated specifications are subject to change without notice or obligation.

## OPTIONS

Check out Icom's full line of convenient options.

- **AH-7000** SUPER WIDEBAND OMNIDIRECTIONAL ANTENNA  
Provides super wideband coverage from 25 to 1300 MHz.
- **CT-16** SATELLITE INTERFACE UNIT  
Easy tuning for instant satellite communications with the IC-R9000 and another Icom transceiver.
- **CT-17** CI-V LEVEL CONVERTER  
For remote control using a personal computer equipped with an RS-232C port.

- **SP-20** EXTERNAL SPEAKER WITH AUDIO FILTERS  
High performance speaker with audio filters for greater sound quality. Size and style match the IC-R9000.
- **UT-36** VOICE SYNTHESIZER UNIT  
Announces the displayed frequency in English.

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Count on us!

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