HIGH PERFORMANCE SOFTWARE DEFINED RECEIVER

ICOM

IC-R8600

COMMUNICATIONS RECEIVER

HIGH PERFORMANCE SOFTWARE DEFINED RECEIVER

- 10 kHz – 3.0 GHz Super Wideband
- P25, NXDN™, dPMR™, D-STAR Mode
- Real-time Spectrum Scope with Waterfall
- Software Demodulation by FPGA Processing
Exciting Innovation in the Professional Communications Receiver World

The IC-R8600 is a super wideband 10 kHz to 3 GHz communication receiver that enables you to hear and see a wide variety of signals in various ways. Not only does it decode diverse digital communication signals, but the advanced FPGA processing technologies implemented provide clarity and accuracy of received signals. With the optional remote control software for a Windows® PC, received audio and spectrum scope data can be transferred through an IP network for monitoring from remote locations.

Superior Performance

10 kHz to 3 GHz Super Wideband Coverage

The IC-R8600 decodes various digital protocol signals including P25 (Phase 1), NXDN™, dPMR™, D-STAR, Japanese DCR (Digital Convergence Radio) as well as receives conventional analog signals such as USB, LSB, SSB, CW, AM, S-AM (Synchronous-AM), FM and WFM modes, covering 10 kHz to 3 GHz wideband in 1 Hz steps.

Absolute Value of RSSI (Received Signal Strength Indicator)

The IC-R8600 shows S-meter, dB/uni03BC, dB/uni03BC (emf) and dBm meter types in the RSSI. The dB/uni03BC (emf) and dBm meter has a high ±3 dB accuracy* (between 0.5–1100 MHz) that can be used for measuring signal strength level.

122.88 MHz sampling frequency used for the A/D converter results in transferred to the FPGA and DSP for optimal processing. The high-rate 122.88 MHz sampling frequency used for the AD converter results in superior aliasing and image reception reduction.

Software Demodulation in FPGA Processing

The IC-R8600 utilizes FPGA (Field Programmable Gate Array) and DSP units for demodulation, decoding and most of signal processing. Direct HF signals and intermediate frequency signals, which are converted from VHF/UHF signals, are digitized in a 14-bit AD converter and transferred to the FPGA and DSP for optimal processing. The high-rate 122.88 MHz sampling frequency used for the AD converter results in superior aliasing and image reception reduction.

Superb Receiver Performance

The IC-R8600 has 11 discrete RF bandpass filters in the HF bands and 13 bandpass filters in the VHF/UHF bands. To prevent overload, only the intended signal is passed, while any out of range strong interference signals are rejected. The IC-R8600 provides +30 dBm IP3 and 105 dB dynamic range at 14.1 MHz. IP3 performance is +10 dBm at 144 MHz and 0 dBm at 440 MHz.

Ample Memory Channels

The IC-R8600 has up to 2000 regular memory channels assignable to 100 groups. In addition to the regular memory channels, up to 100 scan skip channels and 50 pairs of program scan edges can be set. The auto memory write scan automatically stores busy frequencies in the auto memory write channels (up to 200 channels). These memory channels and various settings can be edited with the optional CS-R8600 programming software on a Windows® PC.

Variety of Scan Functions

A variety of scan functions effectively and thoroughly search for desired stations. The IC-R8600 scans up to 100 channels per second in the memory scan mode.

- Program scan/Fine program scan
- Of scan/fine scan
- Priority scan
- Memory scan
- Selected memory scan
- Selected mode memory scan
- Auto memory write scan

Extensive Rich Features

- SD Card Slot for Receiver Recorder
- The recorder function can record received audio onto an SD card in WAVE format. The recorded voice audio can be played back on the receiver or a PC. When a 32 GB SD card is used, up to 270 hours of recording is possible. In addition, the screen capture function saves a snapshot of the screen in PNG or BMP format on the SD card.

- I/Q Signal Output
- The I/Q signal output function* allows you to derive digital IF signals from the I/O output jack. It can be used for analyzing spectrum or decoding signals.

* This function will be provided with future firmware update. A third party software may be required separately.

Remote Control Function through IP Network or USB Cable

The optional RS-R8600 PC remote control software allows you to listen to received audio and control most of the receiver functions, including the spectrum scope, through an IP network or USB cable.

Real-time Spectrum Scope with Waterfall Function

The high-resolution real-time spectrum scope provides class-leading performance in resolution, maximum 30 frames per second fast sweep speed, ±2.5 MHz wide scope span (display range) and 110 dB of dynamic range (at ±5 kHz span). The waterfall screen allows you to find weak signals by showing the spectrum change over time. When tapping the spectrum scope or waterfall screen, the tapped area can be selected as the operating frequency. The peak search function finds several peak frequencies within the scope range, and helps you to select these. (* Approximate)

Quick, Smooth and Intuitive Operation

To efficiently acquire intended signals, the IC-R8600 user interface provides quick and accurate operation. The large 4.3 inch color display, with touch screen function, is configured to collect operating information. By tapping indications and icons on the screen, the setting menu will pop up and parameters can easily be adjusted. When either the DIAL A, B or C multi-function control knobs is pushed, various functions, such as scan speed, RF gain, audio tone, display backlight or other menus will pop up on the display.

Other Features

- 3 antenna connectors: an SO-239 type and a type-N connector
- Clock and NTP function
- Center tuning meter and digital auto frequency control (AFC) for FM, WFM and digital modes
- Voice synthesizer function
- Audio tone functions: VXP/XPB base, treble and de-emphasis
- Decode multiple digital code used in digital mode • IP+ function improves 3rd order intercept point performance
- Manual drift adjustment • Dial lock and panel lock • CI-V remote control commands
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### Superior Performance

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  The IC-R8600 shows S-meter, dBm, dBm (emf), dB/μm and dBm meter types in the RSSI. The dBm, dBm (emf) and dBm meter has a high ±3 dB accuracy* (between 0.5–1100 MHz) that can be used for measuring signal strength level.

* Less than ±6 dB between 1100–3000 MHz.

### Software Demodulation in FPGA Processing

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### Real-time Spectrum Scope with Waterfall Function

The high-resolution real-time spectrum scope provides class-leading performance in resolution, maximum 30 frames per second* fast sweep speed, ±2.5 MHz wide scope span (display range) and 110 dB of dynamic range (at ±5 kHz span). The waterfall screen allows you to find weak signals by showing the spectrum change over time. When tapping the spectrum scope or waterfall screen, the tapped area can be selected as the operating frequency. The peak search function finds several peak frequencies within the scope range, and helps you to select these. (*Approximate)

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  The recorder function can record received audio onto an SD card in WAVE format. The recorded voice audio can be played back on the receiver or a PC. When a 32 GB SD card is used, up to 270 hours of recording is possible. In addition, the screen capture function saves a snapshot of the screen in PNG or BMP format on the SD card.

- **I/Q Signal Output**
  
  The I/Q signal output function* allows you to derive digital IF signals from the I/Q output jack. It can be used for analyzing spectrum or decoding signals.

* This function will be provided with future firmware update. A third-party software may be required separately.

### I/O Signal Connectors

- 3 antenna connectors: an SO-239 type and a phono (RCA) connector for HF and a type-N connector
- Clock and NTP function
- Center tuning meter and digital auto frequency control (AFC) for FM, WFM and digital modes
- Voice synthesizer function
- Audio tone functions: VOX, VOX+LFS base, treble and de-emphasis
- Decode multiple digital code used in digital mode + IP+ function improves 3rd order intercept point performance

### Other Features

- Main dial friction adjustment
- Dial lock and panel lock
- O/L remote control commands

### Actual Size

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**Communications Receiver**

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SPECIFICATIONS

GENERAL

Frequency coverage
USA
0.010000–821.999999*, 851.000000–866.999999, 896.000000–3000.000000 MHz
EXP
0.010000–3000.000000 MHz
(*Guaranteed range: 0.100000–821.999999 MHz)

Antenna connector
ANT 1 (1–3000 MHz): Type-N (50 Ω)
ANT 2 (0.01–30 MHz): PL-259 (50 Ω)
ANT 3 (0.01–30 MHz): RCA (50 Ω)

Frequency stability
Less than ±0.5 ppm (at 25˚C, after warm up)

Mode
USB, LSB, CW, FSK, AM, FM, WFM,
Digital (D-STAR, P25 Phase 1, NXDN, dPMR, DCR),
Spurious and image rejection
0.010–29.999 MHz
Less than 70 dB
30.000–1099.999 MHz
More than 50 dB
1100.000–2499.999 MHz
More than 40 dB
2500.000–3000.000 MHz
More than 40 dB

Power supply requirement
13.8 V DC ±15%

Power supply output
15 V/2 A

Speaker maximum input
7 W, 8 Ω load, 10% distortion

Selectivity
More than
Less than

Audio output power
More than 2.0 W (8 Ω load, 10% distortion)

Sensitivity** (Preamp ON)
0.1–1.799 MHz
0.15–29.999 MHz
Less than ±5 dBμ
1100–1999.999 MHz
2000–3000 MHz

** More than 35 dB for 1st IF through above 1100 MHz. More than 30 dB for 1st IF image above 2000 MHz.

OPTIONS

Some options may not be available in some countries. Please ask your dealer for details.

- RS-R8600
- CS-R8600
- MB-123
- CS-R8600
- RS-R8600

SP-39AD EXTERNAL SPEAKER WITH DC POWER SUPPLY
High-quality audio and matching height
Speaker maximum input: 7 W, 8 Ω
Power supply output: 15 V 2 A

SP-23 EXTERNAL SPEAKER 4 audio filters; headphone jack.
Input impedance: 8 Ω
Max. input power: 5 W

AH-8000 SUPER WIDEBAND OMNI-DIRECTIONAL ANTENNA
Frequency coverage: 100–3335 MHz

AH-710 FOLDED DIPOLE ANTENNA Covers 1.9–30 MHz bands.

AD-55NS POWER SUPPLY Input: 100–240 V AC/1 A
Output: 15 V/2 A

Supplied accessories:
- DC power cable
- Fuses
- Plugs

RECEIVER

Receiver system
Direct sampling
30.000–499.999 MHz
Double superheterodyne (IF: 778.7, 46.35 MHz)
500.000–1099.999 MHz
Double superheterodyne (IF: 278.7, 46.35 MHz)
1100.000–1499.999 MHz
Triple superheterodyne (IF: 900–500.000001, 278.7, 46.35 MHz)
1500.000–3000.000 MHz
Triple superheterodyne

Sensitivity** (Preamp ON)
0.1–1.799 MHz
0.15–29.999 MHz
1100–1999.999 MHz
2000–3000 MHz

Selectivity
More than
Less than

Audio output power
More than 2.0 W (8 Ω load, 10% distortion)

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

Rear Panel View

IN: 10 MHz Reference Frequency Input
IN: 10 MHz IF Output Jack
IN: 10 MHz Reference Frequency Input/Output
IN: 13.8V DC Power Socket
IN: DC IN Jack (For use with AD-55NS or SP-39AD)
IN: S-meter Output Jack
IN: AUX Jack
IN: RCA Antenna Connector (HF: 500 0)
IN: PL-259 Antenna Connector
IN: Type-N Antenna Connector
IN: LAN (Ethernet) Connector
IN: Ground Terminal

Count on us!