JRC’s New Professional-Grade Communications Receiver with Intelligent Features and High Performance
The NRD-535 HF Receiver is designed with JRC’s high technology based on the abundant technical experience that JRC has had in the development and manufacture of professional radio receivers installed on ocean-going ships, fishing vessels and coast stations throughout the world. The NRD-535 incorporates upgraded features and performance compared with its predecessor in order to meet the need of the new generation. The professional grade communications receiver will satisfy even the most discerning listeners.

Variable Tuning
The NRD-535 adopts a variable tuning system (electronic tuning by capacitor diodes) in the front end of its double tuning circuit. The center frequency of the double tuning circuit is continuously controlled by a microprocessor to vary with the received frequencies. This system can substantially attenuate undesired signals and enhance signal selectivity, compared with the wide-band BPF system with a fixed bandwidth.
- Conventional BPF system
- Variable tuning system

High Sensitivity with Wide Dynamic Range
The dynamic range and sensitivity are enhanced by using 4 low-noise junction type FETs with excellent cross modulation characteristics each in the RF amplifier and the first mixer in the first stage. The RF amplifier incorporates 4 parallel-connected high power gain circuits to improve the receiving sensitivity. The first mixer is a quadruple-connected double balanced mixer to reduce the odd-order intermodulation product distortion (IMD), ensuring a wide dynamic range.

High-Speed Synthesizer Using One-Chip DDS IC
The frequency synthesizer consists of a phase-locked loop and a direct digital synthesizer (DDS) with its logic circuit configured as a one-chip IC in order to obtain full compatibility with both high purity of local signals and high-speed frequency switching. Unlike a PLL synthesizer, the DDS, which is widely used in high-class electronic testing equipment because of its excellent features, generates the frequencies directly and digitally, ensuring enhanced response (high-speed frequency switching in 1-Hz step), high C/N (carrier to sideband noise ratio) and simplified circuit configuration.
Note: The sideband noise of the local signal appears as a noise within the IF pass band by its mixing with a strong incoming signal close to the desired signal (reciprocal mixing), resulting in a deteriorated effective sensitivity of the receiver. This problem can be solved by enhancing the C/N of the local signal. On the other hand, if only the purity of the local signal is pursued in the synthesizer, the frequency switching time would be longer. The DDS can solve both problems.

High Precision 1-Hz Step Tuning by Magnetic Rotary Encoder
The main dial adopts a high-precision magnetic rotary encoder. The main dial that generates 1,000 pulses per rotation is capable of tuning in 3 steps (100 kHz/rot, 10 kHz/rot and 1 kHz/rot). At 1 kHz/rotation, frequency control is available in 1-Hz step, ensuring tuning with analog VFO feeling.

HF Receiver NRD-535
External Speaker NVA-319
Rear panel of NRD-535 HF Receiver
Various Interference Rejection

The NRD-535 incorporates various interference rejection functions as described below:

Exalted Carrier Selectable Sideband (ECCS) - Option
Sideband suppression and AM-synchronized detection is made to reduce distortion due to fading and beat disturbance by an adjacent station. When receiving an AM (DSB) signal under an interference from an adjacent station, its USB or LSB can be picked up whichever is not affected by the interference, ensuring effective interference rejection and high tone quality. Distortion due to fading is rejected by producing a signal synchronized with the carrier of the received signal and using it for detection.

Bandwidth Control (BWC) - Option
The pass bandwidth of the IF filter can be narrowed continuously (2.4kHz to approx. 500Hz) without varying its center frequency, ensuring effective interference rejection. This function is powerful in rejecting interference in a congested receiving band because the sharp attenuation curve of the filter is not varied. This function is available when the bandwidth control is to be set to INTER.

Pass-Band Shift (PBS)
In all the modes except in the FM mode, the equivalent center frequency of the IF filter is shifted up and down without varying its pass bandwidth, in order to expel undesired signals out of the band.

Notch Filter (NOTCH)
The notch filter with a sharp notch incorporated in the IF circuit eliminates beat interference close to the desired signal.

Noise Blanker (NB)
The noise blanker can effectively eliminate a wide range of noises from narrow automobile ignition noise to wide "woodpecker" noise by adjusting the level control.

Easy-To-See Multi-Function Display
The large custom vacuum fluorescent display on the front panel is a multi-function display to indicate various data including frequency, memory channel, mode and bandwidth. In addition, the signal strength is displayed in the form of a digital bar graph.

Remote Control from Personal Computer
By connecting an RS-232C interface cable (option), 25 items of operational functions including the receiving frequency can be remote-controlled from a personal computer, providing an expanded range of operation. By recalling the setting conditions of the receiver, the S-meter value and the time of realtime clock, panoramic and scheduled receptions are available.

OPERATING PANEL AND DISPLAY

1. Vacuum fluorescent display
2. AGC switch with LED
3. Bandwidth switch with LED
4. Tuning ratio switch with LED
5. ECCS switch with LED
6. Channel switch with LED
7. Frequency switch with LED
8. Numerical keys
9. Memory switch
10. Frequency entry switch
11. MHz switch
12. Tone control
13. AF gain control
14. Clear switch
15. Right/Up switch
16. Main tuning control
17. Lock switch with LED
18. Left/Down switch
19. PBS control
20. RF gain control
21. BNC control
22. Notch control
23. Level control
24. Squelch control
25. Squelch operation check LED
26. Record jack
27. Headphones jack
28. Noise blanker switch
29. Power on/off and timer switch
30. Noise blanker level check LED
31. Mode switches
32. Function switches
33. Function switching check LED
34. Internal speaker (top panel)
**Large Memory Capacity of 200 Channels**
Various data per channel including frequency, mode, AGC time constant, ATT on/off and IF filter bandwidth can be stored in a 200-channel internal memory (C-MOS RAM). The stored data can be backed up by an internal lithium battery.

**Highly Stable Crystal Oscillator Kit – Option**
The synthesizer is controlled by a single standard frequency oscillator. Its frequency stability can be improved to be within ±0.5 ppm (at −20°C to +50°C) by using the CGD-135 highly stable crystal oscillator kit.

**Complete Modular Design**
All the printed circuit boards are of complete modular plug-in design. Each unit is plugged into the motherboard, and it employs surface-mount components extensively, ensuring uniform quality, enhanced reliability.

**New Panel Design with Excellent Operability**
The cosmetic design of the operating panel is new and original and the arrangement of the controls and switches is functional and easy to operate.
HF RECEIVER
NRD-535
NRD-535D
Built-in CFL-243 BWC Unit, CMF-78 ECSS Unit and CFL-233 IF Filter

ADDITIONAL FUNCTIONS

- **Memory Channel Search**
  The memory channels can be searched without changing the receiving frequency.

- **Scan Reception**
  All the channels between designated two channels can be scanned. The scan rate is user-defined and adjustable from 0.5 s/CH to 5 s/CH.

- **Sweep Reception**
  All the frequencies between designated two frequencies can be swept with a sweep rate between 0.05 s/step and 0.5 s/step. The sweep rate is user-defined and set by the main dial.

- **Automatic Scan/Sweep Stop**
  If the squelch is opened during scan or sweep operation, the scanning or sweeping is automatically stopped and the scanned or swept frequencies are continuously received. This function is user-defined.

- **Scan Hold Input**
  The scan operation can be temporarily stopped by earthing the scan hold terminal on the rear panel.

- **All-Mode Squelch**
  Squelch operation is available in all modes.

- **Muting control**
  The AF output of the receiver can be muted by earthing the mute terminal on the rear panel.

- **Clock/Timer**
  In the TIMER mode, the internal real-time clock turns the relay on/off so that time control is available of a tape recorder connected to this receiver. In the normal receiving mode, the relay can be set to CONSTANT ON, CONSTANT OFF, or ON/OFF on squelch.

- **Tone Control**
  Tone quality of the AF output can be controlled.

- **RTTY Fine Tuning**
  By installing the CMH-530 RTTY unit (option), fine tuning is available.

- **Dimmer Control**
  **RF Attenuator**

- **Direct Entry of Frequencies from Numerical Keys**
- **Internal Speaker**
- **Main Dial Lock**
- **Up/Down Switches**
- **Recording output**
- **AGC Time Constant Switch**
- **IF Filter Switching in 4 Steps**
- **User-Defined Function Change**

OPTIONS

**Option Units**

- **CFL-243 BWC Unit**
- **CMF-78 ECSS Unit**
- **CMH-530 RTTY Unit**

**NVA-319 External Speaker**

- Input impedance: 8 Ω
- Max. input power: 3 W
- Dimensions (mm): 180W × 130H × 280D

**ST-3 Headphones**

- Weight: Approx. 300g

**IF Filters**

- **CFL-231 (300Hz)**
- **CFL-232 (500Hz)**
- **CFL-233 (1kHz)**
- **CFL-216A (1.8kHz)**
- **CFL-251 (2.4kHz)**

**NVA-88 External Speaker**

- **CGD-135 Highly Stable Crystal Kit**
**SPECIFICATIONS**

- **Frequency range:** 0.1 to 30 MHz
- **Type of reception:** RTTY, CW, SSB (USB/LSB), AM, FM, FSK
- **Frequency stability:** ±10 ppm or less 3 mm, to 50 mm. After powering on and within ±2 ppm for one hour thereafter.
- **Minimum adjustable frequency step:** 1 Hz
- **Frequency memory:** 200 channels
- **Receiving system:** Triple superhetreodyne (FM - double superhetreodyne)
  - 1st IF: 70.455 MHz
  - 2nd IF: 455 kHz
  - 3rd IF: 87 kHz (except FM)
- **Sensitivity:**
  - RTTY, FAX, CW, SSB: 0.1 - 6.5 MHz, 14 dB, 16 dB, 24 dB
  - AM: 6 dB, 10 dB, 15 kHz or less
  - FM: 6 kHz or more
- **Selectivity:**
  - AUX: 12 kHz or more
  - WIDE: 6 kHz or more
  - INTER: 2 kHz or more
  - NARROW: 1 kHz or more
- **Image rejection:** 70 dB or more
- **IF rejection:** 70 dB or more
- **PBS variable range:** ±1 kHz or more
- **Notch filter:** 40 dB or more
- **Antenna impedance:** 50Ω (Lo-Z terminal), 600Ω (Hi-Z terminal)
- **Antenna input attenuation:** Approx. 20 dB
- **AGC characteristics:** The AF output varies 10 dB or less for the antenna input of 3 μV to 100 mV
- **AF outputs:**
  - Speaker output: 1 W or more with 4 Ω load at 1% distortion
  - Line recorder output: 1 W or more with 600Ω load at 10% distortion
- **RS-232C interface:** 480 baud (character format: 1 start bit, 8 data bits, no parity bit, 1 stop bit)
- **Power supply:** 100/100/200/240 V ac, 50/60 Hz, 12 to 16 Vdc (13.8 Vdc standard), 25 W
- **Dimensions:** 330 W x 136 (143) H x 267 (224) D mm, (max dimensions with projections)
- **Weight:** Approx. 9 kg
- **Accessories:** 1 fuse, 1 coax plug, 5 pin plugs, 1 headphone plug, 1 record plug, AC power cable, DC power cable, Instruction manual

*Specifications subject to change without notice.*

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**DIMENSIONS**

- **Rear Panel Description**
  - DC terminal
  - AC terminal
  - AC fuse
  - AC voltage selector
  - RTTY line output (Mark)
  - RTTY line output (Space)
  - RS-232C connector
  - Timer output terminal

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**For further information, contact**

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