FT-991A
HF/VHF/UHF
ALL MODE TRANSCEIVER

Explore the Vast Ocean of Radio waves
HF through UHF

〈Wide-Coverage Transceiver〉
With Real-Time Spectrum Scope and Multi-Color Waterfall Display
An all-around model with a built-in real-time spectrum scope and superior basic performance

All modes from HF to UHF bands condensed into a small body

Covers the amateur radio bands from 160 m to 70 cm, and is capable of all modes SSB/CW/AM/FM, even the high-definition C4FM digital mode. All this condensed into a compact body W: 9”x H: 3.2”x D: 10” (229 x 80 x 253 mm). This is all the radio you will need to enjoy the wide world of amateur radio.

Supports Real-Time Spectrum Scope with Multi-Color Waterfall Display

Instantly evaluate band conditions with the built-in real-time spectrum scope

Listen to the received audio while tuning with the built-in high resolution real-time spectrum scope. Instantly evaluate ever-changing band conditions and easily find the desired signals. TX and RX markers are displayed on the scope for an immediate grasp of the relationship between the TX and RX frequencies. The display color of the scope screen can be selected as desired.

Uncompromising Circuit Design Ensures Excellent Receiver Performance from HF to VHF/UHF

Sophisticated receiver front end engineering is on a par with FTDX Series Transceivers

Triple conversion with 1st IF frequency of 69.450 MHz for all bands

1st IF stage implements a narrow bandwidth 3 kHz roofing filter as standard equipment

Designed for outstanding adjacent multi signal characteristics, not only in HF but also in VHF and UHF bands.

Separate RF amplifiers provide the best characteristics for each band

The IPO, AMP1 and AMP2 selections for the HF/50 MHz bands allow matching the settings to the current band and conditions, to ensure optimal RF amplifier operation. The RF amplifier for the 430 MHz band uses high-electron-mobility transistor (HEMT) NE3509 devices which maintain good performance into the GHz range, and combine high gain with a low NF (Noise Figure).

Latest Touch Panel Operation, Combined With Traditional Front Panel Layout, Achieve Optimal Ease of Use

3.5 inch full color touch panel display for convenient comfortable operating

- Full color TFT LCD display provides useful information about function status and settings at a glance
- Highly responsive panel with functional design and intuitive layout makes touch operation a pleasure
- Four user-customizable function keys offer quick access to mode-dependent assignments
- Traditional layout of Main Dial knob and related controls makes experienced users feel right at home

Receiver Block Diagram

<table>
<thead>
<tr>
<th>Receiver Frequency Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF: 1.8 MHz - 30 MHz</td>
</tr>
<tr>
<td>30 MHz - 300 MHz</td>
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<tr>
<td>300 MHz - 3000 MHz</td>
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<tr>
<td>3000 MHz - 30000 MHz</td>
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</tbody>
</table>

(Wide coverage from HF to UHF bands)

* Specified performance: Amateur bands only
The YAESU IF DSP is Famous for Superb Interference Rejection

**Same high-speed floating point DSP as used in FTDX Series**

The high speed floating point DSP chip TMS320C6746 (3000 MIPS / 2250 MFLOPS) from Texas Instruments, makes possible excellent interference rejection with actual signals under real-world conditions, not only in the HF but also in the VHF and UHF bands.

**Highly effective interference rejection**

The IF WIDTH and IF SHIFT functions are the basis for removing interfering signals and are easily implemented for the best effect. The efficacy of interference rejection is further enhanced by sophisticated functions inherited from the FTDX series, such as the 16-stage digital noise reduction and the DNF (AUTO NOTCH) filter that rapidly tracks even multiple heterodynes. The CONTOUR function that enhances the desired signal with a natural sound, the NOTCH function with selectable bandwidth, along with other functions are provided for comfortable and convenient DX and Contest QSO operation.

**32-bit High Speed Floating Point DSP**

**CONTOUR Filter Conceptual Diagram**

**Digital Noise Reduction Performance**

Final Stage with Ample Power Reserves: 100 W for HF/50 MHz Band and 50 W for VHF/UHF Band

**High quality push-pull amplifier with 100 watts for HF/50 MHz**

Using a push-pull arrangement of RD100HF1 MOS-FET devices, renowned for excellent performance in the HF/50 MHz range, the amplifier delivers 100 watts of low-distortion, high-quality power.

**High speed 1.8 to 54 MHz antenna tuner included as standard equipment**

The high speed digital tuner employs relay switching and features a large 100-channel tuning data memory. This allows the user to instantly call up optimum matching conditions for previously used frequencies.

**50 W amplifier for VHF/UHF assures plenty of power for high frequency bands**

The final amplifier for the VHF and UHF bands uses the high-output MOS-FET RD70HUF2 device which incorporates two MOS-FETs in a single package, providing ample output power of 50 watts.

Support for Advanced C4FM Digital Functions

- **V/D mode** for simultaneous transmission of voice and data with powerful error correction and optimal for mobile use, and Voice FR (Full Rate) mode for high-quality audio transmission
- **AMS function** instantly recognizes digital mode or FM mode and enables mutual communication
- **GM (Group Monitor) function** allows handy on-screen display of group members that are within communication range

**Basic function**

- **Versatile Array of Functions for CW Operation**
  - Advanced electronic keying (4 to 60 wpm) with FULL BK-IN support
  - Electronic Keyer Weight control (2.5 - 4.5)
  - CW side tone pitch frequency adjustable (300 - 1050 Hz)
  - Message Memory function (5 ch x 50 characters)
  - APF function with 3-stage bandwidth selection improves S/N ratio for enhanced intelligibility
  - Auto Zero-in function facilitates subtle tuning operations for CW
  - Automatic “Beacon” keyer mode
  - CW SPOT Feature
  - CW Mode reversal (USB or LSB injection)

- **Convenient Functions for FM Mode**
  - 104 types of DCS (Digital Code Squelch)
  - ARS function provides easy repeater access
  - 50-tone CTCSS Encoder/Decoder for FM operation

**FT-991A**

HF/VHF/UHF 100 W
All Mode Transceiver
(144 MHz/430 MHz 50 W)
Useful and Convenient Functions

- Speech Processor
- Parametric MIC EQ
- Five-channel digital voice message memory function for repetitive voice messages
- MULTI dial design facilitates setting operations
- White LED Key button illumination
- Independent AF GAIN, RF GAIN and CLAR/YO-B knobs
- FH-2 Remote Control (Optional)
- VOX
- MOX
- 99 channel memory (supports memory group view, 12 alphanumeric characters)
- RTTY/DATA Jack
- TUN/LIN connector allows connection of optional VL-1000 or FC-40
- Wide Band Receive Capability (30kHz-56MHz, 118-164MHz, 420-470MHz)
- CS key brings up a preselected menu with a single touch
- USB port allows connection to a PC with a single cable (CAT control, Audio In/Out interface, PTT/RTTY(FSK) SHIFT control) • High Stability 0.5 ppm TCXO • Carrying Handle • Tilt Stand

Specifications

<table>
<thead>
<tr>
<th>General</th>
<th>RX Frequency Range: 0.03 - 56 MHz, 116 - 164 MHz, 420 - 470 MHz (operating), 1.8 - 54 MHz, 144 - 148 MHz, 430 - 450 MHz (specified performance, Amateur bands only)</th>
</tr>
</thead>
</table>
| TX Frequency Ranges: 1.8 - 54 MHz, 144 - 148 MHz, 430 - 450 MHz (Amateur bands only)
| Frequency Stability: ±0.5 ppm (after 1 minute WHT) • +122°F(-10°C) • +5°C) |
| Operating Temperature Range: +14°F • -122°F (4°C) • -50°C |
| Emission Modes: 15 W/GW, AIE (AM), JIE, 15 W/GW, USB, JBE, F3E, FM, F7/G7 (G4F-M) |
| Frequency Steps: 5/10/12 MHz, SSB, AM, 100 MHz (FM, G4F-M) |
| Antenna Impedance: 50 Ohms, unbalanced (Tuner ON), 1.8 - 30 MHz Amateur bands)
| Power Consumption (Approx): RX (no signal) 1.8 A
| Power Consumption (Max): RX (signal present) 25.2 A
| TX: 25 A (HF/50MHz 100 W), 15 A (144/430MHz 50 W) |
| Supply Voltage: DC 14.8 V ± 15% (Negative Ground) |
| Dimensions (W x H x D): 9.01” x 3.21” x 10.1” (229 x 80 x 252 mm)
| Weight (Approx): 8.5 lbs (3.9 kg) |
| Transmitter | Power Output: HF/50MHz 5 - 100 watts (5 - 25 watts AM carrier) 144/430MHz 5 - 25 watts (2 - 12 watts AM carrier) |
| Modulation Types: JIE (SSB), Balanced JAE (AM), AM, 12 MHz (Early Stage) F3E-FM (FM), Variable Reactance F7W/GEF (G4E-M), AM |
| Maximum FM Deviation: ±5.5 kHz • ±2 kHz |
| Harmonic Radiation: Better than +50 dB, 1.8 - 30 MHz Amateur bands |
| SG-S Carrier Suppression: At least 50 dB below FM output |
| Undesired Sideband Suppression: At least 50 dB below FM output |
| Bandwidth: 3 kHz (SSB/USB, 500 Hz (CW), 6 kHz (AM), 16 kHz (FM/G4F-M) |
| Audio Response (SSB): Not more than ±6 dB from 300 to 7000 Hz |
| Microphone Impedance: 600 ohms (200 to 10 KOhms) |

Receiver

<table>
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<tr>
<th>Circuit Type</th>
<th>SSB/CW/AM: Tri-band conversion Super heterodyne</th>
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<tbody>
<tr>
<td>FM/G4F-M: Double-conversion Super heterodyne</td>
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<tr>
<td>Sensitivity:</td>
<td>SSB/CW: 45.5 kHz, 9.7 dB S+N/No</td>
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<tr>
<td>AM: 9.7 kHz, 10 dB S+N/No, 20 kHz modulation, 900 Hz</td>
<td></td>
</tr>
<tr>
<td>FM: 9.7 kHz, 12 dB S+N/No</td>
<td></td>
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<tr>
<td>Selectivity:</td>
<td>Mode: 6 kHz</td>
</tr>
<tr>
<td>Audio Output Impedance:</td>
<td>Gam: 4 to 8 Ohms (4 Ohms: nominal)</td>
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<tr>
<td>Conducted Radiation:</td>
<td>Less than 4 kHz</td>
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</tbody>
</table>

Option

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<thead>
<tr>
<th>VL-1000</th>
<th>HF: 30MHz - 56MHz, 1.8 - 24 MHz (50 MHz) 500 KHz USB Version</th>
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<tbody>
<tr>
<td>VP-1000</td>
<td>VLF-1000 Power Supply: 12V, 14 A</td>
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</table>

Ham Microphone

MH-31A
MH-36A
M-1
MD-200 A
MD-100 A

Headphones

YH-77STA

Remote Control

FF-2

Automatic Antenna Tuner

ATB-100

Mobile Bracket

ATAS-120

Active Tuning Antenna (Manual Type)

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