Ultra-Compact HF/VHF/UHF Transceiver

FT-100D

MICRO MOBILE
The FT-100D's power amplifier section utilizes MOSFET devices, providing low noise, low distortion, and high reliability. The HF/50 MHz amplifier provides 100 Watts of output, while the VHF/UHF section generates 50 Watts on 144 MHz, and 20 Watts on 430 MHz. Reliability is assured thanks to the extensive cooling system, featuring twin cooling fans and an aluminum diecast chassis.

HF with a 68.985 MHz first IF, the FT-100D features a double-conversion superheterodyne system (tripleconversion on FM) with the 2nd IF at 11.705 MHz. The first mixer is a low-noise, high-intercept design using SST310 JFETs in a doubly-balanced configuration. On 144/430 MHz, the very-low-noise GaAs MESFET SGM2016 preamplifier is followed by an HSB88 diode-ring mixer, yielding the excellent Noise Figure required for weak-signal work. The front-end devices are individually selected and matched, ensuring a high level of performance consistency as units are manufactured.

The FT-100D is the smallest transceiver in the world providing such wide frequency coverage. Providing transceive coverage of the HF, 50 MHz, 144 MHz, and 430 MHz amateur bands on SSB, CW, AM, FM, AFSK Teletype, and Packet, the MICRO MOBILE also includes receive coverage of 100 kHz through 961 MHz (cellular and digital telephone frequencies are blocked), so you can monitor public safety, weather broadcast, AM and FM broadcast, and TV audio transmissions, in addition to all the action on the ham bands. All this from a rugged compact case measuring just 160(W) x 54(H) x 205(D) mm (6.3” x 2.2” x 8.0!”)

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RUGGED, HIGH-OUTPUT TRANSMITTER DESIGN!

DIRECT DIGITAL SYNTHESIZER!

To ensure the dual goals of low receiver noise floor and wide dynamic range, Yaesu’s engineers utilize an AD9850 Direct Digital Synthesizer (DDS) for the main local oscillator of the FT-100D. Providing fast lock time and excellent Carrier-to-Noise (C/N) ratio, the DDS also yields tuning steps as small as 1.25 Hz, for silky-smooth action indistinguishable from an analog VFO system. The PLL circuits in the FT-100D feature a low-noise custom J-FET device (FQ7925), thus enhancing system performance.

For superior interference rejection and transmitter "talk power," the FT-100D’s DSP circuitry enhances both sides of the communications circuit. The FT-100D’s DSP Unit features a 24-bit high-tech D/A chip for signal processing. For removal of annoying carriers or heterodynes, the DSP Notch Filter will identify and suppress one or more such signals automatically, thus improving copy and reducing operator fatigue. Providing "brick wall" audio selectivity for voice modes, the Bandpass filter allows independent High-Pass and Low-Pass Filter adjustments, with cutoff frequencies of 100 Hz ~ 1000 Hz (HPF) and 1000 Hz ~ 6000 Hz (LPF). On CW, the Bandpass filter becomes an Audio Peaking Filter with available bandwidths of 60/120/240 Hz.

ADVANCED FEATURES FOR ACTIVE DXERS!

For superior interference rejection and transmitter “talk power,” the FT-100D’s DSP circuitry enhances both sides of the communications circuit. The FT-100D’s DSP Unit features a 24-bit high-tech D/A chip for signal processing.

ENHANCED TRANSMITTER PERFORMANCE THROUGH DIGITAL SIGNAL PROCESSING!

Advanced  Digital Dual Bandpass Filter: Providing “brick wall” audio selectivity for voice modes, the Bandpass filter allows independent High-Pass and Low-Pass Filter adjustments, with cutoff frequencies of 100 Hz ~ 1000 Hz (HPF) and 1000 Hz ~ 6000 Hz (LPF). On CW, the Bandpass filter becomes an Audio Peaking Filter with available bandwidths of 60/120/240 Hz.

Noise Reduction Filter: Building on the highly-successful Noise Reduction feature of the FT-920, the FT-100D’s DSP utilizes multi-parameter analysis for efficient processing and reduction of incoming noise. A total of 16 Noise Reduction settings are available for best results under changing conditions.

Automatic Seeking Notch Filter: For removal of annoying carriers or heterodynes, the DSP Notch Filter will identify and suppress one or more such signals automatically, thus improving copy and reducing operator fatigue.

Microphone Equalizer: To match the FT-100D’s transmitter audio response to the waveform produced by your voice and the microphone in use, the DSP system includes a three-position Mic Equalizer circuit. The result is increased “talk power” as extraneous frequencies are suppressed, allowing all available power to be concentrated into your voice’s pattern.

Download the MOBILE DX MASTER PDF!
Adjustable AGC: The Automatic Gain Control (AGC) circuitry of the FT-100D's receiver may be adjusted, via the menu, for SLOW or FAST receiver recovery times. A menu, called "AUTO" setting programs "FAST" AGC for CW, and "SLOW" for voice modes.

Clarifier (RIT): For split-frequency pile-ups or to follow drifting signals, the Clarifier control provides up to a 9.95 kHz of adjustment of the receiver's frequency, without changing the transmitter frequency. For wider-split pile-ups, the "SPLIT" mode allows you to use VFO-A and VFO-B separately, too.

RF Gain Control: For noise reduction and/or variation of the AGC system threshold, the menu allows the front panel's Squelch control to be switched to operate as an "RF Gain" control.

VOX: For hands-free voice operation, the VOX system includes MENU adjustments for both VOX Gain and VOX Delay. A separate setting is also provided for receiver recovery in the CW mode.

CW OPERATING FLEXIBILITY!

Built-In Electronic Keyer: The FT-100D's built-in Electronic Keyer includes Dot, Space and Dash: Space weight adjustments.

CW Message Memory: For repetitive "CQ DX" or "CQ TEST" messages, the FT-100D includes a 50-character CW Message register.

CW Full Break-In (GSK): Both "Full GSK" and "Semi-Break-In" CW modes are available, with excellent keyed waveforms in both modes.

CW "Reverse" Reception: When interference is encountered in the CW mode, the "Reverse" feature allows the injection sideband to be changed between "USB" and "LSB" by a simple press of the "MODE" switch on the front panel.

CW Pitch/Sidetone Control: The CW Pitch control allows the transmitted signal to be offset 400/500/600/700/800 Hz from "zero beat" with the receive frequency. This adjustment simultaneously varies the center frequency of the RX passband (including the DSP BPF), as well as the CW Sidetone's pitch. The sidetone therefore serves as a "Spot" signal during tuning.

Optional Narrow Filter: The ultra-narrow XF-117C 300 Hz CW filter is an available option for the FT-100D, providing an additional CW filter selection for use during very crowded conditions.

MULTI-PURPOSE MEMORY SYSTEM!

The FT-100D provides 6 Memory Groups of 50 Channels each, for a total of 300 "Regular" memories. In addition, you get 20 "Split Frequency" memories, 5 Quick Memory Bank (QMB) memories, 4 "Home" Channel memories, and 20 Band-Limit memories, for a grand total of 349 Memory Channels! Use the QMB or Home channels for Quick OXY to a favorite frequency, and use the Split memories for DX-pedition pileups or 7 MHz SSB work.

HIGH-RESOLUTION DOT-MATRIX DISPLAY!

The large (70 mm x 30 mm) blue dot-matrix display provides easy-to-read indication of many operating functions, including frequency, RX and TX metering, operating functions, status icons, and the Spectrum Scope bar-graph. And to set the illumination level precisely to the brightness you want, the display provides a "Dimmer" feature with 64 degrees of illumination.

VERSATILE SCANNING MODES!

VFO Scan: Scan up or down the band in the VFO mode.

Memory Scan: Scan within the current Memory Group, or scan all the memories.

Programmable Memory Scan (PMS): Use PMS to scan within band limits set by the special PMS memories.

QMB Scan: When operating on the QMB channels, you can also elect to scan just those memories.

During scanning operation, the FT-100D can be set up to Stop completely when a signal is encountered; to Hold until the incoming transmission ceases; or to Resume after a delay of 1 to 10 seconds.

OPTIONAL REMOTE MOUNTING KIT!

For mobile operation where mounting space is very limited, the optional YSK-100 Separation Kit allows the front panel to be remotely mounted on your dashboard, with the transceiver stashed away in available space. Data is transferred between units at a lightning-fast rate of 62,500 bps, for seamless remote operation.

LEADING EDGE FEATURES FOR VHF/UHF OPERATORS!

Automatic Repeater Shift: On the 144 MHz and 430 MHz bands, the FT-100D will automatically activate the repeater shift appropriate for the part of the band in which you are working.

CTCSS/DCS Tone Systems: For repeater access, a CTSS Encoder/Decoder is built into the FT-100D, and for advanced repeater systems a 104-tone Digital Code Squelch system provides improved immunity from false decoding.

Smart Search™: When visiting a new city, use the Smart Search™ system to scan the FM band for activity. When busy channels are found, they will be automatically loaded into a special Smart Search™ Memory Bank, for easy recall.

Spectrum Scope: If you have to be away from your radio for a few minutes, turn on the Spectrum Scope to keep watch on band activity. The Spectrum Scope will create a bar-graph display of activity on 15 channels above and below your current operating frequency.

ARTS™ (Auto-Range Transponder System): During Search-And-Rescue operations, the ARTS™ feature will notify you if a field station (for example, a hand-held unit) has gone out of communications range, so you can instruct them to move to a better location.

AND SO MUCH MORE...

Two Antenna Jacks (HF/50 MHz, 144/430 MHz) using Type N connectors. Three Programmable Microphone Keys (ACC, P1, and P2) for easy access. Easy Linear Amplifier interface. AF Speech Processor. Operation on Alaska Emergency Frequency (587.5 kHz). Automatic Power-Off (APO) feature turns radio off after 1/2 hour to limit battery drain. Time-Out Timer (TOT) limits "stuck mic" interference potential. Dual VOXs for quick USY. Peak-Hold metering of Signal Strength, Power Output, and relative SWR. AF Speech Processor. Easy-to-use MENU system for custom "Set and Forget" configurations.
**SPECIFICATIONS**

### General
- **Frequency Range**: Receive 100 kHz - 961 MHz (Cellular blocked)
- **Transmit**: 160 - 6 Meters
  - 2 Meters
  - 70 Centimeters (Amateur bands only)
- **Emission Modes**: A1 (CW), A3 (AM), A3J (LSB/USB) (U.S.A. version only)
- **5167.5 kHz**: Alaska Emergency Frequency
- **70 Centimeters (Amateur bands only)**
- **2 Meters**
- **U.S.A. version**
- **Frequency Range**: Receive 100 kHz - 961 MHz (Cellular blocked)

### Operating Temp. Range
- –10°C to +60°C (14°F to 122°F)

### Antenna Impedance
- 50Ω, Unbalanced

### Synthesizer Steps (Min.)
- 1.25 Hz (CW/SSB), 100 Hz (AM), 1 kHz (FM) (SSB/CW/AM)
- Better than ±1 ppm (–10°C to +50°C)

### Power Requirements
- DC 13.8V ±10%, Negative Ground

### Current Consumption
- Receiver (Squelched): 1.2A, Receive (Max. Audio): 1.6A
- Transmit: 22A (100W RF output)

### Case Size
- 160(W) x 54(H) x 205(D) mm

### Weight
- 3 kg. (6.6 lbs.)

### Transmitter
- **Power Output**: 160 - 6m: 100 Watts (25 Watts AM carrier) 2m: 50 Watts (12.5 Watts AM carrier) 70cm: 20 Watts (5 Watts AM carrier)
- **Modulation Types**: SSB - Balanced Modulator FM - Variable Reactance AM - Early Stage (Low Level) FM Maximum Deviation: ±5 kHz (±2.5 kHz on FM-N)
- **Squish Sensitivity**: SSB/CW/AM FM 1.8 - 28 MHz: 2.5 µV – 28 - 30 MHz: 2.5 µV 0.32 µV 50 - 54 MHz: 1.12 µV 0.20 µV 144/430 MHz: 0.8 µV 0.18 µV
- **Intermediate Frequencies**: 1st IF: 68.985 MHz (SSB/CW/AM/FM) 2nd IF: 11.705 MHz (SSB/CW/AM/FM) 3rd IF: 455 MHz (FM)
- **Image Rejection**: Better than 70 dB (1.8 - 30 MHz, 50 - 54 MHz)
- **Audio Output**: At least 1.5 W into 8 Ω @ 10% THD
- **Audio Output Impedance**: 4 Ω – 8 Ω

### Receiver
- **Selectivity** (-6/-60 dB):
  - 100 Hz (FM), 1 kHz (FM)
  - SSB/CW/AM-N figures are for 10 dB S/N, 12 dB SINAD on FM

### Frequency Stability
- Better than ±10 ppm (–14°C to 122°F)

### Frequency Response
- See Table

### Sensitivity
- SSB/CW/AM-N: 1.0 µV 0.20 µV 0.16 µV 0.50 µV 0.20 µV

### Intermediate Frequencies
- 1st IF: 68.985 MHz (SSB/CW/FM/Digital)
- 2nd IF: 11.705 MHz (SSB/CW/FM/Digital)
- 3rd IF: 455 MHz (FM)

### Image Rejection
- Better than 70 dB (1.8 - 30 MHz, 50 - 54 MHz)

### Audio Output
- At least 1.5 W into 8 Ω @ 10% THD

### Audio Output Impedance
- 4 Ω – 8 Ω

### Specifications
- Specifications are subject to change without notice, and are guaranteed within amateur bands only.

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**OPTIONAL ACCESSORIES**

<table>
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<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XF-117CN</td>
<td>CW (300 Hz) Filter (Either the XF-117CN or XF-117A may be installed)</td>
</tr>
<tr>
<td>XF-117A</td>
<td>AM (6 kHz) Filter</td>
</tr>
<tr>
<td>MH-366JS</td>
<td>DTMF Microphone (Supplied in U.S. Model)</td>
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<tr>
<td>MH-426JS</td>
<td>Condenser Microphone</td>
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<td>FP-1023A</td>
<td>(U.S.A. only) Compact Power Supply (23A)</td>
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<tr>
<td>FP-1030A</td>
<td>Base Power Supply (30A)</td>
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<tr>
<td>SP-7</td>
<td>External Speaker</td>
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<tr>
<td>MMB-67</td>
<td>Quick-Release Bracket</td>
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<tr>
<td>MMB-62</td>
<td>Mobile Remote Head Bracket</td>
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<tr>
<td>ATAS-100</td>
<td>Active-Tuning Antenna System</td>
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<tr>
<td>ATBK-100</td>
<td>(Rail Mount not included) Antenna Base Kit (VHF/UHF)</td>
</tr>
<tr>
<td>VL-1000</td>
<td>Solid-State Linear Amplifier for VL-1000</td>
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<tr>
<td>CT-58</td>
<td>Interface Cable for VL-1000</td>
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<tr>
<td>FC-20</td>
<td>External Automatic Antenna tuner</td>
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<td>CT-39</td>
<td>Packet Cable</td>
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<tr>
<td>CT-62 (Dsub-9)</td>
<td>CAT Interface Cable</td>
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<tr>
<td>YSK-100</td>
<td>Separation Kit (Cable - 6 m)</td>
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</tbody>
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