

Ultra-Compact HF/VHF/UHF Transceiver

FT-100D

MICRO MOBILE



 **YAESU**
Choice of the World's top DX'ersSM

MOBILE DX MASTER

Since its introduction over a year ago, Yaesu's FT-100 HF/VHF/UHF Transceiver has been widely acclaimed for its outstanding performance and flexibility. Now the FT-100D builds on this success story, adding the convenience of factory-installed modules for today's Ham on the go!



WIDE FREQUENCY COVERAGE!

The FT-100D is the smallest transceiver in the world providing such wide frequency coverage. Providing transceiver 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")!

RUGGED, HIGH-OUTPUT TRANSMITTER DESIGN!

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 of power 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.



HIGH-PERFORMANCE RECEIVER DESIGN!

Building on the acclaimed performance of the FT-1000D, FT-1000MP, and FT-847, Yaesu's engineers have crafted the FT-100D's front end for a very low noise floor and wide dynamic range. Utilizing an up-conversion architecture for HF with a 68.985 MHz first IF, the FT-100D features a

double-conversion superheterodyne system (triple-conversion 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 MES FET 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.

ENHANCED TRANSCIEVER PERFORMANCE THROUGH DIGITAL SIGNAL PROCESSING!

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.

- **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.

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.

ADVANCED FEATURES FOR ACTIVE DXERS!

- **IF Shift** : Use the IF SHIFT feature to vary the center frequency of the IF passband, so as to eliminate interference above or below the current operating frequency.
- **IF Noise Blanker** : Optimized for use in the mobile environment, the FT-100D includes an effective IF Noise Blanker specially designed for suppression of ignition and other pulse-type noises. The Noise Blanker's threshold is adjustable via the MENU system.
- **Intercept Point Optimization (IPO)** : For reception on the lower frequencies, where very low Noise Figure is not required, the IPO feature causes the RF preamplifier to be bypassed, allowing direct signal input to the first mixer. An input attenuator is also available, for reception under extremely noisy conditions.

Now including...

- * Built-in XF-117C 500 Hz CW Filter
- * Built-in TCXO-8 High-Stability Reference Crystal
- * Built-in FTS-27 CTCSS Decoder Unit
- * Large, High-Quality Speaker

MICRO MOBILE

HF/50/144/430 MHz
Ultra-Compact HF/VHF/UHF Transceiver

FT-100D

• **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 convenient "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 ± 9.99 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 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 (QSK)** : Both "Full QSK" 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-117CN 300 Hz CW filter is an available option for the FT-100D, providing an additional CW filter selection for use during very crowded conditions.



GET MORE DX WITH YAESU ANTENNA ACCESSORIES!

• POWER GAIN Mobile Antenna System: ATAS-100

Yaesu's Exclusive ATAS-100 Active-Tuning Antenna System is a motorized mobile antenna which utilizes microprocessor-controlled DC voltages to resonate the antenna on the operating frequency. The ATAS-100 mounts on any standard "UHF" female base (base and coaxial cable not included), and is capable of operation on the 7/14/21/28/50/144/430 MHz* bands. Ruggedly constructed and highly efficient, the ATAS-100 is a great way to enjoy the thrill of mobile DX!

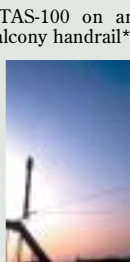
* For full coverage of all specified bands, an optional duplexer is required to combine the outputs of the FT-100D's HF/50 and 144/430 antenna ports.



• ATBK-100 VHF/UHF Antenna Base Kit

When mounting the ATAS-100 on an apartment or townhouse balcony handrail*, the ATBK-100 Antenna Base/Counterpoise Kit may be used to establish a resonant counterpoise system for the 50/144/430 MHz bands (the handrail is used for HF).

*Handrail Mount not available from Yaesu.



• FC-20 1.8~54 MHz Automatic Antenna Tuner

The FC-20 provides 100 tuning memories for enhanced system bandwidth when using high-Q antennas. Utilizing a high-resolution stepper-motor for capacitor adjustments, the FC-20 can convert impedances between 17 Ω and 150 Ω to the 50 Ω impedance required by the FT-100D (50 MHz tuning range: 25 Ω -100 Ω).



MULTI-FUNCTION "SELECT" KNOB

The front panel's SELECT knob acts as a Quick-QSY dial for tuning, with independent steps on different bands and modes. The SELECT knob is also used for Memory Channel and MENU item selection, as well as CLARIFIER tuning and IF SHIFT adjustment.

ONE-TOUCH SCROLLING FRONT PANEL

The A, B, C, and D keys below the display provide access to many control functions for the FT-100D, including VFO selection, Memory Channel loading, Repeater Shifts and Tones, and Filter selection. See the chart below.



A key	B key	C key	D key
A/B (VFO A/B Selection)	A=B (Set VFOs to same freq.)	SPL (Split VFO mode)	QMB (Quick Memory Bank)
V>M (Load Memory)	M>V (Send Memory to VFO)	RPT (Select Rptr. Shift)	REV (Reverse Rptr. Shift)
TON (CTCSS)	DCS (DCS)	ART (ARTS™)	—
SKP (Skip Memory)	SCN (Scanning)	DW (Priority Ch.)	SCH (Smart Search™)
DNR (DSP Noise Reduction)	DNF (DSP Notch Filter)	DBP (DSP Bandpass Filter)	—
WRI (Store CW Message)	PLY (Play CW Message)	BK (QSK/Semi Break-in)	KYR (Keyer)
MTR (ALC/SWR Meter)	TUN (Ext. Tuner Start)	PRO (Speech Processor)	VOX (VOX)
6.0 (6.0 kHz RX Filter)	2.4 (2.4 kHz RX Filter)	500 (500 Hz RX Filter)	300 (300 Hz RX Filter)
IPO (RX Preamp Off)	ATT (RX Attenuator)	AGC (Fast/Slow/Auto)	NB (IF Noise Blanker)

EASY DATA-MODE SETUP!

For operation on a wide variety of data modes, including 1200/9600 bps FM packet, RTTY (AFSK), or SSTV, the rear-panel's 6-pin mini-DIN connector provides easy access to Data I/O lines, plus PTT and Ground.

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 QSY to a favorite frequency, and use the Split memories for DX-pedition pileups or 7 MHz SSB work.

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.

HIGH-RESOLUTION DOT-MATRIX DISPLAY!

The large (70 mm x 30 mm) blue LCD 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 MENU provides a "Dimmer" feature with 64 degrees of illumination.

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 CTCSS Encoder/Decoder is built into the FT-100D, and for advanced repeater systems a 104-code 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 M (UHF) connectors
- Three Programmable Microphone Keys (ACC, P1, and P2) for easy feature access
- Easy Linear Amplifier interface
- AF Speech Processor
- Operation on Alaska Emergency Frequency (5167.5 kHz)
- Automatic Power-Off (APO) feature turns radio off after 1/2/3 hours to limit battery drain
- Time-Out Timer (TOT) limits "stuck mic" interference potential
- Dual VFOs for quick QSY
- Peak-Hold metering of Signal Strength, Power Output, and relative SWR/ALC
- Easy-to-use MENU system for custom "Set and Forget" configurations.

SPECIFICATIONS

General

Frequency Range : Receive 100 kHz - 961 MHz (Cellular blocked)
 U.S.A. version
 Transmit 160 - 6 Meters
 2 Meters
 70 Centimeters (Amateur bands only)
 5167.5 kHz: Alaska Emergency Frequency
 (U.S.A. version only)

Emission Modes : A1 (CW), A3 (AM), A3J (LSB/USB),
 F1 (9600 bps Packet), F2 (1200 bps Packet),
 F3 (FM)

Synthesizer Steps (Min.) : 1.25 Hz (CW/SSB), 100 Hz (AM),
 100 Hz (FM), 1 kHz (FM)

Antenna Impedance : 50 Ω, Unbalanced

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

Frequency Stability : Better than ±1 ppm (-10 °C to +50 °C)
 (SSB/CW/AM)
 Better than ±(1 kHz +1 ppm) (FM)

Power Requirements : DC 13.8V ±10%, Negative Ground

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

Case Size : 160(W) x 54(H) x 205(D) mm
 (6.3" x 2.2" x 8.0") WHD

Weight : 3 kg. (6.6 lb.)

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)

Spurious Radiation: Harmonics : At least 40 dB down (1.8 - 29.7 MHz)
 At least 60 dB down (50/144/430 MHz)

Non-harmonic : At least 50 dB down (1.8 - 29.7 MHz)
 At least 60 dB down (50/144/430 MHz)

Carrier Suppression : At least 40 dB

Opp. Sideband Suppression : At least 50 dB

SSB Frequency Response : 400 Hz - 2600 Hz (-6 dB)

Microphone Impedance : 200 Ω - 10 kΩ (Supplied microphone: 2 kΩ)

Receiver

Sensitivity	: SSB/CW	AM-N	FM
150 kHz - 250 kHz (IPO off)	: 5 μV	40 μV	-
250 kHz - 1.8 MHz (IPO off)	: 4 μV	32 μV	-
1.8 - 28 MHz (IPO off)	: 0.25 μV	2 μV	-
28 - 30 MHz	: 0.25 μV	2 μV	0.50 μV
50 - 54 MHz	: 0.20 μV	2 μV	0.50 μV
144/430 MHz	: 0.125 μV	2 μV	0.20 μV

Above specifications are worst-case.
 SSB/CW/AM-N figures are for 10 dB S/N, 12 dB SINAD on FM

Squelch 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 0.16 μV

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

Image Rejection : Better than 70 dB (1.8 - 30 MHz, 50 - 54 MHz)
 Better than 60 dB (144 - 148 MHz, 430 - 450 MHz)

IF Rejection : Better than 70 dB (1.8 - 30 MHz)
 Better than 60 dB (50 - 54 MHz, 144 - 148 MHz, 430 - 450 MHz)

Selectivity (-6/-60 dB) :
 SSB/CW : 2.2 kHz/5.2 kHz
 CW : 450 Hz/1.8 kHz
 CW-N : 250 Hz/1.2 kHz (Optional XF-117CN installed)
 AM : 5.2 kHz/18 kHz (Optional XF-117A installed)
 FM : 15 kHz/25 kHz (-6/-50 dB)

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

Audio Output Impedance : 4 Ω - 8 Ω

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

OPTIONAL ACCESSORIES

 XF-117CN CW (300 Hz) Filter	 XF-117A AM (6 kHz) Filter <small>※ Either the XF-117CN or XF-117A maybe installed.</small>	 MH-36B6JS DTMF Microphone <small>(Supplied in U.S. Model)</small>	 MH-42B6JS Condenser Microphone	 FP-1023A (U.S.A. only) Compact Power Supply (23A)	 FP-1030A Base Power Supply (30A)		
 SP-7 External Speaker	 MMB-67 Quick-Release Bracket	 MMB-62 Mobile Remote Head Bracket	 VL-1000 Solid-State Linear Amplifier	 CT-58 Interface Cable for VL-1000	 ATAS-100 Active-Tuning Antenna System	 ATBK-100 Antenna Base Kit (VHF/UHF) <small>(Rail Mount not included)</small>	
 FC-20 External Automatic Antenna tuner	 CT-39 Packet Cable	 CT-62 (Dsub-9) CAT Interface Cable	 YSK-100 Separation Kit (Cable : 6 m)				

About this brochure: we have made this brochure as comprehensive and factual as possible. We reserve the right, however, to make changes at any time in equipment, optional accessories, specifications, model numbers, and availability. Some accessories shown herein may not be available in some countries. Some information may have been updated since the time of printing; please check with your Authorized Yaesu Dealer for complete details.

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