



### TX POWER OUTPUT (SSB.CW.FM) 70 cm

2 m 5W ~ 50W 2W ~ 20W HIGH-PERFORMANCE RECEIVER DESIGN

Building on the acclaimed performance of the FT-1000D, Mark-VFT-1000MP, and FT-897, Yaesu's engineers have crafted the FT-857D's front end for a very low noise floor, along with wide dynamic range. Utilizing an up-conversion architecture for HF with a first IF of 68.33 MHz, the FT-857 features a double-conversion superheterodyne system (single conversion on WFM), with the 2nd IF at 455 kHz. Extensive bandpass filtering in the front end, along with careful device selection and gain distribution, yield a receiver system ready for the strong-signal challenges of today's crowded bands! On VHF and UHF the very-low-noise MOS

FET preamplifier is followed by an active DBM mixer, yielding the low noise figure required for weak-signal intermodulation rejection.



### VIDE FREQUENCY COVERAGE

Providing transmitter coverage of the HF, 50 MHz, 144 MHz, and 430 MHz Amateur bands, the FT-857D also includes receive coverage on 100 kHz to 56 MHz, 76 to 108 MHz, 118-164 MHz, and 420-470 MHz. Enjoy the excitement of public safety monitoring, along with weather broadcasts, AM and FM broadcasts, aviation communications, as well as the action on the new U.S. 60-meter band!

For superior interference rejection and transmitter "talk power," the FT-857D's DSP circuitry enhances both sides of the communications circuit. The FT-857D's DSP Unit features a 24-bit high-tech D/A chip for signal processing.

•DSP BANDPASS FILTER: Separate DSP Bandpass Filters for Voice and CW augment the analog filters for enhanced interference rejection. For Voice modes, you get 16 High-Pass Filter cutoff frequency selections, and 32 Low-Pass Filter selections, for a total of 512 combinations. And for CW, you may choose bandwidths of 240 Hz, 120 Hz, or a razor-sharp 60 Hz.

●DSP AUTO-NOTCH FILTER: To reduce interference caused by annoying carriers within the audio passband, the DSP Auto-Notch provides a significant reduction in the interference level. If multiple carriers are present, the DSP will detect and notch all the carriers present.

•DSP NOISE REDUCTION: The very effective Noise Reduction filter of the FT-857D utilizes as many as 16 noise-reduction algorithms, for use in a wide variety of noise environments, without introducing appreciable distortion on the desired signal. Operator fatigue is reduced, and signal-to-noise ratio is significantly enhanced.

•DSP MICROPHONE EQUALIZER: To match the FT-857D's TX audio response to the waveform produced by your voice and the microphone in use, the DSP system includes a four-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.

Receive: 0.1-56 MHz, 76-108 MHz, 118-164 MHz, 420-470 MHz

70 Centimeters (Amateur bands only)

5167.5 kHz (Alaska Emergency Frequency/USA Version)

F1 (9600 bps packet), F2 (1200 bps packet)

±0.5 ppm/1 hour @25° C, after warmup

Transmit: 160 - 6 Meters (60 Meter Band/USA Version), 2 Meters,

Emission Modes: A1 (CW), A3 (AM), A3J (LSB/USB), F3 (FM),

Frequency Stability: ±4 ppm from 1 min. to 60 min after power on.

Synthesizer Steps (Min.): 10 Hz (CW/SSB), 100 Hz (AM/FM/WFM)

Operating Temp. Range: +14° F to +140° F (-10° C to +60° C)

@25° C: 1 ppm/hour

Current Consumption: Squelched: 600 mA (Approx.)

Receive: 1 A

Transmit: 22 A

Weight (Approx.): 4.6 lb. (2.1 kg)

(with optional TCXO-9)

Case Size (W x H x D): 6.1" x 2.0" x 9.2" (155 x 52 x 233 mm)

Supply Voltage: Normal: 13.8 VDC ±15 %, Negative Ground

Antenna Impedance: 50 Ohms, Unbalanced

General

Frequency Range

The quiet, fast-acting local oscillator system of the FT-857D borrows extensively from the FT-847 and FT-897, using a Direct Digital Synthesizer (DDS) to achieve fast lock times and silky-smooth tuning in steps as fine as 10 Hz. The excellent carrier-to-noise ratio helps preserve spurious-free dynamic range in a crowded band, and the smooth tuning leaves you with the feeling you're using an analog VFO.

Despite its compact size, the FT-857 is without peer in ease

of access to the features and functions you need the most! •BIG-RADIO TUNING DIAL AND OUTSTANDING ERGONOMICS: Ease of operation of the FT-857D is enhanced by the large diameter 1.7" (Ø43 mm) Main Tuning Dial (10 Hz steps minimum), similar in size to the tuning knob of many base station rigs. What's more, the SELECT knob allows "channelized"

tuning in minimum steps 🌌 of 1 kHz on SSB/CW, or 5 kHz on FM, for quick and easy tuning around the band. All important keys are strategically placed around the front panel, for quick access.

●EASY-TO-USE "SCROLLING FRONT PANEL" KEYS: The compactness of the FT-857D is made possible by the easy-to-use "multi-function" keys, which allow adjustment of a number of transceiver operating functions during operation. Pressing the [FUNC] key allows selection of the operating function row, using the Selector knob, and you may then press the [A], [B], or [C] key, as needed, to change the setting. One row of keys may also be custom-programmed by the operator, allowing you quick access to a

particularly important set of functions or Menu items.



### **Multi Function Keys**

	A key	<b>B</b> key	<b>C</b> key
MFa	A / B	A=B	SPL
	(VFO A/B Selection)	(Equalize VFOs A/B)	(Split Operation)
MFb	MW	SKIP	TAG
	(Write to Memory)	(Skip during Scan)	(Memory Name Tag)
MFc	STO	RCL	PROC
	(Quick Memory Store)	(Quick Memory Recall)	(Speech Processor On/Off)
MFd	RPT	REV	VOX
	(Repeater On/Off)	(RPT Shift Reverse)	(VOX On/Off)
MFe*	TON (CTCSS/DCS On/Off)	ı	TDCH (Tone/Code Selection)
MFe	ENC	DEC	TDCH
	(Split Tone Encode)	(Split Tone Decode)	(Tone/Code Search)
MFf	ARTS	SRCH	PMS
	(ARTS™ On/Off)	(Smart Search™ On/Off)	(Band-Limit Scan)
MFg	SCN	PRI	<b>DW</b>
	(Scan Start)	(Priority Ch. Watch)	(Dual Watch)
MFh	SCOP	WID	STEP
	(Spectrum Scope)	(Scope Bandwidth)	(Scope Steps)
MFi	MTR	PWR	DISP
	(Meter Mode)	(Meter Mode)	(Display Size)
MFj	SPOT	<b>BK</b>	KYR
	(CW Spot)	(Break-in On/Off)	(CW Keyer On/Off)
MFk	TUNE	DOWN	UP
	(ATU/ATAS On/Off)	(ATAS Down)	(ATAS Up)
MFI	NB	AGC	AUTO
	(Noise Blanker On/Off)	(AGC On/Off)	(AGC Mode)
MFm	IPO	ATT	NAR
	(RX Preamp On/Off)	(RX Attenuator On/Off)	(Narrow Dev.)
MFn	CFIL	N/A	N/A
	(RX Normal Fltr.)	(Optional Fltr. 1)	(Optional Fltr. 2)
MFo	PLY1	PLY2	PLY3
	(Keyer Mem. 1)	(Keyer Mem. 2)	(Keyer Mem. 3)
MFp	DNR	DNF	DBF
	(DSP Noise Fltr.)	(DSP Notch Fltr.)	(DSP BPF)
MFq	MONI*	QSPL*	ATC*
	(SQL Disable)	(Quick Split)	(1750 Hz Tone)

•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

•IF Noise Blanker: Optimized for use in the mobile environment, the FT-857D includes a highlyeffective IF Noise Blanker specifically designed for suppression of ignition and other pulse-type noises. The Noise Blanker's threshold is adjustable via the Menu.

Intercept Point Optimization (IPO): For reception on the lower HF bands, where 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 provided, for very noisy conditions.

•Adjustable AGC: The Automatic Gain Control (AGC) circuitry of the FT-857D's receiver may be adjusted, by the operator, for Slow or Fast recovery times. A convenient "Auto" feature programs "Fast" AGC for CW, and "Slow" for voice modes. And the AGC may also be turned off, if desired, allowing manual gain control from the front panel.

•Clarifier (R.I.T.): For split-frequency pile-ups or to follow drifting signals, the Clarifier control provides up to  $\pm 9.99$  kHz of adjustment of the receiver's frequency, without changing the transmit frequency. For wider-split pileups, 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 operate as an "RF Gain" control.

•VOX: For hands-free Voice operation, the VOX system includes easy adjustments for both VOX Gain and Delay. A separate setting is also provided for receiver recovery time in the CW mode, as well.

### **CW OPERATING FLEXIBILITY**

The FT-857D is without peer in its array of most-askedfor features for the CW expert!

•Built-In Electronic Keyer: The FT-857D's built-in Electronic Keyer includes a weight control, as well as Menu capability to reverse the "Dot" and "Dash" contacts on your connector.

**•CW Message Memory with Beacon Mode: For** repetitive "CO TEST" and contest exchange messages, the FT-857D includes a three-message memory capability. The "Beacon" mode may be used to send a repetitive message out continuously for up to four hours, ideal for 6-meter use during DX-peditions.

•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 pitch. The Sidetone therefore serves as a "Spot" signal during tuning. •CW Trainer: A popular feature of the FT-857D is the CW Trainer, which will send five-character letters and/or numbers via the speaker, so you can practice your CW reception even when the bands are dead!

### **EASY DATA-**

For operation on a wide variety of digital modes, including 1200/9600 bps FM packet, RTTY, SSTV, or PSK31, the rear-panel 6-pin mini-DIN connector provides easy to Data I/O lines, plus PTT and Ground. For PSK-31 and other AFSK modes, the injection sideband (USB/LSB) is selectable, along with BFO and Display Shift and Digital "VOX" Gain level.

SB/CW

 $0.2\,\mu V$ 

0.2 μV

SSB/CW/AM

2.5 μV

2.5 μV

1 μ\

0.5 μV

Selectivity (-6/-60 dB): SSB/CW: 2.2 kHz/4.5 kHz AM: 6 kHz/20 kHz

Image Rejection: HF/50 MHz: 70 dB, 144/430 MHz: 60 dB

144/430 MHz

IF Rejection: 60 dB

0.125 μV

AM

32 μV

2 μV

2 μV

1 μV

10 dB S/N, FM = 12 dB SINAD)

0.5 μV

0.2 μV

FM

0.32 μV

 $0.16 \,\mu V$ 

Opp. Sideband Suppression: >50 dB

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

SPE	CIFICATIONS		
ansmitter			Sensitivity:
Power Output (@13.8 V DC):	SSB/CW/FM	AM Carrier	100 kHz-1.8 MHz
160- 6 Meters:	100 W	25 W	1.8 MHz-28 MHz
2 Meters:	50 W	12.5 W	28 MHz-30 MHz
70 Centimeters:	20 W	5 W	50 MHz-54 MHz
dulation Types:	SSB: Balanced Modulator,		144/430 MHz
	AM: Early Stage (Low Level),		(SSB/CW/AM = 1)
	FM: Variable Reacta	nce	Squelch Sensitivity:
Maximum Deviation:	100 kHz-1.8 MHz		
urious Radiation:	-50 dB (1.8-29.7 M)	Hz)	1.8 MHz-28 MHz
	-60 dB (50/144/430	MHz)	28 MHz-30 MHz
rier Suppression:	>40 dB		50 MHz-54 MHz

Receiver Double-Conversion Superheterodyne (SSB/CW/AM/FM) Superheterodyne (WFM) Intermediate Frequencies: 1st: 68.33 MHz (SSB/CW/AM/FM); 10.7 MHz (WFM)

Microphone Impedance: 200-10k Ohms (Nominal: 600 Ohms)

CW (option YF-122C installed): 500 Hz/2.0 kHz AF Output: 2nd: 455 kHz AF Output Impedance: 4-16 Ohms Specifications are subject to change without notice, and are guaranteed within the amateur bands only.

FM: 15 kHz/30 kHz FM-N: 9 kHz/25 kHz SSB (optional YF-122S installed): 2.3 kHz/4.7 kHz (-66 dB) 2.5 W (@4 Ohms, 10% THD or less)

The FT-857D is a VHF/UHF operator's dream come true! Versatile Tone Control Selections: Both CTCSS and DCS Encoder/Decoders are built in! For easy access to repeaters, a 50-tone CTCSS system works along with a 104-code Digital Code Squelch (DCS) in the FT-857D. For applications requiring split CTCSS/DCS access, a convenient "Split Tone" feature is also provided, along with the ability to encode (only) CTCSS or DCS, if desired.

 Automatic Repeater Shift: On the 144 MHz and 430 MHz bands, the FT-857D will automatically activate the repeater shift appropriate for the part of the band in which you are operating. •Smart Search™: When visiting a new city, use the

Smart Search system to scan the FM/AM Mode 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 channels above

and below your current operating frequency.

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

### ACTIVE-TUNING ANTENNA SYSTEM (ATAS-120 Option)

Yaesu's patented ATAS-120 Active-Tuning Antenna System provides a compact, vet efficient automatically-adjusting

antenna for mobile, portable, or apartment-balcony use! Utilizing DC voltages fed from the FT-857D, the ATAS-120 automatically adjusts its lenath longer or shorter. with the FT-857D feeding a tiny amount of power for SWR detection by its internal directional coupler. When the best impedance match is found, tuning automatically stops, and operation can begin. Specified for operation on

the 7/14/21/28 MHz Amateur bands, the ATAS-120 contracts fully for use on the 50/144/430 MHz bands, providing a low SWR for

MD-200A8X

External AC

FP-1030A

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YSK-857

local FM work (where vertical polarization is predominant). And if you're an apartment dweller, use the optional ATBK-100 Antenna Base Kit, which provides an outstanding counterpoise to ensure low-angle radiation on the VHF/UHF bands.

## See your Yaesu Dealer for details regarding suitable mo

The FT-857D provides up to 200 "Main" memory channels, each of which may be named with an Alpha-Numeric label of up to eight characters. These 200 Memories may be separated into as many as 10 Memory Groups of 20 Memories each. For added convenience, you also get a "Quick Memory" and a "Home Channel" on each band, plus Five pairs of band-limit memories, to let you restrict operation to a sub-band, if you like.

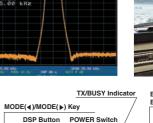
To enhance performance on both receive and transmit, high-performance Collins® Mechanical Filter options are available for both SSB and CW. For SSB, the 2.3 kHz, 10-pole YF-122S option provides a very flat passband response, for naturalsounding transmit audio, along with excellent skirt selectivity. And for CW, the 500 Hz, 7-pole YF-122C and 300 Hz, 7-pole YF-122CN options help separate signals on a crowded band in a contest.



Front Panel

SELECT Knob

Rear Panel



**KEY Jack** 

EXT SPKR Jack

144/430 MHz Antenna Jack

### New Remote Control **DTMF Microphone** MH-59A8J (Option) The optional MH-59A8J Remote Microphone provides control of the major functions of the FT-857D from the microphone's keypad. The MH-59A8J includes a rotary control knob for adjusting the operating frequency and the receiver volume level LOCK Key MAIN DIAL

The large 2.1"x0.69"(53.4x17.2 mm) multi-color

display provides easy-to-read indication of many

operating functions. The color may be chosen from

among 32 different color selections, and may be

programmed to show different colors on each

band, mode, Memory Group, or even to track signal

Battery Voltage Meter •TX Meter Selection

Modulation Level, ALC, Power Output, or SWR. •Two

Antenna Connectors Separate jacks for HF/50

MHz and 144/430 MHz, affixed to the rear panel.

•Large, Easy-to-See TX/RX Status LED •Optional High-Stability Reference Oscillator The TCXO-

9 provides ±0.5 ppm stability at 77° F/25° C for

applications requiring very high frequency

accuracy. • Versatile Scanning Features VFO

Scan, Memory Scan, Band-Limited Scanning

(PMS), Priority Scan and Dual Watch. Auto

Power-Off (APO) and Time-Out Timer (TOT)

•CAT System Computer Programming capability

for DX/ contest logging software, etc.

strength and power output by color!

# 000 000 2(MHz) kej 3(CLAR) k 4(HOME) ke 5(∢MODE) 6(MODE ►) 7(V/M) key 8(BAND DW)

ATAS-120

ATAS-25



BAND DATA Cable
CT-58

Supplied Accessories: Hand Microphone MH-31A8J, Mobile Mounting Bracket MMB-82, DC Power Cord 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 please check with your Authorized Yaesu Dealer for complete details.

Packet Cable

CT-39A



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VL-1000 + VP-1000

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B9200411B Printed in Japan

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