

YAESU

# Amateur Radio Equipment



In 1956 a young Japanese college graduate and amateur radio experimenter, Sako Hasegawa, read with enthusiasm about the development of Single Sideband (SSB) Telephony by Arthur Collins. After constructing several SSB generators for himself and friends, he was soon receiving requests from radio amateurs all over Japan for complete transmitters. Yaesu Musen Company, Ltd., was thus formed and incorporated in 1959 to produce radio communications equipment for radio amateurs.

Beginning with the FT-20 SSB Transmitter, the Yaesu brand rapidly became known over the air worldwide, and in 1961 Yaesu Musen began exporting to Australia, followed soon afterwards by Switzerland, Germany and the United States. In 1966 Yaesu developed the first Japanese amateur transceiver using transistors, the FT-100, and sales boomed. Virtually all profits were reinvested to expand the Company, and the product line grew to include an all solid state VHF FM transceiver in 1970, and the FT-101 all-mode single-unit hf station the following year. The FT-101 was widely

recognized as the first of its kind in the world, and the Company doubled in size in the next three years, and doubled again in the following three years after introduction of the first hf amateur transceiver with digital frequency display, the FT-501. During this time Yaesu also developed the FT-7 series all solid state hf transceiver, and then the FT-301 and FT-107 all solid state lines.

The ruggedness, utility and economy of Yaesu amateur products have allowed 30 years of continuous growth and leadership in serving the needs of the amateur radio service. Our seven hundred employees (including seventy engineers), together with over 100 independent distributors in over 60 countries, remain dedicated to bringing to amateur radio operators the best that evolving technology can offer.

The following pages describe some of our current product line. Please check with your nearest Yaesu dealer if you don't find what you want, as new products are being developed all the time.



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# FT-767GX



## FT-767GX HF/VHF/UHF All Mode Base

The FT-767GX is the first hf transceiver designed to operate on all hf bands plus 6 m, 2 m and 70 cm amateur bands with a single unit, providing 100 watts PEP output below 30 MHz and 10 watts above. The optional vhf and uhf band modules plug right into the rear of the set, and share the same extensive array of operating features as hf operation.

Tuning continuously from 100 kHz to 30 MHz, the hf receiving front end provides wide dynamic range with operator's choice of direct feed mixer or rf amplification. A 3 ppm temperature-compensated crystal oscillator (TCXO) provides rock-solid stability from -10 to +50°C. The TX Shift control allows optimizing the SSB carrier point for your voice, using the transmitter IF monitor. A built-in Automatic Antenna Tuner with its own memories allows instant antenna matching as you change bands.

Four microcontrollers and a custom gate array offer a high level of digital control, supporting features like programmable tuning steps for each mode, a digital hf wattmeter and autocalculating

SWR meter, and synchronous VFO tracking (for convenient operation through repeaters). Ten memories store modes along with frequencies; and band, memory and sub-band scanning are provided. An enhanced CAT (Computer-Aided Transceiver) System allows extensive control of the FT-767GX from an external personal computer. Special features for CW operation include QSK t/r switching and a built-in iambic keyer and 600 Hz narrow IF filter as standard features along with an audio peak filter, IF notch and CW pitch control. Other features include an rf speech processor, all mode squelch, adjustable noise blander, 3-position AGC selection (plus off), marker signal generator, 20 dB receiver attenuator and RF preamp switches, and digital data in/out jacks for packet tnc connections. CTCSS tone squelch and 1750/1800 Hz burst generators are available as options for FM repeater operation. The rear panel connectors include band data for control of the FC-757AT and FC-1000 Automatic Antenna Tuners or the PL-7000 Automatic Solid State Linear Amplifier.

## SPECIFICATIONS

GENERAL	FT-767GX
Receiving Frequency Ranges	100 kHz to 29.99999 MHz (continuous) 50 to 53.99999 MHz (option) 144 to 145.99999 (or 147.99999*) MHz (option) 430 to 439.99999 (or 440 to 449.99999*) MHz (option)
Transmitting Frequency Ranges	1.8 to 1.99999 MHz 3.5 to 3.99999 MHz 7.5 to 7.49999 MHz 10.0 to 10.49999 MHz 14.0 to 14.49999 MHz 18.0 to 18.49999 MHz 21.0 to 21.49999 MHz 24.5 to 24.99999 MHz 28.0 to 29.99999 MHz 50 to 53.99999 MHz (option) 144 to 145.99999 (or 147.99999*) MHz (option) 430 to 439.99999 (or 440 to 449.99999*) MHz (option)
Emission Type	LSB/USB (J3E); CW (A1A); FSK (J1B, F1B); AM (A3E); FM (F3E)
Reference Oscillator Stability	Better than ± 3 ppm (-10 to +50°C) after 15 minutes warm-up
Antenna Impedance	Receive, and transmit above 50 MHz: 50 ohms, unbalanced Transmit 40, 30, 20, 17, 15, 12 & 10 m amateur bands: 20-150 ohms Transmit 160 & 80 m: 25-100 ohms
Voltage Requirement	100, 110, 117, 200, 220 or 234 V AC, 50/60 Hz
Power Consumption (Approx.)	Receive: 55 VA Transmit: 650 VA
Dimensions	366 (W) X 129 (H) X 295 (D) mm
Weight (Approx.)	15.9/13.5 kg (with/without options)
<b>RECEIVER</b>	
Circuit Type	Triple-conversion superheterodyne
Intermediate Frequencies	45.03 MHz, 8.215 MHz and 465 kHz
Sensitivity	See Sensitivity Chart
Image Rejection	1.5 to 30 MHz: 70 dB or better VHF/UHF: 60 dB or better
IF Rejection	1.5 to 30 MHz: 70 dB or better VHF/UHF: 60 dB or better
Selectivity (-6/-60 dB)	SSB, CW, AM (N): 2.7/4.5 kHz; CW (N): 600/1300 Hz AM (W): 5/16 kHz; FM: 15/30 kHz
Notch Filter Rejection	Better than -30 dB
Variable IF Shift	± 1 kHz
Audio Output Power	1.5 W into 4 ohms with 10% THD
Audio Output Impedance	4 to 16 ohms
<b>TRANSMITTER</b>	
Power Output	HF (all modes except AM): 100 W HF (AM carrier): 25 W VHF/UHF (all modes except AM): 10 W VHF/UHF (AM carrier): 2.5 W
Modulation Type	SSB: Balanced, filtered carrier AM: Low level (early stage) FM: Variable reactance (± 5 kHz deviation) FSK: Audio frequency shift
Harmonic Radiation	HF: Better than -50 dB below peak output VHF/UHF: Better than -60 dB
Carrier Suppression (SSB)	Better than -40 dB below peak output
Undesired Sideband Suppression (SSB)	Better than -50 dB below peak output
Audio Response (SSB, with TX shift off)	Not more than -6 dB from 350-2900 Hz
3rd Order IMD Product	Better than -35 dB below peak output (vs. single tone, @ 100 W PEP, 14 MHz)
Microphone Impedance	500-600 ohms

\*Per label requirements and Band Module.

SENSITIVITY	100 to 200 kHz	200 to 500 kHz	0.5 to 1.5 MHz	1.5 to 29.9 MHz	6 m*	2 m*	70 cm*
	[10 dB S+N/N (µV)] SSB/CW/FSK AM	2.5 25	1 4	4 20	0.25 1	0.25 1	0.25 1
[12 dB SINAD (µV)] FM	-	-	-	0.5 0.32	0.32	0.32	0.32
[Squelch Sensitivity] SSB/CW/FSK/AM FM	20 -	10 -	20 -	2 0.32	1 0.32	1 0.32	1 0.32

\*With optional unit.



# FT-757GXII



## FT-757GXII HF All Mode Base/Mobile

Recent advances in digital control and computer-aided manufacturing methods offer great versatility and operator convenience with the FT-757GXII on all modes and hf bands. Yaesu's through-chassis cooling system and expansive integrated heatsink allow 100 watts of PEP output on the amateur bands, with general coverage reception from 0.15 to 30 MHz.

Special microprocessor-controlled features include selectable mode-dependent tuning steps, ten memories storing mode along with frequency, auto-resume loop scanning between the dual vfos or adjacent memories, a clarifier memory and a bi-directional CAT System for simplified programming and more advanced control by an external computer.

Receiver features include a 40 dB IF notch filter and

IF shift control, built-in AM wide and CW narrow IF filters (as standard), a switchable RF amplifier and 20 dB attenuator, and adjustable-width noise blanker. Full break-in (QSK) CW is provided along with a built-in electronic keyer (also standard), and high voltage solid state t/r switching for direct control of a wide variety of linear amplifiers. An audio speech compressor increases SSB transmitter punch.

Operating from 13.5V DC at 20 A, the FT-757GXII makes a compact base station when used with the FP-700 AC Power Supply, or with the FP-757HD Heavy Duty AC Power Supply for long duty cycle transmission. Connections are provided for automatic control of the FC-757AT and FC-1000 Antenna Tuners and the FL-7000 Linear Amplifier.

## SPECIFICATIONS

### GENERAL

Receiving Frequency Range  
Transmitting Frequency Ranges

Tuning Steps (Selectable)

Emission Type  
Voltage Requirement  
Current Consumption

Reference Oscillator Stability  
Dimensions  
Weight (Approx.)

### RECEIVER

Circuit Type  
Clarifier Range  
Sensitivity (for 10 dB S+N/N, exc. FM)

Intermediate Frequencies  
Image Rejection  
IF Rejection  
Selectivity (-6/-60 dB)

Dynamic Range (CW(N) @ 14 MHz)  
Maximum Audio Power Output  
Audio Output Impedance

### TRANSMITTER

Power Output  
  
SSB Carrier Suppression  
Undesired Sideband Suppression (SSB)  
Spurious Radiation  
Audio Response  
3rd Order IMD Product  
Modulation Type

Maximum FM Deviation  
RF Output Impedance (Nominal)  
Microphone Impedance

### FT-757GXII

150 kHz to 29.99999 (continuous)  
160 m band 1.5 to 1.99999 MHz  
80 m band 3.5 to 3.99999 MHz  
40 m band 7.0 to 7.49999 MHz  
30 m band 10.0 to 10.49999 MHz  
20 m band 14.0 to 14.49999 MHz  
17 m band 18.0 to 18.49999 MHz  
15 m band 21.0 to 21.49999 MHz  
12 m band 24.5 to 24.99999 MHz  
10 m band 28.0 to 29.99999 MHz  
SSB & CW: 10 Hz or 1 kHz/step  
AM: 1 kHz or 10 kHz/step  
FM: 2.5 kHz or 10 kHz/step  
LSB, USB (J3E); CW (A1A); AM (A3E) and FM (G3E)  
13.5 V DC  $\pm 10\%$   
Receive: 2 A  
Transmit (100 W output): 19 A  
Better than  $\pm 10$  ppm from 0 to 40°C after 15-minute warm-up  
238 (W) X 93 (H) X 238 (D) mm (without feet or knobs)  
5.2 kg

Triple-conversion superheterodyne  
Unlimited (full receiver range)  
150-250 kHz 250-500 kHz above 500 kHz  
SSB/CW 1.0  $\mu$ V 0.5  $\mu$ V 0.25  $\mu$ V  
AM 10  $\mu$ V 4  $\mu$ V 1  $\mu$ V  
FM: 0.5  $\mu$ V for 12 dB SINAD (above 500 kHz)  
47.060 MHz, 8.215 MHz, 455 kHz  
Better than 70 dB  
Better than 70 dB (all frequencies)  
SSB, CW(W) & FSK: 2.2/4.5 kHz; CW(N): 600 Hz/1.3 kHz  
AM: 6/18 kHz; FM: 15/30 kHz  
Better than 100 dB  
At least 1.5 W into 4 ohms w/10% THD  
4 to 16 ohms

SSB, CW & FM: 100 W PEP/DC, with slightly less on 10 m band  
AM: 25 W carrier  
Better than 40 dB below peak output  
Better than 50 dB below peak output (1 kHz tone)  
Better than 50 dB below peak output  
Less than -6 dB from 400 to 2600 Hz  
Better than -35 dB below peak output (@ 14 MHz, 100 W)  
SSB/CW: Active balanced modulator  
AM: Early stage (low level)  
FM: Variable reactance  
 $\pm 5$  kHz  
50 ohms, unbalanced  
500 to 600 ohms

# FT-747GX



## FT-747GX Lightweight HF All Mode Mobile/Base

Housed in newly developed high-impact metallized plastics with a modular die cast RF power amplifier, the heavyweight performance of this 100 W transmitter belies its mere 3.3 kg. A front panel mounted loudspeaker and large backlit LCD make this set a joy to use for both amateur radio and general coverage reception from 100 kHz to 30 MHz. The product of an intensive "human engineering" effort by our designers, the FT-747GX has only two knobs and 13 push-button switches, yet provides features like selectable tuning steps optimized for each mode, dual A/B vfos, twenty memory

channels storing mode and skip-scan status for auto-resume scanning of selectable memories, receiver clarifier, attenuator and a noise blanker. Eighteen of the memories also store independent transmit frequencies for split operation. AM wide and CW narrow IF filters are provided as standard, and a CAT control jack allows advanced control from an external personal computer. The 13.5 V DC FT-747GX accepts the same power supplies as the FT-757GXII, as well as the FC-747AT, FC-1000 and FL-7000. The optional TCXO-747 is available for high stability requirements.

## SPECIFICATIONS

### GENERAL

Receiving Frequency Range  
Transmitting Frequency Ranges

Tuning Steps (Selectable)

Emission Type

Frequency Stability (0 to +40°C)

Frequency Accuracy

Antenna Impedance (Nominal)

Voltage Requirement

Current Consumption

Dimensions

Weight (Approx.)

### RECEIVER

Circuit Type

Clarifier Range

Sensitivity (for 10 dB S+N/N, exc. FM)

Squelch Sensitivity

Intermediate Frequencies

Image Rejection

IF Rejection

Selectivity (-6/-60 dB)

Maximum Audio Power Output

Audio Output Impedance

### TRANSMITTER

Power Output

SSB Carrier Suppression

Undesired Sideband Suppression (SSB)

Spurious Radiation

Audio Response

3rd Order IMD Product

Modulation Type

Maximum FM\* Deviation

Microphone Impedance

### FT-747GX

100 kHz to 29.9999 MHz (continuous)

160 m band 1.5 to 1.9999 MHz

80 m band 3.5 to 3.9999 MHz

40 m band 7.0 to 7.4999 MHz

30 m band 10.0 to 10.4999 MHz

20 m band 14.0 to 14.4999 MHz

17 m band 18.0 to 18.4999 MHz

15 m band 21.0 to 21.4999 MHz

12 m band 24.5 to 24.9999 MHz

10 m band 28.0 to 29.9999 MHz

SSB & CW: 25 Hz or 2.5 kHz/step

AM: 1 kHz or 10 kHz/step

FM: 12.5 kHz or 5 kHz/step

LSB, USB (J3E); CW (A1A);

AM (A3E) and optionally FM (F3E)

SSB, CW, AM: ± 200 Hz; FM: ± 300 Hz,

± 100 Hz w/TCXO option

SSB, CW, AM: ± 200 Hz; FM: ± 300 Hz

50 ohms, unbalanced

13.5 V DC ± 10% (negative ground)

19 A (@ 100 W output)

238 (W) X 93 (H) X 238 (D) mm

3.3 kg

CW, SSB, AM: Double-conversion superheterodyne

FM\*: Triple-conversion superheterodyne

± 9.975 kHz

0.5 ~ 1.5 MHz > 1.5 MHz

SSB/CW: 0.5 μV 0.25 μV

AM: 2 μV 1.0 μV

FM\*: 0.7 μV for 12 dB SINAD (above 28 MHz)

SSB/CW/AM: 2.0 μV above 1.5 MHz

4.0 μV within 0.5 ~ 1.5 MHz, FM: 0.32 μV

47,055 MHz, 8,215 MHz, 455 kHz (FM only\*)

Better than 70 dB within 1.5 ~ 30 MHz

Better than 60 dB within 1.5 ~ 30 MHz

SSB, CW (W), AM (N): 2.2/5 kHz; CW (N): 500 Hz/1.8 kHz

AM (W): 6/14 kHz; FM (-6/-50 dB)\*: 8/19 kHz

At least 1.5 W into 8 ohms w/10% THD

4 to 8 ohms

SSB, CW & FM\*: 100 W PEP/DC, AM: 25 W carrier

Better than 40 dB below peak output

Better than 50 dB (1 kHz tone)

Harmonic: Better than -50 dB

Non-Harmonic: Better than -40 dB

Less than -6 dB from 400 to 2600 Hz

Better than -25 dB (@ 100 W PEP)

SSB/CW: Active balanced modulator

AM: Early stage (low level)

FM: Variable reactance

± 2.5 kHz

500 to 600 ohms

\* FM operation requires optional unit.



# FT-736R



## FT-736R All Mode Multi-Band VHF/UHF Full Duplex Base

Designed to meet the needs of the most demanding VHF and UHF operators, the FT-736R covers up to four of the 50 MHz, 144 MHz, 220 MHz, 430 MHz, 440 MHz and 1.2 GHz bands with installable band modules, providing 10 watts output on the 50 MHz and 1.2 GHz bands, and 25 watts on the others. Operating features include IF shift and notch, noise blanker, all-mode VOX and 3-speed AGC. GaAs FET RF amplifiers in the modules above 430 MHz assure low noise and high sensitivity, and a TCXO reference oscillator meets the requirements of specialized UHF applications. One hundred general purpose memories, ten full duplex cross-band memories and five call channel memories all store mode and receive and transmit frequencies independently. Fourteen vfos are provided: two general purpose plus one PMS (Programmable Memory Limit Scanning) on each band, two full duplex vfos, and up to four clarifier memories. Each of the two full duplex vfos can be selected so that its receive and transmit frequencies and modes can be displayed and tuned independently, or linked to

tune synchronously in opposite directions for satellite operation. A special narrow FM mode reduces adjacent channel interference in crowded areas. Automatic repeater shift and a center tuning meter are provided for FM repeater operation. A 1750/1800 Hz Burst Tone generator is built-in, and an optional Tone Squelch Unit can be programmed from the front panel. A t/r switched DC supply is provided for masthead preamps, activated from a front panel switch. AFSK input directly to the modulator is provided for high performance packet operation. The enhanced CAT System allows extensive automation and customization by an external personal computer. The FT-736R can be powered from 13.5 V DC or from the AC mains by its own internal switched mode power supply. Optional add-ons include the TV-736 Amateur Television Modulator/Demodulator, FMP-1 AQS Message Processor. A 600 Hz CW narrow IF filter, electronic CW keyer and the FTS-8 Tone Squelch Unit are installable options.

## SPECIFICATIONS

GENERAL	FT-736R
Operating Frequency Ranges	50 to 53.99999 MHz* 144 to 145.99999 MHz (or 147.99999 MHz) 220 to 224.99999 MHz* 430 to 439.99999 MHz (or 449.99999 MHz) 1240 or 1260 to 1299.99999 MHz*
Emission Type	LSB/USB (J3E voice), CW (A1A) FM (F2D, FSK, F3E voice) TV (A3F, optional for 1.2 GHz*)
Operating Temperature Range	-10 to +60°C
Reference Oscillator Stability	Better than ±1 ppm (+10 to +40°C), and ±5 ppm (-10 to +60°C) after 15 minutes warm-up
Antenna Impedance	50 ohms, unbalanced
Voltage Requirements	85 to 132 or 170 to 234 V AC, 50/60 Hz or 13.8 V DC ±10%, negative ground
Current Consumption	Maximum: 250 VA (approx.) Receive: 1.5 A ( " ) Transmit: 8 A ( " )
Dimensions	368 (W) X 129 (H) X 286 (D) mm
Weight (Approx.)	9 kg
<b>RECEIVER</b>	
Circuit Type	50*, 144 MHz bands: Double-conversion superheterodyne Other bands: Triple-conversion superheterodyne
Intermediate Frequencies	13.69 MHz and 455 kHz, plus 47.75 MHz on 220*, 47.43 MHz on 430, or 133.91 MHz on 1200 MHz band*
Sensitivity	SSB/CW: Better than -15 dBμ for 12 dB S+N:N FM: Better than -9 dBμ for 12 dB SINAD
Squelch Sensitivity	SSB/CW: Better than 0 dBμ; FM: Better than -12 dBμ
Image Rejection	60 dB or better
Selectivity (-6/-60 dB)	SSB, CW: 2.2/4.5 kHz; CW-N (optional): 600/1200 Hz FM: 12/25 kHz FM-N: 8/19 kHz
Audio Output Power	1.5 W into 8 ohms with 5% THD
Audio Output Impedance	4 to 16 ohms
<b>TRANSMITTER</b>	
Power Input	30 W DC @ 50 MHz* (10 W output) 60 W DC @ 144, 220*, 430 MHz (25 W output) 45 W DC @ 1.2 GHz* (10 W output)
Modulation Type	SSB: Balanced, filtered carrier FM: Variable reactance (±5 kHz or 2.5 kHz selectable max. deviation)
Spurious Radiation	ATV*: Low level carrier
Carrier Suppression (SSB)	Better than -60 dB
Undesired Sideband Suppression (SSB)	Better than -40 dB below peak output
Audio Characteristic (SSB)	Better than -40 dB below peak output
Microphone Impedance	Within 6 dB from 300 to 2700 Hz 600 ohms nominal (200-ohm to 10-kilohm)

\*Requires optional unit.

### FT-736R VERSION CHART

Version	A	B1	B2	C1	C2	H1	H2
<b>(2 m Band)</b>							
Frequency Range (MHz)	144-148	144-146	144-148	144-146	144-148	144-146	144-148
FM Channel Step* (kHz)	5	12.5	12.5	12.5	12.5	5	5
Repeater Shift* (kHz)	±600	±600	±600	±600	±600	±600	±600
Tone Burst (Hz)	1800	1750	1750	1750	1750	1750	1750
<b>(70 cm Band)</b>							
Frequency Range (MHz)	430-450	430-440	430-440	430-440	430-440	430-440	430-440
FM Channel Step* (kHz)	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Repeater Shift* (MHz)	±5	±7.6	±7.6	±1.6*	±1.6	±5	±5
Tone Burst (Hz)	1800	1750	1750	1750	1750	1750	1750

\*Can be reset by operator.

# FT-211RH



## FT-211RH High Power VHF FM Mobile/Base

If you need economical high power on VHF FM, the FT-211RH may be the perfect solution. Offering 45 watts output (and selectable 5 watts low power), the FT-211RH is a compact all-channel transceiver with backlit LCD and translucent keypad. Chip component construction and a reversible sloping front panel make this set easy to install even in small cars. Operating features include both pushbutton and knob memory selection and tuning in selectable steps; ten memories storing automatically programmed or user-settable repeater splits or separate tx/rx frequencies (seven hold any shift); one touch repeater reverse and CALL channel recall; band, memory and selective memory auto-resume scanning and priority channel

monitoring.

Five different microphones are available for particular operating requirements, including one with a Burst button and another with auto-dial DTMF memories. The microphone jack includes all signals needed for connection of a packet tnc (European versions may require slight modification). European versions include a 1750 Hz burst generator. Any of 37 standard CTCSS tone frequencies which can be displayed, selected and stored in memories when the optional FTS-12 Tone Squelch Unit is installed. A mobile mounting bracket is supplied with the transceiver, and for base installations, the FP-700 AC Power Supply/External Speaker is available as an option.

## SPECIFICATIONS

### GENERAL

Frequency Range  
Channel Steps  
Standard Repeater Shift  
Emission Type  
Antenna Impedance  
Voltage Requirement  
Current Consumption

Operating Temperature Range  
Dimensions  
Weight (Approx.)

### RECEIVER

Circuit Type  
Intermediate Frequencies  
Sensitivity (for 12 dB SINAD)  
Adjacent Channel Selectivity  
Intermodulation Distortion  
Audio Output (for 10% THD)

### TRANSMITTER

RF Output Power (into 50 ohms)  
Frequency Stability  
Modulation Type  
Maximum Deviation  
Spurious Emissions  
Audio Distortion (@ 3.5 kHz dev.)

### FT-211RH

See Version Chart  
See Version Chart  
See Version Chart  
G3E  
50 ohms, unbalanced  
13.8 V DC  $\pm 10\%$ , negative ground  
Transmit: 45 W 9 A  
Transmit: 5 W 3 A  
Receive : 700 mA  
Stand-by: 450 mA  
-20 to +60°C  
160 (W) X 50 (H) X 175 (D) mm  
1.5 kg

Double-conversion superheterodyne  
10.7 MHz & 455 kHz  
Better than 0.2  $\mu$ V  
Better than 60 dB  
Better than 70 dB  
At least 1.5 W into 8 ohms

5 W (Low), 45 W (High)  
Better than  $\pm 10$  ppm (-20 to +50°C)  
Variable reactance  
 $\pm 5$  kHz  
At least 60 dB below carrier  
Less than 5% @ 1 kHz

### VERSION CHART

Version	A	B	D
Frequency Range	144-148 MHz	144-146 MHz	144-146 MHz
Channel Steps	5/10 kHz	12.5/25 kHz	5/10 kHz
Tone Burst	None	1750 Hz	1750 Hz
Repeater Shift	$\pm 600$ kHz	$\pm 600$ kHz	$\pm 600$ kHz



# FT-212RH/-712RH



## FT-212RH/-712RH Compact VHF/UHF FM Mobile/Bases (with Digital Voice Option)

Taking full advantage of the latest refinements in automated manufacturing and microprocessor control, these compact, synthesized models offer outputs of 5 and 45 watts on the 2-meter band (FT-212RH) or 3 and 35 watts on the 70 cm band (FT-712RH). A compartmentalized die-cast chassis and modular surface mount boards provide excellent rf isolation and incredible ruggedness. Unique capabilities include local and remote digital voice recording and playback when the optional DVS-1 Digital Voice System is installed. A photo-sensor controls the brightness of the LCD and control backlighting, dimming the display to a comfortable level in dark environments.

Operating features include selectable tuning steps, 18 general purpose memories plus a one-touch recall CALL channel memory and two subband limit memories (for **programmable** subband scanning); one-touch repeater **reverse**; band and selected

memory scanning with auto-resume after carrier drop or 5-second pause, and priority channel monitoring. Nineteen of the memories store either programmable repeater shift or independent transmit and receive frequencies. Automatic Repeater Shift (ARS) can be enabled to select repeater offset automatically when tuned to standard repeater subbands.

Any of 37 standard CTCSS (subaudible) tone frequencies (plus 97.4 Hz) can be displayed, selected and programmed into any memory for transmission, and when the optional FTS-12 is installed, for silent monitoring. The microphone jack includes signals for CAT System control from an external personal computer. A 1750 Hz Burst generator is built-in and can be activated from the MH-14A8 Speaker/Mic.

The FP-700 AC Power Supply is available for base installations.

## SPECIFICATIONS

GENERAL	FT-212RH	FT-712RH
Frequency Range	See Model Chart	See Model Chart
Channel Steps (user selectable)	5/10/12.5/20/25 kHz	5/10/12.5/20/25 kHz
Standard Repeater Shift	See Model Chart	See Model Chart
Emission Type	G3E	G3E
Antenna Impedance	50 ohms, unbalanced	50 ohms, unbalanced
Voltage Requirement	13.8 V DC $\pm$ 10% negative ground	13.8 V DC $\pm$ 10% negative ground
Current Consumption	Transmit: 45 W 10 A Receive: 500 mA Squelch: 300 mA	Transmit: 35 W 10 A Receive: 500 mA Squelch: 300 mA
Operating Temperature Range	-20 to +60°C	-20 to +60°C
Frequency Accuracy	$\pm$ 10 ppm	$\pm$ 5 ppm, -5 to +50°C
Dimensions	140 (W) X 40 (H) X 160 (D) mm	140 (W) X 40 (H) X 160 (D) mm
Weight (Approx.)	1.25 kg	1.25 kg
<b>RECEIVER</b>		
Circuit Type	Double-conversion superheterodyne	Double-conversion superheterodyne
Intermediate Frequencies	10.7 MHz and 455 kHz	45 MHz and 455 kHz
Sensitivity (for 12 dB SINAD)	Better than 0.25 $\mu$ V	Better than 0.25 $\mu$ V
Image Ratio	Better than 65 dB	Better than 65 dB
Selectivity (-6/-60 dB)	12/30 kHz	12/30 kHz
Audio Output (for 5% THD)	At least 1.5 W into 8 ohms	At least 1.5 W into 8 ohms
<b>TRANSMITTER</b>		
RF Output Power (into 50 ohms)	5 W and 45 W	3 W and 35 W
Modulation Type	Variable reactance	Variable reactance
Maximum Deviation	$\pm$ 5 kHz	$\pm$ 5 kHz
Spurious Emissions	At least 60 dB below carrier	At least 60 dB below carrier
Microphone Impedance	2 kilohms	2 kilohms

## MODEL CHART

Model Version	FT-212RH		FT-712RH			
	A	B	A	B	C	X
Frequency Range (MHz)	144-148	144-146	430-450	430-440	430-440	430-440
Tone Burst	None	1750 Hz	None	1750 Hz	1750 Hz	None
Repeater Shift	$\pm$ 600 kHz	$\pm$ 600 kHz	$\pm$ 5 MHz	$\pm$ 7.6 MHz	$\pm$ 1.6 MHz	$\pm$ 5 MHz



# FT-4700RH



## FT-4700RH Dual-Band (VHF/UHF) Trunk-Mountable FM Mobile/Base

Providing 50 watts output on the 2-meter and 40 watts on the 70 cm band, this model offers the ultimate in FM operating (5 watts low power is also selectable on both bands). The optional YSK-4700 controller cable option allows the main body of the transceiver to be installed under a seat or in the trunk, while the front panel/controller mounts conveniently on the dashboard.

True full-duplex crossband operation, as originated by Yaesu for amateur radio, is supplemented by dual band simultaneous or auto-muting reception with independent squelch and mixing balance, so you can listen for calls on either band while working someone on the other. On the control panel, the bright amber-backlit LCD shows both VHF and UHF frequencies and signal strengths, and all con-

trols have backlit labels for clear readability, with a dimmer switch to sooth your eyes in dark environments.

All of the latest tuning/scanning features are included, such as operator selection of tuning steps, one-touch CALL channel recall, selective single- or multi-band scanning with auto-resume after carrier drop or 5-second pause, and priority monitoring even during dual band reception. Twenty memories (ten per band) are provide, with eight storing independent transmit frequencies and all storing subaudible tone functions when the optional FTS-8 Tone Unit is installed. Other options include the AD-2 Antenna Duplexer, SP-3 and SP-4 External Loudspeakers (required when trunk mounted), and the FP-700 AC Power Supply for base installations.

## SPECIFICATIONS

### GENERAL

Frequency Range  
Channel Steps (user selectable)  
Standard Repeater Shift  
Emission Type  
Antenna Impedance  
Voltage Requirement  
Current Consumption (Typical)

Operating Temperature Range  
Dimensions  
Weight (Approx.)

### RECEIVER

Circuit Type  
Intermediate Frequencies

Sensitivity (for 12 dB SINAD)  
Selectivity (-6/-60 dB)  
Image Rejection  
Squelch Sensitivity  
Maximum AF Output  
AF Output Impedance

### TRANSMITTER

Output Power (High/Low)  
Modulation Type  
Maximum Deviation  
Spurious Radiation  
Microphone Impedance

### FT-4700RH

See Version Chart  
5/10/12.5/20/25 kHz  
See Version Chart  
F3  
50 ohms, unbalanced  
13.8 V DC  $\pm 15\%$ , negative ground  
Receive: 600 mA  
Transmit High/Low: 10/3 A  
-20 to +60°C  
150 (W) X 50 (H) X 180 (D) mm  
2 kg

Double-conversion superheterodyne  
VHF: 17.30 MHz & 455 kHz  
UHF: 47.75 MHz & 455 kHz  
Better than 0.158  $\mu$ V  
15/30 kHz  
Better than 65 dB  
At least 0.1  $\mu$ V  
1.5 W into 8 ohms @ 5% THD  
4 to 16 ohms (8-ohm internal speaker)

VHF: 50 W/ 5 W, UHF: 40 W/ 5 W  
Variable reactance  
 $\pm 5$  kHz  
Less than -60 dB  
2 kilohms

## VERSION CHART

Version		A1	B1	B2	C1	C2	D1
Freq. Range (MHz)	VHF	144-148	144-146	144-148	144-146	144-148	144-146
	UHF	430-450	430-440	430-440	430-440	430-440	432-438
Std. Rptr. Split	VHF	$\pm 600$ kHz	$\pm 600$ kHz	$\pm 600$ kHz	$\pm 600$ kHz	$\pm 600$ kHz	$\pm 600$ kHz
	UHF	$\pm 5$ MHz	$\pm 7.6$ MHz	$\pm 7.6$ MHz	$\pm 1.6$ MHz	$\pm 1.6$ MHz	$\pm 1.6$ MHz



# FT-x90R II



## FT-x90R II Series VHF and UHF All Mode Portable/Mobile/Bases

For the ultimate in versatility on the VHF and UHF band, consider the FT-690R II (for 50 MHz), FT-290R II (for 144 MHz) and the FT-790R II (for 430-440 or 430-450 MHz). Providing either 2.5 watts output with the clip-on FBA-8 battery case and nine "C"-size dry cells or Ni-Cds, or 25 watts with an external 12 V supply and clip-on linear amplifier (10 watts on 6 meters), these sets are ideal as all mode shoulder-carried field portables, mobiles and base stations. Special features for FM, SSB and CW modes include mode-dependent selectable steps for tuning and scanning of the dual vfos, ten memories holding mode and repeater split, all mode squelch and an analog S/PO meter. Scanning features include full or limited band scanning and selective multi-mode memory scanning. Repeater operation is facilitated by one-touch reverse split and a built-in Burst generator (for European versions) or an

optional FTS-7 Tone Squelch Unit (for US version). For SSB and CW a noise blanker and receiver clarifier control are provided, with semi break-in CW and sidetone. Despite their wealth of features, the '90 series is easy to get to know, with just three knobs and ten multi-function keys. The light die-cast aluminum alloy chassis and surface-mount chip circuitry make these sets really tough, for reliable operation even under harsh portable and mobile condition, yet small and light enough to carry around comfortably all day long. Along with the linear amplifiers mentioned above (FL-6020, FL-2025 and FL-7025 for 6 m, 2 m and 70 cm, respectively), the MMB-31 quick-release mobile bracket allows portable-mobile conversion in seconds. A wide variety of microphones is available for all types of operation, and the FP-700 is available for base installations with the linear amplifiers.

## SPECIFICATIONS

GENERAL	FT-690R II	FT-290R II	FT-790R II
Frequency Range (MHz)	Per Local Requirement See Model Chart	Per Local Requirement See Model Chart	Per Local Requirement See Model Chart
Emission Type	FM, SSB (LSB, USB), CW	FM, SSB (LSB, USB), CW	FM, SSB (LSB, USB), CW
Channel Steps	FM: See Model Chart SSB/CW: 25/100/2500 Hz	FM: See Model Chart SSB/CW: 25/100/2500 Hz	FM: See Model Chart SSB/CW: 25/100/2500 Hz
Antenna	BNC jack (YHA-6 telescoping whip supplied)	BNC jack (YHA-14A rubber flex antenna supplied)	BNC jack (YHA-44D rubber flex antenna supplied)
Voltage Requirements	8 to 15.8 V DC 12 to 15.8 V DC	8 to 15.8 V DC 12 to 15.8 V DC	8 to 15.8 V DC 12 to 15.8 V DC
Current Consumption (@ 13.8 V)	w/FL-6020 Receive: approx. 80 mA Transmit: approx. 1.1 A (for 2.5 W RF)	w/FL-2025 Receive: approx. 80 mA Transmit: approx. 1.1 A (for 2.5 W RF)	w/FL-7025 Receive: approx. 80 mA Transmit: approx. 1.5 A (for 2.5 W RF)
Dimensions	w/FL-6020: 4.5 A max. 150 (W)X57 (H)X194 (D) mm w/FBA-8 or FL-6020	w/FL-2025: 7.5 A max. 150 (W)X57 (H)X194 (D) mm w/FBA-8 or FL-2025	w/FL-7025: 8 A max. 150 (W)X57 (H)X194 (D) mm w/FBA-8 or FL-7025
Weight (Approx.)	1.2 kg (less FBA-8) 2.1 kg with FL-6020	1.2 kg (less FBA-8) 2.1 kg with FL-2025	1.2 kg (less FBA-8) 2.1 kg with FL-7025
<b>RECEIVER</b>			
Circuit Type	SSB/CW: Single-conversion FM: Double-conversion	SSB/CW: Single-conversion FM: Double-conversion	SSB/CW: Single-conversion FM: Triple-conversion
First IF	13.9885 MHz	13.9885 MHz	54.5 MHz, 13.9885 MHz
Second (FM) IF	455 kHz	455 kHz	455 kHz
Sensitivity	SSB/CW: 0.2 $\mu$ V for 10 dB SN FM: 0.25 $\mu$ V for 12 dB SINAD	SSB/CW: 0.2 $\mu$ V for 10 dB SN FM: 0.25 $\mu$ V for 12 dB SINAD	SSB/CW: 0.2 $\mu$ V for 10 dB SN FM: 0.25 $\mu$ V for 12 dB SINAD
Image Rejection	Better than 60 dB	Better than 60 dB	Better than 60 dB
IF Rejection	Better than 70 dB	Better than 70 dB	Better than 70 dB
Sensitivity (-6/-60 dB)	SSB & CW: 2.4/5.2 kHz FM: 12/25 kHz	SSB & CW: 2.4/5.2 kHz FM: 12/25 kHz	SSB & CW: 2.4/5.2 kHz FM: 12/25 kHz
Audio Output	1 W into 8 ohms @ 10% THD	1 W into 8 ohms @ 10% THD	1 W into 8 ohms @ 10% THD
External Speaker Impedance	4 to 16 ohms	4 to 16 ohms	4 to 16 ohms
<b>TRANSMITTER</b>			
Input Power	6 W @ 13.8 V (2.5 W output)	6 W @ 13.8 V (2.5 W output)	11.5 W @ 13.8 V (2.5 W output)
Modulation Type	SSB: Balanced, filtered FM: Variable reactance	SSB: Balanced, filtered FM: Variable reactance	SSB: Balanced, filtered FM: Variable reactance
Deviation (FM)	$\pm$ 5 kHz	$\pm$ 5 kHz	$\pm$ 5 kHz
Carrier Suppression	Better than 40 dB	Better than 40 dB	Better than 40 dB
Undesired Sideband Suppression	Better than 40 dB	Better than 40 dB	Better than 40 dB
Spurious Response	-60 dB	-60 dB	-60 dB
Microphone Impedance	400 ohms, dynamic	400 ohms, dynamic	400 ohms, dynamic
Frequency Stability (@ 25°C)	First 30 min.: 300 Hz After 30 min.: 50 Hz	First 30 min.: 500 Hz After 30 min.: 100 Hz	First 30 min.: 1 kHz After 30 min.: 100 Hz

## MODEL CHART

Model	Version	Frequency Range	FM Step	Repeater Shift	Tone Burst	CTCSS
FT-690R II	A1	50-54 MHz	5/10/20 MHz	$\pm$ 1.0 MHz	n/a	Optional
	B	50-54 MHz	12.5/25/50 MHz	$\pm$ 1.0 MHz	Optional	n/a
FT-290R II	A1	144-148 MHz	5/10/20 MHz	$\pm$ 0.6 MHz	n/a	Optional
	B	144-146 MHz	12.5/25/50 MHz	$\pm$ 0.6 MHz	1750 Hz	n/a
	C1	144-148 MHz	12.5/25/50 MHz	$\pm$ 0.6 MHz	1750 Hz	n/a
	D	144-146 MHz	5/10/20 MHz	$\pm$ 0.6 MHz	1750 Hz	n/a
	E1	144-148 MHz	5/10/20 MHz	$\pm$ 0.6 MHz	1750 Hz	n/a
FT-790R II	A	430-450 MHz	12.5/25/50 MHz	$\pm$ 5.0 MHz	n/a	Optional
	B	430-440 MHz	12.5/25/50 MHz	$\pm$ 7.6 MHz	1750 Hz	n/a
	C	430-440 MHz	12.5/25/50 MHz	$\pm$ 1.8 MHz	1750 Hz	n/a
	X	430-440 MHz	12.5/25/50 MHz	$\pm$ 5.0 MHz	n/a	Optional



# FT-23R/-33R/-73R



## FT-23R/-33R/-73R Compact FM Handhelds

Housed entirely in die-cast zinc/aluminum alloy, with rubber gasket seals around all controls and connectors, these extremely rugged models offer up to five watts output on the 144, 220 and 430-440 or 430-450 MHz bands, respectively.

Operating features include ten memories storing repeater offsets (and CTCSS tone frequencies when the optional FTS-12 Tone Squelch Unit is installed), busy channel band and memory scanning, priority channel monitoring, 1-MHz up/down stepping and tuning with a top panel rotary dial. Seven of the memories can also store separate transmit frequen-

cies. The LCD shows six frequency digits, memory selection and CTCSS tone frequency during selection, and includes a bargraph S/PO meter. A fixed-interval power saver is built-in to prolong battery life during squelched monitoring.

The FTE-8 Burst generator is supplied as standard in European versions, while the FTT-4 DTMF keypad encoder is available as an option for all versions, along with a full line of batteries, chargers, soft cases and accessories for mobile operation (compatible with our other hand-helds).

## SPECIFICATIONS

GENERAL	FT-23R	FT-33R	FT-73R
Frequency Range	144-146 MHz (B&D)* or 144-148 MHz (A, C & X)	220-225 MHz	430-440 MHz (B, C & X) or 440-450 MHz (A)
Channel Steps	5 & 10 kHz (A, D & E) 12.5 & 25 kHz (B & C)	5 & 10 kHz	12.5 & 25 kHz
Standard Repeater Shift	600 Hz	1.6 MHz	5 (A & X), 7.6 (B), 1.6 (C) MHz
Emission Type	G3E (F3)	G3E (F3)	G3E (F3)
Antenna	YHA-16 rubber flex antenna	YHA-33 rubber flex antenna	YHA-46 rubber flex antenna
Voltage Requirement	6.0-15.0 V DC	6.0-15.0 V DC	6.0-15.0 V DC
Current Consumption	Stand-by (Power save on): 19 mA Receive : 150 mA Transmit: 1.5 A @ 5W RF 0.9 A @ 2W RF	Stand-by (Power save on): 19 mA Receive : 150 mA Transmit: 1.3 A @ 5W RF 0.8 A @ 2W RF	Stand-by (Power save on): 19 mA Receive : 150 mA Transmit: 1.6 A @ 5W RF 1.1 A @ 2W RF
Dimensions (WHD)	55 X 122 X 32 mm w/FNB-/FBA-9 55 X 139 X 32 mm w/FNB-/FBA-10 55 X 188 X 32 mm w/FNB-11 55 X 155 X 32 mm w/FNB-12/-14	55 X 122 X 32 mm w/FNB-/FBA-9 55 X 139 X 32 mm w/FNB-/FBA-10 55 X 188 X 32 mm w/FNB-11 55 X 155 X 32 mm w/FNB-12/-14	55 X 122 X 32 mm w/FNB-/FBA-9 55 X 139 X 32 mm w/FNB-/FBA-10 55 X 188 X 32 mm w/FNB-11 55 X 155 X 32 mm w/FNB-12/-14
Weight (Approx.)	430 g w/FNB-10 550 g w/FNB-11	430 g w/FNB-10 550 g w/FNB-11	430 g w/FNB-10 550 g w/FNB-11
<b>RECEIVER</b>			
Circuit Type	Double-conversion superheterodyne	Double-conversion superheterodyne	Double-conversion superheterodyne
Sensitivity (for 12 dB SINAD)	Better than 0.25 µV	Better than 0.20 µV	Better than 0.25 µV
Adjacent Channel Selectivity	Better than 60 dB	Better than 55 dB	Better than 60 dB
Intermodulation	Better than 65 dB	Better than 65 dB	Better than 65 dB
Audio Output (@ 12 V)	0.4 W @ 8 ohms for 5% THD	0.4 W @ 8 ohms for 5% THD	0.4 W @ 8 ohms for 5% THD
<b>TRANSMITTER</b>			
Power Output	See RF Power Chart	See RF Power Chart	See RF Power Chart
Frequency Stability	Better than ± 10 ppm	Better than ± 10 ppm	Better than ± 5 ppm
Modulation Type	Variable reactance	Variable reactance	Variable reactance
Deviation	± 5 kHz	± 5 kHz	± 5 kHz
FM Noise	Better than -40 dB @ 1 kHz	Better than -40 dB @ 1 kHz	Better than -40 dB @ 1 kHz
Spurious Emission	Less than 60 dB below carrier	Less than 60 dB below carrier	Less than 60 dB below carrier
Audio Distortion	Less than 5% @ 1 kHz w/3 kHz deviation	Less than 5% @ 1 kHz w/3 kHz deviation	Less than 5% @ 1 kHz w/3 kHz deviation
Microphone Impedance	2 kohms condenser	2 kohms condenser	2 kohms condenser
Burst Tone	1750 Hz (except version A)	None	1750 Hz (versions B & C only)

\* Letters in parenthesis indicate version

### RF POWER CHART

Battery Type	FT-23R Output	FT-33R Output	FT-73R Output
(Dry Cell Cases)			
FBA-9 (6 X 'AAA' cell)	2.0 W	1.0 W	1.0 W
FBA-10 (6 X 'AA' cell)	2.5 W	1.5 W	2.0 W
(Ni-Cd Battery Packs)			
FNB-9 (7.2 V, 200 mAh)	2.5 W	1.5 W	2.0 W
FNB-10 (7.2 V, 600 mAh)	2.5 W	1.5 W	2.0 W
FNB-11 (12 V, 600 mAh)	5.0 W	5.0 W	5.0 W
FNB-12 (12 V, 500 mAh)	5.0 W	5.0 W	5.0 W
FNB-14 (7.2 V, 1000 mAh)	2.5 W	1.5 W	2.0 W



# FT-411/-811



## FT-411/811 Full-Feature VHF & UHF FM Handhelds

The top-of-the-line in single band handhelds, these models provide up to five watts output across the 2m (FT-411) and 70cm (FT-811) bands. With packaging and features similar to the dual-band FT-470, these models share the same accessories. Extra features include 49 memories and two vfos controlled by the 16-button backlit keypad. All memories store repeater offsets or separate tx/rx frequencies, and CTCSS tones when the optional FTS-17 Tone Squelch Unit is installed. Busy channel band, subband and selective memory scanning are provided along with priority channel monitoring, 1 MHz up/down stepping, ARS (Automatic Repeater Shift) when tuned to repeater subbands, plus a top panel rotary dial for memory and frequency selection. The keypad serves as a DTMF encoder during transmission, and 10 DTMF memories can be used to store 15 digits each for quick

playback.

The LCD shows six frequency digits, memory channel selection, CTCSS tone frequency during tone selection, and page-received status when paged by a matching subaudible tone. Yaesu's programmable power saver system can be set by the operator for optimum sampling/standby ratio, or can be turned off for packet. Our new APO (Automatic Power Off) system shuts off the transceiver to avoid dead batteries if you doze off or are called away unexpectedly.

The display/keypad lighting and diatonically-assigned function dependent keypad beeps make operation in difficult conditions easy. A VOX (voice-actuated transmit switching) system is also provided for hands-free operation with the optional YH-2 headset.

## SPECIFICATIONS

GENERAL	FT-411	FT-811
Frequency Range	144-146 (B&C) MHz or 144-148 (A) MHz	430-440 (B&C) MHz or 430-450 (A) MHz
Channel Steps	5, 10, 12.5, 20 & 25 kHz	5, 10, 12.5, 20 & 25 kHz
Standard Repeater Shift (resettable)	600 kHz	5 (A), 7.6 (B), 1.6 (C) MHz
Emission Type	G3E	G3E
Voltage Requirement	5.5 to 15.0 V DC	5.5 to 15.0 V DC
Current Consumption	Stand-by (with 1 sec Save): 7 mA Receive : 150 mA Transmit (5 W): 1300 mA Auto Power Off: 6 mA	Stand-by (with 1 sec Save): 8 mA Receive : 150 mA Transmit (5 W): 1600 mA Auto Power Off: 7 mA
Antenna (BNC jack)	YHA-16 rubber flex antenna	YHA-46 rubber flex antenna
Dimensions (WHD)	55 X 122 X 32 mm w/FNB-/FBA-9 55 X 139 X 32 mm w/FNB-/FBA-10 55 X 188 X 32 mm w/FNB-11 55 X 155 X 32 mm w/FNB-12/-14	55 X 122 X 32 mm w/FNB-/FBA-9 55 X 139 X 32 mm w/FNB-/FBA-10 55 X 188 X 32 mm w/FNB-11 55 X 155 X 32 mm w/FNB-12/-14
Weight (Approx.)	380g w/FNB-10, 510 g w/FNB-11	380 g w/FNB-10, 510 g w/FNB-11
<b>RECEIVER</b>		
Circuit Type	Double-conversion superheterodyne	Double-conversion superheterodyne
Sensitivity (12 dB SINAD)	Better than 0.158 $\mu$ V (-10 dB $\mu$ )	Better than 0.158 $\mu$ V (-10 dB $\mu$ )
Adjacent Channel Selectivity	Better than 60 dB	Better than 60 dB
Intermodulation	Better than 65 dB	Better than 65 dB
Audio Output (@ 12 V)	0.5 W @ 8 ohms for 5% THD	0.5 W @ 8 ohms for 5% THD
<b>TRANSMITTER</b>		
Power Output	See RF Power Chart	See RF Power Chart
Frequency Stability	Better than 10 ppm	Better than 10 ppm
Modulation Type	Variable reactance	Variable reactance
Maximum Deviation	$\pm$ 5 kHz	$\pm$ 5 kHz
FM Noise	Better than -40 dB @ 1 kHz	Better than -40 dB @ 1 kHz
Spurious Emissions	Better than 60 dB below carrier	Better than 60 dB below carrier
Audio Distortion	Less than 5% @ 1 kHz, w/3 kHz deviation	Less than 5% @ 1 kHz, w/3 kHz deviation
Microphone Impedance	2-kilohm condenser	2-kilohm condenser
Burst Tone	1750 Hz (except version A)	1750 Hz (except version A)

\* Letters in parenthesis indicate version

## RF POWER CHART

Battery Type	FT-411 Output	FT-811 Output
<b>(Dry Cell Cases)</b>		
FBA-9 (6 X 'AAA' cell)	2.0 W	1.0 W
FBA-10 (6 X 'AA' cell)	2.5 W	1.5 W
<b>(Ni-Cd Battery Packs)</b>		
FNB-9 (7.2 V, 200 mAh)	2.5 W	1.5 W
FNB-10 (7.2 V, 600 mAh)	2.5 W	2.0 W
FNB-11 (12 V, 600 mAh)	5.0 W	5.0 W
FNB-12 (12 V, 500 mAh)	5.0 W	5.0 W
FNB-14 (7.2 V, 1000 mAh)	2.5 W	2.0 W



# FT-470



## FT-470 Compact Dual Band 2m/70cm FM Handheld

Introducing new concepts in the realm of miniaturized hand-held communications, the FT-470 provides up to 5 watts of power on the 2 m and 70 cm bands, in an incredibly tiny case. A lamp button illuminates the display and backlit translucent keypad when needed, and diatonically assigned function-dependent keypad beeps aid operation in difficult conditions.

Dual independent IF strips allow simultaneous reception on both bands, so you can operate on one band while monitoring for calls or scanning on the other. Current drain can be reduced to as little as 7 mA to extend battery charge life with the programmable-interval power saver and automatic power off (APO), which puts the transceiver to sleep after a selectable period of inactivity. The display shows up to 5½ frequency digits of both bands at the same time.

Other advanced features include 2 vfos and 21 memories for each band, storing repeater offsets or separate tx/rx frequencies and CTCSS tones.

Fast busy channel band, subband or selective memory scanning is provided along with priority channel monitoring for each band, or even on both bands simultaneously. ARS (Automatic Repeater Shift) activates repeater offset when tuned to standard repeater subbands. A built-in 10-memory DTMF autodialler can store 15 digits in each memory for one-key playback of commonly-used numbers. DTMF tones and memory sequences also play back through the speaker (so you can play back directly into a telephone). A CTCSS encoder/decoder is built-in as a standard feature, allowing the FT-470 to function as a paging receiver, sounding an alerting tone and displaying a blinking indicator when a call is received with the correct tone frequency (in addition to standard tone squelch functions).

The FT-470 shares a wide assortment of accessories with the other Yaesu handies, including battery packs and cases, chargers/DC adapters, soft cases, mobile hanger and speaker/microphones.

## SPECIFICATIONS

GENERAL	FT-470	
	144 MHz	430 MHz
Frequency Range	144-146 (B&C) MHz or 144-148 (A) MHz	430-440 (B&C) MHz or 430-450 (A) MHz
Channel Steps	5, 10, 12.5, 20 & 25 kHz	5, 10, 12.5, 20 & 25 kHz
Standard Repeater Shift (resettable)	600 kHz	5 (A), 7.6 (B), 1.6 (C) MHz
Emission Type	G3E	G3E
Voltage Requirement	5.5 to 15.0 V DC	5.5 to 15.0 V DC
Current Consumption	Stand-by (with 1 sec Save): 8 mA Receive: 150 mA Transmit (5 W): 1300 mA Auto Power Off: 7 mA	Stand-by (with 1 sec Save): 8 mA Receive: 150 mA Transmit (5 W): 1600 mA Auto Power Off: 7 mA
Antenna (BNC jack)	YHA-28 rubber flex antenna	YHA-28 rubber flex antenna
Dimensions (WHD)	55 X 147 X 32 mm w/FNB-/FBA-9 55 X 164 X 32 mm w/FNB-/FBA-10 55 X 213 X 32 mm w/FNB-11 55 X 180 X 32 mm w/FNB-12/-14 55 X 152 X 32 mm w/FNB-/FBA-17	55 X 147 X 32 mm w/FNB-/FBA-9 55 X 164 X 32 mm w/FNB-/FBA-10 55 X 213 X 32 mm w/FNB-11 55 X 180 X 32 mm w/FNB-12/-14 55 X 152 X 32 mm w/FNB-/FBA-17
Weight (Approx.)	420g w/FNB-10/-17, 550 g w/FNB-11	420 g w/FNB-10/-17, 550 g w/FNB-11
RECEIVER		
Circuit Type	Double-conversion superheterodyne	Double-conversion superheterodyne
Sensitivity (12 dB SINAD)	Better than 0.158 μV (-10 dBμ)	Better than 0.158 μV (-10 dBμ)
Adjacent Channel Selectivity (± 25 kHz)	Better than 60 dB	Better than 60 dB
Intermodulation	Better than 65 dB	Better than 65 dB
Audio Output (@ 12 V)	0.5 W @ 8 ohms for 5% THD	0.5 W @ 8 ohms for 5% THD
TRANSMITTER		
Power Output	See RF Power Chart	See RF Power Chart
Frequency Stability (-5 to +60°C)	Better than ± 5 ppm	Better than ± 5 ppm
Modulation Type	Variable reactance	Variable reactance
Maximum Deviation	± 5 kHz	± 5 kHz
FM Noise	Better than -40 dB @ 1 kHz	Better than -40 dB @ 1 kHz
Spurious Emissions	Better than 60 dB below carrier	Better than 60 dB below carrier
Audio Distortion	Less than 5% @ 1 kHz, w/3.5 kHz deviation	Less than 5% @ 1 kHz w/3.5 kHz deviation
Microphone Impedance	2-kilohm condenser	2-kilohm condenser
Burst Tone	1750 Hz (except version A)	1750 Hz (except version A)

\* Letters in parenthesis indicate version

### RF POWER CHART

Battery Type	144 MHz Output	430 MHz Output
(Dry Cell Cases)		
FBA-9 (6 X 'AAA' cell)	1.5 W	1.0 W
FBA-10/-17 (6 X 'AA' cell)	2.0 W	1.5 W
(Ni-Cd Battery Packs)		
FNB-9 (7.2 V, 200 mAh)	2.0 W	1.5 W
FNB-10 (7.2 V, 600 mAh)	2.3 W	2.3 W
FNB-11 (12 V, 600 mAh)	5.0 W	5.0 W
FNB-12 (12 V, 500 mAh)	5.0 W	5.0 W
FNB-14 (7.2 V, 1000 mAh)	2.3 W	2.3 W
FNB-17 (7.2 V, 600 mAh)	2.3 W	2.3 W

# FRG-8800



## FRG-8800 HF/VHF General Coverage Communications Receiver

Utilizing recent developments in microprocessor control, the FRG-8800 is designed to meet the needs of serious shortwave listeners and professional monitors. Covering 150 kHz to 30 MHz continuously in AM, SSB, CW and narrow FM modes, the optional FRV-8800 VHF Converter can be added to extend coverage to 118 to 174 MHz.

The large liquid crystal display includes a unique S/SINPO bargraph digital indicator, along with 100 Hz resolution frequency display (actual tuning resolution is 25 Hz). A 21-button keypad allows digital frequency entry and programming of the 12 internal memories and multi-function scanner. AM, SSB, CW and FM modes are pushbutton selectable with both wide and narrow bandwidths (exc. SSB), and all mode data is stored in the memories along with frequency. Selectable AGC decay, noise blanking width and tuning rates ensure comfortable listening and easy operation even under adverse band conditions. Two 24-hour clocks

with an automatic timer allow selection of display of local and universal time, and automatic control of the receiver and auxiliary recording equipment at preprogrammed time and frequency.

Three scanning modes are available through the keypad, by which either all or selected memories can be scanned, or all frequencies between two memories (at selectable rates and steps). Of course all-mode squelch and attenuator controls are provided. The Yaesu CAT System allows operators with personal computers to add other functions, such as unlimited additional memories, automatic tuning, customized scanning systems and voting reception, using almost any personal computer and a Yaesu FIF CAT Interface Unit (software not provided by Yaesu).

In addition to the FRV-8800, optional accessories include the FRA-7700 Active Antenna, FRT-7700 Antenna Tuner, and a 12 V DC Kit for conversion to DC operation.

## SPECIFICATIONS

GENERAL	FRG-8800
Frequency Range	150 kHz to 29.999 MHz (150 kHz to 25.999 MHz and 2 to 29.999 MHz models available on request)
Receiving Modes	118 to 173.999 MHz Models available on request)
Sensitivity	AM, SSB (LSB/USB), CW, FM-Narrow, FM-Wide Discriminator Optional AM, SSB, CW: 10 dB S+N/N or better FM (Narrow): 20 dB SINAD or better
Selectivity	See Sensitivity Charts
Frequency Stability	See Selectivity Chart Within $\pm 300$ Hz during the first half hour after 1 minute warm-up, Within 50 Hz during any 30 minutes thereafter.
Squelch Sensitivity	See Squelch Sensitivity Chart
Antenna Impedance	150 kHz to 29.999 MHz: 50 ohms/500 ohms 118 MHz to 173.999 MHz (Optional Unit): 50 ohms
Audio Output	1.4 W w/8 ohms load (10% THD)
Audio Output Impedance	External Speaker, Headphones: 4 to 16 ohms
Voltage Requirements	100/120/220/240 V AC, 50/60 Hz, 4.5 V DC for Memory Back-up
Power Consumption	35 VA AC in operation (no signal input) 5 VA AC Power Switch Off
Dimensions	334 (W) X 118 (H) X 225 (D) mm
Weight (Approx.)	6.1 kg (without VHF Unit)

## SENSITIVITY CHART

	AM	SSB/CW	FM
150 kHz - 1.6 MHz	30 $\mu$ V/50 $\Omega$	3 $\mu$ V/50 $\Omega$	—
1.6 - 29.999 MHz	4 $\mu$ V/50 $\Omega$	0.4 $\mu$ V/50 $\Omega$	1 $\mu$ V/50 $\Omega$
118 - 173.999 MHz*	10 $\mu$ V/50 $\Omega$	1 $\mu$ V/50 $\Omega$	2 $\mu$ V/50 $\Omega$

\*w/Optional Unit

## SQUELCH SENSITIVITY CHART

	1.6 - 29.999 MHz	118 - 173.999 MHz*
AM, SSB, CW	2 $\mu$ V or better	4 $\mu$ V or better
FM-Narrow	0.5 $\mu$ V or better	1 $\mu$ V or better

\*w/Optional Unit

## SELECTIVITY CHART

	6 kHz (-6 dB)	15 kHz (-50 dB)
AM	6 kHz (-6 dB)	15 kHz (-50 dB)
AM-Narrow	2.7 kHz (-6 dB)	8 kHz (-50 dB)
SSB/CW	2.7 kHz (-6 dB)	8 kHz (-50 dB)
FM-Narrow	12.5 kHz (-6 dB)	30 kHz (-40 dB)



# FRG-9600



## FRG-9600 VHF/UHF General Coverage Scanning Receiver

The FRG-9600 is the first all-mode scanning receiver covering 60 to 905 MHz continuously with 100 keypad programmable memories. Custom VLSI microprocessor technology has allowed us to include special features for serious broadcast and communications monitoring.

In addition to FM wide mode (for FM and TV broadcasts) and FM narrow (for two-way public service, military, business and amateur communications), AM wide and narrow modes are provided for the VHF aeronautical band, and CW and SSB modes for amateur and military two-way communications (SSB up to 460 MHz). A tuning knob and seven tuning/scanning rates between 100 Hz and 100 kHz facilitate tuning of narrowband signals and fast, efficient scanning.

The scanning system allows full or limited (keypad programmed) band scanning as well as memory

channel scanning, with auto-resume after 5-second pause. Audio scan stop sensing is provided along with carrier sensing scan stop, to avoid pausing on "carrier-only" channels. A 24-hour clock/timer is included with a recorder control jack, for automatic power on/off switching and recording. Additional rear panel jacks provide cpu band selection outputs, multiplexed (FM wide) output, AF and RF mute and a Yaesu CAT System jack, allowing virtually unlimited external control from a personal computer.

The FRG-9600 requires 12 V DC and comes with the MMB-28 Mobile Mounting Bracket and DC power cord. Power may also be provided from the AC line using the optional PA-4 adapter. An optional NTSC Video IF Unit is available for reception of television on a video monitor (NTSC format only).

## SPECIFICATIONS

GENERAL	FRG-9600
Frequency Range	60 to 905 MHz (up to 460 MHz for SSB)
Modes, -3 dB Bandwidth	FM-Narrow: 15 kHz BW FM Wide: 180 kHz BW AM-Narrow: 2.4 kHz BW AM Wide: 6 kHz BW SSB: 2.4 kHz BW
Conversion Schemes	Triple: FM-N, AM, SSB Double: FM-W Single: Optional NTSC TV Video Unit
Intermediate Frequencies	47.754, 10.7 MHz and 455 kHz
Image Rejection	60 to 460 MHz -50 dB Typical 460 to 905 MHz -40 dB Typical
Typical Sensitivity	FM-N 0.5 $\mu$ V (for 12 dB SINAD) FM-W 1.0 $\mu$ V (for 12 dB SINAD) AM-N 1.0 $\mu$ V (for 10 dB S+N/N) AW-W 1.5 $\mu$ V (for 10 dB S+N/N) SSB 1.0 $\mu$ V (for 15 dB S+N/N)
Tuning Steps	FM-N* 5/10/12.5/25 kHz FM-W 100 kHz AM-N 100 Hz/1 kHz AM-W* 5/10/12.5/25 kHz SSB 100 Hz/1 kHz
Memory Channels	100
Audio Output	1 W (into 8 ohms, with less than 10% THD)
Voltage Requirements	DC 12 to 15 V AC 100/117/220 to 230 V w/optional PA-4
Current Consumption	Operating: 550 mA (maximum) Power Switch Off: 100 mA DC Supply Off: 3 $\mu$ A max. (lithium memory back-up)
Dimensions	180 (W) X 80 (H) X 220 (D) mm
Weight (Approx.)	2.2 kg (without options)

\*Selected steps shown on display

# FL-7000



## FL-7000 Automatic HF Solid-State Linear Amplifier

This microprocessor-controlled RF power amplifier includes a built-in power supply and automatic antenna tuner, providing up to 1200 watts input power on all hf amateur bands. Without costly vacuum tubes there is no need for a dangerous high-voltage supply, eliminating the problems of tube and high-voltage component failures. Super-fast transmit/receive switching allows the FL-7000 to be used for QSK CW, hf packet radio and AMTOR, requiring only 70 watts of excitation for full output.

Four transistors with 300-watt collector dissipation each are combined in a fully protected push-pull wideband "no-tune" circuit, powered by a heavy-duty regulated 47 V, 25 A DC power supply and cooled by a bottom-mounted fan through Yaesu's DVC heatsinking system. A high power low-loss automatic internal antenna tuner automatically rematches the antenna whenever SWR exceeds 2:1.

Band changes are completely automatic when the

FL-7000 is used with the Yaesu FT-747GX, FT-757GXII and FT-767GX transceivers. When changing bands, previously stored antenna selection and tuner settings are recalled from lithium-backed memories automatically: tune-up transmission and retuning are not required. When rematching to a new load, the amplifier section turns itself off until the match is achieved.

Six parameters in the amplifier, power supply and tuner are simultaneously monitored by protective circuitry to avoid distortion of the transmitted signal, as well as to guard against overload. Two large meters allow constant monitoring of amplifier current and one of four other parameters simultaneously. LED indicators keep the operator informed of tuner and protection status, fan speed, and band and antenna selections. Up to four antennas can be connected at once and automatically selected for different bands when the optional FAS-14R remote antenna relay is used.

## SPECIFICATIONS

### GENERAL

Frequency Range (MHz)

Collector Input Power (final transistors)

Continuous Full Power Transmission Period

Voltage Requirements

Power Consumption

Dimensions

Weight (Approx.)

### LINEAR AMPLIFIER SECTION

Excitation Power

ALC Voltage Range

Spurious Radiation

3rd Order Intermodulation Distortion

Input/Output Impedance

### AUTOMATIC ANTENNA TUNER SECTION

Impedance Matching Range

Maximum Feedthrough Power

Insertion Loss

VSWR After Matching

### FL-7000

1.8-2, 3.5-4, 7-7.5, 10-10.5, 14-14.5, 18-18.5, 21-21.5, and 24.5-25, 28-30 MHz except USA version (SSB) 1200 W PEP, (CW/FSK) 1200 W DC (SSB) 100% for 30 min. (Full Carrier) 100% for 1 min.

100/110/117/200/220/234 V AC  $\pm 10\%$

1900 VA maximum (@ 500 W RF output)

390 (W) X 130 (H) X 400 (D) mm

25 kg

Less than 100 W for 1200 W input

0 to -9 V

Less than -50 dB

Less than -25 dB

50 ohms, unbalanced

(1.8-2 MHz) 25 to 100 ohms, unbalanced

(Other Amateur Bands) 16 to 150 ohms, unbalanced

600 W

Less than 0.5 dB when tuned to match

1:1 to 1.2:1



## ACCESSORIES AND OPTIONS (BASE STATION)

	Model	FT-767GX	FT-757GXII	FT-747GX	FT-736R
37-Tone CTCSS Audible Tone Squelch Unit	FTS-8	•			•
Microphones	Desktop Mic	•	•	•	•
	Hand Mic	•	•	•	•
Relay Control Unit	FRB-757		•	•	
CAT Interface Units	Apple II Computers	FIF-65			
		FIF-65A	•	•	•
	IEE RS-232C Bus	FIF-232C	•	•	•
	MSX Computer	FIF-MX			•
CAT/TNC Interface for Packet Radio & CAT	FIF-232Cvan				•
AQS Message Processor & Digital Message Display	FMP-1				•
Voice Synthesizer for Aural Frequency Readout	FVS-1				•
Fast Scan Television (ATV) Modulator/Demodulator	TV-736				•
600 Hz CW Narrow Filter	XF-455MC				•
TCXO	TCXO-747			•	
DC Power Cable for Operation from Ext. Supply	E-736 (DC)				•
2 m Module	FEX-767-2	•			
6 m Module	FEX-767-6	•			
70 cm Module (440-450 MHz)	FEX-767-7 (A)	•			
70 cm Module (430-440 MHz)	FEX-767-7 (B)	•			
50 MHz Band Module	FEX-736-50 (A)				•
220 MHz Band Module	FEX-736-220 (A)				•
1.2 GHz Band Module for North America	FEX-736-1.2 (A)				•
1.2 GHz Band Module for Outside North America	FEX-736-1.2 (B)				•
FM Unit	FM UNIT-747			•	
Mobile Mounting Brackets	MMB-20		•		
	MMB-38			•	
Metal Case	MMB-42A			•	
Automatic Antenna Tuners	FC-757AT		•	•	
	FC-1000		•	•	

## ACCESSORIES AND OPTIONS

### MICROPHONES

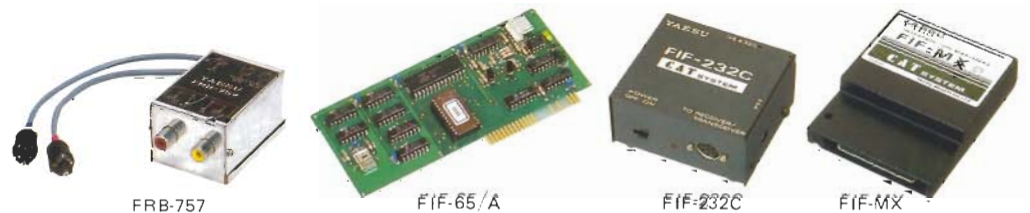


### AC POWER SUPPLIES

### SPEAKERS



### ACCESSORIES FOR TRANSCEIVERS











**BATTERIES AND CHARGERS FOR HAND-HELDS**



Specifications may be subject to change with out notice or obligation.

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