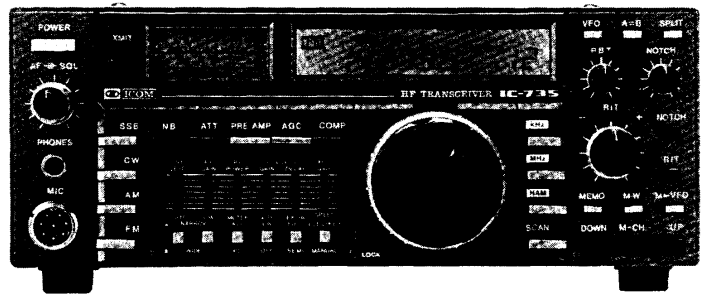


IC-735

HF ALL BAND TRANSCEIVER
GENERAL COVERAGE RECEIVER

INSTRUCTION MANUAL



FOREWORD

Thank you very much for choosing this ICOM product.

The IC-735 is a complete HF, all mode transceiver and general coverage receiver contained in one small, compact package developed by ICOM utilizing the latest computer technology and precise, advanced HF engineering.

To fully enjoy the benefits of this high-performance transceiver, please study the instruction manual thoroughly prior to operation. Also, feel free to contact an authorized ICOM dealer if you have any questions relating to the operation of this model.

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SECTION 1 SPECIFICATIONS

1 - 1 GENERAL

Number of semiconductors	:	Transistors	124
		FETs	18
		Diodes	258
		ICs (Includes CPU)	42
Frequency coverage	:	Ham Bands	
		1.8MHz ~ 2.0MHz	
		3.4MHz ~ 4.1MHz	
		6.9MHz ~ 7.5MHz	
		9.9MHz ~ 10.5MHz	
		13.9MHz ~ 14.5MHz	
		17.9MHz ~ 18.5MHz	
		20.9MHz ~ 21.5MHz	
		24.4MHz ~ 25.1MHz	
		27.9MHz ~ 30.0MHz	
	General Coverage (Receive Only)		
	0.1MHz ~ 30.0MHz		
Usable temperature range	:	-10°C ~ +60°C (+14°F ~ +140°F)	
Frequency control	:	CPU based 10Hz step digital PLL synthesizer. Independent Transmit/Receive frequency available.	
Frequency readout	:	6 digit 100Hz illuminated LCD	
Frequency stability	:	Less than ±200Hz from 1 minute after switch ON to 60 minutes. Less than ±30Hz after 1 hour at 25°C Less than ±500Hz in the range of 0°C ~ +50°C	
Power supply requirements	:	13.8V DC ±15% (negative ground) Current drain 20A maximum at 200W input. AC power supply is available for AC operation.	
Current drain (at 13.8V DC)	:	Transmitting	
		At 200 watts input	Approx. 20A
		Receiving	
		At maximum audio output	Approx. 1.5A
	Squelched	Approx. 1.2A	
Antenna impedance	:	50 ohms unbalanced	
Weight	:	5kg (Includes options FL-32, IC-EX243 and UT-30.)	
Dimensions	:	94(107)mm(H) x 241(244)mm(W) x 239(272)mm(D) () Dimensions include projections.	

1 - 2 TRANSMITTER

RF power	: SSB (A3J) : 200 watts PEP input CW (A1) : 200 watts input AM (A3) : 40 watts output FM (F3) : 200 watts input Continuously adjustable output power from 10 watts to maximum.
Emission modes	: A3J (J3E) SSB (Upper and Lower Sideband) A1 (A1A) CW A3 (A3E) AM F3 (F3E) FM
Harmonic output	: More than 40dB below peak power output.
Spurious output	: More than 50dB below peak power output.
Carrier suppression	: More than 40dB below peak power output.
Unwanted sideband	: More than 50dB down at 1000Hz AF input.
Microphone	: 600 ohm electret condenser microphone with push-to-talk switch and scanning buttons.

1 - 3 RECEIVER

Receive system	: Triple conversion superheterodyne with continuous bandwidth control.
Receive modes	: A3J (J3E) SSB (Upper and Lower Sideband) A1 (A1A) CW A3 (A3E) AM F3 (F3E) FM
Intermediate frequencies	: 1st: SSB, AM, FM 70.4515MHz CW 70.4506MHz 2nd: SSB, AM, FM 9.0115MHz CW 9.0106MHz 3rd: SSB, CW, AM, FM 455kHz
Sensitivity (PRE AMP ON on 1.6 ~ 30MHz)	: SSB, CW 0.1 ~ 1.6MHz Less than 1.0 μ V for 10dB S/N 1.6 ~ 30MHz Less than 0.15 μ V for 10dB S/N AM (When selecting NARROW FILTER.) 0.1 ~ 1.6MHz Less than 6 μ V for 10dB S/N 1.6 ~ 30MHz Less than 1 μ V for 10dB S/N FM 1.6 ~ 30MHz Less than 0.5 μ V for 12dB SINAD
Squelch sensitivity	: FM 0.3 μ V
Selectivity	: SSB, CW 2.3kHz @ -6dB, 4.0kHz @ -60dB AM 6.0kHz @ -6dB, 18kHz @ -50dB FM 15kHz @ -6dB, 30kHz @ -60dB
Spurious and image response rejection	: More than 80dB
Notch filter attenuation	: More than 30dB
Audio output	: More than 3 watts @ 10% distortion with 8 ohm load.
Audio output impedance	: 8 ohms

SECTION 2 DESCRIPTION

■ COMPLETE HF RADIO

● COMPACT SIZE

The small size of the IC-735, only 94mm(3.7'')(H) x 241mm(9.5'')(W) x 239mm(9.4'')(D), simplifies installation in most mobile and portable situations such as automobiles, airplanes, boats or suitcases.

● ALL BAND, ALL MODE, ALL SOLID-STATE

The IC-735 covers all Amateur HF frequencies from 1.8MHz to 30MHz, including the three new bands of 10MHz, 18MHz and 24MHz. It offers not only SSB, but also CW, AM and FM operating modes. All circuits in the IC-735, including the driver and final power stages, are completely solid-state, and the transceiver provides about 100 watts output.

● GENERAL COVERAGE RECEIVER

The IC-735 features general coverage receive capability with a tuning range from 100kHz to 30MHz continuous, made possible by an up-conversion system which uses a high side IF and a CPU control system.

● RTTY OPERATION POSSIBLE

The rear panel of the IC-735 has easy-to-access terminals for AFSK (audio frequency shift keying) RTTY operation.

■ OUTSTANDING RECEIVER PERFORMANCE

● 105dB DYNAMIC RANGE

The IC-735 has a 105dB dynamic range with a 70.4515MHz first IF circuit which uses two quality crystal filters that virtually eliminate spurious responses.

● ICOM'S DFM SYSTEM INSTALLED

The ICOM DFM (Direct Feed Mixer) feeds the incoming signals directly into a high level first mixer developed by ICOM. This advanced system produces a higher spurious response rejection ratio, a higher receiver sensitivity and a wider dynamic range.

● PBT AND NOTCH CONTROL

The IC-735 has a built-in Passband Tuning system that allows continuous center frequency adjustment of the IF passband. Additionally, a sharp IF notch filter provides clear reception even in the presence of strong interference.

● PREAMP AND ATTENUATOR INCLUDED

Both a 10dB preamplifier plus a 20dB attenuator are installed as standard equipment. The preamplifier increases receiver sensitivity while the attenuator provides added protection from intermodulation problems.

■ SIMPLE PANEL DESIGN

● ROTARY DIAL DIGITAL TUNING SYSTEM

ICOM'S new continuous tuning system features a backlit LCD (liquid-crystal display) that closely follows the TUNING CONTROL, and provides an extremely accurate readout. The VFO, with 10Hz digital tuning steps, gives the feel of an analog tuning system.

● EASY-TO-OPERATE, MULTIPURPOSE TUNING CONTROL

The MAIN TUNING CONTROL plus adjacent switches select either the 10Hz, 1kHz or 1MHz tuning speed and, also, control band changes.

● CONVENIENT, FRONT SWITCH PANEL

The front-mounted SWITCH PANEL is a new idea from ICOM which groups lesser used controls in one compact area behind a protective cover.

■ NEWLY DEVELOPED CPU INSTALLED

● VARIOUS SCANNING FUNCTIONS

Memory Scan allows monitoring of all different memory channels or only those stored with a particular mode. Programmed Scan provides scanning between any two programmed frequencies. Auto-stop Scan functions when a signal is received in any mode. Mode Selective Scan automatically monitors only those memories which contain frequencies with a similar mode.

● EASY-TO-READ DISPLAY

The new liquid-crystal display with a soft, green illumination provides good operating frequency visibility even in sunlight, and also indicates the VFO in use, operating mode, memory channel, split mode and scan mode.

● 12 MEMORIES

Twelve programmable memories are provided to store mode and frequency, and the CPU is backed up by an internal lithium battery to maintain the memories for up to five years. Scanning of frequencies, memories and bands is possible from either the transceiver or the IC-HM12 scanning microphone.

● ADVANCED REMOTE CONTROL SYSTEM

Full communications with a personal computer equipped with an RS-232C jack is possible by using the serial port mounted on the rear panel of the IC-735. The computer controls frequency, mode, VFO A/B selection and memories when an appropriate interface is used. The serial port uses a standard 1200 baud data rate.

■ OPTIONS AVAILABLE

● AT-150

The AT-150 HF automatic antenna tuner was developed primarily for the IC-735 using advanced, state-of-the-art design techniques.

● PS-55

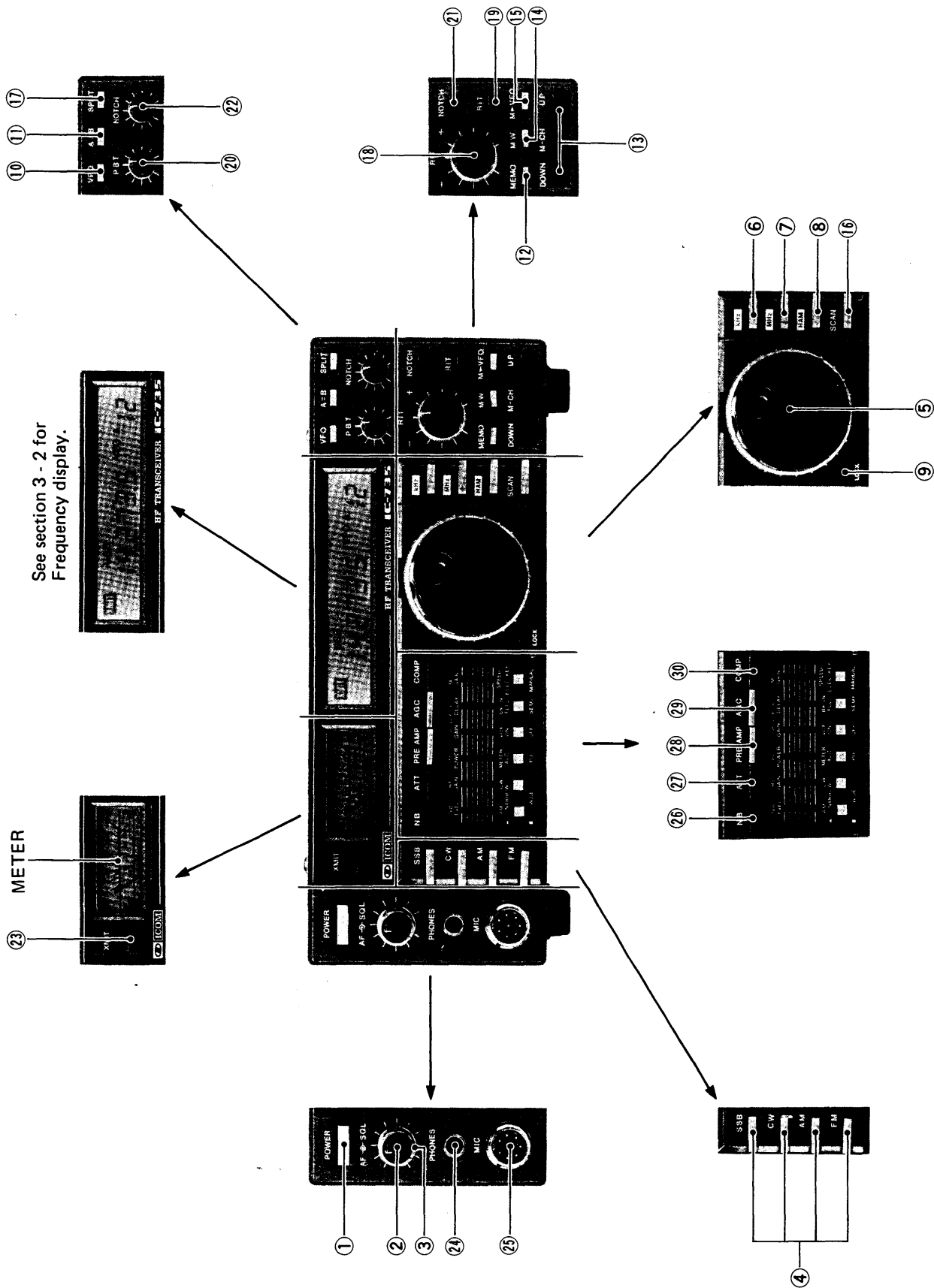
This is a 13.8V DC, 20A power supply recently developed specifically for use with the IC-735.



AT-150
AUTOMATIC ANTENNA TUNER

PS-55
AC POWER SUPPLY

SECTION 3 CONTROL FUNCTIONS



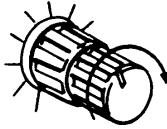
3-1 FRONT PANEL

① POWER SWITCH

This is a push-lock switch which controls the input DC power to the IC-735. When the PS-55 AC power supply is used, the switch also acts as the AC power supply switch. Power is supplied to the transceiver when the switch is pushed in and locked. Power to all circuits is cut (except to the PA unit when using a DC power supply) when the switch is pushed again and released.

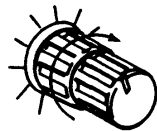
② AF GAIN CONTROL

This control varies the audio output level in the receive mode. Clockwise rotation increases the level.



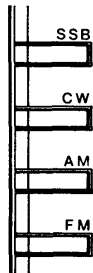
③ SQUELCH CONTROL

This control sets the squelch threshold level. To turn off the squelch function, rotate this control completely counterclockwise. To set the threshold level higher, rotate the control clockwise.



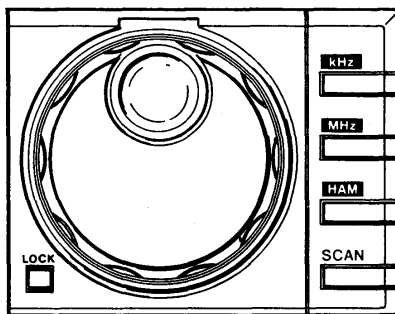
④ MODE SELECT SWITCHES

These switches select any one of four operating modes; either SSB, CW, AM or FM. Each push of the SSB button alternately selects USB and LSB. Additionally, the "correct" sideband (USB for 10MHz and above, LSB for 7MHz and below) is automatically selected when the HAM switch is pushed. This is explained in greater detail in item 8.



⑤ TUNING CONTROL

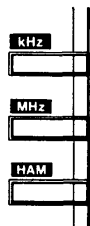
Rotate this control clockwise to increase, and counterclockwise to decrease the frequency. The frequency changes in 10Hz steps in any mode, although the number of steps per dial revolution automatically increases when the control is rotated more rapidly. This control is also used to select the operating band while the HAM button is pushed.



⑥ kHz TUNING RATE SWITCH

This switch sets the tuning rate for 1kHz steps. See Section 6-2-1 for more information.

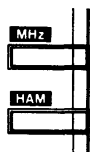
MHz and HAM buttons have priority over the kHz button.



⑦ MHz TUNING RATE SWITCH

This switch sets the tuning rate for 1MHz steps. See Section 6-2-1 for more information.

The HAM button has priority over the MHz button.





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