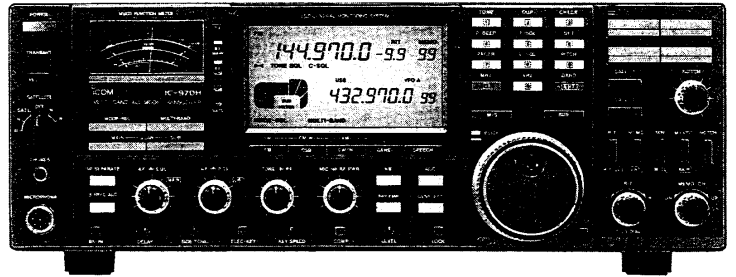


ICOM

INSTRUCTION MANUAL

V/UHF MULTI BAND
ALL MODE TRANSCEIVER

IC-970A
IC-970E
IC-970H



Icom Inc.

IMPORTANT

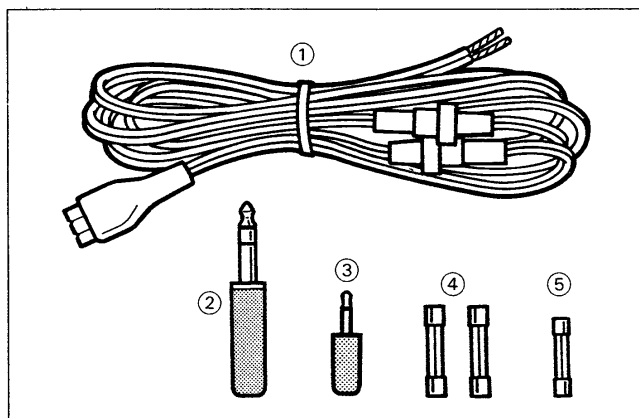
- (1) **READ THIS INSTRUCTION MANUAL CAREFULLY** before attempting operation. If you have any questions regarding the operation of the IC-970A/E/H, feel free to contact your nearest authorized Icom Dealer or Service Center.
- (2) **SAVE THIS INSTRUCTION MANUAL** — This instruction manual contains important safety and operating instructions for the IC-970A/E/H.

EXPLICIT DEFINITIONS

The following explicit definitions apply to this instruction manual.

WORD	DEFINITION
WARNING	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	If disregarded, inconvenience only. No personal injury or risk of electric shock.

UNPACKING



Accessories included with the IC-970A/E/H	Qty.
① DC power cable (OPC-025A)*	1
② Keyer plug (AP-330)	1
③ External speaker plug (AP-313)	1
④ Spare fuses (for DC power cable; FGB 20 A)	2
⑤ Spare fuse (for internal circuitry; 5 A)	1

* Some versions include an AC power cable instead of a DC power cable.

INTRODUCTION

Thank you for purchasing the IC-970A/E/H MULTI BAND ALL MODE TRANSCEIVER.

Icom's advanced IC-970A/E/H is designed to meet the increasing demand of today's amateur radio operators for high precision, sophisticated radio communications. Two bands with multi-mode and additional band capability. Moreover, a wideband receiver unit can be installed. Serious satellite operators and V/UHF band enthusiasts will love the multi-function capability of this state-of-the-art rig.

FEATURES

- Separate receiver on the MAIN and SUB bands
- Expansion capability with 1200 MHz and wideband receiver
- Perfect satellite communication
- Multiple-action scan functions
- Large multi-function display
- 99 memory channels in each band
- Selective calling system
- Dial click function
- DDS (Direct Digital Synthesizer) System
- Notch filter and speech compressor
- CW break-in and optional electronic keyer

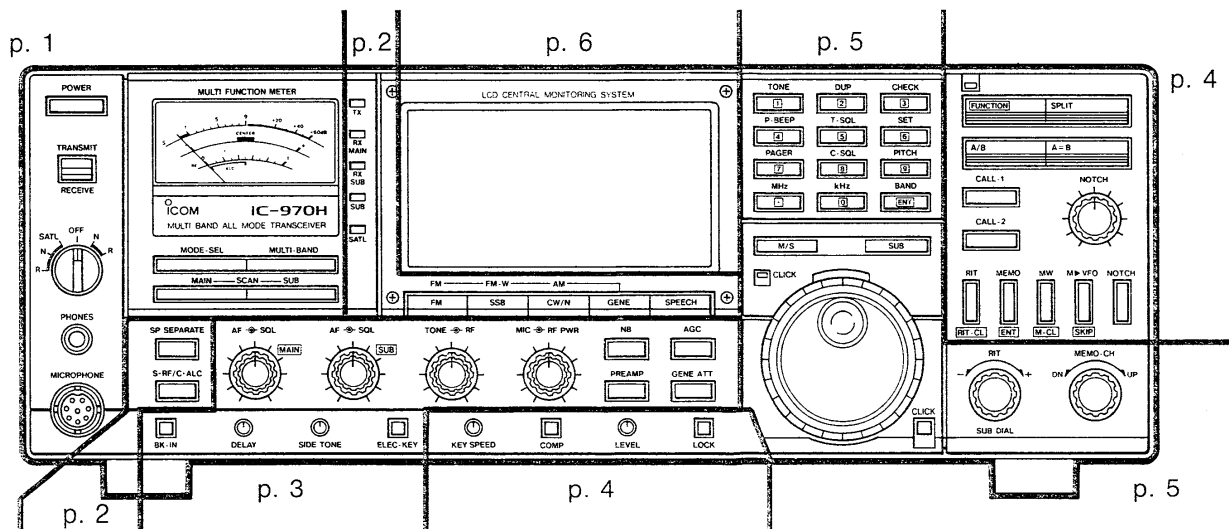
PRECAUTIONS

- (1) **NEVER** connect the DC power cable to an AC outlet. This will ruin the transceiver.
- (2) **NEVER** apply more than 16 V DC to the DC power socket on the transceiver rear panel. Check the power source voltage before connecting the power cable.
- (3) **NEVER** allow metal, wire or other objects to touch any internal part of the transceiver. Risk of electric shock could occur.
- (4) **NEVER** allow children to touch the transceiver.
- (5) **NEVER** expose the transceiver to rain, snow or any liquid.
- (6) **AVOID** to use of strong chemical agents for cleaning such as benzine or alcohol. Use a dry, soft cloth only.

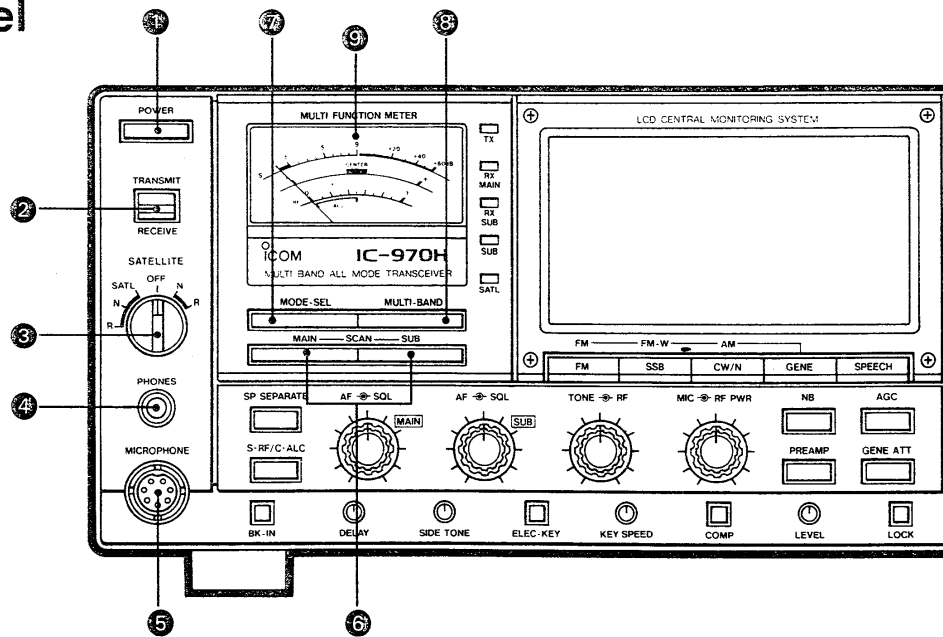
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FRONT PANEL INDEX



Front panel



- 1 POWER SWITCH [POWER]**
Turns power ON and OFF.

- 2 TRANSMIT/RECEIVE SWITCH [TRANSMIT/RECEIVE]** (p. 21)
Selects transmit or receive.

- 3 SATELLITE SWITCH [SATELLITE]** (p. 31)
Allows tracking operation for satellite communications.

- **OFF**

For normal operation. The MAIN and SUB bands have no frequency tracking relation.

- **N (NORMAL)**

The MAIN and SUB band frequencies simultaneously change in the same direction. (Normal tracking)

- **R (REVERSE)**

The MAIN and SUB band frequencies simultaneously change in the opposite direction each other. (Reverse tracking)

- **SATL (SATELLITE)**

Enters SATELLITE MEMORY mode. The [MEMO-CH] selector is used for satellite memory channel selection.

Use for programming frequencies. The MAIN and SUB band frequencies have no tracking relation.

- **SATL-N (NORMAL)**

When the [SUB] switch is ON: The MAIN band frequency simultaneously changes with the SUB band frequency in the same direction each other.

When the [SUB] switch is OFF: Only MAIN band frequency changes.

- **SATL-R (REVERSE)**

When the [SUB] switch is ON: The MAIN band frequency simultaneously changes with the SUB band frequency in the opposite direction.

When the [SUB] switch is OFF: Only the MAIN band frequency changes.

- 4 HEADPHONES JACK [PHONES]** (p. 11)
Accepts a standard 1/4 inch plug from 4 ~ 16 Ω mono or stereo headphones.

- 5 MICROPHONE CONNECTOR** (p. 9)
Accepts an optional microphone described on p. 47.

- 6 SCAN SWITCHES** (p. 29)

- **MAIN BAND SCAN SWITCH [MAIN-SCAN]**

Starts and stops a scan function in the MAIN band.

- **SUB BAND SCAN SWITCH [SCAN-SUB]**

Starts and stops a scan function in the SUB band.

- 7 MODE SELECT SWITCH [MODE-SEL]** (pgs. 25, 29)
Activates the mode-select function.

- [MEMO-CH] selects only the same mode memory channels as currently displayed mode.

- The mode-select scan is selected instead of the memory scan.

- 8 MULTI-BAND SWITCH [MULTI-BAND]** (pgs. 25, 29)
Activates the multi-band memory function.

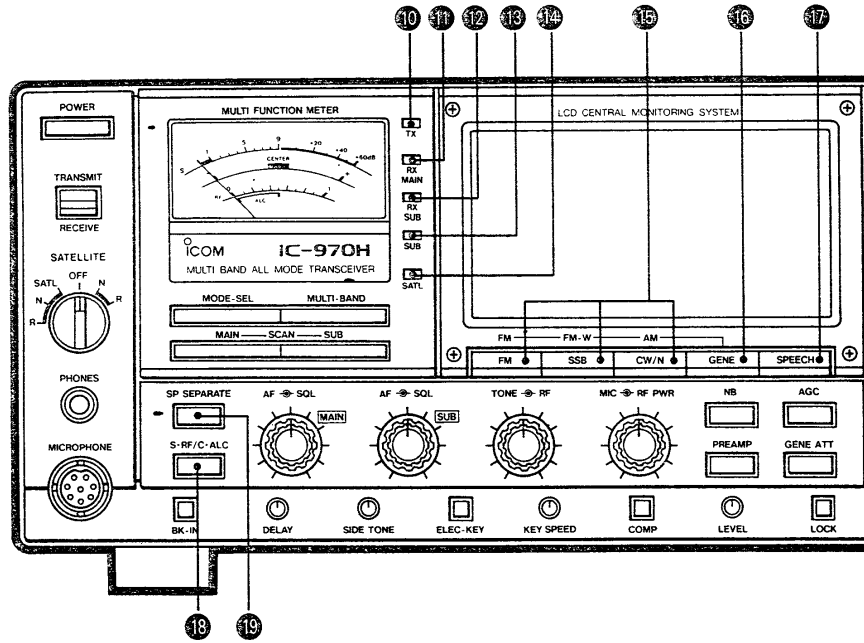
- [MEMO-CH] selects SUB band and undisplayed band memory channels (except the general coverage receiver band).

- The multi-band memory scan is selected instead of the memory scan.

The function can be used when an optional band unit is installed.

- 9 MULTI-FUNCTION METER** (pgs. 19, 20)

Acts for the MAIN band. Functions as an S-meter (signal strength meter) or center meter while receiving and an RF meter or ALC meter while transmitting. See item 18 for selection.



- ⑩ **TRANSMIT INDICATOR [TX]** (p. 21)
Lights up in red while transmitting.
- ⑪ **MAIN BAND RECEIVE INDICATOR [RX MAIN]**
(p. 19)
Lights up in green while the MAIN band is in receive with the squelch open.
- ⑫ **SUB BAND RECEIVE INDICATOR [RX SUB]** (p. 19)
Lights up in green while the SUB band is in receive with the squelch open.
- ⑬ **SUB BAND INDICATOR [SUB]** (p. 16)
Lights up in red when the SUB band control is selected.
- ⑭ **SATELLITE INDICATOR [SATL]** (p. 31)
Lights up in red when a satellite memory is used and lights up in green when the tracking operation is in the MAIN and SUB bands.
- ⑮ **MODE SWITCHES** (pgs. 19, 24)
Select the desired operating mode.

FM wide (FM-W) and AM modes can be selected when an optional UX-R96 RECEIVE UNIT is installed.
- ⑯ **GENERAL COVERAGE SWITCH [GENE]** (p. 24)
Selects an optional UX-R96 RECEIVER UNIT.
- ⑰ **SPEECH SWITCH [SPEECH]**
Activates an optional UT-36 VOICE SYNTHESIZER UNIT for announcing the selected band (MAIN or SUB) frequency in English.

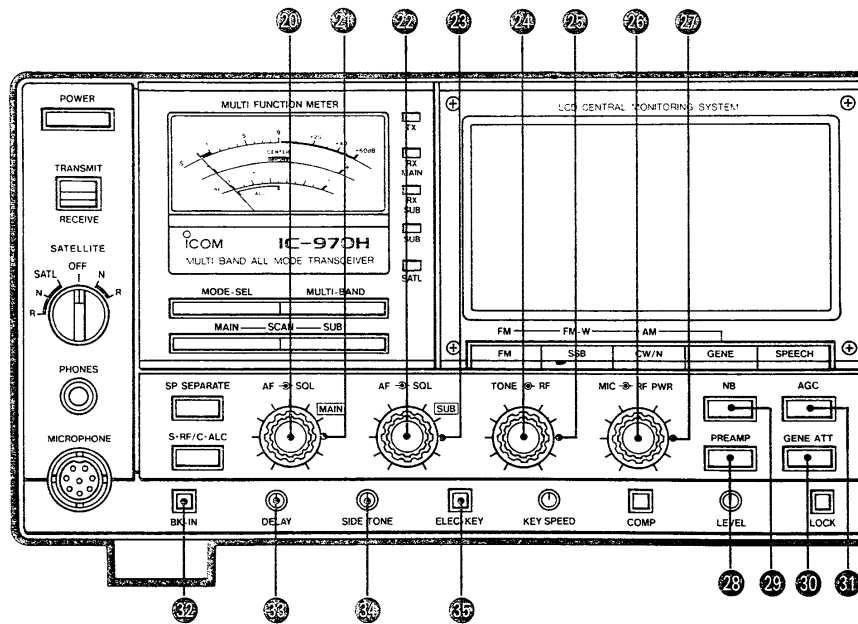
- ⑱ **METER FUNCTION SWITCH [S-RF/C-ALC]**
(pgs. 20, 22)
Selects the function of the multi-function meter ⑨ for the MAIN band as follows:

MODE	FM		SSB/CW	
	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
S-RF (OUT)	S-meter	RF meter	S-meter	RF meter
C-ALC (IN)	Center meter	ALC meter	S-meter	ALC meter

- ⑲ **SPEAKER SEPARATE SWITCH [SP SEPARATE]**
(p. 11)
Selects the internal and external speaker combination as follows:

[SP SEPARATE] SWITCH	ON (IN)	OFF (OUT)
When no external speaker is connected.	The internal speaker outputs the MAIN band audio only.	The internal speaker outputs both MAIN and SUB bands audio.
When an external speaker is connected.	The internal speaker outputs the MAIN band audio. The external speaker outputs the SUB band audio.	The external speaker outputs both MAIN and SUB bands audio.
When stereo headphones are connected.	The left speaker outputs MAIN band audio. The right speaker outputs SUB band audio.	The left and right speakers output mixed audios.

1 CONTROL FUNCTIONS





- 20 MAIN BAND AF CONTROL [AF]** (p. 19)
Adjusts the MAIN band audio level.
- 21 MAIN BAND SQUELCH CONTROL [SQL]** (p. 19)
Adjusts the MAIN band squelch threshold level.
- 22 SUB BAND AF CONTROL [AF]** (p. 19)
Adjusts the SUB band audio level.
- 23 SUB BAND SQUELCH CONTROL [SQL]** (p. 19)
Adjusts the SUB band squelch threshold level.
- 24 TONE CONTROL [TONE]**
Adjusts the receive audio frequency response of the MAIN band.


The SUB band frequency response is fixed.
- 25 RF GAIN CONTROL [RF]** (p. 20)
Adjusts gain at the MAIN band receiver RF stage.

The SUB band RF gain is fixed.
- 26 MIC GAIN CONTROL [MIC]**
Adjusts the microphone input gain. See p. 22 RF and ALC meter for adjusting details.
- 27 RF POWER CONTROL [RF PWR]** (p. 22)
Adjusts transmit output power.
- 28 PREAMP SWITCH [PREAMP]** (pgs. 20, 42)
Activates an optional external preamplifiers.
- 29 NOISE BLANKER SWITCH [NB]** (p. 20)
Blanks pulse-type noise such as vehicle ignition noise from the receiving audio.

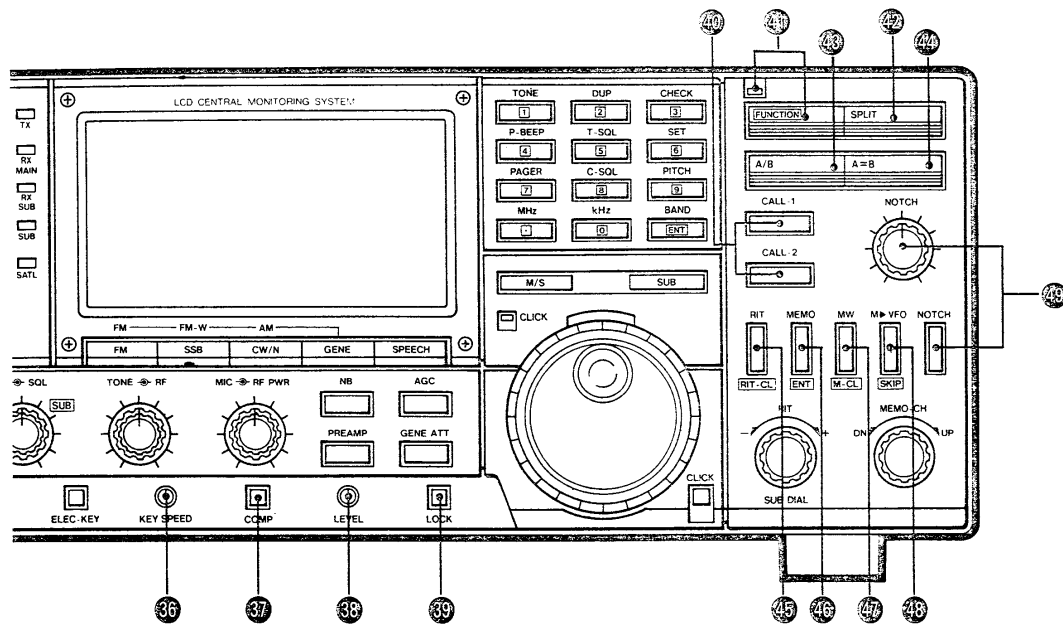
Noise blanker activates in SSB, CW and AM (optional) modes on both MAIN and SUB bands.
- 30 GENERAL COVERAGE BAND ATTENUATOR SWITCH [GENE ATT]** (p. 24)
Attenuates receiving signals with 20 dB attenuation when an optional UX-R96 RECEIVER UNIT is selected.
- 31 AGC (Auto Gain Control) SWITCH [AGC]** (p. 20)
Selects the time constant of the AGC circuit.

 : AGC slow
 : AGC fast

 The SUB band AGC time constant is fixed as "slow" for SSB mode and "fast" for CW mode.
- 32 CW SEMI BREAK-IN SWITCH [BK-IN]** (p. 23)
Activates the CW semi break-in function.
- 33 CW BREAK-IN DELAY CONTROL [DELAY]** (p. 23)
Adjusts the transmit-to-receive switching delay time for CW semi break-in operation.

To activate this control, push IN [BK-IN] .
- 34 CW SIDE TONE CONTROL [SIDE TONE]** (p. 23)
Adjusts the CW side tone level regardless of the [AF] control position.
- 35 ELECTRONIC KEYSER SWITCH [ELEC-KEY]** (pgs. 23, 40)
Activates an optional IC-EX243 ELECTRONIC KEYSER UNIT.

NOTE: The antenna connectors of the displayed band frequencies output DC voltages when [PREAMP] is pushed IN. **BE CAREFUL** when connecting a non-Icom preamplifier or linear amplifier. See p. 42 for control voltage information.



36 KEYING SPEED CONTROL [KEY SPEED] (p. 23)
Adjusts the keying speed when operating in CW mode with an optional IC-EX243.

To activate this control, push IN [ELEC-KEY] **35**.

37 SPEECH COMPRESSOR SWITCH [COMP] (p. 22)
Activates the built-in speech compressor.

38 COMPRESSOR LEVEL CONTROL [LEVEL] (p. 22)
Adjusts the speech compressor level.

To activate this control, push IN [COMP] **37**.

39 LOCK SWITCH [LOCK] (p. 18)
Deactivates the main dial and electrically locks the currently displayed frequencies.

40 CALL SWITCHES [CALL-1]/[CALL-2] (p. 28)
Call up a user-programmable call channel.

- **[CALL-1]**

The call-1 channel remains on one frequency in all bands.

- **[CALL-2]**

The call-2 channel remains on a frequency in each band.

41 FUNCTION SWITCH AND INDICATOR [FUNCTION] (pgs. 17, 27, 28)
The switch activates the secondary function of switches **45** ~ **48** and the keyboard for digit entry.
The red indicator lights up when the switch is pushed.

42 SPLIT SWITCH [SPLIT] (p. 22)
Selects split operation — Receiving on VFO A and transmitting on VFO B or vice versa.

43 VFO SWITCH [A/B] (p. 17)
Selects VFO mode and changes VFO A and B.

44 VFO EQUALIZING SWITCH [A = B] (p. 17)
Equalizes contents of the undisplayed VFO to the displayed VFO.

45 RIT SWITCH [RIT] (p. 20)
Activates the RIT (Receive Incremental Tuning) function.
After pushing [FUNCTION], this switch clears the displayed RIT shift frequency.

46 MEMORY SWITCH [MEMO] (pgs. 25, 26)
Selects MEMORY mode.
After pushing [FUNCTION] and digit keys, this switch selects the memory channel directly.

47 MEMORY WRITE SWITCH [MW] (pgs. 26, 27)
Stores the displayed frequency, mode and repeater information into the displayed memory channel.
After pushing [FUNCTION], this switch clears the displayed memory contents.

48 FREQUENCY TRANSFER SWITCH [M → VFO] (pgs. 27, 28)
Transfer the displayed memory or call channel information into a VFO.
After pushing [FUNCTION], this switch sets the skip function into the displayed memory channel.

49 NOTCH FILTER CONTROL AND SWITCH [NOTCH] (p. 20)
• **NOTCH SWITCH**
Activates the notch filter function to reduce an interference signal.
• **NOTCH CONTROL**
Adjusts the center frequency of the notch filter.

The notch filter functions in the MAIN band only.

Count on us!

