

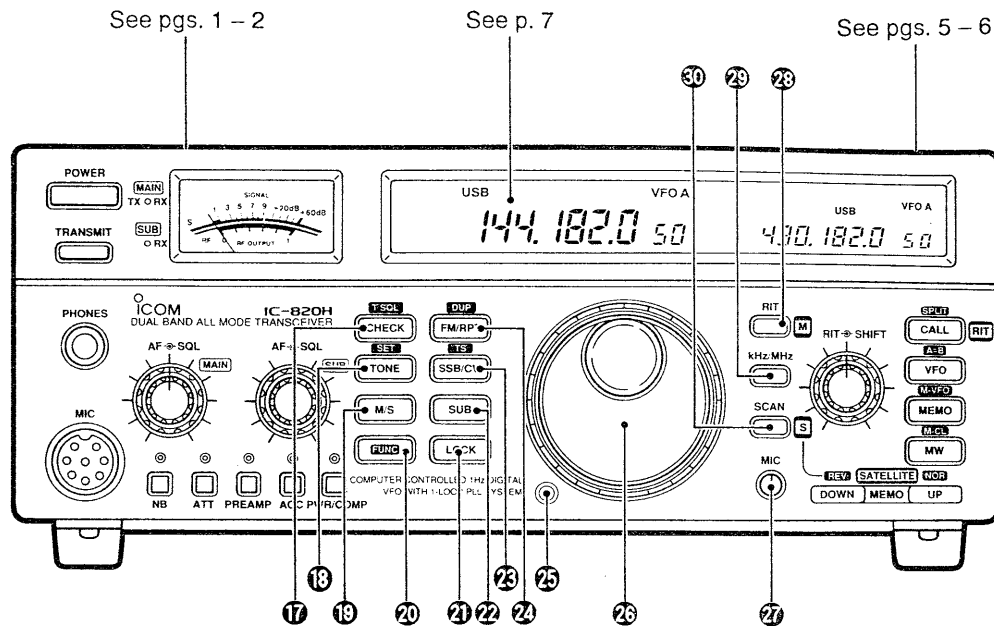


INSTRUCTION MANUAL

VHF/UHF
ALL MODE TRANSCEIVER
IC-820H



1 PANEL DESCRIPTION



17 FREQUENCY CHECK SWITCH [CHECK·T SOL] (pgs. 23, 25)

- CHECK** • Opens the squelch manually to check the operating frequency condition.
 - Checks the transmit frequency simultaneously when selecting duplex or split operation.
- FUNC** • Activates an optional tone squelch function for rejecting undesired signal reception.
 - Both the main and sub bands can be used with an optional UT-50 TONE SQUELCH UNIT, however, if you want to use the tone squelch on both bands simultaneously, two UT-50's are necessary.

18 TONE SWITCH [TONE·SET] (p. 25)

- TONE** • Turns the subaudible tone encoder ON and OFF (U.S.A. and Australia versions).
 - Transmits a 1750 Hz tone call signal when pushed (Europe and Sweden versions).
- FUNC** then **SET** then **TONE** • Enters the set mode after pushing [FUNC] for selection of the following:

Rotate the tuning dial to change the contents when a display appears.

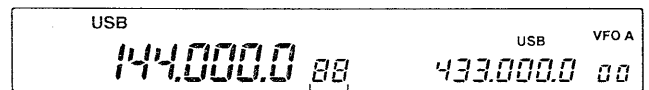
Po C-OFF	[PWR/COMP] switch function.
DUP - o-touch	Shift direction for the one touch repeater function.
DUP - 0.600	Offset frequency
T 88.5	Subaudible tone frequency
T-SQL 88.5	Tone squelch frequency (Appears only when an optional UT-50 is installed.)

19 MAIN/SUB EXCHANGE SWITCH [M/S] (p. 19)

Replaces the main band's frequency and mode with the sub band's.

20 FUNCTION SWITCH [FUNC]

- FUNC** • Activates the secondary function of some switches.
- FUNC** + **POWER** • Enters the F-set mode when pushed at power ON. (p. 39)
- FUNC** Push and hold • Displays the frequency readout below the 10 Hz-digits when pushed and held. (p. 21)
 - The memory channel readout appears below the 10 Hz-digit while rotating the tuning dial and returns to channel number indication 1 sec. after tuning.



Changes to 10/1 Hz digit indicator while rotating the tuning dial.

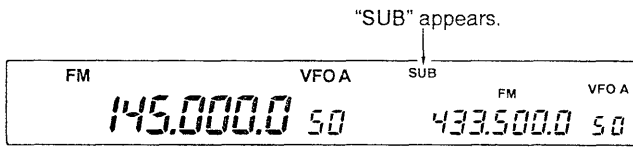
21 DIAL LOCK SWITCH [LOCK] (pgs. 22, 23, 25)

- LOCK** • Turns the dial lock function ON and OFF.
 - The dial lock function electronically locks the tuning dial.
 - Announces the accessed band's frequency, mode, etc. when an optional UT-36 VOICE SYNTHESIZER UNIT is installed and dial lock function is turned ON.
- LOCK** + **POWER** • Enters the L-set mode when pushed at power ON. (p. 41)

22 SUB BAND SWITCH [SUB] (p. 19)

Activates the sub band access function to control the sub band's frequency/mode while standing by on the main band.

- "SUB" appears in the function display while the function is in use.



23 SSB/CW MODE SWITCH [SSB/CW-TS] (pgs. 17, 18)

[SSB/CW] • Selects USB, LSB, CW or CW-Narrow* mode in sequence.

* Selectable only when the main band is selected. When an optional CW narrow filter is not installed, no audio is output in CW-N.

[FUNC] then **[TS]** **[SSB/CW]** • Indicates accessed band's tuning step increments after pushing [FUNC]; use the tuning dial to change the tuning steps. (p. 21)

- Tuning steps can be separately selected for FM and SSB/CW.

FM : 0.1, 5, 10, 12.5, 20, 25, 100 kHz
SSB/CW : 1, 10, 50, 100 Hz

24 FM MODE SWITCH [FM/RPT-DUP] (pgs. 17, 27)

[FM/RPT] • Selects an FM mode.
- FM mode with a duplex/subaudible tone encoder setting is selected when pushing twice on the main band (U.S.A. and Australia versions).

[FUNC] then **[DUP]** **[FM/RPT]** • Selects -duplex, +duplex or cancel the duplex (simplex) on the main band in sequence after pushing [FUNC]. (p. 27)

- An auto-repeater function is available to activate duplex and the tone encoder automatically when in a repeater frequency range (U.S.A. and Australia versions).

25 BRAKE ADJUSTMENT SCREW

Adjusts the tuning dial tension.



26 TUNING DIAL (p. 21)

Changes the displayed frequency, etc.

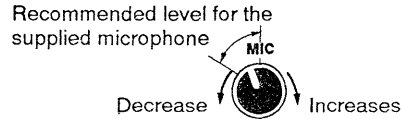
Tuning rates (frequency change/rotation of tuning dial)

MODE	Selected tuning step	Normal rotation	Rapid rotation
SSB, CW	1 Hz	200 Hz	2 kHz
	10 Hz	2 kHz	20 kHz
FM	5 kHz	250 kHz	250 kHz

27 MIC GAIN CONTROL [MIC] (p. 25)

Adjusts microphone input gain.

- Adjust the [MIC] control so the [TX] indicator brightly illuminates (ALC activates) periodically during normal voice transmission.



28 RIT SWITCH [RIT-M] (pgs. 23, 24)

[RIT] • Turns the RIT function ON and OFF.
- Use the [RIT] control to vary the RIT frequency.

[FUNC] then **[RIT]** • Activates the sub tuning dial function according to the L-set mode selection. (p. 22)

[RIT] **[M]** • Cancels the tracking function; the tuning dial changes the main band only, for Doppler shift compensation, while pushed in the satellite mode. (p. 34)

FUNCTION

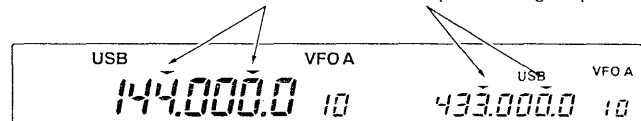
The **RIT** (Receiver Incremental Tuning) shifts the receive frequency without shifting the transmit frequency.

This is useful for fine tuning stations calling you on an off-frequency or when you prefer to listen to slightly different-sounding voice characteristics, etc.

29 QUICK TUNING SWITCH [kHz/MHz] (p. 21)

• Selects the 1 kHz or a pre-selected normal tuning step.
• Selects the 1 MHz tuning step when pushed for 2 sec.

"▼" indicates the selected quick tuning step.



30 SCAN SWITCH [SCAN-S] (p. 37)

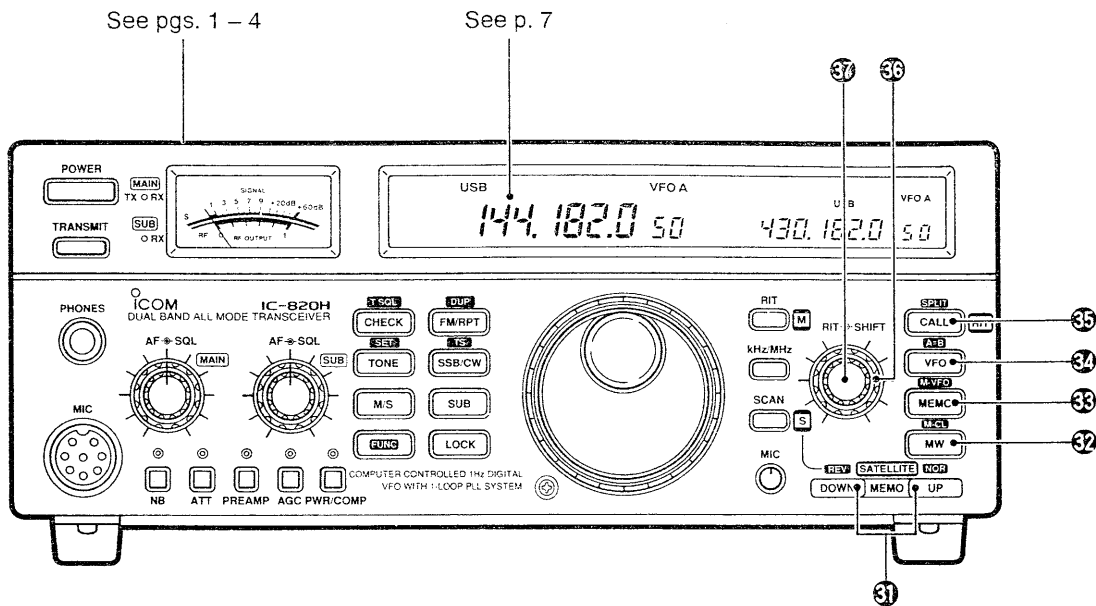
[SCAN] • Starts and stops the programmed scan, memory scan or mode select memory scan.

[SCAN] **[S]** • Cancels the tracking function; the tuning dial changes the sub band only while pushed in the satellite mode. (p. 34)

[FUNC] then **[SCAN]** • Starts the optional tone scan when the tone encoder or tone squelch is in use. (p. 28)

- An optional UT-50 is required.

1 PANEL DESCRIPTION



31 MEMORY UP/DOWN SWITCHES [MEMO DOWN/UP·SATellite REV/NOR] (pgs. 30, 34)

DOWN
OR
UP

- Select the memory channel number.
 - Memory channel can be selected both in the VFO and memory modes.

FUNC
then
REV
DOWN
OR
NOR
UP

- Enter the satellite mode after pushing [FUNC] to track the main and sub bands frequencies.
 - When selecting the satellite mode, the [VFO] switch selects the satellite VFO mode and the [MEMO] switch selects the satellite memory mode.

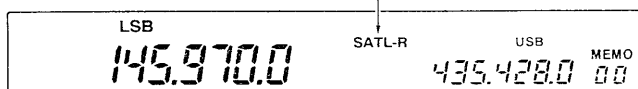
FUNC
then
REV
DOWN
OR
NOR
UP

Push and hold

- Exit the satellite mode after pushing [FUNC].
- Enter and exit the satellite mode using the current operating frequencies when pushing one of these for 2 sec. after pushing [FUNC].

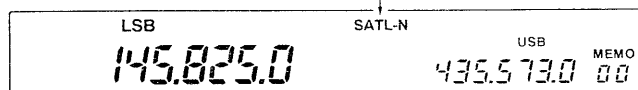
FUNC then **REV**
DOWN

Indicates reverse tracking for the uplink and downlink frequencies.



FUNC then **NOR**
UP

Indicates normal tracking for the uplink and downlink frequencies.



Uplink frequency Downlink frequency

32 MEMORY WRITE SWITCH [MW·M-CL] (pgs. 30, 31)

MW
Push and hold

- Stores displayed frequency and mode into the displayed memory channel when pushed for 2 sec.
 - This function is available both in the VFO and memory modes.

FUNC
then
M-CL
MW
Push and hold

- Clears memory channel contents when pushed for 2 sec. after pushing [FUNC].
 - This switch does not function in the VFO mode.

33 MEMORY SWITCH [MEMO·M▶VFO] (pgs. 29, 31)

MEMO

- Selects the memory mode.
 - When the selected channel is not programmed, a selected band name (140 or 400) appears 2 sec. after the selection.

MEMO
+

- While pushed and held, the tuning dial changes the memory channel.

FUNC
then
M▶VFO
MEMO
Push and hold

- When pushed for 2 sec. after pushing [FUNC], transfers the programmed contents in the selected memory channel to a VFO.

- This function is available both in the VFO and memory modes.

34 VFO SWITCH [VFO•A=B] (p. 20)

- VFO** • Selects VFO mode and toggles VFO A and B.
- FUNC** then **A=B** **VFO** • When pushed for 2 sec. after pushing [FUNC], equalizes the contents (frequency, operating mode, etc.) of the two VFO's.
 - The rear (undisplayed) VFO contents are equalized to the front (displayed) VFO contents.

35 CALL SWITCH [CALL•SPLIT] (pgs. 33, 26)

- Calls up the call channel.
- CALL** • Turns the RIT function ON and OFF while in the satellite mode.
- FUNC** then **SPLIT** **CALL** • Turns the split function ON and OFF after pushing [FUNC].
 - This function is available in the VFO mode only.

36 IF SHIFT CONTROL [SHIFT] (pgs. 22, 24)

- Shifts the center frequency of the main band IF in SSB and CW modes.
- Can be used as the sub tuning dial according to the L-set mode selection.
 - See the description of **37** for details.

FUNCTION

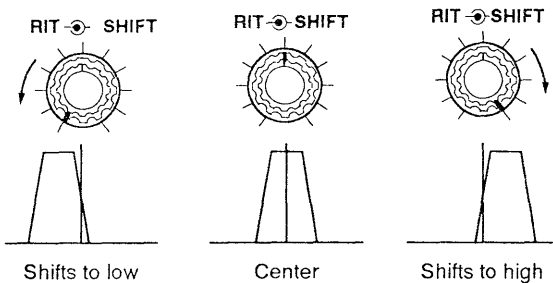
The **IF shift** electronically changes the IF passband frequency to reject interference. The IF shift is especially effective in SSB operation and is not available in FM operation.

37 RIT CONTROL [RIT] (pgs. 22, 24)

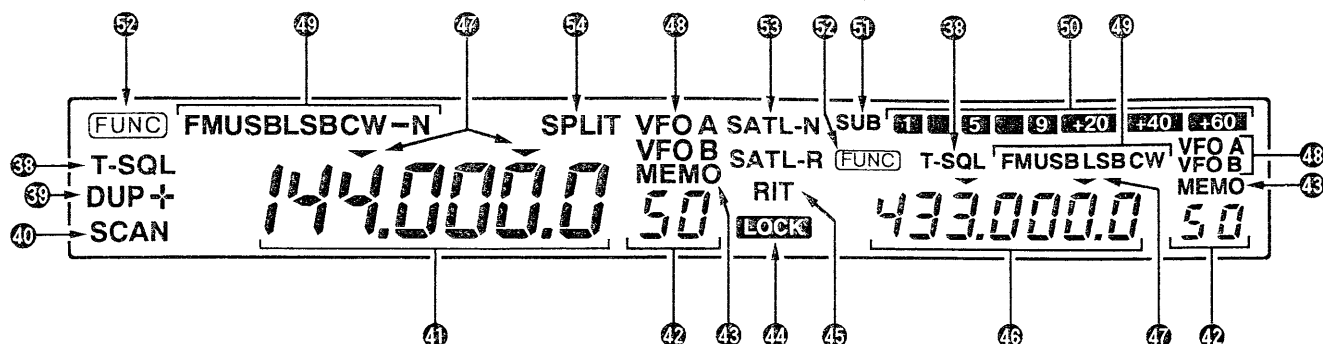
- Shifts the main band receive frequency without changing the transmit frequency while the RIT function is ON.
 - Rotate the control clockwise to increase the receive frequency, or rotate the control counterclockwise to decrease the receive frequency.
 - The shift frequency resolution can be selected for SSB/CW and FM separately using the L-set mode.
 - SSB/CW: 1 Hz (100 Hz), 10 Hz (1 kHz), 20 Hz (2 kHz)
 - FM : 10 Hz (1 kHz), 50 Hz (5 kHz), 100 Hz (10 kHz)
 - Bracketed values are maximum shift frequencies in each direction.
- Can be used as the sub tuning dial according to the L-set mode selection.

FUNCTION

The **sub tuning dial** allows you to change the frequency without using the tuning dial. Tuning speed varies according to the control rotation. However, this is not a scan function, therefore, tuning does not stop, even when detecting a signal. This control is convenient when you want to search both the main and sub bands.



Function display



38 TONE INDICATORS

- "T" appears when the subaudible tone encoder is in use. (p. 27) (U.S.A. and Australia versions only)
- "T-SQL" appears when the optional tone squelch is in use. (p. 26)

39 DUPLEX INDICATOR (p. 27)

"DUP-" or "DUP+" appears while -duplex or +duplex operation is selected, respectively.

40 SCAN INDICATOR (pgs. 28, 37)

Appears while scanning.

41 MAIN BAND FREQUENCY READOUT (p. 19)

- Shows the main band operating frequency.
 - The main band can be used for transmitting and receiving during normal operation.
- Shows the uplink (transmit) frequency during satellite operation. (p. 34)
- The kHz decimal point blinks while the sub tuning dial is activated. (p. 22)

42 MEMORY CHANNEL READOUTS (p. 30)

- Show the selected memory channel number while the tuning dial is not rotated.
- Show the 10 and 1 Hz digits when the fine indication is turned ON and the tuning dial is rotated. (p. 21)
- The main band's memory channel readout disappears when the satellite mode is selected. (p. 34)

43 MEMORY MODE INDICATORS (p. 29)

Show that the memory mode is selected.

44 DIAL LOCK INDICATOR (p. 22)

Shows that the dial lock function is activated.

45 RIT INDICATOR (pgs. 22, 24)

- Appears when the RIT function is in use.
- Blinks when the sub tuning dial is activated and the [RIT] control is set as the sub tuning dial.

46 SUB BAND FREQUENCY READOUT (p. 19)

- Shows the sub band operating frequency.
- Shows the downlink (receive) frequency during satellite operation. (p. 34)
- The kHz decimal point blinks while the sub tuning dial is activated. (p. 22)

47 QUICK TUNING INDICATORS (p. 21)

Appear above the selected digit to indicate the quick tuning function is activated.

48 VFO INDICATORS (p. 20)

The selected VFO, VFO A or VFO B, appears when the VFO mode is selected.

49 MODE INDICATORS

Show the selected operating mode.

50 SUB BAND S-METER (pgs. 23, 40)

Shows the signal strength of the sub band received signal.

- The sub band S-meter can be turned OFF using the F-set mode if desired.

51 SUB BAND ACCESS INDICATOR (p. 19)

Appears when the sub band access function is in use.

- While this indicator appears, the tuning dial and most switches are activated for sub band control.

52 FUNCTION INDICATORS

Appear when the [FUNC] switch is pushed.

53 SATELLITE INDICATORS (p. 34)

One of the indicators appears when the satellite mode is selected.

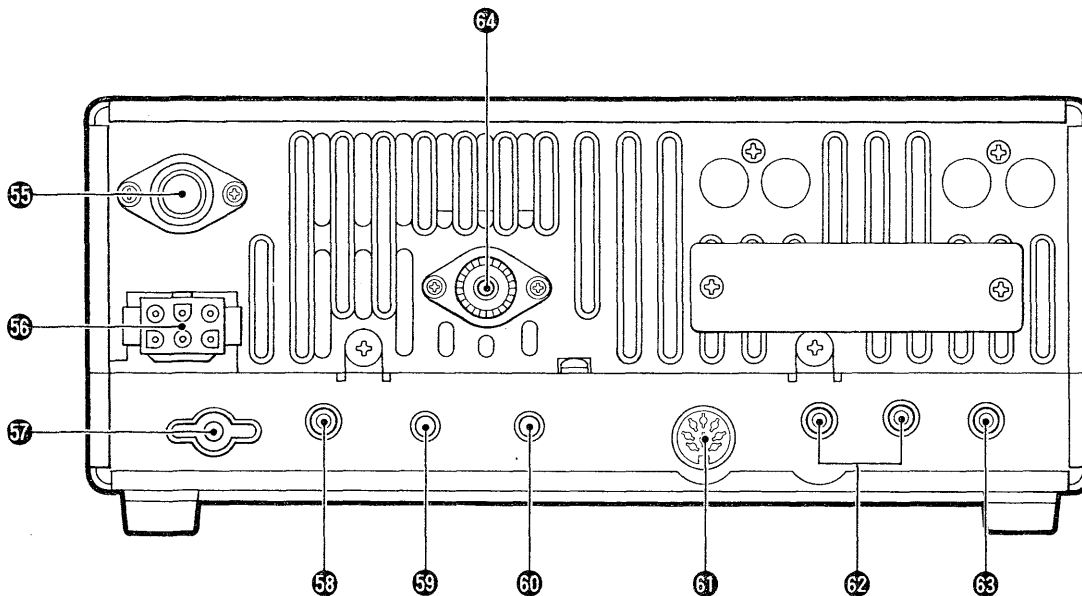
- "SATL-N" shows that normal tracking is selected; "SATL-R" shows that reverse tracking is selected.

54 SPLIT INDICATOR (p. 26)

Appears when the split function is in use.

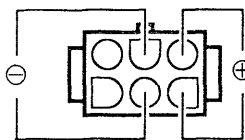
- VFO A and B are used for transmit and receive frequencies, and vice versa.

■ Rear panel



55 430 MHz BAND ANTENNA CONNECTOR [430MHz ANT] (p. 10)
Connects a 430 MHz band antenna with a type-N connector.

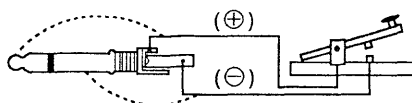
56 DC POWER SOCKET [DC 13.8V] (p. 12)
Accepts 13.8 V DC through the supplied DC power cable (OPC-025A).



Rear panel view

57 GROUND TERMINAL [GND] (p. 11)
Connect this terminal to a ground to prevent electrical shocks, TVI, BCI and other problems.

58 CW KEY JACK [KEY] (p. 11)
Accepts a CW keyer or external electronic keyer for CW operation.
- 3.5 mm diam. mini plug can be connected.



59 BREAK-IN DELAY TIME CONTROL [DELAY] (p. 18)
Adjusts the transmit-to-receive switching delay time for CW semi break-in operation.

60 CW SIDE TONE CONTROL [CW SIDE TONE] (p. 18)
Adjusts the CW side tone level to monitor CW keying.

61 ACCESSORY SOCKET [ACC(1)] (p. 9)
Enables connection to external equipment such as a linear amplifier, TNC, etc.

62 EXTERNAL SPEAKER JACKS [MAIN SP]/[SUB SP] (pgs. 13, 52)
Accept a 4 to 8 Ω speaker. An external speaker may be convenient for simultaneous receiving on the main and sub bands.

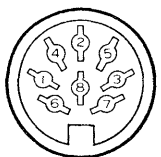
Audio output	Speaker connection			
	No connection	[MAIN SP] only	[SUB SP] only	Both jacks
Main band	Internal (Mixed)	External (Mixed)	Internal (Separated)	External (Separated)
Sub band	Internal (Mixed)	External (Mixed)	External (Separated)	External (Separated)

63 CI-V REMOTE CONTROL JACK [REMOTE] (pgs. 15, 52)

- Designed for use with a personal computer for remote control of transceiver functions.
- Used for transceive operation with another Icom CI-V transceiver or receiver.

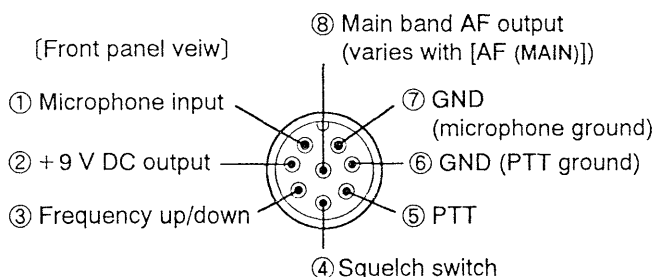
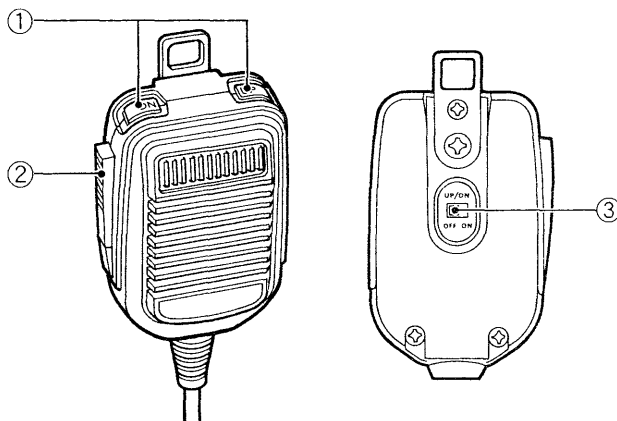
64 144 MHz BAND ANTENNA CONNECTOR [144MHz ANT] (p. 10)
Connects a 144 MHz band antenna with a PL-259 connector.

Accessory socket information

ACC(1)	PIN NO.	PIN NAME	DESCRIPTION	SPECIFICATIONS
 <p>Rear panel view</p>	1	ATVM	ATV microphone input.	—
	2	ATVME	Ground for microphone input.	—
	3	SEND	Input/output pin. Goes to ground when transmitting. When grounded, transmits.	Ground level : -0.5 to 0.8 V Input current : Less than 200 mA
	4*	MOD	Modulator input. The input level is selectable.	Input impedance : 10 kΩ or 300 Ω Input level : 100 or 2 mV rms
		PACT	Direct modulator input for 9600 bps packet operation.	Regular input level : 1.0 Vp-p (0.35 V rms) Max. input level : 1.6 Vp-p (0.56 V rms)
	5*	AF	Main or sub band AF detector output (squelched).	Output impedance : 4.7 kΩ Output level : 100 to 300 mV rms
			Direct detector output during 9600 bps packet operation.	Fixed, regardless of [AF] position.
	6*	SQLS	Main or sub band squelch output. Goes to ground when squelch opens.	Squelch open : Less than 0.3 V/5 mA Squelch closed : More than 6.0 V/100 μA
7	13.8 V	13.8 V output when power is ON.	Output current : Max. 1 A	
8*	ALC	ALC voltage input/output.	Control voltage : -4 to 0 V Input impedance : More than 10 kΩ	
	MIC UD	Microphone up/down input.	Same as the [MIC] connector pin ③ below.	

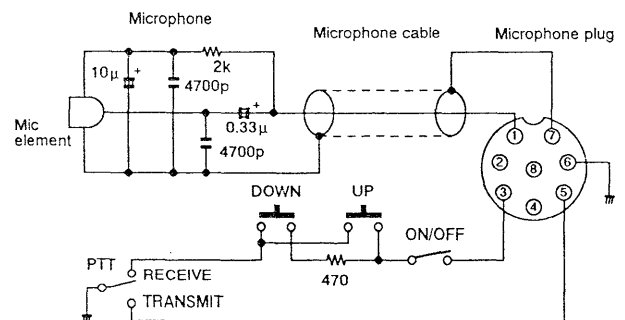
* The functions of pins 4, 5, 6 and 8 are selectable via the internal switches. (pgs. 47, 48)

Microphone (HM-12; optional)



PIN NO.	FUNCTION	DESCRIPTION
②	+9 V DC output	Max. 10 mA
③	Frequency up	Ground
	Frequency down	Ground through 470 Ω
④	Squelch open	"LOW" level
	Squelch closed	"HIGH" level

- ① **UP/DOWN SWITCHES [UP]/[DN]**
Change the operating frequency or memory channel.
• Continuous pushing changes the frequency or memory channel number continuously.
- ② **PTT SWITCH** (p. 25)
Push and hold to transmit; release to receive.
- ③ **UP/DOWN ON/OFF SWITCH [ON/OFF]**
Activates and deactivates the [UP]/[DN] switch control to prevent accidental frequency changes.



CAUTION: DO NOT short pin 2 to ground as this can damage the internal 9 V regulator.

Count on us!