ICOM

INSTRUCTION MANUAL

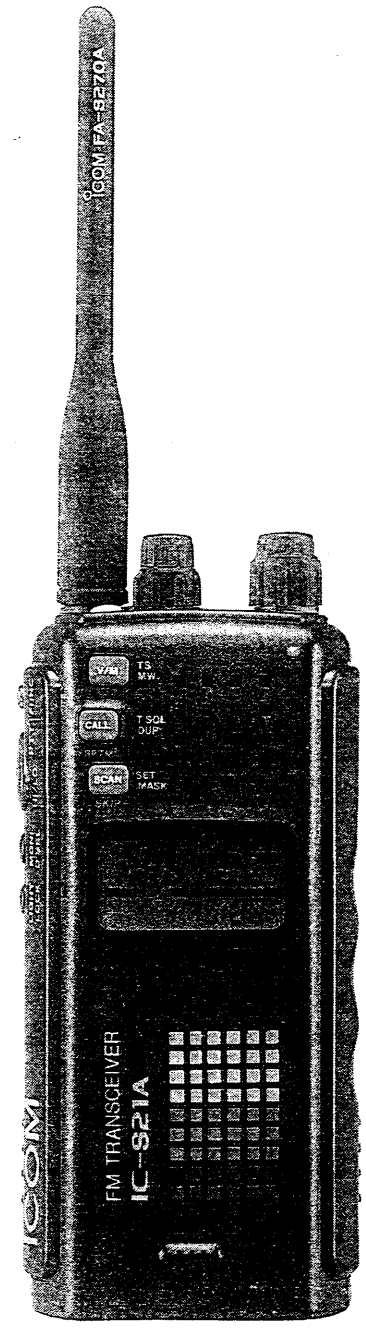
144 MHz FM TRANSCEIVER

IC-S21A
IC-S21E

UHF FM TRANSCEIVER

IC-S41A
IC-S41E

Icom Inc.



IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL – This instruction manual contains important safety and operating instructions for the IC-S21A/E and IC-S41A/E.

This instruction manual uses the IC-S21A/E for most of the example displays. Please note that only the frequency differs from the IC-S41A/E.

EXPLICIT DEFINITIONS

CAUTION : Equipment damage may occur.

NOTE : If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

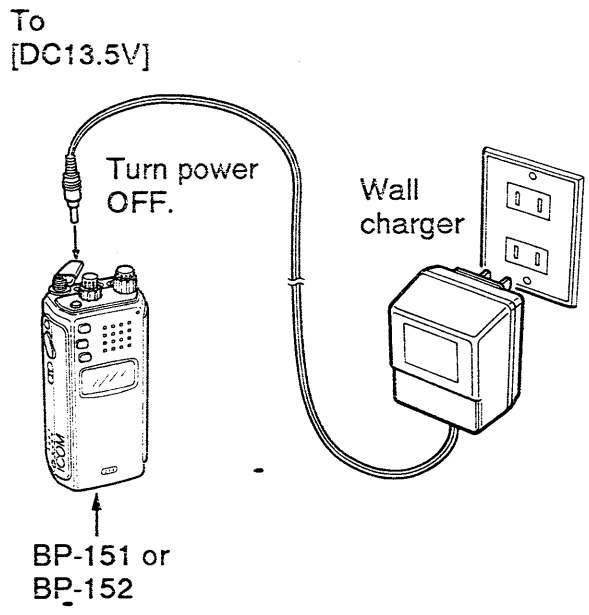
WHEN FIRST APPLYING POWER

◇ Battery pack charging

① Insert the battery pack into the transceiver.

② Connect the wall charger to the [DC13.5V] jack to charge the battery pack.

- Charging period of the BP-151 and BP-152 is approx. 15 hrs.



◇ Installing batteries into the battery case

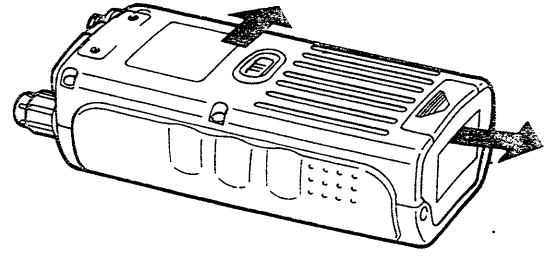
① Remove the battery case from the transceiver as shown below. (Fig. 1)

② Install four dry cell batteries as shown below. (Fig. 2)

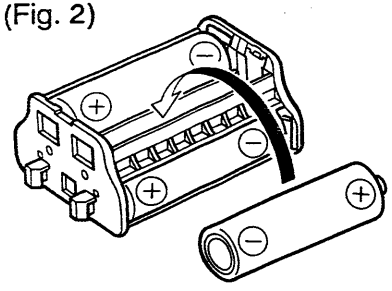
- Pay attention to the polarities.

③ Insert the battery case into the transceiver until hearing a click.

(Fig. 1)

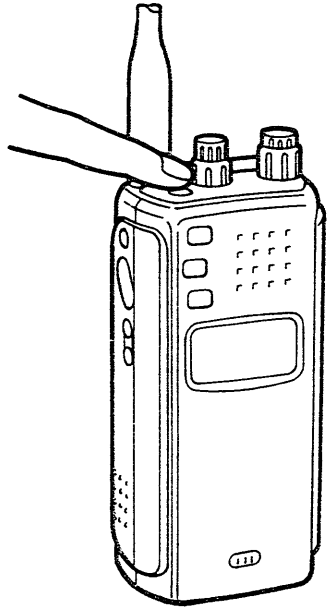


(Fig. 2)



◇ Power ON

Push and hold [POWER] on the top panel for 1 sec. to turn power ON.

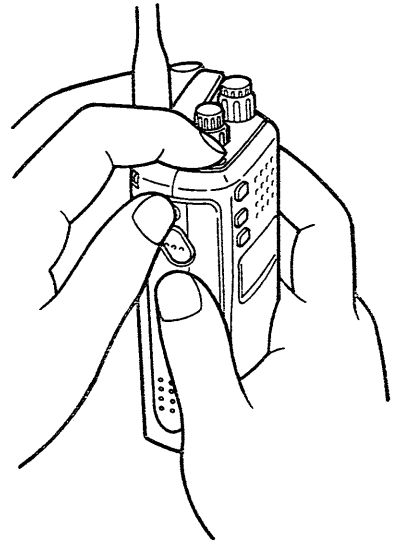


Push and hold [POWER] for 1 sec. again to turn power OFF.

◇ Resetting the transceiver

Reset the transceiver before operating for the first time, or when the internal CPU mulfunctions.

① Turn power OFF.
② While pushing [FUNC], [MONI] and [LIGHT], push and hold [POWER] for 1 sec. to reset the CPU.



Partial resetting is alternatively available. See p. 36 for details.

CAUTIONS

NEVER connect the transceiver to an AC outlet or to a power source of more than 16 V DC.

NEVER connect the transceiver to a power source using reverse polarity. This connection will ruin the transceiver.

NEVER allow children to touch the transceiver.

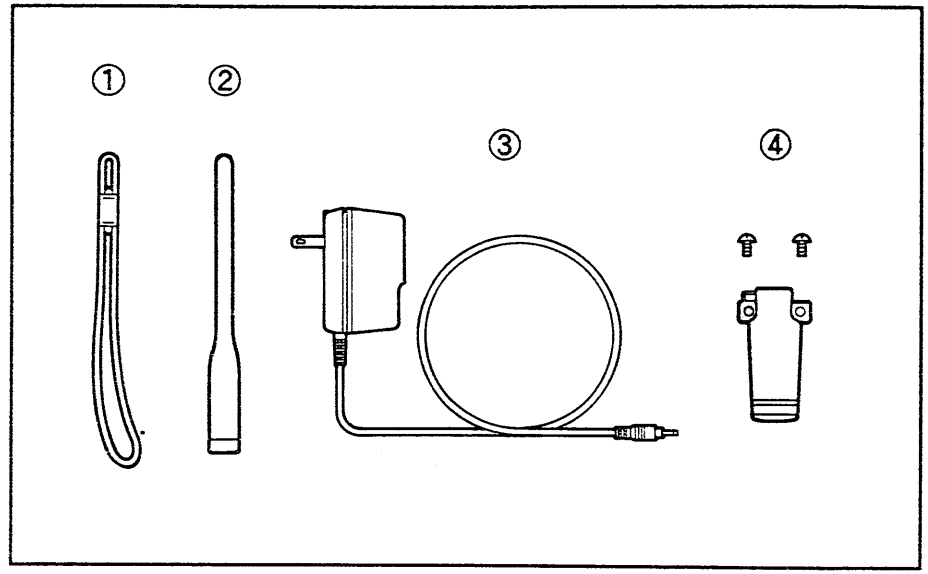
AVOID using or placing the transceiver in direct sunlight or in areas with temperatures below −10 ℃ (+14 ℉) or above +60 ℃ (+140 ℉).

BE CAREFUL! When transmitting for a long time with high output power, the rear panel will become hot.

The use of non-Icom battery packs/chargers may impair transceiver performance and invalidate the warranty.

Even when the transceiver power is OFF, a slight current still flows in the circuits. Remove the battery pack or case from the transceiver when not using the transceiver for a long time. Otherwise, the battery pack or installed dry cell batteries in the battery case will become exhausted.

UNPACKING



Accessories included with the transceiver:	Qty.
① Handstrap	1
② Antenna (FA-S270A)	1
③ Wall charger*	1
④ Belt clip and screws	1 set
Battery pack (BP-151) or battery case (BP-159) (attached to the transceiver)	1

* Not included with versions which include a battery case.

TABLE OF CONTENTS

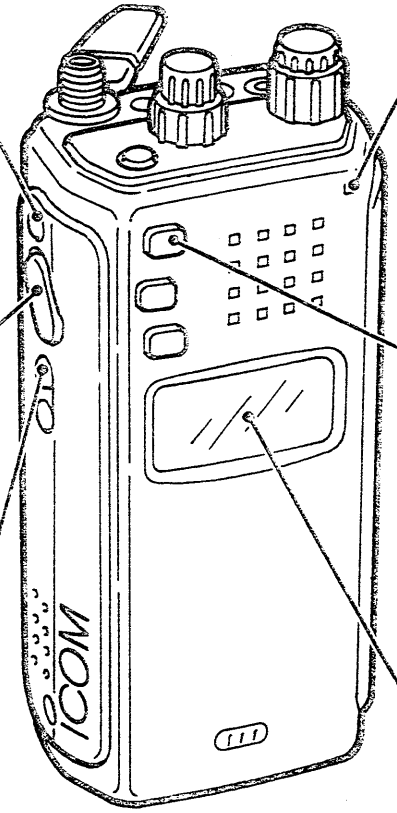
1 PANEL DESCRIPTION

Front and side panels

FUNCTION SWITCH [FUNC]
While pushing this switch, other switches and the tuning dial perform secondary functions.
- "Push [FUNC] + a switch" means "while pushing the [FUNC] switch, push the switch."

PTT SWITCH [PTT•HI/LO]
- Push and hold to transmit; release to receive. (p. 11)
- [FUNC] + [PTT•HI/LO] selects high or low output power. (p. 12)
- The tuning dial selects a low output power while pushing [FUNC] and [PTT•HI/LO]. (p. 12)

MONITOR SWITCH [MONI•D SEL]
- Manually opens the squelch and monitors the transmit frequency. (p. 11)
- [FUNC] + [MONI•D SEL] selects the dial select step. (p. 9)



TX/RX INDICATOR (p. 11)

VFO/MEMORY SWITCH [V/M•TS•MW]
- Selects VFO or memory mode. (p. 8)
- [FUNC] + [V/M•TS] (momentarily) in VFO mode enters the tuning step setting condition. (p. 9)
- [FUNC] + [V/M•MW] (for 1 sec.) in VFO mode writes the VFO contents into the selected memory channel. (p. 18)
- [FUNC] + [V/M•MW] (for 1 sec.) in memory mode transfers the selected memory contents into the VFO. (p. 19)
- [FUNC] + [V/M•MW] (for 1 sec.) in the call channel writes the VFO contents into the call channel. (p. 20)
- Generates a 1750 Hz tone while transmitting.* (p. 13)

FUNCTION DISPLAY (p. 4)

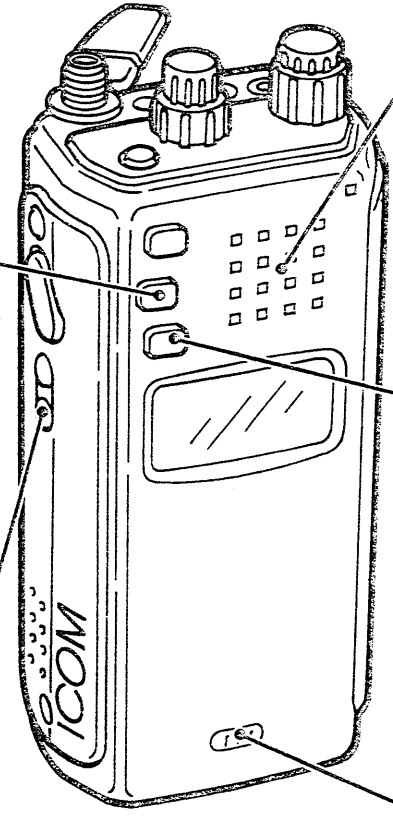
* Europe, Italy and Denmark versions only.

CALL CHANNEL SWITCH [CALL•T SQL•DUP•RPTM]

- Selects the call channel. (p. 20)
- Selects the repeater memory when pushed and held for 1 sec. (p. 15)
- [FUNC] + [CALL•T SQL] (momentarily) activates the following optional*1 functions in this sequence: subaudible tone encoder → pocket beep → tone squelch → non-tone operation. (pgs. 13, 32)
- [FUNC] + [CALL•DUP] (for 1 sec.) selects the duplex direction in this sequence: – duplex → + duplex → simplex. (p. 13)
- Generates a 1750 Hz tone while transmitting.*2 (p. 13)

LIGHT SWITCH [LIGHT•LOCK]

- Turns the display lighting ON and OFF. (p. 10)
- [FUNC] + [LIGHT•LOCK] turns the lock function ON and OFF. (p. 8)



SPEAKER

SCAN SWITCH [SCAN•SET•SKIP•MASK]

- Starts scan in VFO or memory mode. (pgs. 22, 25)
- Starts tone scan when pushed and held for 1 sec. while an optional*1 tone squelch is in use. (p. 16)
- [FUNC] + [SCAN•SET] (momentarily) in VFO mode enters set mode. (p. 38)
- [FUNC] + [SCAN•SKIP] (momentarily) in memory mode sets the selected memory channel as a skip channel. (p. 25)
- [FUNC] + [SCAN•MASK] (for 1 sec.) in memory mode masks the selected memory channel. (p. 19)
- Generates a 1750 Hz tone while transmitting.*2 (p. 13)

MICROPHONE

*1 Built-in to the U.S.A. version.
*2 Europe, Italy and Denmark versions only.

Top panel

EXTERNAL DC POWER JACK [DC13.5V] (p. 41)
Allows operation with a 13.5 V DC power source using the optional cables, CP-12 or OPC-254.

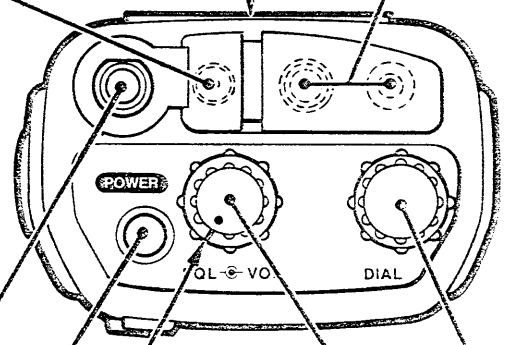
CAUTION: Operation with an external DC power source simultaneously charges batteries inside the battery case or the battery pack. This may cause battery leakage and damage the transceiver or cause battery overcharging and shorten the life of the battery pack, respectively.

ANTENNA CONNECTOR (p. 7)
Connects the supplied antenna.

POWER SWITCH [POWER] (p. ii)
Turns the power ON and OFF when pushed for 1 sec.

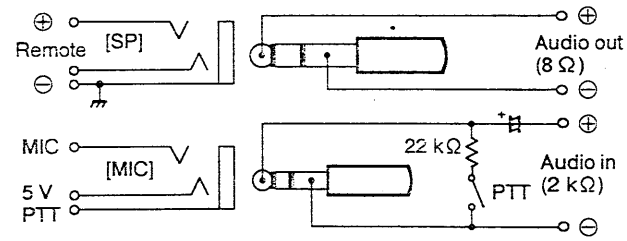
SQUELCH CONTROL [SQL] (p. 11)
Varies the squelch threshold point for noise mute.

BATTERY PACK RELEASE BUTTON (p. i)



EXTERNAL SPEAKER AND MICROPHONE JACKS [SP]•[MIC]
Connect an optional speaker-microphone or headset, if desired. The internal microphone will not function when either is connected. The HM-9 cannot be used. (p. 42)

◇ **External connection**

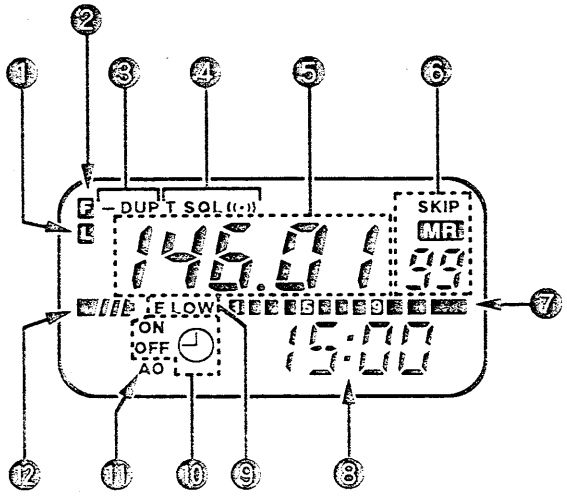


The above diagram does not apply when a condenser microphone is connected.

TUNING DIAL [DIAL]
Sets operating frequency, memory channel and set mode contents.

VOLUME CONTROL [VOL] (p. 11)
Adjusts the audio level.

Function display



① **LOCK INDICATOR** (p. 8)
Appears while the lock function is in use.

② **FUNCTION INDICATOR**
Appears while the [FUNC] switch is pushed.

③ **DUPLEX INDICATOR** (p. 13)
"–DUP" or "DUP" appears during semi-duplex operation (repeater operation).

④ **TONE INDICATOR**
Appears while an optional* tone squelch unit is in use.
- "T" appears while the subaudible tone encoder is in use. (p. 13)
- "T SQL" appears while the tone squelch is in use. (p. 32)
- "T SQL ((•)) " appears while the pocket beep function is in use. (p. 32)

* Built-in to the U.S.A. version.

⑤ **FREQUENCY READOUT**
Shows the operating frequency, set mode contents, etc.
- The decimal point of the frequency flashes while scanning. (pgs. 21–26)

⑥ **MEMORY CHANNEL INDICATOR**
Shows the selected memory channel number.
- " MR " appears when memory mode is selected. (p. 17)
- " SKIP " appears when the selected memory channel is set as a skip channel. (p. 25)
- " C " appears when the call channel is selected. (p. 20)

⑦ **S/RF INDICATOR**
- Shows the relative signal strength while receiving signals. (p. 11)
- Shows the output power selection while transmitting. (p. 12)

⑧ **CLOCK READOUT**
Shows the current time or the set mode selection, etc. (pgs. 28, 38)

⑨ **LOW POWER INDICATOR**
- "LOW" appears while low output power is selected. (p. 12)
- "LOW" blinks while auto repeater power control is in use. (p. 15)
- "E LOW" appears while the economical low power (15 mW) is assigned to low output power and low power is selected. (p. 12)

⑩ **TIMER INDICATOR**
" ◴ " appears while the power-on or power-off timer is in use.
- "ON" appears while the power-on timer is in use. (p. 29)
- "OFF" appears while the power-off timer is in use. (p. 30)

⑪ **AUTO POWER-OFF INDICATOR**
Appears while the auto power-off function is in use. (p. 27)

⑫ **BATTERY VOLTAGE INDICATOR**
Graphically indicates the attached battery pack's voltage. (p. 34)

2 BATTERY PACK CHARGING

Battery pack charging

The supplied* BP-151 BATTERY PACK includes rechargeable Ni-Cd batteries and can be charged approx. 300 times. Charge the battery pack before first operating the transceiver or when the battery pack becomes exhausted. (p. 6)

* Optional for versions which come with the BP-159 BATTERY CASE.

If you want to be able to charge the battery pack more than 300 times, the following points should be observed:

1. Avoid overcharging. The charging period should be less than 48 hours.
2. Use the battery until it becomes almost completely exhausted under normal conditions. We recommend battery charging after transmitting becomes impossible.

Charging precautions

NEVER attempt to charge dry cell batteries. This will cause internal liquid leakage and damage the battery case or transceiver.

NEVER connect two or more chargers at the same time.

Charging may not occur in extreme cold (under 0 ℃; + 32 ℉) or extreme heat (over + 40 ℃ ; + 104 ℉).

About the battery pack

◇ Operating period

Depending on the attached battery pack, the operating period of the transceiver varies. Refer to the table below.

Battery pack	Battery capacity	Approx. operating period			
		IC-S21A/E		IC-S41A/E	
		Cond. 1	Cond. 2	Cond. 1	Cond. 2
BP-151	800 mAh	5 h 40 m	1 h 55 m	6 h 00 m	2 h 00 m
BP-152	1100 mAh	7 h 45 m	2 h 40 m	8 h 15 m	2 h 50 m
BP-153	600 mAh	3 h 15 m	1 h 5 m	2 h 45 m	1 h 00 m

Condition 1: Tx (High) : Rx : Standby (power saved) = 1:1:8 (min.)
Condition 2: Tx (High) : Rx = 1:3 (min.) Operating periods are estimated values and vary depending on output power, temperature, etc.

◇ Battery pack life

When the operating period becomes extremely short even after charging the battery pack fully, a new battery pack is needed.

◇ When the battery is exhausted:

- Transmitting is interrupted while holding the [PTT] switch.
- The economical low power is automatically selected by the automatic power down function. (p. 12)
- The [POWER] switch cannot turn the power OFF. (At this time, remove the battery pack from the transceiver.)

Count on us!

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