ICOM®

INSTRUCTION MANUAL

FRS UHF FM TRANSCEIVER

IC-4088A

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Icom Inc.

FOREWORD

Thank you for purchasing the IC-4088A FRS FM transceiver. This FRS (Family Radio Service) FM transceiver meets the FCC regulation (FCC Part 95). This transceiver is designed for those who require top-grade quality, performance and outstanding reliability under the most demanding conditions.

◇ *FEATURES*

- ❍ *Free of user-license and applications*
- ❍ *Voice scrambler function for communication privacy*
- ❍ *External DC-IN jack for both operation and battery charging*
  (Optional BC-149A or CP-18A is required)
- ❍ *All 14 FRS channels are available*
- ❍ *Powerful 500 mW (ERP) high output power*
- ❍ *38 convenient group channels*

■ ATS (Automatic Transponder System)

This convenient function automatically checks station availability within the operating range, and alerts you via function display indication. (p. 20)

In addition, a manual transponder is also available for "GROUP MODE" operation to check availability of stations in a specified group within the operating range. In this case, the transceiver alerts you via beeps. (p. 12)

■ WATER-RESISTANT* CONSTRUCTION

Water-resistant* construction is employed, and this unit can be used in a wide range of applications.

*Meets JIS water-protection specification grade 4.

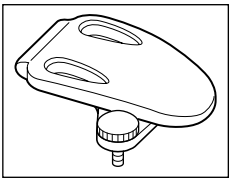
■ GROUP MODE (BUILT-IN CTCSS: Continuous Tone Coded Squelch System)

CTCSS encoder/decoder are standard, providing quiet stand-by. Audio (voice) signals are output only when a signal with matched CTCSS tone signal is received. This is very helpful for group communications. In addition, 38 different CTCSS frequencies are available. (p. 12)

■ 2 types of “Ring” function

The “Smart-Ring” function and the “Call-Ring” function are available for smart and simple station calls providing a telephone-style ring when called. 10 different ringing tones are available. (p. 18)

SUPPLIED ACCESSORY



• Belt clip 1

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IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL— This instruction manual contains important operating instructions for the transceiver.

PRECAUTION

⚠**DANGER! NEVER** operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere.

⚠**WARNING! NEVER** hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting. The transceiver will perform best if the microphone is 2 to 4 in. (5 to 10 cm) away and the transceiver is vertical.

⚠**WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels. Hearing experts advise against continuous high volume operation. If you experience a ringing in your ears, reduce the volume or discontinue use.

NEVER attempt to charge alkaline cell batteries. Be aware that external DC power connections will charge batteries inside the battery case. This will damage not only the battery case but also the transceiver.

DO NOT push the PTT when not actually desiring to transmit.

PRECAUTION— continued

USE the optional AC adapter or cigarette lighter cable only for both operating the transceiver and charging the battery. Other manufacturer's AC adapter, cigarette lighter cable or DC power cable with external power supply may damage the transceiver.

Place the unit in a secure place to avoid inadvertent use by children.

AVOID using or placing the transceiver in direct sunlight or in areas with temperatures below –4˚F (–20°C) or above +122˚F (+50°C).

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 radio. Remove the alkaline cells or battery pack from the transceiver when not using it for a long time. Otherwise, the installed batteries will become exhausted.

FCC WARNING: **NEVER** open the transceiver's case to make any internal adjustments, changes or modifications by a person who not expressly approved by Icom Inc., could void your authority to operate this transceiver under FCC regulations.
Any transceiver's adjustments, replacement must be made by a qualified technician using the proper test equipment.

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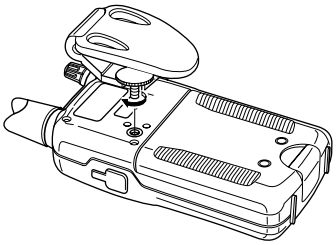
■ Belt clip attachment

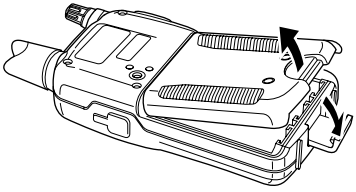
Attach the belt clip using the supplied screw. Conveniently attaches to a belt.

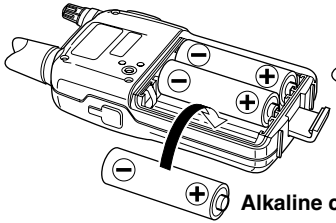


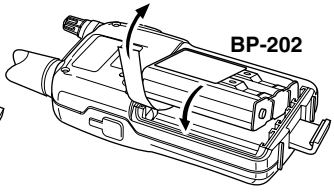
■ Battery installation

Install 3 R6 (AA) size alkaline cell batteries or the optional BP-202 BATTERY PACK as illustrated below.

① Remove the battery case cover from the transceiver.
② Install 3×R6 (AA) size alkaline cell batteries or BP-202.
- Be sure to observe the correct polarity.





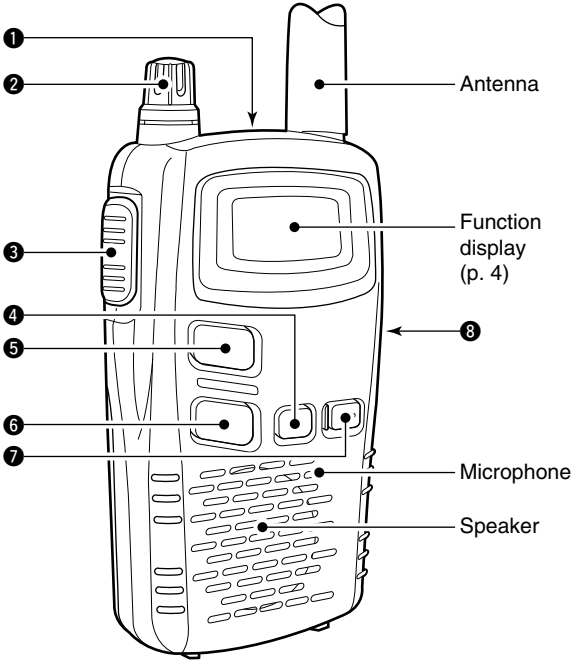


Alkaline cells

NOTE: Keep battery contacts clean. It's good idea to clean battery terminals once a week.

2 PANEL DESCRIPTION

■ Switches, controls, keys and connectors



❶ EXTERNAL SPEAKER AND MICROPHONE JACKS
Connect an optional speaker-microphone or headset, if desired.

❷ VOLUME CONTROL [VOL]
Rotate clockwise to increase and counterclockwise to decrease volume.

❸ PTT SWITCH [PTT]
Push and hold to transmit; release to receive.

❹ MODE SWITCH [MODE]
- ➥ Push to enter and select set mode for group (p. 12) and voice scrambler code. (p. 16)
- ➥ Push and hold for 1 sec. to turn the monitor function ON and OFF. (p. 8)

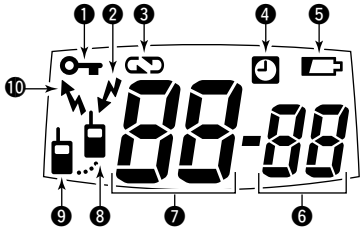
❺ CHANNEL UP SWITCH [▲]
- ➥ Push to increment the operating channel.
- ➥ Push and hold to increment the operating channel continuously.
- ➥ While scanning, changes scanning direction. (p. 14)

❻ CHANNEL DOWN SWITCH [▼]
- ➥ Push to decrement the operating channel.
- ➥ Push and hold to decrement the operating channel continuously.
- ➥ While scanning, changes scanning direction. (p. 14)

❼ POWER SWITCH [PWR]
- ➥ Push to turn the power ON.
- ➥ Push and hold this key to toggle the key lock function ON/OFF. (p. 19)

❽ EXTERNAL DC IN JACK [DC 6V] (p. 6)
Connects the optional AC adapter or cigarette lighter cable for both operation and battery charging.

■ Function display



❶ KEY LOCK INDICATOR
Appears during the key lock function ON.

❷ BUSY INDICATOR
Appears while receiving a signal or when the squelch is open.

❸ VOICE SCRAMBLER INDICATOR
Appears while the voice scrambler function is in use.

❹ AUTO POWER OFF INDICATOR
Appears while the auto power off function is ON.

❺ LOW BATTERY INDICATOR
Appears or blinks when the battery decreases to a specified level.

❻ GROUP NUMBER INDICATOR
Indicates the selected group number during the group function ON.

❼ CHANNEL NUMBER INDICATOR
Indicates the selected operating channel number.

❽ POWER ON INDICATOR
Appears while the power is ON.

❾ ANSWER BACK INDICATOR
➥ Appears when you and your group are in the conversation area.
➥ Blinks when you or your group is out of the conversation area.

❿ TRANSMIT INDICATOR
Appears during PTT ON.

BATTERY CHARGING 3

■ Battery caution

CAUTION NEVER short the terminals.

NEVER mix old and new batteries.

NEVER incinerate used battery cells. Internal battery gas may cause explosion.

Make sure all battery cells are the same brand, type and capacity.

AVOID over charging— The BP-202 can be charged during operation when the AC adapter or the optional cigarette lighter cable is connected. To prevent over charging, the IC-4088A has charging timer that automatically disconnecting the charging line electronically after 15 hours from charging. However, the charging timer will reset and start charging again when disconnect then re-connecting the AC adapter or CP-18A more than 1 min. interval.

Recommended temperature range for charging:
+50˚F to +104˚F (+10˚C to +40˚C)

The optional BP-202 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.

If the battery pack seems to have no capacity even after being fully charged, completely discharge it by leaving the power ON all day. Then, fully charge the battery pack again.

If the battery pack still does not retain a charge (or very little), a new battery pack must be purchased.

◇ **Recycling information** (U.S.A. only)

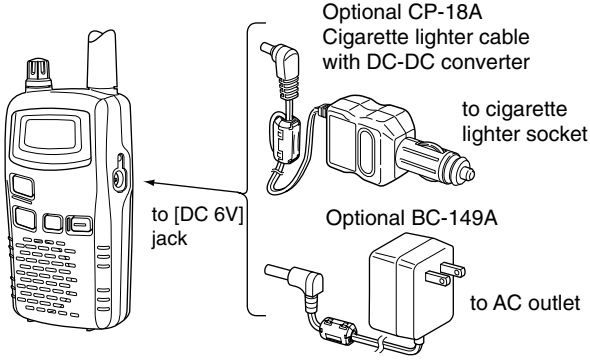
The battery (BP-202) that you have purchased is recyclable. At the end of its life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Call 1-800-822-8837 for battery recycling options in your area or contact your dealer.

■ Charging connections

◇ Regular charging with the BC-149A, CP-18A

➥ Connect the optional BC-149A AC ADAPTER or CP-18A CIGARETTE LIGHTER CABLE to [DC 6V].

• Charging period: approx. 15 hours



IMPORTANT!:

Use the BC-149A or CP-18A **ONLY**. Other type of AC adapter, cigarette lighter cable or DC power cable with an external power supply may damage the transceiver.

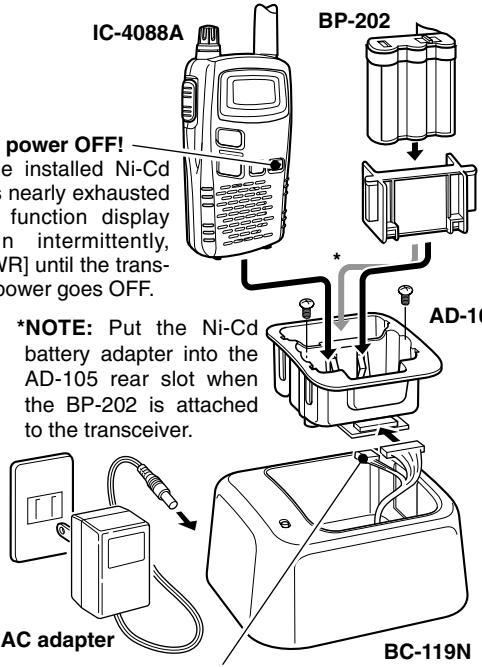
The optional BP-202 can only be charged— other AA (R6) size rechargeable Ni-Cd cannot be charged.

BE SURE to disconnect the CP-18A from the cigarette lighter socket when charging is finished, because, a slight current still follows in the CP-18A and the vehicle's battery will become exhausted.

◇ Rapid charging with the BC-119N+AD-105

① Insert the optional AD-105 DESKTOP CHARGER ADAPTER into the charging slot of the BC-119N.

② Insert the battery pack, either by itself or attached to the transceiver, into the charger.



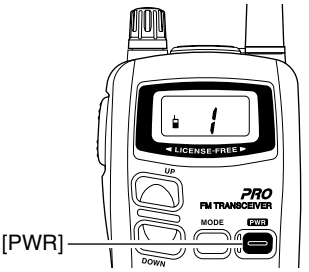
NOT used:

Fix the 3-pin connector to the bottom of the charger with the adhesive tape, etc., to prevent catching or touching the 3-pin connector's terminals with the adapter's leads, etc.

4 BASIC OPERATION

■ Power ON

➥ Push [PWR] for 1 sec. to turn the power ON.
- "🔒" and operating channel number appear on the display.

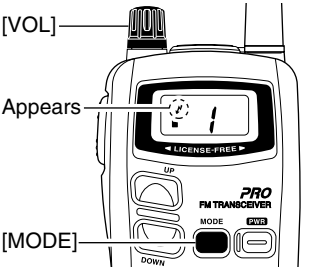


■ Adjusting the volume

① Push and hold [MODE] for 1 sec. to open the squelch (monitor function ON).
- "📶" indicator appears on the display while the squelch is open.

② Adjust the audio to a suitable level using [VOL].

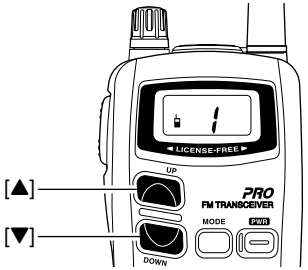
③ Push and hold [MODE] for 1 sec. to close the squelch.



✔ *What is squelch*?
A squelch circuit allows muting of undesired noise while receiving no signal and emit audio while receiving signals.
This provides quiet standby. The [MODE] key changes the squelch setting. This is useful to listen to weak signals that do not open the squelch.

■ Selecting the operating channel

Push [▲] or [▼] keys several times until the desired operating channel number appears on the display.

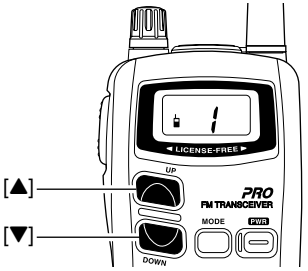


- While pushing and holding [▲] or [▼] keys, the displayed channel changes continuously until channel number "1" appears.
  To keep the automatic selection, release the [▲] or [▼] keys then push and hold them again.
- When displayed channel stops at channel number "1," a beep is emitted.

NOTE:
- The transceiver has 14 operating frequency channels.
- The selected channel is memorised when the transceiver is turned off.

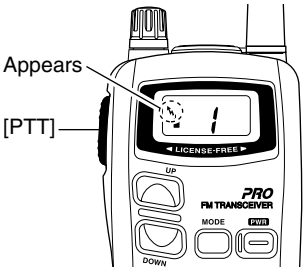
5 RECEIVE AND TRANSMIT

① Select the desired operating channel with [▲]/[▼].
When a signal is received:
- "⚡" indicator appears on the display.
- Squelch opens and audio is emitted from the speaker.
  - Further adjustment of [VOL] may be necessary at this point.



② Push and hold [PTT] to transmit then speak into the microphone.
- Do not hold the transceiver too close to your mouth or speak too loudly. This may distort the signal.
- The transmit indicator "↯" appears on the display.

③ Release [PTT] to return to receive.



IMPORTANT:
To maximize the readability of the transmitted signal, pause a few sec. after pushing [PTT], hold the transceiver 4 to 6 in. (10 to 15 cm) from your mouth and speak at a normal voice level.

NOTE:
The transceiver has an auto power save function to conserve the battery power. The power save function activates automatically when no signal is received for 5 sec.

✔ ***Talk Range***

The IC-4088A is designed to maximize performance and improve transmission range in the field. However, the single most important factor in transmit range (talk power) is the surrounding environment. These radios are “line of sight” radios and as such, transmission range are influenced by the degree to which you can “see” the other communicating party. Large concrete structures and heavy foliage or transmission from inside a building or vehicle will reduce the talk power range.

- Optimal range: wide, open areas free of obstructions.
- Medium range: large buildings or trees blocking your line of sight.
- Minimum range: mountainous areas or areas of heavy foliage.

6 GROUP MODE (CTCSS)

■ Setting the group code

The IC-4088A is equipped with 38 group codes. Group mode operation provides communication with silent standby since you will only receive calls from group members using the same group number.

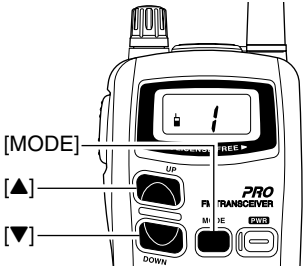
First of all, set the same group code number for all group member's transceivers.

To turn ON the group mode operation:

① Push [MODE] to enter set mode.
- "- - -" (group mode OFF) appears on the display.

② Push [▲] or [▼] to select the desired code number.

③ Push [MODE] twice to set the group code number and exit set mode.

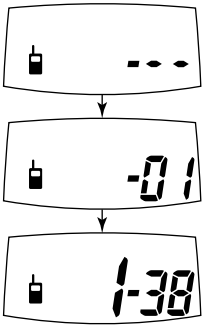


To cancel the group mode operation:

① Push [MODE] to enter set mode.
- Channel number disappears on the display.

② Push [▲] or [▼] to select "- - -" (group mode OFF).

③ Push [MODE] twice to cancel the group mode and return to operating condition.



NOTE: Only stations with the same group channel number can be heard during group mode operation, even when the busy indicator appears on the display.

◇ CTCSS code table

CH	Freq.	CH	Freq.	CH	Freq.	CH	Freq.
01	67.0	11	97.4	21	136.5	31	192.8
02	71.9	12	100.0	22	141.3	32	203.5
03	74.4	13	103.5	23	146.2	33	210.7
04	77.0	14	107.2	24	151.4	34	218.1
05	79.7	15	110.9	25	156.7	35	225.7
06	82.5	16	114.8	26	162.2	36	233.6
07	85.4	17	118.8	27	167.9	37	241.8
08	88.5	18	123.0	28	173.8	38	250.3
09	91.5	19	127.3	29	179.9	- - -	OFF
10	94.8	20	131.8	30	186.2		

(unit: Hz)

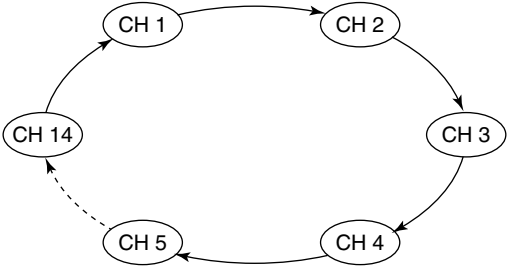
✔ ***What is CTCSS (Continuous Tone Coded Squelch System) GROUP MODE*** **?**

CTCSS (Continuous Tone Coded Squelch System) GROUP MODE allows communication with silent stand by. Only signals containing a specific group code can open the squelch.
This conveniently eliminates unwanted audio and is useful in group activities or security related activities where unwanted output can be a problem. Note that CTCSS group mode is not private—anyone can receive your calls.

The IC-4088A is equipped with 38 tone codes for CTCSS GROUP MODE use. Selecting a code applies it to all 14 operating channels. Each push of [PTT] superimposes your group code over your transmit signal; and, only signals containing the same code can open your squelch. To temporarily hear all signals (including noise) push and hold [MODE]. Do not use CTCSS GROUP MODE if you want to be able to hear signals on all channels.

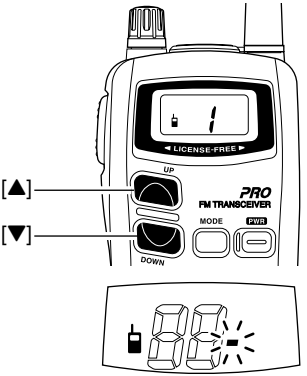
7 SCAN FUNCTION

Scanning is an efficient way to locate signals quickly over all channels. Select scan resume condition in advance, using Initial Set Mode (p. 17)



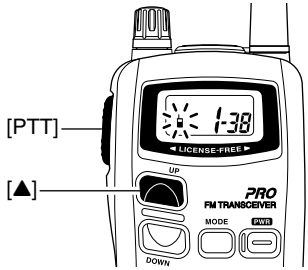
◇ Starting the scan

➥ While pushing [▲], push [▼] to start the scan.
- "-" flashes.
- While pushing [▼], pushing [▲] also starts the scan.
- Push [▼] or [▲] to change the scanning direction or resume the scan manually.
- To cancel the scan, push [▼] (or [▲]) while [▲] (or [▼]) is pushed, or push [PTT].



■ Smart-Ring

The ring function has an answer back feature. This allows confirmation of whether or not a call has reached the receiving party even if the operator is temporarily away from the transceiver.



① Set the same group channel number for all of the group transceivers. (See p. 12)
② While pushing [PTT], push [▲] .
- A beep is emitted and "🔒" blinks on the display.

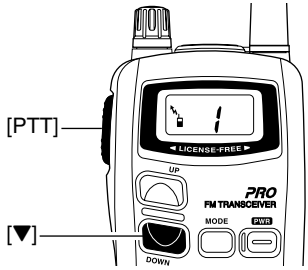
③ Release the [PTT].
- When a member of a specific group answers a call, the transceiver emits beep tones for 10 sec. and blinks "🔒."
- When no answer comes back, the transceiver emits short faint beep tones.

④ Push [PTT] to answer and to stop the beeps and flashing.

NOTE: This function is available only when the called station has set the same group number and the same operating channels as you.

■ Call-Ring

Sends the ring tones during transmit mode.

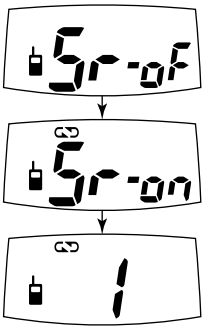


➥ While pushing [PTT], push [▼] to send a ring tone.
- The ring tone is emitted while pushing [▼].
- The microphone signal is automatically cut while pushing [▼].

9 OTHER FUNCTIONS

■ Voice scrambler function

The voice scrambler function provides communication privacy.



① Push [MODE] twice to select voice scrambler setting mode.
- "Sr-" appears on the display.

② Push [▲]/[▼] to turn the function ON and OFF.
- "⟲" appears when the voice scrambler is activated.

③ Push [MODE] to exit voice scrambler setting mode.

NOTE: All transceivers in a specific group MUST turn ON the voice scrambler function. Otherwise the communication will not possible.

■ Initial set mode

Initial set mode is accessed at power ON and allows the setting of seldom changed settings. In this way the user can "customize" transceiver operations to suit specific preferences and operating style.

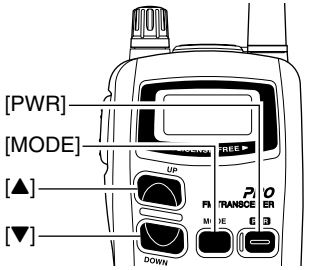
◇ Entering initial set mode

① While pushing [MODE], push [PWR] for 1 sec. to enter initial set mode.

② Push [MODE] to select the desired item.

③ Push [▲]/[▼] to select the condition or value as desired.

④ Push [PWR] to exit initial set mode.



◇ Beep tones ON/OFF

Confirmation beep tones normally sound when a key is pushed. These can be turned ON or OFF.

ON (on) : Emits confirmation beep.
OFF (oF) : No confirmation beep.

◇ Scan resume type

Select the scan resume type from timer scan and pause scan.

Timer scan (tS) : Scan resumes after the specified time period even signal is received.
Pause scan (PS): Scan pauses until the signal disappears.

◇ Time-out timer

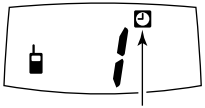
The time-out timer limits continuous transmission time period to prevent accidental prolonged transmission, such as when using the PTT hold function.

The time period can be specified within 1–30 min. in 1 min. steps.

◇ Auto power OFF timer

When signal is received, or no operation is performed for the set period, the transceiver turns power OFF automatically.

30 min., 1 and 2 hours timers are available.



Appears when the auto power off function is in use.

◇ Ring tone type

Ring tone is selectable with 10 different individual sounds.

◇ LCD backlight

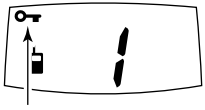
The IC-4088A has LCD backlight light for nighttime operation, and the lighting condition can be selected to suits a specific preference, from Auto, ON and OFF.

Auto (At) : Lights when any switch, except [PTT], is pushed. When no key operation is performed for 5 sec., the backlight goes OFF.
ON (on) : Lights continuously.
OFF (oF) : Never lights.

■ Lock function

This function electronically locks all keys and switches to prevent accidental channel changes and function access.

➥ Continue to hold [PWR] down for 2 sec. after power ON to turn the lock function ON and OFF.
- "🔑" appears on the display.
  - Only [PWR] and [PTT] are functional.
  - The Ring function is also available. (See p. 15)



"🔑" appears when the lock function is in use.

■ Low battery indicator

➥ Appears when the battery is nearing exhaustion.
- A warning beep is emitted while turning the power ON.

➥ Blinks when battery replacement is necessary.
- When the indicator blinks, the transceiver may not be operated. (Not guaranteed)

Appears when the battery is nearing exhaustion. Blinks when battery replacement is necessary.

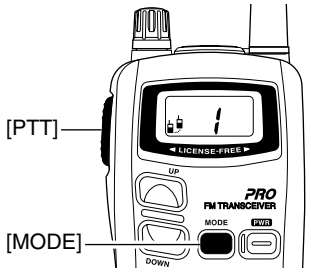
■ Auto power save

➥ The power save function reduces the current drain to conserve battery power.
  - The function automatically turns ON when no operation is performed and no signal is received for 5 sec.

■ ATS (Automatic Transponder System)

This allows the user to confirm whether or not a call has reached the receiving party even if the operator is temporarily away from the transceiver. No “Ring” tone is emitted with this function.

➥ While pushing [PTT], push [MODE] to turn the function ON and OFF.
- “ ” appears on the display.
- The transceiver starts to send a searching signal every 60 sec.
  - When the transceiver receives an answer back signal, “ ” stays on the display until the next search transmit.
  - If no reply is received, “ ” blinks until the next search transmit.



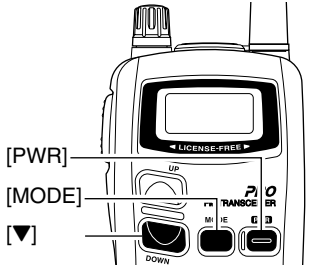
NOTE: Above setting is for the calling station only. A called party automatically sends an answer back signal without any presettings. All IC-4088A’s operating on the same operating channel will answer back to the call in the surroundings communications area.

■ Resetting the transceiver

Initialize the operating conditions before using the transceiver for the first time, or if the function display shows erroneous information.

➥ While pushing [▼] and [MODE], push [PWR] for 1 sec. to initialize the transceiver.

CAUTION: Resetting the transceiver returns all settings to their defaults.



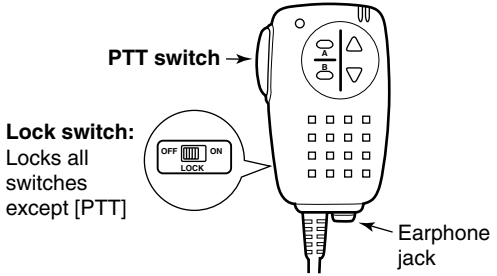
■ Optional HM-75A functions

The optional HM-75A allows remotely selected operating channels, open the squelch, etc. The switches on the HM-75A function as follows.

CAUTION: When connecting the HM-75A to the transceiver, make sure that power to the transceiver is turned OFF, otherwise the transceiver may malfunction.

◇ **Switch action**

SWITCH	NORMAL	While holding HM-75A's [PTT]
A	Smart-Ring	No function
B	Open squelch	No function
UP △	Change the operating channel number up.	Smart-Ring
▽ **DOWN**	Change the operating channel number down.	Call-Ring



10 SPECIFICATIONS

GENERAL

- Frequency coverage : 462.5625–467.7125 MHz
- No. of operating Ch. : 14 (simplex)
- Mode : 11K0F3E (FM)
- Frequency stability : ±2.5 ppm
- Channel separation : 25 kHz
- Power supply requirement (negative ground) : 3 AA (R6) alkaline, BP-202, BC-149A or CP-18A
- Current drain : Less than 500 mA
- Operating temp. range : –4˚F to +122˚F; –20˚C to +50˚C
- No. of CTCSS freq. : 38
- Dimensions (projections not included) : $2\frac{1}{16}$(W)×$4\frac{1}{32}$(H)×$1\frac{1}{16}$(D) in ; 52.5(W)×102.5(H)×26.9(D) mm
- Weight : 200 g; 7 oz (including 3×AA (R6) batteries)

TRANSMITTER

- Output power : Less than 500 mW ERP
- Maximum deviation : ±2.5 kHz
- Spurious emissions : Less than –40 dB
- Ext. mic. connector : 3-conductor 2.5 (d) mm/2.2 kΩ

RECEIVER

- Receiver system : Double-conversion superheterodyne
- Sensitivity (12 dB SINAD) : Less than 0.2 µV
- Selectivity : More than 8.5 kHz/–6 dB
- Spurious & image rejection : More than 40 dB
- Adjacent Ch. rejection : More than 40 dB
- Intermodulation rejection : More than 40 dB
- Audio output power (at 4.5 V DC) : More than 100 mW at 10 % distortion with an 8 Ω load
- Ext. speaker connector : 3-conductor 3.5 (d) mm/8 Ω

All stated specifications are subject to change without notice or obligation.

◇ Channel number and group number

Use this page to record a group operating channel number (see p. 9) and group code number (p. 12) for your reference.

Operating channel number	
Group code number	

◇ Channel frequency list

CH	Freq.(MHz)
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6875
14	467.7125

11 OPTIONS

BP-202 Ni-Cd BATTERY PACK
3.6V/700 mAh Ni-Cd battery pack.

BC-119N DESKTOP CHARGER + **AD-105** DESKTOP CHARGER ADAPTER
Rapidly charges battery pack in 1 to 1.5 hrs. An AC adapter is packed with the BC-119N. The AD-105 must be used with the BC-119N for charging the battery pack. The CP-17L or OPC-515L can be used instead of the supplied AC adapter. (p. 7)

BC-149A AC ADAPTER
Regularly charges installed BP-202 in 15 hours (approx.). Operation for both transmit and receive also possible with this adapter.
Output voltage: 6 V DC, Current capacity: 1 A

CP-18A CIGARETTE LIGHTER CABLE
Allows you to operate the transceiver through a 12 V cigarette lighter socket, and also charges the installed battery regularly. A DC-DC converter is built-in.

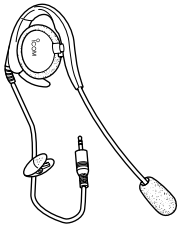
HM-46/HM-75A/HM-131 SPEAKER MICROPHONES
HM-46: Compact size with transmission LED indicator.
HM-75A: Remote control capability. (See p. 21 for details.)
HM-131: Compact and durable construction.

HM-128 EARPHONE MICROPHONE

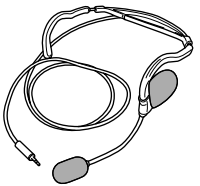
HS-85 HEADSET
Over-head arm style headset. VOX and one-touch PTT functions are available.

VS-1 VOX/PTT CASE + **HS-94/HS-95/HS-97**
Separated VOX/PTT unit and one of the following microphone unit is required additionally.

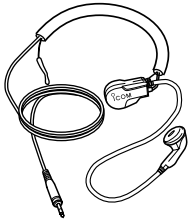
HS-94 Earhook type



HS-95 Neck-arm type



HS-97 Throat microphone



MEMO 12

Count on us!

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