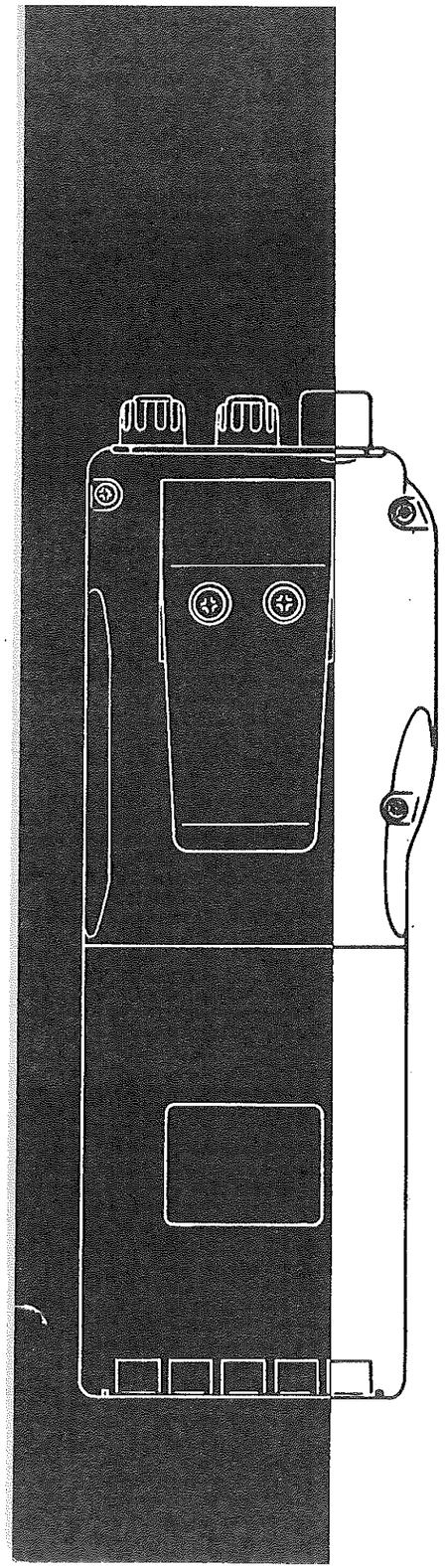
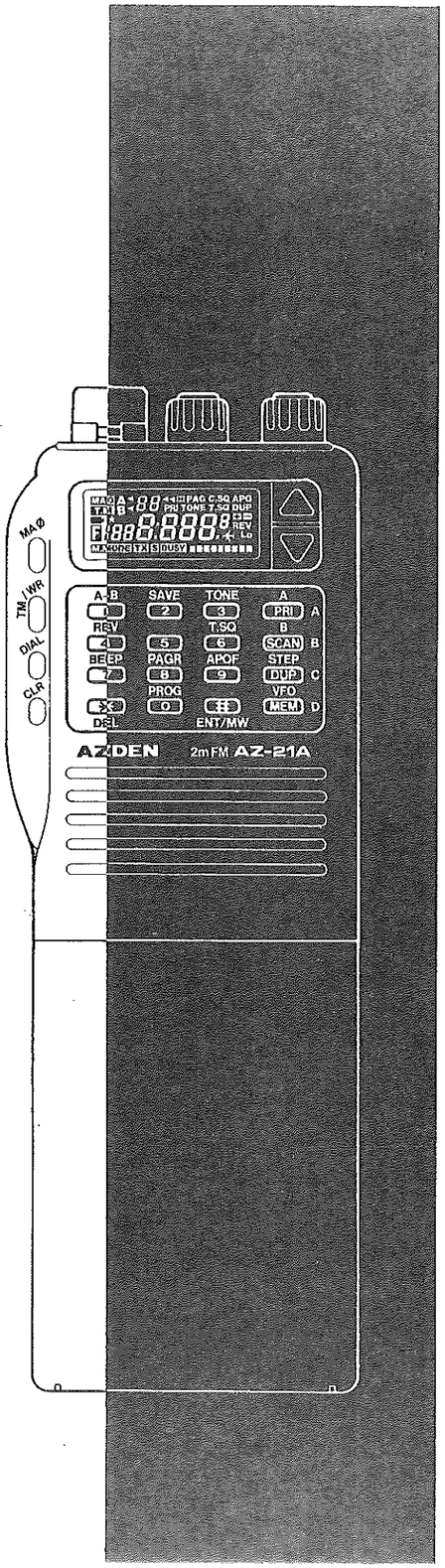


AZDEN

AZ-21A

144MHz
FM TRANSCEIVER

OWNER'S MANUAL



AZDEN®
AZDEN CORPORATION
147 New Hyde Park Road
Franklin Square,NY 11010
(516)328-7501

Manufactured by
Japan Piezo Co.,Ltd.
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Mitaka,Tokyo 181 Japan

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* BEFORE USING

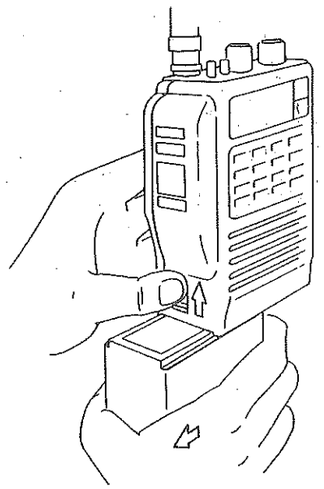
1. Charge the battery pack (BP-11) for five (5) hours. The battery pack (BP-11) cannot be charged through the DC input terminal (DCIN). Use the supplied battery charger to charge it.

2. Attach the battery pack (BP-11) to the radio as shown.

3. When using an external power source, +6.5 to +16 VDC is required.

4. Attach the helical antenna to the antenna terminal and lock it in place.

5. Do not open the case.



How to remove the battery pack.

* SPECIFICATIONS

GENERAL SPECIFICATIONS

TRANSMISSION/RECEPTION FREQUENCY RANGES	RX 118.000-135.995 AM 136.000-173.995 FM TX 144.000-147.995 FM
ANTENNA IMPEDANCE	50 ohms
DC POWER INPUT VOLTAGE	+6.5 to +16VDC, Negative ground
CURRENT CONSUMPTION (Receiving)	When receiving signal: Approx. 150mA When squelched: Approx. 48mA When in the save mode: Approx. 28mA When automatically turned off: Approx. 100uA

CURRENT CONSUMPTION (Transmitting)	High power: Approx. 1.5A Low power: Approx. 500mA
DIMENSIONS	With BP-11 installed: 65mmW(2.6in.)x174mmH(6.85in.)x 33mmT(1.3in.) Including projections: 71.5mmW(2.8in.)x185mmH(7.3in.)x 37mmT(1.5in.)
WEIGHT	Approx. 550g (1.2 lbs.) (BP-11, antenna, hand strap and belt clip included).
OPERATING TEMPERATURE	-20 deg.C (-35 deg F) to +60 deg. C (+140 deg. F.)

TRANSMITTING SECTION

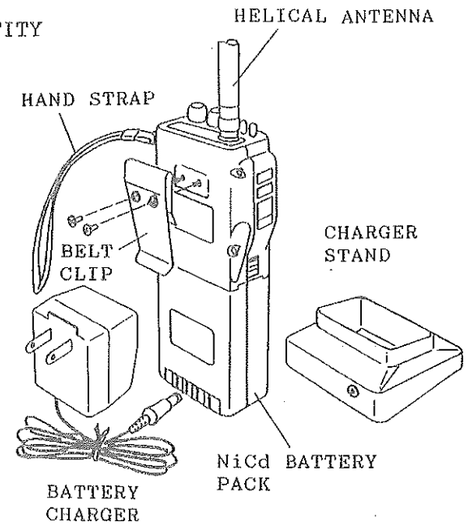
POWER OUTPUT	High: 5W (External power source of +13.8V used) Low: 0.5W
MODULATION	Variable Reactance Modulation
MAX.FREQUENCY DEVIATION	± 5kHz
SPURIOUS OUTPUT	-60dB or less
BUILT-IN MICROPHONE	Electret capacitor type (Impedance: 2k ohms)

RECEIVING SECTION

METHOD	Double conversion super-heterodyne type
RF SENSITIVITY	AM: Better than 1uV for 10dB S/N FM: Better than 0.16uV for 12dB SINAD.
FIRST INTERMEDIATE FREQUENCY	16.9MHz
SECOND INTERMEDIATE FREQUENCY	455KHz
SQUELCH SENSITIVITY	0.1uV or less
SELECTIVITY	± 6kHz min. (-6dB) ± 15kHz max. (-60dB)
AUDIO OUTPUT	250mW min. into 8 ohms with 10% distortion.

* ACCESSORIES

ITEM	QUANTITY
Helical antenna (BNC)	1
NiCd battery pack (BP-11)	1
Battery charger (DC 14.5V 150mA)	1
Charger Stand	1
Belt clip	1
Hand strap	1
Guarantee	1
Instruction Manual	1



*Precautions: Please do not discard the carton. It will be useful for service and transportation.

*Caution: Dispose of NiCd batteries in accordance with local regulations.

* NiCd BATTERY

1) This product is equipped with a battery charger for the 12V, 600mAh NiCd battery pack, BP-11 and charger stand. Connecting this product with any other equipment is not recommended and could lead to failure.

2) The BP-11 is not charged at the time of delivery. Prior to the start of use, use the battery charger and the battery stand to charge it.

3) The charge capacity may run short at the first use or after long-term storage. Charging it two or three times permits it to be charged sufficiently.

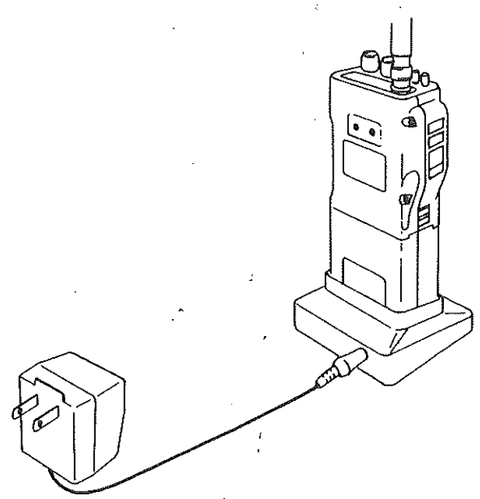
4) The ambient temperature range for charging the BP-11 is +10 deg.F to + 75 deg.F.

5) The specified charging time is approx. five hours.
* Overcharging the BP-11 may cause performance degradation. (An extarnal clock timer is recommended.)

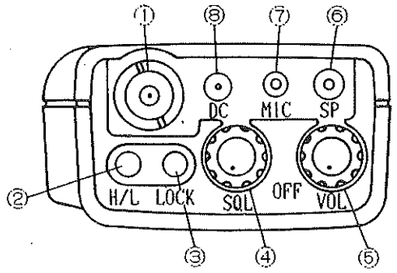
6) The life-time of a NiCd battery is limited. If the operating time becomes short despite sufficient charge, the life-time of the battery is near the end. (The maximum number of charging/discharging cycles is 500.)

7) Remove, charge and store the BP-11 when it will not be used for a long time.

8) Charging the BP-11 through the DC input terminal from an external power source is not possible.



*** NOMENCLATURE AND FUNCTIONS**

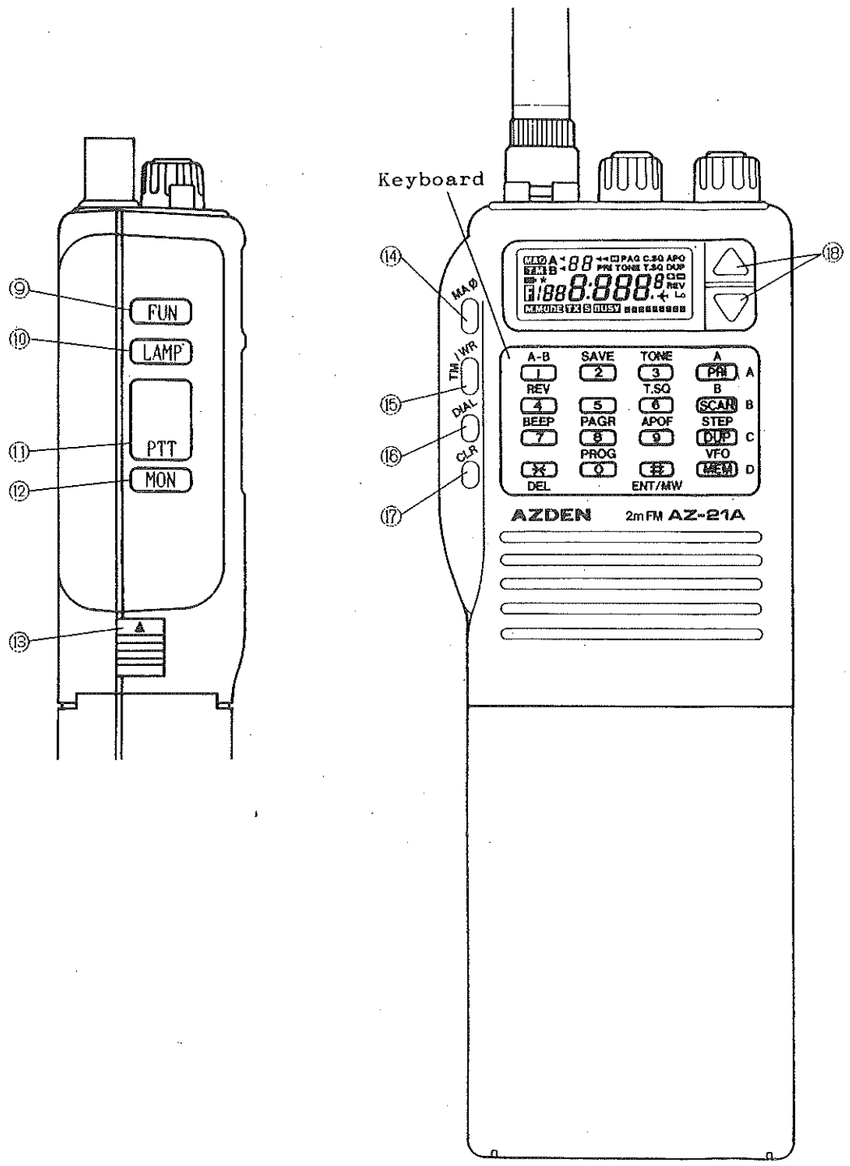


1. ANTENNA CONNECTOR: A BNC type connector is used to connect the antenna to the radio. Turn this connector clockwise to lock it.

2. POWER OUTPUT CHANGEOVER SWITCH: Changes the transmission output level from H (high) to L (low), or L to H.

3. KEY LOCK SWITCH: Prevents malfunctions due to operational mistakes. Pressing any of the front panel keys could cause such a malfunction.

4. SQUELCH KNOB (SQL): Quiets the receiver when no received signals are present.



5. POWER/VOL. KNOB: Turns the radio on and off as well as adjusts the volume. Turning it clockwise turns on the power source. Turning it more increases the volume.

6. SPEAKER TERMINAL (SPK): Terminal for an external speaker or earphone.

7. MICROPHONE TERMINAL (MIC): Terminal for an external microphone.

8. DC INPUT TERMINAL: Terminal for connecting a +13.8 VDC external power source.

9. FUNCTION KEY (FUN): Enables the secondary functions of the keyboard.

10. LAMP ON/OFF KEY (LAMP): Turns the lamp on/off (the LCD backlight). The lamp turns off automatically in ten seconds. While pressing this key, turning the power switch allows the automatic extinguishing switch to be turned on.

11. PRESS TALK SWITCH (PTT): When pressed and held, the radio is in the transmitting mode. When released, the radio is in the receiving mode.

12. MONITOR SWITCH: Pressing this switch allows monitoring with the squelch open.

13. BATTERY RELEASE KNOB: Prior to removing the battery pack, press this knob in the direction indicated by the arrow and slide the pack to the left.

14. MA0 KEY: With one touch of this key, the memory A0 channel can be recalled. Usually it performs the main-channel storage. During scanning, it performs the function of stopping the scanning.

15. TM/WR KEY: Temporarily stores the frequency being used. To store a frequency, press it for more than 1 second. Pressing this key for less than 1 second recalls the stored data. Another pressing of this key recalls the previous display.

16. DIAL KEY: Turns the AUTO-DIAL function on/off (16 digits and 7-channel memory).

17. CLR KEY: Clears the stored frequency, code squelch input and code squelch, tone and tone squelch, and errors.

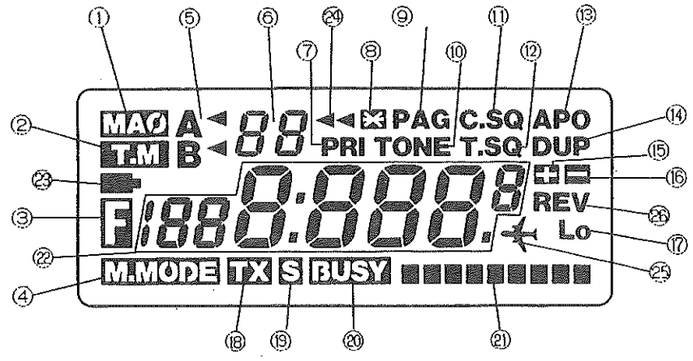
18. UP/DOWN KEY: Raises or lowers the frequency. Pressing the FUN key at the same time allows increase or decrease of frequency in MHz. When the memory mode is set, the frequencies of the channels skipped (A,B banks), increase or decrease. Pressing the FUN key at the same time allows the channels skipped to increase or decrease.

KEYBOARD (TEN KEY)

SWITCH/KEY	SINGLE INPUT	WHILE THE F KEY IS PRESSED
A-B [1]	"1" input	A-B <-> A or B Mode change
SAVE [2]	"2" input	Turns battery saving function on/off.
TONE [3]	"3" input	Turns tone encoding function on/off. (Program mode required)
REV [4]	"4" input	Reverses transmission/ reception frequencies.
[5]	"5" input	N/A
T.SQ. [6]	"6" input	Turns tone decoding function on/off. (Program mode required)
BEEP [7]	"7" input	Turns beep sound on/off
PAGER [8]	"8" input	Pager -> Code Squelch -> OFF (Selection order)
APOF [9]	"9" input	Turns AUTO POWER OFF function on/off.
PROG [0]	"0" input	Sets the program mode (hold for at least one second).
[*] DEL	Decimal point input. SKIP ON as a memory code.	
[#] ENT/MW	Writing to the memory (hold for 1 sec.) SKIP OFF as a memory code.	

A [PRI]	A	Turns priority function on/off	A memory bank, A mode specified
B [SCAN]	B	Turns on scanning function	B memory bank, B mode specified
STEP [DUP]	C	Changes the SHIFT direction. (SIMPLEX -,+)	Changing a step. dF <-> 2 x dF
VFO [MEM]	D	Memory mode to be set	VFO mode to be set
MHz UP [△]		Increases the frequency or the memory address, or cancels scanning	Increase by MHz, or memory address
MHz DOWN [▽]		Decreases the frequency or the memory address, or cancels scanning.	Decrease by MHz, or memory address

*** DISPLAY PANEL**



1. [MAO]

   Blinks when the MA0 channel is activated.

2. [T.M.]

   The Temporary Memory (T.M.) display blinks during T.M. calling.

3. [F]

The Secondary-function display. Blinks when the FUN key is pressed.

4. [M.MODE]

The Memory mode display blinks when the memory mode is set.

5. A <-
B

The Memory mode display shows the A mode, B mode or C mode when in programmable scanning.

6. 

Displays the memory address (01-20) during operation as well as the DCS code address. Also, displays the scanning method (SC during the program execution (C0-C5, CP).

7. PRI

The priority display lights up during priority operation.

8. [*]

The status display of being ready to receive lights up when the DCS address permits reception.

9. PAG

The pager display lights up or blinks during paging operation.

10. TONE

The CTCSS Tone encoding display lights up when the tone switch is turned on.

11. C.SQ

The Code Squelch display lights during code squelch operation.

12. T.SQ

The CTCSS Tone decoding display lights when the T.SQ switch is turned on.

13. APO

The Automatic Power-Off display lights up when the automatic power-off function is enabled.

14. DUP

The Duplex display lights up when transmission/ reception frequencies are different.

15. [+]

The Plus-shift display lights up when the plus-shift is selected.

16. [-]

The Minus-shift display lights up when the minus-shift is selected.

17. Lo

The Low-power display lights up when the low-power switch is turned on.

18. [TX]

The Transmission display lights up when transmitting.

19. [S]

The Priority Busy display lights up when a signal is detected during priority operation.

20. [BUSY]

The Busy display lights up when the squelch is opened.

21. S/RF

The S/RF meter displays signal strength when receiving, or the power output level when transmitting. All segments light with high power, and three segments are lighted with low power.

22.  : RF Frequency Display

(1) Frequency display
(No display when the last digit is 0.) 

(2) Scanning display

(3) DCS code display 

(4) AUTO DIAL code display 

(5) PLL unlock display (Blinking) 

(6) Frequency step width display 

(7) Frequency shift width display

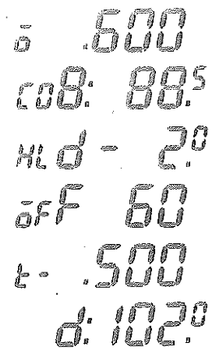
(8) CTCSS code and frequency display

(9) Scanning method display

(10) AUTO POWER OFF time display

(11) Battery saving time display

(12) Automatic dial mark/space display



23.

The Battery saving display lights up when the battery saving function is being performed.

24. <-<-

The Skip display lights up at the channel to be skipped.

25. AIRPLANE

The AM display lights up in the AM reception mode over 118,000MHz to 135,995MHz.

26. REV

The REV (reverse) display lights up when the REV function
is activated.

* OPERATIONS: KEY OPERATION EXAMPLE

1) FUN + A-B (1) :

The symbol "+" means that the operator should press the
A-B
(1) key while pressing the FUN key.

2) MEM . 1 . 8 . . . :

The period "." between key symbols means that the operator should press the next key following the previous key.

3) For the symbol on the LCD display, refer to the section, "DISPLAY PANEL."

* HOW TO RECEIVE SIGNALS

Make sure that the power-source switch on the VOL (volume) knob is turned counterclockwise all the way to the stop position. Then connect the battery pack and attach the antenna.

Turn the VOL knob on the top front panel clockwise to turn on the power source. Turning the VOL knob more increases the output. NOTE: If the display panel is not set as shown, resetting is required.
(Turn off the power source. Then turn it on while pressing and holding the CLR key.)

Set the SQL knob at the point where noise is not heard. The BUSY display disappears when the SQL knob is set correctly.

There are two receiving modes, VFO and memory.

1. VFO MODE RECEPTION METHOD

1) To set the VFO mode when the memory mode has been initialized at power up:

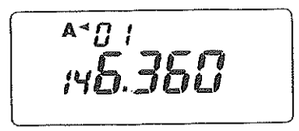
Turn on the power source. Then press the following keys to set the VFO mode.

FUN + VFO (MEM)

The display will be as shown.

2) To change from 146.000MHz to 146.360MHz:
A) Press keys as follows:

6 . * . 3 . 6



Now the reception of 146.360MHz is possible.

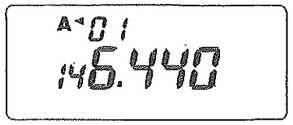
NOTE: If the operator fails to press the next key within 1.5 seconds after pressing the * key, the displayed value becomes 146.000.

B) Using the UP key/DOWN key.

To change from 146.360MHz to 146.440MHz:

Press [△] , [▽]

If the 5kHz step has been chosen, press the [UP] key 16 times. then, 146.440 will be displayed.



If the frequency difference is great (example: 146.300MHz ->145.020MHz), press

[FUN] + [▽]

The frequency will change from 146.3000 to 145.300 (a decrease of 1MHz).

Release the [FUN] key and

press the [▽] key to display 145.020.

3) High speed frequency increase/decrease using the UP key/DOWN key.

[△] , [▽]

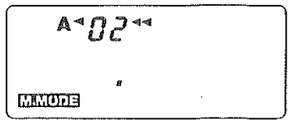
Continue to press these keys for one second or more and the frequency will change quickly by 5kHz, 10kHz, 20kHz, 12.5kHz or 25kHz. When the frequency nears the target value, release and press the key for fine frequency adjustment.

2. MEMORY MODE RECEPTION METHOD

1) How to select and store frequency.

Example: To store 145.800MHz in A02 (second memory location in the A bank).

Press [MEM] . [2] successively within 1.5 seconds. The display will blink 2 or 3 times and it will be as shown.



This display shows that the A02 location is empty.

To input a frequency of 145.800MHz, for example, input 145.800 by pressing:

[1] . [4] . [5] . [*] . [8] . [0] . [0]

The input figure blinks and the display will be as shown (The last 0 can be disregarded).

After confirming the frequency, continue to press the [#] key for more than one second. A beep will sound and 145.800MHz will be stored. The radio is ready to receive on this frequency.

If there is no signal, sounds will be produced and the symbol <-<- will disappear as shown.
The stored contents will remain unchanged unless rewritten or reset.

To store 146.700MHz in memory A08 (eighth memory in the A bank):

Press [MEM] . [8] to call up memory channel A08. Enter [1] . [4] . [6] . [*] . [7] and when it stops blinking, press [#] for 1 second or more.

(Another way to do this):

Using [MEM] [FUN] + [△] or [▽] call up memory channel A08 and then press [1] . [4] . [6] . [*] . [7] and [#] for 1 second or more.

(The last trailing 00 or 000 is automatically inputed).

NOTE: In order to input another frequency in the A02 memory, key in the value and press [#].
ENT/MW

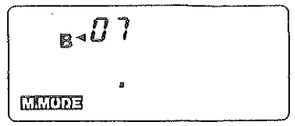
2) Memory bank selection.

There are 40 memory channels that are divided into the bank A and the bank B. (A: A01-A20, B: B01-B20).

Prior to the selection of the bank A or the bank B, make sure that there is no blinking display. (Blinking display indicates that another function is ready to be specified.) Then, while pressing the [FUN], select the bank A or the bank B by pressing

$\overset{A}{[PRI]}$ or $\overset{B}{[SCAN]}$.

Example: [FUN] + $\overset{B}{[SCAN]}$



If the bank B is selected and no data is stored for channel 07, the memory bank and channel display will be as shown.

3) Memory channel recalling.

There are two ways to call up a memory channel.

A. For example, to call up channel 17, press [MEM] . [1] . [7].
When pressing [1] and [7], max. key-in interval is 1.5 seconds. (Unless you press while the display is blinking, the channel 01 will be displayed.

B. Press [MEM] and make sure that [M.MODE] is displayed. Then, press [FUN] + [△] OR [▽] several times to specify channel 17.

Pressing [△] OR [▽] without pressing the [FUN] key allows the <-<- marked channels to be skipped.

Skipping selection:
[*] : Skip function...ON << displayed
DEL

[#] : Skip function...OFF<< not displayed
ENT

The blank channels for which no data has been stored are to be ON in terms of being skipped.

4) Memory storage (backup).

The built-in lithium battery allows memory storage. The life of a battery is, for the most part, 2 years or more. Replace the battery when it has completely discharged and memory storage becomes impossible. The lithium battery is a CR2032 type.

5) Initialized values stored in the memory.

In addition to Fig.1.1, the following items are initialized.

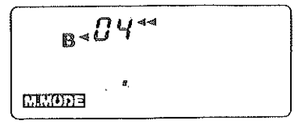
MA0 MA01 T.M	F RX CTCSS RX F TX. CTCSS TX	146.000MHz 0 0 146.000MHz 0 0
VFO MODE	CTCSS RX CTCSS TX OFFSET STEP	0 0 0 0 .600MHz 5k
SCAN	SCAN STEP A STEP B	HOLD 2 5KHz 5KHz
TIM	APOF SAVE DIAL M/S	60min 500msec 102msec
TXBAND	Lo HI	144.000MHz 147.995MHz
DTMF	C0~CP d0~d6	0 0 0 BLANK
MA19 MB19	F RX CTCSS RX F TX CTCSS TX	144.000MHz 0 0 144.000MHz 0 0
MA20 MB20	F RX CTCSS RX F TX CTCSS TX	147.995MHz 0 0 147.995MHz 0 0

6) Use of memory.

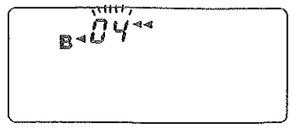
When in the VFO mode, memory channels other than MA0 or T.M. can not be called up. If other memory channels are required, use the key pad to key in the desired channel within 1.5 seconds.

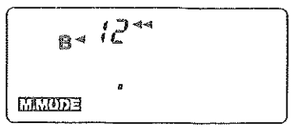
Example: If you wish to call the contents stored in bank B, channel 12, the key-strokes will be as follows:

(It is assumed that A04 is displayed).
Press [MEM] to set the memory mode. [M.MODE] will be displayed. After the blinking stops, press
[F] + $\overset{B}{[SCAN]}$ to call up bank B. The display will be as shown.



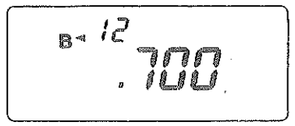
Press [MEM]. As shown the channel number will blink. Within 1.5 seconds (channel number blinking) press [1] . [2]. The display will be as shown (No memory).





NOTE: If you fail to press [2] within 1.5 seconds after pressing [1], only [1] becomes effective and the channel 01 will be called up.

To write 146.7000 into the new channel, press [1] . [4] . [6] . [*] . [7] . [0] . [0]. Then press [#] for one second or more after the blinking stops. Beep sounds will be heard and 146.7000MHz will be written into bank B, channel 12. The display will be as shown.



It is unnecessary to press the trailing zero. Using [△] or [▽], the memory channels can be checked for contents.

3. Frequency step check.

The initialized frequency step is 5kHz. To change this value to 10kHz, press:
STEP
[FUN] + [DUP] . To specify 5kHz frequency step, repeat the same operation.

STEP
Pressing [FUN] + [DUP] causes no display change, just produces beep sounds. Use [△] or [▽] to change the displayed frequency for confirmation.

The basic frequency steps are 5kHz, 10kHz, 15kHz and 25kHz. For further information on how to change a frequency step, refer to "PROGRAM EXECUTION PROCEDURE."

The following frequency steps can be specified:

5kHz 10kHz 15kHz 25kHz	FUN + DUP ->	10kHz 20kHz 30kHz 50kHz

(Refer to "PROGRAMMING PROCEDURE-SCANNING STEPS")

* TRANSMISSION METHOD

1) When the transmission/reception frequencies are equal to each other (simplex mode),

   Prior to the start of transmission, make sure that the antenna with a SWR to ≤ to 1.5:1, is connected.

   Prior to the start of transmission, make sure that the transmission frequency is not being used by another station. To do this, press [MON] or turn the SQL counterclockwise.

2) Press the PTT switch and speak into the microphone with your mouth approximately 5cm (2 in.) from it.

3) For example: Transmitting 146.520MHz stored in bank A, channel 03 on high power: The LCD display is shown.

[TX] and the power indicator will light up. With the top-panel H/L switch in the low power position, indicator will show three bars.

4) When the PTT switch is released, the radio is in receive and the power indicator bar becomes the S meter bar.

   NOTE: Very long-time transmissions with high power can increase the radio's temperature and cause possible damage.

5) Duplex mode.

   The standard offset frequency of ±600kHz is set.

   In the VFO mode, pressing [DUP] causes [−] , [+] and simplex....to be sequentially set.

   For example: With a (+) offset as in Fig.A, and H/L in H, pressing the PT automatically displays Fig.B . The transmission frequency is 147.120. If the offset frequency is out of range, transmission and offset fail to be performed.

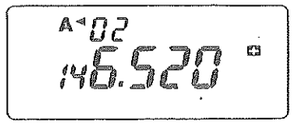


Fig. A

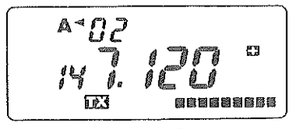


Fig. B

o In the memory mode, transmission and reception are performed on stored frequencies.

DUP cannot be used in the memory mode.

o The VFO-mode offset frequency can be changed in the program mode. Refer to "VFO MODE PROGRAMMING METHOD."

6. Transmitter power output is as follows:

	Hi (high)	Lo (low)
Battery (12V)	4 - 5	0.5
External power source (13.8V)	5	0.5

*** SCANNING**

Functions to be performed in the scanning mode, the VFO mode or the memory mode:

In the VFO mode or the memory mode, the following eight types of scanning can be conducted.

1) VFO mode
- Programmable scanning
  - A-B bank scanning
  - A bank scanning
  - B bank scanning
- Dual-watch scanning (Scanning priority)

2) Memory mode
- Memory channel scanning
  - A-B bank scanning
  - A bank scanning
  - B bank scanning
- Dual-watch scanning (Scanning priority)

o SCANNING METHOD AND SCANNING STOP/RESTART OPERATIONS

To start the scanning, press SCAN. If a signal is received, the scanning stops. There are four types of operations which can be selected by setting the program mode.

(a) STOP 4: Restarting after a 4-second pause at the frequency or the memory channel where an effective input signal is detected.

(b) STOP 8: Restarting after an 8-second pause at the frequency or the memory channel where an effective input signal is detected.

(c) HOLD 2: The scanning starts from the next frequency or the memory channel if effective signals cease to be input two seconds after the pause of scanning at a frequency or a memory channel where an effective signal is detected.

(d) HOLD 4: Same as (c) except that the delay time is four seconds.

The initialized step is (c). (For selection method, refer to "PROGRAM EXECUTION PROCEDURE."

To stop the scanning, press △ or ▽ or FUN.

Pressing MAO or T.M stops the scanning and calls up the MAO or T.M memory channel. During scanning, if an input signal is detected and the PTT switch is pressed, the scanning stops and the transmitter is turned on. But if there is no signal detected, the scanning stops and the transmitter is not turned on. Press the PTT switch again to transmit.

SCANNING MODE SELECTION (Refer to "FREQUENCY SELECTION AND MEMORY STORAGE".)

1) Programmable scanning/VFO mode

a) A-bank scanning
Scanning is to be conducted between the receiving frequencies specified by the memory channels A19 and 20, with the specified frequency step.

b) B-bank scanning
Scanning is to be conducted between the receiving frequencies specified by the memory channels B19 and 20. (Same as the A-bank scanning.)

c) A-B bank scanning
Alternate scanning of a-bank and B-bank scanning.

2) Memory mode scanning

a) A-bank scanning
Scanning of the memory channels A01 to 20.

b) B-bank scanning
Scanning of the memory channels B01 to 20.

c) A-B bank scanning
Alternate scanning of the memory channels, A01-20 and B01-20.

Memory channel skip:

Scanning skip is possible on any memory channel. (lock-out)
Skip-off....ENT key
Skip-on ....DEL key

Example: When Fig.C is displayed, pressing [*] causes the memory channel display, A<-07 to change to A<-07<-<-. The changed display shows the scanning skip. See Fig.D.

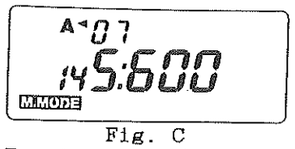


Fig. C

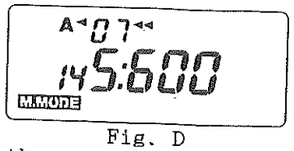


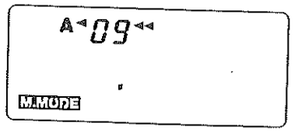
Fig. D

To stop scanning skip, call up the memory channel and press

[#]
ENT

And then, press [MEM] . [D] . [7], or [FUN] + [△] or [▽] to clear the displayed <-<-.

When calling up a channel which has not been stored, the display will be as shown
At this time pressing [#] causes no change.
ENT/mw

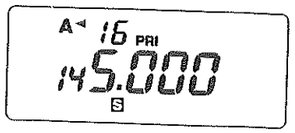


* PRIORITY OPERATION (DUAL WATCH)

If priority operation is activated in the VFO mode or the memory mode, dual watch of the frequency being received and the MA0 channel can be set. The MA0 channel is checked approximately every four seconds. Receiving a signal on the A0 channel produces beep sounds and lights "S".

Press [PRI] to turn the priority operation on/off.

During the dual watch mode, pressing the PTT switch allows immediate transmission for the channel set in the VFO mode or the memory mode.



* TONE/CTCSS ON/OFF

Refer to "PROGRAM EXECUTION PROCEDURE" for the CTCSS frequency program. Otherwise, the CTCSS will not operate.

There are two program execution procedures as shown below:

A. Program execution in the VFO mode.
B. Program execution in the memory mode.

CTCSS encoding or decoding operation is as follows:
o CTCSS encoding (transmission).
TONE
[FUN] + [3]
o CTCSS decoding (transmission)
T.SQ
[FUN] + [6]

* PROGRAM EXECUTION PROCEDURE

Turning the program mode on/off.

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX.)
Before executing program, set the program mode.	PROG FUN + [0] (1 sec.)	PR display blinks. (Received freq.) 

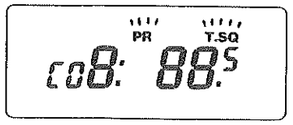
A) VFO mode program
B) Memory mode program

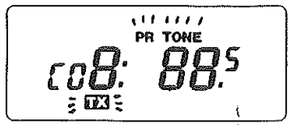
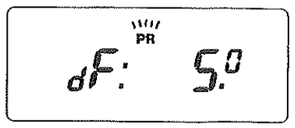
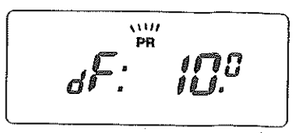
When program execution stops, release the program mode.	PROG FUN + [0] NOTE: Automatically turned off when no information is keyed in for 10 sec. or more in the program mode	Returning to the pre-program mode.

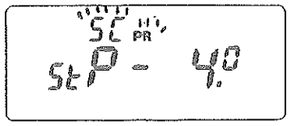
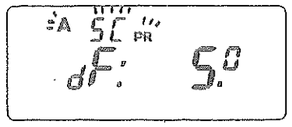
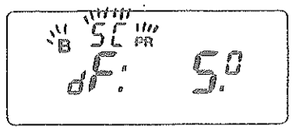
A) Program execution method in the VFO mode (after setting the program mode)

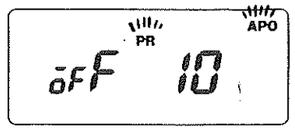
ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX.)
Reception CTCSS decoder	[#] Press ENT/MW while "PR" is blinking	

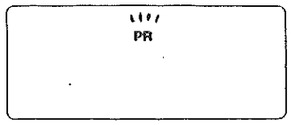
To be selected with [△] or [▽]
Example: 88.5Hz to be specified



ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
	[#] ENT/MW (For next item to be displayed)	
Transmission CTCSS encoder	[△] , [▽] Example: 88.5Hz to be set	
	[#] ENT/MW (For next item to be displayed)	
Offset width setting 0-20.0MHz	Set the desired offset value using FUNC, [△] and [▽] (Example: 560kHz)	
	[#] ENT/MW (For next item to be displayed)	
Frequency step setting	Selected with [△] and [▽] (5.0 <->10.0 <->15.0 <->25.0 <->... Example: 10kHz	

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
	[#] ENT/MW (For next item to be displayed)	
Scanning hold time method setting	To be selected with [△] and [▽] (STOP4<->STOP8<->HOLD2<->HOLD4<->..	
	[#] ENT/MW (For next item to be displayed)	
A-bank scanning skip setting	To be selected with [△] , [▽] . (5.0<->10.0<->15.0<<->25.0<->...) Example: 10kMz step specified.	
	[#] ENT/MW (For next item to be displayed)	
B-bank scanning skip setting	To be selected with [△] , [▽] Example: 15kHz step specified	

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
	[#] ENT/MW (For next item to be displayed)	
Automatic power -off timer setting	To be selected with [△], [▽] (10<->30<->60<->120<->...) Example: 10 minutes shown	
	[#] ENT/MW (For next item to be displayed)	
Battery saving timer setting	To be selected with [△], [▽] (125<->250<->500<->1000<->...) Example: 1000m specified	
	[#] ENT/MW (For next item to be displayed)	
Automatic-dial mark/space time setting	To be selected with [△], [▽] (102.0<->204.0<->408.0<->51.0<->) Example: 51ms specified	

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
	[#] ENT/MW	

CTCSS frequency (Hz)

C01 67.0	C14 107.2	C27 167.9
C02 71.9	C15 110.9	C28 173.8
C03 74.4	C16 114.8	C29 179.9
C04 77.0	C17 118.8	C30 186.2
!	!	!
C13 103.5	C26 162.2	C39 69.3
		C40 1750.0 Tone burst

/_____/VFO mode has been set/_____/

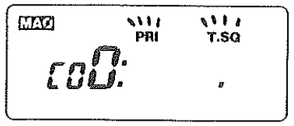
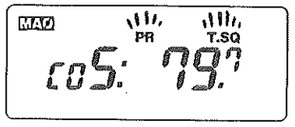
B) Setting in the memory mode

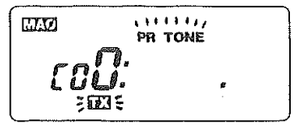
The VFO-mode setting procedure mentioned in A) is common to all the frequencies used in the VFO mode. In the memory mode, each memory channel can be set separately.

Prior to the start of the operations mentioned below, set the program mode.

MA0 and memory channel program:

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX.)
Memory address (MA0,MA01-20 MB01-20	PR blinking (At the beginning of various settings such as blinking UP/DN)	
	[△], [▽]	
	Select the desired memory address using appropriate keys. EX: MA0 channel setting	

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
	[#] ENT/MW (Next item to be displayed)	
Receiving frequency setting	Using [FUNC], [△], [▽] keys, or 0-9 and * keys, adjust the frequency to the desired value.	
	[#] ENT/MW (Next item to be displayed)	
Receiving CTCSS decoded-frequency setting	To adjust the frequency, use: [△] and [▽]	
	[#] ENT/MW MA channel is set	Next memory address shown. 
Transmitting frequency setting	Using FUNC, [△], [▽] keys, or 0-9 and * keys, adjust the frequency to the desired value.	

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
	[#] ENT/MW MA channel is set	Next memory address shown. 
Transmitting encode CTCSS frequency setting	To adjust the frequency, use: [△] and [▽]	
	[#] ENT/MW MA channel is set	Next memory address shown.

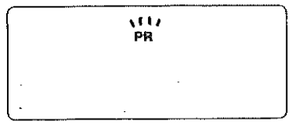
NOTE: In memory mode, the set values of the following items are the same as the VFO mode.

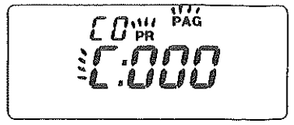
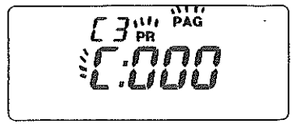
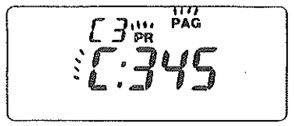
Scanning Mode
Scanning skip
Automatic power-off
Battery saver timer

*** DCS OPERATION (DTMF CODE SQUELCH)**

The DCS operations are classified into pager operation and code squelch, allowing selection of seven channels (C0-C6, <CP>) using 3-digit (decimal) DTMF signals. C0XXXX represents the individual codes of the station. C1XXX -C5XXX represent group codes. CP-CPXXX allows automatic storage of the individual code of the station selected in terms of the individual code C0.

DCS code program execution

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
Set the program mode	PROG FUN + [0] (1 sec.)	PR display blinks. 

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
Start of DCS code program	PAGR FUN + [8]	
Selecting the DCS code address	To specify the address use [△] or [▽] (Ex: C3 displayed)	
DCS programs (0 - 9)	Ex: 3->4->5 (Codes to be set by 0-9 keys)	
	Automatically written 1.5 seconds later, then PR display	
Cancel the DCS code program	PAGR FUN + [8]	(Returns to the start of the various settings) 

NOTE: Pressing [0] (CLR) clears displayed addresses.

NOTE: The codes that have been set here are common to both the pager operation and the code squelch operation.

Dial code program

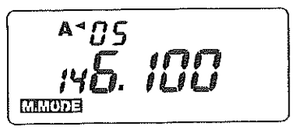
ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
Set the program mode	PROG FUN + [0] (1 sec.)	

ITEM	KEYBOARD OPERATION	LCD DISPLAY (EX)
To start DIAL code program	During program mode: [0] DIAL	The contents of the address are displayed on the left. 
Selection of DIAL code address (d0-d6)	To be specified by [△] or [▽]	The contents of the address are displayed on the left. 
DIAL code programs (0-9, *,# A-D)	0 - 9, * , # A - D used to set programs. (Max. 16 digits)	To be displayed on the left
	Automatically written 1.5 seconds later (Beeps twice.)	
DIAL code program release	[0] DIAL	(UP/DN: Returns to the start of the various settings)

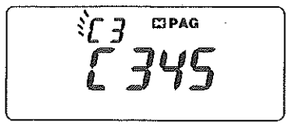
NOTE: Pressing the [0] (CLR) key clears the displayed addresses.

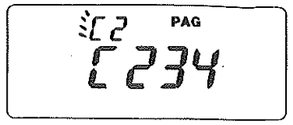
*** PAGER OPERATIONS**

1) Set the operating frequency.



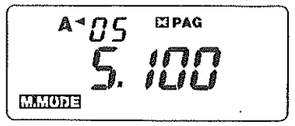
2) Press [FUN] + [8] (PAGE) to select the PAGR mode. When this mode is selected, the last DCS code address and its contents are displayed. In this state, pressing [△] or [▽] allows the address to be changed.





Four seconds after the last key operation, the DCS address and the code cease to be displayed, and then the memory address and the frequency are automatically displayed.

NOTE:
A) The symbol * shows that this address is ready to receive.
B) If the symbol * is not displayed, receiving an address code causes no operation.
C) Pressing the key [*] causes the PAGR mode to be turned on/off.
(CO: * always displayed)

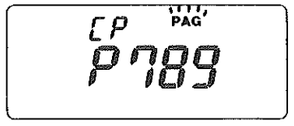


3) Pager reception

After the set up is completed, reception becomes possible in terms of selected code of its own station (CO) or *-attached group code.

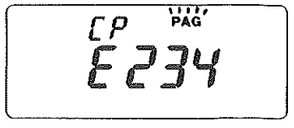
a) When receiving the individual code of its own station:

The code of the called party is displayed and "PAG" blinks.



b) When you fail to receive the individual code of the other party:

CP (individual code of the other party) is displayed as well as E. "PAG" blinks.



1.5 seconds after no signals are detected, the resetting is conducted, thus leading to the state of being ready to receive.

4) Pager transmission

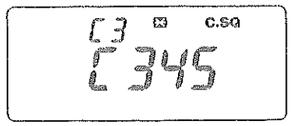
Pressing the PTT switch allows 7-digit DTMF codes to be encoded and transmitted.

Even if the PTT switch is turned off part way, transmission continues until the seven digits are outputed. The DTMF signals can be monitored by the speaker.

* CODE SQUELCH OPERATION

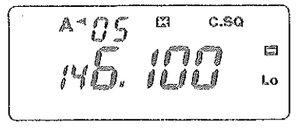
1) Set the operating frequency.

2) Select C.SQ by using the [PAGR] key. (The same as "PAGER OPERATION...2)



3) C.SQ reception

After 1) and 2) above are completed, reception becomes possible in terms of the individual code of its own station (CO) or the *-attached group code. Receiving 3-digit DTMF signals releases voice squelch.



4) After 1) and 2) above are completed, 3-digit DTMF signals are encoded. Even if switched off, transmission continues until 3 digits are outputed. The DTMF signals can be monitored by the speaker.

Pressing the [CLR] key turns off PAGR and C.SQ.

* DTMF OPERATION

There are two types of DTMF encoding operations:

1) Manual encoding
2) Automatic dial encoding

NOTE: The automatic dial encoding method allows a max. of 16-digit hexadecimal DTMF codes to be automatically encoded in seven channels (d0 to d6). For the automatic dial mark/space, four types, i.e., 51, 102, 204 and 408ms are available in the program mode.

1) Manual encoding

   a) Set the operating frequency.

   b) Press the PTT switch to set the transmission mode.

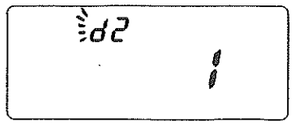
   c) Pressing each of 0-9, * and # keys causes the keyed-in DTMF signals to be encoded. Even if the PTT switch is turned off, transmission continues to be conducted for 1.5 seconds. So, pressing a key during that time allows continued encoding.

   d) Transmitted DTMF signals can be monitored by the speaker.

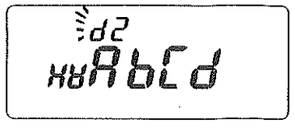
2) Automatic dial encoding

   a) Set the operating frequency

   b) Pressing [0] (DIAL) causes the last dial memory used and the memory contents to be displayed sequentially. While the address (d) is blinking, pressing [△] or [▽] allows the address to be changed.



   The contents are displayed to the left. Finally, the last six digits are displayed. The display speed is 2 to 3 digits/second.



   c) While the displayed address is blinking or lighting, pressing the PTT switch allows the max. 16-digit DTMF codes stored in this address to be encoded. After that, the transmission frequency will be displayed.

   NOTE: After the automatic dial transmission, the automatic dial function will be canceled. To set this function again, press the DIAL key and turn on the PTT switch. Under the condition (b), pressing the CLR key or the DIAL key turns off the automatic dial function and the reception frequency will be displayed again.

* BATTERY SAVING

During the normal standby or priority operations, pressing [FUN] + [2] (SAVE) activates the battery saving function (>> display), reducing the power consumption. Intermittent operations cannot be preformed during the pager, code squelch and scanning operations. The initialized value is 500ms.

* AUTOMATIC POWER-OFF

Pressing [FUN] + [8] (APOF) allows the automatic power-off function to be activated (APO display). After the passage of a preset time from the key-in operation, the transceiver will be switched off. One minute before the switch-off, an alarm will be given. To cancel the automatic power-off function, press the APOF key again.

After the transceiver is switched off due to the automatic power-off functions, the power source will be turned on by switching off the unit and then switching it on. But the automatic power-off function remains turned on. Automatic power-off time is adjustable to 10 minutes, 30 minutes, 50 minutes and 120 minutes. The initialized time is 60 minutes.

Turning on the power source after the automatic power-off.

In the automatic power-off mode, even if the power source is turned off, the POWER/VOL knob is in the ON state. To turn on the power source again, set the POWER/VOL know to OFF and approx. five seconds later, turn it on.

*** RESETTING METHOD**

Turning on the power source while pressing the CLR key erases all the stored information, thus returning to the initialized state.

*** MAINTENANCE**

Lithium battery replacement:

The built-in lithium battery powers the memory storage. Even if the power-switch is turned off, no information will be lost from the memory. But, if the life of the battery seems to be near the end, please contact Azden to replace it with a new one.

*** ACCESSORIES (Optional)**

- Extra BP-11
  (12VDC, 600mh)
  NiCd battery pack

- Soft carrying case
  LC-16

- Waterproof speaker/microphone
  SDX-514W

- DC cord AD-16