

English

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## Introduction

Congratulations on your purchase of the **ALAN HP 446 extra**, an advanced PMR446 professional radio allowing you to cover a range of up to 5-6 km.

You may use your **Alan HP 446 extra** in any country where the PMR446 frequencies are authorized. Contact your dealer for further information.

Your **ALAN HP 446 extra**, thanks to its rugged design will be your friendly partner, even during the hardest working day, while the liquid crystal display (LCD) and user friendly controls make it easy to use by all.

## This manual

Read the instructions of this manual as well as the instruction labels on your **ALAN HP 446 extra** carefully.

Every effort has been made to ensure that the information in this document is complete, accurate and up-to-date. CTE International accepts no responsibility for actions resulting from errors beyond its control.

Changes made to the equipment by non-authorized personnel **MAY** affect the applicability of the information contained in this document.

## Cautions



**Do not carry the transceiver by the antenna.** This may damage the antenna or its terminal.



**While transmitting, do not hold the antenna very close to you or allow it to touch exposed parts of the body.**



**Do not operate the radio near unshielded electrical blasting caps or in an explosive atmosphere.**



-30°C/+60°C

The radio is designed to operate in harsh environmental conditions. However, avoid exposing it to extreme hot or cold temperatures (beyond the range -30° C to +60° C).



Do not expose your ALAN HP 446 extra to excessive vibration, dust or moisture (rain).



**Do not service the radio or the batteries by yourself** (other than the routine maintenance described in this handbook).



**To avoid damages on your ALAN HP 446 extra use only ALAN genuine accessories.**



**Do not use your radio near water or spill liquid of any description into it.** If the transceiver gets wet, dry immediately with a clean, soft cloth.



**Switch the radio off before you clean it.**

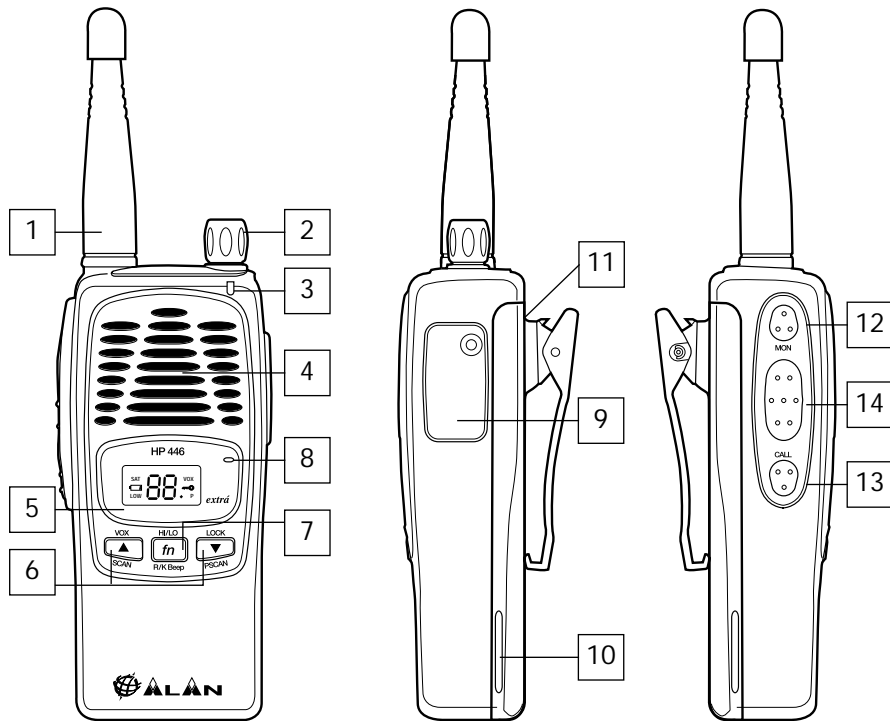


Be certain that your AC power source is suitable for the charger supplied.






To avoid damaging the power cable of the battery charger, do not put anything on it.

# CONTROLS AND INDICATORS



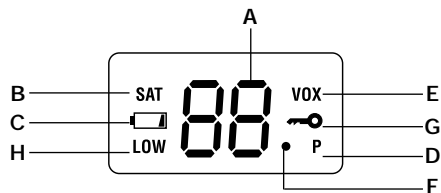
## TOP/FRONT




- [1] Stubby Antenna
- [2] ON/OFF and volume knob
- [3] Status LED
- [4] Speaker
- [5] LCD display
- [6]  and  buttons.
- [7]  Function button
- [8] Microphone

## SIDE (LEFT AND RIGHT)

- [9] 2 pin accessory connector. Protected by a plastic cap.
- [10] 1300 mA/h NiMH Battery pack.
- [11] Battery pack release button.
- [12] Monitor (MON) button. Defeats squelch operation but also switches CTCSS/DCS (SAT) on and off.
- [13] CALL button. Sends a paging call (if enabled).
- [14] Push to talk (PTT) button. Press and hold to transmit (speak), release to receive (listen).

## Display indications



- A. Channel number
- B. SAT CTCSS/DCS Tone indicator
- C.  Battery level indicator (blinking when the battery is low)
- D. P Priority channel indicator
- E. VOX Light to indicate Vox is on
- F.  Light to indicate the CH is on Scan list
- G.  Light to indicate key lock
- H. LOW Light to indicate RF Power is low

## SETUP

### Accessories supplied as standard in the box:

- a. Transceiver main body (with stubby antenna).
- b. High capacity 1300mA/h NiMH battery pack.
- c. Slow desk top battery charger
- d. Belt clip
- e. User guide (this booklet)

### BATTERY INSTALLATION/REMOVAL

1

1. Place the battery pack into the bottom of the radio.

2

2. Push the battery pack towards the back edge of the transceiver until you hear a click indicating that the battery pack has snapped into place and is now fully locked.

*To remove the battery pack:*

1

1. Press the battery release button [11] and hold .

2

2. Pull the battery pack away from the transceiver back edge.

## INSTALLING/REMOVING THE BELT CLIP

1

1. Gently slide the clip from top to bottom into the appropriate guides located on the back of the transceiver until it locks.

1

2

*To remove the belt clip:*

1. Press the small plastic lever located on the top of the belt clip.
2. Gently slide the belt clip towards the antenna until it comes away from the transceiver.

## Charging the battery pack

The new 1300 mA NiMH battery pack will not hold a full charge.

It will need to be cycled at least 3 times. To cycle a battery it is necessary to fully discharge it and then charge it. Battery life may be extended by cycling every month.

1. Connect the cable mounted jack from the AC adaptor to the

socket located on the charger base. Plug the AC adaptor into an AC power outlet.

2. Switch the transceiver off.
3. Insert the radio, with the keypad towards you, into the charger-base.
4. The status led of the charger turns red indicating that the charging process is on.
5. Leave the radio in the charger until the battery is fully charged (this may take up to 10 hours with the slow charger; to 2 hours with the rapid charger).



Suggestion  
**BOX**

### **Do not overcharge the battery.**

If possible only charge the battery when it is fully discharged or has been used for a considerable period of time, re-charging partially discharged batteries will result in memory effect.

**The charger of your ALAN HP 446 extra allows also the charge of the battery pack on its own.**

## **Autonomy**

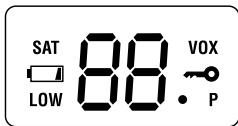
Up to 26 hours with the standard duty cycle (10% conversation, 90% standby). Such values have been obtained during testing. The effective autonomy is influenced by : use of the radio, enabled functions such as Time Out Timer. The power save function may be enabled by your system administrator only.

 blinking when the battery charge is low.

## And now, let's communicate!

### SWITCHING THE RADIO ON/OFF

1. Rotate the **VOL** knob clockwise. The radio will run a rapid autotest at the end of which an audible "tone" will indicate that the radio is operational.
2. The display will show the current operating mode.
3. The current operating mode will be saved automatically within 0.5 seconds of any change made by the user.
4. **Note:** The following icons will be displayed depending on the operating mode.



- "Low" refers to output power/nothing stays for high.
- "•" indicates that the channel is in the scan list.
- "P" is displayed when the channel has priority in the scan list.
- "SAT" indicates that the channel has been programmed for CTCSS/DCS
- " [Battery Icon] " indicates battery level (blinking when the battery is low).
- "VOX" is displayed when the VOX facility has been selected.
- " [Key Icon] " is displayed when the keypad is locked. Only the PTT button is operational.
- To switch the radio off rotate the **VOL** knob counter-clockwise until a click is heard.

### ADJUSTING VOLUME

Turn the knob clockwise to increase the volume, counter-clockwise to reduce the volume.

### CHANNEL SELECTION

To select a channel:

- Press the key to increase the channel number or the key to decrease the channel number.

### CALLING ANOTHER PARTY

1. Check that the channel is not busy (status LED is not glowing). Do not press the **PTT** button if someone else is speaking as both messages will be lost.
2. Press the **PTT** button, the status LED will now glow **red**.
3. Hold the radio about 5-10cm away from your face and speak at a normal volume across the front of the radio.  
Keep the **PTT** button pressed for the duration of your speech.
4. Release the **PTT** button when you have finished speaking.

**Note:** Shouting into the microphone will not increase your range but will cause an increase in distortion.

**Note:** Releasing the PTT button before you have finished speaking will result in your message being lost.

### CTCSS/DCS

Your ALAN HP 446 extra can operate in two modalities:

- OPEN CHANNEL : all signals transmitted on the selected channel will be heard. The status LED will glow **green**.
- GROUP MODALITY CTCSS/DCS: **CTCSS and DCS tones are "access tones"** that allow you to receive only calls from parties using same channel and code.  
The status LED will glow green when signals with the correct CTCSS/DCS code are received, it will **glow amber** if signals with the **incorrect** CTCSS/DCS code are received.

## Advantages with the Use of CTCSS/DCS

### 1. PRIVACY

Your ALAN HP 446 extra with its 50 CTCSS tone sets and 104 DCS tones, **provides privacy between users co-existing on the same frequency** but using different CTCSS/DCS tones.

### 2. GROUP CALL










CTCSS and DCS may be used also to address "group call" to users with the same CTCSS/DCS code.

However interference will be caused if more than one user transmits at the same time, it is therefore recommended not to transmit if the status LED is glowing (either green or amber).

## HOW TO SET A CTCSS/DCS CODE


To set CTCSS/DCS codes:

Turn the radio off.

- Press and hold the  and  buttons while turning the radio on.
- Release the  and  buttons.
- Press the  or  key to select the **channel**.
- Press the function  button, the display will now show the **tone code**.
- Press the  or  button to select the code required.



**Note:** the number is shown in hexadecimal format, refer to **Remind Appendix Σ** for information on this numbering system.

- Press the function  button and **switch the radio off** to store the setting.

## PRESET CTCSS CODES

To facilitate CTCSS/DCS setting, your ALAN HP 446 extra has been programmed by the factory with a range of preset CTCSS codes (pls refer to APPENDIX A ).

### ENABLING/DISABLING CTCSS/DCS codes:

To enable pre-setted CTCSS/DCS press **(MON)** button once or twice until the SAT icon appears on the LCD display. When the CTCSS/DS is enabled, the speaker will be muted unless the correct CTCSS/DCS code is received.

## MONITOR FUNCTION

The monitor function is used to check the activity on the selected channel before transmitting.

**The squelch (noise reduction device)** is defeated by pressing and holding the **MON** button for 3". In this mode a continuous noise will be heard from the loudspeaker.

Pressing once the **MON** button will result in defeating the SAT mode.

**Note:** Defeating the squelch and leaving the radio in this mode will result in reducing battery life.

## BUSY CH FUNCTION

**Once programmed the BUSY CHANNEL LOCK OUT function**, disables transmission if the **PTT** button is pressed while the channel is busy.

## TIME OUT TIMER

Your administrator/dealer may have programmed a "time out timer" to set the maximum duration of conversation.

Timeout-timer, automatically switches the radio from transmit to receive if your speech exceeds the pre-set time.

To defeat TOT simply release the **PTT** button and wait for a few seconds before pressing the **PTT** button again (don't forget to check if the channel is busy!).





**TOT Helps extend your battery life!**




## SCANNING CHANNELS

Channels may be incorporated into a scan list and scanned.

To add or delete channels from the scan list:

1. Select the channel.  
Press **CALL** and **MON** buttons simultaneously, the "•" icon will appear or disappear.
2. To **start scan** hold **CALL** button and press the  button, the channel numbers will now cycle continuously.
3. To **stop scan** hold **CALL** button and press the  button.
4. To **review** the scan list scroll through the channels using the  and  buttons, channels included in the scan list will show a "•" in the display.

### Priority channel:

1. A channel may be assigned as the priority channel, it will then be scanned more frequently than the others.
2. To assign or remove the priority channel:
  - Select the chosen channel.
  - Press **CALL** and  buttons simultaneously, the "P" icon will appear or disappear.

**Note:** At least two channels must be added to the scan list for the radio to scan.





A low frequency beep will be heard if scan is selected but no channels have been added to the scan list.

**Note:** Scan will stop if a signal with the correct CTCSS/DCS code (if programmed) is received on a channel, scan will resume when activity on the channel stops.

**Note:** The **PTT** button should not be pressed while the radio is scanning.

## RADIO LOCK

This protects against accidental button pushes.

- Press  and  buttons simultaneously.
- To unlock the radio press  and  buttons simultaneously.

**Note:** When the radio is locked only the **PTT** and **MON** buttons are enabled.

## Advanced operations

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### HANDSFREE TRANSMISSION WITH VOX

**VOX** (Voice Operated Transmission) is an automated system which allows hands-free conversation with your ALAN HP 446 extra.



The sound of your voice activates transmission once you connect the proper headset (see the optional accessory table).

When you stop talking the radio will revert to receive mode.

#### To enable VOX function:

- a. Turn the radio off.
- b. Press and hold the  and  buttons while **turning the radio on**, the **VOX** icon will be displayed on the LCD.
- c. Connect the external headset to the radio through the dedicated connector [9].

Your ALAN HP 446 extra **VOX** has two sensitivity levels to suit to different background noise.

Press the  and  buttons to adjust **VOX** sensitivity;(the status LED should glow red continuously while you are talking).

- A **flashing VOX** icon indicates **low sensitivity**
- A **constant VOX** icon indicates **high sensitivity**



In high noise environmental conditions set the VOX sensitivity to low level, otherwise spurious transmissions may occur due to extraneous noise.

**Note:** The PTT button is disabled when VOX is selected.  
**To disable VOX function follow the same procedure.**

## PAGING CALL

Other users on the same frequency with the same CTCSS/DCS code may be alerted by pressing the **CALL** button, a ringing beep will be heard by the other users.

To send a paging call:

- Press and hold the **CALL** button

## ROGER BEEP (END CONVERSATION BEEP)

A roger beep will be heard by all users on the same frequency with the same CTCSS/DCS code whenever the **PTT** button is released, indicating that the conversation is finished.

To enable/disable the roger beep facility:

- Press the  and **CALL** buttons simultaneously

## KEY BEEP

A beep will be heard whenever any button (except PTT) is pressed.

To enable/disable the key beep facility:

- Press the  and **MON** buttons simultaneously

## Care and maintenance

### BATTERY PACKS


#### *Information on rechargeable batteries*

- A correctly maintained battery pack will be good for at least 400 charge/discharge cycles.
- All batteries are prone to self-discharge while not being used, a nickel metal hydride (NiMH) battery may lose up to 20% of the stored charge within a few days.

#### *Memory effect*

The NiMH battery pack supplied with your ALAN HP 446 extra are virtually free of memory effect typical of the Ni-CD elements. Although continuous misuse, will eventually lead to a reduction in capacity.

Observing the following procedures will reduce memory effect and prolong the life of the battery:

- **Charge battery packs only when they are fully discharged, ie when  is blinking.**
- Do not partially charge the battery.
- Cycle the battery at least once a month ( full discharge followed by a charge).
- Having a spare battery means that you will always have a fully charged battery and that both batteries will be in peak condition.

#### *Erasing memory effect*

Memory effect may be cured by applying 3-4 deep charge/discharge cycles:

- a. Install the battery pack to be cycled on the radio, switch radio on and leave until the radio switches off automatically, switch the radio off using the **VOL** knob.
- b. Wait for at least one hour and switch the radio on, leave until the radio switches off automatically, switch the radio off using the **VOL** knob. Repeat this at least three times.
- c. Turn the radio off, insert into the base unit of the charger and charge the battery.

- d. Check the life of the battery the next time it is used, repeat steps a. to c. if memory effect is still present.

**Note:** If the problem persists then the battery pack is probably faulty, in which case contact your dealer to arrange for purchase of a replacement battery.

#### General Precautions

Please follow these precautions to avoid damage to the battery pack or the transceiver.

- Do not short-circuit the battery terminals, this may cause a fire or an explosion.
- Always un-plug the AC adaptor from the AC power source before attempting to clean the charger or the radio.
- Do not store batteries to temperatures below  $-20^{\circ}\text{C}$  or above  $+35^{\circ}\text{C}$  during normal use and do not charge batteries at temperatures below  $+5^{\circ}\text{C}$  or above  $+55^{\circ}\text{C}$ .

## RADIO MAINTENANCE

#### Cleaning battery packs

The battery contacts may be wiped with a clean, lint free cloth to remove any grease or dirt which may prevent a good electrical contact. A soft pencil eraser (not an abrasive ink eraser) may be used if the contacts are very dirty.

#### Cleaning the radio

The radio may be wiped with a clean, lint free cloth to remove any grease or dirt, stubborn marks may be removed by the use of a damp cloth.

**Note:** If your radio is to be used in harsh or dusty environments it is recommended to use the carry cases available for this model.

#### Connectors

When not in use the accessory connectors should be fitted with the protective covers supplied.

- Do not use any liquid alcohol or inadequate cleaners.

## Optional accessories

A full range of optional accessories is available.

Please refer to table "B".

- **Spare battery pack.** Extends the talk time of the radio and may reduce the likelihood of memory effect.
- **Carry case.** Protects the radio against knocks and guards against scratches, ideal for use in harsh environments.

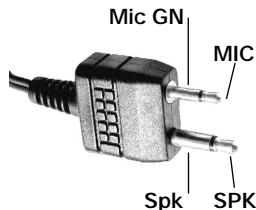
## MICROPHONE CONNECTOR

The microphone connector is designed for the use of external audio accessories:

- **External speaker/microphone.** Allows use of the radio while being firmly secured to a belt or tucked inside a protective coat.
- **External headset with built-in VOX microphone.** Allows use of the radio in hands-free mode.

Connection specifications are:

- Jack connectors for speaker (SPK) and microphone (MIC) must be standard 3.5mm and 2.5mm types respectively and be connected as follows:













- The suggested speaker impedance is  $8\Omega$ .
- The microphone should be a low-impedance condenser type.

**Note:** Do not connect any accessory which you are unsure of, if in doubt contact your dealer.

## Quick reference

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### Operation

- a. Press the **MON** button to enable/disable CTCSS/DCS (group mode). SAT icon is displayed when CTCSS/DCS is enabled.
- b. Press and hold the **MON** button to enable/disable the squelch.
- c. Press the **CALL** and  buttons to select scan.
- d. Press the **CALL** and **MON** buttons to change the scan list. "•" icon is displayed if the channel is included in the scan list.
- e. Press the **CALL** and  buttons to select the priority channel. "P" icon is displayed.
- f. Press the  and  buttons to lock/unlock the radio. Only the **PTT** and **MON** buttons are enabled when the radio is locked.
- g. Turn off the radio, press and hold the  and  buttons while turning the radio on to enable/disable **VOX**. **VOX** icon is displayed, **PTT** button is disabled.
- h. When **VOX** is enabled press the  and  buttons to set **VOX** sensitivity. Flashing **VOX** icon indicates low sensitivity.
- i. Press the **CALL** button to send a paging call to other users using the same channel and CTCSS/DCS code.
- j. Press the  and **CALL** buttons to enable/disable the roger beep.
- k. Press the  and **MON** buttons to enable/disable key beeps.

## Main specifications

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ALAN HP 446 extra meets the requirements of ETS 300 296, the robust mechanical design is compliant with IEC529 (level IP54).  
CTE International has a policy of continuous quality improvement, for this reason specifications may vary without prior notice.

- **Do not service the radio or the batteries by yourself** (other than the routine maintenance described in this handbook). It will immediately void the warranty and may cause irreparable damage. Always contact your local dealer for assistance.

## Technical Specifications

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### TEST METHODS

ETS 300-296 - IEC 529 IP54

### GENERAL

Frequencies .....	446.00625 - 446.09375 MHz
Number of Channels .....	99
Frequency Control .....	PLL Synthetiser
Channel spacing .....	12,5 KHz
Temperature Range operative .....	-30 °/ +60 °C,
Power Supply .....	7.2 Vdc batt. NiMH 1300mA/h
Frequency Stability .....	±2.5ppm

### TRANSMITTER

RF Output Power .....	0.5W ERP ± 1dB
Modulation System .....	F3E (FM)
Maximum Deviation .....	±2.5 KHz
Adjacent Channel Power .....	< -60dBc
Spurious Emissions .....	-70dB min.
Audio distortion .....	5% max

### RECEIVER

Circuit Type .....	Double Conversion
Intermediate Frequencies .....	45.1 MHz, II 455 KHz

Sensitivity .....	< 0.35µV @ 12 dB SINAD
Squelch sensitivity .....	10 dB SINAD
Current drain	
Squelched (with Power saver) .....	18mA, typical
Squelched (w/o Power saver) .....	55mA, max.
Rated Audio .....	160 mA, max
Co-channel Rejection .....	within legal terms
Adjacent Channel Selectivity.....	within legal terms
Spurious Rejection .....	within legal terms
Intermodulation Resp. Rejection.....	within legal terms
Blocking.....	within legal terms
Hum and Noise Ratio .....	-40dB min.
Rated audio output .....	400mW at 5% T.H.D. (1KHz)

### AF & signalling

Audio power.....	> 500mW
CTCSS decode sensitivity .....	> 8 dB Sinad
CTCSS decode selectivity .....	accept tones ±0,5%, reject tones ±3%

### Mechanical Specs

Dimensions .....	133 x 40 x 62 mm (with battery pack)
Weight.....	362 gr (with battery pack)
Battery .....	Back slide battery
Accessory/programming connector .....	mono Jack
Water & dust .....	IEC529 IP54

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