HP125

VHF Handheld PMR Transceiver

User's Manual

In this book…

Introduction

Congratulations. HP125 is an advanced PMR (Professional Mobile Radio). Its rugged design allows it to be your reliable partner even during hard working days. Its large LCD as well as user friendly controls make the HP125 easy to use.

HP125 is a real system radio, supporting CTCSS/DCS, 5 tone signaling systems (encoder/decoder up to 28 + 28 tones), FFSK, DTMF and trunking system property. Selcall mode supports also many facilities, such as an alphanumeric address book, a call queue function as well as a status message table. You can also use FFSK to send/receive short text messages which you can enter via the alphanumeric keypad. The way your radio operates may be upgraded and may differ from what is described here.

To extend the flexibility, the radio is provided with VOX function, which allows you to switch on the transmitter just by talking using an optional headset for full hands free operation.

Since standard operation can be changed by programming, the functions of the radio and the buttons used to activate them can be modified to meet your needs. Please contact your radio network administrator or dealer for further details.

Transceiver's specifications provided in HP125 are compliant with ETS 300 086 and ETS 300 113, moreover its top level design and resistance are compliant with IEC529 level IP54 and MIL STD 810 C,D,E.

CTE International is committed to continuous quality, for this reason specifications may vary without prior notice.

Warning notes

Every effort has been made to ensure that the information in this document is complete, accurate, and up-to-date. CTE International assumes no responsibility for the results of errors beyond its control. The manufacturer of this equipment also cannot guarantee that changes in the equipment made by non authorized people will not affect the applicability of the information in it.

This user's guide is subject to change without notification. This booklet is referred to equipment software version 1.0. If you own a later one please contact CTE International for the most recent updates.

Safety

Your HP125 handheld transceiver has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the radio:

- **Read the instructions** in this handbook carefully. Be sure to save it for future reference.

- **Read and follow all warning and instruction labels on the radio itself**.

- **Do not carry the transceiver by the antenna**. This may damage the antenna or antenna terminal. Grasp it by its base (not the tip!) when you need to replace or remove the antenna.

- **Do not** transmit the radio with the antenna very close to or touching exposed parts of the body. The radio will perform best if the microphone is 5-10 cm away from the mouth and the radio is vertical.

- **Be sure** the PTT key is not pressed when you don't need to transmit.

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

- **Do not transmit without the antenna fitted on the radio**. Although the HP125 is provided with a

protection circuit, damage to the TX final stage could result.

- **Respect the environment conditions**. The radio is designed to be used in heavy environments, however avoid exposure to extremely hot or cold temperatures (out of the range between –30 to +60°C). Don't expose the transceiver to excessive vibrations as well as dusty or rainy places.

- **Never try to disassemble or service the radio yourself** (aside from the routine maintenance described in this handbook). It will immediately void the warranty and you may cause damage requiring extensive repair work. Always contact your local dealer for assistance.

- **Use only authorized accessories**. Non original accessories could seriously damage your handheld transceiver.

- **Do not spill liquid of any kind on this radio**. If your transceiver gets wet immediately dry it with a soft cloth.

- **Switch the radio off before you clean it**. Strictly follow the directions in the paragraph "Care and maintenance".

- **Handle the battery properly**. Strictly follow the directions in "Care and maintenance".

- **Be certain** that your power source matches the rating listed for the supplied battery charger (AC adapter). If you are not sure, check with your dealer.

- **To avoid damaging the power cable of the battery charger**, do not put anything on it or place it where it will be walked on.

This product complies with the requirements of the Council Directives 89/336/EEC and 73/23/EEC on the approximation of the laws of the member states relating to electromagnetic compatibility and low voltage.

Conventions and Symbols in this Book

📄 *This symbol marks a 'note'. Notes are hints or tips which offer additional information to help you.*

✋ ***This symbol marks a 'caution'. Cautions are special notices which you should read and follow carefully to avoid possible damage to your equipment and to avoid potential danger to yourself or other people.***

Key names will be highlighted in **bold**.

Important sentences and words are highlighted in *Italic*.

LCD messages which may appear on the transceiver's display are highlighted in `Courier New`

Part Names and their functions

Please have a look to the following parts description in order to familiarize with the transceiver's main parts and controls. Numbers in brackets refer to the illustration.
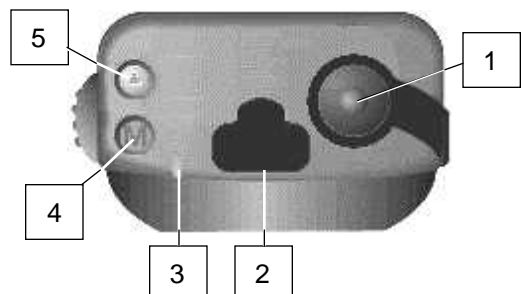
Top

[1] **Antenna connector.** Fit the antenna to this connector (MX thread type).

[2] **Programming connector** (under the protection cap - for authorized dealers/service facilities only). Allows to program the radio (channels data) via a suitable programmer. It must be protected with the supplied rubber cap when not in use

[3] **Status LED**. Glows in different colors to show the current radio's status.

[4] Ⓜ **Monitor** button. Enables the speaker for monitoring of the tuned channel.

[5] ⬛ **Emergency** button. Sends an emergency selective call. (if enabled)

Front
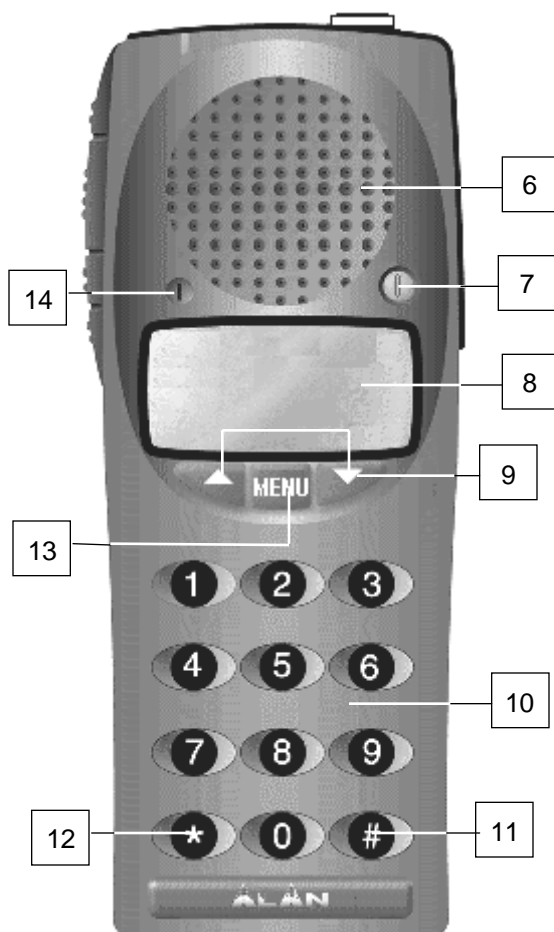
[6] **Speaker**. The reception sound is emitted by the built in speaker located at this point.

[7] ⓪ **Power** button. Press this key to turn the transceiver on and off.

[8] **LCD display**. Shows the radio's parameters (channel number etc.). Icon and symbols are further explained in the text "Display". Whenever any key is pressed the display is automatically backlit for a few seconds.

[9] ▲ **UP** and ▼ **Down** buttons. For scrolling forward and backward through function list and for changing channels, volume and function values.

[10] **Keypad**. For entering digits of selective call (if enabled) and letters for the related operations (e.g. SDM messages or Address Book). Whenever any key is pressed the display is automatically backlit for a few seconds.

[11] ⃟ **Clear** button. If pressed for two seconds in command mode, radio reverts back to standby mode. In Selcall mode, deletes incorrectly entered digits (if Selcall is enabled).

[12] ⃟ **Call** button. To send a valid call when using selective call features. (Selcall - if enabled)

[13] **MENU** button. Allows accessing the main menu.

[14] **Microphone**. The microphone located in this place detects your voice.

Side (left and right)
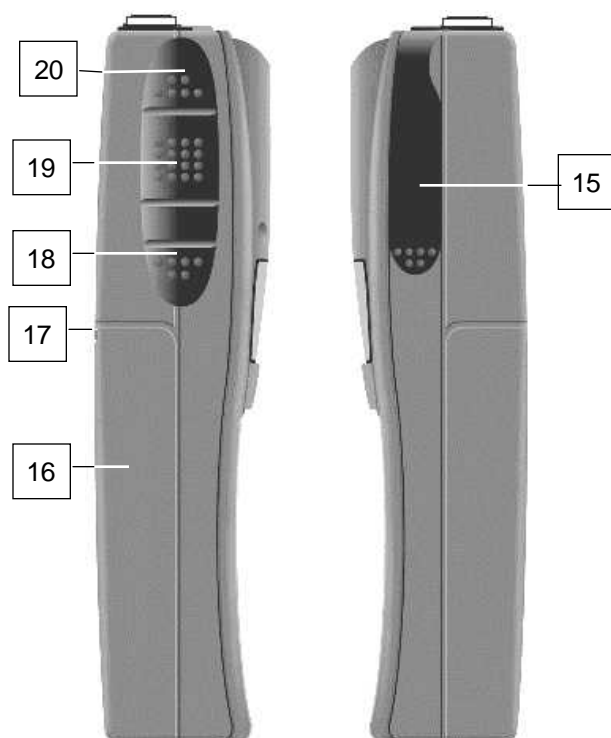
[15] **Microphone connector**. For remote speaker/microphone, headsets for VOX use and other accessories. It must be protected with the supplied rubber cap when not in use. For the related pin connections please see to "Microphone connection".

[16] **Battery pack**. This NiMH battery pack supplies energy to your radio.

[17] **Release** button (located on the battery's body). Allows for removal of the battery pack.

[18] **CALL 1** button. Sends the selective call NO.1. (if enabled)

[19] **PTT** (Push To Talk) button. Switches the transceiver from receive to transmit when pressed.

[20] **CALL 2** button. Sends the selective call NO. 2. (if enabled)

Display

This section explains the meaning of the various indicators which may appear on the LCD of your HP125 handheld transceiver:

Radio is transmitting (status LED will glow red at the same time)

Speaker is enabled (you will hear audio communications and/or noise)

DTMF is enabled

CTCSS/DCS tone detected

Selective call detected

Scrambler enabled

Battery Level indicator (the number of bars will vary with level of charge)

Keypad lock enabled

Receive mode (squelch is open)

Reception field strength level (the number of bars will vary with receive strength)

Transmit output power currently selected, respectively high (H) or Low (L)

Mail notification

Customizable operation

Volume level (the number of bars will vary with volume level)

Setup

Unpacking

The following items are in the package:

(a) Transceiver's main body

(b) Flexible antenna

(c) Battery pack NiMH 1,200 mA/h

(d) Standard battery charger composed by two parts:

- Cradle

- AC adapter

(e) Belt clip

(f) User's guide (this book!)

If something is missing please promptly advise your supplier.

Fitting/removing the antenna

To fit the antenna:

1) Locate the antenna terminal (thread MX connector) on transceiver's top.

2) Hold the transceiver with one hand and the base (the thicker part) of the antenna with the other one.

3) Attach the included flexible antenna to the antenna terminal by turning the antenna clockwise until it is firmly locked. Don't overtighten the antenna!

To remove the antenna reverse the previous step.

✋ ***Leave the antenna attached on the radio.*** You can not communicate without it. Moreover, transmitting without the antenna may damage the TX final stage. For the same reason use only the supplied antenna.

📄 *The supplied antenna is broadband type and covers the whole spectrum. The antenna does not need any alignment.*

Installing/removing the battery pack

To install the battery pack *(please see the figure):*
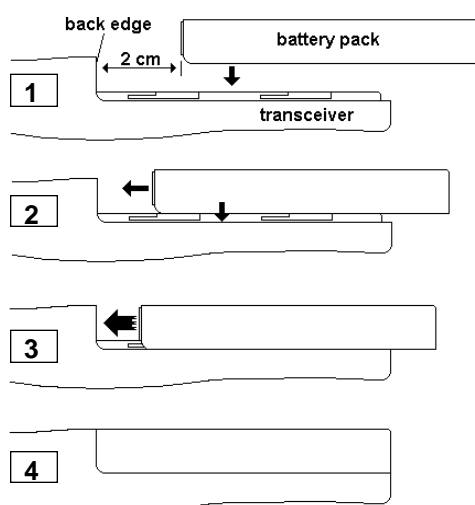
1) Hold the transceiver's body with one hand and the battery pack with the other. Put the battery pack onto the metallic back of the transceiver as shown at approximately 2 cm from the bottom edge of the thick part of the transceiver.

2) Gently slide the battery pack toward the transceiver's bottom edge keeping it slightly pressed onto the metallic back surface.

3) At approx. 1.5 cm you will feel the battery's guides fitting with the transceiver's guides (the battery pack will be closer to the transceiver). Keep sliding the battery pack toward the back edge.

4) At the end you will hear two clicks: the battery pack will snap into place and should be firmly locked.

To remove the battery pack*:*

1) Press the battery release button located in the back of the battery pack.

2) **Keep the button pressed** and gently pull the battery pack away from the transceiver bottom edge (the opposite operation of the previous step 2): it will stop at 1.5 cm approximately and will be free.

3) Remove the battery pack by separating it from the transceiver's body.

Installing/removing the belt clip

The supplied belt clip allows you to hang the transceiver on your belt or jacket when you are not using the radio.

To fit the belt clip onto the transceiver's body:

1) Remove the battery pack as explained in "Installing/removing the battery pack".

2) Just gently slide the clip into the appropriate guides located in the transceiver's back until it firmly

locks.

To remove the belt clip:

1) Remove the battery pack as explained in "Installing/removing the battery pack".

2) Reverse step 2.

   ✋ **Do not forget to remove the battery pack before fitting/removing the belt clip, otherwise the operation will be harder to perform.**

Charging the Battery

To charge the supplied battery pack you have to setup the supplied standard charger and connect the radio as follows (please see the picture):
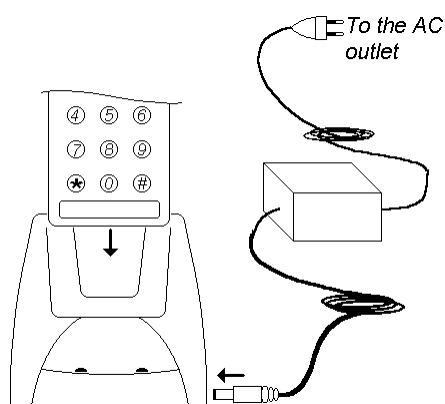
1) Connect the jack coming from the AC adapter to the cradle's socket located in its right side.

2) Connect the AC plug of the AC adapter's power cable into an AC power outlet: the built-in green LED of the cradle will glow.

3) Ensure that the radio is switched off. Insert the radio into the cradle with the keypad toward you (the three metallic contacts of the battery pack must touch with the three contacts inside the cradle): the built-in red LED of the cradle will glow.

4) Wait 8-9 hours and remove the radio after that time.

📄 *Do not remove the radio before 8 hours, otherwise the battery's duty could be temporarily reduced.*

✋ **Do not forget to remove the radio after 9 hours.**

✋ **The battery charger is for indoor use only.**

✋ **For maximum battery life please see the chapter "Care and Maintenance".**

Basic Operations

This section describes how the standard operations work. Programming can change standard operation. Functions of the radio can be modified via an IBM compatible PC. For this reason the way your radio operates may be upgraded and may slightly differ from what is described here.

> 📄 *IMPORTANT: Due to the full programmability of the radio, certain menu commands could be unavailable. E.g. if your radio has not been programmed for selective call operations, the related menu commands won't be recalled. In case of doubts please contact your dealer/radio network administrator for further details.*

Switching the radio ON/OFF

To switch the radio on:

1) Hold the ⏻ (power) button until the radio is switched on: the LCD will start an autotest showing in sequence:

   - A welcome message (if previously programmed – it is usually your company name or your personal station identification). At the same time all the LCD icons will be shown for one second as LCD test.

   - The firmware release number (`FW Rev.`).

2) After the autotest has been carried out the LCD will steadily show the following data:

   <table>
   <tr><td style="text-align:center">

   ▭▭▭

   ## CHANNEL 1

   ■■■■■   H

   </td></tr>
   </table>

   - **The battery level** ▰▰▰▰. (number of bars indicate level of charge)

   - **The channel name/number** on the first line (a specific twelve alphanumeric characters identification name), it could be the last recalled channel or a previously programmed specific channel.

   - **The current volume level** with an LCD bar indication.

   - The currently selected TX output power: `L` (low) or `H` (high) in the lower right corner of the LCD.

To switch the radio off Press and hold the ⏻ key until the transceiver switches off.

Reception

Your radio could be previously programmed to work, channel by channel, in "Open traffic", "CTCSS/DCS" or "Selcall" mode. Please have a look at each description and ask your radio network manager or dealer which mode your radio channels work.

   - **OPEN TRAFFIC**: in this case you will hear any communication which will be transmitted on the selected channel. When any signal is received your squelch will unmute and you will see in the LCD the icon 🔊 (speaker enabled), ↘ (squelch is open), ▮▮▮ (reception field strength level – the number of bars will vary according to the received signal strength). Moreover you will see the status

LED glowing green and you will hear the message.

- **CTCSS/DCS** (Continuous Tone Code Squelch System - Digital Coded Squelch): are systems which use particular TX signaling (a continuous sub-audible tone for CTCSS or a digital code for DCS) as an access "key" to work a repeater (encoder) or to unlock the party's signaling sensitive squelch. This last condition allows sharing more radio networks in the same frequency. In this case you will receive only messages coming from parties sending a proper TX signaling. Please see the chapter "Selcall Operation" for further details.

- **SELCALL** (Selective call): is a system which uses a signaling sequence (e.g. audio tones for "5 tones" and DTMF Selcall or a frequency shift signaling for FFSK) to call a particular station or group(s). In this case you will receive only calls provided with your identification selective call code (a number) or calls sent to the group you desire. For further details please see the chapter "Selcall operation".

📄 **CTCSS/DCS** *and* **Selcall** *can be combined together.*

✋ ***CTCSS/DCS** and Selcall allow to share more than one radio network in the same frequency, however they are just useful to avoid disturbing stations not owning of the same network with messages not related to them. In any case, if more than one station is transmitting at the same time, this will cause interference. Do not transmit if the status LED is glowing or the ↘ icon is on the LCD. Wait until channel is clear before transmitting.*

Adjusting volume

When no keys are pressed for 5 seconds, the radio is in its normal stand by condition and the ▲ (up) and ▼ (down) keys are used to adjust the RX volume. To adjust the volume repeatedly press the ▲ (up) key to increase or the ▼ (down) key to reduce the volume. The bar meter ■■■■■■■■■■■ is provided in the bottom of the LCD to continuously show the volume level. The number of bars will vary depending on volume level.

Channel selection

If your radio has been programmed with more than one channel, you can easily change it. As previously explained, each channel can be identified by alphanumeric names which are previously defined by your network manager or supplier.

To select a channel:

```
     ▭▭▭
  ▁▁Channel
  ■■■■■         H
```
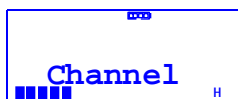
1) Press the **MENU** key in order to access the command menu and see on the display the message **Channel**. Press the ▲ key to increase the channel (number) or the ▼ key to decrease it

2) . Press the ⊕ (clear) key for two seconds to escape the command mode

📄 ***After 5 seconds**, if you have not pressed any keys, the radio automatically reverts back to standby mode.*

Adjusting squelch

Squelch is provided to silence your radio when you are working in open traffic mode (please see

"Reception") and no signals are received. It's very important to adjust the squelch to a level in order to assure you a stable silence in stand-by condition. If the squelch level is too high, you might lose weak signals. A good squelch adjustment assures also proper scanning operation.

To adjust the squelch:

1) Ensure that no communications are carried out in the tuned channel (the icon should not be present in the top right part of the LCD).

2) Press the **MENU** key in order to access the command menu and see on the display the message "Squelch". You will also see a number, which is the squelch adjustment level.

3) Press the ▼ key repeatedly to decrease the squelch level: after the level 1 you will see **OFF** squelch
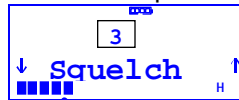
is disabled and you will also see the icon.

4) Press the ▲ key repeatedly in order to select the minimum squelch level in which the. icon disappears (level 2 normally).

5) Press the # (clear) key for two seconds to escape the command mode.

> *After 5 seconds, if you have not pressed any keys, the command menu is automatically escaped*

> *In case of either CTCSS or Selcall system programmed, squelch does not affect the speaker status, because the radio is closed awaiting the correct tones. In case of advanced signaling systems, please, pay attention to the programming of the monitor key function (further described). Depending on this, you may or may not be able to press the Ⓜ button to mute/unmute the loudspeaker and to adjust the squelch level. The set squelch level will be stored and recovered at every switch on operation.*

Transmission

When you need to transmit please get used to following all these steps:

1) *Ensure that the channel is not busy.* (Otherwise you will create an interference. Please wait for that condition).

2) Press the **PTT** key: the status LED will glow red.

3) Start talking *at a normal voice level* at approximately 10 cm from the microphone (keep the **PTT** key pressed).

4) When your message is over, release the **PTT.**

> *Do not shout! It will not increase the distance you are able to communicate. Shouting into the microphone will only make your transmission sound distorted!*

> *Don't release the **PTT** before your message is over or start talking before pressing it, otherwise your message will be "chopped".*

> *A PMR handheld radio doesn't normally allow you to talk and receive simultaneously, for this reason make your messages short.*

> *The radio might be programmed with a timeout timer which will automatically switch your radio to receive mode if you talk too much (after a preset time). In this case release the PTT and wait for a few seconds: the radio TX features will be automatically reset. Ask the network administrator or your dealer for further details.*

Adjusting Transmit Power

Your HP125 can transmit with two power levels according to the distance of your party's station(s). Low and High levels can be defined by default during programming. We recommend, when possible, to use the Low power: it will increase the battery life and will reduce the risk of interference with stations not in your radio network which may be sharing the same channel with you.

1) Press the **MENU** key to access the command menu and see on the display **Power.** You will also see a cursor on either **L** or **H.**

```
        ▭▬▫
H   Power   L
▪▪▪▪▪
```

2) Change the power as follows:

- If the **LOW** power is currently selected, press the ▽ key to set to high power; the cursor will move to **H** .

- If the **HIGH** power is currently selected, press the △ key to set to low power; the cursor will move to **L** .

3) Press the ⊘ (clear) key for about 2 seconds to escape the command menu and restore the radio to normal standby operation.

▤ *After 5 seconds, if you have not pressed any keys, the command menu is automatically escaped.*

Adjusting display contrast

You can adjust the LCD contrast in order to obtain the best readability. It will vary depending on your use as well as the environment illumination.

1) Repeatedly press the **MENU** key in order to access the command menu and see on the display the message `Contrast`.

```
         ▭▬▫
↓ Contrast ↑
▪▪▪▪▪      H
```

2) Press the △ key repeatedly to increase the contrast or the ▽ key to decrease it.

3) Press the ⊘ (clear) for 2 seconds key to escape the command menu mode.

▤ *After 5 seconds, if you have not pressed any keys the command menu is automatically escaped.*

Scanning channels

If you have more than one channel programmed, your HP125 can scan them. The advanced scan functions of the radio allows you to optionally preset two groups (g1 and g2).

1) Repeatedly press the **MENU** key in order to access the command menu and see on the display `g2 Scan g1.`

```
         ▭▬▫
g2  Scan  g1
▪▪▪▪▪      H
```
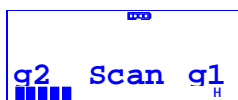
2) Activate the scan as follows:

- *If you have only one group available* press the ⬙ key.

- *If you have two groups programmed*, press ⬇ to scan the g2 group or ⬙ to scan g1.

- *If you simultaneously want to scan the 2 groups, press and hold g1 or g2.*

In both cases you will see `Scanning` and the channel names cycling continuously on the display. The scanning starts from the lowest address number toward the highest. If one or more priority channels have been programmed, it will start from the first priority address number.

3) *To stop channel scan* Press the **MENU** key, ⊕ or the **PTT**.

📄 *If you are working in Open traffic (please see the paragraph "Reception") ensure that the squelch is properly set, otherwise the scanning may not work properly. See the paragraph "Adjusting squelch" for more details.*

📄 *If CTCSS/DCS or Selcall have been previously programmed, the scanning will stop only if the received signal has the appropriate signaling.*

📄 *If you press the PTT during channel scan, scanning will stop and transmit in the priority channel or in the first available vacant channel, depending on programming.*

📄 *Channel scan can be programmed by your radio network administrator or dealer in a variety of different parameters depending on your needs. For example he can assign one or more priority channels, adjust the scan speed (switching time), the resume time (the time the radio waits before scanning resumes after receiving a signal), set busy or vacant channel stop etc. Please contact your administrator/dealer for further details.*

Radio lock

Your HP125 has been provided with a security function which protects it against unauthorized or accidental activation of commands. You can lock the radio in two ways:

- *Full lock*: every command is locked.

- *Partial lock*: only the keypad is locked.

Every time you unlock the radio you will have to enter a 4 digits security code called PIN (personal identification number).

To lock the radio:

1) Repeatedly press the **MENU** key to access the command menu and see on the display the message `F Lock P`.

2) Press the ⬇ key to activate the Full lock or the ⬙ key to activate the Partial lock.

To unlock the radio:

1) If the radio is in Partial lock press the **MENU** key: the display will read `PIN ....`

2) Enter the PIN (four digits), the radio will be unlocked.

📄 *If you entered the correct pin then the radio will return to normal operation mode. If you entered the wrong pin radio remains locked.*

Selcall and CTCSS/DCS Operation

Reception

During CTCSS/DCS and Selcall operation the radio may be set-up so that the appropriate CTCSS/DCS and Selcall decoder enables the speaker. Speaker will remain muted until the correct CTCSS tone, the correct DCS code and/or the appropriate selective call is received. In case of unmuted speaker, the message will be heard, the status LED will glow green and the receive icon will be displayed. Moreover the strength level of the received signal is displayed (the number of bars will vary according to the received signal strength). The CTCSS/DCS reception is indicated by the icon; the Selcall reception is indicated by the icon.

Transmission

Sending a Selcall

You can send a selective call in many different ways which makes it easy and quick to send your calls depending on your needs: **Stored** call, (w*ho-has called)*, **Manual** call and **One touch** call.

Stored call (Address book)

This mode allows you to originate a call by using a convenient alphanumeric address book which has been programmed by your radio network administrator or dealer with the most used ID associated to an alphanumeric label, for example:

Headoffice	15
John	01
Mary	07
Mike	08
Robert	05
.....	XX
.....	XX

📄 *Starting from now, as "address" we mean an ID associated with an alphanumeric label.*

To call an address using the address book:

1) Repeatedly press the **MENU** key to access the command menu and see on the display the message `AddrBook Ok`.

<div align="center">

AddrBook Ok

</div>

2) Press the key to access the address book.

3) Select the required address to call (name with associated ID); you have two choices:

- *Scrolling trough the various addresses* by means of the and keys.

- *Recalling the initial letter of the addresses.* Press the key which states the initial letter (e.g. to call

Mary press **5,** to call **J**ohn press **4** etc.**)**. The unit will display the first name of the address book starting with the selected character (or the next address if no names beginning with the selected character is in the list). If the initial letter is the 2nd of the 3rd one printed on a key, press respectively that key two or three times (e.g. to recall the **H**eadoffice press **3** twice). If you have more than one address beginning with the same initial letter use the $\boxed{\blacktriangledown}$ key to scroll down names till you will reach the proper address.

4) Press the ⊛ (call) button for 2 seconds to call the selected address.

  📄 *If you made a mistake in recalling an address you can abort the call operation at step 4 by pressing the* ⊕ *(clear) button.* **Note***: the selected address became the default TX address.*

  📄 *Address book is also useful in reception. When you receive a Selcall ID which is stored in the address book, your radio will automatically look for that ID in the address book. If it is stored, you will see the alphanumeric label on the display as well. For example, if you receive 15 as caller ID, and it is stored in your address book as "Headoffice", you will see "Headoffice" in your LCD instead of "15".*

Who-has-called (Call Queue)

This is a convenient facility which is useful to check who has called you and eventually call back him/her. First of all please note that your HP125 has a memory which holds the last 10 received calls:

1st (most recent received call)	John
2nd	Robert
3rd	Mary
4th	Headoffice
5th	Lyndsay
6th	Mike
7th	Branch
8th	William
9th	Ann
10th (oldest received call)	Peter

This buffer memory is displayed similarly to the address book and is a FIFO (First In First Out) type. This means that the 10th stored address (the oldest received call) is the first which will be deleted after the 11th received call in order to make room for it.

In the example the 1st received call came from Peter, so it will be deleted from the call queue as soon as a new call is received. All the other addresses (Names with associated IDs) will be shifted one position down in order to make room for the new address at the 1st position.

	Before a received call				**After the call received from Fred (ID 23)**	
1st	John	01		1st	Fred	23
2nd	Robert	05		2nd	John	01
3rd	Mary	07		3rd	Robert	05
4th	Headoffice	15		4th	Mary	07
5th	Lyndsay	21		5th	Headoffice	15
6th	Mike	08		6th	Lyndsay	21
7th	Branch	33		7th	Mike	08
8th	William	55		8th	Branch	33
9th	Ann	16		9th	William	55
10th	Peter	19		10th	Ann	16

To call an address using the call queue:

1) Repeatedly press the **MENU** key to access the command menu and see on the display the message
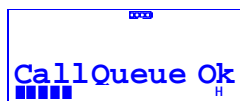
CallQueue Ok.

2) Press the key to access the call queue. This access is only allowed if the CallQueue is not empty.

3) Scroll through the address by using the and keys and select the address you want to call.

4) Press the ⊛ (call) button to call the selected address: it will be called and automatically deleted from the call queue.

   ▤ *If you need to delete an address stored in the call queue without calling it perform the previous procedure. At the step 4 press the ⊕ (clear) button: the selected address will be deleted.*

   ▤ *The call queue is provided with a "space save" function: if more than one call has been received from the same caller "space save" will overwrite it.*

Manual call

If the radio network administrator or your dealer has enabled in your unit the manual definition of variable address digits:

1) Just dial the variable address digits using the keypad before sending the call. Any digit can be corrected by overwriting.

2) When you see the correct address on the display, make the call by pressing the ⊛ (call) button.

   ▤ *To repeat the last call, just press the ⊛ button twice. (The group tone ('A') can be obtained by pressing and holding the **0** key).*

One touch call

To activate the "One Touch call, press either the **CALL1** or **CALL2** button. If they have been programmed the preset addresses will be automatically called.

Advanced Operations

In this section we'll describe some advanced operation which you can do with your handheld transceiver:

Sending status messages

Status digits allow you to transmit some previously programmed conditions in which you could momentarily be: BUSY, FREE, EMERGENCY etc. Your transceiver can automatically associate the said digits with the related alphanumeric message in order to make it easier to send and recognizing them exactly as you do with the address book.

To send a status message:

1) Repeatedly press the **MENU** key in order to access the command menu and see on the display the message StatusDig Ok.

<div align="center">

StatusDig Ok

</div>
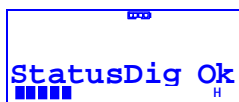
2) Press the ⬙ key to access the status digit command.

3) Press either the ⬙ and ⬙ keys to scroll through the various programmed messages and select the one you wish to transmit.

4) Press the ⊗ (call) button to select the status digit.

5) Press the ⊕ (clear) button for 2 seconds to escape command menu mode.

6) Refer to "Sending a Selcall" to address the call. **Select** the required address to call, *press* the ⊗ (call) button, the status digit/digits will be automatically sent to the selected address.

Sending FFSK free messages (SDM)

1) Repeatedly press the **MENU** key to access the command menu and see on the display the message Send SDM Ok.

<div align="center">

Send SDM Ok

</div>

2) Press the ⬙ key to edit the SDM.

3) Edit the text of SDM by using the keypad as follows.

- Press the key which states each required letter/number (e.g. use **5** to select **M**, **N**, **O** or **5**). If the letter is the 2nd, the 3rd or the 4th one printed on a key, press respectively that key two, three or four times (e.g. to recall the **H** press the key **3** twice). After one second the cursor will automatically move to the next position.

- To select a dot press the key **9** three times.

- To select **!**, **?** or a space, repeatedly press the key **0** until the required character appears on the LCD.

- If you have made a mistake in editing the message, you can delete characters by *briefly* pressing

the Ⓟ (clear) button.

4) *Press and hold* the ⊛ (call) button for 2 seconds to send the SDM.

5) *Press and hold* the Ⓟ (clear) button for 2 seconds to escape the command menu mode.

Checking FFSK free messages (SDM)

When you receive an SDM (FFSK message) you will see it on the LCD. Any key will delete it; You can see the last 5 received messages at any time. SDM messages are queued in a FIFO call queue similar to the one dedicated for the selective calls (please make reference to "Who-has-called call" in the chapter "Selcall and CTCSS/DCS Operation"). To recall it:

1) Repeatedly press the **MENU** key to access the command menu and see on the display the message


```
MSGQueue Ok.
```

2) Press the ▲ key to access the message queue. This access is only allowed if the MSGQueue is **not** empty.

3) Scroll through the messages by using the ▼ and ▲ keys and select the one you want to see.

4) Press the Ⓟ (clear) button for 2 seconds to exit the command menu mode.

Sending DTMF patterns

DTMF (Dual Tone Multifunction Frequency) is a standard signaling system used to dial telephone numbers over a normal PSTN landline. In radio communications it can be also used to do the same if your radio channel is connected to a landline via a suitable device (phone patch). DTMF is used to send/receive radio commands or provide signaling similarly to selective calls. For further details please contact your network administrator.

To store or dial a DTMF pattern:

1) Repeatedly press the **MENU** key to access the command menu and see on the display the message `DTMF Send Ok`.

2) Press the ▲ key to edit the DTMF pattern to send.

3) Edit the DTMF pattern to send by using the keyboard. Pressing ⊛ **or** Ⓟ buttons, you can digit * or #. Any digit can be corrected by overwriting.

4) *Press and hold* ⊛ (call) button for 2 seconds to send the DTMF pattern.

5) Press *and hold* the Ⓟ (clear) button for 2 seconds to escape the command mode.

Handsfree transmission (VOX)

VOX (Voice Operated Transmit) is an automatic system which allows you to automatically switch the transmission in hands free mode just by speaking in the built-in microphone of a headset (not provided with

the unit). Please ensure that the handset is suitable for your transceiver as reported in the paragraph "Microphone connection".

To adjust the VOX sensitivity:

1) Connect the optional headset with built-in microphone to the microphone connector located on the transceiver's side.

2) Repeatedly press the **MENU** key to access the command menu and see on the display the message **VOX.** You will see **OFF** (disabled) or digit which indicates the microphone sensitivity value.(OFF-9)

```
      ┌─────────────────┐
      │        ▰▰▰       │
      │      OFF         │
      │ ↓    Vox      ↑  │
      │ ▪▪▪▪▪       H   │
      └─────────────────┘
```

3) Ensure that the headset's built-in microphone is located close to the side of your mouth.

4) Press either the ⬆ and ⬇ keys to adjust the VOX sensitivity in order to ensure a stable transmission when speaking with a normal voice level.

5) *Press and hold* the #️ (clear) button for 2 seconds to escape the command mode.

✍ ***We recommend setting the VOX to lowest sensitivity possible; too high a value could cause accidental transmissions, especially in hi-noise environments.***

Care and Maintenance

Battery Packs

Information on rechargeable batteries

- When the battery pack is new it does not provide 100% of its efficiency. To reach the full battery life you must "run-in" the battery with at least 3-4 deep charging/discharging cycles, after that it will reach its maximum capacity. Please see "Proper charging of battery packs" for further details.

- Should you properly use the battery pack, you will obtain at least 400 charge/discharge cycles (300 with the optional rapid charger).

- Nickel-Metal-Hydride rechargeable battery packs lose their charge with time if left unused (self-discharge), **this is normal.** A NiMH (Nickel-Metal-Hydride) battery can reduce 10 to 20% of its stored energy in few days.

Proper charging of battery packs

1) Ensure that the radio is switched off; otherwise switch it off by holding the $\bigcirc$ (power) key pressed (release it after the radio is switched off).

2) Insert the radio into the cradle as explained in the paragraph "Charging the battery pack"

3) Wait the necessary time to provide a full charge. If the pack isn't completely discharged you will need less than 8 hours. Evaluate the time by using the battery level indicator ☐☐☐☐ and common sense.

   ✋ *Do not overcharge the battery: always remember to remove the radio after the necessary time.*

   ✋ *The battery charger is for indoor use only.*

   📄 *When possible, charge the battery when it is fully discharged. The battery's duty could be temporarily reduced. Please see the paragraph "Memory effect".*

   📄 *Don't remove the radio before the necessary time, otherwise the battery's duty could be temporarily reduced. Please see the paragraph "Memory effect".*

Memory effect

The supplied NiMH (Nickel Metal Hydride) battery pack is made with a more advanced technology than normal NiCd (Nickel Cadmium) battery. For this reason it is virtually free of what is called "memory effect", which affects NiCd batteries. Memory effect is a temporary capacity reduction which reduces the battery duty. Memory effect may occur just if you *regularly* charge the battery when you haven't discharged it at least at 50-70%. Memory effect can be easily avoided by following these simple rules:

- When possible charge battery packs only when they are completely discharged, i.e. when the battery icon has no bars inside.

- Don't remove the battery from the charger before the necessary time to provide a full charge.

- Provide at least two deep charge/discharge cycles per month.

- The best way to avoid memory effect is to use two battery packs and alternate their use with the

radio. This will allow you to keep on your transceiver's operation by replacing the battery pack just when it's fully discharged and use the spare (charged) one. At the end of your working day you will charge the discharged pack for 8 hours.

Erasing memory effect

Memory effect can be easily erased just by applying 3-4 deeper charge/discharge cycles:

1) Use the battery fitted in the radio and wait until the radio switches off. Do not stop when the last battery bar disappears from the ▭▭▭▯ icon; wait until the LCD completely disappears.

2) Wait at least one hour and then try to turn the radio on by pressing the ⏻ button: you will note that some energy has restored in the battery, because the radio can be switched on.

3) Leave the radio in RX until the radio switches off again.(usually after a few minutes)

4) Repeat steps 2 and 3 three times.

5) Fully charge the battery for 9 hours and check the battery duty. If some memory effect still exists go back to step 1.

   📄 *If the battery duty doesn't improve after three cycles, your battery pack is faulty or has reached the end of life (please see "Information on rechargeable batteries").*

Warnings for battery and charger use

Please use these cautions to avoid damaging battery packs or the transceiver:

   ✋ **Before using the battery charger carefully read any related warning or caution.**

   ✋ **Don't short battery terminals: this may cause fire, burns or explosions.**

   ✋ **Never dispose of batteries into fire they may explode causing, burns or explosions. Strictly follow any disposal regulation of your country.**

   ✋ **Use only authorized batteries and chargers. The use of non-authorized accessories may cause burns, fire or explosions; causing serious damages to the radio/battery or serious injuries to yourself.**

   ✋ **Battery chargers are for indoor use only.**

   ✋ **Be certain that your power source matches the rating listed for the supplied battery charger (AC Adapter). If you are not sure, check with your dealer.**

   ✋ **To avoid damaging the power cable of the battery charger, do not put anything on it or place it where it will be walked on. Insert the plug in socket provided with grounded connection.**

   ✋ **. Do not use the charger if it has fallen down or it appears damaged; immediately contact an authorized service station.**

   ✋ **Never try to disassemble or service the charger by yourself. Always contact your local dealer for assistance.**

   ✋ **To reduce the risk of electric shocks disconnect the plug before any cleaning or maintenance. Grasp the plug (not the cable) to remove the plug from the socket.**

   ✋ **Do not expose batteries directly to temperatures below -20°C (-4°F) or greater than 35°C (95°F) during their use and do not charge them outside the range of +5 to +55°C (41-131°F).**

Radio maintenance

Cleaning battery packs

Wipe the battery contacts with a clean and lint free cloth to remove dirt, grease or any other material which may prevent a good electrical contact. If contacts are very dirty you can also wipe them using a soft pencil eraser (not hard erasers for ink!). If you feel that battery contacts are not working properly, please contact your authorized dealer.

🖐 ***Do not use liquid, alcohol or aerosol cleaners.***

Cleaning the radio

- Wipe the radio with a clean and lint free cloth to remove dust. If it is very dirty, you can use a damp (*slightly* moistened with *water*) cloth.

🖐 ***Do not use liquid, alcohol or aerosol cleaners.***

📄 *If you normally use your radio in dusty or hard environments, we do recommend using the optional carrying case. Please see "Optional accessories".*

Connectors

When the connectors are not being used, they should be fitted with the supplied cover caps.

🖐 ***Only authorized accessories should be connected to the related connectors.***

Optional accessories

These optional accessories can be used to improve the transceiver's performances:

- Spare battery pack.

- Rapid charger.... Recharges the battery pack in 1 hour and provides trickle charge when the battery pack reached a full charge.

- Carrying case.

Microphone connector

The microphone connector is designed for the connection of two basic accessories (not supplied as standard):

- **An external speaker/microphon**e, which allows using the radio firmly secured to your belt by means of the supplied belt clip.

- **A headset with built-in microphone**, which additionally will add the "**VOX"** facility. For further details please see "Hands free transmission (VOX)".

Any kind of accessory for the above stated purposes can be connected to the microphone connector, provided that they meet the following requirements:

- Jack connectors for Speaker (SPK) and Microphone (MIC) must be respectively standard type 3.5 mm and 2.5 mm. and connected as follows:
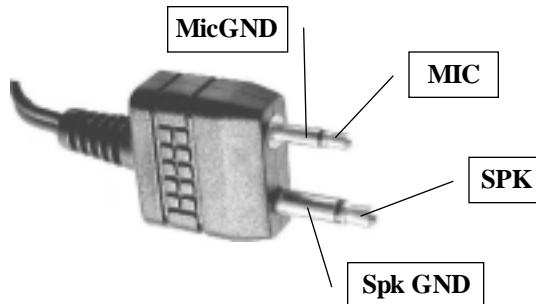
- The suggested speaker input impedance is 8 Ohms

- The microphone should be condenser low-impedance type.

- Any accessory should be of high quality suitable for professional use.

    Please don't connect any accessory which you are not sure meet the above stated requirements. You could cause serious damages to your radio. In case of doubt please contact your authorized dealer.

Quick reference

Operation summary

You should now be familiar with your transceiver. Now you know how very easy it is to use one of its menu commands. Follow this quick reference.

1) Press repeatedly the **MENU** key until the required setting appears on the LCD.

2) Perform one of the following actions:

   • If the related message is followed by Ok, press the ▲ key to enter the setting.

   • If two arrows are present in each side of the LCD, press either ▼ or ▲ respectively to decrease or increase the setting.

   • If two parameters appears in each side of the LCD, press either ▼ or ▲ respectively to activate the left or right parameter.

3) If necessary do what is described for that particular setting press and hold ⊛ (call) button in case of DTMF sending).

4) To exit from the menu command press and hold the ⌗ (clear) key for 2 seconds.

LCD Memo reference guide

As soon as you have read the entire manual, the following table references the meaning of each LCD message to help you quickly locate each function / setting. This is just a memo, for further details please see the related paragraph.

LCD Message	Description	For full details please see…
Channel	Operating channel selection (if more than one previously programmed). Use ▲ and ▼ to select the needed channel.	Channel selection
Squelch	Squelch (audio mute in open traffic mode) adjustment. Use ▲ and ▼ to select the level.	Adjusting squelch
Power	Allows adjusting the transmission output power. Use ▲ and ▼ to select **L** (Low) or **H** (High).	Adjusting transmission power
Contrast	Display contrast adjustment. Use ▲ and ▼ to select it.	Adjusting display contrast
g2 Scan **g1**	Channel scanning. If you have only one programmed group use ▲ to activate the scanning. If you have two groups, press ▲ to scan group 1 or ▼ to scan group 2. Press and hold **g1** or **g2** to scan both.	Scanning channels
F Lock P	Radio lock against misuse. Press ▲ to lock the keypad only or ▼ to lock the entire radio.	Radio lock
AddrBook Ok	(Selcall) Display the preprogrammed Address book. Press ▲ to access the book, then use ▲ and ▼ or the keypad to select the address to call Press and hold the ⊗ key to call the address.	Stored call
CallQueue Ok	(Selcall) Display the addresses of the last 10 received addresses (to recall the callers). Press ▲ to access the call queue, then use ▲ and ▼ to select an address. Press and hold the ⊗ key to call, or Press and hold the ⊕ key to delete it.	Who-has-called call
StatusDig Ok	(Selcall) Sends the previously programmed status messages. Press ▲ to access the status list, then use ▲ and ▼ to select the needed status. Press and hold the ⊗ key to confirm the selected status.	Sending status messages
Send SDM Ok	Allows editing an FFSK text message (SDM). Press ▲ to start editing the message (use the keypad to edit). Press and hold the ⊗ key to send the message.	Sending FFSK free messages
MSGQueue Ok	Display the last 5 received FFSK messages. Press ▲ to access the message queue, then use ▲ and ▼ to scroll through the messages.	Checking FFSK free messages
DTMF Send Ok	To edit and send a DTMF pattern. Press ▲ to start editing the pattern (use the keyboard to edit). Press and hold the ⊗ to send.	Sending DTMF patterns
VOX	Allows selecting the VOX sensitivity for handsfree operation (through an external headset). Use ▲ and ▼ to select the level. Press and hold ⊕ key to escape command mode.	Hands free transmission

Main Specifications

General

Frequency Bands	VHF (HP125): 136÷174 MHz (136÷162 / 146÷174 MHz) Number of Channels more than 100
Frequency Control	synthesizer
Modulation System	F3E / G3E
Channel spacing	12.5 / 25KHz
Temperature Range	-30 / +60 °C operative, -40 / +80 °C storage
Humidity	90% not condensing @ 40°C
Power Supply	NiMH battery 1,200mA/h
RF Impedance	50Ω
Antenna socket	MX thread type
Frequency Stability	better than ± 2.5ppm

Transmitter

Output Power	5 W , High / low level programmable channel dependent
Modulation System	FM (F3E) / PM (G3E)
Maximum Deviation	±2.5 KHz@12.5KHz, ±5 KHz@25KHz
Adjacent Channel Power	< -60dBc
Spurious Emissions Switching	< 0.25µW 9KHz÷1GHz, <1µW 1÷4GHz
Bandwidth	full band

Receiver

Circuit Type	Double Conversion
Intermediate Frequencies	I: 45 MHz, II: 455 kHz
Sensitivity	< 0.25µV @ 12 dB SINAD
Intermodulation Rejection	> 65dB
Spurious Response Rejection	> 70dB
Adjacent Channel Selectivity	> 60dB 12.5KHz, 70dB 25KHz
Switching Bandwidth	full band
Squelch threshold	0.18µV

Squelch hysterisis	< 3dB

AF & signaling

Audio power	> 500mW @ 10% distortion
CTCSS sensitivity	< 6dB Sinad
CTCSS selectivity	accept tones +/-0,5%
Selcall sensibility	> 99% @ 12 dB Sinad > 95% @ 10 dB Sinad
Selcall selectivity	accept tones +/-1,5% reject tones +/-3%

Mechanical Specs

Size (mm)	148 x 36 x 60
Weight	385 g.
Display	backlit LCD 2 x 12 char alphanumeric
Keyboard	12 + 3 function keys + UP/DOWN/MENU keys + Emergency key
Battery	back slide battery
Radio and key paint	grease resistant
Shock resistant	follow MIL STD 810
Water & dust	IEC529 IP54
Environmental:	IEC529 IP54 and MIL STD 810 C,D,E

Index