

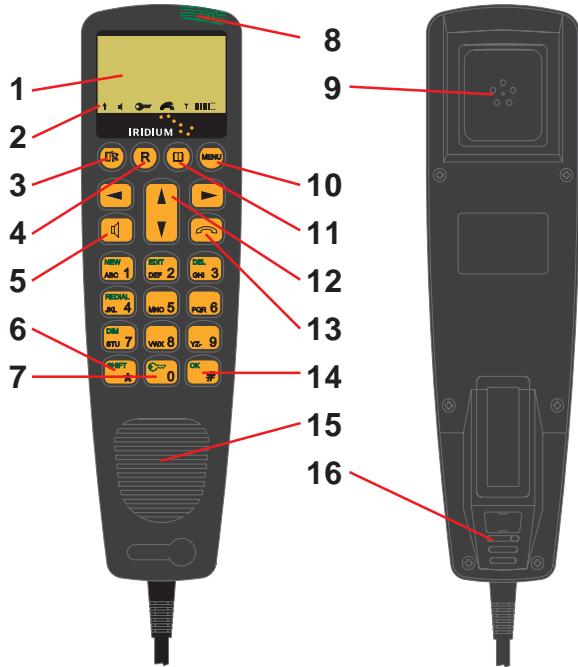
SAILOR SC4000 IRIDIUM



Thrane & Thrane

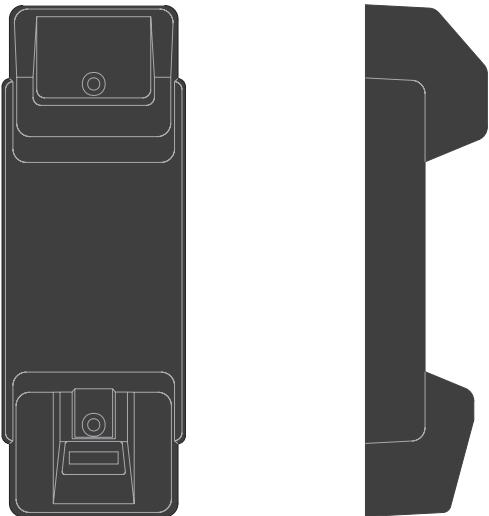
Handset

What Is What?



- 1. Display
- 2. Display icons
 - Shift
 - Speaker on / Speaker off
 - Handset locked
 - Handset on hook/ off hook
 - Antenna receiving signal strength
- 3. Escape key
- 4. Call transfer key
- 5. Loudspeaker on/off key

Cradle



- 6. Shift key
- 7. Lock on/off key
- 8. On/off button
- 9. Earpiece
- 10. Opens menu
- 11. Opens phone book
- 12. Volume control/navigate menu
- 13. Hook on/off key
- 14. OK key
- 15. Loudspeaker
- 16. Microphone

Introduction

Your Iridium equipment is a modular system that consists of a transceiver unit, control handset unit, antenna unit and an optional analogue PSTN telephone/PABX.

You can make and receive voice calls on the control handset and the analogue PSTN telephone. You can connect up to four handsets and one analogue PSTN telephone or PBX switchboard to the system.

The system provides intercom for internal calls between any control handsets and between the analogue telephone and a control handset.

Via the data port on the transceiver, the unit can be used as a data modem for dial-up data calls, Internet access, SMS and E-mail messaging.

Important!

For FCC RF exposure compliance, the antenna must be installed with a minimum distance of 0.61m (2 feet) away from all persons.

About this Manual

This manual provides instructions on how to operate a control handset, an analogue telephone and on using the transceiver as a data modem.

The instructions on operating the handset are divided into two parts. The first part deals with **Basic** operation, which includes e.g. making and answering calls. The second part describes the more **advanced** functions of the system.

All functions of your Iridium equipment can be operated by following the step by step procedures described in this manual. Each procedure is an explicit sequence of key presses that has to be carried out.

Unless otherwise specified, the description of the individual procedures has been based on the assumption that the handset is enabled and is displaying either "Ready" or "Ready Internal" in the display. This state is through out the manual referred to as ready state.

We recommend that you read the manual before using the equipment.

Iridium Satellite System

Iridium is a global satellite network for telecommunications. It consists of 66 satellites providing world-wide coverage.

The Iridium system makes it possible for any two locations on Earth to establish wireless global telephone contact.

You will need an Iridium subscription with an active Subscriber Identification Module (SIM card). The SIM card holds your phone number and the phone number will thus follow the SIM card if used in another Iridium equipment.

You can buy a subscription from one of the Iridium Service Partners. The Iridium Service Partners can be found on www.iridium.com. Different services are available from the service partners, for example Crew Calling, Pre and Post Paid subscriptions.

Disclaimer

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This manual covers operation on the following transceiver unit version:

Software	05.07.00 or higher
Hardware	mk4

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Abbreviations

CU	Control unit = handset
GPS	Global Positioning System
DTMF	Dual Tone Multiple Frequency
LBT	L-Band Transceiver
PABX	Public Automatic Branch Exchange (also called PBX)
PSTN	Public Switched Telephone Network
UTC	Universal Time Coordinated (app. the same as Greenwich Mean Time)
RTU	Receiver and Transmitter Unit (also called Transceiver)

Handset Basic Operation

You can connect up to four handsets to this Iridium equipment.
A handset can be in one of two states: enabled or disabled.

Handset States

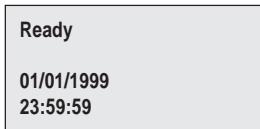
In each of the two states, the handset's normal display and signalling can be described as follows:

Disabled State

- The display is cleared and the light is off.

Enabled State

- In the enabled state, various information is shown on the display.
An example:



Handset Enabling/Disabling

To enable/disable the handset:



- Press and hold the on/off button.
- Wait until you hear the continuous tone signalling or see that the hook icon is shown.
- Release the on/off button.

Pin Code

Each time a valid SIM card with an enabled PIN code is inserted, you are asked to enter your pin code:

Enter PIN

7/9/1999
12:00:48

Key in the pin code supplied with the SIM card. If the pin code keyed in is correct, the handset enters ready state:

Ready

7/9/1999
12:00:49

If for some reason the Iridium network is not available at the time, the display will show "Ready Internal" and you will only be able to make internal calls between the handsets and the analogue phone.

If you did not key in the correct pin code, you will have to try again. If you key in a wrong pin code three times in a row, the SIM card will be blocked and you will have to enter the PUK code to unblock it. (The PUK code is supplied with the SIM card). See section "SIM Card Handling" under "Handset Advanced Operation" for further details.

Unlocking Handset

If the handset is locked, you have to unlock it before it can be used.

Locked

7/9/1999
12:05:06

To unlock the handset:

- Press:



The display shows a list of user names. Your user name (i.e. the current value of the associated priority level) determines which facilities you have access to. Furthermore, the user name that is used for unlocking the handset is the name stored in the call log each time an external call is made.

>Captain
Commander
Crew
Officer

2. To find the right user name on the list, eg. Commander, use:



1. Hook on.



3. Confirm:



4. Key in the password that corresponds to the selected user name:



5. Confirm:



Call Functions

Speaker, Earpiece and Microphone

The earpiece is always turned on. The speaker and microphone are always in opposite states, i.e. if the speaker is on, the microphone is off, and vice versa.



You can toggle the speaker and microphone states by means of the speaker key. The speaker icon appears on the display when the speaker is on, and disappears when the microphone is on.

Hands free operation is not possible. You can call or receive a call, and toggle the speaker on - for listening purposes only.

Note: When the speaker is off, you can see that you are being called (the display will show "Incoming Call") - but there will be no sound in the speaker.

Hooking On/Off

Before a call can be initiated, the handset must be hooked off. To do so, either remove the handset from the hook or use the on/off-hook key.

The handset icon on the display indicates two states, depending on whether the handset has been hooked on or off.

Volume

During a conversation, the speaker and earpiece volume can be adjusted by means of:



How to make an External Call

Entering a telephone number on a handset follows the procedure shown with this example:

1. Hook off either by removing the handset from the hook



or by pressing the hook key



2. External call 0



3. Prefix for automatic call 0 0



4. Country code, e.g. 4 5



5. Area code, e.g. 7 0



6. Subscriber's number, e.g. 1 3 7 0 0 0



7. Confirmation #



How to make an Internal Call

Entering a telephone number on a handset follows the procedure shown with this example:

1. Hook off either by removing the handset from the hook

or by pressing the hook key



2. Internal number, e.g. 1 0 0 1



3. Confirmation #



Factory setup of extension numbers are:

PSTN/PABX:	1000
Handset 1:	1001
Handset 2:	1002
Handset 3:	1003
Handset 4:	1004

Making a Manual Call

Provided that no internal or external calls are in progress and that the handset is enabled and unlocked, it is possible to make an internal call.

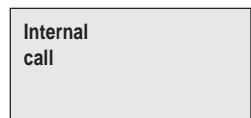
Furthermore, if a valid SIM card has been inserted into the SIM card slot and the correct PIN code has been entered or the PIN code has been disabled, it is also possible to make an external call.

In order to be able to make a manual call, the handset must either be in ready state or inside the phone book. For a description on how to return to ready state, see section "About this Manual". If the idle text differs from 'Ready' (e.g. SIM card messages) only internal calls are possible.

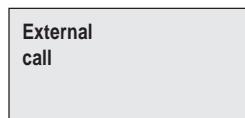
Now in order to make a manual call, do the following:

1. Hook off.

If the system is **occupied**, a busy tone is heard in the earpiece/speaker, and the display shows either

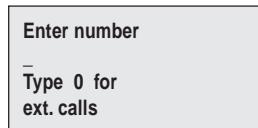


or

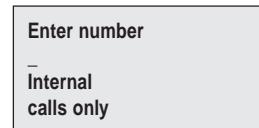


depending on whether an internal or external call is in progress.

If the system is **ready** to make a call, a dialling tone is heard in the earpiece/speaker, and the display shows:



or



2. Use the numeric keys to key in the number you want to dial.

For external calls, first key: 0



To delete the previous digit, if desired, press:



An example

Enter number
0 0 0 4 5 7 0 1 3 7 0 0
0 _

3. Confirm the call and start dialling by pressing:



4. Now the call will first be routed through the Iridium satellite constellation and connecting to the earth station. This process can take up to 30sec and is indicated by a deep, short tone puls in the earpiece/speaker. When the call is connected to the normal phone line network on ground the normal calling tones will be heard, and display will show:

Connecting

5. When the connection has been established, the display shows:

Connected to
0 0 0 4 5 7 0 1 3 7 0 0
0 _

6. When one of the calling parties end the call or if for some reason the call is dropped, the display will show:

Call terminated

Answering a Call

NOTE: When the speaker is off you can see that you are being called, (the display will show "Incoming Call") but there will be no sound in the speaker. The speaker can be toggled on and off using:



1. When the handset rings, remove it from the hook and communicate as on an ordinary telephone.

2. Adjust the volume in the earpiece or loudspeaker by means of:



3. When you want to stop communicating, hang up or press hook key.



Call Transferring

A call can be transferred to another handset. The procedure depends on whether or not the call is answered before it is transferred.

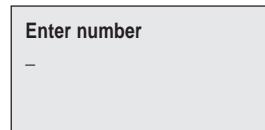
Transferring AFTER Answering

When you answer a call, the display shows:



To transfer the call:

1. Press:



2. Now, key in the extension number to which the call should be transferred.

3. To transfer the call, press:



Call is transferred

- or:

To cancel transferring the call, press:



Automatic Transferring BEFORE Answering

A call can be transferred to another handset automatically before it is answered. To see if the auto transferring function is enabled,

press:

The display will show eg.:

Call transfer enabled
Local: 1001
Delay: 0 sec 10

or

Call transfer disabled

The auto transferring parameters can be set up individually for each handset in the function menu:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Transfer" item, use:



and press:



4. To select “Enable” or “Disable”, use :



and press:



The function has now been enabled or disabled depending on your choice.

To select to which extension number(s) incoming calls should be transferred, follow the steps described above. In step 4, however, select “Extension”, after which you can key in and confirm the wanted extension number.

To specify the time in seconds (0-60) that the call should ring before it is transferred to the specified unit, follow the steps described above. In step 4, however, select “Delay”. If the delay is set to 0 seconds, the call is transferred immediately; before the first handset rings, the call is transferred to the chosen transfer destination.

Handset Advanced Operation

The system features a large number of special functions. For those of the functions that are likely to be used the most, there are special buttons or shifted functions in connection with the numeric keys. The functions used less often can be found in the menu system.

Menu System

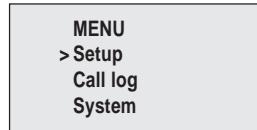
The handset contains several functions for changing the system settings, showing the status of certain system parameters, configurations, and functions for testing the system.

The menu system can always be entered from an enabled and unlocked handset which is in ready state. See section "Handset States" on how to return to ready state.

To enter the function menu system, press the following key:



The function menus appear:



The "Setup" menu contains all functions for changing the system parameters, such as volume, ringing tone, user names and passwords.

The "Call log" menu contains information on each call made, including details about when the call was made, its duration, and the receiver's telephone number.

The "System" menu contains all functions needed for the system administrator/super user to test and configure the system.

To navigate the menus, use the arrow keys:



To confirm that you want to select an item, use the OK key:



To regret the last step, use the Escape key:



Functions marked with an asterisk (*) concern the specific handset. All other functions are global, i.e. they concern the whole system. The following table contains a total list of the entries in the function menu system.

Keying in Names and Numbers

When keying in letters and numbers in the phone book, or in connection with user names and passwords, you will need to know

how many times to press each key. Pressing the key  once, for instance, will give a "D"; pressing the key twice, will give an "E", etc.

1 st push:	D
2 nd push:	E
3 rd push:	F
4 th push:	d
5 th push:	e
6 th push:	f
7 th push:	2

After each character keyed in, wait a little while to go to the next character (the cursor appears when it is ready), or use the right arrow key. The left arrow key deletes the last character entered.

When inside the phone book or user list;

- to create a **new entry**, press:
- to begin **editing** the entry selected on the list,

press:



- to **delete** the entry selected on the list, press:

Phone Book

The phone book offers the following facilities:

- Up to 100 entries with names and numbers can be stored. A telephone number may consist of up to 24 digits, and a name may contain a maximum of 11 characters.
- Any of the 100 stored telephone numbers can be used to initiate a call.
- Each entry in the phone book can be deleted.
- New entries can be added to the phone book as long as some of the 100 entries are free.
- The name and/or number stored in every entry can be changed.
- The stored entries can be searched alphabetically.
- The current extension/local number for all connected control units are stored in the phone book. However, only one control unit at a time can operate in new, edit, or delete mode. If a control unit tries to enter one of these modes, and another control unit has done the same, the display will show: **Phone book occupied**.

Entering the phone book

The phone book can always be entered from an enabled and unlocked handset, which is in ready state. See section "Handset States" on how to return to ready state.

Open the phone book by pressing:



Searching the Phone Book

When entering the phone book, the display shows a list beginning with the first entry in the phone book:



To find previous/following entries, use:



When you have reached the last entry, the phone book starts from the top again with the first entry.

Alphanumeric Search

You can also search the phone book by means of the alphanumeric keys. When inside the phone book, pressing e.g.



moves the cursor to the first entry beginning with an A. If no entry begins with an A, or if the key is pressed twice, the cursor moves on to the first entry beginning with a B, etc.



Storing a New Entry in Phone Book

To store a new entry (name and number) in the phone book:

- To enter the phone book, press:



- To enter the shifted functions, press:



- To select the new mode, press:



- Key in the name that corresponds to the number.



- To store the name, press:



- Key in the number using of the numeric keys.

- To store the number, press:

Remember to add "0" in front of country prefix to allow external calls

An example:



Changing a Number Stored in the Phone Book

To edit a stored number in the phone book:

1. To enter the phone book, press:



2. To select the desired entry in the phone book, press:



3. To enter the shifted functions, press:



4. To select the edit mode, press:



5. Key in the name that corresponds to the number.



6. To store the name, press:



7. Key in the number using of the numeric keys.



8. To store the new number, press:



Deleting a Stored Entry in the Phone Book

1. To enter the phone book, press:



2. To select the desired entry in the phone book, press:



3. To enter the shifted functions, press:



4. To select the delete mode, press:



5. To confirm deleting the selected entry, press:



Calling a Number from the Phone Book

To call a number stored in the phone book:

1. To enter the phone book, press:



2. To select the desired entry in the phone book, press:



3. To prepare for making the call:

- Lift the handset
- or
- Press:



Now, follow the steps described in connection with "Making a manual call", beginning with step 3.

Redialling

It is possible to redial the last number dialled by the current user. To do so:

1. Hook off.



2. Press:



3. Press:



4. To initiate the call, press:

A ringing tone is now heard from the handset. To go on with the call, follow the steps described in connection with "Making a manual call", beginning with step 4.

Security Lock Function

The handset can be protected against unauthorized use via the security lock function. This works together with the list of user names and corresponding passwords. The security lock requires that the user selects his user name from the list, and then keys in his personal password before the handset can be used for making calls.

The default password for all the users on the user list is "password", i.e. 61778562. Passwords can be edited in the Setup/Password menu (the user's own password) or in the /Setup/Users menu using



(Passwords of users with a lower priority than the current user).

The security lock function ensures that only users recognized by the system can unlock the handset and make calls through the Iridium system.

Answering incoming calls is not protected by the security lock.

Note that from a PSTN phone (stand alone or via PABX), the security lock is not an option.

The security lock function affects all control units. That means that if one control unit disables the lock, the lock is disabled on all control units connected. The same goes for enabling the lock.

User ID/User Name List

Every user specified in the system is given a priority value. The priority value determines what the user is allowed to do in the system. By default, the user list contains 6 entries with different priority values. The 6 default users are shown below.

User ID/User Name	Priority value
SUPER USER	0
Captain	1
Commander	4
Officer	10
Crew	100
Passenger	200

The SUPERUSER has the highest priority in the system and is therefore not restricted in any action. The SUPERUSER can edit all other users. A user can create, edit, and delete users of a lower priority; e.g. a user of priority value 4 may create, edit, and delete users of priority values 10, 100, and 200.

Each item in the handset menu has a priority value. The priority

value of the item and the user's priority value determine whether the user has access to the item or not. The blocked items are indicated by a star * in front of the item.

The user ID is written in the call log and it is thus possible to identify who has made which calls.

Enabling Security Lock

If the security lock function has been disabled, it can be enabled by users with a priority value of 4 or less:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. Find the "Lock" item using:



and press:



4. To select the "Enable" item, press:



5. Find a user name of priority level 4 or less, using:



and press:



6. Enter the password using the numeric keys, and press:



The handset from which the system lock was enabled, is not actually locked before an explicit lock is issued via pressing:



This action can only be carried out if the handset is in ready state. See section "About this Manual" on how to return to ready state.

When the lock is enabled, all **other** control units are automatically locked if they are in ready state (no call in progress and not inside the menu system or phone book). If one of these control units is not in ready state, it is automatically locked when returning to ready state.

Disabling Security Lock

To disable the security lock, the user has to be identified with a priority value of 4 or less (Commander, Captain, or SUPER USER).

To disable the security lock:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. Find the "Lock" item using:



and press:



4. Find the "Disable" item using :



and press:



5. Find the right user name using:

and press:



6. Key in the password, and press:



The security lock function is now disabled. This means that the handset is ready for use for everyone without any identification of the user. To avoid misuse of the handset, the user who disables the security lock is asked to set the priority value. This is done by selecting a user name from the user list and keying in the associated password. That user name is then used as the default user of the unlocked system. Information about subsequent outgoing calls from any handset will be logged under this default user name.

Note:

If the security lock is used for keeping track of the crew calls, each crew member must unlock the handset before use. Do not forget to lock the handset after use. The handsets are not locked automatically.

Password

A user may change his password at any time. To do so:

1. To enter the function menu, press



2. To select the "Setup" item, press



3. To find the "Password" item, use:



4. To confirm, press:



5. Key in the old password and confirm by pressing



6. Key in the new password and confirm by pressing



7. Re-enter the new password and confirm by pressing



Users

Up to 25 users can be registered in the system by manually creating an entry for each user. Both a user name and a temporary password must be entered for each user.

A user may create, edit, and delete users with a priority value higher than the user's own priority value.

Adding a New User to the System:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Users" item, use



and confirm by



4. To create a new user, press:



5. Key in the new user name, and confirm by



6. Key in the password, and confirm by



A new user has now been added to the system with a default priority. The priority is one of the properties that can be edited using the procedure described next.

Editing the Properties of an Existing User:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Users" item, use



and confirm by



4. To find the user to be edited, use:



5. To edit the user, press:



6. To go to the user property to be edited, use



and confirm



Deleting an Existing User:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Users" item, use



and confirm by



- To find the user to be deleted, use:



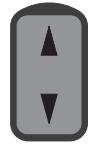
- To delete the user, press



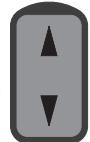
- Confirm by



- Find the item "Call Log" using and confirm by



- Find the item "Private" using and confirm by



- Find the item "Outgoing" using and confirm by



Call Log

Information about all outgoing calls are logged. The latest 50 outgoing calls can be found in the call log. The duration of the last outgoing call can be retrieved.

Notice! The user name that is used for unlocking the handset is the name stored in the call log each time an external call is made.

A list showing the phone numbers of the outgoing calls made by the current user now appears on the display.

Viewing the Last Call

- To enter the function menu, press:



To see more details about a specific call, find the call using

- Find the item "Call Log" using



and confirm by



- Find the item "Last Call" using



and confirm by



and confirm by



The total account of the current user can be retrieved by choosing "Account" instead of "Outgoing" at step 4.

Viewing the Last Private Call Log

The call log for the current user can be retrieved as shown in the following:

- To enter the function menu, press:



Viewing the Global Call Log

The global call log for all users in the system can be retrieved as shown in the following:

- To enter the function menu, press



- Find the item "Call Log" using



and confirm by



3. Find the item "Global" using



and confirm by



A list of all outgoing calls made from the system can now be

retrieved by choosing the item "Outgoing" and pressing



To see more details about a specific call, find the call using



and confirm by



Alternatively, the account of each user can be retrieved as shown below:

1. Follow steps 1-3 above.

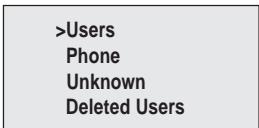


2. Find the item "Account" using

and confirm by



The available items are now:



To select e.g. a specific user, choose "Users" and press



and press

Now, find the user by means of



Print Call Log to a Personal Computer

Connect a PC/Laptop to the RS232 service interface port with a standard 9 wire serial cable. (RX on pin 2, TX on pin 3 and Ground on pin 5)

On the PC/Laptop you can use a terminal program (e.g. hyper terminal) to read out the call log.

Terminal port set-up: 9600 baud, 8 data bit, no parity and 1 stop bit.

In the terminal program press ESC twice and you will see:

Thrane & Thrane a/s service interface
SI>

The call log can be read out in 3 different modes.

- 1) Continues print mode
- 2) Latest calls
- 3) Calls made by a specific user

The call log record format is as follows:

[Date], [Time], [Call duration], [User name], [Subscriber name],
[Telephone number]

An example:

A call made April 4, year 2004, time 12.01.22, by SUPERUSER to a telephone number 00045 70101155 (labelled with HOME in the address book) and the call duration was 1 minute and 16 seconds.

Will be read out as:

04/04-2004,12:01:22,01:16,SUPERUSER,HOME,0004570101155

A comma separates each position.

Continues print mode

To read out a list of all completed calls, write "CALLS ON" on the command line and press enter.

An example:

SI> CALLS ON [enter]

Now the call records are listed continuously until the mode is disabled or the transceiver unit is restarted.

To disable the continuous print mode write "CALLS OFF" on the command line and press enter.

An example:

SI> CALLS OFF [enter]

Latest calls

To read out a list of the latest calls, write "CALLS [number of last calls]" on the command line and press enter. Up to 50 calls can be listed.

An example:

SI> CALLS 27 [enter]

When following this example, the last 27 calls will be read out, starting with the latest call.

Calls made by a specific user

To read out calls made by a specified user, write CALLS [USER NAME]

An example:

SI> CALLS SUPERUSER [enter]

This will sort out all calls made by SUPERUSER among the last 50 calls in the call log and read out each record.

Setting Time and Date

Time and date can be displayed and adjusted manually. The time is used in the call log. Adjusting the time requires that the user is identified with a priority value of 4 or less (Commander, Captain, or SUPER USER).

1. To enter the function menu, press:



2. Go to the "System" item using:



and press:



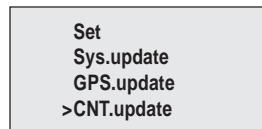
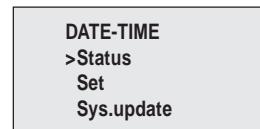
3. Go to "Time/date" using:



and press:



You can now choose between "Status", "Set", "System update", "GPS update" and "CNT update"



Status: Shows current time and date (from system).

Set: Allows you to edit time and date manually, using the numeric keys.

Sys. update: If this option is chosen, the time written in the display is updated using an internal clock in the transceiver unit.

If power is removed from the transceiver the clock will continue running for up to 24 hours.

GPS. update: If this option is chosen, the time written in the display is updated using the connected GPS, if any. Consequently, even if your Iridium system is turned off and then on again, the clock will still be adjusted to the correct time each time a GPS update is received. If no GPS is available, it makes no sense choosing this option.

CNT. update: If this option is chosen, the time written in the display is updated using a software counter. Consequently, if your Iridium system is turned off and then on again, the clock will be reset to a default time. The correct time must then be set again manually each time.

Setting Dimmer and Contrast

To adjust the background light and the contrast level, first press the two keys:



The dimmer/contrast menu appears:



Now, move to the desired item – **dimmer** or **contrast** – by means of:



Then, to select the item, press:



An example

When you select **dimmer** in the **dimmer/contrast** menu, the display shows the **dimmer** menu:



To enable or disable the light, select the **On** or **Off** item respectively.
To adjust the dimmer level, select the **Level** item.



Then, to increase or decrease the dimmer level, use:



For the changes to take effect, press:

The **dimmer/contrast** menu may also be entered via the “Setup” menu as follows:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “Light” item using



and press:



GPS

Via this menu item, it is possible to obtain the geographical position in terms of longitude and latitude if an optional GPS receiver is connected via the transceiver. If this is the case, the position is available by going through the following steps:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “GPS” item using



and press:



Display

For each handset, the user may select the information to be shown in the display when the handset is in ready state. However, the state of the system will always be shown in the display. The available choices are:

- **Time/date:** Both the time (hours, minutes, seconds) and the date is shown.
- **Time:** Only the time (hours and minutes) is shown.
- **Position:** If a GPS receiver is connected to the transceiver, choosing “Position” will show the geographic position in terms of latitude and longitude.
- **State only:** Only the state of the transceiver is shown.

If for instance you want to choose time/date;

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “Display” item using



and press:



- Find the "Time/date" item using



and press:



To see the effect, exit the menu system.

Billing

When a mobile originated call is initiated from the RJ11 port (PSTN/PABX) and the call is connected to the remote user, the system sends the billing tone to the PSTN/PABX at the RJ11 port. The tone lasts for 500ms. Some PABX can catch this tone and start billing the user at the PABX for the call.

Enter Billing Menu

- To enter the function menu press:
- Select the setup item
- Select billing item



The following options are available in the billing menu.

Status

Select status will show if the billing is enabled or disabled and also show the billing frequency.

Enable

Select enable will enable the billing tone

Disable

Select disable will disable the billing tone

Frequency

Select frequency, select 12kHz or 16kHz, refer to PABX manual to select correct frequency.

SIM Card Handling

Your Iridium equipment monitors the SIM card status. The status information is shown in the display of each handset in ready state.

SIM Card Messages

As long as one of the following messages are seen in the display, the SIM card currently inserted in the transceiver cannot be used for making external outgoing calls.

- SIM card blocked:** This message indicates that a wrong pin code has been entered three times in a row with the current SIM card inserted into the transceiver. To unlock the SIM card, enter the correct PUK1 code.
- Card blocked permanently:** This message indicates that a wrong PUK1 code has been entered ten times in a row. The SIM card is now permanently blocked and cannot be unblocked.
- SIM card defective:** This message indicates that your Iridium equipment has detected that a SIM card has been inserted into the SIM card slot. For some reason, however, the Iridium equipment cannot communicate with the SIM card.
- SIM card validation:** This message indicates that a valid SIM card has been inserted into the SIM card slot, and that the pin code just entered is being validated by the Iridium system.

Note: In case of SIM card problems you must contact your Iridium Service Partner for help.

Enabling and Disabling PIN Codes

Each SIM card has an associated PIN code. In order to prevent unauthorized use of SIM cards, your Iridium equipment is capable of enabling and disabling the associated PIN codes.

When the PIN code from a given SIM card is enabled, the user must enter the current value of this PIN code each time the SIM card is re-entered into the SIM card holder in the transceiver. When the PIN code for a given SIM card is disabled, the SIM card can be used for making external outgoing calls, provided that it is not defect or blocked.

Enabling the PIN Code

- To enter the function menu, press:



2. Find the "System" item using:



and press:



3. Find the "SIM Card" item using:



and press:



4. Find the "PIN enable" item using:



and press:



5. Key in the PIN code and press:



Disabling the PIN code

Follow steps 1 – 5 above with the following substitution:

4. Find the "PIN disable" item using:



and press:



Entering the PIN Code

Each time a valid SIM card with an enabled PIN code is inserted into the SIM card holder, the current value of the associated PIN code must be entered using the alphanumeric keys. The PIN code must be a number consisting of 4 to 8 digits.

In order to enter the PIN code, do the following:



1. Key in the 4-8 digit PIN code and press:

Changing the PIN Code

1. To enter the function menu, press:



2. Find the "System" item using:



and press:



3. Find the "SIM Card" item using:



and press:



4. Find the "Change PIN" item using:



and press:



5. Enter the current PIN code and press:



6. Enter the new PIN code and press:



7. Reenter the new PIN code and press:



Unblocking a Blocked SIM Card

If a wrong PIN code has been entered 3 times in a row, the transceiver blocks the SIM card. If a blocked SIM card is inserted into the SIM card holder or if a SIM card already in the SIM card holder is blocked, the display will show "SIM Card blocked" when the handset is in ready state. In order to unblock a blocked SIM card:

Follow step 1 – 3 above.

4. Find the "PUK Code" item and press:



5. Enter the correct PUK code and press:



6. Enter a new 4-8 digit PIN code and press:



7. Re-enter the new PIN code and press:



Ringing Tone

When configuring each handset, the user can choose among a number of different ringing tones.

The procedure is to choose one of the following 4 ringing tones:

- Deep
- High
- Alternating slowly
- Alternating fast

The ringing tone for internal incoming calls as well as the ringing tone for external incoming calls are both affected by this single choice. Therefore they cannot be set independently.

For **external** incoming calls, resulting tones are respectively:

- Deep
- High
- Alternating slowly
- Alternating fast

For **internal** incoming calls (local calls), the resulting tones are respectively:

- Deep dual
- High dual
- Deep dual
- High dual

As mentioned above, choosing a ringing tone affects both the external incoming ringing tone and the internal incoming (local call) ringing tone according to the following table:

Choice of ringing tone	External incoming calls	Internal incoming calls
Deep	Deep	Deep dual
High	High	High dual
Alternating slowly	Alternating slowly	Deep dual
Alternating fast	Alternating fast	High dual

An **internal incoming call** (local call) can always be recognized by two equal consecutive tones (hence the term "dual" in the table) followed by a pause. The tones may be deep or high.

An **external incoming call** can always be recognized by a single continuous sound sequence (deep, high, alternating slowly or alternating fast), followed by a pause.

An **example:** To set the external incoming ringing tone to alternating slowly, and the internal incoming ringing tone to deep dual (remember that they cannot be set independently as described above):

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. Find the "Ring tone" item using and press:



4. Find the "Slow alt." item using and press:



Extension

At any time, each handset is uniquely characterised by an extension number. That is, only one handset at a time may have a given extension number. The extension numbers may be changed, but no two handsets can have the same extension number simultaneously. To change the extension number of a handset do the following:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. Find the "Extension" item using and press:



4. Key in a number below 10.000 that is not in use by any other control unit, and press:



Note: The PSTN extension number cannot be changed.

Call Answer

If your Iridium equipment includes more than one control unit or a control unit and a PSTN telephone, you may configure the answering of external incoming calls in a number of different ways. The available choices are:

- **One CU:** Choosing this option, you must specify the extension of the control unit to which you want external incoming calls to be directed automatically.
- **PSTN:** If there is a PSTN telephone connected to your Iridium equipment, selecting this option will direct external incoming calls to your PSTN telephone.
- **All:** Choosing this option will make all control units and the PSTN telephone (if any) ring when your Iridium equipment receives an external incoming call. Any of these units may be used for answering the call.

An example: If you want all external incoming calls to be directed to a control unit with the extension number 1001:

1. To enter the function menu, press:



2. Find the item "System" using and press:



3. Find the item "Call Answer" using and press:



4. Find the item "One CU" using and press:



5. Find the extension number of the handset to which you want all



external incoming calls to be directed, using



and press:

Alternatively, if you want to direct external incoming calls to your PSTN telephone (if any), follow steps 1-3 above, and proceed as follows:



4. Find the item "PSTN" using and press:



5. Press again to confirm that external incoming calls should be directed to the PSTN telephone.

Call Forwarding

NOTE: This feature is a supplementary service available from the Iridium network. Thrane & Thrane has no influence on the availability and cannot guarantee that the service is available. Please check the availability with your Iridium Service Partner.

The Iridium network offers the possibility of forwarding incoming calls to another phone number. This facility can be configured from your Iridium equipment. The call forwarding can be divided into the following two categories:

- **Forward all calls:** All external incoming calls will immediately be forwarded to the number you specify when you activate this category.
- **Forward on not reachable:** When your Iridium equipment has been turned off or cannot for some reason be contacted by the network or when the line of your Iridium equipment is occupied, either by an internal or an external call, external incoming calls will be forwarded to the number you specify when you activate this category.

Note: By default, the above two categories of calls will all be forwarded to your personal mailbox. When you activate a category, the calls in this category will be forwarded to the number that you specify and no longer to your personal mailbox.

In the following, the procedures for activating, restoring and reviewing settings for the above two categories are described. As usual, when manually dialling a number to call, this must be done from ready state.

Forwarding all Calls (Unconditional Call Forwarding)

Activate:

1. Hook off
2. Enter the following code ***21*00 [country code]
[telephone number] # OK**
by pressing the keys:



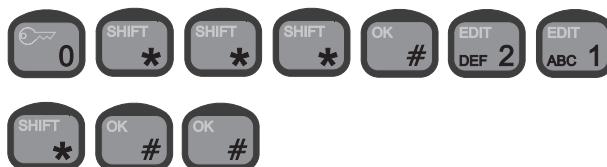
Cancel:

1. Hook off
2. Enter the following code **#21#OK**
by pressing the keys:



Review forwarding number:

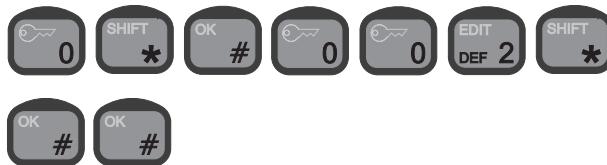
1. Hook off
2. Enter the following code ***#21#OK**
by pressing the keys:



Cancel All Forwarding

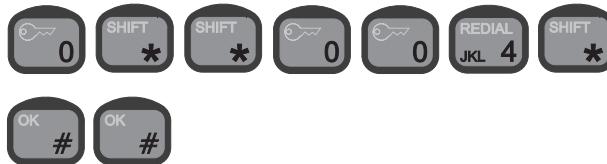
Activate:

1. Hook off
2. Enter the following code **#002#OK**
by pressing:



Reactivate and restore previous settings:

1. Hook off
2. Enter the following code ***004#OK**
by pressing:



Call Forward When Unavailable (Busy + Not Reachable + No Reply/No Answer)

Activate:

1. Hook off
2. Enter the following code *004*00[country code]
[telephone number]#OK
by pressing:



Restore forwarding to personal mailbox:

1. Hook off
2. Enter the following code *004*00[personal mailbox retrieval number]#OK
by pressing:



Note: Personal mailbox retrieval number is currently:
881631462990000

Call Barring

NOTE: This feature is a supplementary service available from the Iridium network. Thrane & Thrane has no influence on the availability and cannot guarantee that the service is available. Please check the availability with your Iridium Service Partner.

Call barring allows you to bar either all external incoming or all external outgoing calls. If you bar external incoming calls, your Iridium equipment will not receive external incoming calls. If you bar external outgoing calls, nobody will be able to place external outgoing calls from your Iridium equipment.

Note: External incoming calls will not be sent to your personal mailbox if call barring of external incoming calls is active.

Before activating call barring, **disable all types of call forwarding**.

Call Barring of Incoming Calls

Activate:

1. Hook off
2. Before activating, cancel all forwarding #002#OK
by pressing the keys:



3. Enter the following code *35*[password]#OK
by pressing the keys:



Cancel:

1. Hook off
2. Enter the following code #35*[password]#OK
by pressing the keys:

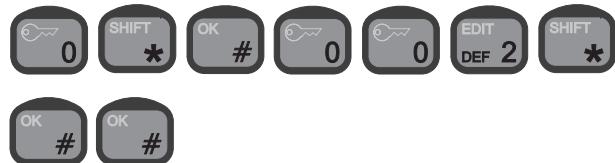




Call Barring of Outgoing Calls

Activate:

1. Hook off
2. Before activating, cancel all forwarding by pressing the keys: **#002#OK**



3. Enter the following code ***33*[password]#OK** by pressing the keys:



Cancel:

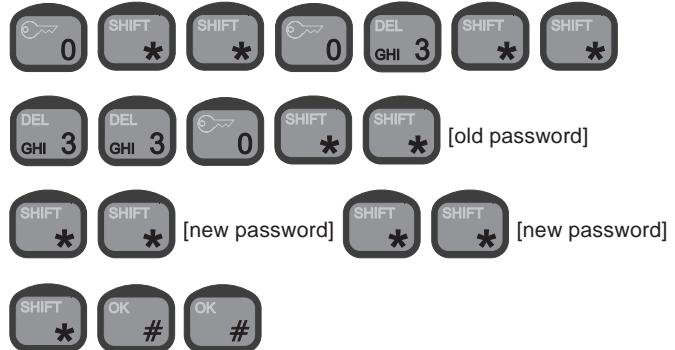
1. Hook off
2. Enter the following code **#33*[password]#OK** by pressing the keys:



Changing your password:

1. Hook off
2. Enter the following code ***03*330*[old password]*[new password]*[new password]#OK**

by pressing the keys:



Voice Mail

NOTE: This feature is a supplementary service available from the Iridium network. Thrane & Thrane has no influence on the availability and cannot guarantee that the service is available. Please check the availability with your Iridium Service Partner.

Voice mail allows callers to leave a voice message in your personal mailbox. As described in section "Call Forwarding", by default external incoming calls are forwarded to your personal mailbox if the call is not answered, if your equipment is switched off, if your Iridium system is occupied by an internal or external call or cannot, for some reason, be contacted by the Iridium network. Therefore these calls will be forwarded to your personal mailbox unless you set a new telephone number to transfer to.

You may record a personal greeting which the callers will hear when they are forwarded to your mailbox. After hearing your personal greeting, callers can leave a voice mail message which is stored in your mailbox.

Your personal mailbox has a lot of features which can be configured by you. The caller also has a number of facilities to choose between when forwarded to your mailbox. See the "Iridium Services User Guide" that comes together with your Iridium equipment.

To call your voice mailbox you shall call 00881662990000 associated with your subscription i.e. SIM card number.

Your access code is for default the last 7 digits of your SIM card number.

Software Version

Primarily for service purposes, it is possible to get information about the version of the software for the following pieces of hardware in your Iridium equipment:

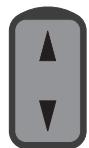
- **Transceiver:** This software handles the configuration of your Iridium equipment, audio routing, the information to be shown on the displays, communication with your SIM card, etc.
- **LBT:** Readout of the LBT IMEI number (International Mobile Equipment Identity number)
- **Handset:** This software consists of low level drivers (for each control unit) that control the display, the key pad, and the microphone, earpiece and speaker.

To get information on these software modules, go through the following steps:

1. To enter the function menu, press:



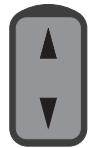
2. Find the item "System" using



and press:



3. Find the item "SW version" using



and press:



4. Choose the hardware whose software version you want informa-



tion on, using



Resetting

Primarily for service and test purposes, it is possible to reset your Iridium equipment to force it into a well-defined state. The following different levels of resetting are available:

- **Restart:** No configuration information or user data (call log, user list, phone book) are deleted. When this command is issued/chosen, all control units are forced back to ready state regardless of their current state.
- **Factory reset:** **NOTE!** ALL (!) configuration information AND (!) user data (call log, user list, phone book) are deleted. When this command is issued, your Iridium equipment returns to the state it was in when leaving the factory.

To restart your system:

1. To enter the function menu, press:



2. Find the item "System" using



and press:



3. Find the item "Reset" using



and press:



4. Find the item "Restart" using



and press:



5. To confirm that you want to restart the equipment, press:



Auto Restart

The auto restart menu is used for debugging/maintenance only. When enabled, auto restart will only be carried through when the system is not in use.

Under the auto restart menu, the available items are:



Mode

The mode setting is used together with the timer as a condition for when the system can reset. The mode settings - 10 minutes, 1 minute or 0 minute - will allow the system to reset after the timer expires and when the condition that the handset has not been in use for a period of 10 minutes, 1 minute or 0 minute has been fulfilled.

Hardware Restart

Pressing the restart switch next to the SIM card holder will power recycle the unit.

Using an Analogue Telephone

You can connect an analogue telephone to your Iridium equipment. Many of the system's more advanced features, like the security lock function, are however not accessible from an analogue telephone. The accessible features are described in the Analogue Phone Menu.

Making a Manual Call

How to make an External Call

Entering a telephone number on an analogue telephone follows the procedure shown with this example:

- Pick up phone: dialling tone.
 - External call 0 0
 - Prefix for automatic call 0 0
 - Country code, e.g. 4 5
 - Area code, e.g. 7 0
 - Subscriber's number, e.g. 1 3 7 0 0 0
1 3 DEF 7 PQRS 0 0 0
 - To confirm you want to make the call,
press #

How to make an Internal Call

Entering a telephone number on an analogue telephone follows the procedure shown with this example:

- Pick up phone: dialling tone.
 - Internal number, e.g. **1001**

 - To confirm you want to make the call,
press **#** 

Factory setup of extension numbers are:

PSTN/PABX:	1000
CU1:	1001
CU 2:	1002
CU 3:	1003
CU 4:	1004

Up to four control units and a telephone/PABX can be connected to the transceiver at the same time. Note that if connecting a PABX to the transceiver, the PABX must function as a PSTN telephone.

To dial control unit 1 from a local telephone connected to your Iridium equipment via a PABX, first pick up the phone, then:

1. Dial the number for the outgoing line connected to the trans-

ceiver, eg.

10



2. When you hear the dialling tone, dial the extension number of control unit 1: 1001



3. To confirm you want to make the call,

press

#



DTMF Tones - Limitations

When used for internal calls, control units do not generate DTMF tones. Therefore the PABX cannot be set up for using DTMF tones to access extension numbers.

Analogue Phone Menu

The phone menu is using tone notification for status indication. When picking up the phone, tones will be pulsed if any user action is required.

SIM Card Handling

Enter PIN code

If SIM PIN code is enabled the phone will repeat the following tone pulses:

297Hz (300ms) – 317Hz (150ms) – 237Hz (300ms) – pause 1.5s

Enter the PIN code press * 1# PINCODE #



The phone is ready when dialling tone is heard.

Enter PUK code

If the SIM card is blocked the PUK code is needed to re-open the card. The phone will repeat the following tone pulses:
1000Hz (300ms) – 1000Hz (300ms) – 1000Hz (300ms) – pause 1.5s

Enter the PIN code press: * 2# PUKCODE * PINCODE #



The phone is ready when dialling tone is heard.

Enable PIN code

Pick up phone to enable PIN code.

When dialling tone is heard,
press:



Disable PIN code

Pick up phone to disable PIN code.

When dialling tone is heard,
press:



Signal Level

The signal level can be retrieved by:

Pick up phone: dialling tone,

press:



The signal level will be indicated by a beep per level with an 800Hz tone for 50ms per beep.

1 beep indicates no signal

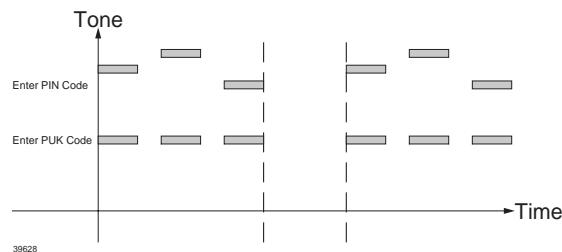
6 beeps indicate full level

To return to dialling tone,

press: #



Tone signalling on DTMF menu



Billing

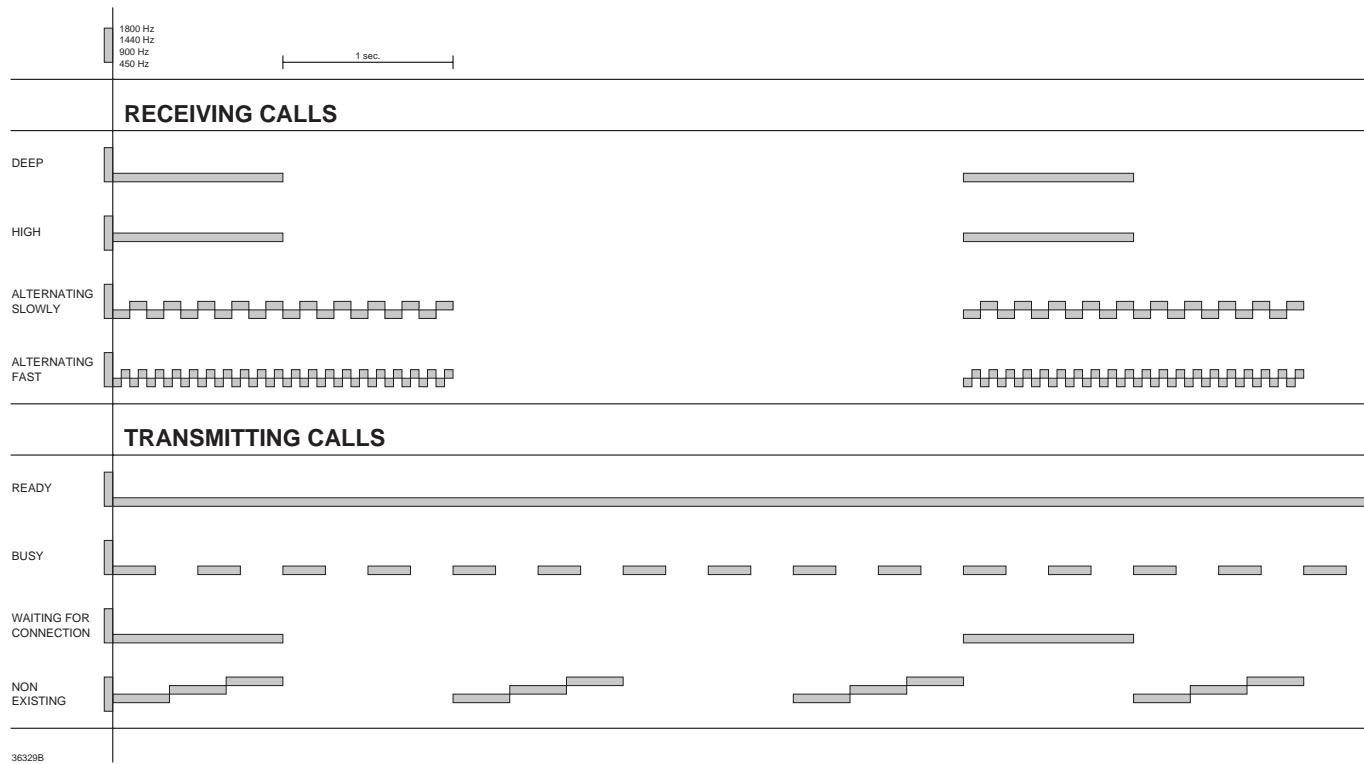
When a mobile originated call is initiated from the RJ11 port (PSTN/PABX) and the call is connected to the remote user, the system sends the billing tone to the PSTN/PABX at the RJ11 port. The tone lasts for 500ms. Some PABX can catch this tone and start billing the user at the PABX for the call.

Refer to "Handset Advanced Operation" for setup instructions.

Appendix A

Tone Signalling

The system will give you information on its status as well as instructions by means of tone signalling. This is done on four different frequencies: 450, 900, 1440 and 1800 Hz. Appendix A illustrates what the various tone signalling sounds like.



Appendix B

Function Menu Overview

Menu	1st submenu	2nd submenu	3rd submenu	4th submenu	Action
Setup	Ringing tone	Deep			Sets ringing tone to deep (see Appendix A)
		High			Sets ringing tone to high (see Appendix A)
		Slow alt.			Sets the ringing tone to alternating slowly (see Appendix A)
		Fast alt.			Sets the ringing tone to alternating fast (see Appendix A)
	Ring test	External			Generate external ringing tone in order to test the setting of this sound
		Internal			Generate internal ringing tone in order to test the setting of this sound
	Ring vol. (*)				Sets the volume of the ringing tone
	Speaker vol. (*)				Sets the speaker volume
	Key beep (*)	Enable			Turns on the key beep function: When a key is pressed, a beep is heard
		Disable			Turns off the key beep function: When a key is pressed, no beep is heard
		Volume			Sets the volume of the beep heard when a key is pressed
	Lock	Enable			Requires users to log in. When selecting this function, the user is prompted to log in
		Disable			Does not require users to log in. This function can only be selected by users with certain priorities. When selecting the function, the user is asked to state a default user priority level that decides what all users will be allowed to do. This default priority level cannot be higher than that of the user disabling the lock
	Password				Sets the current user's password
	Users	Userlist + Add			Browses the user list, and adds new users, entering names and passwords
		Userlist + Edit	Name		Browses the user list, and edits user names
			Password		Browses the user list, and edits user passwords
			Priority		Browses the user list, and edits user priorities
			Clear account		Browses the user list, and clears user account records
		Userlist + Del.			Browses the user list, and deletes users from the list
	Extension (*)				Selects the extension number of the current handset
	Transfer (*)	Enable			Enables the auto transfer function
		Disable			Disables the auto transfer function
		Extension			Selects the extension number(s) to which calls are to be transferred
		Delay Time			Selects the delay time before a call is transferred
	GPS				Shows the current position
	Display (*)	Time/date			Displays the time and date when the handset is ready
		Time			Displays the time (hour and minute) when the handset is ready
		Position			Displays the position when the handset is ready
		State only			Displays only the state of the system when the handset is ready
	Light	Dimmer	On		Turns the display backlight on
			Off		Turns the display backlight off
			Level		Adjusts the level of the display backlight
		Contrast			Adjusts the display contrast
	Billing	Status			Shows the status of billing tone
		Enable			Enables the billing tone
		Disable			Disables the billing tone
		Frequence	12 kHz		Selects the tone frequency
			16 kHz		
Call log	Global	Outgoing	Userlist		Browses the log of all outgoing calls
		Account	Users		Browses the user list, and shows the accounts of selected users
			Phone		Shows the account of the PSTN phone
			Unknown		Shows the accounts of unknown users
			Del. Users		Shows the accounts of deleted users
	Private	Outgoing			Browses the log of the current user's calls
		Account			Views the current user's account
	Last call				View the duration of the last call

System	Time/date	Status	Shows the time and date															
		Set	Sets the time and date															
		Sys.update	Sets the system to update the time and date															
		GPS update	Sets the GPS to update the time and date															
	SW version	Transceiver	Displays the software version number of the transceiver															
		LBT	Displays the software version number of the LB T															
		Ctrl unit	Displays the software version number of the handset															
	Call answer	Status	Shows the status of Call Answer, i.e. who is set to receive incoming calls															
		One CU	Incoming calls go to a specific control unit															
		PSTN	Incoming calls go to the PSTN phone															
		All	Incoming calls go to all control units and the PSTN phone															
	SIM Card	PIN enable	Enable PIN code															
		PIN disable	Disable PIN code															
		Change PIN	Change PIN code															
		PUK code	Enter PUK code															
	Reset	Restart	Restarts the system (works like switching the power off and on again)															
		Factoryres	Restarts the system and reloads all factory settings															
		Auto Reset	<table border="1"> <tr> <td>Status</td> <td></td> <td>Shows the status of the current setting</td> </tr> <tr> <td>Disable</td> <td></td> <td>Will disable the auto-reset function</td> </tr> <tr> <td>Enable</td> <td></td> <td>Will enable the auto-reset function</td> </tr> <tr> <td>Timer</td> <td>24 hour 12 hour 6 hour 1hour</td> <td>Sets the time between auto resets</td> </tr> <tr> <td>Mode</td> <td>Ready 10 min 1min 0 min</td> <td>Sets the time for how long the control handset must have been left unused before auto reset</td> </tr> </table>	Status		Shows the status of the current setting	Disable		Will disable the auto-reset function	Enable		Will enable the auto-reset function	Timer	24 hour 12 hour 6 hour 1hour	Sets the time between auto resets	Mode	Ready 10 min 1min 0 min	Sets the time for how long the control handset must have been left unused before auto reset
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