Back to Start Page

Fleet inmarsat

Nera F55

User Guide

MPDS Compatible

NERA

enabling a wireless future

Starting up

- Switch ON Nera F55,
  *For location of the ON/OFF switch, see "**Switching ON**" in **Getting Started**.*
- Turn ON the PC and click
  Start>Programs>vtLite Marine.

Note! VtLite can only be used on one PC at a time.

1 The satellite search program is initialized.
*See also "**Satellite search**" in **Getting Started**.*

2 Nera F55 starts searching for **last known satellite/elevation** (Ocean Region) as default.

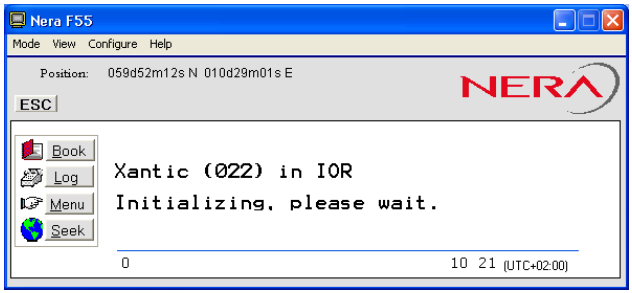
3 When receiving a satellite signal, a signal strength bar will appear in the search window.

The longer the signal bar or higher the signal strength indicator value, the better the signal quality.

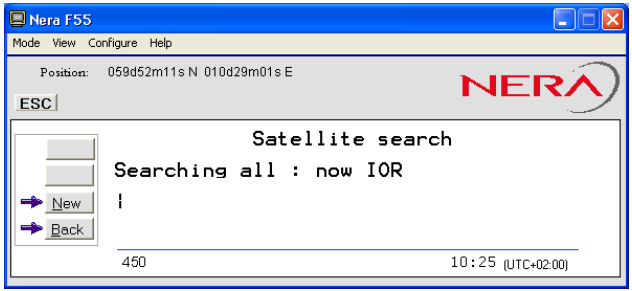
The maximum marker indicates the highest signal strength achieved during the current search.

*Note! It is recommended that the signal strength reading (**S**/**N**=**S**ignal/**N**oise ratio) should be at least 550, typically 600. The antenna will automatically fine-*

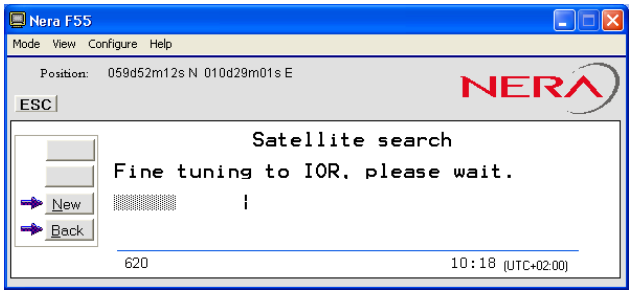
1



2



3



tune to the best signal and accept it.

Clicking **Seek** starts the search again.

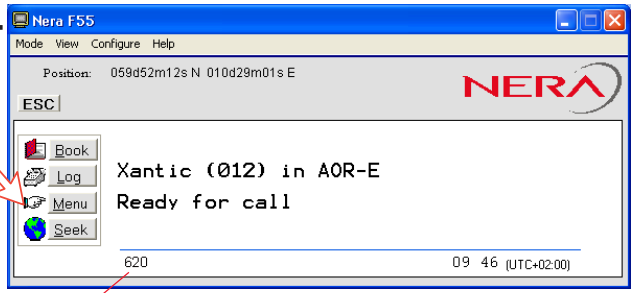
If required, select a specific satellite by clicking **New**.

*See also "**Selecting default Net provider**" in **Getting Started**.*

4 The equipment is ready for use when the **Main window** appears.

*To make a connection, see "**Making a call**" in **Getting Started**.*

4



S/N=Signal/Noise ratio

Phone book

Adding and editing entries can also be done from the handset, *see* ***OPERATION FROM HANDSET*** *in* ***Getting Started***.

Phone book capacity

	MCU	*SIM card* *(Data vary with card type)*
Phone numbers:	100 entries	100 entries
Number length:	19 digits	19 digits
Name length:	29 characters	12 characters
Entry numbers:	0 - 99	100 and up

The SIM card entries and "MCU" entries merge when the card is inserted. The list is sorted by name.

Abbreviated dialing (prefix 23)

1 Clicking **Book** opens the **Phone book**.

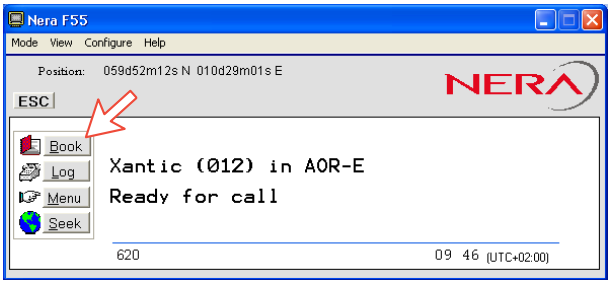
2 Scroll through list ↑/↓ to wanted entry.

Example: dialing 2 3 1 5 # on the analogue telephone or ISDN keypad fetches and sends the telephone number stored under short number entry 15.

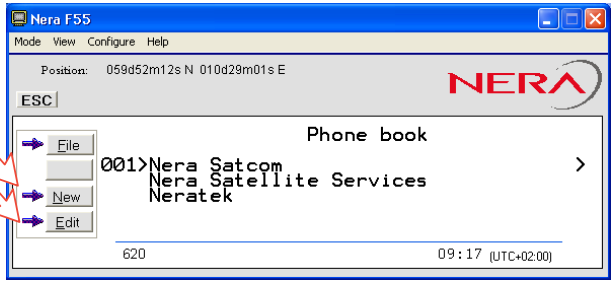
Adding or editing entries

3 Clicking **New** (window **2**) opens the window used to add an entry to the book.
Use **Del** to modify. **Save** stores the new entry.

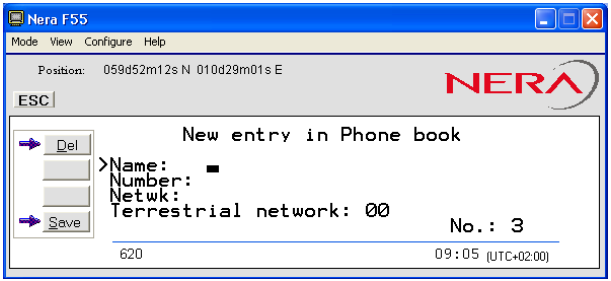
1



2



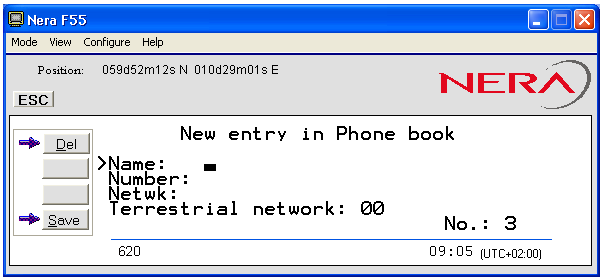
3



4 Clicking **Edit** (window **2** on previous page) opens the window allowing changes to be made in the Phone book.
Use **Del** to modify. **Remov** erases the entry.

*Note! The book is also used with the restriction "Dial from book only", see "**Restricted dialing setup**".*
Use of Terrestrial network requires special agreement. Default: 00.

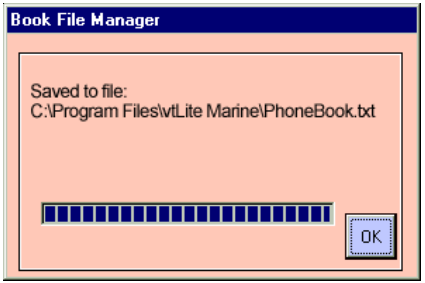
4



Saving entries to/from PC

5 Click **File** to save, load or replace the phone book.

5



Traffic Log

This function logs all outgoing and incoming calls both with and without SIM card inserted. Incoming calls may be logged as well.

Up to 100 calls can be logged:

Circuit switched calls (Cct) including:

- speech
- fax
- data

Packet switched data calls (Mpds) including:

- Mobile Packet Data Service calls

The Nera F55 *owner* may set the log output mode as follows, *(see "**Traffic log settings**")*:

- paused
- cleared (stops logging and clears the log)
- enabled
- automatic printout to RS-232A
- automatic printout to RS-232B

Traffic log readout

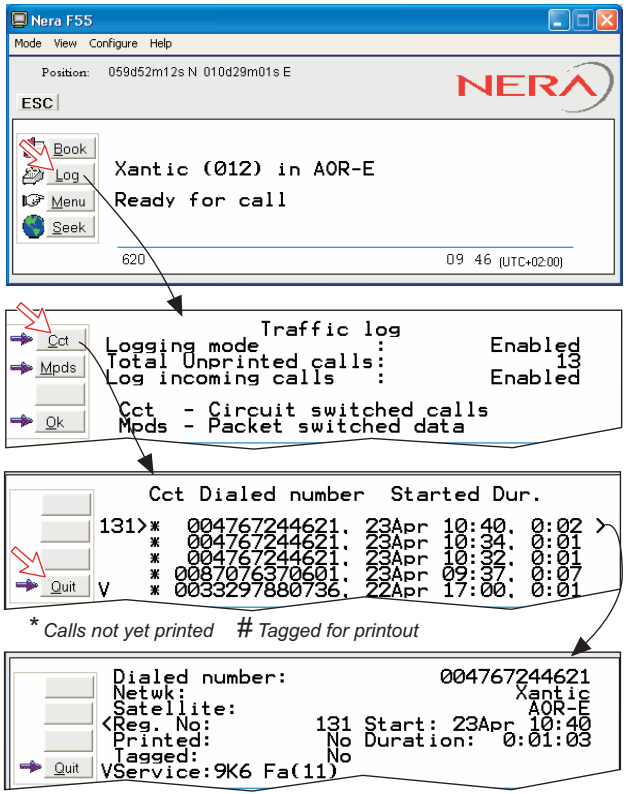
1 Clicking **Log** opens the Traffic log window.

2 The Traffic log window shows whether the logging is enabled, whether incoming calls are logged, and the total number of *unprinted* calls (MPDS and Cct calls).

Circuit switched calls:

Clicking **Cct** displays the list of calls.

3 Scroll ↑/↓ to wanted call record and press → to display details of the selected call.



4 The call details include data such as dialed number, start of the call, duration, service and terminal Id.

Quit reverts to main window.

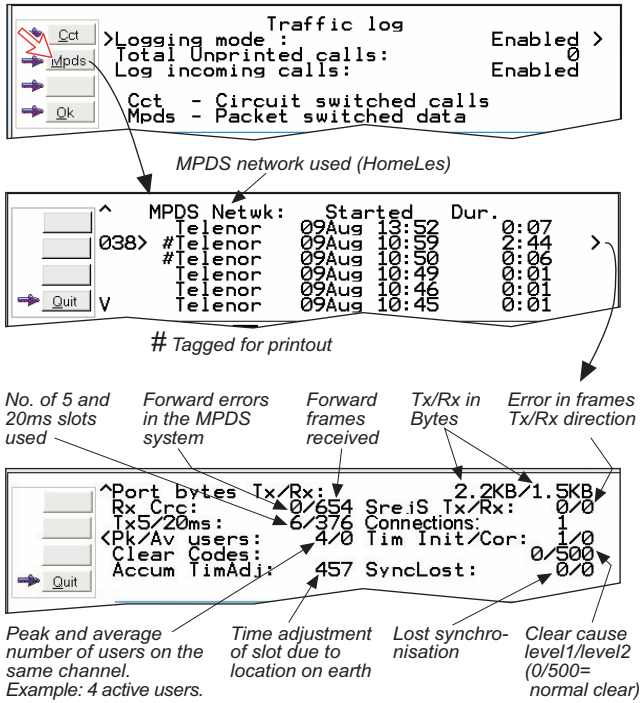
Mobile Packet Data Service calls:

5 Clicking **Mpds** displays the list of *Mobile Packet Data Service* calls.

6 The call list include data such as Net provider, start of the call and duration.
Scroll ↑/↓ to wanted call record and press → to display details of the selected call.

7 The call details include data such as forward errors in the MPDS system, forward frames received, etc.

Quit reverts to main window.



Traffic log settings

*(owner level only, see "**Shifting to owner level**")*

1 In the Main window, clicking **Log** opens the Traffic log window, which displays the current log mode, number of unprinted calls, and whether logging of incoming calls is enabled/disabled.

- Point to **Logging mode**, click **Edit** or ⇨ to choose mode of operation:
- **Paused**: any logging is off.
- **Cleared**: all log entries are deleted (incoming and outgoing).
- **Enabled**: outgoing logging is on.
- **Automatic printing to RS-232 A**: output to local printer
- **Automatic printing to RS-232 B**: output to local printer

Scroll ↑/↓ to wanted mode, and click to select.

- Scroll down ↓ to **Log incoming calls** and click **Edit** or ⇨ to enable or disable logging of incoming calls.

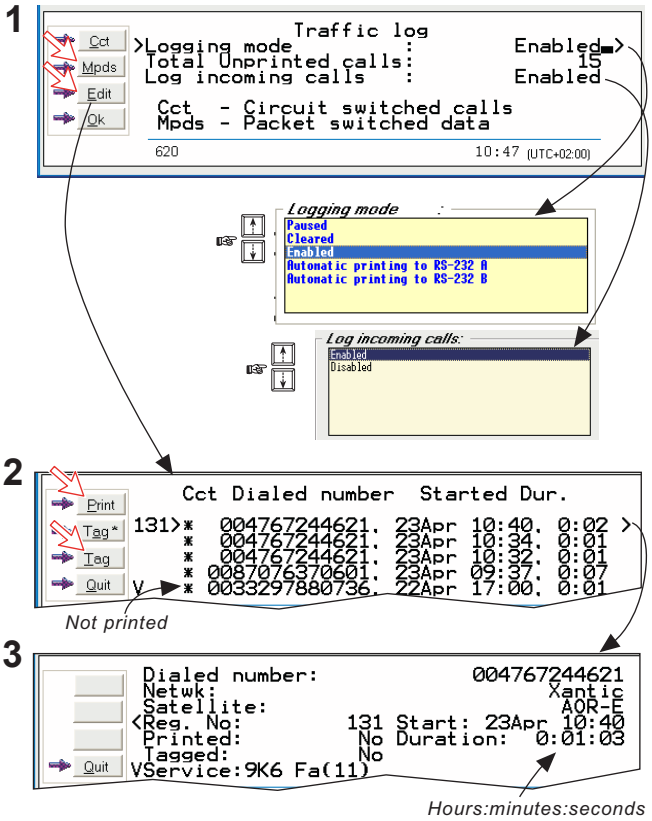
Circuit switched calls:

2 Clicking **Cct** in the Traffic log window (**1**) opens the list of *all* call records except MPDS calls.

Print outputs all unprinted calls (marked with a star):

- Clicking **Tag*** marks *all* calls with a hash, which adds the records to the printout file.
- Clicking **Tag** marks the *selected* call with a hash, which adds the record to the printout file.
- Clicking **Tag** again untags a selected record.

3 Pressing ⇨ at a record when in window (**2**) displays detailed call data.



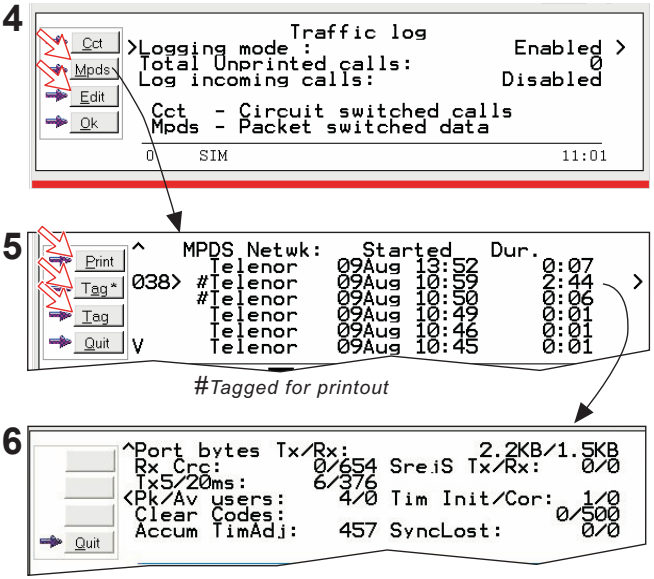
Mobile Packet Data Service calls:

4 Clicking **Mpds** in the Traffic log window (**1**) opens the list of *Mobile Packet Data Service* call records.

5 **Print** outputs all unprinted calls (tagged with a hash):

- Clicking **Tag*** marks all calls with a hash, which adds the records to the printout file.
- Clicking **Tag** marks the *selected* call with a hash, which adds the record to the printout file.
- Clicking **Tag** again untags a selected record.

6 Pressing ⊡ at a record when in window (**2**) displays detailed call data.



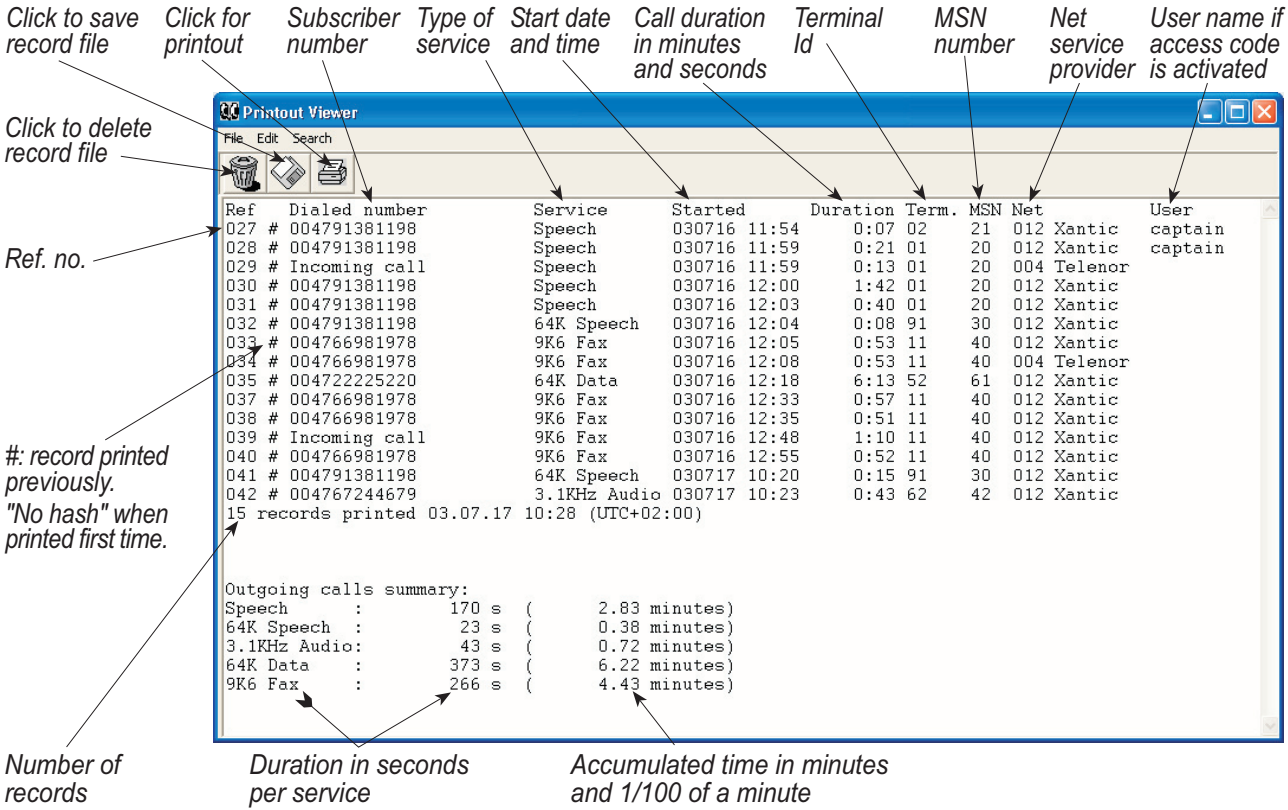
Traffic log printout viewer - normal calls (Cct)

The viewer lists tagged call records.

Records that have been printed out previously are marked with a hash.

The record file can be printed out or saved to disk.

For default setup, *see "**Print handling setup**".*



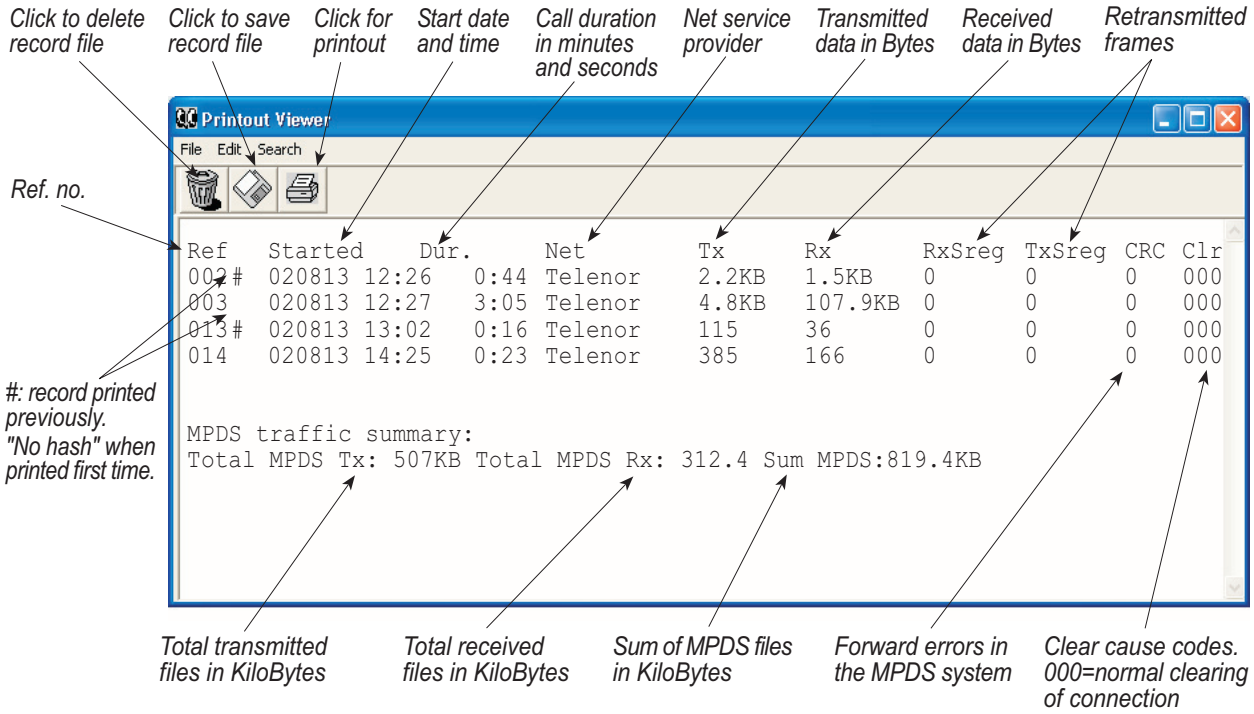
Traffic log printout viewer - Mobile Packet Data Service calls (MPDS)

The viewer lists tagged call records.

Records that have been printed out previously are marked with a hash.

The record file can be printed out or saved to disk.

For default setup, *see "**Print handling setup**".*



Traffic log output to serial printer

When connected, traffic log details are automatically output as indicated below. One line is printed out after each call. To dump the traffic log, select menu>information>Traffic log in the Nera ISDN Handset.

*For setting up, see **Serial printer settings** in Getting Started.*

*Select logging mode in vtLite Marine Traffic log to: Automatic printing to RS232A or RS232B, see **Traffic log settings** earlier in this manual.*

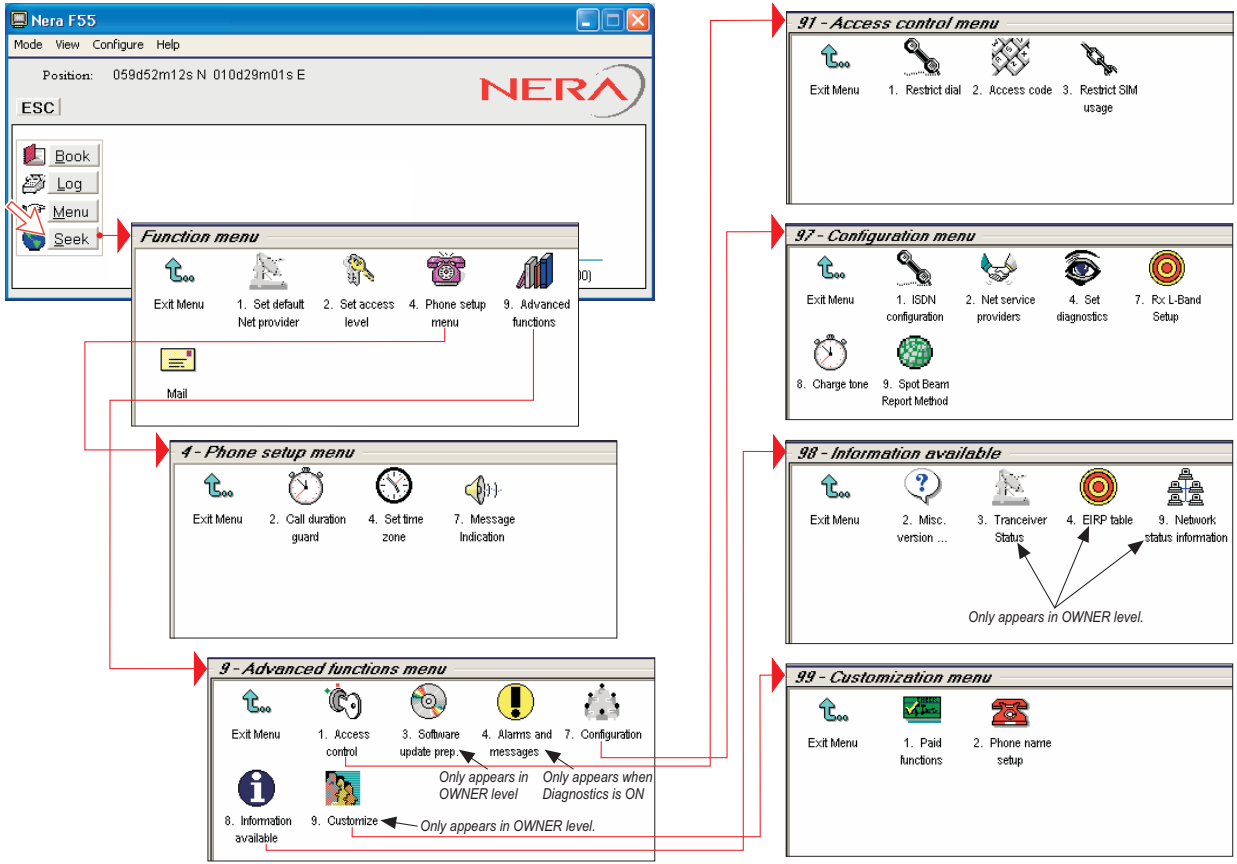
Reference number — *Subscriber number* — *Type of service* — *Start date and time* — *Call duration in minutes and 1\100 of a minute* — *Transmitted & received data in kilobytes* — *MSN number* — *Net service provider* — *User name if access code is activated*

```
Ref Dialed number     Service Started          Duration Tx+Rx MSN Net     User
001 004791381198      Speech  030616 07:10      0:19          20  004Tel
002 004722225220      64K Dat 030616 07:14      1:26          60  004Tel
003 004766981978      3.1 Aud 030616 07:23      0:52          42  004Tel  captain
004 0047911381198     Speech  030616 07:26      0:06          21  004Tel
005 Incoming call     Speech  030616 07:27      1:03          20  004Tel
006 MPDS              MPDS    030616 07:45            1407KB      004Tel
007 004722225220      64K Dat 030616 07:47      3:14          63  004Tel
008 004766981978      9K6 Fax 030616 09:30      0:54          40  004Tel
009 004791381198      64K Spe 030616 09:45      0:20          30  004Tel
010 MPDS              MPDS    030616 11:26            112.5       004Xan
10 records printed 03.06.16 11:26 (UTC+02:00)

Outgoing calls and MPDS traffic summary:
Speech      :      83 s       (      1.38 minutes)
64K Speech  :      12 s       (      0.20 minutes)
3.1KHz Audio:      31 s       (      0.52 minutes)
64K Data    :     270 s       (      4.50 minutes)
9K6 Fax     :      32 s       (      0.54 minutes)
Total MPDS Tx: 521.5KB
Total MPDS Rx: 997.0KB
Sum MPDS: 1632.0KB
```

Menu functions

Point at icons and double-click the mouse to open menus and functions.



Function reference list

Reference number for direct selection. Click menu in main window and then key in the number.

Ref.	Function	Features
1	**Set default Net provider**	*Allows changing Net service provider (and terrestrial network). See "**Selecting default Net service provider**".*
2	**Set access level**	*Allows shifting between user level and owner level, changing PIN code and owner password. See "**Access level**".*
4	**Phone setup** menu	
42	Call duration guard	*Sets maximum call duration for 64 kbps calls.*
44	Set time zone	*Sets MCU Time Zone (UTC and date are set automatically).*
47	Message indication	*Switches indication of received fax and data cals on/off.*
9	**Advanced functions** menu	
91	**Access control** menu	*See "**Advanced functions**".*
911	**Restrict dial**	*Only allows calls from Phone Book. List of barred numbers may be established.*
912	**Access code**	*Sets personal codes for using Nera F55.*
913	**Restrict SIM usage**	*Only allows calls with specific card, no card or any card.*
93	**Software update prep**	*Prepares MCU for software update.*
94	**Alarms and messages**	*See information on CD*
97	**Configuration menu**	
971	**ISDN configuration**	*Chooses between ISDN protocols.*
972	**Net service providers**	*Changing Net service provider data.*
974	**Set diagnostics**	*Allows additional system information to be displayed*
977	**Rx L-Band setup**	*Not in use*
978	**Charge tone**	*Setup and enabling/disabling charge tone.*
979	**Spot beam report method**	*Sending spot ID or position*
98	**Information available**	*See "**Advanced functions**".*
982	**Misc.version Id information**	*Displays a series of version information windows and FWD ID.*
983	**Transceiver status**	*Displays max/min voltages and temperatures in RF unit.*
984	**EIRP table**	*Carrier status (not in use)*
989	**Network status information**	*Displays various network status information.*
99	**Customization menu**	*See "**Advanced functions**".*
991	**Paid functions**	*Installs additional functions, if any.*
992	**Phone name setup**	*Allows altering the factory and phone name.*

Access level

The Nera F55 user program (vtLite Marine) is accessible from two levels:

- **USER LEVEL**
- **OWNER LEVEL** – accessed by owner level password.

Warning! To prevent misuse, passwords other than default must be entered before putting the Nera F55 in operation.

Activating/changing user PIN code

1 Double-click the **Set access level** icon on the **Function menu**.

2 Click **Edit** to enter/modify the PIN code.

3 Key in:

- Old PIN code *(default: 1234)*
- New PIN code *(4 - 10 digits possible)*
- Retype to confirm

Click **Ok** for each entry and to store the new code.

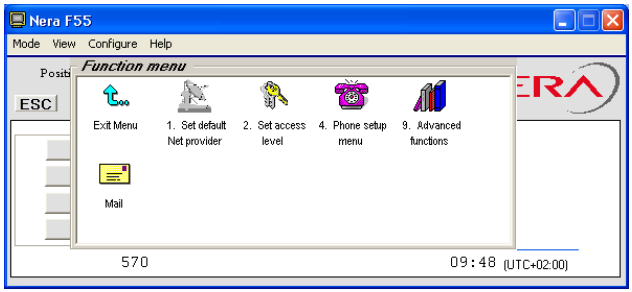
*Note! Clicking **Ok** without entering any numbers for **New PIN** and **Retype new PIN** disables the PIN code. NB! The **Old PIN** code must be entered to reactivate the previous PIN code.*

*If the **PIN** is accidentally lost, it is possible to reset the user's password to default (1234) by logging in as owner:*

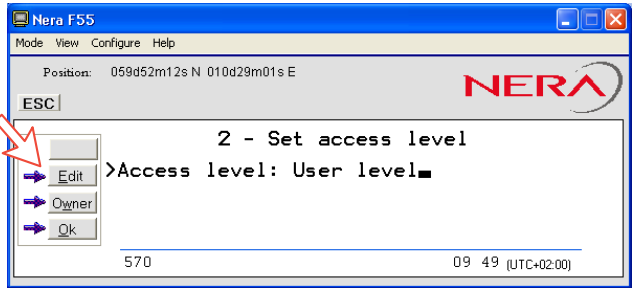
"[*] + owner's password"

(Resetting is not possible on the SIM card.)

1



2



3

Functions requiring owner level

Programming of the functions below requires that the user access is set to **OWNER LEVEL**:

- Traffic log settings/printouts
- Modifying password
- Net Service provider names
- Restricted dial
- Restricted SIM usage
- ISDN configuration (except data/time element)
- Access code
- Paid functions
- Phone name setup
- Spot beam report method

Shifting to owner level

1 Click **Owner** in **Set access level** window.

2 Key in the password.

*Note! The **default** password is: **1 2 3 4 5 6 7 8 9 0***

Clicking **Ok** activates the **Owner level**.

Changing owner level password

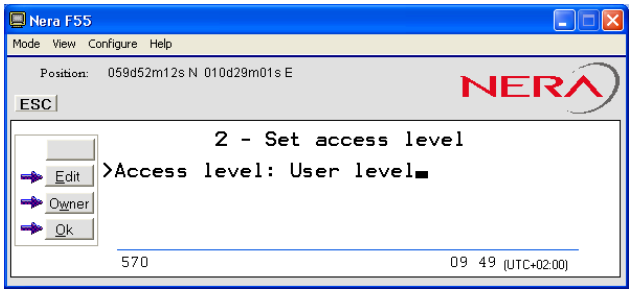
3 Open the **Set access level** window again, and click **Edit** to modify the owner password. Key in:

- Current password
- New password *(10 – 12 digits)*
- Retype to confirm

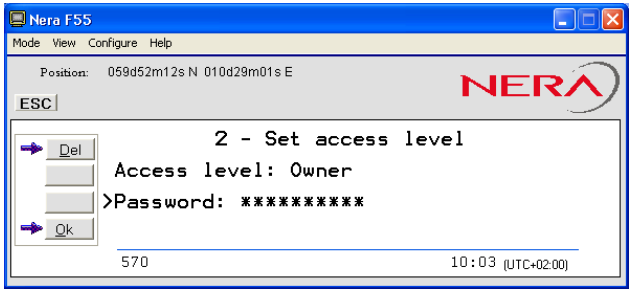
Click **Ok** for each entry and to store new password.

*To revert to **User level**, open the "**Set access level**" window and click **User**.*

1



2



3

Selecting default Net service provider

The default Inmarsat Net service provider for a satellite (Ocean Region) is automatically used if the user does not select another one when making a call.

Make sure that you choose the Net service provider who commissioned the equipment. You will othervise be barred or charged additional rate.

In this menu default Net service provider can be preprogrammed for the *current* Ocean Region.

When using SIM card, selection is automatically restricted to one of the allowed Net service providers and does not need to be programmed!

Procedure:

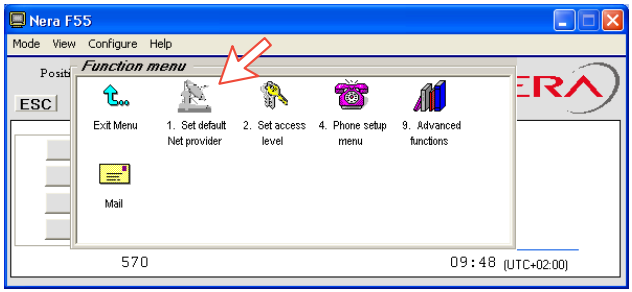
1 On the **Function menu**, double-click the **Set default Net provider** icon to display the current selections.

2 Scroll up/down to change satellite: ↑/↓.

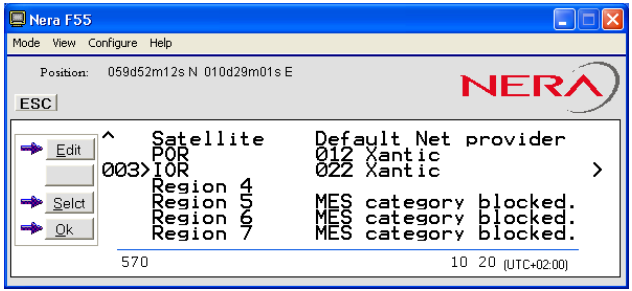
3 Clicking **Selct** or pressing → opens the window prompting you to confirm the choice of satellite with the current default Net service provider.

To change default Net service provider for a satellite region, see next page.

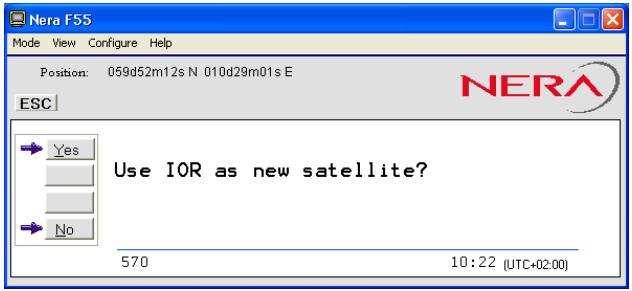
1



2



3

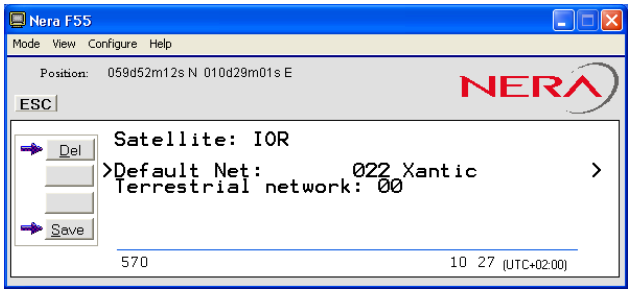


4 Clicking **Edit** or pressing [→] at the satellite region selected in step **2**, displays the list of available Net service providers.

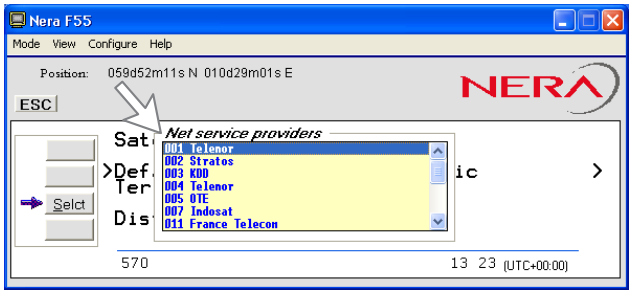
5 Scroll to required Net provider: [↑]/[↓], and press [↵ R] to enter chosen Net as default.
Save stores the selected Net provider for this satellite (Ocean Region).

6 Click **Yes** sets Net service provider for all satellites (Ocean Regions).

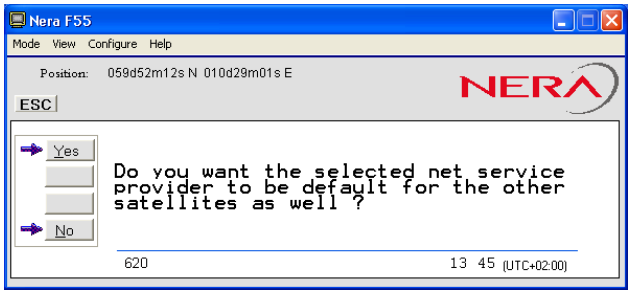
4



5



6



Phone setup

This phone setup menu includes the functions:

- Limitation of call duration.
- Setting date and time.
- Indication of received calls, *see next page.*

*Double-click the **Phone setup menu** icon in the **Function menu** to access the above functions:*

Call duration limit

The call duration guard prevents accidental transmission of prolonged 64 kbps calls.
The timer sets the point at which the call is automatically cleared:

1 Double-click the **Call duration guard** icon

2 Click **Edit** to set the timer.

3 Scroll ⇧/⇩ to select the required limit (either "Stay connected" or in steps between 15 minutes and 12 hours), and click **Selct** to store the setting.

Setting time zone

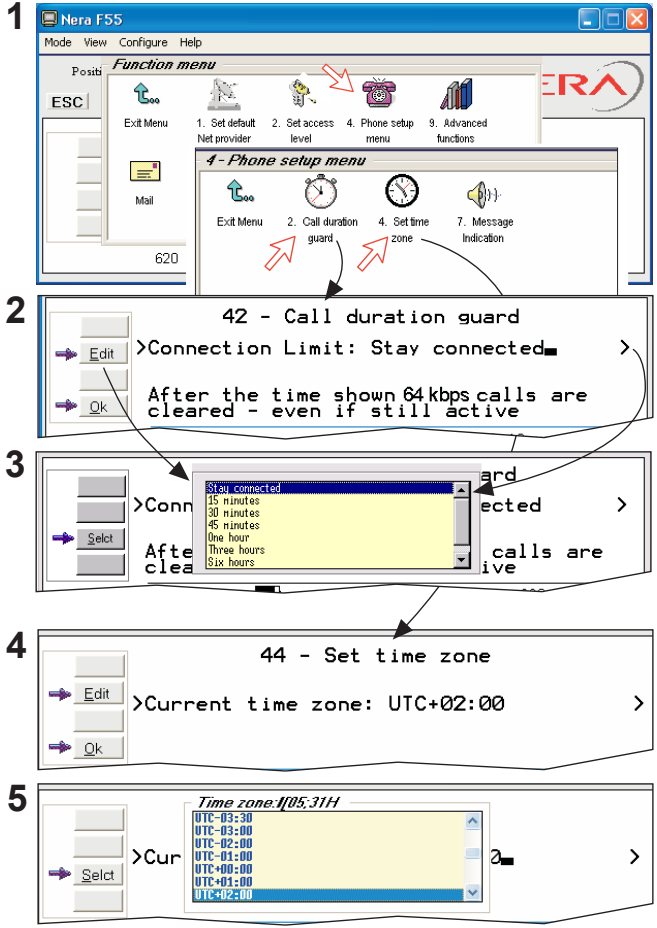
The function sets the time displayed in the window:

1 Double-click **Set time zone** to change zone.

4 Clicking **Edit** opens the list.

5 Scroll ⇧/⇩ to select the required zone.

Click **Selct** to store the selected zone.



Message indication

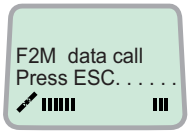
When the Message Indication function is set On, a received data and/or fax call is signalled in all Nera Display Handsets:

♫♫♫ ♫♫♫ ♫♫♫ ♫♫♫ ....

The ringing stops when pressing ESC*, or when the call is finished.*

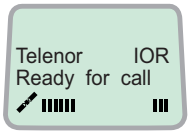
Data call:

F2M = Fixed-to-Mobile



Fax call:

When the call is finished, the display reverts to idle.



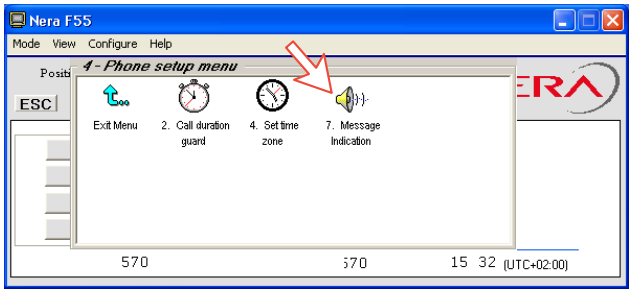
Setup:

1 Double-click the **Message Indication** icon in the **Phone setup menu**.

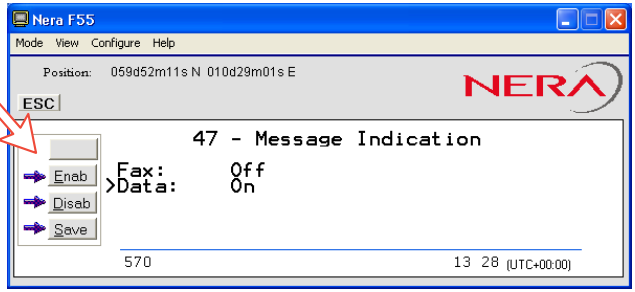
2 Select **Fax** or **Data** and **Enable** or **Disable** indication of received messages, as required.

Press **Save** to store the settings.

1



2



Default G3 fax connection is configured on TEL2 on TA (MSN40)

Fax = 9.6 kbps fax or 3.1 kHz Audio

Data = 64 kbps data

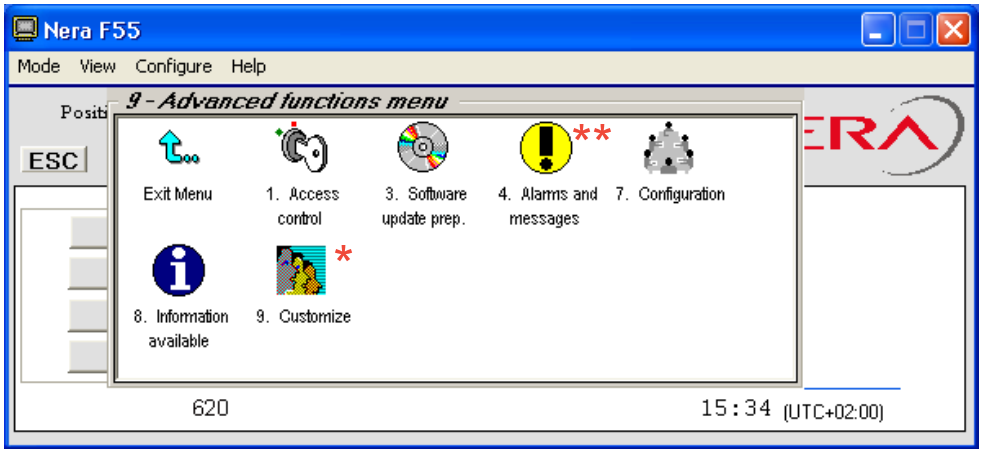
Advanced functions

* Some Advanced functions are accessible from **OWNER LEVEL** only.

The OWNER LEVEL is protected by password.

For shifting to owner level and assignment of password, *see "Access level"*.

** Other Advanced functions are accessible when **Diagnostics** is turned ON.



The Advanced functions include the following menus:

- **Access control**: Restrict dial, Access code, Restrict SIM usage
- **Software update**: Prepare software upgrade
- **Configuration**: ISDN configuration, Net service provider names, Set diagnostics, Charge tone setup, Spot Beam Report Method
- **Information available:** Misc. version Id information, Network status information *(when diagnostics is ON, see "Set diagnostics")*
- **Customize:** Paid functions, Phone name setup (owner level)

Access control

Restricted dialing

The restricted dialing function allows the owner to establish a Barred list of subscriber numbers that cannot be called; or set Nera F55 for dialing from Phone Book only. The restricted dialing modes prevent misuse of Nera F55:

- **Barred list**, which may contain up to 10 phone numbers or part of numbers that **can not** be called. E.g. the entry "0087" in the barred list prevents all mobile-to-mobile calls.
- **Dial from Book only**, which restricts calls to the numbers in Nera F55 Phone Book. It is still possible to append: an entry with number field "0047" means that it is possible to dial all Norwegian numbers. When a SIM card is inserted, the SIM entries will **not** be merged with the "phone" entries.

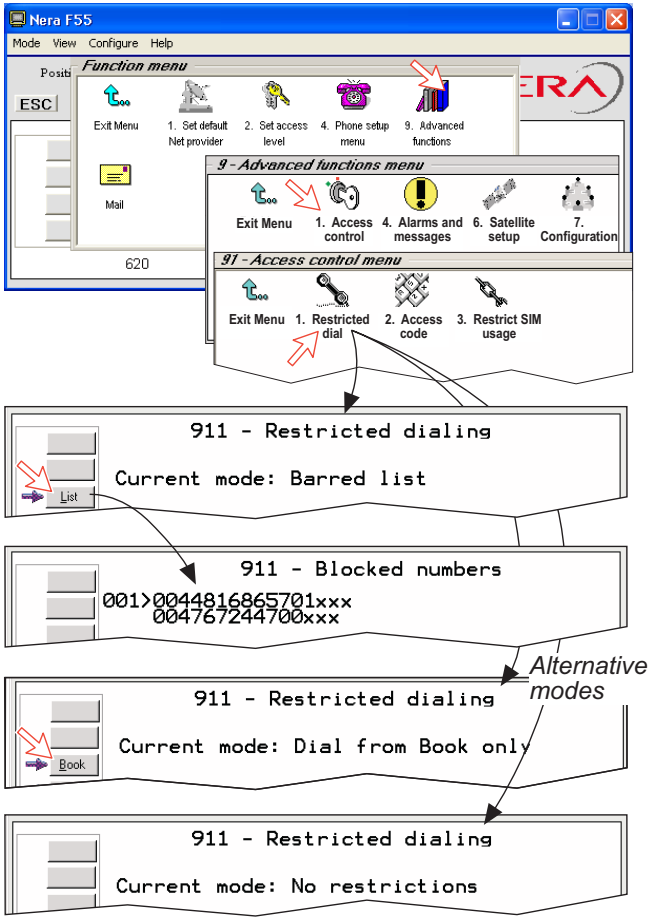
  The function is active for non-SIM operation and for one specific SIM card, *see "**Restricted SIM usage**".*
- **No restrictions** *(default).*

Only one mode can be active at one time, as selected by the owner*, see next page.*

Checking the dialing setup

Via the **Function menu > Advanced functions menu**, double-clicking the **Restrict dial** icon on the **Access control menu** shows the active mode:

- *Barred list*
- *Dial from Book only*
- *No restrictions*



Restricted dialing setup
(owner level only)

"Barred list" and phone book are established as follows:

1 Open the **Restricted dial** window as shown on the previous page.

2 The **Restricted dialing** window shows which list is currently active.

Edit allows selection of restriction mode.

Scroll up/down to select:
(**Selct** enters the chosen mode)

3 Clicking **List** displays the blocked phone numbers. The List key only appears when Current mode is **Barred list**.

4 Clicking **Edit** allows the barred number to be modified:

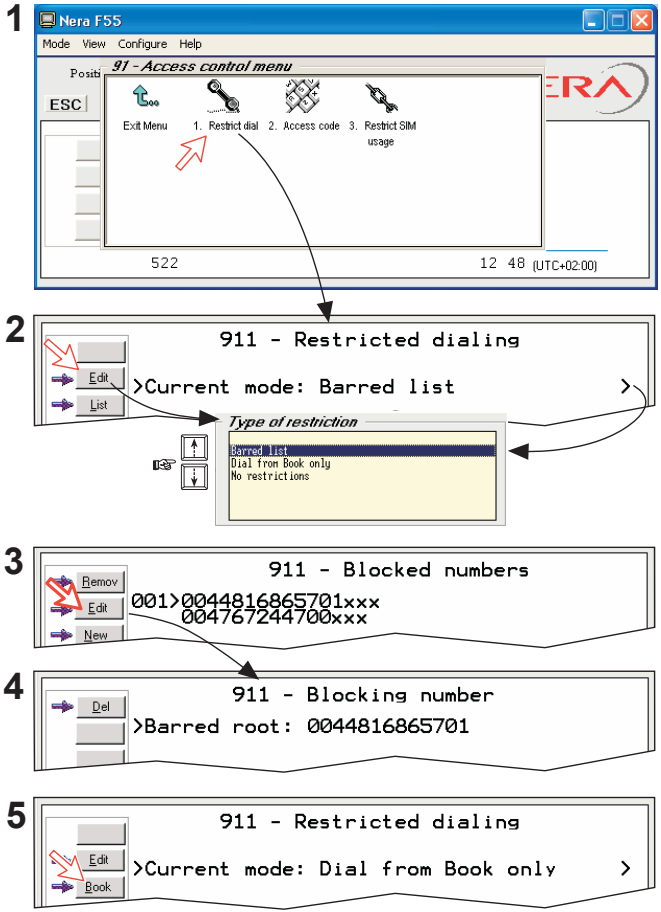
The field is empty when clicking **New** to add a phone number to the list.

Remove deletes number.

Save stores the changes.

5 When the restriction mode "Dial from Book only" is active, clicking **Book** allows data to be entered.

*Warning! Remember to revert to **user** level*



Access code *(owner level only)*

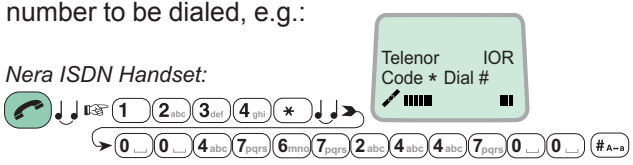
Access code can be activated for 4.8/64K speech only.

When the access code function has been activated, the user is always prompted for a 1 - 8 digit personal code when making a call.

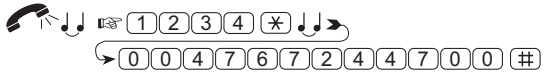
All telephones are activated.To release a telephone for use without access code, see ***MSN configuration****.*

Entering the personal code allows the subscriber number to be dialed, e.g.:

Nera ISDN Handset:



Analogue telephone:



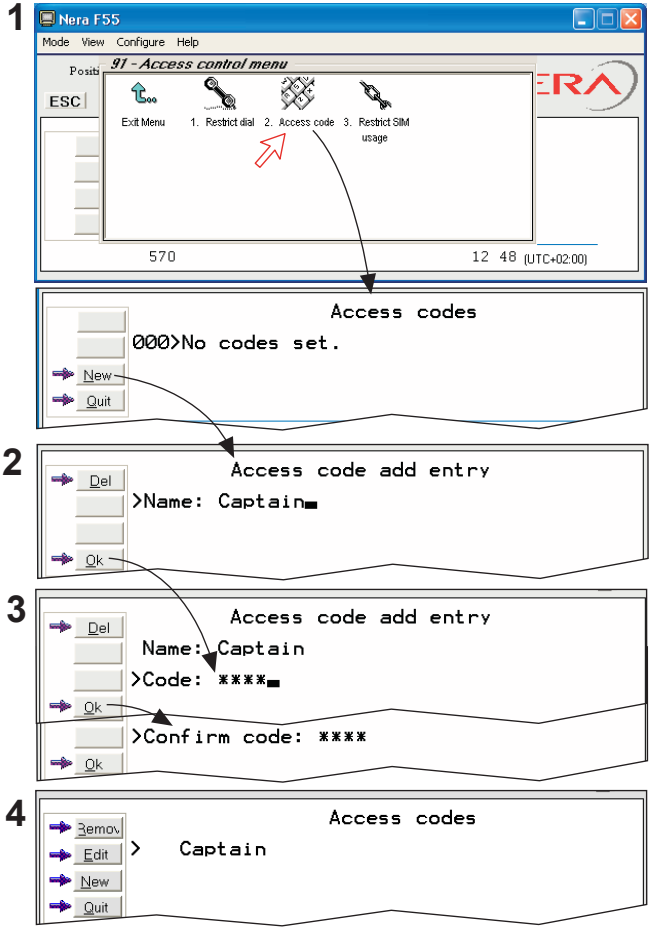
Setup:

1 Double-click the **Access code** icon in the **Access control menu**.

2 Pressing **New** opens the **Access code entry window**, allowing a name associated with the particular code to be entered.

3 Pressing **Ok** allows entering the personal code. Pressing **Ok** again prompts you to confirm the entry.

4 When pressing the **Access code** icon the next time (**1**), the window displays a list of the names associated with the programmed access codes.



Restricted SIM usage

Allowed SIM

Nera F55 can be set to operate from:

- Lock SIM, locked to one specific SIM card. Any other SIM user will be rejected.
- No SIM card. All SIM users will be rejected.
- Any SIM card *(default)*.

Setting SIM restrictions
(owner level only)

1 Double-click the **Restrict SIM usage** icon.

2 The SIM restrictions window shows an example with the setting **Allowed SIM: No SIM**.

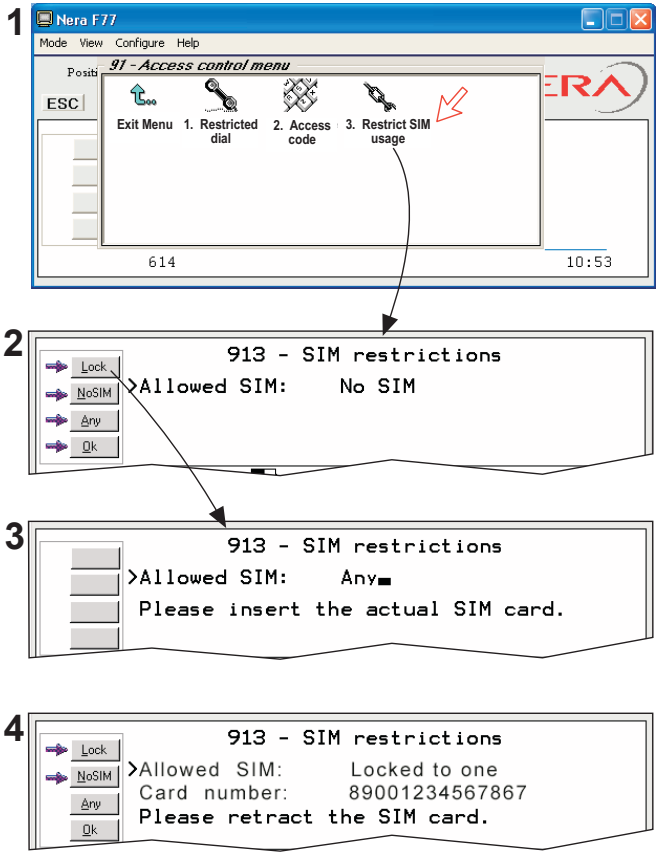
Click **Any** (default) to set Nera F55 for operation from any SIM card.

Lock SIM:

3 Click **Lock** and insert the actual SIM card. Nera F55 can now be operated with that specific card only.

4 When retracting the card, the Id of the SIM provider is displayed.

Ok stores the settings.



Configuration menu

ISDN protocol configuration

1 Open the **Configuration menu** via the **Function menu > Advanced functions menu.**

2 Double-clicking the **ISDN configuration** displays the ISDN configurations implemented in Nera F55.

*Switch to **owner level** to edit the entries:*

- **Protocol**

Select Euro ISDN for connection of equipment conforming to the European ISDN standard. Select NI-1 protocol for equipment conforming to the NI-1 standard (National ISDN-1).

- **Date/time element**

When enabled, date and time is sent to the connected Terminal Equipment during call establishment. Some ISDN devices do not survive this message. The date and time transmission may then be disabled.

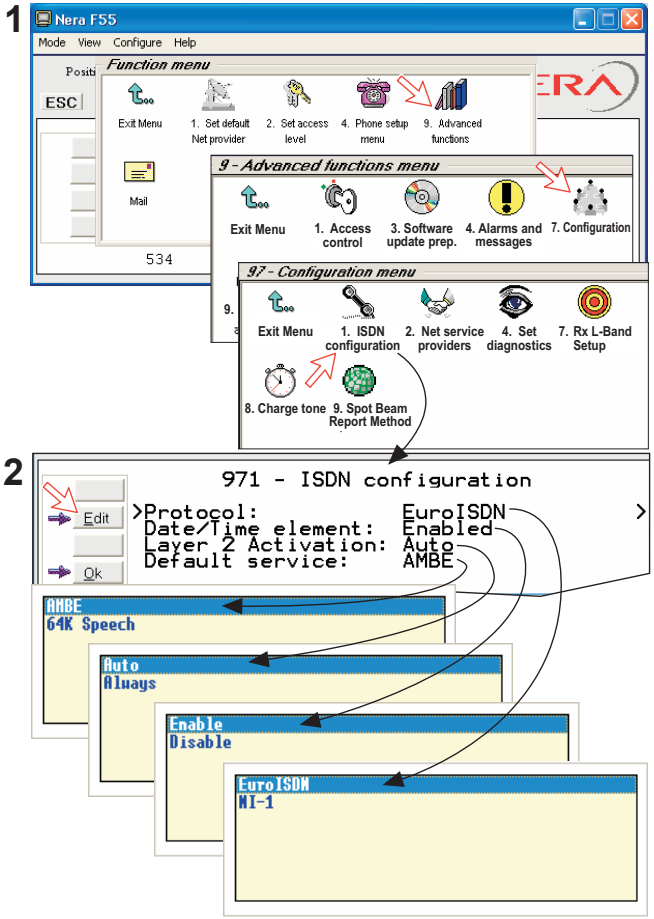
- **Layer 2 Activation**

The layer 2 connection is deactivated after some idle time as default. Some ISDN devices interpret this as an alarm situation. Layer 2 dectivation can then be disabled. When the ISDN protocol is set to NI-1, this option is on as default.

- **Default service**

Some ISDN devices can not signal their own MSN number. Such a phone will be not able to use the 64 kbps service since all "unknown" speech devices are required to use the 4.8 speech service. The user can set Nera F55 to map all "unknown" devices to 4.8 speech (AMBE) service.

*NB! Remember to revert to **user** level.*



Charge tone setup *(owner level only)*

When the charge tone function has been enabled, a single frequency tone or DTMF is transmitted once the call has been established. The tone informs an external debiting system, e.g. a pay phone connected to the MCU that charging can start.

Procedure:

1 Double-click the **charge tone** icon via the **Function menu** > **Advanced functions menu** > **Configuration menu**.

2 The **Charge tone** window appears. The example indicates that a single 2400 Hz with a duration of 1000 ms will be emitted.
The window provides buttons for enabling/disabling the charge tone function.

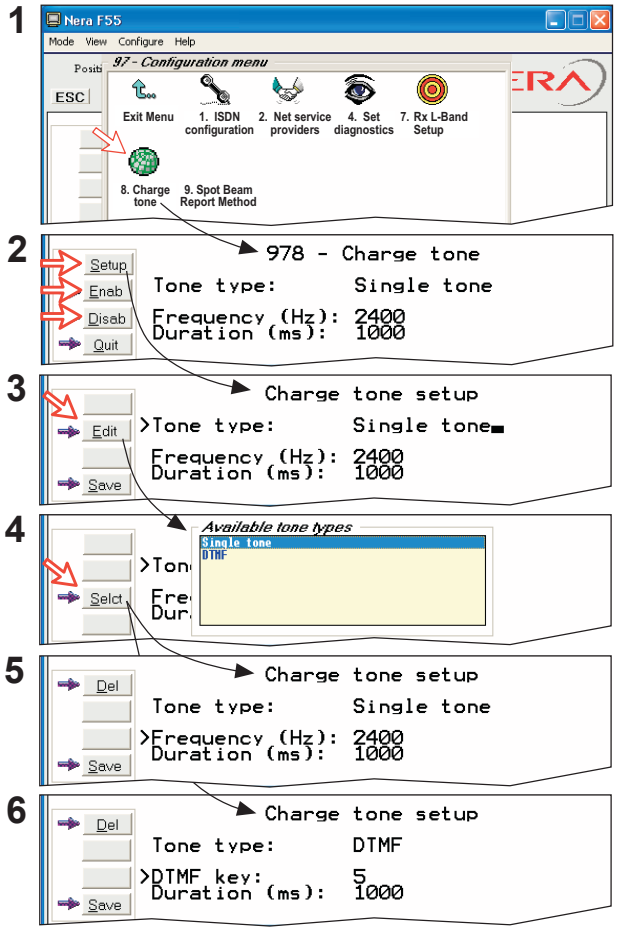
3 Clicking **Setup** allows selecting a single charge tone or DTMF.

4 Clicking **Edit** allows selection between **Single tone** and **DTMF** tone emission.

5 Clicking **Selct** with the **Single tone** activated allows entering the required tone frequency.

6 Clicking **Selct** with the **DTMF** tone activated allows entering the DTMF key and duration.

Valid settings:
Frequency: 400 - 3400 Hz
Duration: 10 - 5000 ms
DTMF key: 0 - 15



Net service providers (owner level only)
Adding, editing, or removing entries in the list of Net service providers:

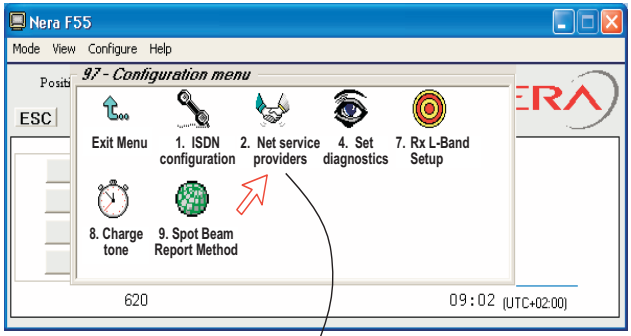
1 Via the **Function menu > Advanced functions menu**, double-clicking the **Net service providers** icon in the **Configuration menu** displays the list of Net service providers including their station codes.

2 Scroll to required Net service provider, ↑/↓. Clicking **Ok** returns you to the Configuration window. **Remov** deletes entry. Clicking **Edit** opens the window allowing the station code and provider name to be modified (window **3**).

4 Clicking **New** (window **2**) opens the window allowing station code and provider name to be added.
Use **Del** to modify. **Save** stores the changes.

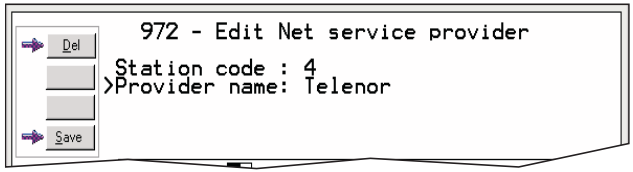
*NB! Remember to revert to **user** level.*

1

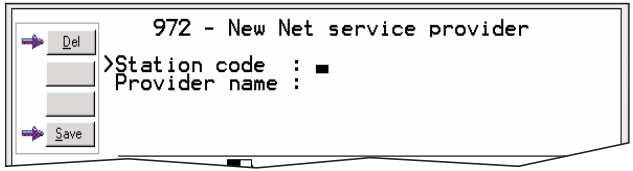


2

3



4



Set diagnostics

Additional system information is displayed when diagnostics is turned **On**.

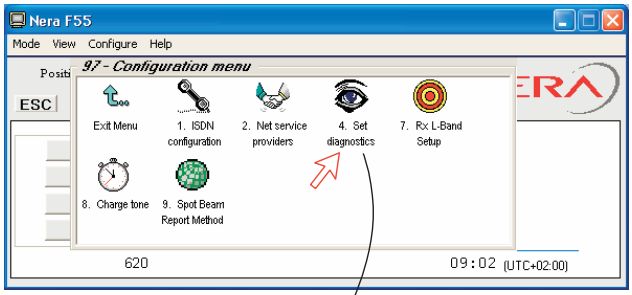
*See also **MENU FUNCTIONS**.*

1 Double-click the **Set diagnostics** icon via the **Function menu** > **Advanced functions menu** > **Configuration menu**.

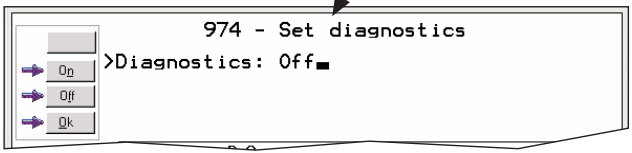
2 Click **On** or **Off** as required.

3 Shows idle window with Diagnostics is **On**.

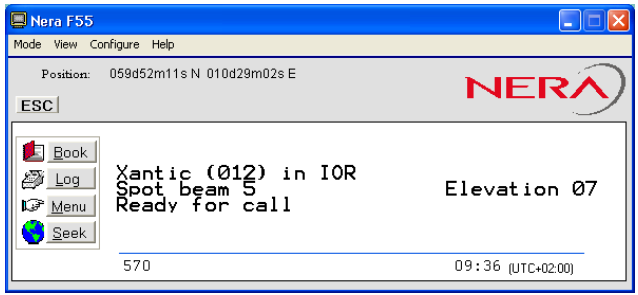
1



2



3



Information available

Miscellaneous version Id information

The **Information available** function displays the terminal forward Id and system versions.

1 Via the **Function menu > Advanced functions menu**, double-clicking the **Miscellanous version Id information** icon in the **Information available menu** displays the available data (window **2**).

2 With **Diagnostics On**, pressing ⍐ opens a series of version information windows.

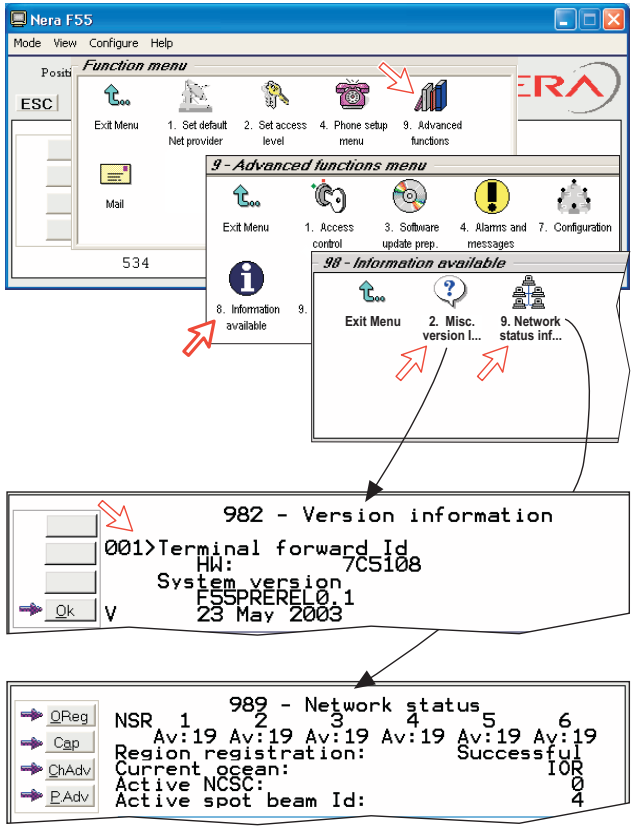
Network status information

(owner level only)

This function displays various network status information.

3 Double-click the **Network status information** icon in the **Information available menu** for readout.

*NB! Remember to revert to **user** level.*



Customize menu

(owner level only)

1 Open the **Customization menu** via the **Function menu > Advanced functions menu**.

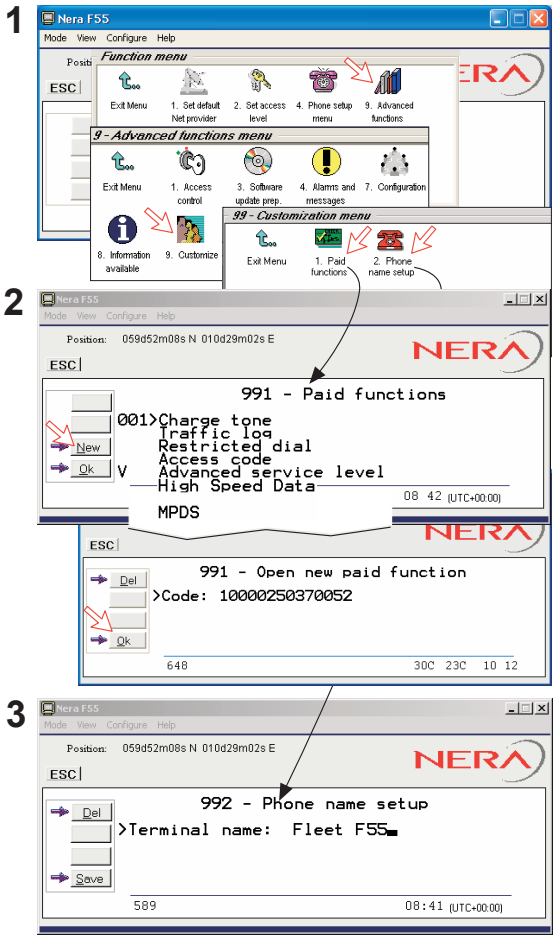
Paid functions

2 A paid function is activated by entering an "Opening key" provided when purchasing the function.
Double-clicking the **Paid functions** icon in the **Customization menu** displays the list of available functions.
Clicking **New** opens the **Open new paid functions menu**. Enter the "Opening key" and click **Ok**.

Phone name setup

3 Double-clicking the **Phone name setup** icon in the **Customization menu** displays the Phone name, i.e. Nera F55. To change, key in uppercase/lowercase letters as required.
Use **Del** to modify.
Save stores the changes

*NB! Remember to revert to **user** level.*



Routing of incoming calls

When applying for IMN numbers, a **Terminal Id** (OID/DID) is received from the Net service provider.

All devices connected to Nera F55 can make outgoing calls. For incoming calls it must be assured that the Terminal Ids and MSN numbers configured are as commissioned.

To make an incoming call reach a particular device, an MSN number and the Terminal Id "connected" to the IMN number must be programmed into the Main Communication Unit (MCU). *See later in this manual.*

The table below lists valid MSN numbers for the available services.

Numbers to be programmed into ISDN devices:

*In **ISDN** device:*	*In **Main Communication Unit**:*
MSN number	**MSN** number and **Terminal Id** *(the Terminal Id is paired with a specific **IMN** number)*

For an easy start, some Terminal Ids and MSN numbers have been preprogrammed into the MCU (marked with a star in the table).

In the ***4.8 kbps speech***, ***3.1 kHz audio*** and ***9.6 fax*** columns of the **ISDN PORTS** table the Term.Id is represented by an X, allowing an ISDN Term.Id to be used for analogue ports.

Note! A Term.Id already entered is not accepted.

LIST OF VALID TERMINAL IDs AND MSN NUMBERS

VIA 2-line TA	**ISDN PORTS**										**ISDN/RS-232/USB PORTS**	
4.8 speech	***4.8 kbps speech***		***64 kbps speech***		***3.1 kHz audio***		***9.6 fax***		***56 kbps data***		***64 kbps data***	
Term.Id MSN ***02**** ***21****	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN
	01*	***20****	***91****	***30****	6X	4X	1X	4X	***71****	***50****	***51****	***60****
	0X	21	92	31	***62****	***42****	***12****	***41****	72	51	***52****	***61****
	0X	22	93	32	6X	4X	1X	4X	73	52	***53****	***62****
	0X	23	94	33	6X	4X	1X	4X	74	53	***54****	***63****
	0X	24	95	34	6X	4X	1X	4X	75	54	55	64
9.6 kbps fax (G3)	0X	25	96	35					76	55	56	65
	0X	26	97	36					77	56	57	66
Term.Id MSN ***11**** ***40****	0X	27	98	37					78	57	58	67
	0X	28	99	38					79	58	59	68
					3.1 kHz/ 64 kbps audio service						*51/60, preset for ISDN port* *52/61, preset for RS-232A port* *53/62, preset for RS-232B port* *54/63, preset for USB port*	
11/40: - fax on TA												

**** Preprogrammed***

Routing of incoming calls (examples)

The table below illustrates the use of appropriate Terminal Ids for the various services combined with examples incoming IMN numbers.

* *Preprogrammed, see table on previous page.*

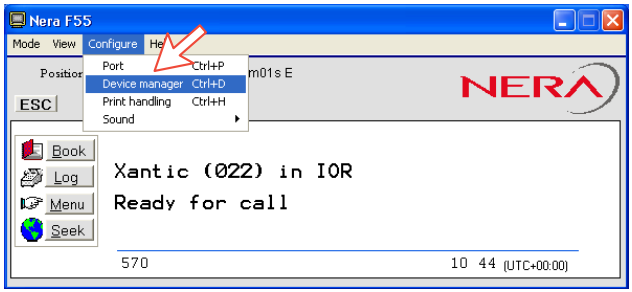
Note! If the Net service provider does not specify which Terminal Id should be used with the various IMN numbers, select Term. Id no.1 for the first 4.8 kbps telephone, then no. 2 for the second phone. Use the same principle for the other type services. It is advisable to note down the selections.

Name		***Service***	***MCU ports***	***Provided by ISP:***	
				Term.Id	***IMN***
Bridge	*MSN **20**** 	4.8 kbps speech	ISDN	*01**	762420510
Saloon	*MSN **21**** 	4.8 speech	TA - TEL1	***02****	762420511
Radio room	*MSN 22* 	4.8 kbps speech	ISDN	*03*	762420512
Nera TA	*MSN **40**** 	9.6 kbps fax	TA - TEL2	***11****	762420513
Fax Gr.4	*MSN **60**** 	64 kbps data	ISDN	***51****	600020521
Data	*MSN **61**** 	64 kbps data	RS-232 A	***52****	600020522
Data	*MSN **62**** 	64 kbps data	RS-232 B	***53****	600020523
Router	*MSN **63**** 	64 kbps data	USB	***54****	600020524
Bridge	*MSN **30**** 	64 kbps speech	ISDN	***91****	600020525
Captain	*MSN 31* 	64 kbps speech	ISDN	*92*	600020526

**** Preprogrammed***

MSN configuration

You are prompted to enter the owner level password (default: 1234567890). For security, the password should be changed before or after configuration of a device. See ***ACCESS LEVEL > Changing owner level password****.*



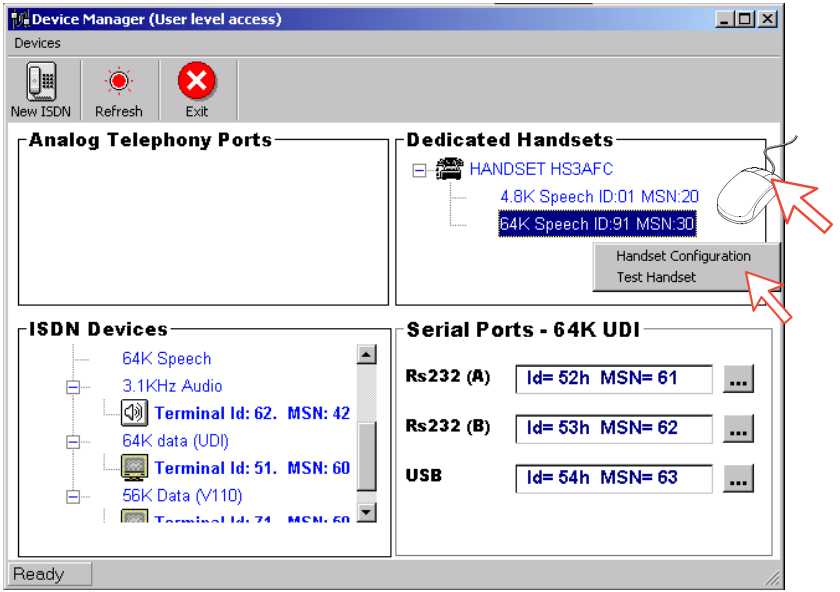
Click to open Device Manager for configuration of ISDN/analogue/RS-232/RS-422/USB > > > > > >

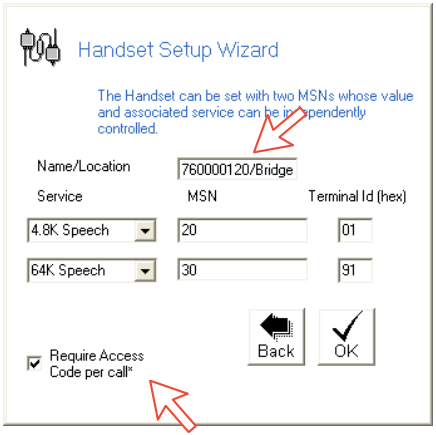
Nera ISDN Handset

- Nera ISDN Handsets will automatically be configured with Handset MSNs in the Device Manager.
- The first Nera ISDN Handset connected will be given MSN20 & MSN30.
- The next Nera ISDN Handset will be the next available MSN.
- The MSNs can be controlled independently, e.g. if two handsets are given the same MSN, they will both respond to an incoming call to that MSN.
- To verify selected MSN of a handset, check in the Device Manager or press the "R"-button on the Handset.

Open the device manager, see previous page. Right-clicking a Dedicated Handset and then clicking ***Handset Configuration*** *starts the Handset Setup Wizard.*

Enter ***Name/Location*** *of the installed Handset, as required.*





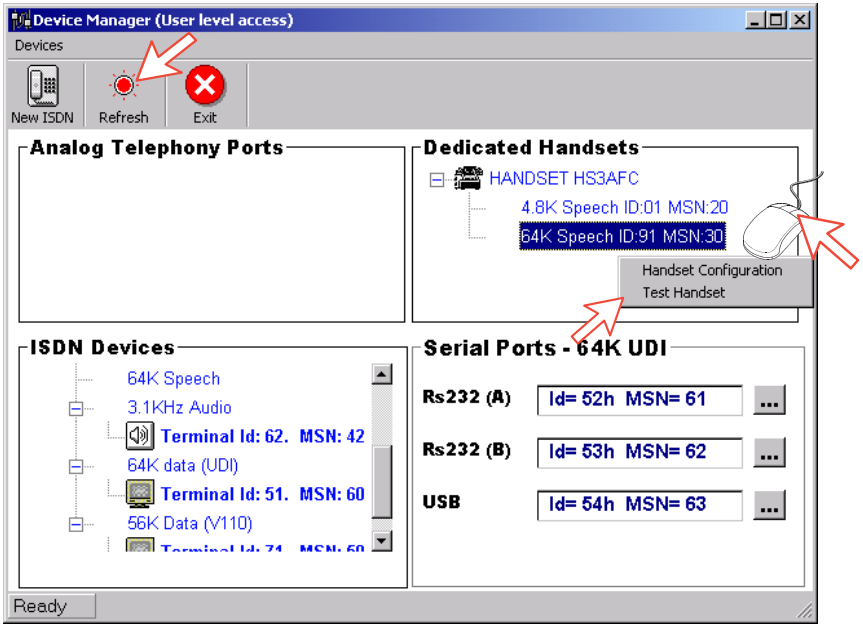
Require Access Code *must be unchecked to allow this Handset to be used without entering a code.*

Deleting an ISDN Handset

Unplug the Nera ISDN Handset to be deleted and rightclick the same in the **Dedicated Handset** list. Clicking **Test Handset** removes its data, leaving the Terminal Id and MSN number vacant for another Display Handset.

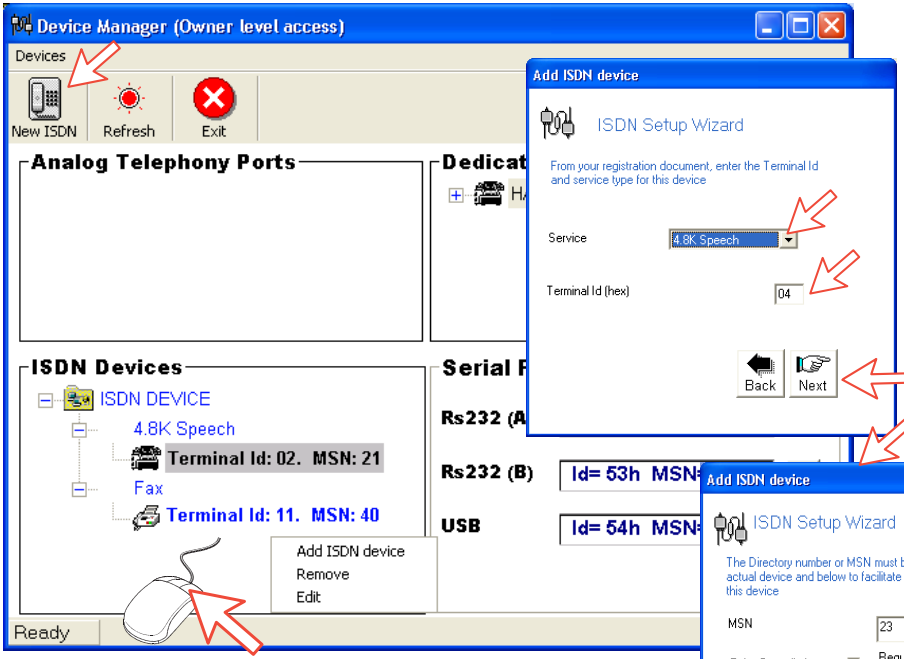
If necessary, click refresh: and repeat clicking **Test Handset**. The Main Communication Unit will remember the handset connection data. All handsets are given a unique name.

Note! A triangle symbol ⚠ in the Device Manager appears when a Display Handset is missing.



ISDN port *(selection example: 4.8 speech)*

Open device manager and right-click to open ISDN Setup Wizard.



Select the required service:

- 4.8 kbps standard speech service
- 64 kbps speech service
- 3.1 kHz Audio
- 56 kbps data service (V110)
- 64 kbps data service (UDI)
- fax (9.6 kbps fax)

Click to continue.
The system selects the Next available Terminal Id. Check with Terminal Id received from Net provider.

Key in MSN number if not using the recommended one.

Access Code is not used for ISDN data.

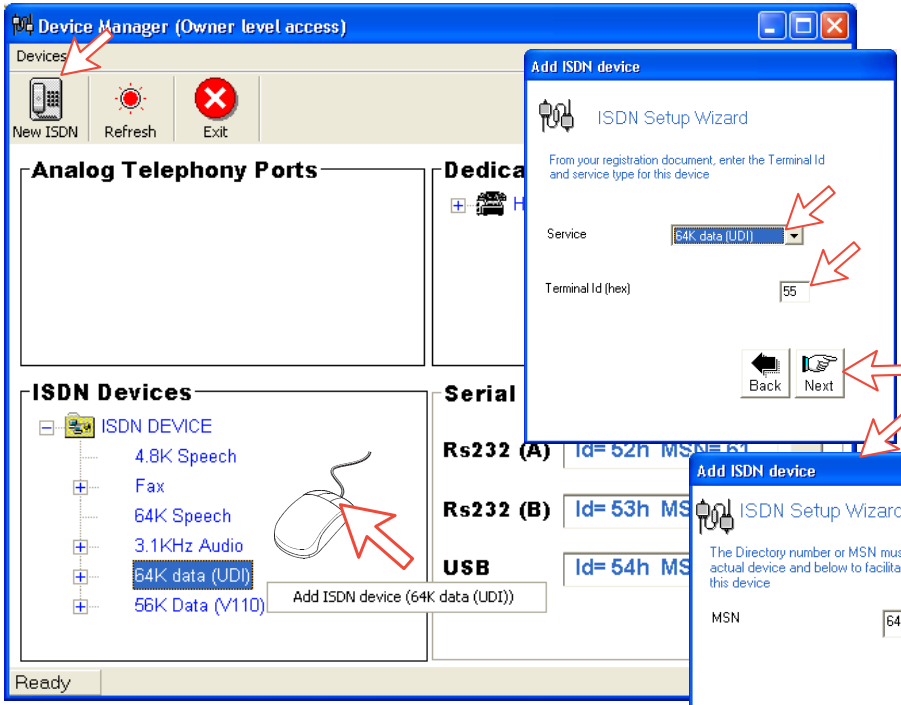
Click to enter number.

***Require Access Code** is checked when used for 4.8 speech and 64 kbps speech.*

***Apply charge tone** is used when connecting pay phone.*

ISDN port *(selection example: 64 kbps data service)*

Open device manager and right-click to open ISDN Setup Wizard.



Select the required service:

- 4.8 kbps standard speech service
- 64 kbps speech service
- 3.1 kHz Audio
- 56 kbps data service (V110)
- 64 kbps data service (UDI)
- fax (9.6 kbps fax)

Click to continue.
The system selects the Next available Terminal Id. Check with Terminal Id received from Net provider.

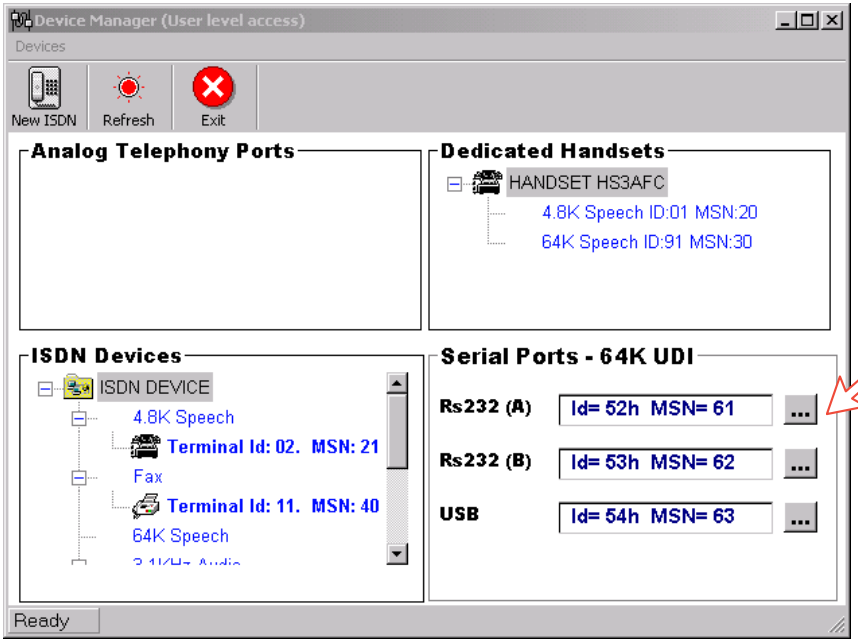
Key in MSN number if not using the recommended one.

Access Code is not used for ISDN data.

Click to enter number.

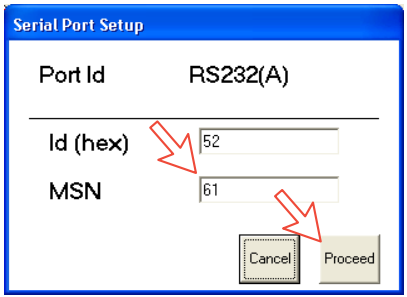
RS-232 port

Open device manager and right-click to open setup editor.



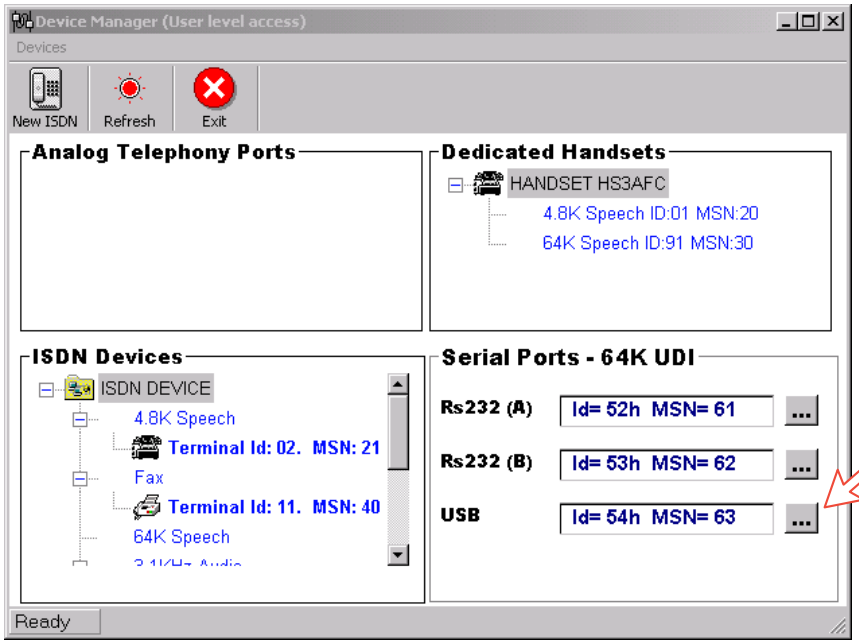
Click to open **Serial Port Setup**.

Key in MSN number if not using the recommended one.
Click **Proceed** to enter number.



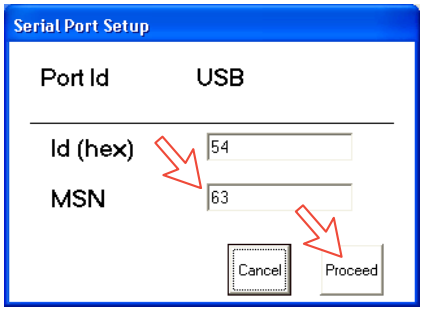
USB port

Open device manager and right-click to open setup editor.



Click to open **Serial Port Setup**.

Key in MSN number if not using the recommended one. Click **Proceed** to enter number.



Saving and reloading configurations

The Nera F55 configuration settings may be stored on the PC harddisk, e.g. prior to replacing software.

Procedure:

1 Open the Device Manager window as indicated

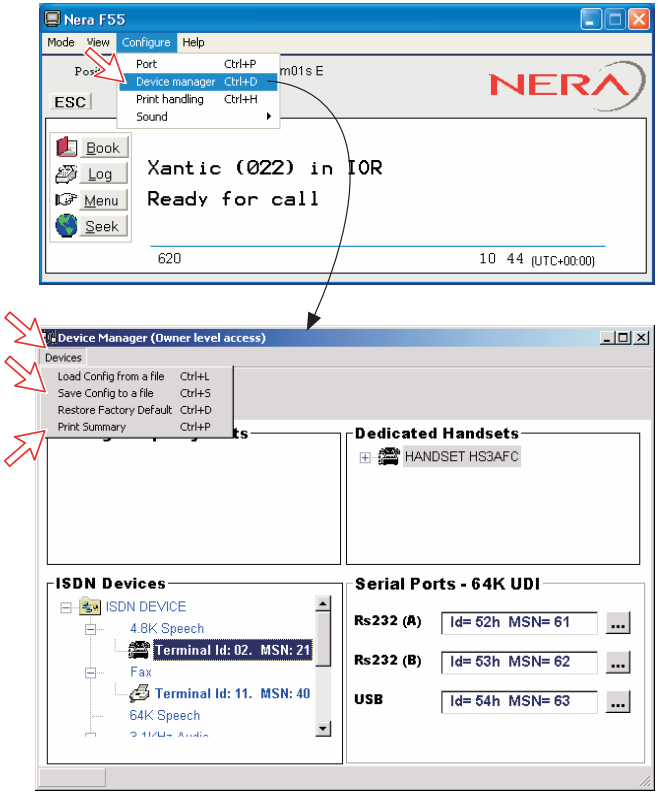
2 Clicking **Devices >Save config to a file** automatically stores the data in a "Config.cgf" file in the vtLite directory **c:/program files/vtLite Marine**.

3 After installing the software, the settings may be transferred back to Nera F55 by pressing **Load**.

4 Clicking **Restore Factory Defaults** loads default Nera F55 configurations.

Printout/storing a configuration summary:

5 Clicking **Print Summary** opens the **Printout Viewer** *(see next page)* which lists the settings of the end user equipment, and allows filing and/or printout.



Note!
Save config to a file** only saves the **Device Manager settings.

Settings such as Net provider / Access codes / ISDN protocol are not saved.

*Phone book data and traffic log must be saved in the **Book** and **Log** menus.*

Configuration printout viewer

The list is sorted by Terminal Id

Print to local printer

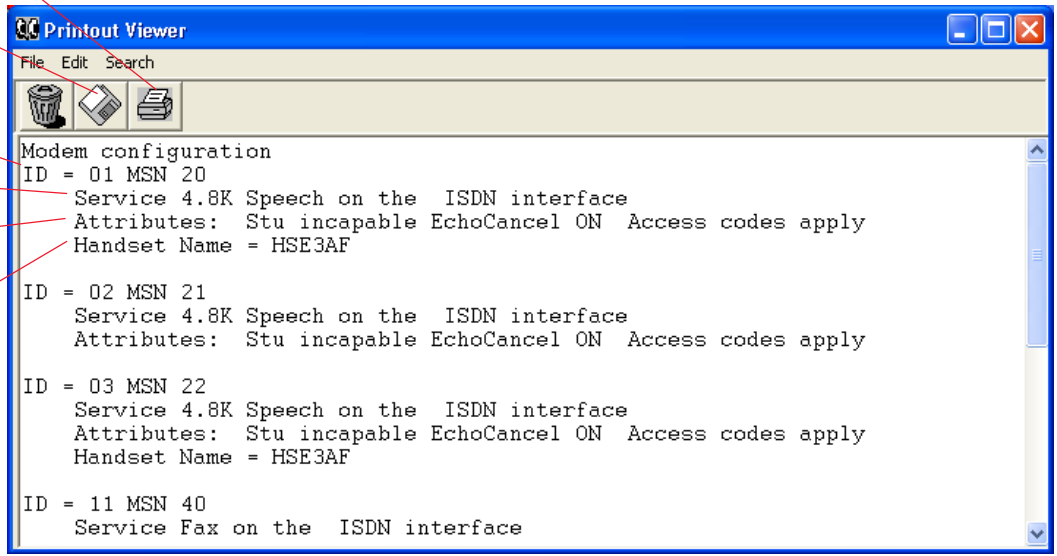
Save to disk

Terminal Id and MSN number

Type of service

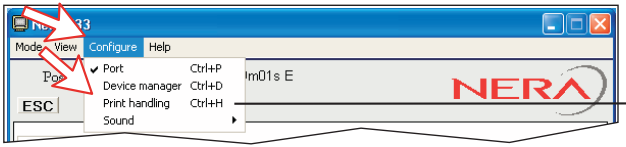
Individual device settings

Name/location, if entered



Print handling setup

The **Printout from modem** window is used for setting of default output of Traffic log, Modem configuration etc.



Clicking **Configure** > **Print handling** opens the **Printout from modem** window. The following settings are selectable:

Default print action:

Normally, choose **Print to screen** which causes the file to be output via the Printout viewer. *For an example, see "**TRAFFIC LOG > Printout viewer**".*

For direct printout, choose **Print to default windows printer**.

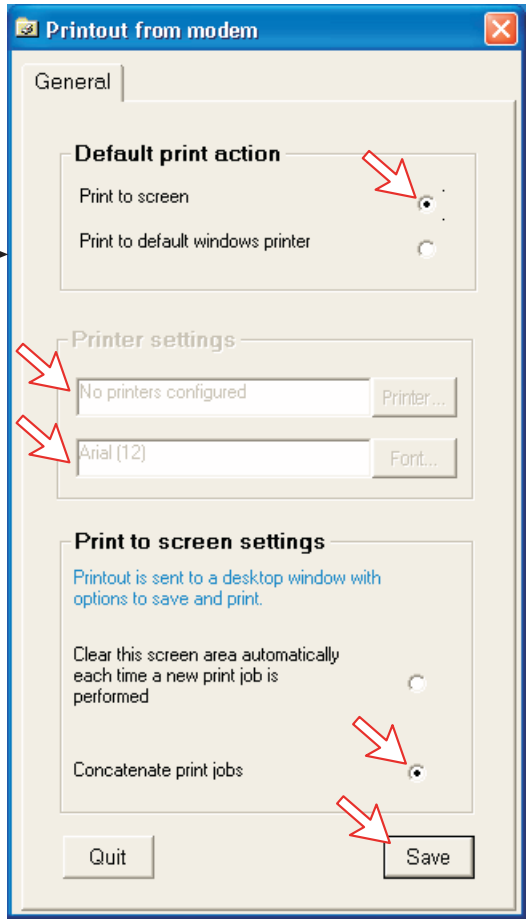
Print to screen settings:

Determines the output of records via the Printout viewer. Normally, use **Concatenate print jobs** which "chains" the jobs to be printed or saved to file.

The alternative choice clears the screen after each printout.

Printer settings:

For hardcopy printout, make sure that the appropriate printer and font are selected.



Mobile Packet Data Service

The MPDS service can be efficient for applications such as:

- E-mail
- Internet/intranet
- Navigational updates
- Vessel telemetry transmission
- Database queries
- E-commerce

The user *only* pays for the *amount* of data sent over the network, and not for the time connected.

Ports supporting MPDS:

- RS232A
- RS232B / RS422
- USB

No configuration is needed!

Dial number **94# to set up an MPDS call.

See the MPDS application on the Nera F55 CD.

Inmarsat Fleet system

The Inmarsat Global Area Network service (GAN) provides 4.8 kbps voice communications service and 64 kbps data transmission to and from mobile/fixed subscribers anywhere within the worldwide coverage of the Inmarsat 3 spot Beam system, *see* ***Satellite Coverage Map*** ***in Getting Started***.

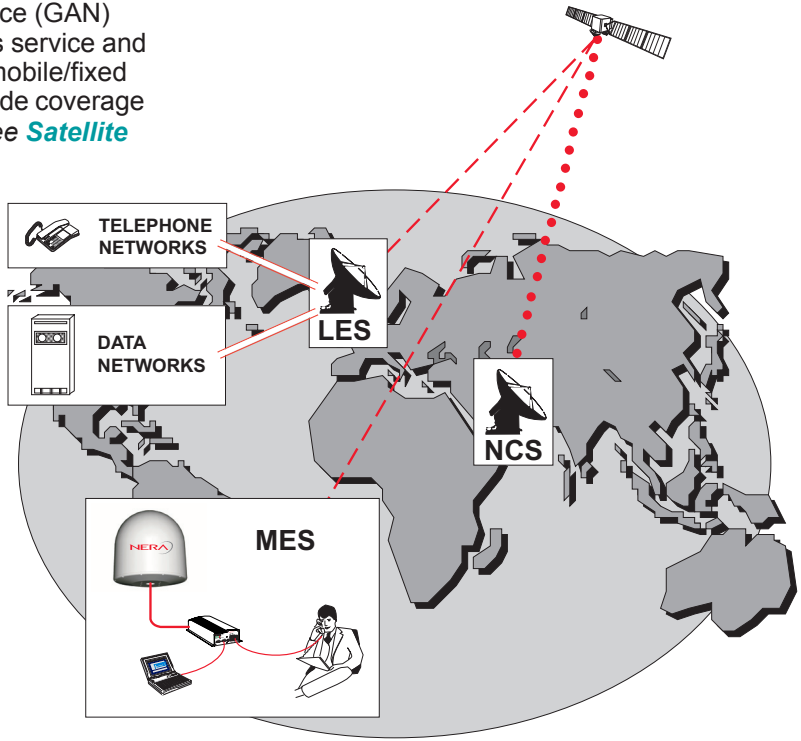
The benefit of the INMARSAT system is its high capacity, and the rapid and reliable connection between the land based (fixed) users and the **Mobile Earth Stations (MESs)**.

Each satellite region is under the control of a **Network Coordinating Station** (**NCS**), which controls and monitors the traffic between the MESs and the LESs.

NCS: *Network Coordinating Station, one in each Ocean Region (supervises all messages and signals sent in the Inmarsat system).*

LES: *Land Earth Station w/Net service providers (interconnects fixed telecommunication networks with the Inmarsat system.*

MES: *Mobile Earth Station (Nera F55, a user terminal for the Inmarsat system).*



Overview of the Inmarsat Fleet system.

System satellites

The satellites are positioned in a geostationary orbit above the equator at approximately 35700 km altitude.

See figure.

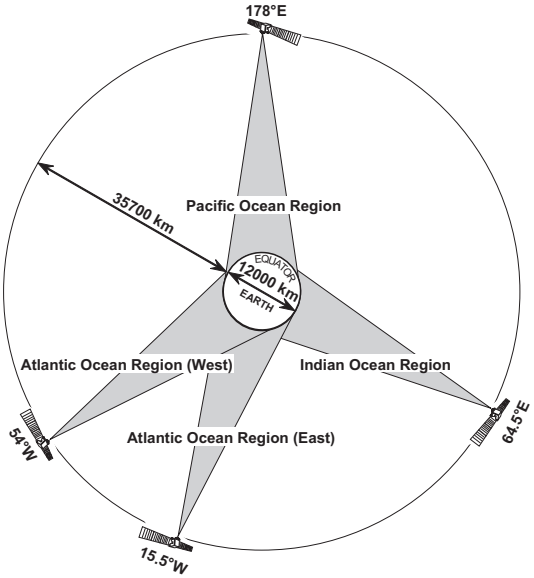
In geostationary orbit, each satellite moves at the same rate as the earth, and so remains in the same relative position to the earth.

The satellites provide 99% landmass coverage.

Nera F55 can communicate via the four satellite Ocean Regions:

AOR-W	Atlantic Ocean West Region
AOR-E	Atlantic Ocean East Region
IOR	Indian Ocean Region
POR	Pacific Ocean Region

For coverage area of the satellites for Nera F55, *see* ***Satellite Coverage Map*** ***in Getting Started***.



Satellite positions.

Transmission frequencies

The Inmarsat terminals operate in the following frequency bands:

MES *transmission* frequencies:
1626.5 MHz - 1646.5 MHz

MES *receiving* frequencies:
1530.0 MHz - 1559.0 MHz

A large number of channels are available (20 kHz channel separation), offering 4.8 kbps voice communication, as well as 9.6 kbps fax or 64 kbps data communication.

Duplex communication uses two channel frequencies, one in each direction.

The LESs provide interface to the international networks for telephony and data: PSTN (Public Switched Telephone Networks) and PSDN (Packet Switched Data Networks).

Antenna search pattern

Azimuth sweep
A 360° rotation of the antenna in azimuth at a fixed elevation angle.

Hemispheric search
A hemispheric search is constituted by azimuth sweeps at elevation angles 5°, 25°, 45°, 65° and 85°.

The antenna searches on the NCS Common TDM channel frequency (NCSC), initiated by the Nera F55 Main Communication Unit (MCU).

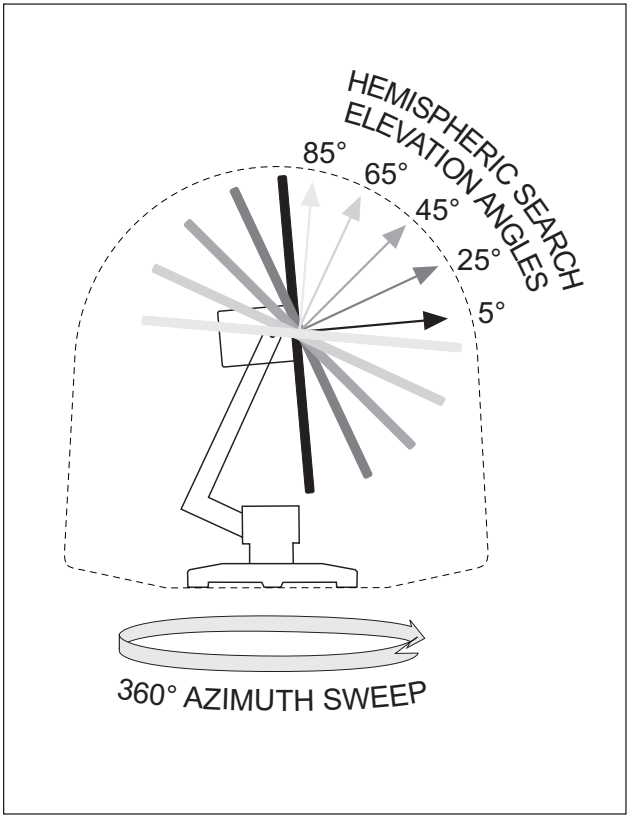
When finding the satellite signal, it completes the hemispheric search and moves to the position where the strongest signal was detected.

The Antenna reports back to the MCU for verification of valid NCSC.

If no valid signal is detected, no further automatic action occurs until the MCU initiates a new search.

A search request from the MCU may contain channel frequency and an order to make a full 360° *search at a specific elevation*, calculated from map and GPS information. If no satellite is found, a *hemispheric searc*h will be performed.

Tracking
At the end of a search, Nera F55 performs a fine-tuning of the antenna position around the strongest detected signal. The fine-tuning is obtained by a squinting function based on satlite signal quality.



Note! Nera F55 remembers the last used Ocean Region when when switching the terminal off/on.

Communication services

Global beam service

- **Speech**: - 4.8 kbps

Spot beam services

- **Speech**: - 64 kbps / 4.8 kbps
- **Data**: - 56/64 kbps
- **MPDS** - Mobile Packet Data Service FWD = 64 kbps, RTN = 64 kbps Shared channel
- **Telefax**: - 64 kbps Group 4 9.6 kbps Group 3 via Terminal Adapter (TA)
- **Audio**: - 3.1 kHz (Audio)

The Nera F55 MCU has following ports (see figure):

- ISDN ports for connection of ISDN telephones or Nera Terminal Adapter; a total of 8 devices.
- RS-232/RS422 and USB ports for connection of data equipment.

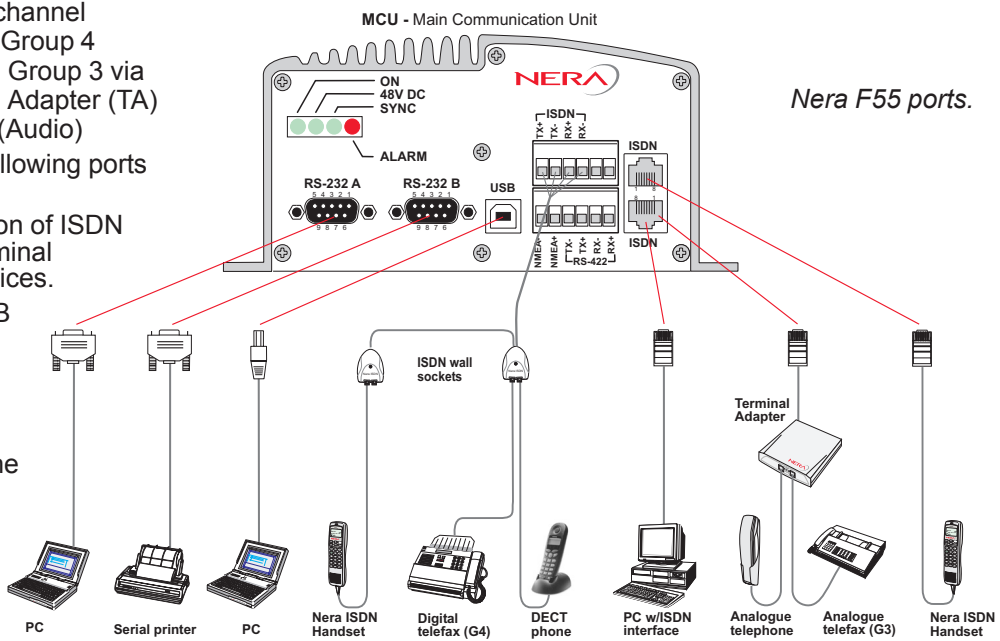
Internal communication

Equipment connected to the various interfaces may communicate with each other via an internal MSN (Mobile Subscriber Number) assigned to each unit.

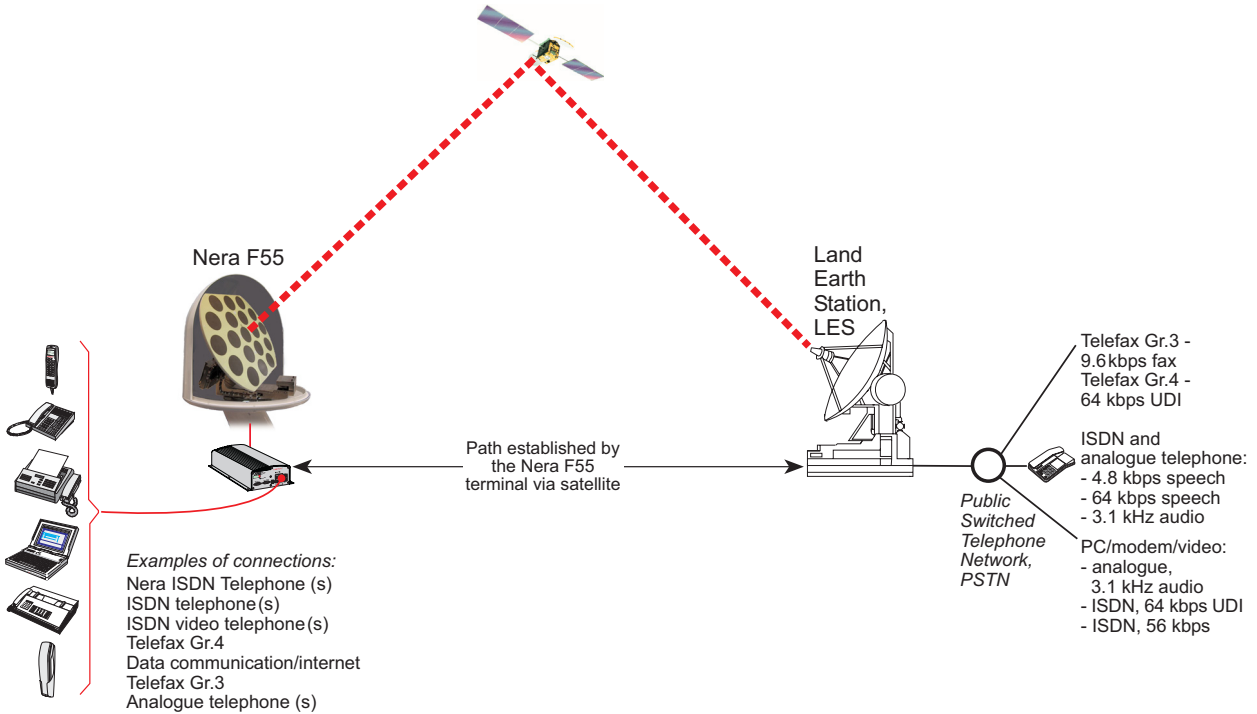
Control interface

The **RS-232** or **USB** port allows connection of a PC for configuration of Nera F55.

A PC program (vtLite Marine) that provides the software to operate and configure Nera F55 terminal is supplied on the enclosed CD (requires at least Windows 98).



Nera F55 ports.



Communication path.

Net service provider

The Net service provider issues your user licence and IMN (Inmarsat Mobile Number) phone numbers. It is also responsible for the billing of calls (charges).

The Nera F55 may respond to individual IMN numbers, giving the possibility to transfer a call directly to each device attached to it.

Note! TermID is a term that includes both Originating Identity (OID) and Destination Identity (DID). The DID is used from LES to MES to identify the service, whereas OID is used from MES to LES to identify the service. TermID is used in this manual because the DID and OID have the same value.

Calls from Mobiles

See figure.

To make an outgoing call, you use a standard international telephone number with the 00 prefix. The MES automatically includes information to identify itself and the particular device that originates.

System signalling

The LES uses the identifying information of the attached device for billing purposes.
The MES transmits the dialing information on a channel specially assigned by the NCS to the LES. LES routes the call over the public telecommunications networks to the intended destination. When the called party responds, the call proceeds.

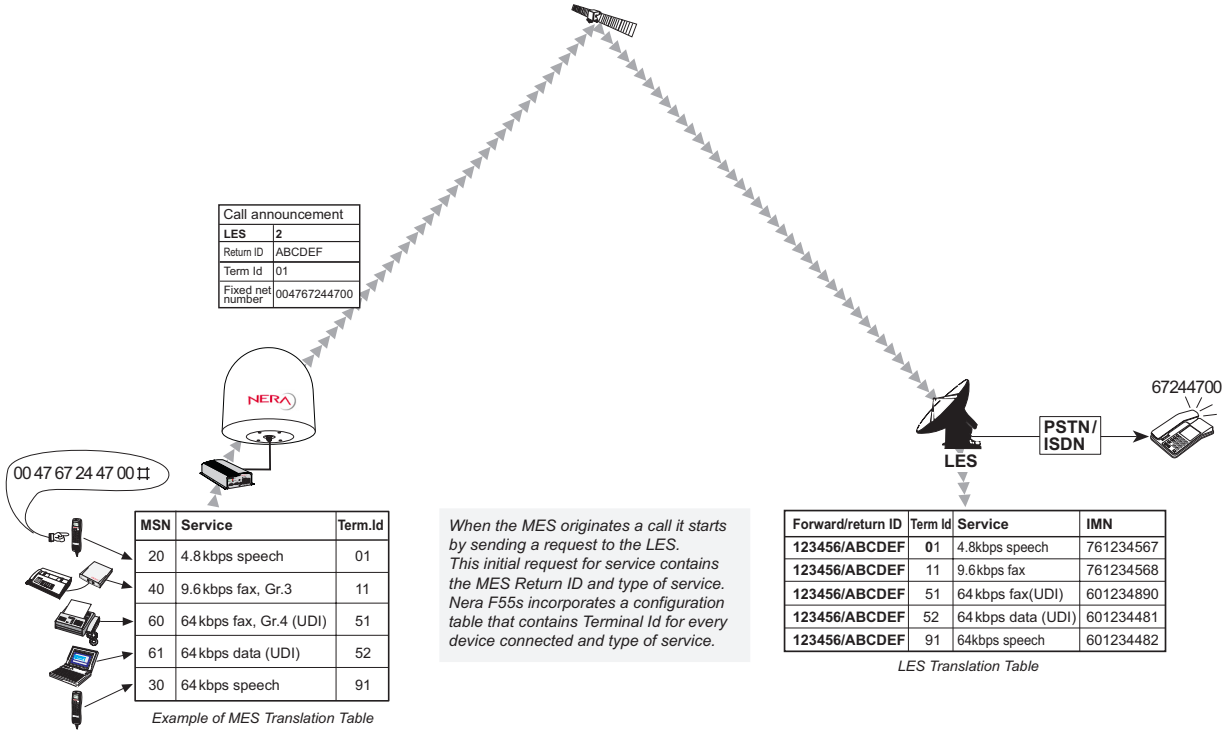
Call announcement from mobile to fixed:

The MES uses the Return Identity (RTNID) to communicate with the LES. It uses the TermID to identify its **IMN** number and the service in use.

The attached equipment dials the number and transmits its **MSN** number to the **MES**. The MES routes the MSN to a TermID.

LES checks that the RTNID is commissioned before connecting the call to the fixed net.

Calls from Mobiles



MSN	Service	Term.Id
20	4.8 kbps speech	01
40	9.6 kbps fax, Gr.3	11
60	64 kbps fax, Gr.4 (UDI)	51
61	64 kbps data (UDI)	52
30	64 kbps speech	91

Example of MES Translation Table

When the MES originates a call it starts by sending a request to the LES. This initial request for service contains the MES Return ID and type of service. Nera F55s incorporates a configuration table that contains Terminal Id for every device connected and type of service.

Forward/return ID	Term Id	Service	IMN
123456/ABCDEF	**01**	4.8kbps speech	761234567
123456/ABCDEF	11	9.6kbps fax	761234568
123456/ABCDEF	51	64 kbps fax(UDI)	601234890
123456/ABCDEF	52	64 kbps data (UDI)	601234481
123456/ABCDEF	91	64kbps speech	601234482

LES Translation Table

Calls to Mobiles

See figure.

The Nera F55 terminal receives incoming calls via the IMN phone numbers. IMN numbers are assigned to the following ports by the user:

- *ISDN ports*
- *RS-232 serial data ports*
- *RS-422 serial data port*
- *USB serial data port*

Calls are made as ordinary international (Satellite) calls by dialing the international prefix (normally 00) followed by **870** and the IMN number, e.g.:
00 **870** 762420510.

*The common Ocean Region access no. **870** connects the call to the dialed Nera F55 regardless of the Ocean Region the user currently communicates through.*

*If the Net service provider does not support access no. **870**, call the Ocean Region directly:*

871 – **AOR-E** (Atlantic Ocean Region East)
872 – **POR** (Pacific Ocean Region)
873 – **IOR** (Indian Ocean Region)
874 – **AOR-W** (Atlantic Ocean Region West)

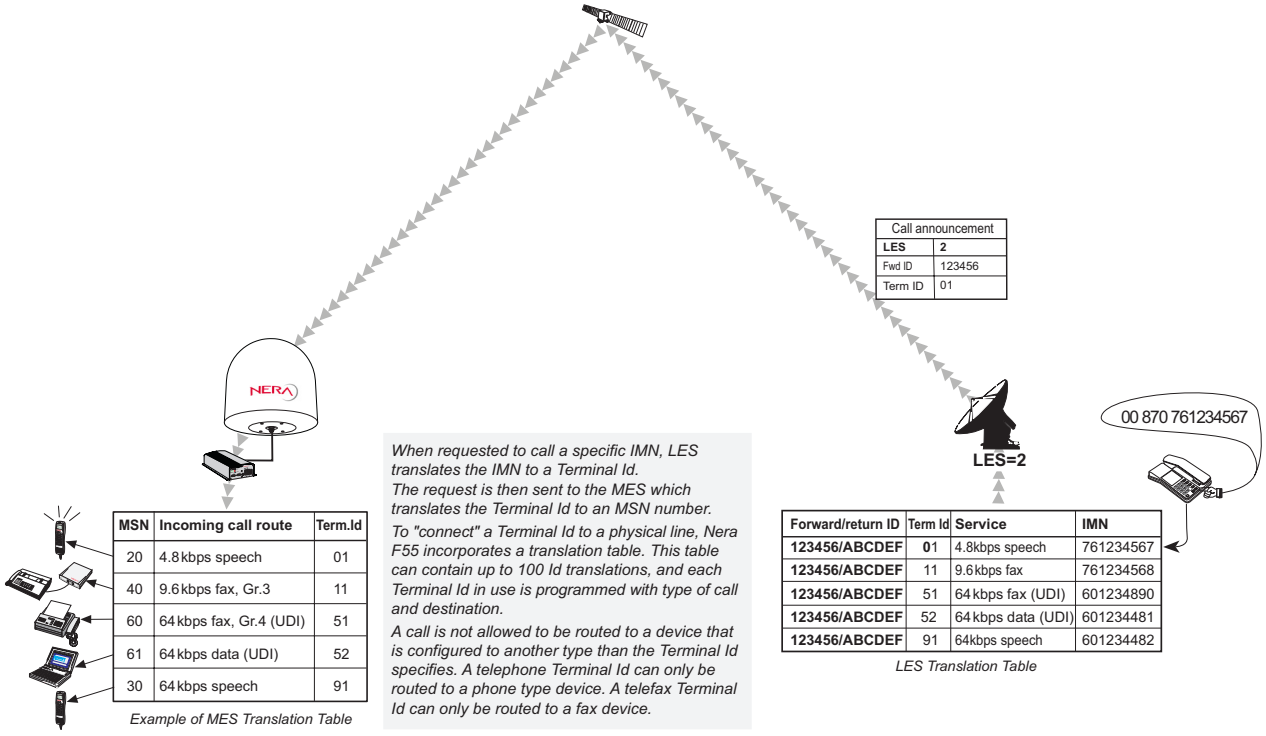
Call announcement from fixed to mobile:

The LES uses the MES's Forward Identity (FWID) to communicate with the MES, and the Terminal Identity (TermID) to identify the IMN number and the service in use.

The FWID together with the TermID replaces the need of the IMN number to be transmitted through the Inmarsat system in order to identify the MES and the specific equipment attached to it. This means that LES routes an IMN number received from the fixed net to the specific FWID and TermID identifying the MES.

The MES identifies the FWID and the TermID and routes it to a Mobile Subscriber Number (MSN) which is programmed in the attached equipment. Nera provides a table to identify which TermID is routed to an MSN.

Calls to Mobiles



MSN	Incoming call route	Term.Id
20	4.8 kbps speech	01
40	9.6 kbps fax, Gr.3	11
60	64 kbps fax, Gr.4 (UDI)	51
61	64 kbps data (UDI)	52
30	64 kbps speech	91

Example of MES Translation Table

When requested to call a specific IMN, LES translates the IMN to a Terminal Id. The request is then sent to the MES which translates the Terminal Id to an MSN number.

To "connect" a Terminal Id to a physical line, Nera F55 incorporates a translation table. This table can contain up to 100 Id translations, and each Terminal Id in use is programmed with type of call and destination.

A call is not allowed to be routed to a device that is configured to another type than the Terminal Id specifies. A telephone Terminal Id can only be routed to a phone type device. A telefax Terminal Id can only be routed to a fax device.

Forward/return ID	Term Id	Service	IMN
123456/ABCDEF	**01**	4.8kbps speech	761234567
123456/ABCDEF	11	9.6 kbps fax	761234568
123456/ABCDEF	51	64 kbps fax (UDI)	601234890
123456/ABCDEF	52	64 kbps data (UDI)	601234481
123456/ABCDEF	91	64kbps speech	601234482

LES Translation Table

Back to Start Page

Nera ASA
Nera SatCom AS
Bergerveien 12, PO Box 91
N-1375 Billingstad, Norway
Tel: +47 67 24 47 00
Fax: +47 67 24 46 21

www.nera.no

NERA
enabling a wireless future