FURUNO

OPERATOR'S MANUAL

INMARSAT FLEET F77
SHIP EARTH STATION

MODEL **FELCOM 70**

FURUNO ELECTRIC CO., LTD.

www.furuno.co.jp

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

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(TATA) FELCOM70

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IMPORTANT NOTICES

General

- The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can cancel the warranty or cause injury.
- Do not copy any part of this manual without written permission from FURUNO.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and equipment specifications can change without notice.
- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.
- Save this manual for future reference.
- Any modification of the equipment (including software) by persons not authorized by FURUNO will cancel the warranty.
- All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

How to discard this product

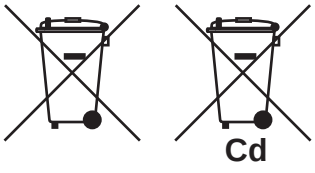
Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery(ies), see the chapter on Maintenance. Follow the instructions below if a battery(ies) is used.

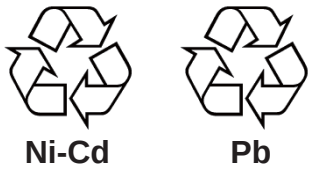
In the European Union

The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.



In the USA

The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.



In the other countries

There are no international standards for the battery recycle symbol. The number of symbols can increase when the other countries make their own recycle symbols in the future.

SAFETY INSTRUCTIONS

Read these safety instructions before you operate the equipment.

WARNING	Indicates a condition that can cause death or serious injury if not avoided.
CAUTION	Indicates a condition that can cause minor or moderate injury if not avoided.

Warning, Caution Prohibitive Action Mandatory Action

WARNING

ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified personnel should work inside the equipment.

Do not approach the radome closer than 4 meters when it is transmitting.

The radome emits radio waves which can be harmful to the human body, particularly the eyes.

Leave the equipment powered while underway.

Distress cannot be communicated unless the equipment is powered.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Turn off the power immediately if water leaks into the equipment or the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire or electrical shock.

Do not operate the equipment with wet hands.

Electrical shock can result.

WARNING

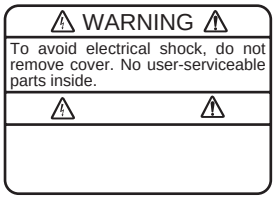
Any repair work must be done by a licensed radio technician.

Improper repair work can cause electrical shock or fire.

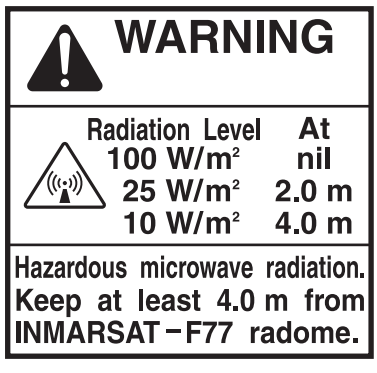
Use the proper fuse.

Fuse rating is shown on the equipment. Use of a wrong fuse can result in damage to the equipment.

A warning label is attached to the terminal, communication and antenna units. Do not remove any label. If a label is missing or damaged, contact a FURUNO agent or dealer.



Terminal, Communication Unit
Name: Warning Label (1)
Type: 86-003-1011
Code No.: 100-236-231



Antenna Unit
Name: Radiation Warning Label
Type: 16-016-1802-0
Code No.: 100-312-020

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FOREWORD

A Word to the Owner of the FURUNO FELCOM 70

Congratulations on your choice of the FURUNO FELCOM 70 Inmarsat Fleet F77 Mobile Earth Station. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.
For over 60 years FURUNO Electric Company has enjoyed an enviable reputation for quality marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.
This equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless operated and maintained properly. Please carefully read and follow the recommended procedures for operation and maintenance.
We would appreciate hearing from you, the end-user, about whether we are achieving our purposes. Thank you for considering and purchasing FURUNO equipment.

Features

The FELCOM 70 mainly consists of an antenna unit, communication unit, distress alert unit, and a handset. The FELCOM 70 provides telephone, facsimile, and data services.

The main features of the FELCOM 70 are

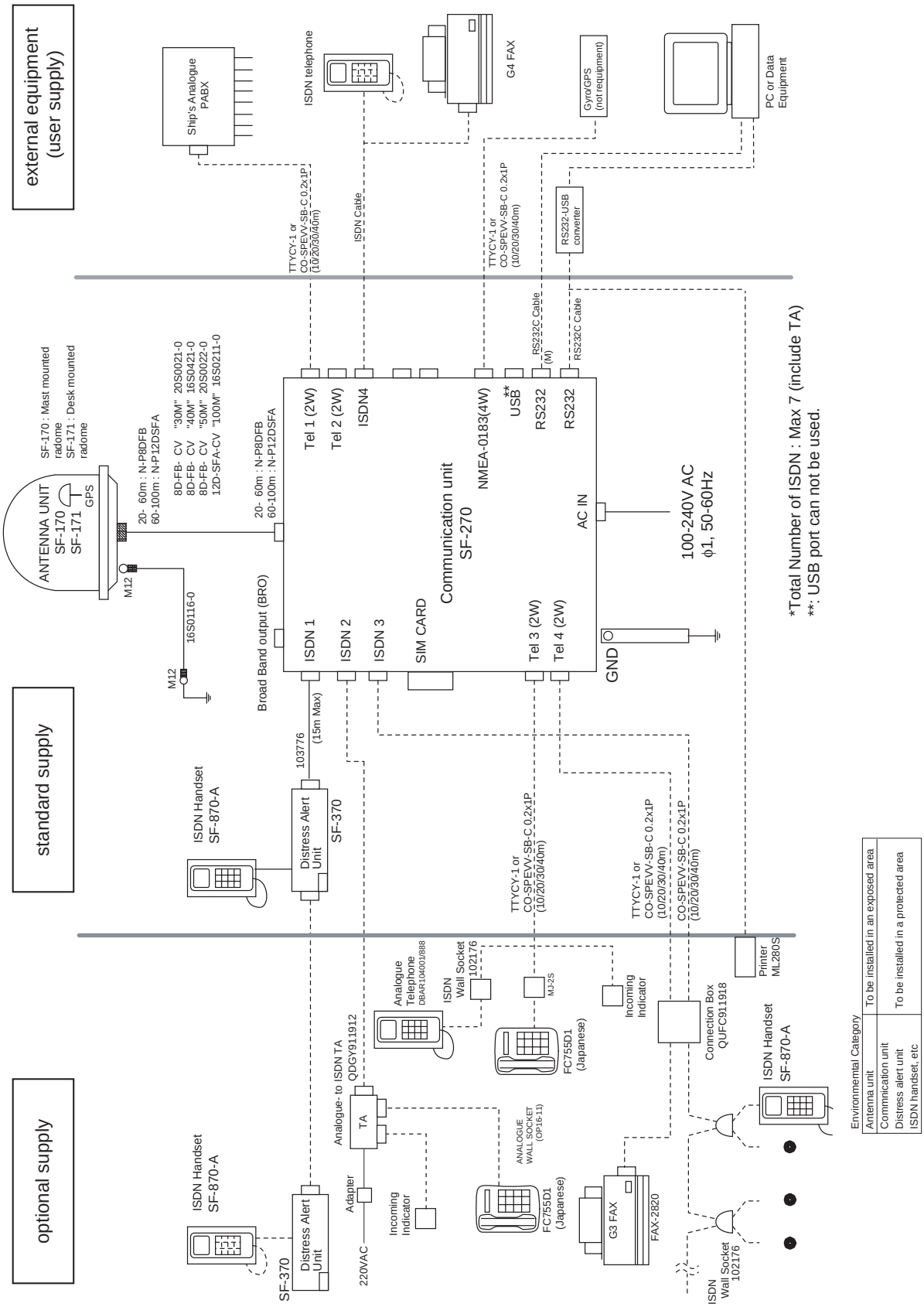
- Conforms to the following standards: INMARSAT MINI-M SDM, CN-MM056, 059, IEC 60945 (Ed. 4), IEC 60529 (Ed. 2), IEC 61162-1 (Ed. 2)
- Voice communication: 4.8 kbps
- Facsimile: G4-64 kbps, G3-Max. 33.6 kbps, G3-9.6 kbps (low cost)
- Connection to ISDN (Up to 8 sets of analog telephone or G3 FAX via Terminal Adapter or Video Phone, etc.)
- Always-on Internet connections via MPDS
- Compact antenna unit (comparing Inmarsat B antenna unit): ϕ970 x 1130 mm, 50 kg; Dome with hatch is also available (ϕ1260 x 1153 mm, 65 kg)

Program number

System version of the communication unit: REL 3.5
Software for PC, SAILOR vtLite:

- For Windows XP SP2 and Windows Vista: 7.2

SYSTEM CONFIGURATION



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1. INTRODUCTION

1.1 General

The FELCOM 70 consists of the Above Deck Equipment (ADE) and Below Deck Equipment (BDE).

Above Deck Equipment - ADE

The FELCOM 70 Above Deck Equipment consists of:

- Servo stabilized antenna dish with RF-Transceiver
- Mast mounted radome, or
- Deck mounted radome

Below Deck Equipment - BDE

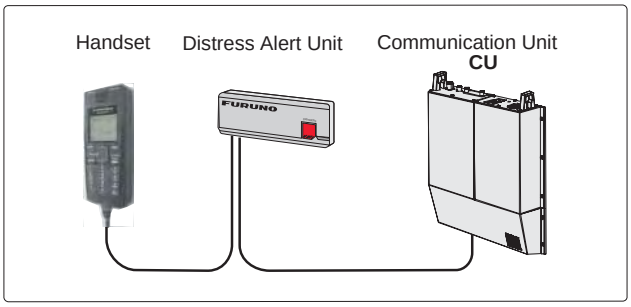
The **FELCOM 70 Communication Unit (CU)** - which constitutes the major electronic part - is designed for wall or desktop installation.
The CU mains input is 100 - 240 VAC. The power requirement is approx. 40 W in receive/idle mode, and approx. 150 W in transmit mode.
The CU supplies 48 VDC power to the ADE through the coaxial cable.

ISDN Handset

The **ISDN Handset** keypad and built-in display allow dialing and control of the CU and antenna.

Distress Alert Unit

The Distress Alert Unit provides remote activation of an alert transmission and indication of incoming distress calls.



FELCOM 70 satellite terminal

CD

The CD ROM supplied with FELCOM 70 contains program for PC (SAILOR vtLite and driver software.

1.2 Communication services

FELCOM 70 provides the following services:

- **ISDN:** - 64 kbps Mobile Data Service (UDI)
  - 128 kbps Mobile Data Service (UDI)
  - 56 kbps Mobile Data Service
  - 110 kbps Mobile Data Service (UDI)
  - 4.8 kbps speech
  - 9.6 kbps fax
  - 64 kbps speech
  - 3.1 kHz audio (64 kbps) (e.g. G4 FAX)
- **RS-232:** - 64 kbps Mobile Data Service (UDI)
  - Mobile Packet Data Service (MPDS)
- **RS-422:** - 64 kbps Mobile Data Service (UDI)
  - Mobile Packet Data Service (MPDS)
- **USB:** - 64 kbps Mobile Data Service (UDI)
  - Mobile Packet Data Service (MPDS)

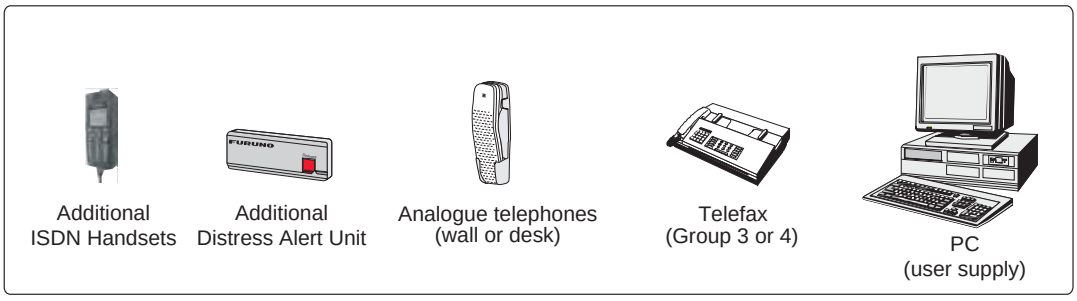
  Note: Currently the USB port is not supported.
- **ANALOGUE:** - 4.8 kbps speech/64 kbps speech
  - 9.6 kbps fax/3.1kHz(e.g. telefax Gr.3)

Internal communication

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

Control interface

The **RS-232/RS-422** port allows connection of a PC for configuration of the FELCOM 70 Communication Unit (CU).
A PC program (SAILOR vtLite) that provides the software to operate and configure the CU is supplied on the enclosed CD (requires Windows XP SP2 or Vista).



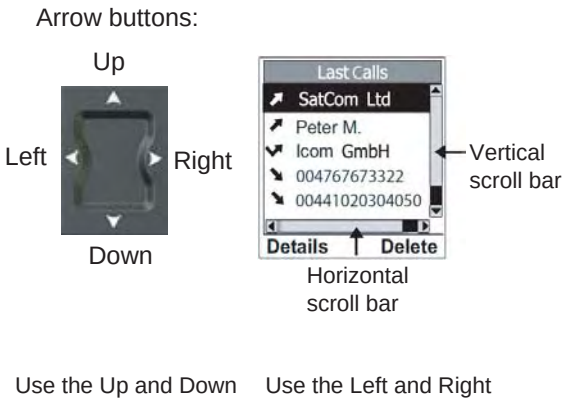
Additional equipment

2. OPERATION FROM HANDSET

2.1 Display Panel and Key Panel of ISDN Handset

Note:
The left and right soft keys will change function according to the actual situation. The function associated with each soft key is at any time indicated in the display, right above each key.

Display and Keys



Use the Up and Down arrow buttons to scroll through listed information and menus.

Use the Left and Right arrow buttons to scroll through text extending beyond the display width.

A smaller vertical scroll bar indicates a longer list.

A smaller horizontal scroll bar indicates more text.

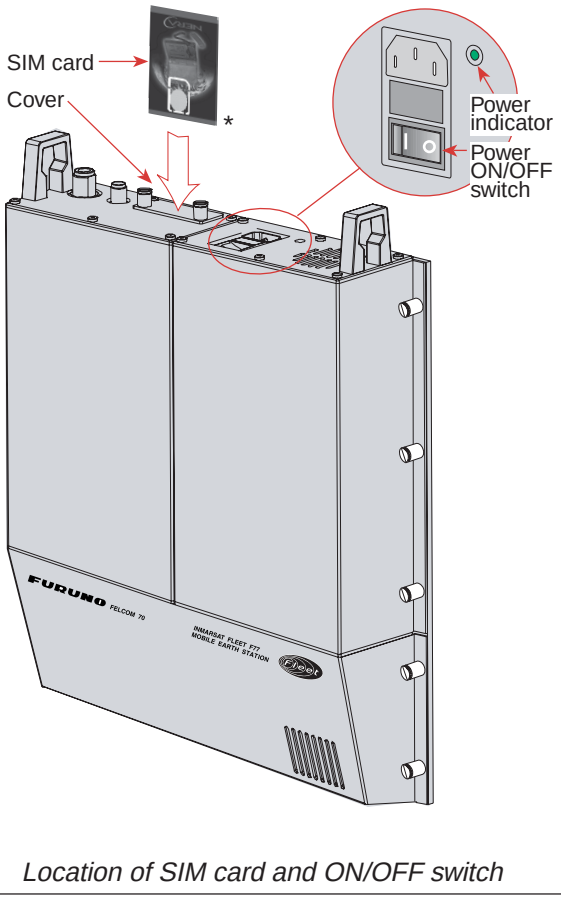
Display Navigation

2.2 Switching ON

The **ON/OFF** switch located on the upper end of the Communication Unit switches all basic units of the FELCOM 70 terminal on/off:

- the ISDN Handset
- the Communication Unit (CU), and
- the Antenna Unit.

*See figure below for location of the power **ON/OFF** switch and indicator.*



Location of SIM card and ON/OFF switch

*: Insert SIM card, contact upside down.

Note: Wait about 30 seconds to turn on the power after turning it off.

2.3 SIM card

The SIM card carries subscription information from your Net service provider on an integrated circuit. The FELCOM 70 used with the SIM card assumes the identity of the SIM card.

The SIM card has its own set of Inmarsat Mobile Numbers (IMN) on which the user can be contacted irrespective of the FELCOM 70 used. All outgoing calls will be billed to the owner of the SIM card.

The SIM card is protected by a SIM PIN (Personal Identification Number). Contact your Net service provider if you do not have the PIN code.

If the PIN code entered does not match the PIN code on the SIM card, operation with that particular SIM card will lock-up after three failed attempts. You must then use the SIM un-block code (PUK code) provided by your Net service provider to un-lock the card. Contact your Net service provider if you do not have the PUK code.

Note: When the PUK is used, the SIM PIN is set to 1 2 3 4.

To change or disable the PIN code, *see "**5.3 Access level**" later in this manual.*

The SIM card can store various information, e.g.:

- PIN code (Personal Identification Number)
- Phone book
- Allowed and preferred Net service providers

Note: FELCOM 70 can be used with or without SIM card. The Net service provider, however, sometimes requires the use of SIM card.

The SIM card driver is located on the upper end of the Communication Unit, *see page 2-2*. The cover must be removed to access the card slot. The cover is attached by two serrated screws. No tools are required to loosen the screws.

Note: Turn on the power, wait for the indication “Ready for call”, and then insert the SIM card. If the ship’s mains are turned off instantaneously, eject the SIM card and turn the power off and on again.

When inserting the SIM card, the terminal prompts for the SIM PIN:	If the correct SIM PIN is entered, the following is displayed:	If an incorrect SIM PIN is entered, the following is displayed:
		

2.4 FELCOM 70 starts up

At start-up FELCOM 70 performs system initialization and then search for a satellite (expect a wait of about 30 seconds after power on).

Note: The Ocean Region used the last time the system was in operation will be searched for.

Available Ocean Regions:

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

After completed the start-up sequence the FELCOM 70 enters idle mode.

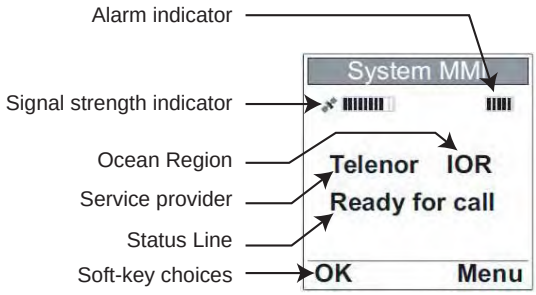
See “3.2 Satellite Search” on how to initiate a manual search.

If required, see “3.4 Selecting Default Net Service Provider” in the HANDSET FUNCTIONS section.

Note: If the Access Code feature has been enabled, an access code must be entered before calling (See 5.7.3 Access code).

Idle Mode

When in idle mode the ISDN Handset displays as shown right:



The signal strength indicator indicates maximum signal strength by all segments shown dark.

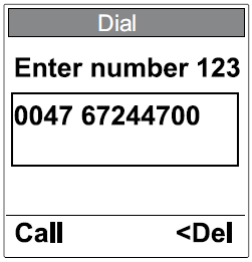
When the terminal is busy, the status line indicates the type of service in use (indicated on all ISDN Handsets connected to the terminal):

4.8k speech	- ongoing low cost voice call
64k speech	- ongoing high quality voice call
MPDS call	- ongoing MPDS call
Fax call	- ongoing fax call
3.1kHz audio	- ongoing audio call
UDI call	- ongoing data call
128k UDI	- ongoing 128k data call

2.5 Making a call

Note: After a call is completed, wait 15 to 30 seconds before initiating a next call. If a next call is initiated within 15 seconds, the call will be rejected by an LES. In this case, try to make a call again, approx. 15 to 30 seconds later. If it is still impossible to set up a call after several attempts, restart the system.

1 Dial 00, country code and subscriber number, e.g.: 004767244700



Use and to move cursor left and right. Select <**Del** to delete the digit to the left of the cursor.

2 Press or select **Call** to send the digits. The **Call active** display appears when connection is established, and indicates the duration of the call as it progresses.

3 Complete the conversation.

SymbolDescription

Symbol	Function	Soft-key
	Speakerphone mode on/off	Left
	Call options	Right
	Microphone mute on/off	Left

The handset may at any time during the conversation be released from the cradle. It then automatically turns to private mode (i.e. reduced loudspeaker volume).

Note: Replacing the handset in the cradle during conversation will terminate the call.

4 Press  or replace the handset in the cradle to end the call.
The duration of the call is indicated in the display for a few seconds before the idle screen appears.

Options During Calling

When selecting **Speaker on** FELCOM 70 turns to speakerphone mode (i.e. increased loudspeaker volume).

Options During Conversation

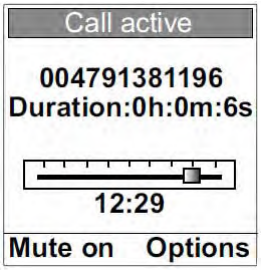
Select **Mute on / Mute off** to toggle the handset's microphone on and off. **Mute on** enables private talking without the called party being able to listen. Selecting **Options** provides the following choices:

- Select **Turn Speaker on / Turn Speaker off** to activate/deactivate the speakerphone mode.
- The **Audio Control Display** option is not supported in the default handset mode (Automatic).

Note: When using DTMF, set the handset to speaker-off and dial slowly.

Loudspeaker Level Adjustment

Press  to decrease and  to increase the loudspeaker volume while in conversation.



2.6 Redialing

The FELCOM70 stores information about the last outgoing and incoming calls (25 altogether). The information is stored inside the handset, and is retained also when the handset is disconnected.

Last Calls Redial

1. Press  once to enter the last calls list.

Symbol Description

Symbol	Signification
	Indicates incoming call
	Indicates outgoing call
	Indicates rejected or missed call

2. Use ▲ and ▼ to scroll through the list and highlight the call to redial.
   Use ◄ and ► to see all available information for a listed call.
3. Press  to redial the highlighted call.
   Select **details** to view more detailed information for the highlighted call.

Select **delete** to delete the highlighted call.

2.7 Dialing from phone book

Note: Phone Book contents are stored in the CU and are available to all connected ISDN Handsets.

1. Press ► once to enter the Phone Book.
2. Press ▲ or ▼ to scroll through the list. Highlight the entry to call by leaving the sign ">" in front of the entry.
3. Press  to call the highlighted entry.

Using short number from phone book (prefix. 23)

1. Dial 23 followed by a short number.
   Example: 2315 (short number = 15)
2. Press  or select **Call** to initiate the call.

2.8 Receiving a call

1. When the handset is ringing, press  or select **Speaker** or release the handset from the cradle to answer the call.

   Selecting **Speaker** or pressing  while in cradle puts the handset in speakerphone mode.

   If the call is not answered, it will eventually time out and either be transferred to an answering service if this option is enabled at your Net service provider or be rejected.

   As the system does not support the service Number forwarding, the display indicates "Anonymous" and not the caller's number.

Symbol Description

Symbol	Function	Soft-key
	Ringing on/off	Right

For description of other symbols, see “2.5 Making a Call”.

2. Complete the conversation.

   The handset may at any time during the conversation be released from the cradle. It then automatically turns to private mode.

   Note: Replacing the handset in the cradle during conversation will terminate the call.

   The Call active display shows the duration of the call as it progresses.

3. Press  or replace the handset in the cradle to end the call.

   The display shows the duration of the call.

Silent Ringing Option

Select **Silence on** to turn off the ringing without answering or terminating the call.

The call may still be answered when feasible until timed out.

Options During Conversation (Incoming Call)

Press  or select **Options** and then **Place call on hold** to put the incoming call on hold. See “2.9 Call Hold and Transfer”.

See “Options During Conversation” (Outgoing Call) and “Loudspeaker Level Adjustment” in “2.5 Making a call” for other options.

2.9 Call hold and transfer

When answered, an incoming call may be put on hold and, if applicable, be transferred to a new internal number (i.e. a two-digit Multiple Subscriber Number).

1. While in conversation, press  or select **Option** and then **Place call on hold** to put the incoming call on hold and get the ringing tone. The following display appears.

It is possible, if desired, to switch back to the incoming call by selecting **Retrieve call** (use arrow down key), and then **Select**.

2. Dial 1, 0, 3, MSN, # or *, *, MSN, #, and press or choose **Select** to call the number.

   MSN: Two-digit internal phone number

   For incorrect entries use and to move cursor left and right Select **<Del** to delete the digit to the left of the cursor.

3. Wait for answer, and talk if necessary.

   If no answer, press to return to the incoming call.

4. Press. when the called party accepts the call. The incoming call is now transferred.

2.10 Internal communication

FELCOM 70 allows internal calls to be made between ISDN Handsets, and between an ISDN Handset and an analogue telephone.

Note: If any of the parties involved in an internal call receives a satellite link call, the satellite link caller receives the busy tone.

Note: Internal communication is not possible when the FELCOM 70 is busy handling a satellite link call.

Make a Call

1. Dial 1, 0, 3, MSN, # or *, *, MSN, #.
2. Press or select **Call** to initiate the call.

Receive a Call

1. Press or select **Speaker** or release the handset from the cradle to answer the call.

   The caller's MSN number is displayed.

2.11 To call FELCOM 70

Dial the prefix for international call (normally 00. USA, however, is using 001) followed by 870 and the Inmarsat Mobile Number (IMN).

Example: 00870762420510.

The common ocean region access number 870 establishes a connection to the called FELCOM 70 regardless of which ocean region the called party currently communicates through.

If the network service provider does not support use of access number 870, select a possible 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)

Note: 871, 872, 873 and 874 are available until Dec. 31, 2008. Only 870 is available from Jan. 1, 2009.

2.12 Phone book entry

The Phone Book entries are stored in the CU and are available to all connected ISDN Handsets. About 100 entries may be stored, and they may as well be edited using the PC application VtLite available on the CD.

Add a New Entry

1. Press ▶ to access the Phone Book.
2. Select **Menu** to see the Phone Book menu options.
3. Select **OK** to add a new entry (Add entry is the first menu option listed).
   The word "ALPHA" is displayed to indicate that letters are expected as input.
4. Enter name (one field) and number for the entry. The content of each field has to be confirmed by selecting OK.

Press ◀ to delete the last character or digit.

The table shows available characters and where to find them.

Key	Uppercase	Lowercase
1	1	1
2 abc	ABC2	abc2
3 def	DEF3	def3
4 ghi	GHI4	ghi4
5 jkl	JKL5	jkl5
6 mno	MNO6	mno6
7 pqrs	PQRS7	pqrs7
8 tuv	TUV8	tuv8
9 wxyz	WXYZ9	wxyz9
0 ␣	␣0	␣0

Note: The # key toggles between upper- and lowercase characters.

Edit an Entry

1. Press ▶ to access the Phone Book.
2. Use ▲ or ▼ to scroll through the Phone Book entries. Highlight the entry to edit by leaving the sign ">" in front of the entry. Select **OK**.
3. Select **Menu** to get the Phone Book menu options.
4. Use ▲ or ▼ to scroll through the menu options. Highlight the desired option and select **OK**.

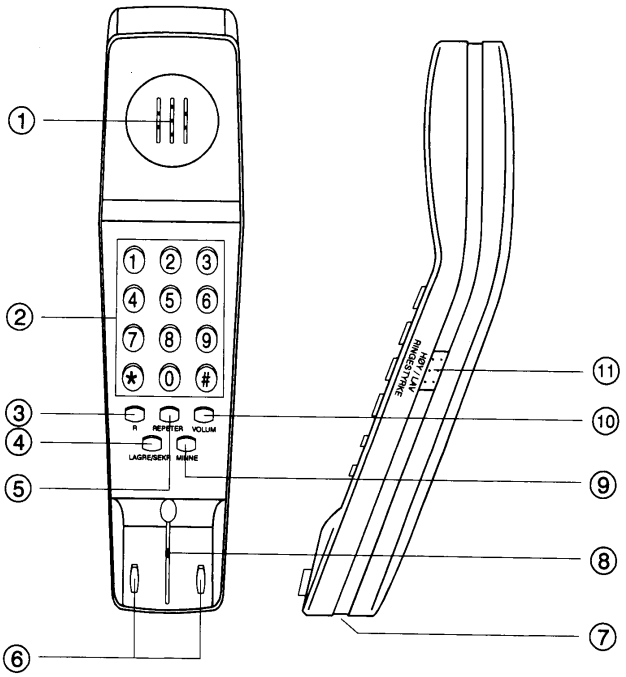
The options are,

Add entry	: Enter new name and number.
Edit number	: Edit number of preselected entry.
Edit name	: Edit name of preselected entry.
Delete	: Delete preselected entry.
Search book	: Enter up to three successive start characters to search for
See number	: View number for preselected entry.
Copy	: Create a copy of the preselected entry with a new short number.
Sort by ShrtNo/Name	: Sort on short number or name (toggle function).

Press ◀ to delete characters to be modified.

2.13 Analogue telephone

In case of optional telephone DBAR 104001/888



1 Speaker
2 Keypads
3 R-button (not used)
4 Storing / Microphone muting
5 Last number redial
6 Hook on / off
7 Line cable outlet
8 Microphone
9 Memory (stored numbers)
10 Volume control
11 Ringing signal High / Low

Outgoing call

1 Lift handset and receive dial tone
2 Dial the subscriber number (and #)
3 When finished, replace the handset

Redialing

If the subscriber is busy, or you want to make a new call to the last dialed subscriber, you can lift the handset, receive new dial tone and then press the [REPETER] button.

Note that this button is for manually dialed numbers only. Stored numbers will not be repeated using this method.

Storing abbreviated numbers

Ten subscriber numbers can be stored in the telephone's memory in short from. The numbers can be used for outgoing call, by pushing 2 buttons only.

1 Lift handset and press [LAGRE/SEKR] button (Don't worry the dial tone).
2 Press [MINNE] button.
3 Select relevant storing address by pushing one button (0 - 9).
4 Dial the subscriber no. and # (max. 21 digits).
5 Press [LAGRE/SEKR] button.
6 Replace handset. The number is stored.
7 Repeat the step 1 - 6 to store additional numbers.

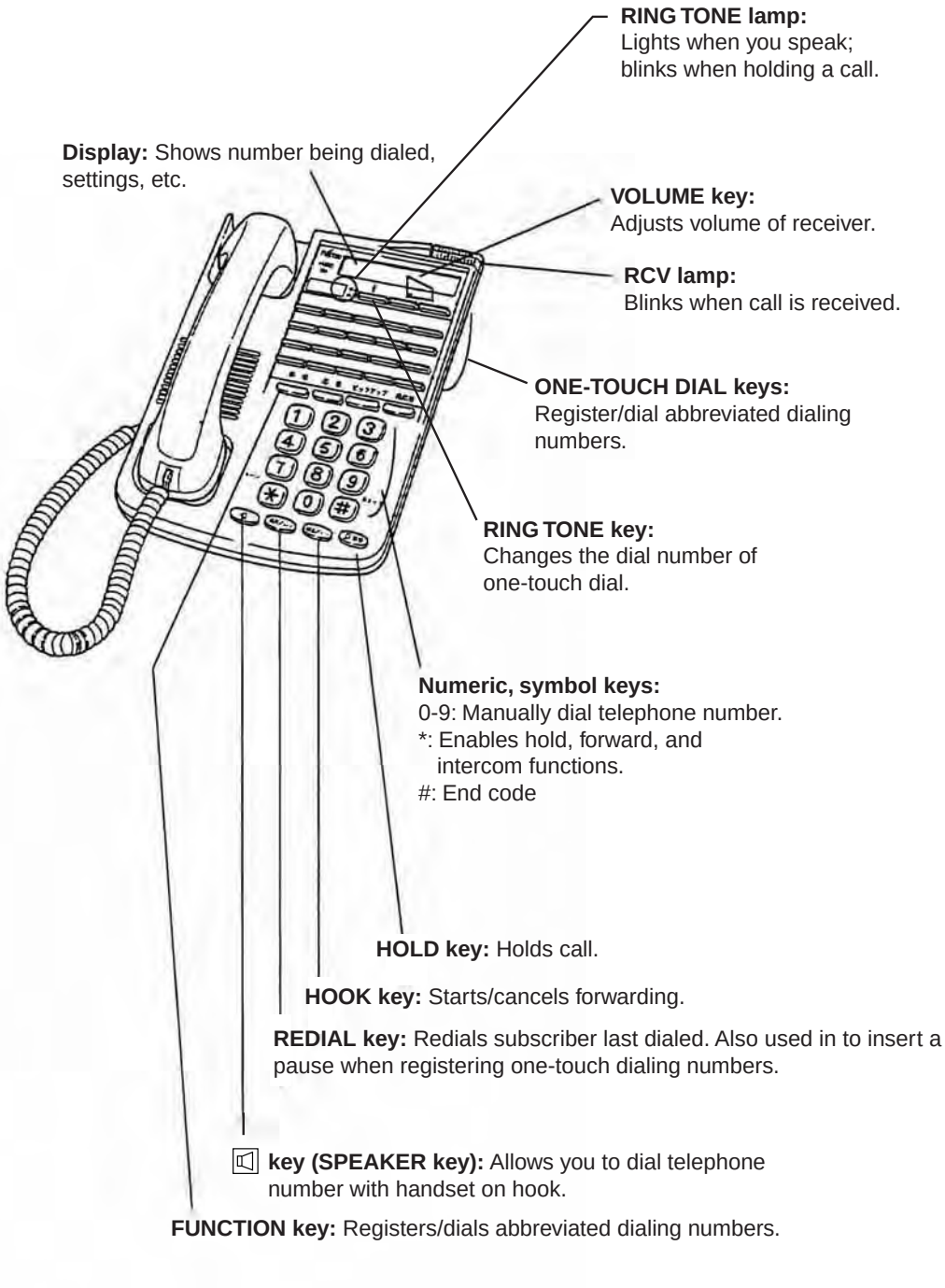
If required to change a number, just overwrite existing number.

Abbreviated call

1 Lift handset and receive dial tone
2 Press [MINNE] button.
3 Press relevant storing address (0 – 9). The subscriber number is automatically dialed.

Note: If you put the analogue phone, facing the key pad down for holding on call, the line will cut.

In case of optional telephone FC755D1



2.14 Call from a telefax unit

Dial 00, country code and subscriber number.

Example:

0 0 4 7 6 7 2 4 4 6 2 1 # START

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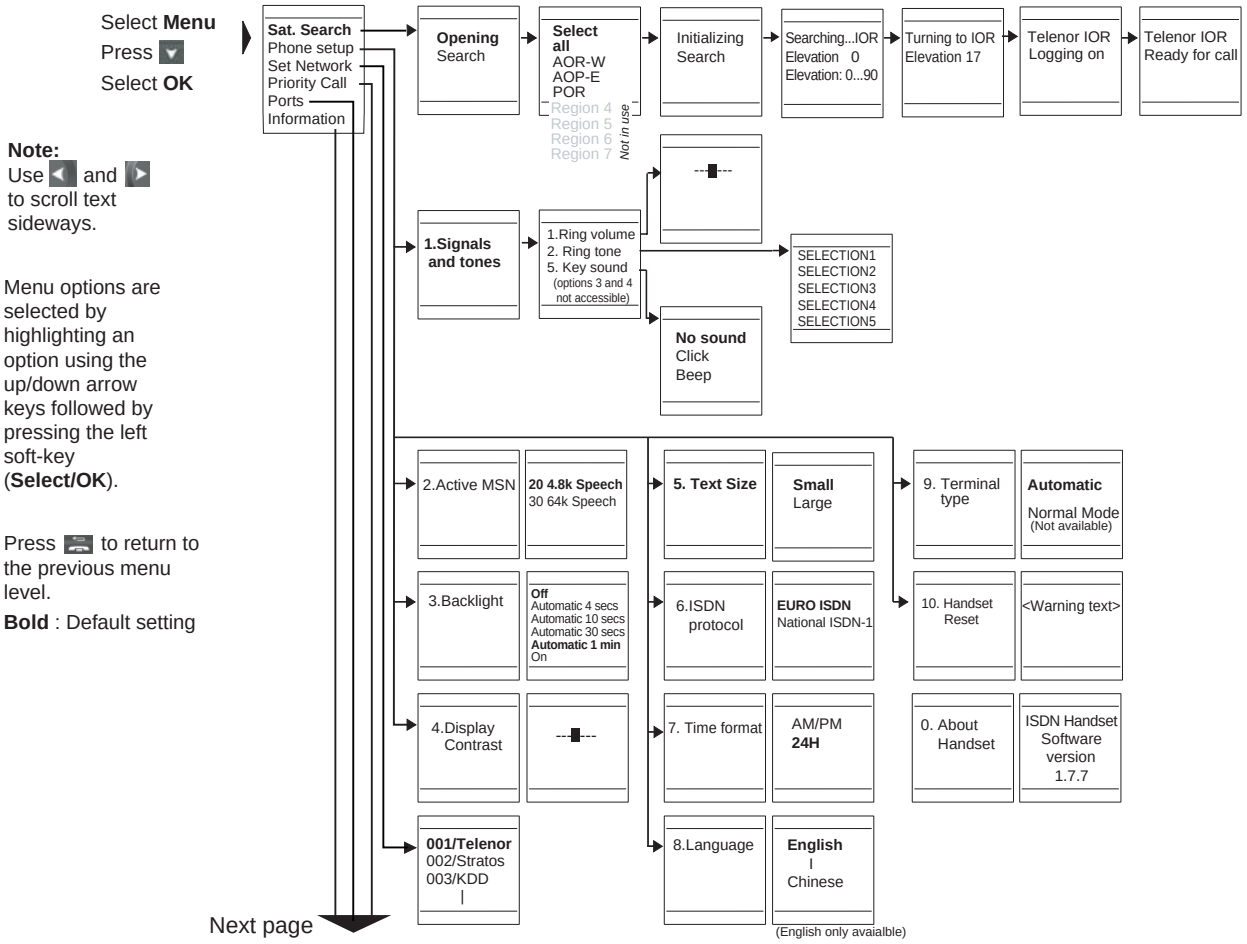
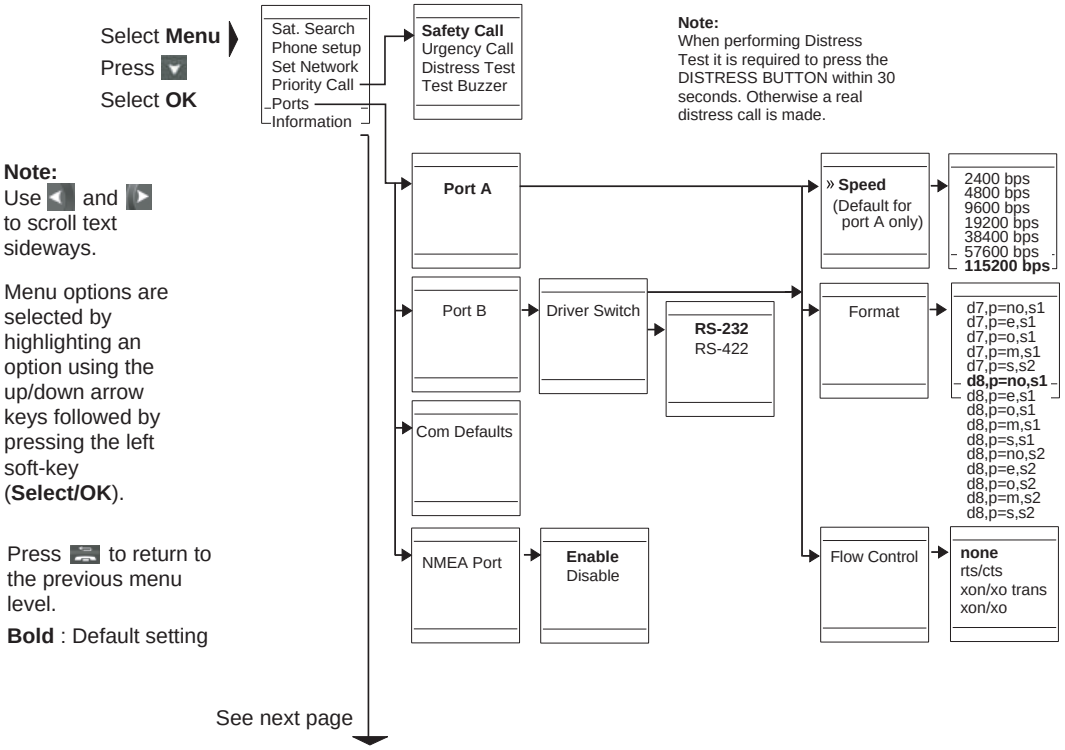
3. HANDSET FUNCTIONS

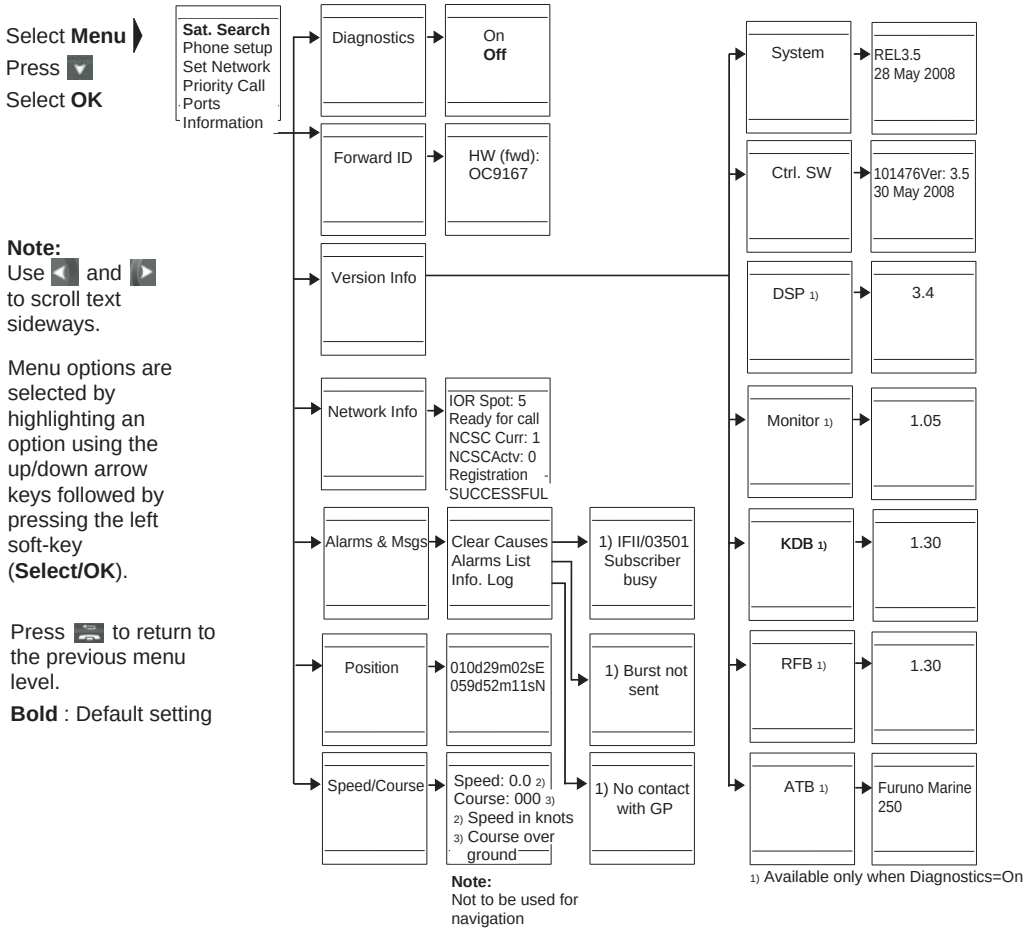
3.1 Overview



Menu Overview 1



Menu Overview 2



Menu Overview 3

3.2 Satellite search

Some geographic locations allow contact with more than one Ocean Region satellite. It is recommended to choose an Ocean Region satellite providing sufficient signal quality in order to have the selected services available. In general, this requires that not less than 5 segments (70%) of the signal strength bar are dark when in idle mode.

Both an automatic search for a satellite in any Ocean Region and a search for a satellite within a specific Ocean Region may be initiated. A search within a specific Ocean Region may be useful in order to find a satellite with better signal quality than the current satellite found by an automatic search.

The “Satellite Coverage Map and the Coverage Map for Each Region” found on the next page may be used to select a specific Ocean Region to search for. For the latest edition of these maps, see http://maritime.inmarsat.com

Possible Ocean Regions are:

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

The options Region 4 to Region 7 are not used.

Select an Ocean Region Automatically

1. Select **Menu** from idle screen to open the main menu.
2. Select **OK** (Sat Search is the first option of the main menu).
3. Select **OK** (Select all is the first option of the Sat. Search menu).

The elevation to use is calculated based on the received GPS information.

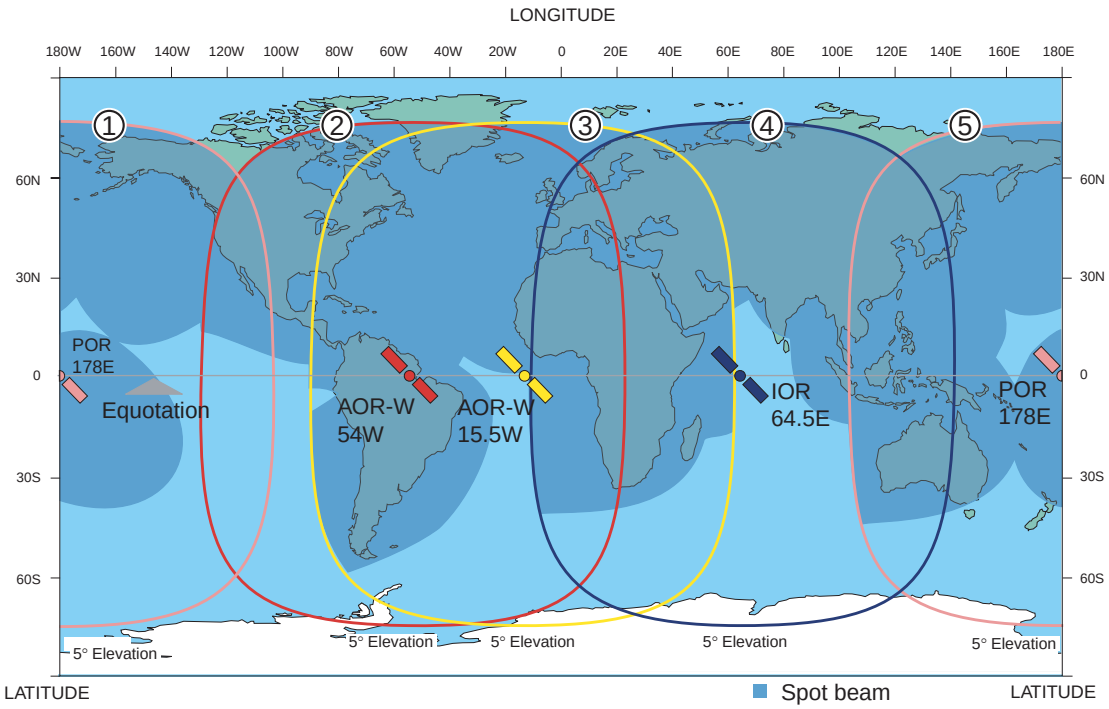
If no satellite signal is found in any Ocean Region, a hemispheric search is performed at an elevation varying from 0° to 90°.

Select Specific Ocean Region

1. Select **Menu** from idle screen to open the main menu.
2. Select **OK** (Sat. Search is the first option of the main menu).
3. Use  and  to highlight (indicated by the sign “>”) the desired Ocean Region, and select **OK**.

Satellite Coverage Map Date:

15 March 2007



① TEL: 870 or 872 Pacific Ocean Region (POR)

② TEL: 870 or 874 Atlantic Ocean West Region (AOR-W)

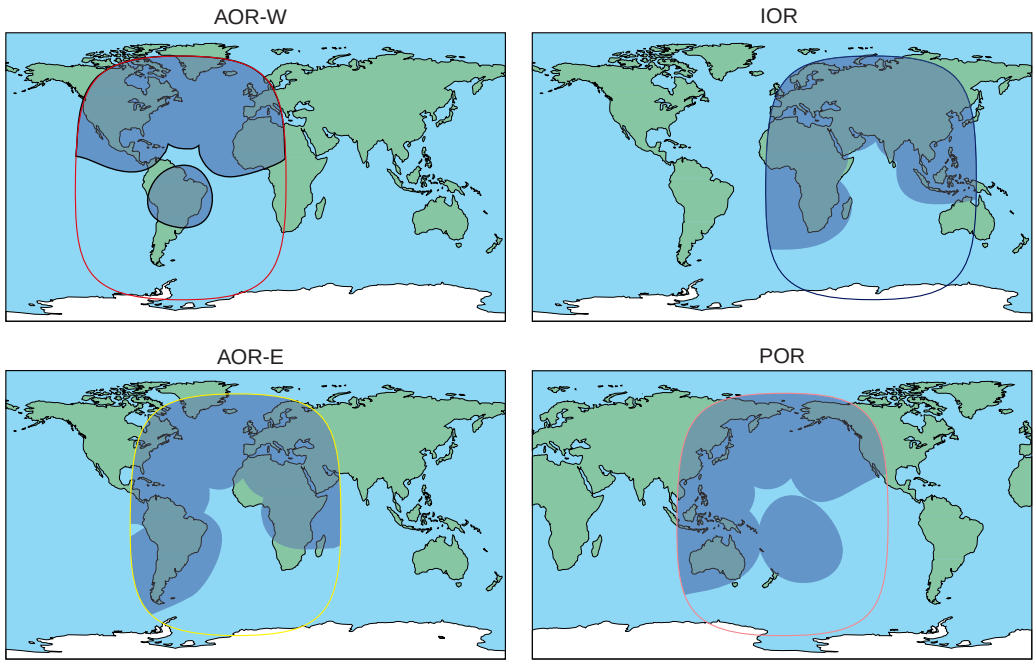
③ TEL: 870 or 871 Atlantic Ocean East Region (AOR-E)

④ TEL: 870 or 873 Indian Ocean Region (IOR)

⑤ TEL: 870 or 872 Pacific Ocean Region (POR)

Note: 871, 872, 873 and 874 are available until Dec. 31, 2008.
Only 870 is available from Jan. 1, 2009.

Coverage Map for Each Ocean Region



3.3 Phone setup

Refer to Menu Overview 1.

The Phone setup option of the main menu consists of the following choices:

1. Signals and tones
2. Active MSN
3. Backlight
4. Display Contrast
5. Text Size
6. ISDN protocol
7. Time format
8. Language
9. Terminal type
10. Handset Reset
0. About Handset

1. Select **Menu** from idle screen to open the main menu.
2. Use ▲ and ▼ to highlight the Phone setup option and choose **OK**.
3. Use ▲ and ▼ to highlight the desired option and choose **Select**.

Signals and tones

The Signals and tones option of the Phone setup menu consists of the following choices:

1. Ring volume
2. Ring tone
3. Message signal (Not used)
4. Alarm signal (Not used)
5. Key sound

Use ▲ and ▼ to highlight the desired option and choose **Select**, or press the key corresponding to the option number (e.g. press **2** to select the Ring tone option).

1. Ring volume

1. Press ▶ to increase the volume (slider moves to the right), and ◀ to decrease the volume (slider moves to the left).
2. Select **Test** to check the new setting and **Save** to store it.

2. Ring tone

1. Use ▲ and ▼ to highlight the desired option and choose **Select**.
2. Select **Play** to listen to the highlighted option before selecting it.
3. Press **Stop** to terminate the sound.

5. Key sound

1. Use ▲ and ▼ to highlight the desired option and choose **Select**.
   You can select “Beep” or “No sound”. “Click” can not be used.
2. Select **Play** to listen to the highlighted option before selecting it.

Active MSN

When making a call, the ISDN Handset identifies itself locally by its Multiple Subscriber Number (MSN).

Although specific MSN numbers may be programmed in the ISDN Handset for both the 4.8k Speech and 64K Speech services, only one of the services can be active at a time for outgoing calls.

The first ISDN Handset connected to a terminal gets the MSN numbers 20 and 30. Additional handsets will get increasing numbers.

The Active MSN option of the Phone setup menu consists of the following choices:

- 20: 4.8 kbps Speech (standard quality speech)
- 30: 64 kbps Speech (high quality speech)

Note: Selecting high quality speech also increases the call cost.

1. Use ▲ and ▼ to highlight the desired option.
2. Choose **Options** and **Select** to save the selected option.

Backlight

The Backlight option of the Phone setup menu is used to select the display backlight setting, and consists of the following choices:

- Off
- Automatic 4 secs
- Automatic 10 secs
- Automatic 30 secs
- Automatic 1 min (default)
- On

The backlight is turned on for the selected amount of time when any key is pressed. Select **Off** or **On** to turn the backlight permanently off or on.

Use ▲ and ▼ to highlight the desired option and choose **Select**.

Display Contrast

The Display Contrast option of the Phone setup menu is used to change the contrast setting of the display to optimize reading conditions.

1. Press ▶ to increase the display contrast (slider moves to the right), and ◀ to decrease the display contrast (slider moves to the left).
2. Select **Save** to store the new setting.

Text Size

The display information may be presented in two different character sizes:

- Small (Default)
- Large

Note: Text size selection applies to the Phone setup menu, the Last Calls list and to the display text indicating the current function of the soft keys. Other text appears as small.

ISDN Protocol

The ISDN Protocol option of the Phone setup menu is used to select ISDN protocol for the handset, and consists of the following choices:

- Euro ISDN. For connection to equipment conforming to the European ISDN standard.
- National ISDN-1. For equipment conforming to the NI-1 (National ISDN-1) standard.

Note: All ISDN devices and the CU must use the same protocol. By default the terminal and handsets use the Euro ISDN protocol.

Use ▲ and ▼ to highlight the desired option and choose **Select**.

Time format

The Time format option of the Phone setup menu is used to set the format of the time presentation.

The time displayed is GMT time and is updated automatically via the GPS receiver.

The Time format option of the Phone setup menu consists of the following choices:

- AM / PM
- 24H

Use ▲ and ▼ to highlight the desired option and choose **Select**.

Language

Only English is available.

Terminal type

The Terminal type option of the Phone setup menu is used to select the handset mode, and consists of the following choices:

- Automatic (For INMARSAT FLEET F77)
- Normal Mode (Not available)

Handset Reset

The Handset Reset option of the Phone setup menu is used to reset the handset settings.

Note: When selected, this option reverts all handset settings to their factory setting (including erasure of Last Calls list).

Choose **Select** and **Yes** to revert to factory settings. The operation may be cancelled by choosing **No** instead of Yes.

About Handset

The About Handset option of the Phone setup menu is used to view information about the ISDN Handset software version.

Choose **OK** to return to the Phone setup menu.

3.4 Selecting default Net service provider

Refer to Menu Overview 1.

The default Net service provider for an Ocean Region satellite service is automatically used if the user does not select another provider.

Note: When using a SIM card, selection of Net service provider is restricted to one of the allowed Net service providers. See Using a SIM Card in the INTRODUCTION section.

When the Restricted Net function is enabled, and also when using certain SIM cards, the selection of default Net service provider is not possible.

1. Select **Menu** from idle screen to open the main menu.
2. Use  and  to highlight the Set Network option and select **OK**.
3. Use and to highlight the desired Net service provider and select **OK**.

3.5 Priority calls

Refer to Menu Overview 2.
This main menu option is only available when the ISDN Handset is connected to the Distress Alarm Unit. The following call priority levels are recognized by the Inmarsat system:

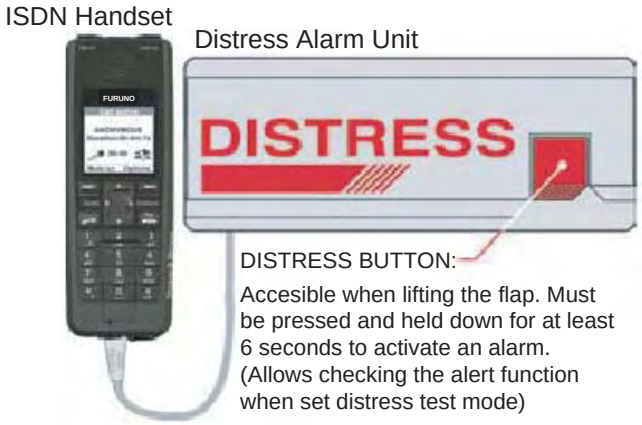
- Safety Call
- Urgency Call
- Distress Test (see Distress Alarm Unit)
- Test Buzzer (see Distress Alarm Unit)

For Safety Call and Urgency Call, specific telephone numbers are prompted for that must be provided by the Net service provider.

1. Select **Menu** from idle screen to open the main menu
2. Use ▲ and ▼ to highlight the Priority Call option and select **OK**.
3. Use ▲ and ▼ to highlight the desired option (Safety Call or Urgency Call) and select **OK**.
4. Enter the number provided by the Net service provider.

3.6 Distress Alarm

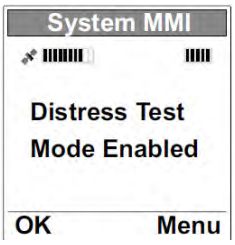
The Distress Alarm Unit allows activation of an alert transmission. Messages concerning alarm transmission and reception are displayed on the connected ISDN Handset. The operability of the Distress Alarm Unit may be tested.



Activate Distress Alarm

Note: This procedure will transmit a distress alarm. Only to be performed when utterly required.

1. Lift the flap located on the Distress Alarm Unit.
2. Press the DISTRESS BUTTON for at least 6 seconds to activate the alarm.
3. Wait for your Distress call to be answered by a RCC (Rescue Coordination Centre).



Activate Distress Alarm Test

Note: A real distress alarm may be transmitted if this procedure is not performed as described.

1. Select **Menu** from idle screen to open the main menu.
2. Use ▲ and ▼ to highlight the Priority Call option and select **OK**.
3. Use ▲ and ▼ to highlight the Distress Test option and select **OK**. The operation may be canceled by pressing .
4. Lift the flap located on the Distress Alarm Unit and press the DISTRESS BUTTON **WITHIN 30 seconds**, otherwise a real distress alarm is transmitted.
5. Press # and then select **Call** to initiate the Distress Alarm test call.
6. Wait for the test call to be answered by a RCC (Rescue Coordination Centre).

Activate Distress Alarm Unit Buzzer Test

1. Select **Menu** to open the main menu.
2. Use ▲ and ▼ to highlight the Priority Call option and select **OK**.
3. Use ▲ and ▼ to highlight the Test Buzzer option and select **OK**.

The Distress alarm buzzer sounds for a short period.

3.7 Setting serial ports

Refer to Menu Overview 2.

This main menu option is used to set parameters (e.g. data speed, format and flow control) for the RS-232 ports A and B.
It is also used to enable/disable the NMEA port used for reading external GPS information when the internal GPS information is not usable.

1. Select **Menu** to open the main menu.
2. Use ▲ and ▼ to highlight the Ports option and select **OK**.
3. Use ▲ and ▼ to highlight the desired option and select **OK**.

Port A / Port B

Select parameter (speed, format or flow control) and the desired parameter value. Confirm selection(s) by selecting **OK**.

Change Port B driver type

Port B may have the driver type changed between RS-232 and RS-422.

1. Select the Driver Switch menu option for Port B, and use ▲ and ▼ to highlight the desired driver type. Confirm the selection by selecting **OK**.
2. Reboot the CU for the new setting to take effect. The disabled port type will be disconnected.

3.8 Information available

Refer to Menu Overview 3.

The information available here is read-only information generated by the system. The Information option of the main menu consists of the following choices:

- Diagnostics (turn diagnostics on and off, see “About Version Info”)
- Forward ID (view terminal ID)
- Version Info. (see “About Version Info”)
- Network Info. (view ocean region and spot no.)
- Alarms & Msgs (see About Alarms & Messages)
- Position (view position values)
- Speed/Course (view speed and course values)

Note: Course (over ground) not to be used for navigation.

1. Select **Menu** from idle screen to open the main menu.
2. Use ▲ and ▼ to highlight the Information option and select **OK**.
3. Use ▲ and ▼ to highlight the desired item and select **OK**.

About Version Info

The Version Info option of the Information menu consists of the following choices:

- System (view system version)
- Ctrl SW (view control software version)
- DSP* (view DSP software version)
- Monitor* (view boot software version)
- KDB* (view KDB software version)
- RFB* (view RFB software version)
- ATB* (view ATB software version)

*Available only when Diagnostics = On

About Alarms & Messages

The Alarms & Msgs option of the Information menu consists of the following choices:

- Clear Causes (view network connection error info)
- Alarms List (see View Alarms)
- Info. Log (view alarm history)

View Alarms

Information about the alarm is found in the Alarms List. The alarm indicator flashes when an alarm condition occurs:

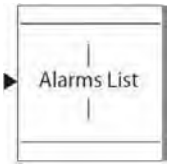
Alarm indicator

The indicator stops flashing when accessing the Alarm List. If an alarm condition permits, the alarm indicator continues to be displayed.

1. Select **Menu** from idle screen to open the main menu.

2. Use ▲ and ▼ to highlight the Information option and select **OK**.

3. Use ▲ and ▼ to highlight the Alarms & Msgs option and select **OK**.



4. Use ▲ and ▼ to highlight the Alarms List option and select **OK**.

   The alarms list is presented.

5. Use ▲ and ▼ to scroll through the list, and select **OK** to view time and date information for the alarm displayed.

4. OPERATION FROM PC

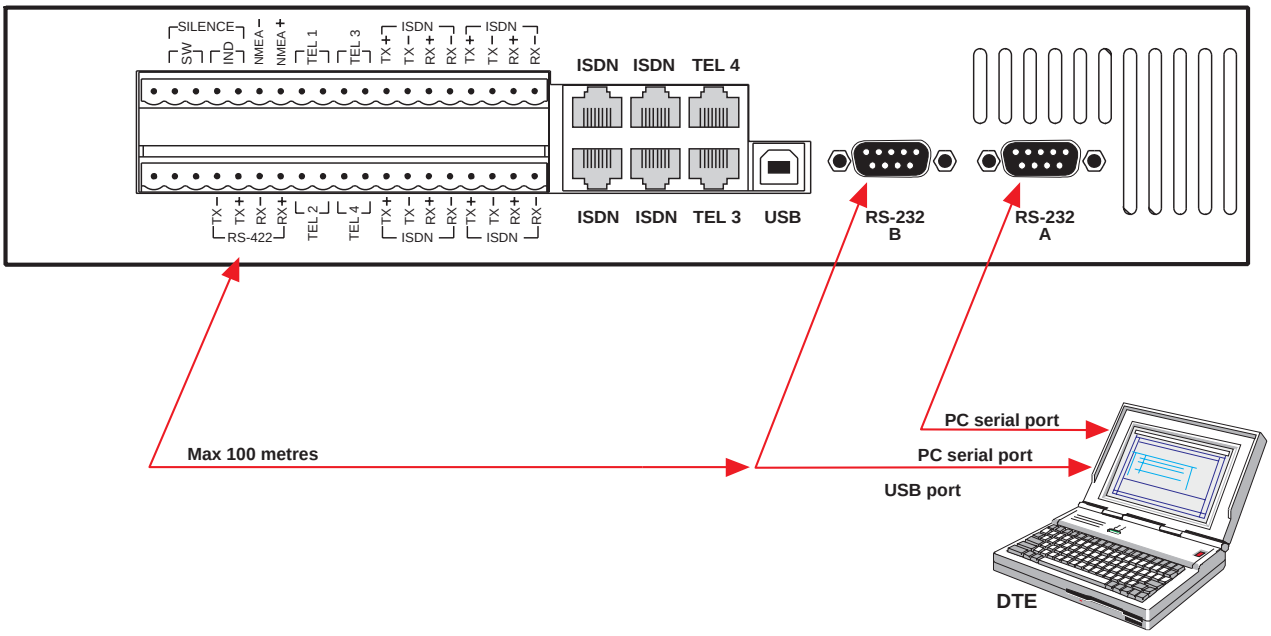
4.1 Installing the PC program

The **SAILOR vtLite** program allows FELCOM 70 to be operated or configured from a PC, including functions such as:

- Phone book
- Traffic log
- Configuration of ports (ISDN/analogue/RS-232/USB/RS422)

For an explanation of the functions, *see later in this manual*.
The **SAILOR vtLite** program is available on the enclosed CD and must be installed on the PC hard disk.

Note: To install the **SAILOR vtLite**, the user name of the PC should be one-byte characters.



Note: Use **SAILOR vtLite** program 7.2 with the system program version REL3.5 of the communication unit.

Note: The SAILOR vtLite software works in Windows XP SP2 and Windows Vista.

Procedure:

1 Insert the CD and open it from the “My Computer” icon.

2 Install the “**SAILOR vtLite**” to the PC hard drive.

a. Open the “SAILOR vtLite” folder.

b. Double-click the “setup.exe” ic

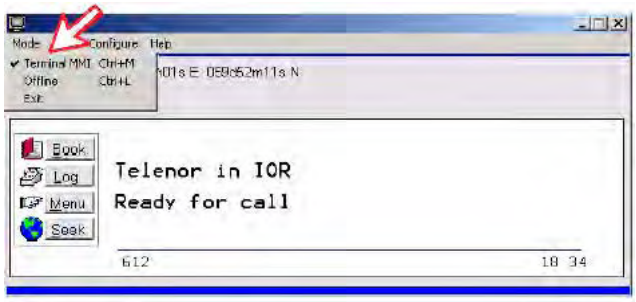
on and follow the instruction displayed.

c. Double-click the “furuno.bat” icon.

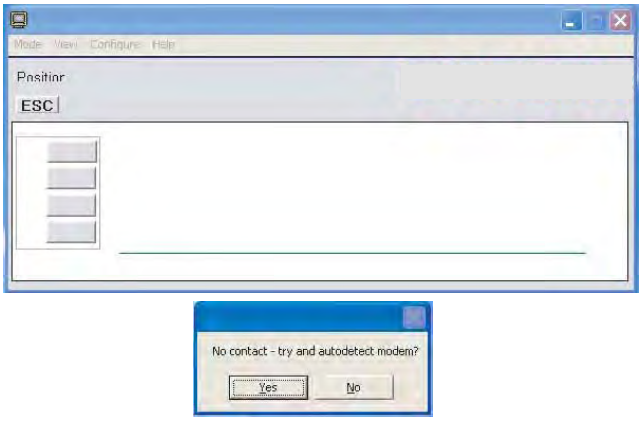
3 Connect the serial cable between the PC serial port and the RS-232 port on the FELCOM 70 Communication Unit. *See previous page*.

4 Start the SAILOR vtLite program by clicking **Start>Programs>SAILOR vtLite**.

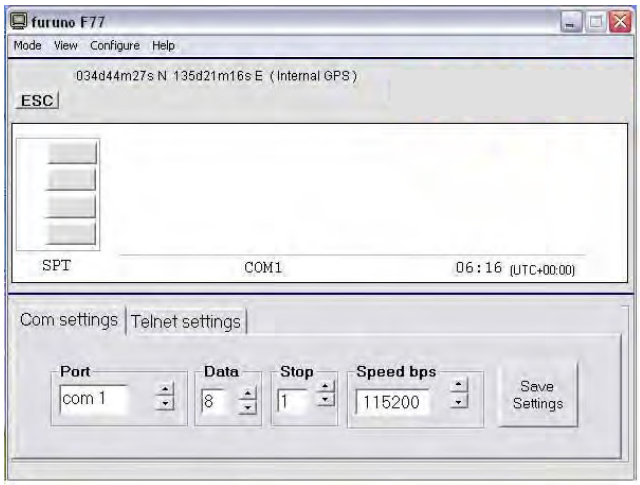
5 Switch ON the Communication Unit.
If no contact, click **Mode>Terminal MMI**.



6 If no contact, press **YES** button to try auto detect.



7 Click **Configure>Port** to check the port settings.



4.2 Starting up

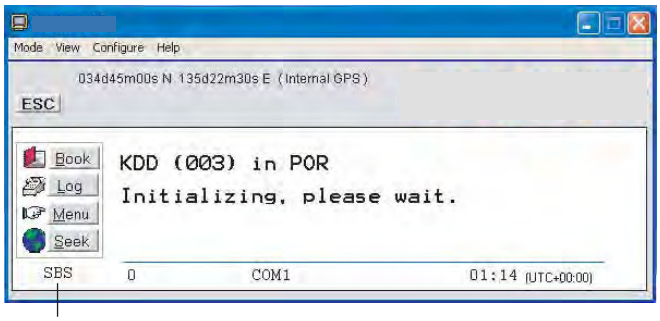
1 Switch ON FELCOM 70. See figure on page 2-2 for location of the ON/OFF switch.
The initialization starts and its progress is displayed on the ISDN handset screen as follows:
Fleet Euro – ISDN ⇨ Enumerating ⇨ Initializing ⇨ Searching

2 Turn ON the PC. After the indication “Initializing” appears on the ISDN handset screen (30 seconds after turning on power), click **Start>Programs> SAILOR vtLite**.

Note: To prevent system hang-up or abnormality such as changed ISDN handset ID, start up the system by following the above procedures.

1) The satellite search program is initialized.
*See also **"3.2 Satellite search"**.*

1

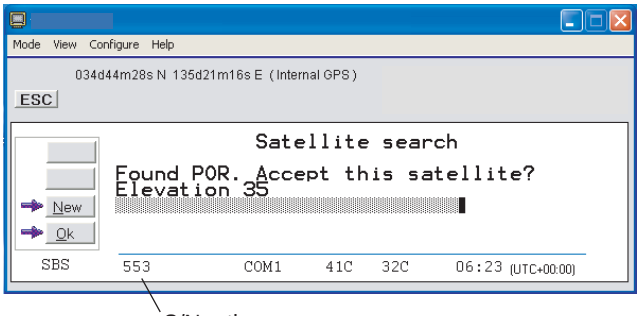


Beam was selected. In global beam, "GLB" is shown.
If spot selection is not complete, SBS is shown as above.

2) FELCOM 70 starts searching for **last known satellite** (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.

3



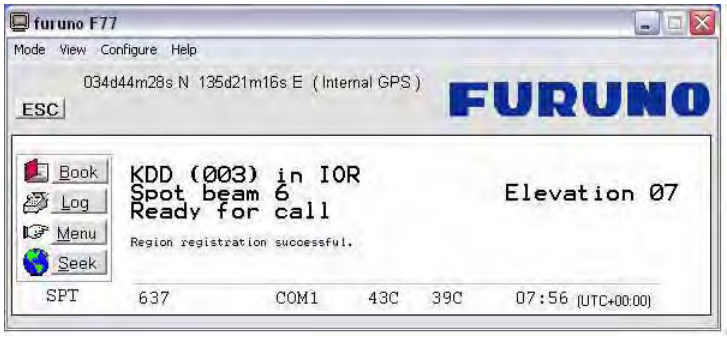
S/N ratio

Note: It is recommended that the signal strength reading (**S/N**=**S**ignal/**N**oise ratio) should be at least 550, typically 660. The antenna will automatically fine-tune to the best signal and accept it.

Clicking **Seek** starts the search again. If required, select a specific satellite by clicking **New**.

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

4



*To make a connection, see **"2.6 Making a call"***

4.3 Phone book

Adding and editing entries can also be done from the handset, *see "Chapter 2 **OPERATION FROM HANDSET"**.*

Phone book capacity

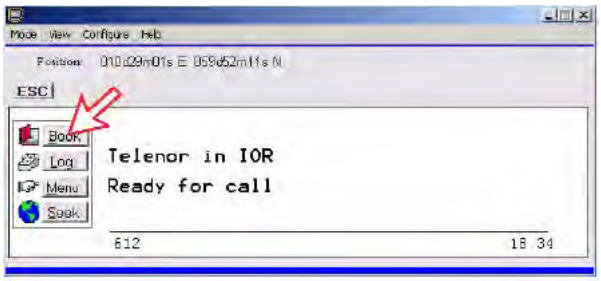
	CU	SIM card (Data vary with card type)
Phone numbers:	100 entries	100 entries
Number length:	19 digits	19 digits
Name length:	29 characters	12 characters
Entry numbers:	0 – 99	100 and up

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

Abbreviated dialing (prefix 23)

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

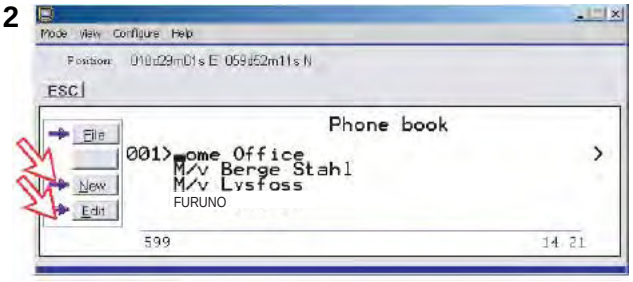
1



2 Scroll through list [↑]/[↓] to wanted entry.

Example: dialing [2][3][1][0][#] on the analogue telephone or ISDN keypad fetches and sends the telephone number stored under short number entry 15.

2

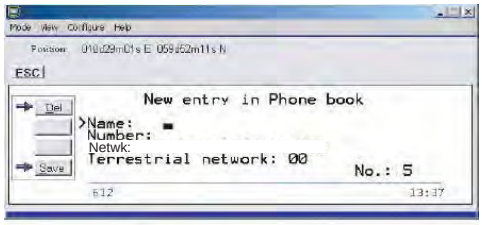


Adding or editing entries

3 Clicking **New** (window **2** on previous page) opens the window used to add an entry to the book. To select a network provider, choose the NETWORK and then a provider you want.

Use **Del** to modify. **Save** stores the new entry.

3

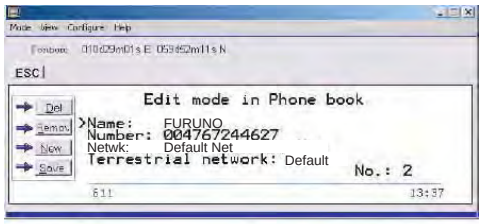


4 Clicking **Edit** (window **2** on previous page) opens the window allowing changes to be made in the Phone book.

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**" on page 5-11.
Terrestrial network is normally "not in use" in the Inmarsat system.

4



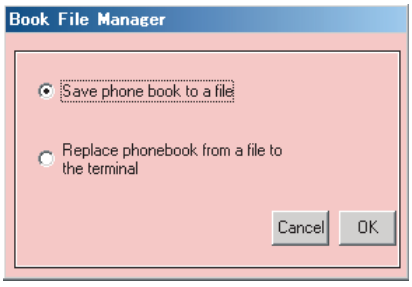
Netwk = Net provider
Another Net provider may be selected when dialing this number from the phone book. If no selection, the system uses the default one.

Terrestrial network
It is possible to change Terrestrial network for the selected Net provider (00 is most common). Call your Net provider for more information.

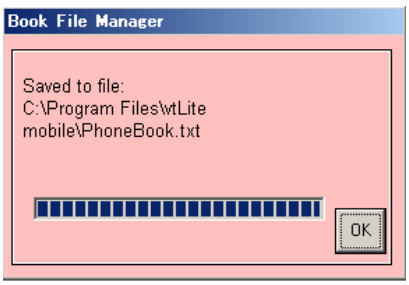
Saving entries to PC (Owner level only)

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

5



6 Choose either one and press OK button.



4.4 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:

- Voice calls
- Mobile Data Service calls

Packet switched data calls (Mpds) including:

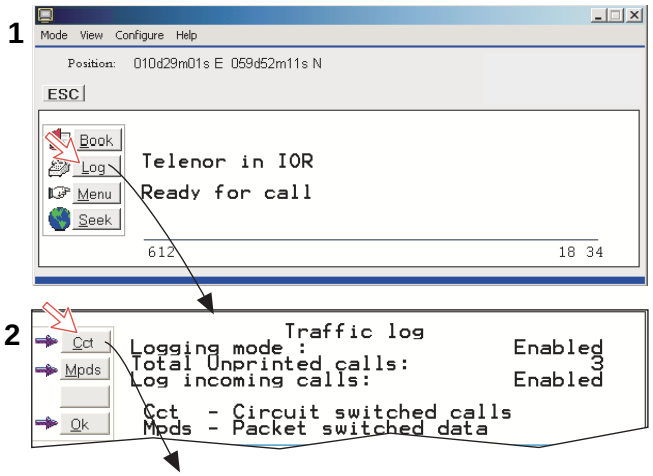
- Mobile Packet Data Service calls

The FELCOM 70 owner may set the log output mode as follows, *(see **"4.5 Traffic log settings**"):*

- Paused
- Cleared (stops logging and clears the log)
- Enabled
- Enabled & automatic printout to RS-232A
- Enabled & 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).



(See next page.)

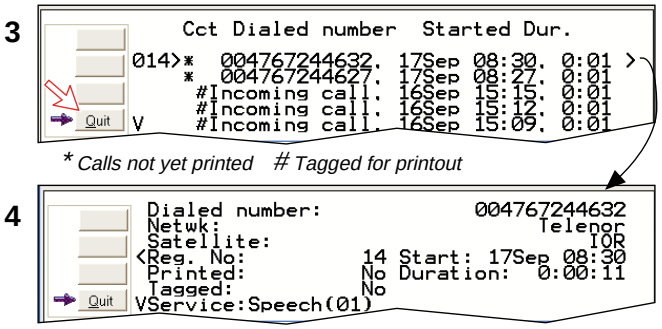
Circuit switched calls:

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:

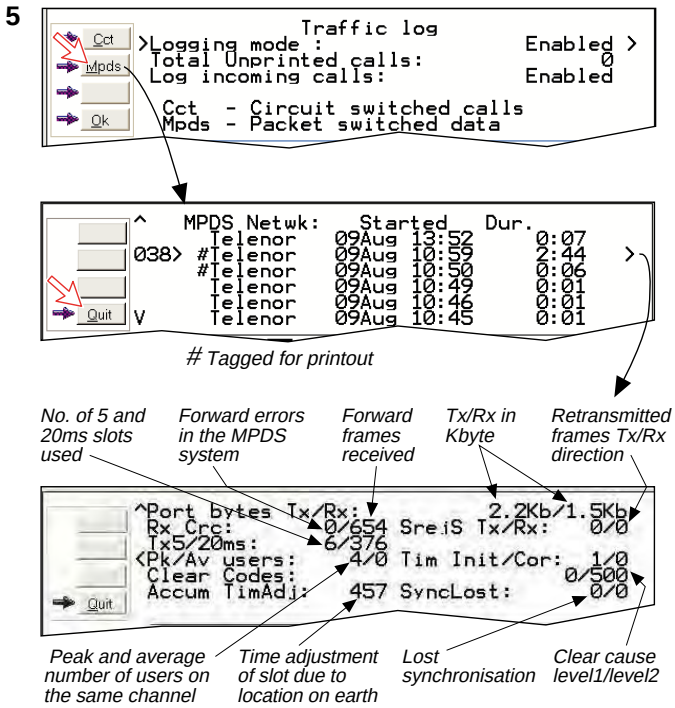
5 Clicking **Mpds** displays the list of *Mobile Packet Data Service* calls.

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.

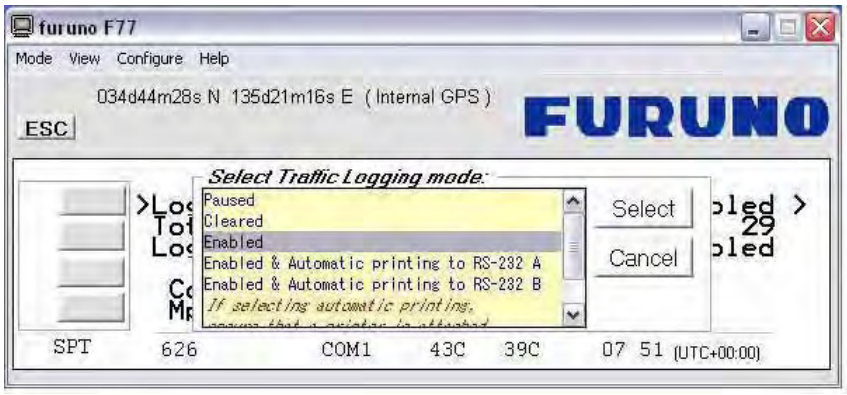
Quit reverts to main window.



4.5 Traffic log settings

*(owner level only, see "**Shifting to owner level**" on page 5-4.)*

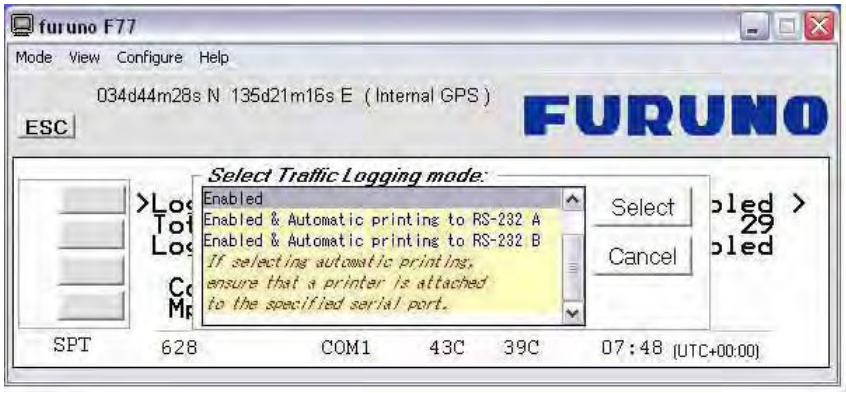
1 In the Main window, clicking **Log** opens the Traffic log window, which displays the current log mode, number of unprinted calls, and whether logging of incoming calls is enabled/disabled. Point to **Logging mode**.
The following “Select Traffic Logging mode” window appears.



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.
- **Enabled & Automatic printing to RS-232A*:** output to local printer
- **Enabled & Automatic printing to RS-232B*:** output to local printer

  Note: Before selecting “Automatic printing”, confirm that a serial printer is connected to the RS-232A or RS-232B port, indicated in the alarm message. If a serial printer is not connected to RS-232A or RS-232B port, never select an item marked with asterisk (*).



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:

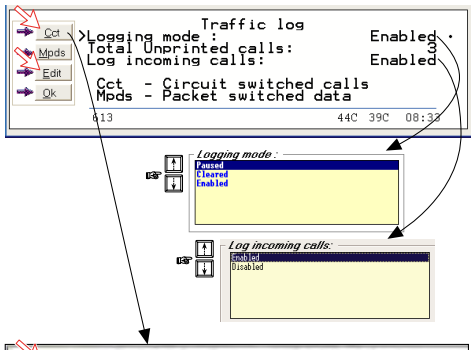
2 Clicking **Cct** in the Traffic log (window **1** shown in the figure below) opens the list of all call records except MPDS calls.

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

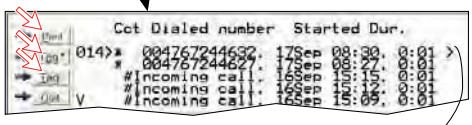
- Clicking **Tag*** marks *all* calls with a hash, which adds the records to the printout file.
- Clicking **Tag** marks the *selected* call with a hash, which adds the record to the printout file.
- Clicking **Tag** again untags a selected record.

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

1

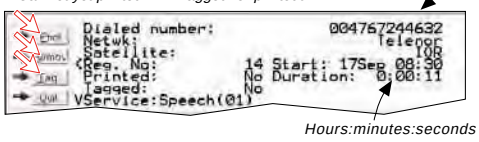


2



* *Call not yet printed* # *Tagged for printout*

3



Hours:minutes:seconds

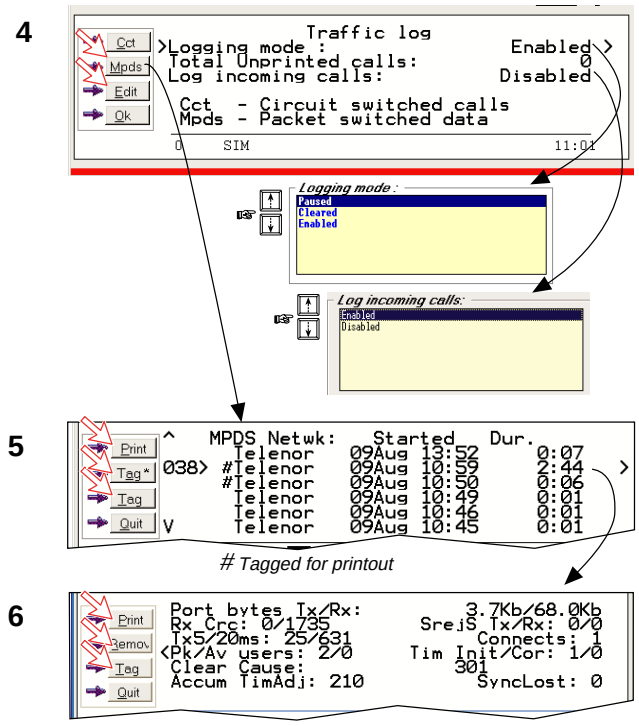
Mobile Packet Data Service calls:

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

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

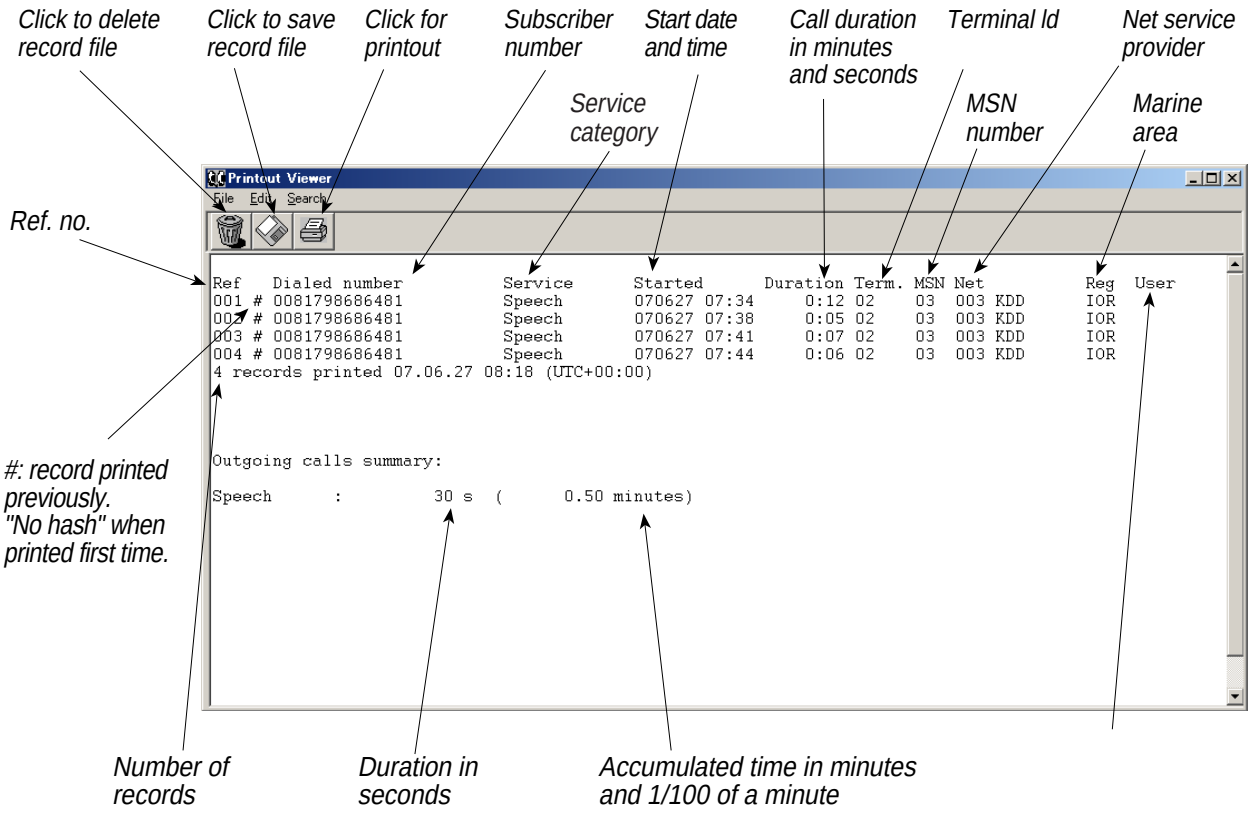
- Clicking **Tag*** marks all calls with a hash, which adds the records to the printout file.
- Clicking **Tag** marks the selected call with a hash, which adds the record to the printout file.
- Clicking **Tag** again untags a selected record.

6 Pressing ⏎ at a record when in window (**5**) displays detailed call data.



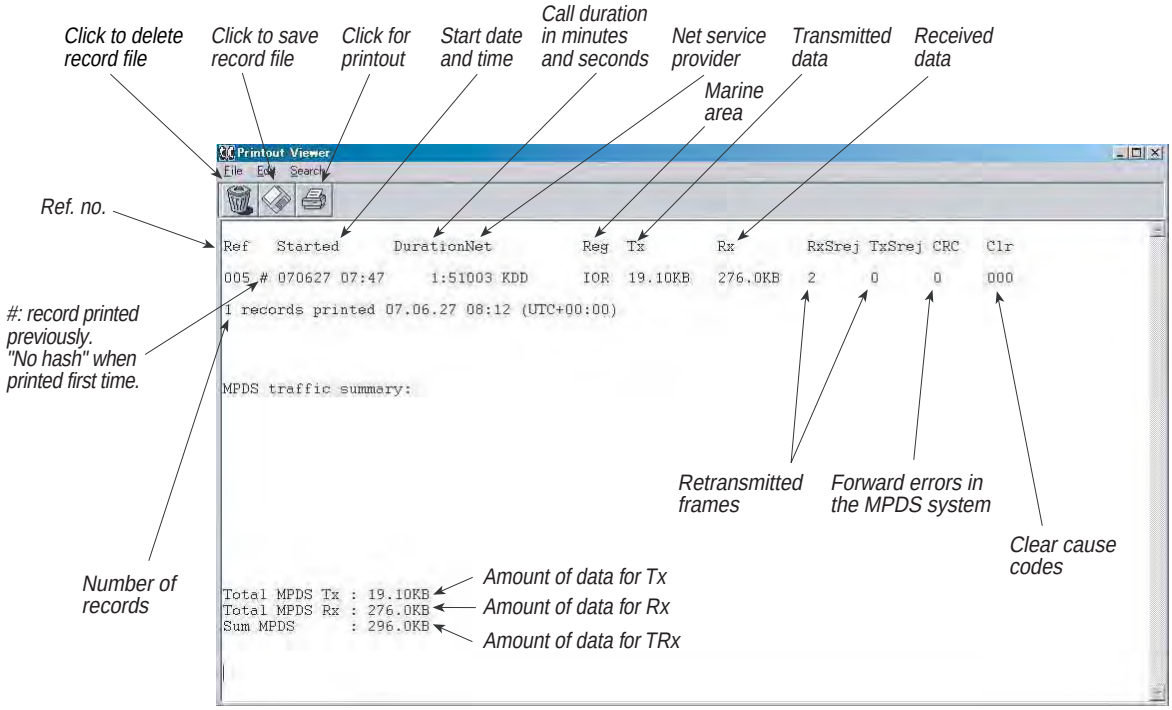
4.6 Traffic log printout viewer - normal calls (Cct)

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 "**5.15 Print handling setup**".*



4.7 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 "**5.15 Print handling setup**".*



4.8 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 ISDN handset.

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

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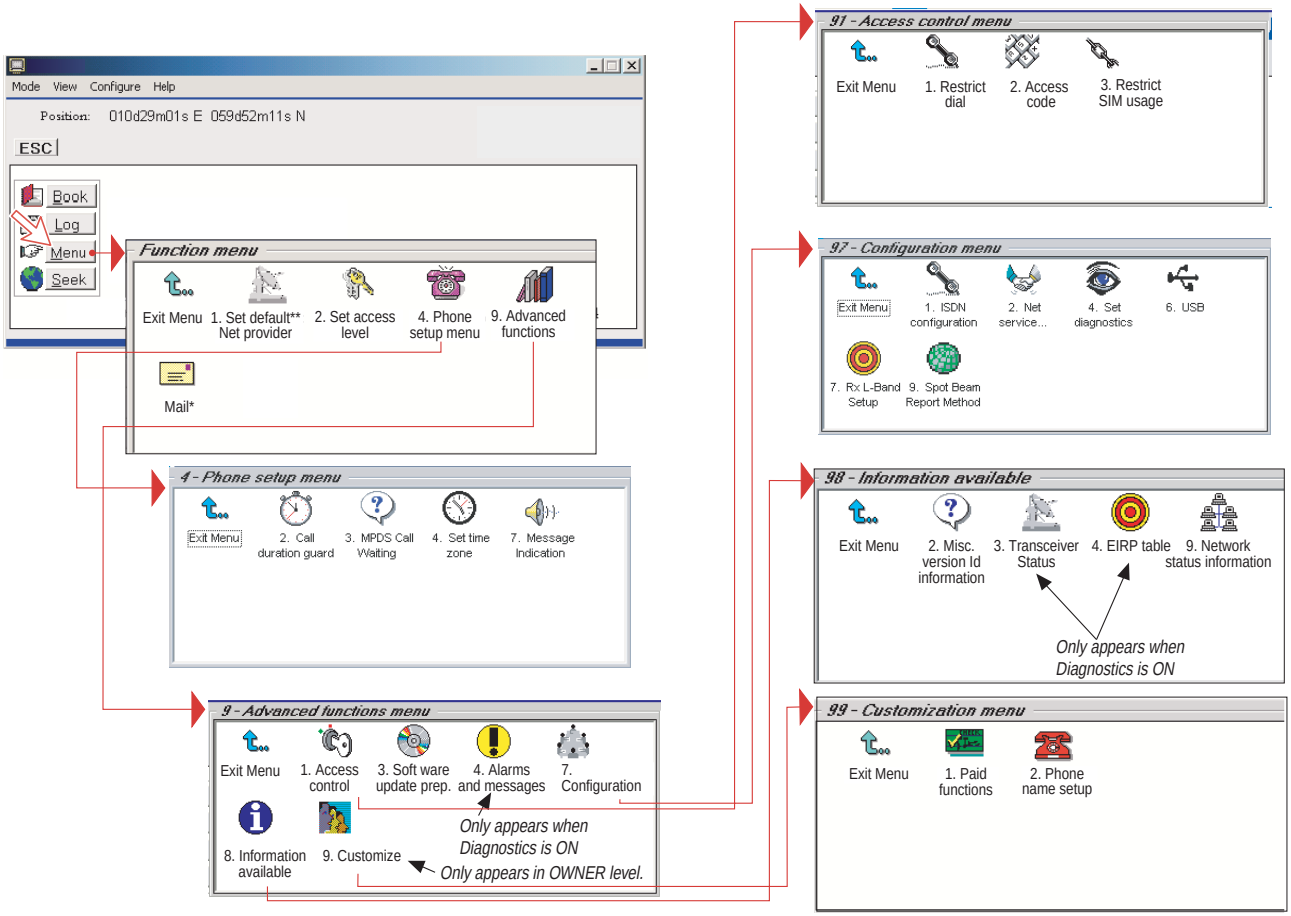
5. CONFIGURATION FROM PC

5.1 Menu functions

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



*: "Mail" is not in use.
**: This icon is not displayed when using SIM card.

5.2 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 "**3.4 Selecting default Net service provider**".*
2	**Set access level**	*Allows shifting between user level and owner level, changing PIN code and owner password. See "**5.3 Access level**".*
4	**Phone setup** menu	
42	Call duration guard	*Sets maximum call duration for 64 kbps calls.*
43	MPDS Call waiting	*Calls may be received during an MPDS session.*
44	Set time zone	*Sets time zone.*
47	Message indication	*Switches indication of received call on/off.*
9	**Advanced functions** menu	
91	**Access control** menu	*See "**5.6 Advanced functions**".*
911	**Restrict dial**	*Only allows calls from Phone Book. List of barred numbers may be established.*
912	**Access code**	*Set personal codes for using FELCOM 70.*
913	**Restrict SIM usage**	*Only allows calls with specific card, no card or any card.*
93	**Software update prep.**	*Prepare software update.*
94	**Alarms and messages**	*See information on page 7-4.*
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*
976	**USB**	*Choose single port or dual port for USB operation.*
977	**Rx L-Band Setup**	*Choose ON or Off as appropriate for DGPS port on the CE.*
979	**Spot beam report method**	*Sending spot ID or position*
98	**Information available**	*See "**5.6 Advanced functions**".*
982	**Misc. version Id information**	*Displays a series of version information windows.*
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 "**5.6 Advanced functions**".*
991	**Paid functions**	*Not in use*
992	**Phone name setup**	*Allows altering the phone name.*

5.3 Access level

The FELCOM 70 user program (SAILOR vtLite) 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 FELCOM 70 in operation.

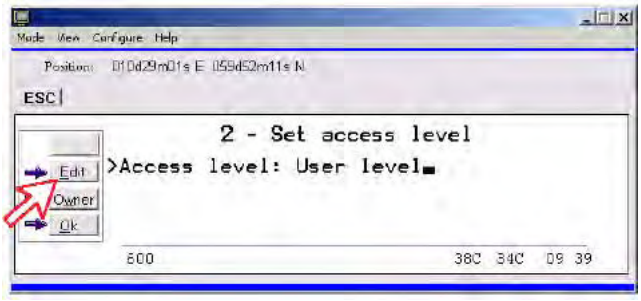
5.3.1 Activating/Changing user PIN code

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

1

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

2



3 Key in:

- Old PIN code (default: 1234)
- New PIN code (4-8 digits possible)
- Retype to confirm

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

3

- **Note1:** If you want to omit entering the PIN code at power up, click **Ok** without entering neither “New PIN” nor “Retype new PIN”. If you want to recover the PIN code previously used, enter the old PIN code. If you have forgotten the PIN code, login with [*] + owner password at power up. The user password is reset to default (1234) at this time. However, the reset can not be done if you are using a SIM card.

- **Note2:** If a wrong PIN is entered consecutively, key entry is disabled for 1 minute. If the system is left under this condition for 1 minute, the PIN prompt screen appears again. (Consecutive entries of wrong PIN codes are barred to prevent a registered PIN from being hacked.)

5.3.2 Functions requiring owner level

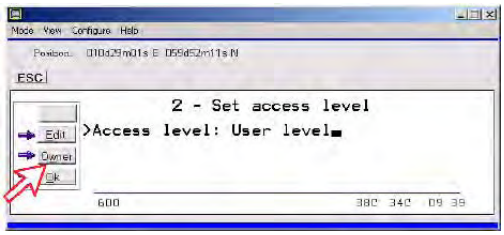
Programming of the functions below requires that the user access is set to **OWNER LEVEL:**

- 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.

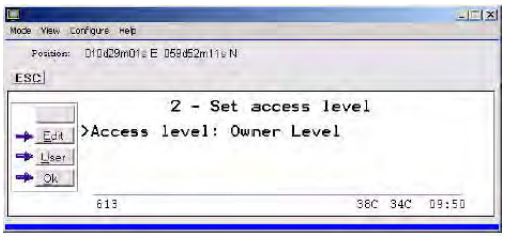
1



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**.

2



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

3

4 Click **Ok** following each entry and store new password.
To revert to **User level**, open the "**Set access level**" window and click **User**.

5.4 Selecting default Net service provider

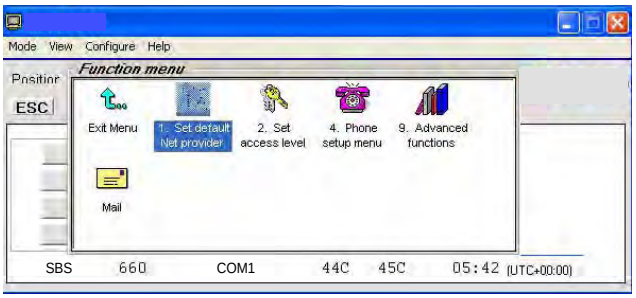
The default Inmarsat Net service provider for a satellite (Ocean Region) is automatically used if the user does not select another one when making a call. Make sure that you choose the Net service provider who commissioned the equipment. You will otherwise be barred or charged additional rate. In this 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:

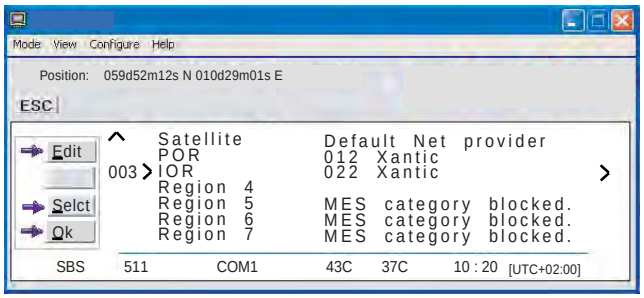
1 On the **Function menu**, double-click the **Set default Net provider** icon to display the current selections.

1



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

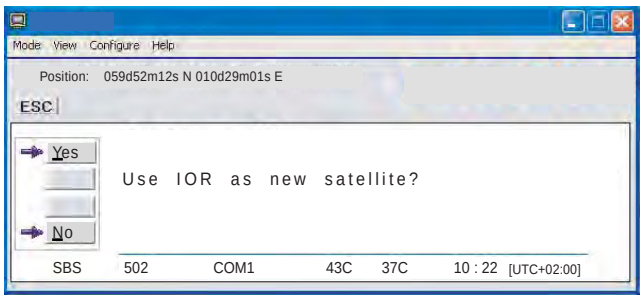
2



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

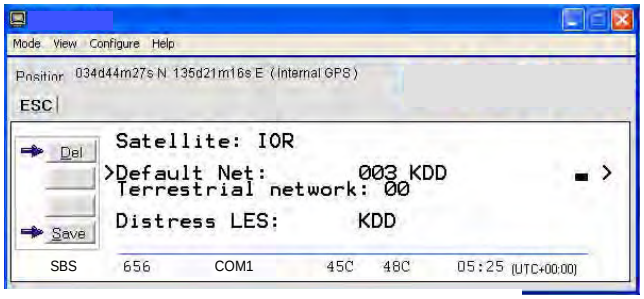
To change default Net service provider for a satellite region, see next page.

3



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

4

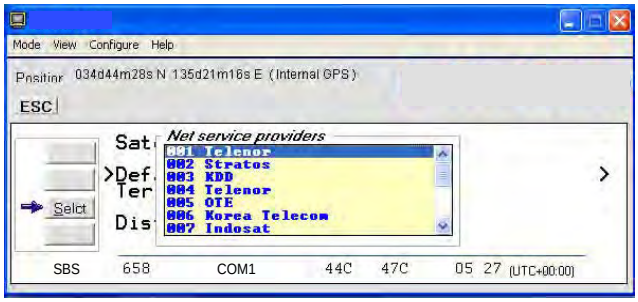


Terrestrial network
It is possible to select different terrestrial network. If no selection, the system uses the default net: 00.

Distress LES
Automatically selected by the system. Can only be changed by selecting another Net service provider.

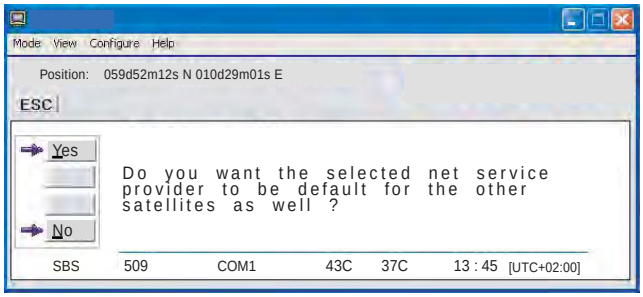
5 Scroll to required Net provider: [↑]/[↓], and press [↵R] to enter chosen Net as default.
Save stores the selected Net provider for this satellite (Ocean Region).

5



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

6



5.5 Phone setup

This phone setup menu includes the functions:

- Limitation of call duration
- Setting time zone
- Indication of received calls(See next page.)

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

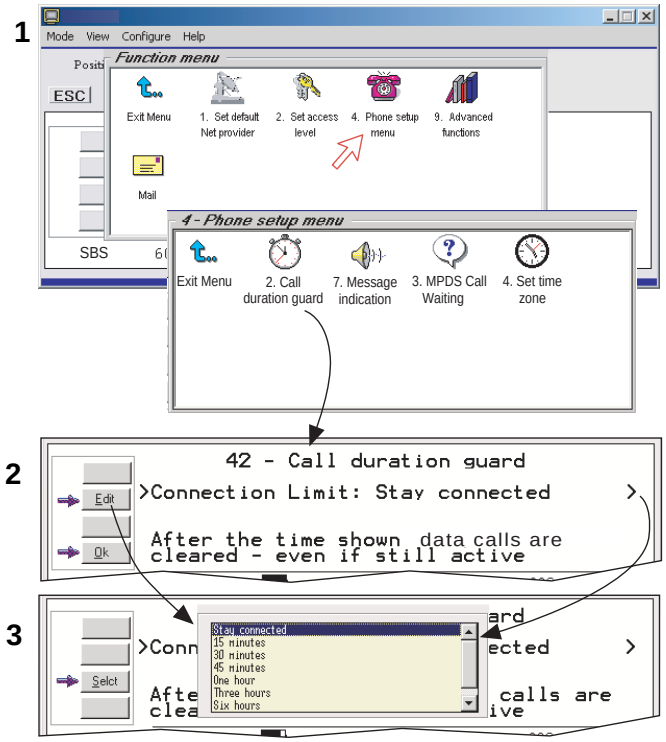
Call duration limit

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 **Select** to store the setting.

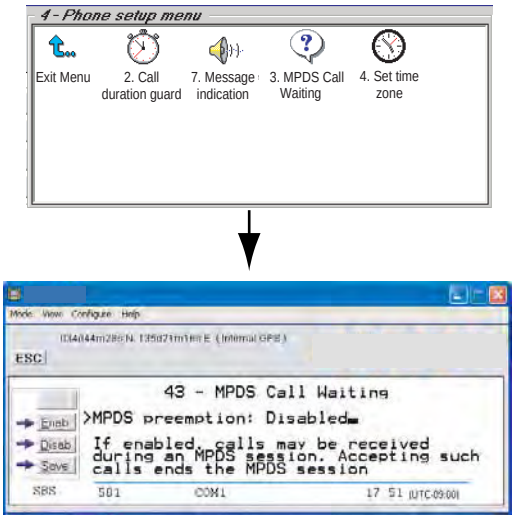


MPDS call waiting

The MPDS call waiting is to notify the presence of a fixed-originated routine priority voice or SCPC data call to a dialed-MES that is engaged in an on going MPDS call. Support for call waiting allows a user to remain connected to the MPDS network without worrying about missing a call.

The default is “disabled”. If enabled, calls may be received during an MPDS session. Accepting such calls ends the MPDS session. Note that the call waiting functionality must be implemented on the LES.

1 Double-click the **MPDS Call Waiting** icon.



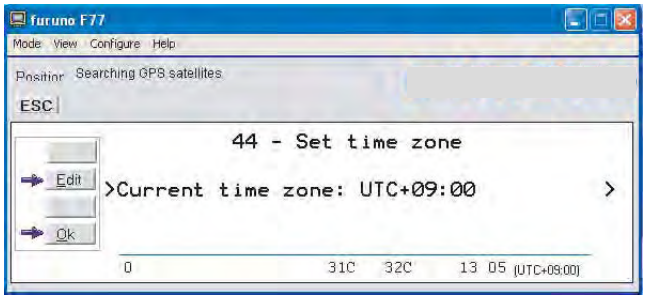
2 Click the **Enab** or **Disab** button.
3 Click the **Save** button to store the setting.

Set time zone

The UTC time is displayed, getting from the GPS. To display local time, set time zone as follows.

1 Double-click the **Set time zone** icon.
2 Press the **Edit** button.

2



3 Choose the time difference and press the **selct** button.

Message indication

When the Massage Indication function is set On, a received data and/or fax call is signaled in all FELCOM 70 Display Handsets:

The ringing stops when pressing  , or when the Call is finished.

Data call:

F2M = Fixed-to-Mobile

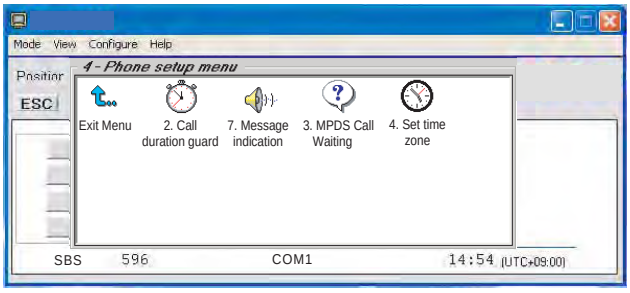
Fax call:

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

Setup:

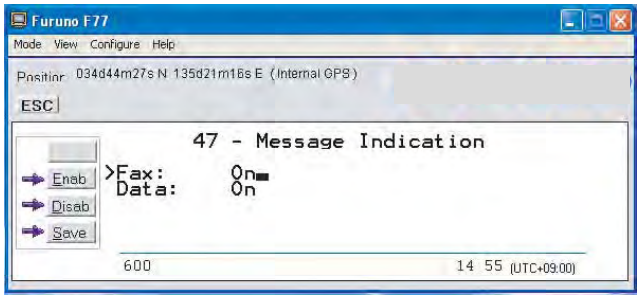
1 Double-click the **Message Indication** icon in the **Phone setup menu**.

1



2 Select **Fax** or **Data** and **Enable** or **Disable** indication of received messages, as required.
Press **Save** to store the settings.

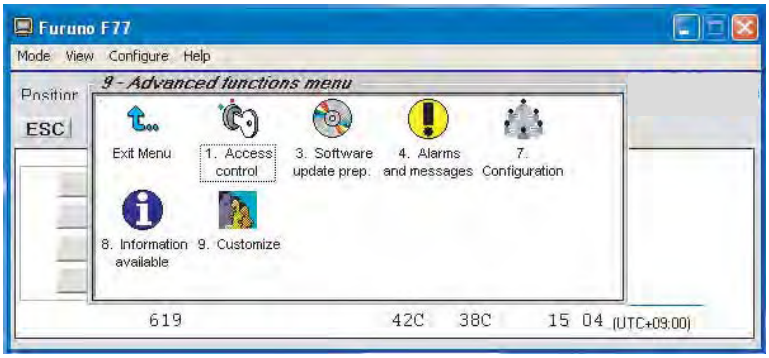
2



5.6 Advanced functions

"9 Customize" is accessible from **OWNER LEVEL** only. The OWNER LEVEL is protected by password. For shifting to owner level and assignment of password, *see "**5.3 Access level**".*

" 4 Alarms and messages" is accessible when **Diagnostics** is turned ON.



The Advanced functions include the following menus.

- **Access control:** Restrict dial
  Access code
  Restrict SIM usage
- **Software update prep:** Prepares software update
- **Alarms and messages:** Indicates alarms and messages. See page 7-4 for details.
- **Configuration:** Net service provider names
  Set diagnostics
  ISDN configuration
  USB port setup
  Rx L-Band Setup
  Spot Beam Report Method
- **Information available:** Misc. version Id information
  Network status information
  *(when diagnostics is ON, see "**5.9.3 Set diagnostics**")*
- **Customize:** Phone name setup (owner level)
  Paid functions

5.7 Access control

5.7.1 Restricted dialing

The restricted dialing function allows the owner to establish a Barred list of subscriber numbers that cannot be called; or set FELCOM 70 for dialing from Phone Book only. The restricted dialing modes prevent misuse of FELCOM 70.

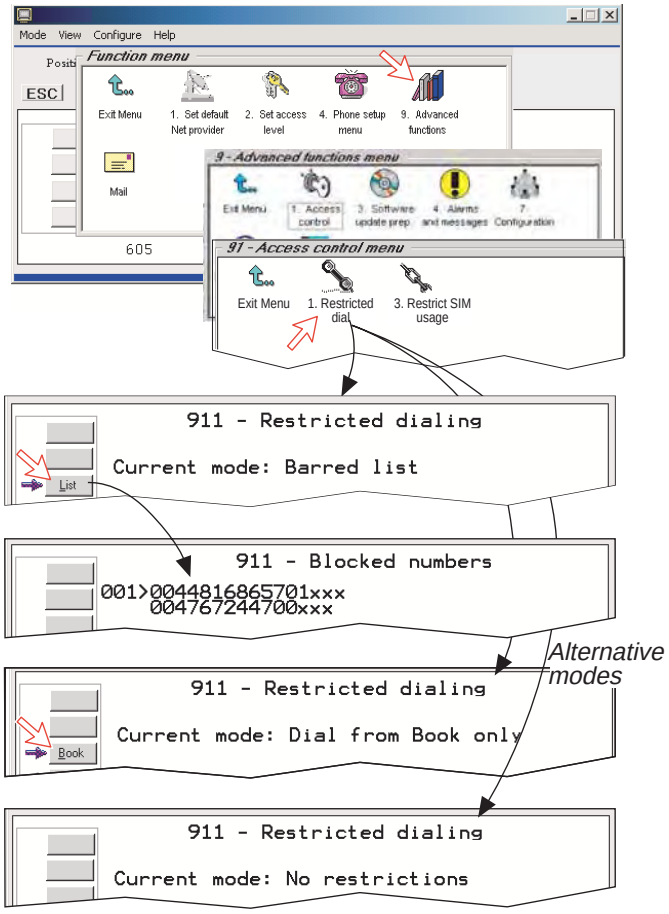
- **Barred list**, which may contain up to 10 phone numbers or part of numbers that **can not** be called. E.g. the entry "0087" in the barred list prevents all mobile-to-mobile calls.
- **Dial from Book only**, which restricts calls to the numbers in FELCOM 70 Phone Book. It is still possible to append: 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 **"5.7.4 Restricted SIM usage"**.*
- **No restrictions.**

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*



5.7.2 **Restricted dialing setup** (owner level only)

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

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

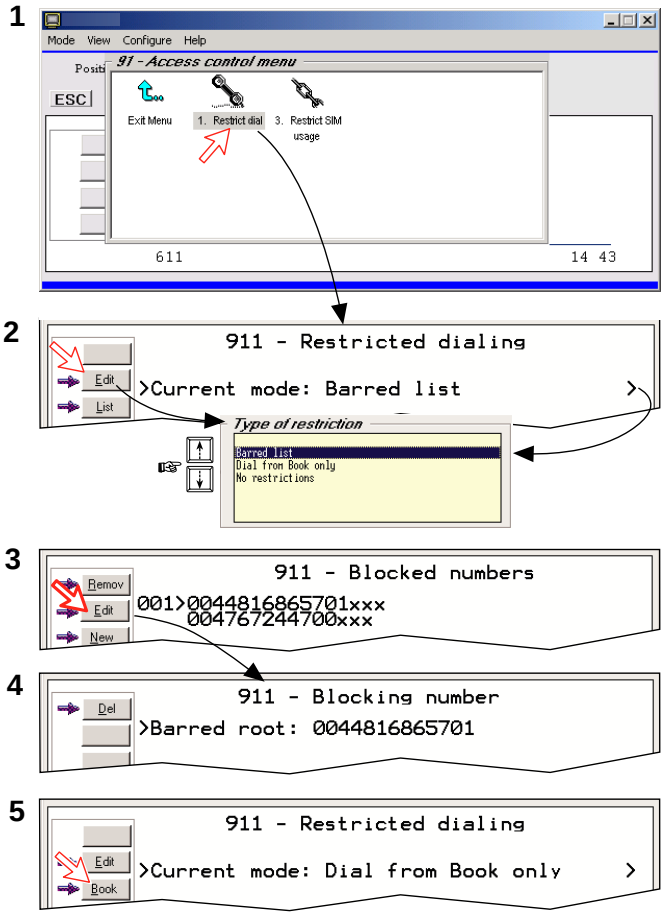
2 The **Restricted dialing** window shows which list is currently active.
Edit allows selection of restriction mode. Scroll up/down to select.
(**Selct** enters the chosen mode)

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.

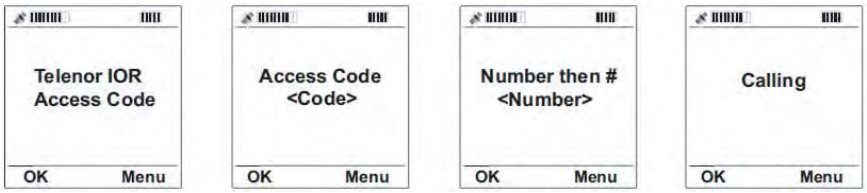
Note: Remember to revert to **user** level



5.7.3 Access code (owner level only)

Access code can be activated for up to 25 users (for 4.8 kbps speech and 64 kbps 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 **"5.13 MSN configuration"**. Entering the personal code allows the subscriber number to be dialed, e.g.:*

ISDN Handset (External communication)



Press . The display above appears.

Enter code and press .

When accepted, enter number and press .

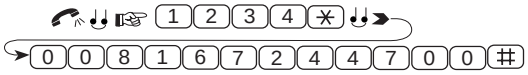
The call is set up.

ISDN handset (Internal communication)

- Press key and dial ✱, ✱, MSN, #.
- Press key and enter access code (1 to 8 digits). After the message "Number then#" appears, dial 1, 0, 3, MSN, # or ✱, ✱, MSN, #.

MSN is two-digit internal phone number.

Analogue telephone (External communication)

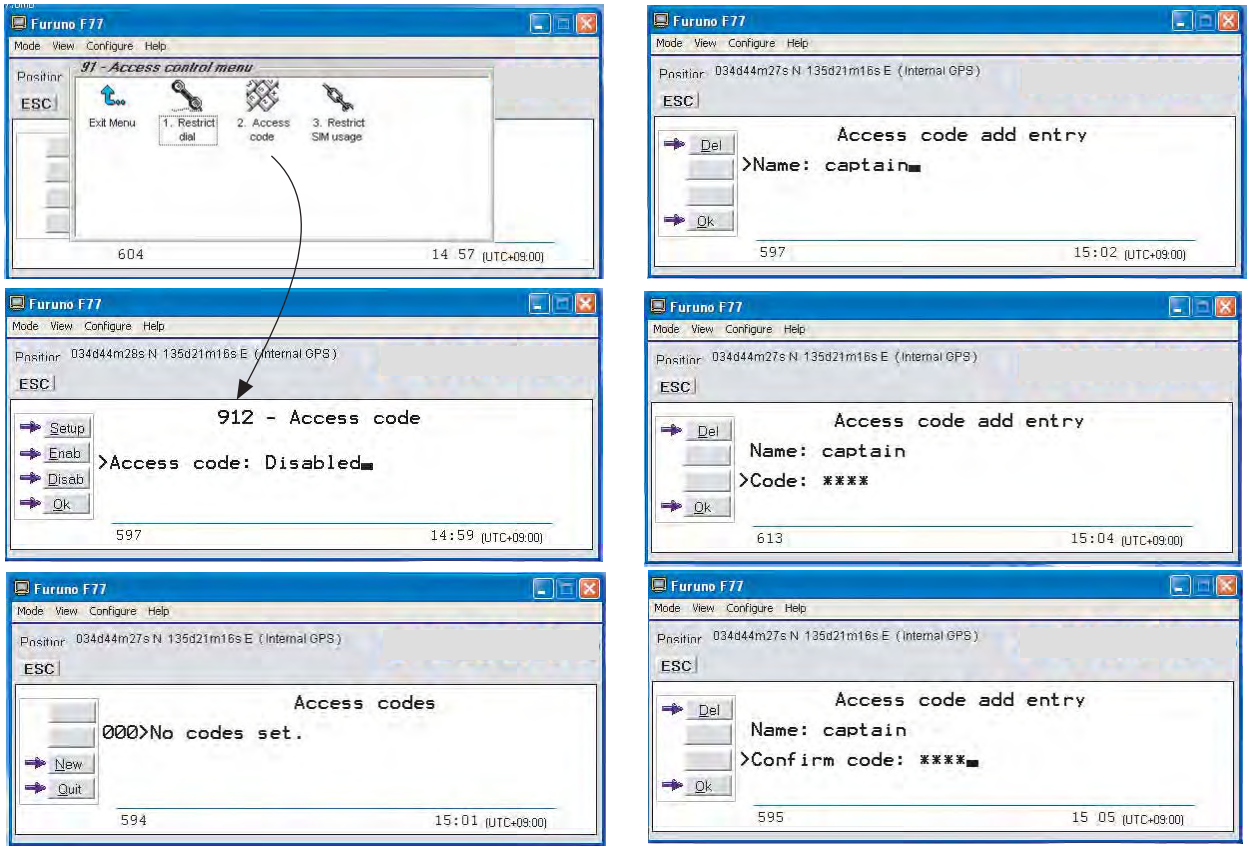


Note 1: Dial input cannot be corrected by **DEL** key when an access code has been set. When you misdialed on an ISDN Handset, hook it on once and then repeat the call initiation procedures from inputting an access code. Once an access code has been set, the dialing signal from the Handset is sent to the mobile terminal with each key input (the same as when dialing from an analog telephone). Therefore, correction by **DEL** key is not possible.

- **Note 2:** For old type handset, **Phone Book** key is unavailable when access code has been set. When an access code has been set, utilize a prefixed call "23XX#" (XX: registered number on Phone Book). **Phone Book** key does not work by the same reason as above.

Setup:

1 Double-click the **Access code** icon in the **Access control menu** and press the (Setup) button.
2 Pressing **New** opens the **Access code add 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.



5.7.4 Restricted SIM usage

Allowed SIM
FELCOM 70 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.

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 FELCOM 70 for operation from a specific card only.

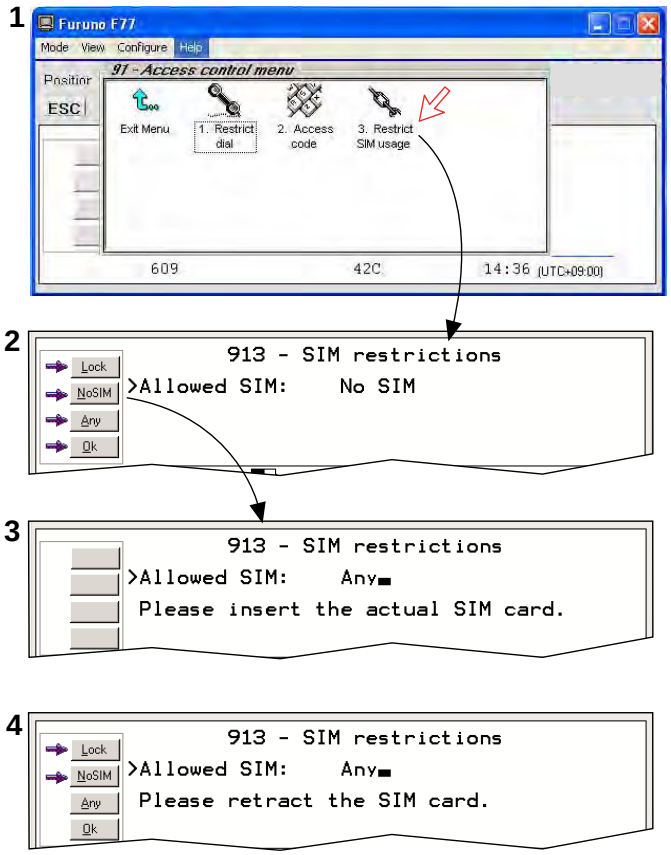
Lock SIM:

3 Click **Lock** and insert the actual SIM card.

FELCOM 70 can now be operated with that specific card only.

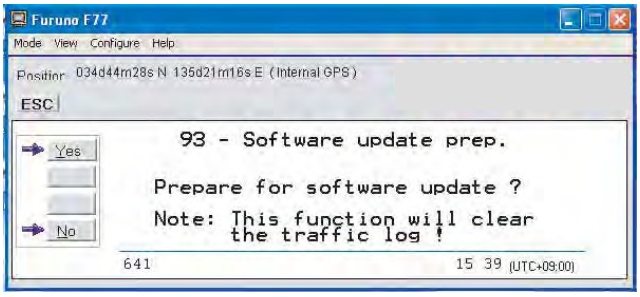
4 When retracting the card, the Id of the SIM provider is displayed.

Ok stores the settings.

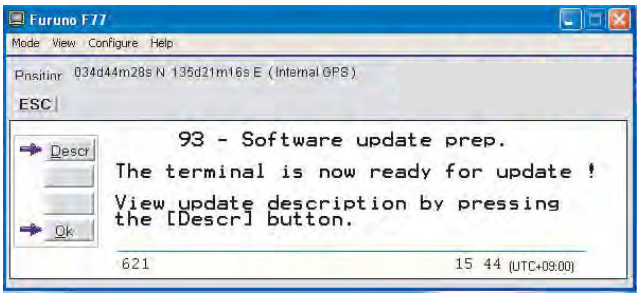


5.8 Software update preparation

1 Open the **Function menu** and then **Advanced function** menu.
2 Double-click the **Software update prep** icon.



3 Press the **YES** button.



4 To view update description press the **Descr** button.
5 Press the **OK** button.

The update information is printout.

5.9 Configuration menu

5.9.1 ISDN protocol configuration

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

2 Double-clicking the **ISDN configuration** displays the ISDN configurations implemented in FELCOM 70.

3 Press the up or down arrow key to select an item and the right arrow key to show the selection dialog box.

*Switch to **owner level** to choose protocol.*

- **Protocol**

Select Euro ISDN for connection of equipment conforming to the European ISDN standard. (NI-1 can not be used.) Select same protocol for all ISDN handsets and PC.

- **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**

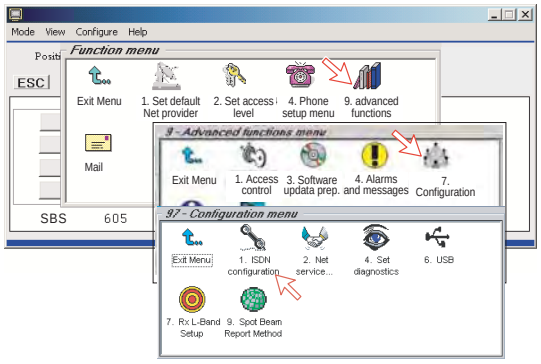
The layer 2 connection is deactivated after some idle time as default. Some ISDN devices interpret this as an alarm situation. Layer 2 deactivation can then be disabled.

- **Default service**

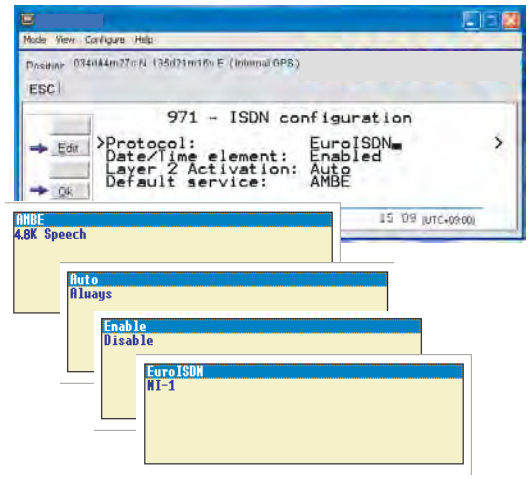
Some ISDN devices can not signal their own MSN number. Such a phone will be able to use the 64 kbps service since all “unknown” speech devices are required to use the 4.8 kbps speech service. The user can set FELCOM 70 to map all “unknown” devices to 64 kbps speech service.

Note: Remember to revert to user level.

1



2



5.9.2 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 with ⇧/⇩ key. Clicking **Ok** returns you to the Configuration window.

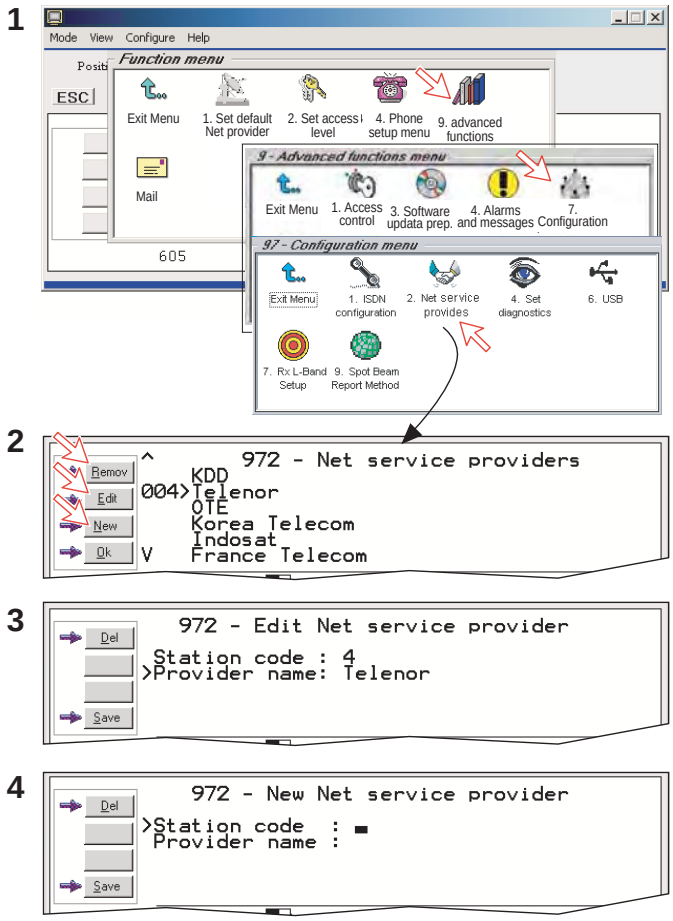
Remov deletes entry.

3. Clicking **Edit** opens the window allowing the station code and provider name to be modified.

Use **Del** to modify. **Save** stores the changes.

4 Clicking **New** (window **2**) opens the window allowing station code and provider name to be added.

Note: Remember to revert to **user** level.

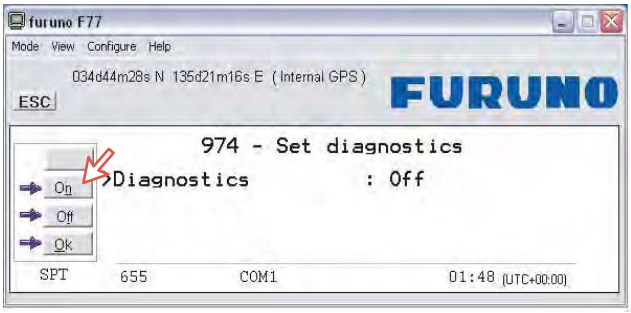


5.9.3 Set diagnostics

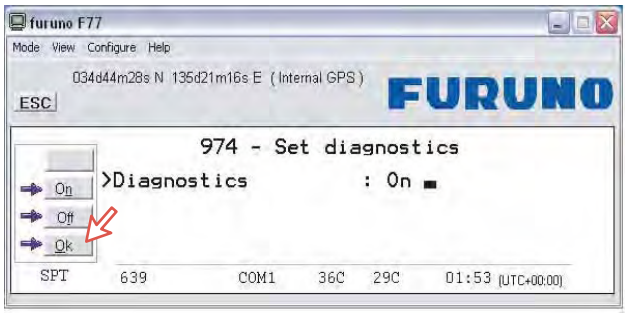
Additional system information is displayed when diagnostics is turned **On**.

*See also **"5.1 Menu functions"**.*

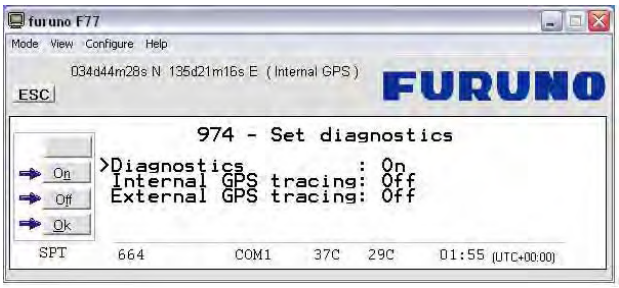
1 Double-click the **Set diagnostics** icon via the **Function menu > Advanced functions menu > Configuration menu**.
2 Click **On** button.



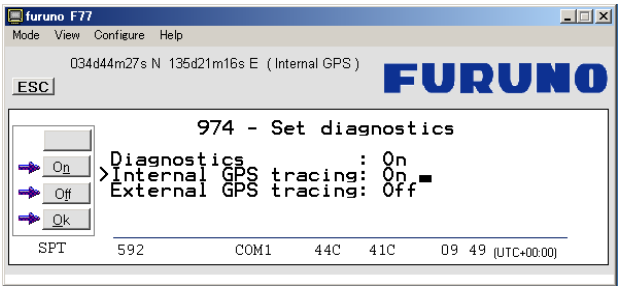
3 Click **Ok** button.
"Diagnostics" becomes On and control is returned to the Configuration Menu.



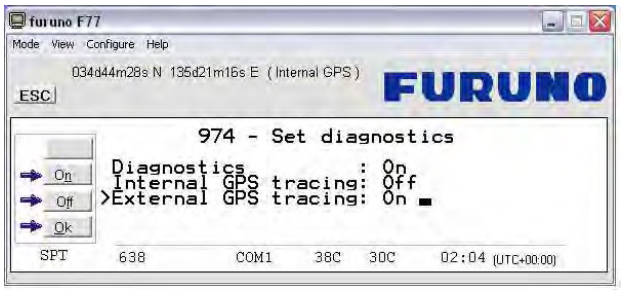
4 Double-click **Set diagnostics** to confirm setting on diagnostic menu.



5 To monitor internal GPS data, press down-arrow key to move the cursor(>) to "Internal GPS tracing". Then click **On** button and then **Ok** button.

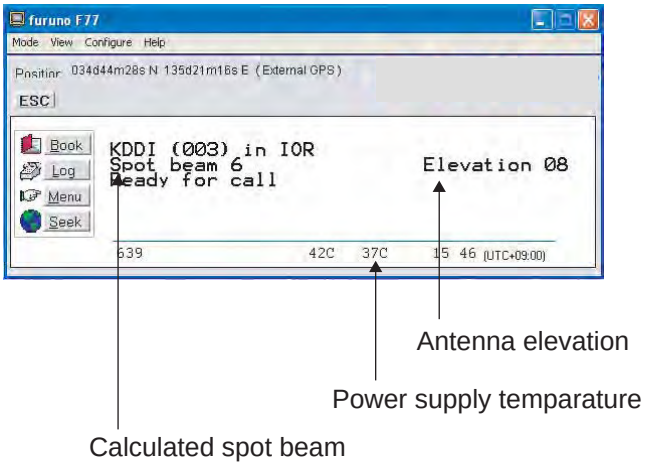


6 To monitor external GPS data, press down-arrow key to move the cursor(>) to “External GPS tracing”. Then click **On** button and then **Ok** button.



When choosing diagnostic **On**, the following terms appear.

- Alarm and message icon (menu 9).
- Power supply unit temperature
- Calculated spot beam
- Antenna elevation



5.9.4 Dual-port USB

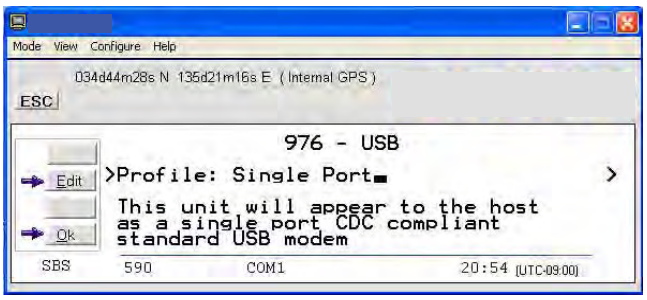
The Dual-port USB allows several programs to operate at the same time via a single USB port. Connect a USB cable between the USB port of the communication unit and the USB port of PC.

- One channel for data communication
- One channel for control (vtLite)

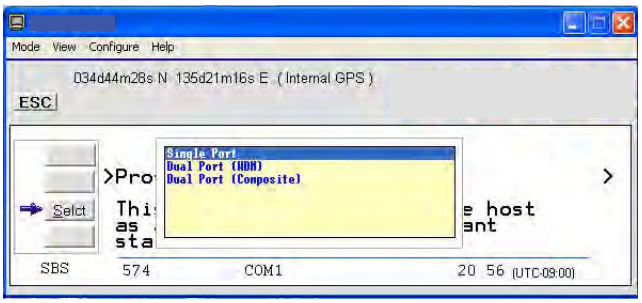
The default setting is “Single port”.

To set the dual port, do as follows.

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



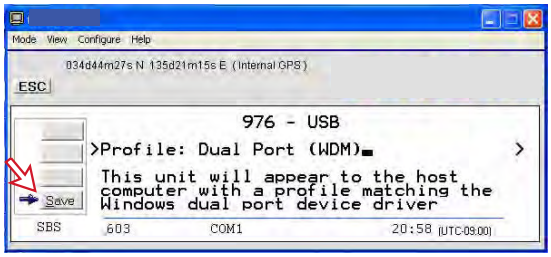
2 Click the **Edit** button. Three selections are provided.



- Single port: This unit will appear to the host PC as a single port CDC compliant standard USB Modem.
- Dual port WDM: This unit will appear to the host computer with a profile matching the Windows dual port device driver.
- Dual port (composite): Not in use.

3 Choose **Dual port WDM** and click the **Select** button.

4 Clicking **Save** opens **Welcome to the Found New Hardware Wizard** which allows the selection of new USB drivers required to achieve parallel operation via the USB port.



For Windows XP, follow next step 5 to 10. For Windows Vista, follow step 5a to 13a.

For Windows XP

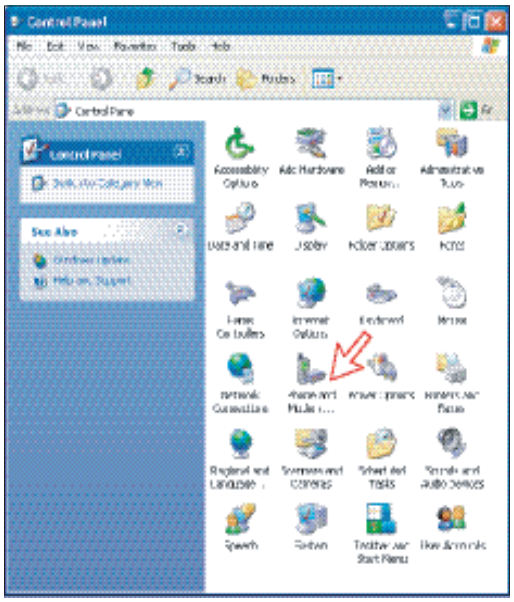
5 Insert CD-ROM provided. Install “SAILOR Dual port USB modem” driver for dual port operation as follows;

1) Check “Install from a list or specific location (Advanced)” and click **Next** button.
2) Check “Search for the best driver in these location” and click **Browse** button.
3) In CD-ROM, choose “USB Driver” and click **Next** button.
4) The window, which says this driver does not pass Windows Logo test, appears, but click **Continue Anyway** button to continue.
5) After the installation is completed, click **Finish** button.

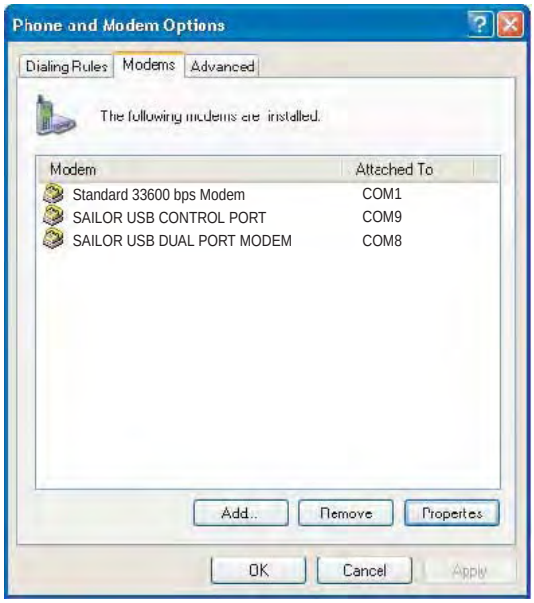
6 The **SAILOR USB DUAL PORT MODEM Wizard** opens automatically. Follow the instructions as above .

Subsequently, the SAILOR USB CONTROL PORT Wizard opens automatically. Follow the instructions as above.

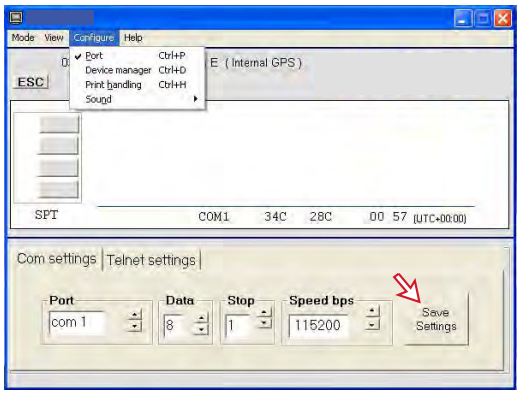
7 Open the **Control Panel** and double-click the **Phone and Modem Options** icon verify com ports used on the PC.



8 Clicking the **Modem** tab shows the new driver installations (examples):
COM9 to be used for SAILOR vtLite
COM8 to be used for dial-ups



9 Open **SAILOR vtLite** and click **Port**. Select the **Port** COM setting for the new driver, i.e. 6.
*Click **Save Settings**.*



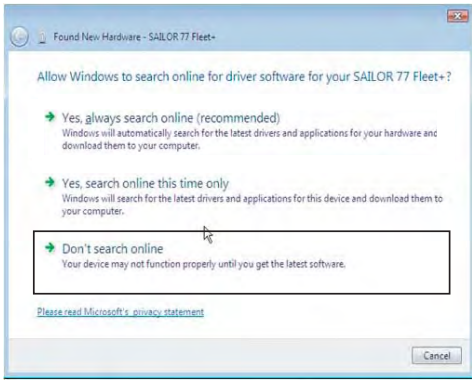
10 Click **Mode > Terminal MMI** to reestablish **SAILOR vtLite.** You can now perform data communication at the same time, see the application: ***Mobile Packet Data Service via USB**, or **Mobile Data Service via USB***

For Windows Vista

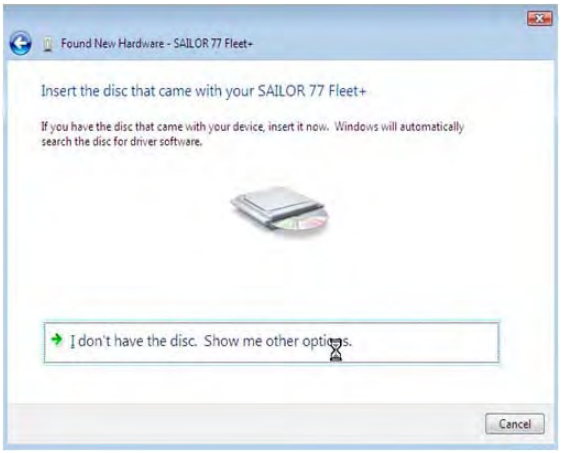
5a. When connecting USB cable, the **Found New Hardware** screen appears. Click the **Locate and install driver software**.

If the **User Account Control** screen appears, click the **Continue** button.

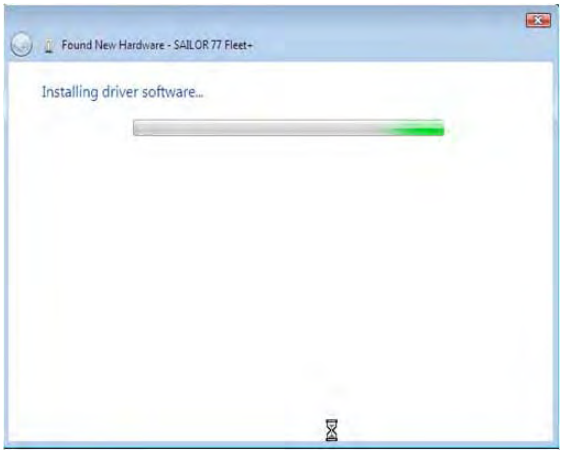
6a. The **Found New Hardware – SAILOR 77 Fleet** screen appears. Click the **Don't search online**.



7a. Insert the CD.

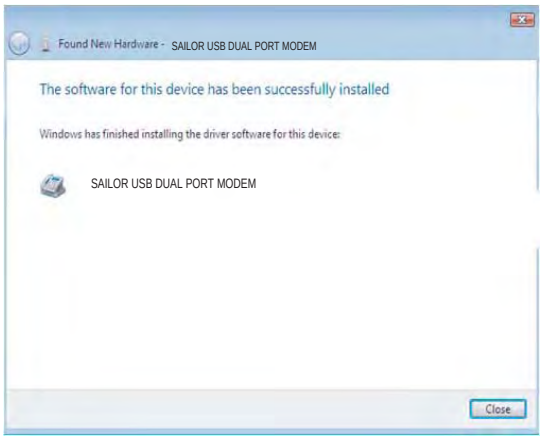


The driver software is installed.

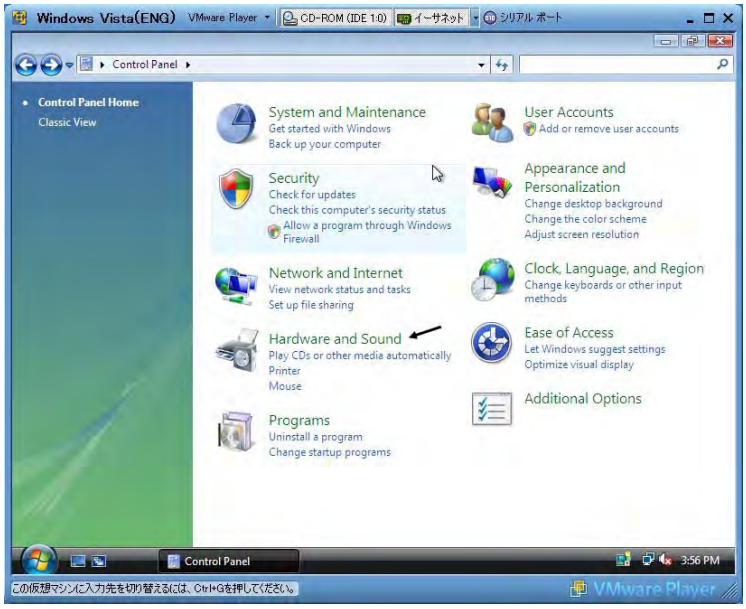


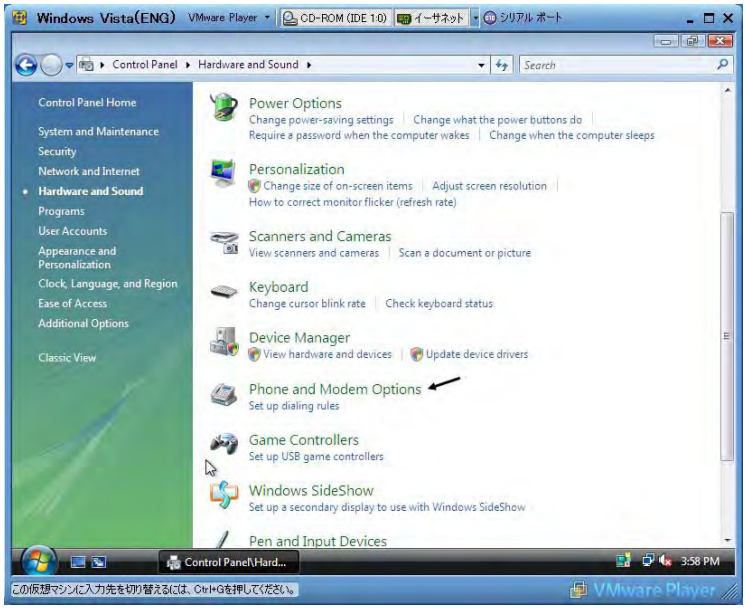
8a. The **Windows Security** wizard appears. Click the **Install this driver software anyway**.

9a. After completing installation, the **The software for this device has been successfully installed** appears. Click the **Close** button.



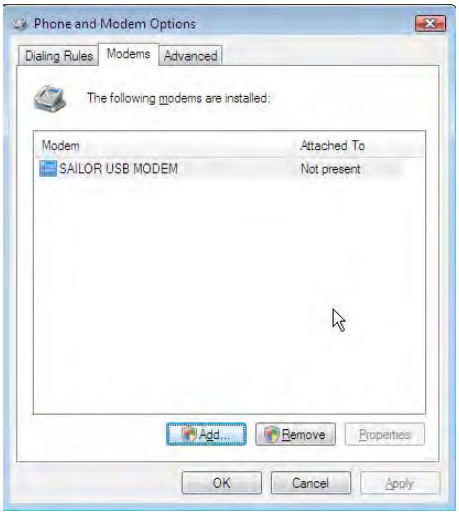
10a. Open the **Control Panel** on the PC and click the **Hardware and Sound** and the **Phone and Modem Options** in that order.



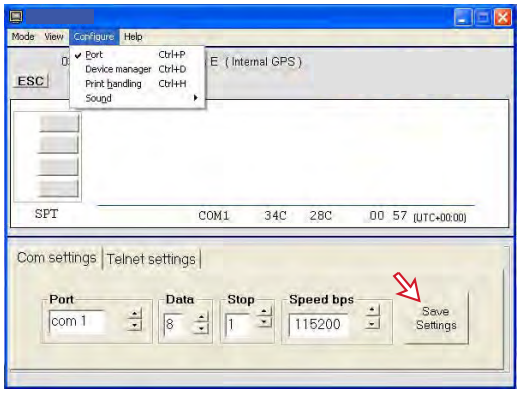


11a. Click the **Modem** tab to show new driver installed.

- COM7: For SAILOR vtLite
- COM5: For dialup



12a. Open SAILOR **vtLite** and click **Port**. Select the **Port** COM setting for the new driver, i.e. 6.
*Click **Save Settings**.*



13a. Click **Mode > Terminal MMI** to reestablish **SAILOR vtLite.** You can now perform data communication at the same time, see the application: ***Mobile Packet Data Service via USB**, or **Mobile Data Service via USB***

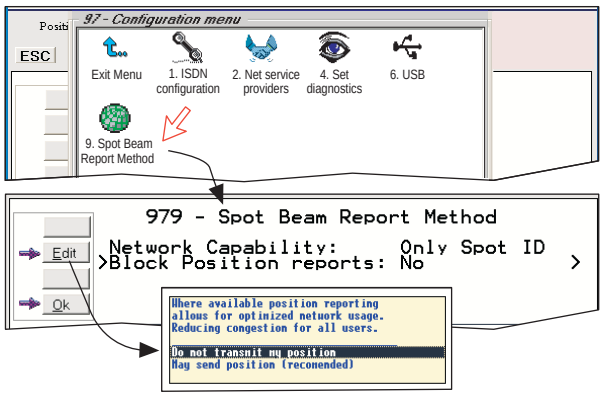
5.9.5 Spot beam report method

1 Double-click the **Spot beam report method** icon via the **Function menu > Advanced functions menu > Configuration menu.**

2 Two selections are provided:

- **Do not transmit my position**
- **May send position** (default)

*May be changed in **owner level only***



5.10 Information available

Miscellaneous version Id information

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

1 Open the **Function menu > Advanced functions menu > Information available** menu.

2 Double-clicking the **miscellaneous version Id information** icon displays the available data.

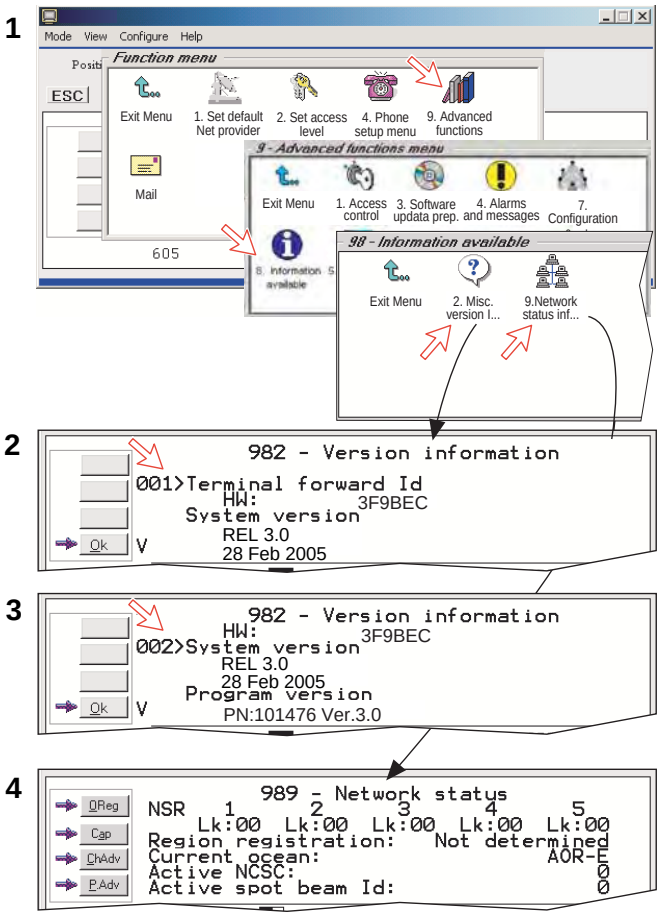
3 With **Diagnostics On**, pressing ⏎ opens a series of version information windows.

Network status information
(owner level only)

This function displays various network status information.

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

NOTE: Remember to revert to **user** level.


1
Mode View Configure Help
Function menu
ESC
Exit Menu
1. Set default Net provider
2. Set access level
4. Phone setup menu
9. Advanced functions
Mail
605
9 - Advanced functions menu
Exit Menu
1. Access control
3. Software updata prep.
4. Alarms and messages
7. Configuration
98 - Information available
Exit Menu
2. Misc. version I...
9.Network status inf...
2
982 - Version information
001>Terminal forward Id
HW: 3F9BEC
System version
REL 3.0
28 Feb 2005
Ok
V
3
982 - Version information
HW: 3F9BEC
002>System version
REL 3.0
28 Feb 2005
Program version
PN:101476 Ver.3.0
Ok
V
4
989 - Network status
NSR 1 2 3 4 5
Lk:00 Lk:00 Lk:00 Lk:00 Lk:00
Region registration: Not determined
Current ocean: AOR-E
Active NCSC: 0
Active spot beam Id: 0
QReg
Cap
ChAdv
PAdv

5.11 Customization menu (owner level only)

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

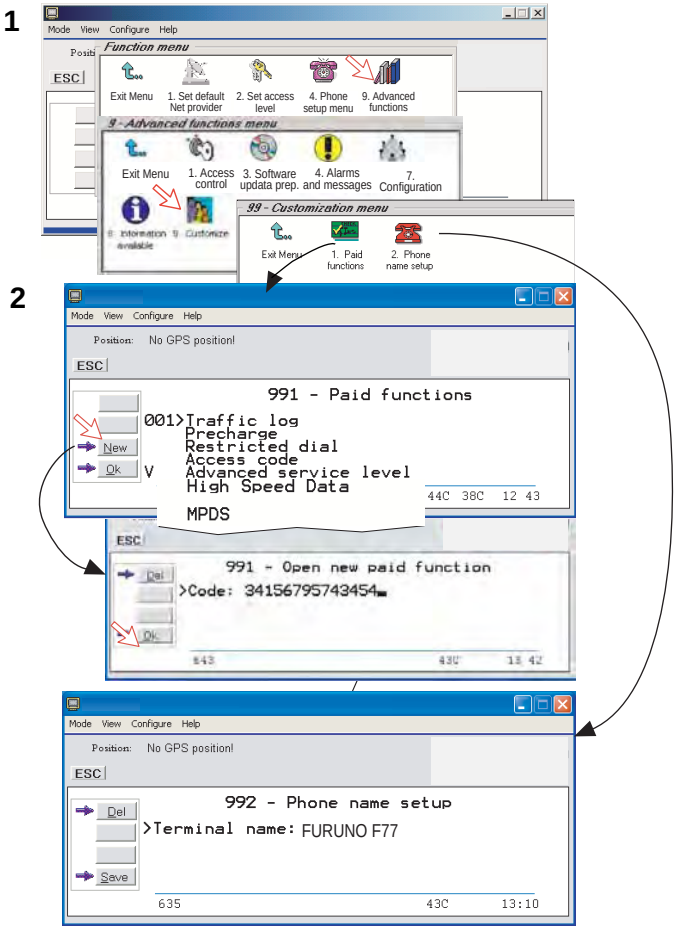
Paid functions

This function is not supported by the FELCOM 70.

Phone name setup

2 Double-clicking the **Phone name setup** icon in the **Customization menu** displays the Phone name, i.e. FURUNO F77. To change, key in uppercase/lowercase letters as required. Use **Del** to modify. **Save** stores the changes. This name appears at some screen.

NOTE: Remember to revert to **user** level.



5.12 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 FELCOM 70 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 Communication Unit (CU). See later in this manual.
The table below lists valid MSN numbers for the available ISDN services.

Numbers to be programmed:

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

For an easy start, the some Terminal Ids and MSN numbers have been preprogrammed into the CU (marked with a star in the table).
In the *4.8 kbps speech and 3.1 kHz audio* 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

ANALOGUE PORTS TEL1 - TEL4	ISDN PORTS												ISDN/RS-232/USB	
	4.8 kbps speech		*64 kbps speech*		*3.1 kHz audio*		*9.6 kbps fax*		*56 kbps data*		*128 kbps data*		*64 kbps data*	
4.8 speech	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN	Term.Id	MSN
Port Term.Id MSN	***01****	***20****	***91****	***30****	6X	4X	1X	4X	***71****	***50****	***86****	***65****	***51****	***60****
TEL 1 ***03**** ***01****	0X	21	92	31	***62****	***42****	***17****	***41****	72	51			***52****	***61****
TEL 2 ***04**** ***02****	0X	22	93	32	6X	4X	18	4X	73	52			***53****	***62****
TEL 3 ***02**** ***03****	0X	23	94	33	6X	4X	19	4X	74	53			***54****	***63****
	0X	24	95	34	6X	4X	20	4X	75	54			55	64
9.6 kbps fax	0X	25	96	35			21	4X	76	55	***110 kbps data***			
Port Term.Id MSN	0X	26	97	36			20	4X	77	56				
TEL 4 ***16**** ***04****	0X	27	98	37					78	57	Term.Id	MSN		
	0X	28	99	38					79	58	***88****	***67****		
Fax via 3.1 kHz audio	*01/20 Distress Handset. First HS connected via Distress Alarm Unit.*		*91/30 Distress Handset. First HS connected via Distress Alarm Unit.*		*3.1 kHz/ 64 kbps audio service*								*51/60: ISDN port* *52/61: RS-232A port* *53/62: RS-232B port* *54/63: USB port*	
Port Term.Id MSN														
TEL 4 ***61*** ***04***														

**** Preprogrammed***

Routing of incoming calls (examples)

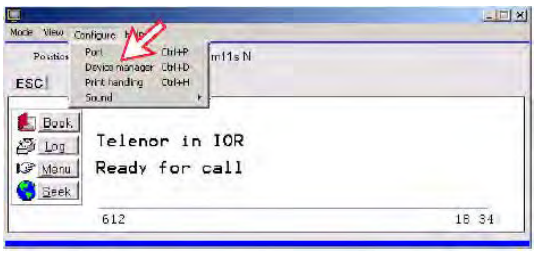
The table below illustrates the use of appropriate Terminal Ids for the various services combined with examples incoming IMN numbers.
** Preprogrammed, see table on previous page.*

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***	***CU ports***	***Provided by ISP:***	
				Term.Id	***IMN***
Bridge	*MSN**20****	4.8 kbps speech	ISDN	*01**	762420510
Radio room	*MSN21*	4.8 kbps speech	ISDN	*05*	762420512
Bridge	*MSN**30****	64 kbps speech	ISDN	***91****	600020520
Captain	*MSN**65****	128 kbps data	ISDN	***86****	600020525
Fax Gr.4	*MSN**60****	64 kbps data	ISDN	***51****	600020522
Data	*MSN**63****	64 kbps data	RS-232 B	***54****	600020525
Fax Gr.3	*MSN**04****	9.6 kbps fax	TEL 4	***62****	600020527
Saloon	*MSN**03****	4.8 kbps speech	TEL 3	***02****	762420511
Data	*MSN**61****	64 kbps data	RS-232A	***52****	600020523
Router	*MSN**62****	64 kbps data	USB	***53****	600020524

5.13 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 "**Changing owner level password**" on page 5-5.*

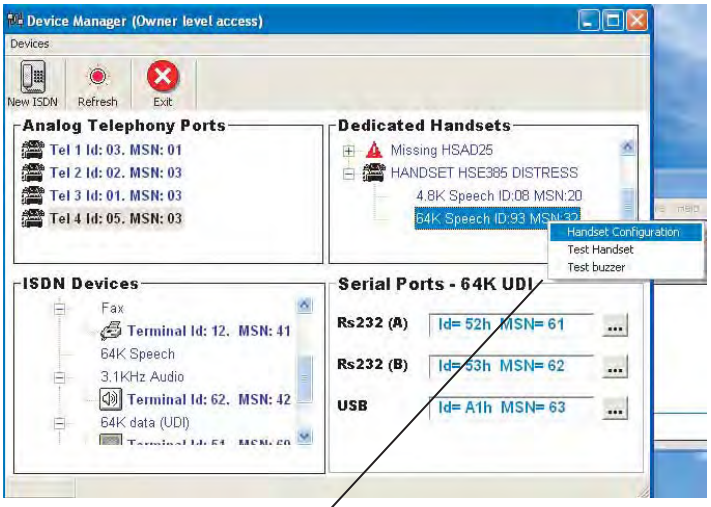


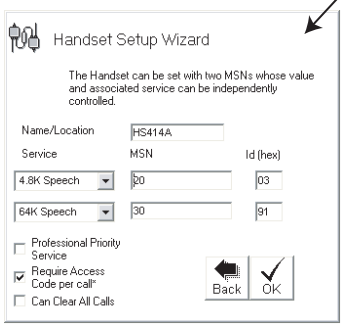
Click to open Device Manager for configuration of ISDN/analogue/RS-232/ RS-422/USB.

5.13.1 ISDN Handset w/Distress Alarm

- ISDN Handsets will automatically be configured with Handset MSNs in the Device Manager.
- The first ISDN Handset connected to the Distress Alert Unit will be given MSN20 and MSN30.
  This handset will thus respond to both these MSNs.
- If the second handset has the distress alarm function, MSN number is 20. If not, it is 21. Those are the default number; MSN number can be changed at the menu of Device Manager.
- All ISDN Handset are given two MSN numbers, one for 4.8K speech and one for 64K speech.
- A ISDN Handset connected to Distress Alert Unit will automatically constitute a distress handset.
- The MSN numbers will follow the handset.
- 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 MSNs of a handset, check in the Device Manager or press the "R"-button on the Handset.

To open 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 requipment*





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

Professional Priority Service is checked on special agreement with the Net Provider, e.g. for higher priority in the Inmarsat system.

Can Clear All Calls is checked to clear all calls.

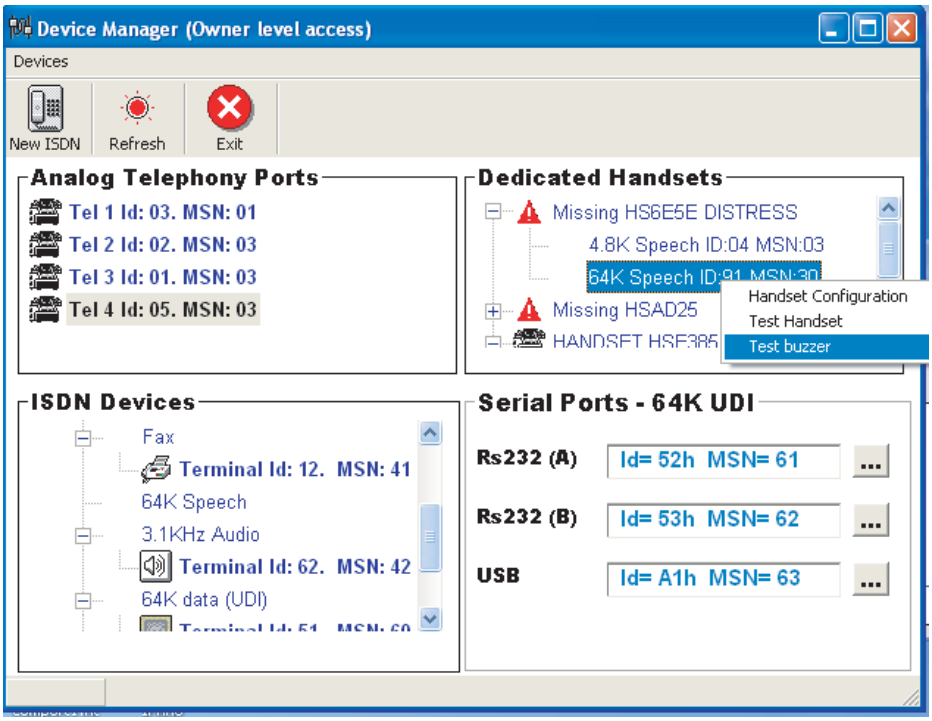
5.13.2 Testing the Distress Alarm

You can not execute the distress alarm test from the device manager. See also **“3.6 Distress Alarm”** in this manual.

Deleting an ISDN Handset

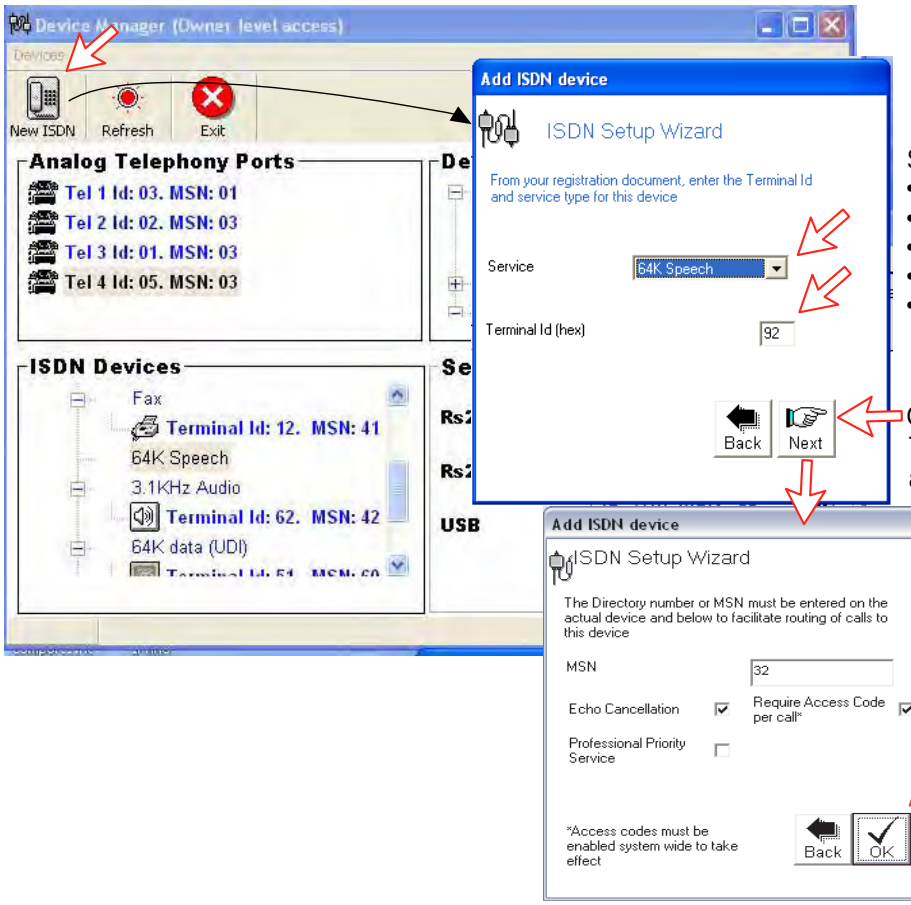
Unplug the ISDN Handset to be deleted and rightclick the same in the **Dedicated Handset** list. Clicking **Test Handset** removes its data, leaving the Terminal Id and MSN number vacant for another Display Handset.
If necessary, click refresh: and repeat clicking **Test Handset**. The Communication 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.



5.13.3 ISDN port

*Open device manager and click the **New ISDN** button 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)

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

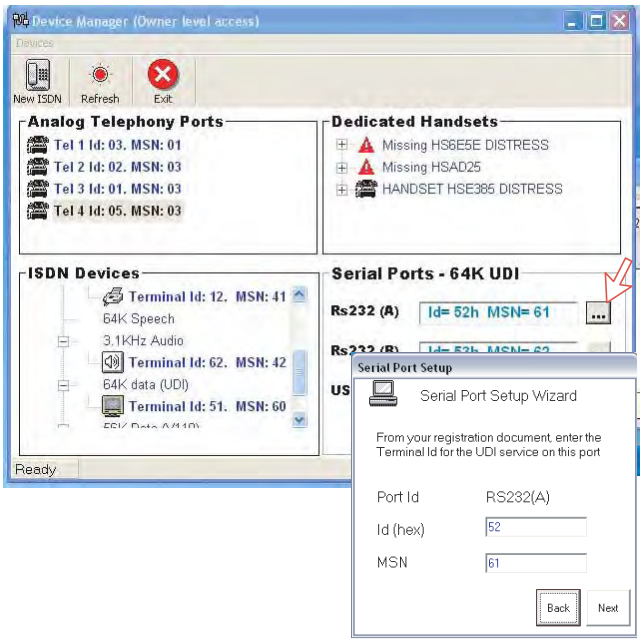
Key in MSN number if not using the recommended one.

Access Code is not used for ISDN data.

Click to enter number.

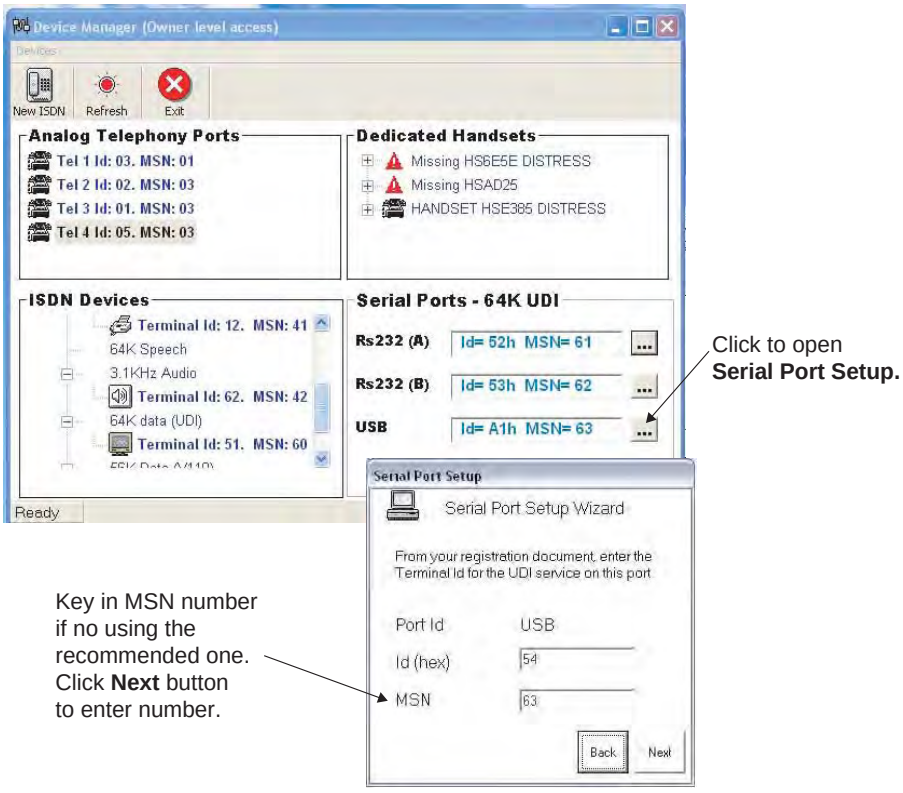
5.13.4 RS-232 port

Open device manager and click [---] button of the RS232 on the **Serial Ports-64K UDI** to open Serial Port Setup window.
Key in MSN number if not using the recommended one. Click **Proceed** button to enter number.



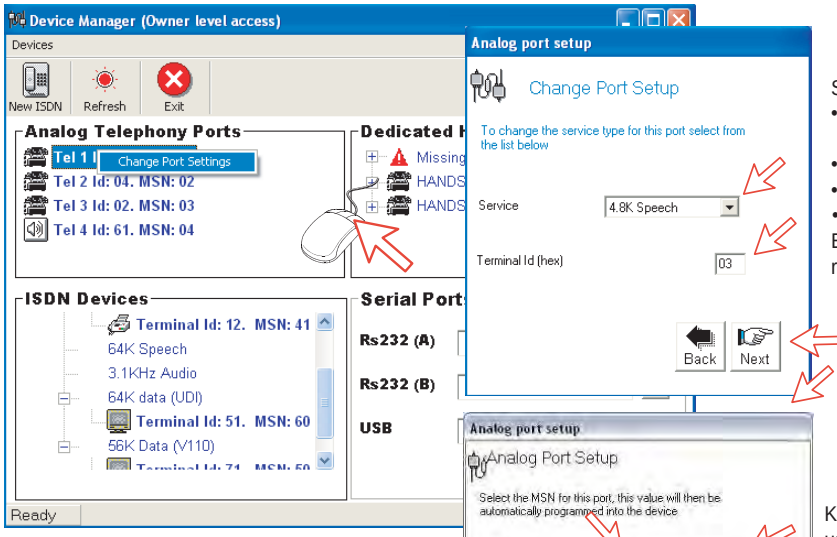
5.13.5 USB port

*Open device manager and click [---] button of the USB on the **Serial Ports-64 K UDI**.*



5.13.6 Analogue port

*Open device manager, right-click the device in the Analog Telephony Ports box and left-click the **Change Port Settings** to open analogue port setup window.*



Select the required service:
- 4.8 kps standard speech service
- 64 kbps speech service
- 3.1 kHz Audio
- Fax

Enter terminal Id (OID/DID) received from the Net provider.

Click **Next** to continue.

Key in MSN number if not using the recommemded one.

Click **OK** to enter number. The MSNs cab be controlled independently, e.g. if two telephones are given the same MSN, they will both respond to an incoming call to that MSN.

***Echo Cancellation** is performed automatically for all voice calls. Uncheck if problems with echo cancellation.*
***Require Access Code** is checked when used for 4.8 kbps speech and 64 kbps speech.*
***Professional Priority Service** is checked on special agreement with the Net Provider, e.g. for higher priority in the Inmarsat system.*

5.14 Saving and reloading configurations

The FELCOM 70 configuration settings may be stored on the PC hard disk, e.g. prior to replacing software.

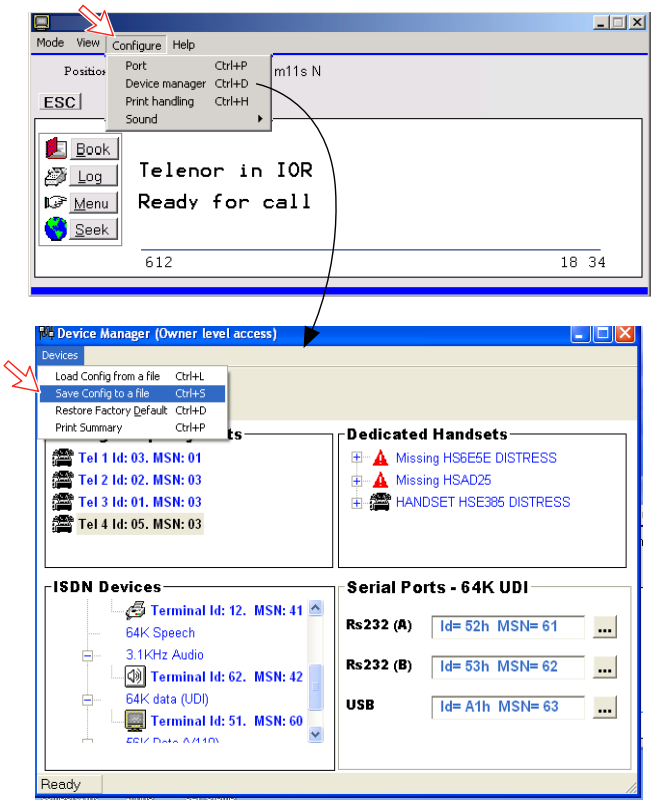
Procedure

1 Open the Device Manager window as indicated.
2 Clicking **Devices > Save config to a file**, naming and clicking **Save** button automatically stores the data in a “Config. cgf” file in the vtLite directory **c:/program files/SAILOR vtLite**.
3 After installing the software, the settings may be transferred back to FELCOM 70 by pressing **Load**.
4 Clicking **Restore Factory Defaults** loads default FELCOM 70 configurations.

Printout/storing a configuration summary:

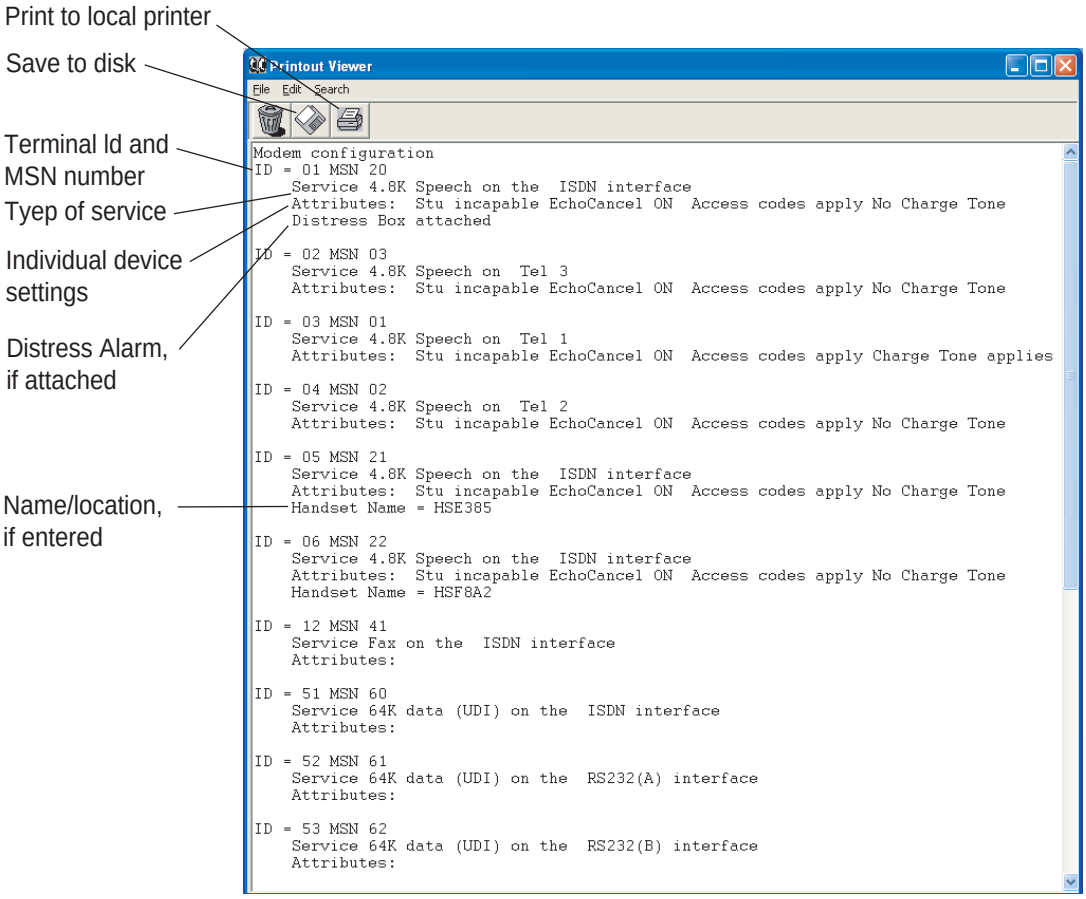
5 Clicking **Print Summary** opens the **Printout Viewer** (see next page) which lists the settings of the end user equipment, and allows filing and/or printout.

Note: Save config to a file only saves the **Device Manager settings**. Setting such as Net provider / Access codes / ISDN protocol / Rx-L band output 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.



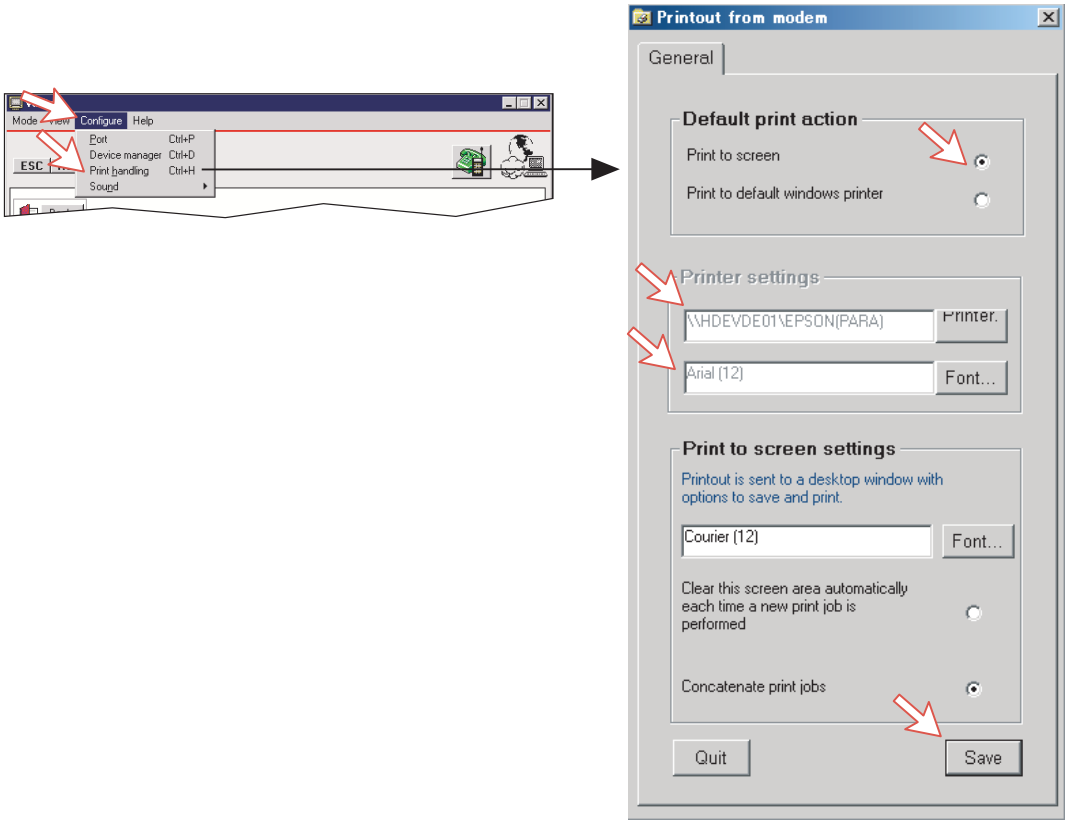
5.15 Print handling setup

Clicking **Configure>Print handling** opens the **Printout from modem** window. The **Printout from modem** window is used for setting of default output of Traffic log, Modem configuration, etc. 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 "**4.6 Traffic Log Printout viewer**".
For direct printout, choose **Print to default windows printer**.

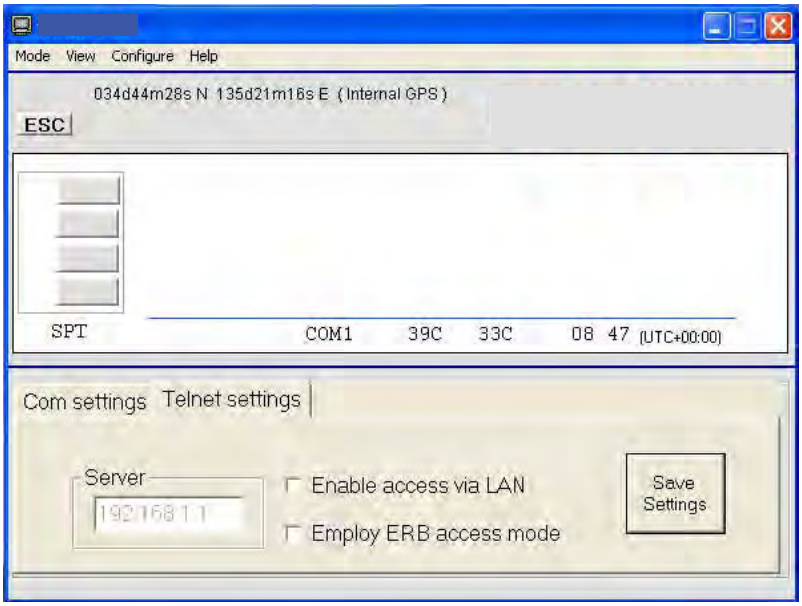
Print to screen settings:
Determines the output of records via the Printout viewer. Normally, use **Concatenate print jobs** which "chains" the jobs to be printed or saved to file. The alternative choice clears the screen after each printout.

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



5.16 Ethernet interface

Port configuration gets an additional tag for Telnet settings. Click **Configure > Port** and **Telnet settings** tag.



If **Enable access via LAN** is ticked then vtLite will attempt to communicate using a raw telnet connection to the server address given in the server box. It will use the default telnet port 23.
If **Empty ERB access mode** is also ticked then over the telnet session the vtLite will attempt to login to an Ethernet Router Board (currently no in use).
If the Ethernet connection is used then the vtLite port indicator will show “LAN” rather than the port number.

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6. DATA COMMUNICATION

6.1 Mobile Packet Data Service (RS-232)

6.1.1 Introduction

The **Mobile Packet Data Service** complies with the communication protocol defined by the Inmarsat F77 system.

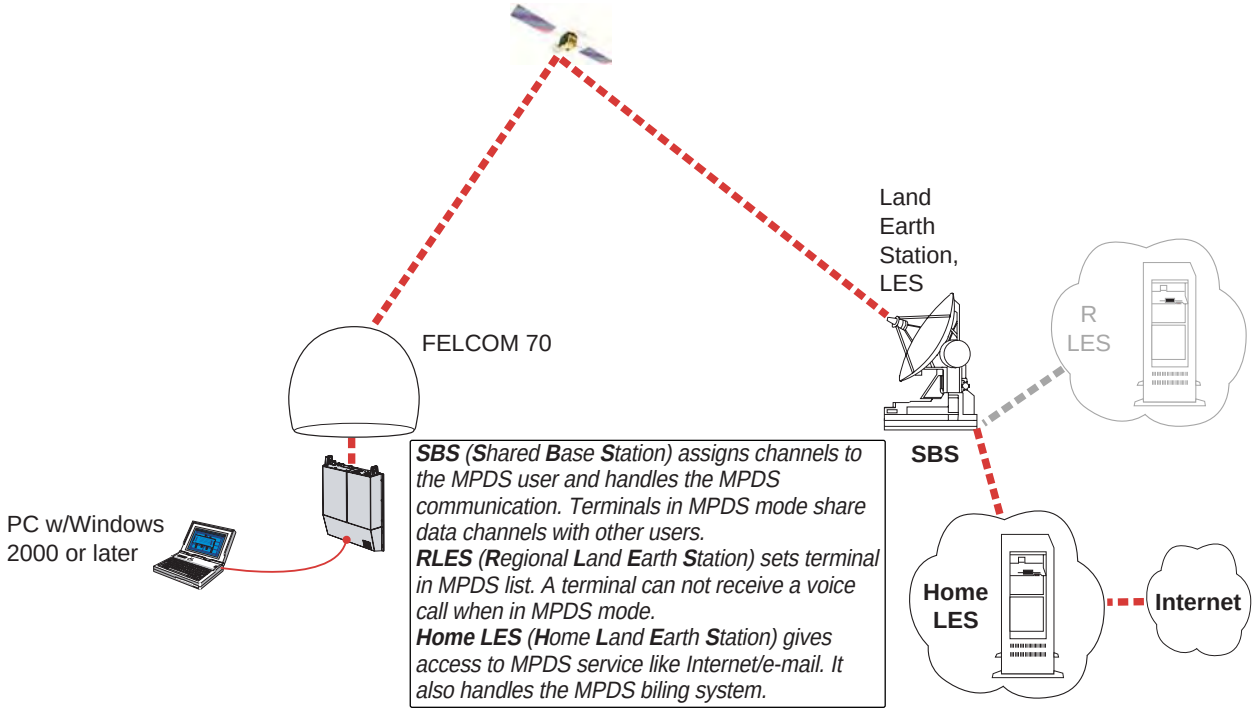
The transmission data rate over the satellite link is typically 20 kbps *(a 64 kbps channel is shared with other users).*

Switching between **MPDS** and Mobile **ISDN** service is done from the PC.

The PC must have Windows XP or Windows Vista installed.

With MPDS you only pay for the amount of data received or transmitted, rather than for the time you are connected.
MPDS can be efficient for applications that involves brief bursts of communication followed by periods of inactivity, such as:

- E-mail
- Internet/intranet
- Navigational updates
- Scada
- Database queries
- E-commerce
- VPN - Virtual Private Network



System Overview

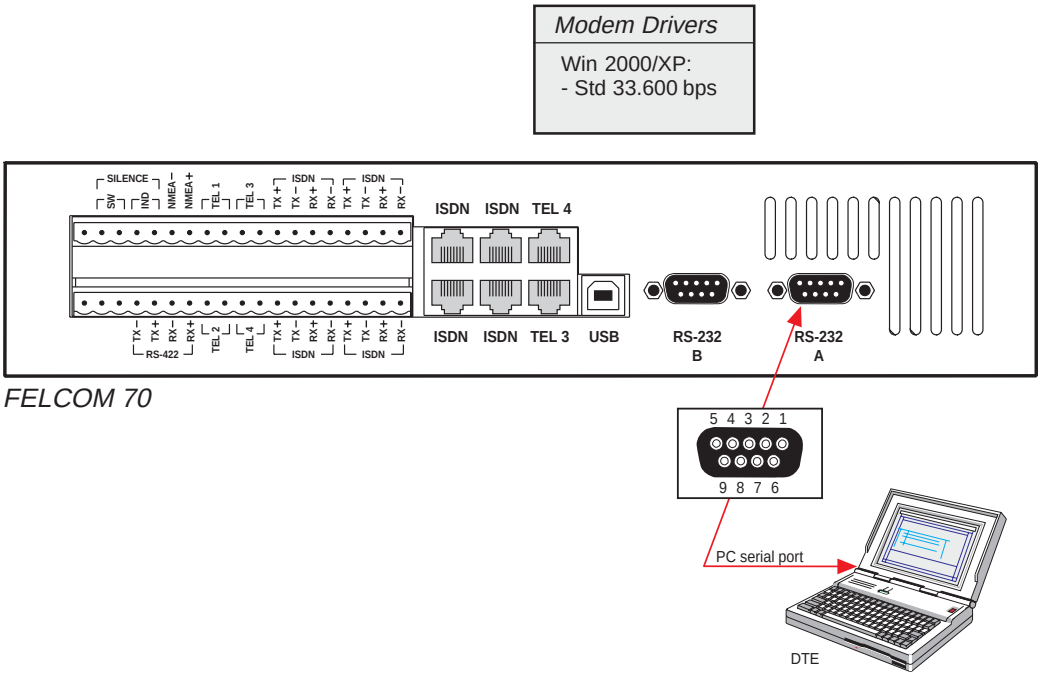
6.1.2 Connecting up

Installation

Connect the RS-232 serial cable between the serial port on the PC and the **RS-232** port on the CU.

The default settings are:

Data speed: 115200 bps
Format: 8 data bits, no parity, 1 stop bit
Flow control: Hardware (RTS/CTS)



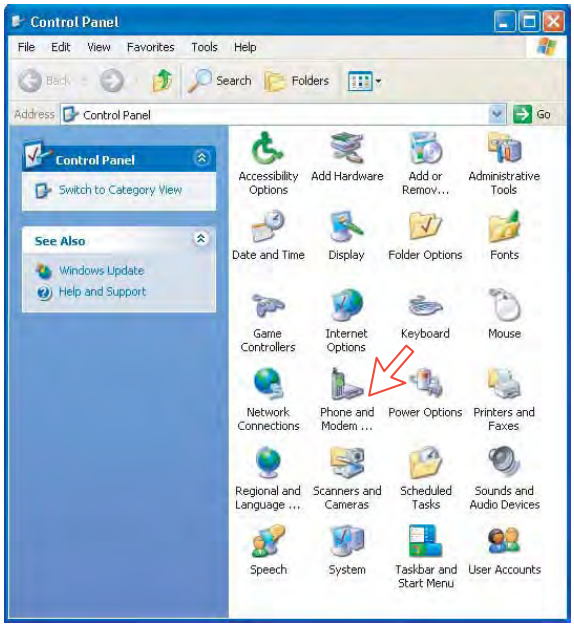
FELCOM 70

6.1.3 MPDS - setup

For Windows XP

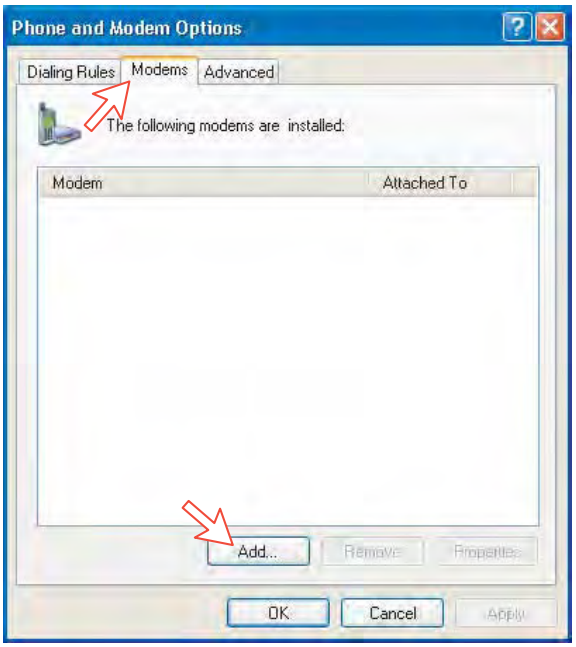
Ensure that SAILOR vtLite is closed.

1 Open the **Control Panel** on the PC and double-click the **Phone and Modem Options** icon.



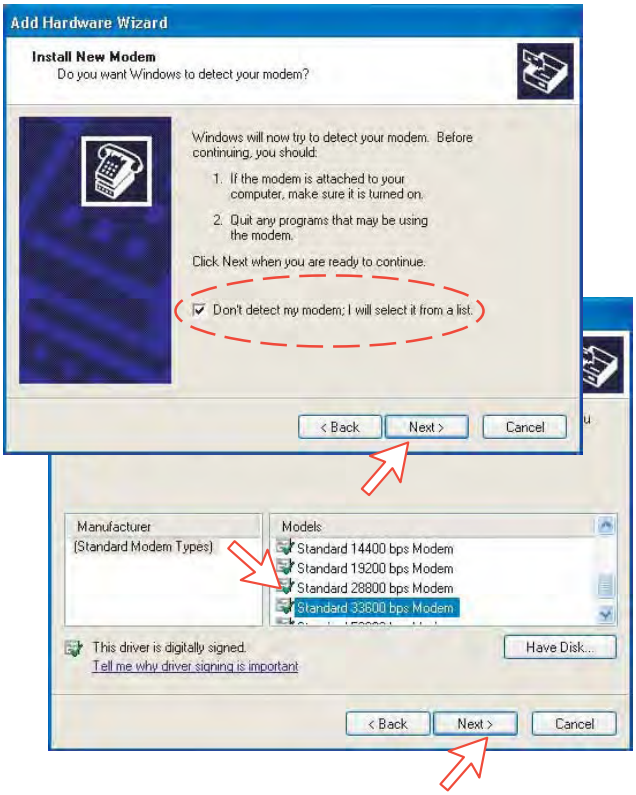
2 Click the **Modems** tab.

*Click **Add**, see next page.*



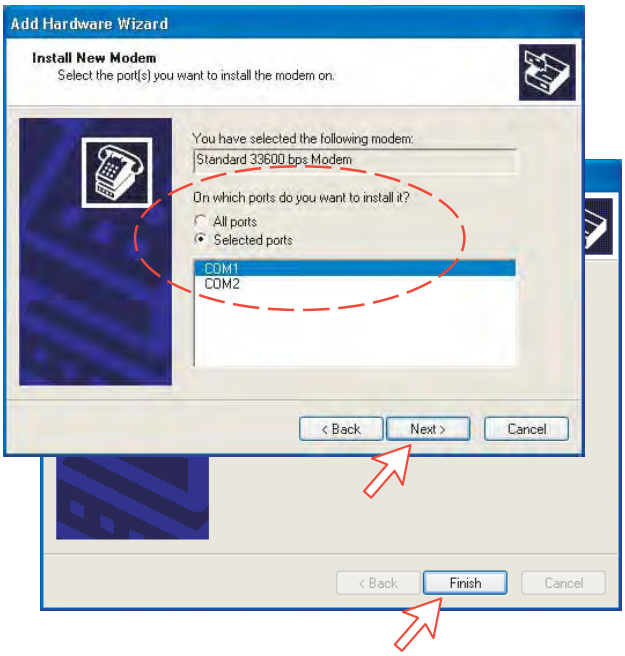
3 In the **Add Hardware Wizard** window check "Don't detect my modem", *and click* ***Next***.

Select **Standard 33600 bps Modem** in the **Models** field, *and click* ***Next***.

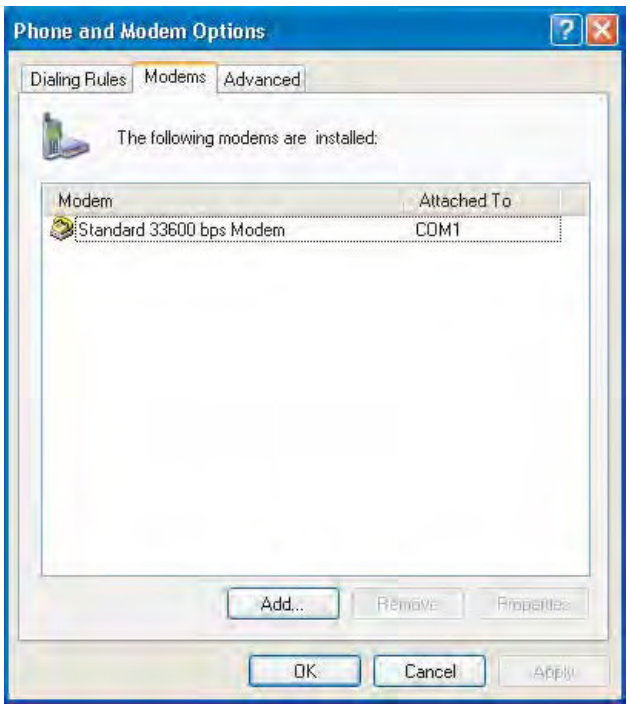


4 Select the port to which the Modem driver should be installed.

Click ***Next*** *and then* ***Finish*** *to complete the installation.*



5 Opening the **Phone and Modem Options** window confirms the established modem connection.
Select “Standard 33600 bps Modem”.

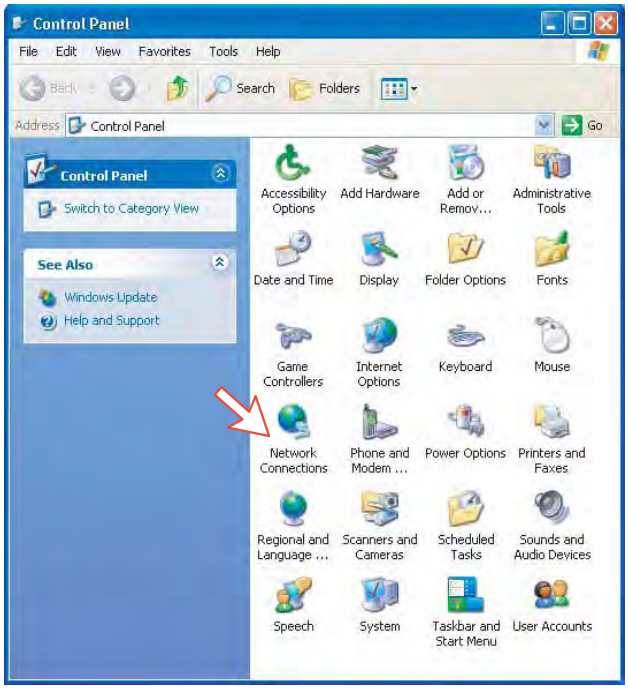


Note: The setup for data transfer to the CU is based on the Windows XP default parameters:

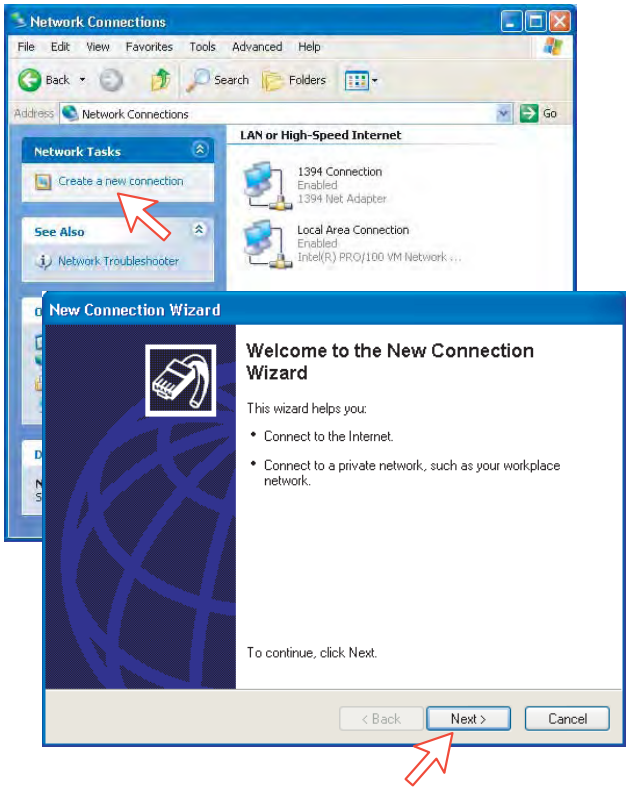
8 data bits - no parity - 1 stop bit - flow ctrl: Hardware

Clicking **Properties** allows checking the parameters.

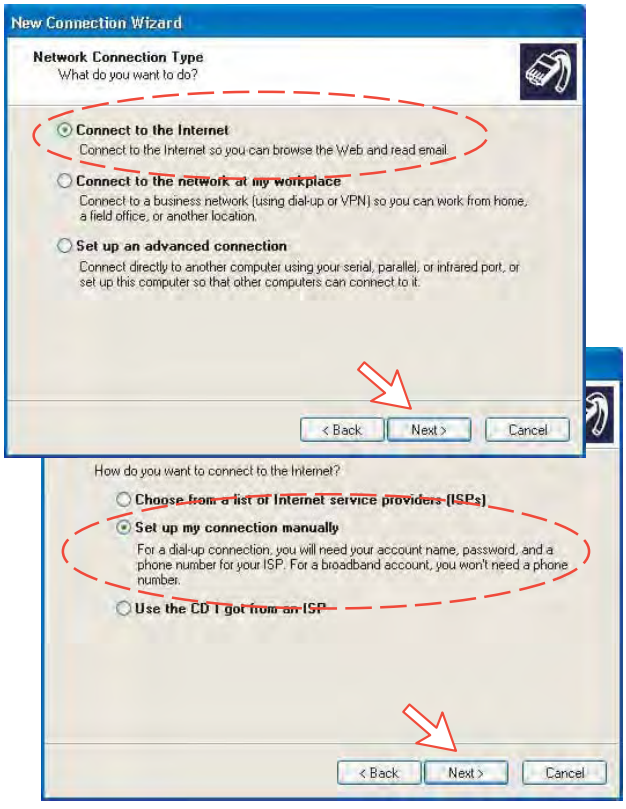
6 Open the **Control Panel** on the PC and double-click the **Network Connections** icon.



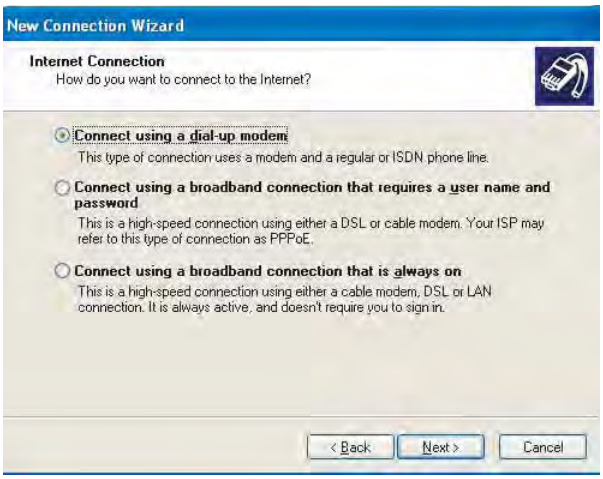
7 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*



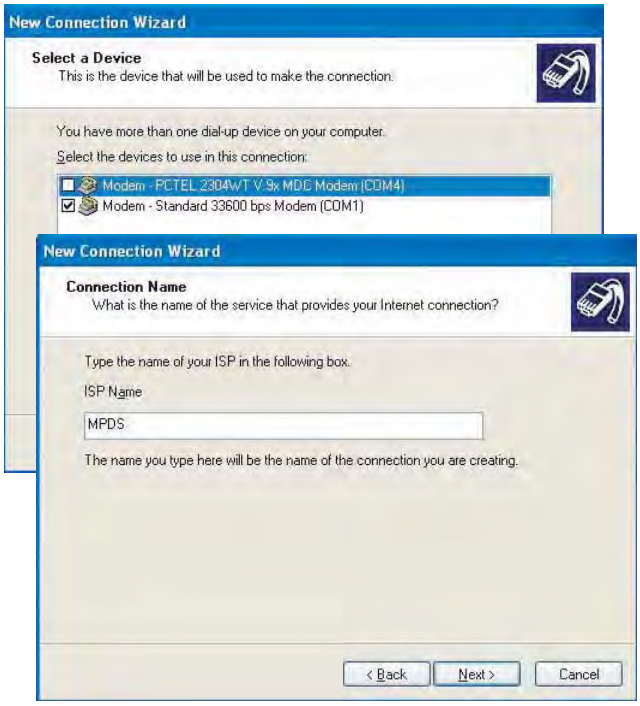
8 Check **Connect to the Internet**. *Click **Next**.*
Check **Set up my connection manually**.
*Click **Next**.*



9 Check “Connect using a dial-up modem”. *Click* ***Next****.*

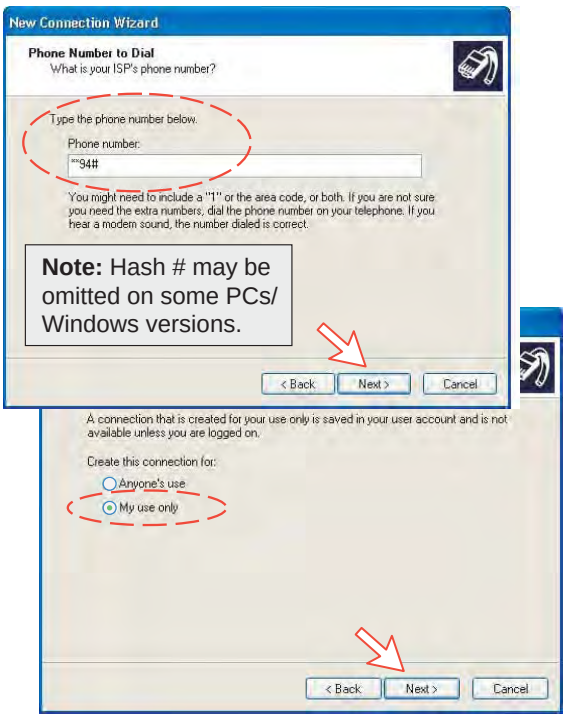


10 Check “Modem Standard 33600 bps Modem.” Click ***Nex***t.
Enter the name for the connection e.g. **MPDS**. *Click* ***Next****.*



11 Entering phone number ****94#** automatically connects you to the Internet Service Provider through your default Net Provider. *Click **Next**.*

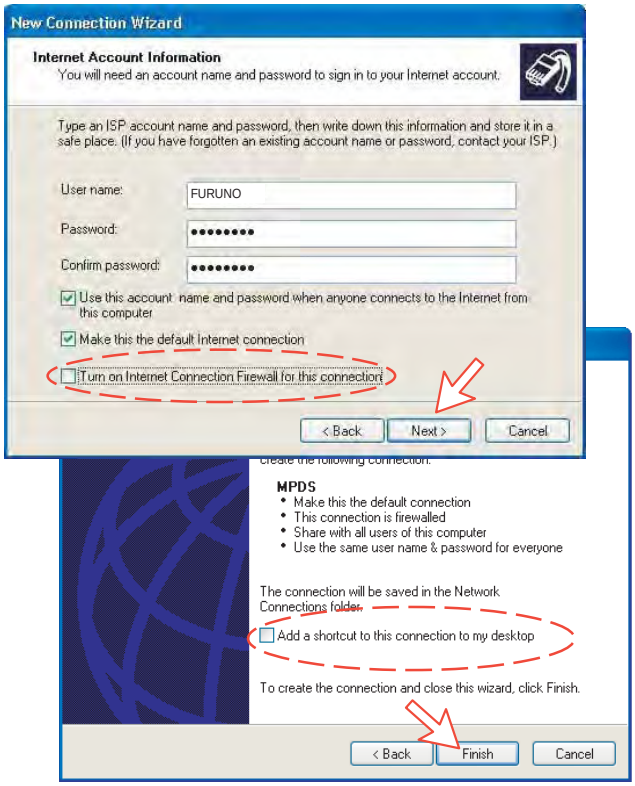
Check **My use only**, *and click **Next***.



12 Enter name and password for the connection.

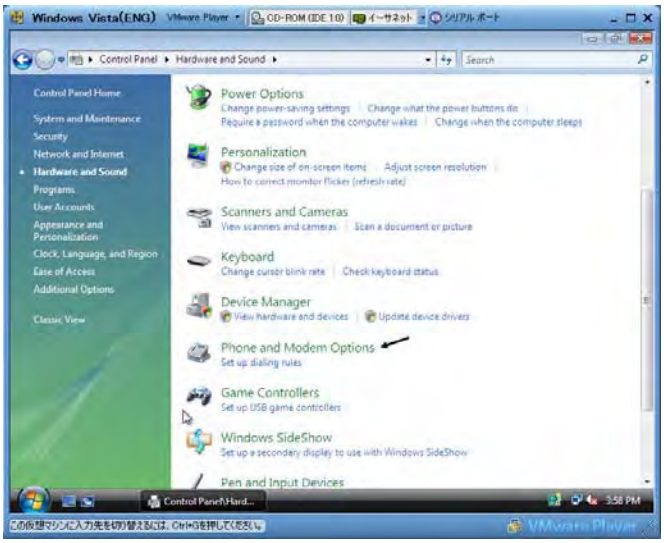
Uncheck **Turn on Internet Connection Firewall for this connection**. *Click **Next**.*

Complete the **New Connection**, *click **Finish***.

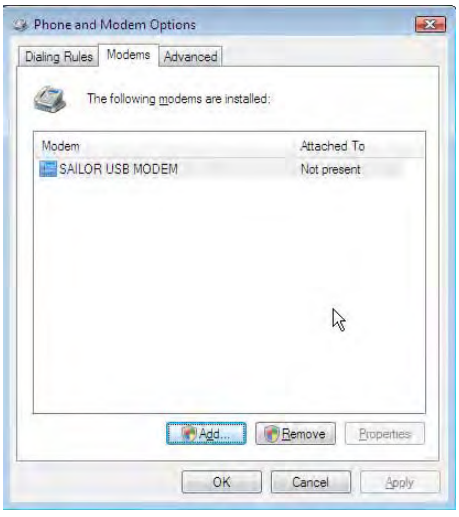


For Windows Vista

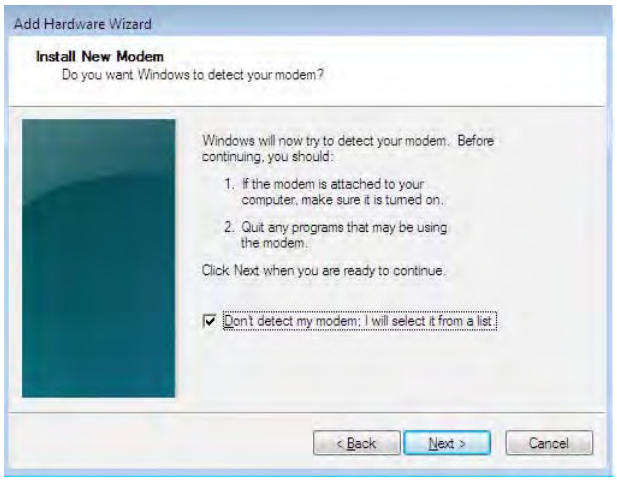
1. Open the **Control Panel** on the PC and double-click the **Hardware and Sound** and the **Phone and Modem Options** in that order.

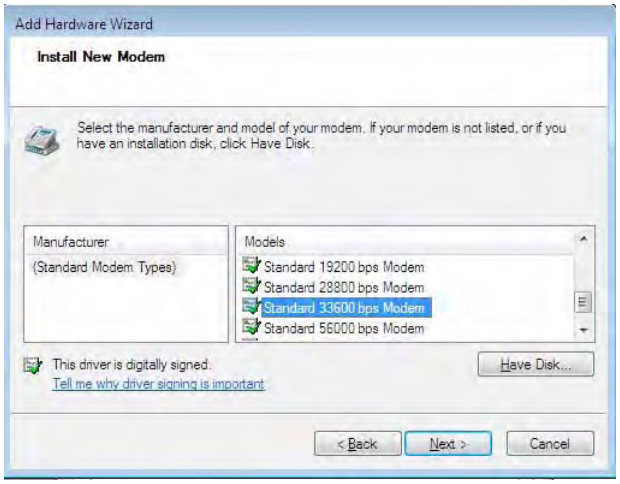


2. Click the **Modems** tab and the **Add** button to show the **Add Hardware Wizard**.

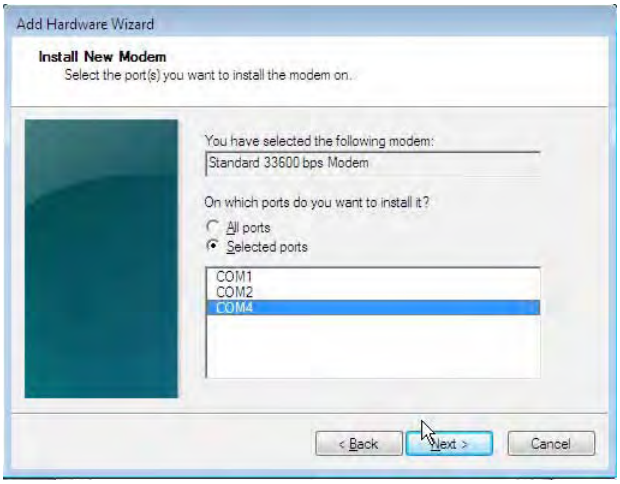


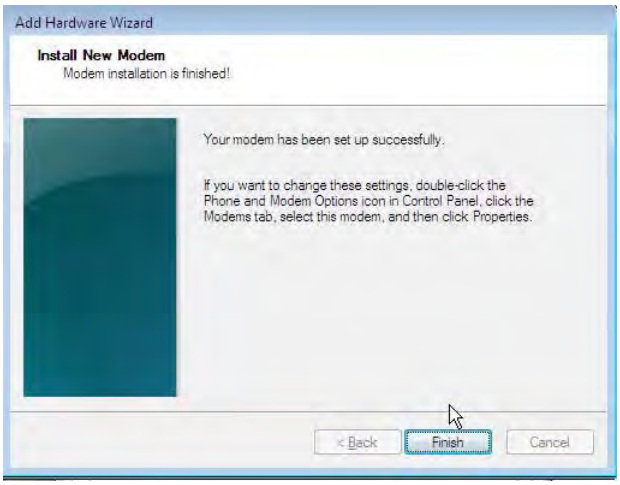
3. Check the "**Don't detect my modem; I will select it from a list**." and click the **Next** button. Then, select the **Standard 336900 bps modem** in the **Modem** field and click the **Next** button.



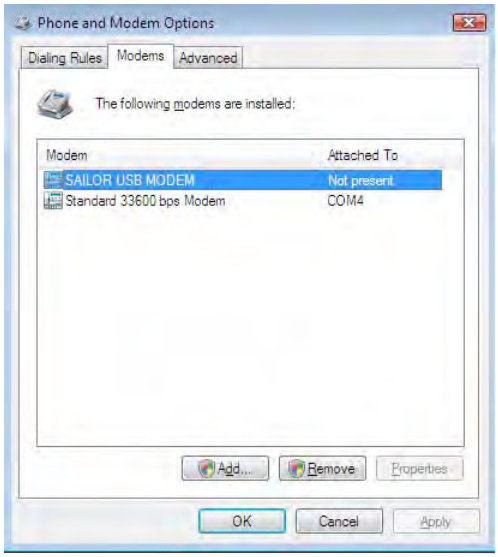


4. Select a port that you installed the modem driver and click the **Next** and the **Finish** button.

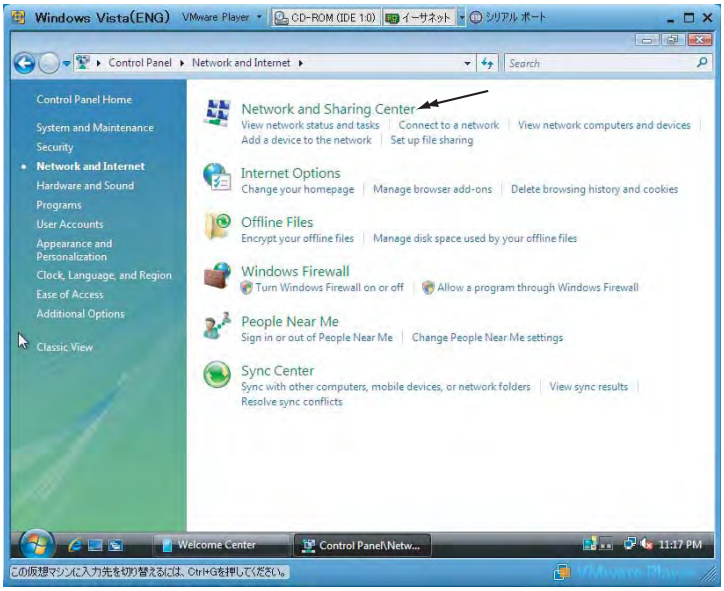




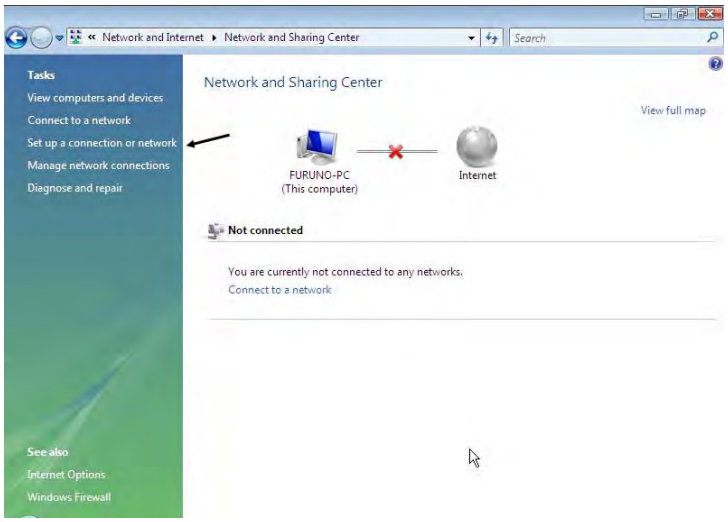
5. Open the **Phone and Modem Options** window and confirm the modem connection.



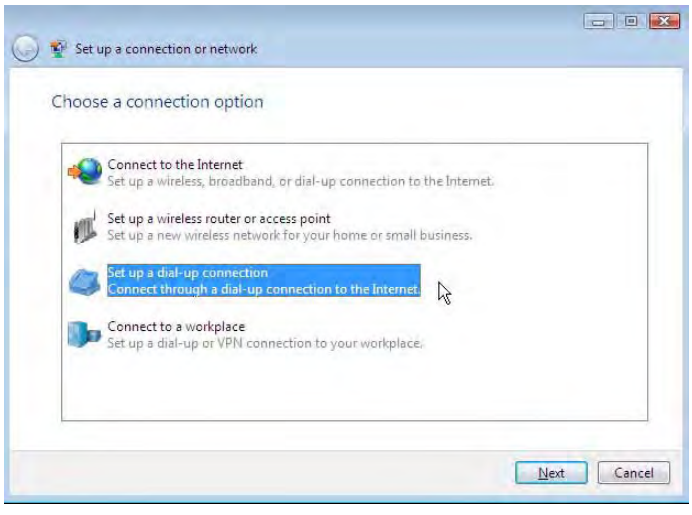
6. Open the Control Panel and click the Network and Internet and the Network and Sharing Center in that order.



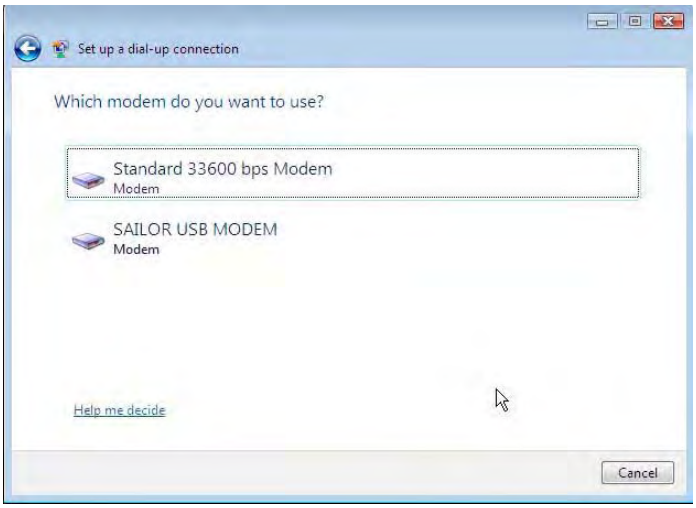
7. Click the Set up a connection or network to open the Set up a connection or network window.



8. Select the **Set up a dial-up connection** and click the **Next** button.



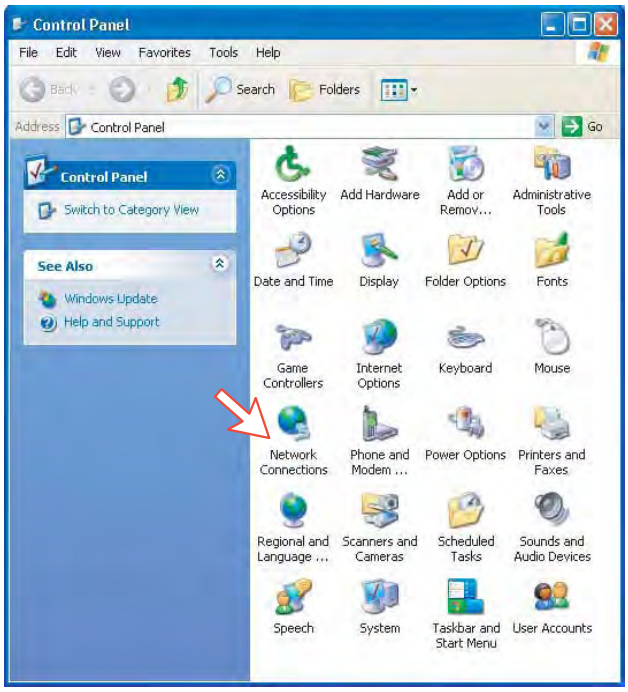
9. Select the **Standard 33600 bps Modem** and click the **Next** button.



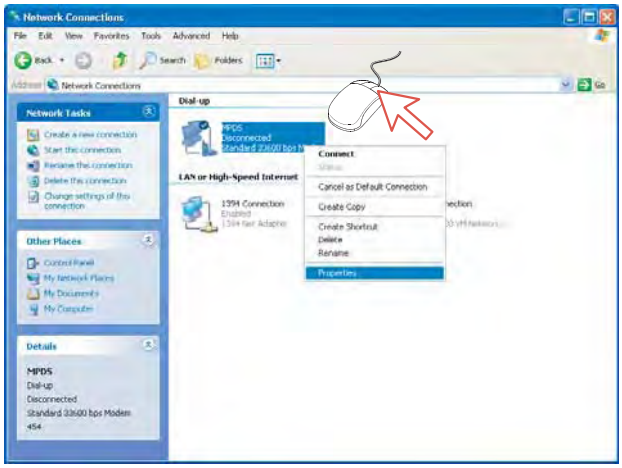
10. Enter telephone number (access code) " * * 9 4 # ", user name, password and connection name. Clear the check box **Allow other people to use this connection** and click the **Connect** button.

6.1.4 Checking default settings

1 Double-click **Network Connections** in the **Control Panel**.



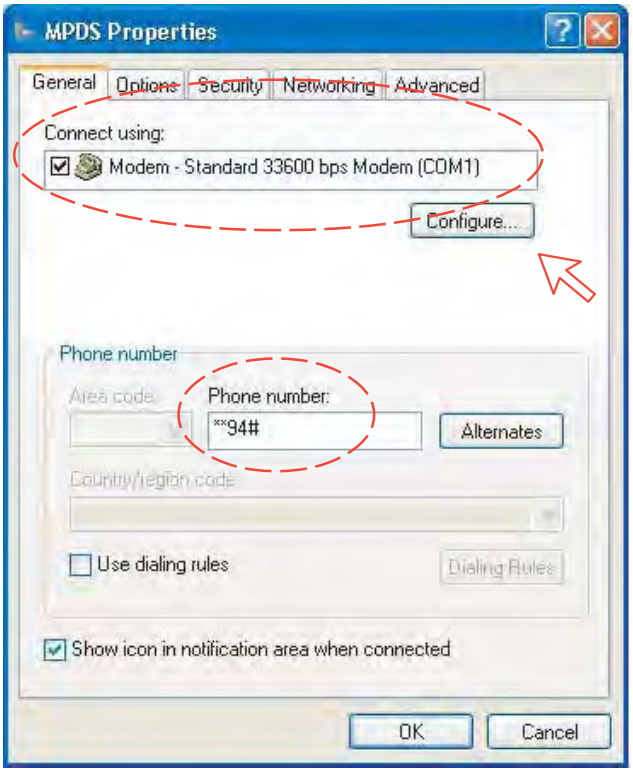
2 Right-click the **MPDS** dial-up connection and click **Properties**.



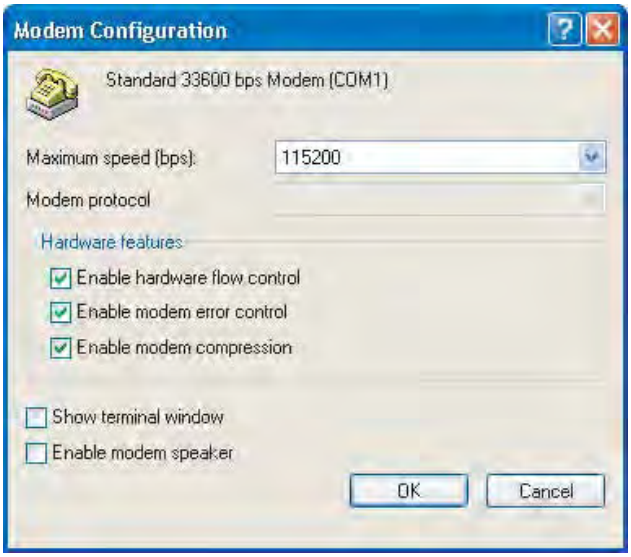
3 Check settings in the **MPDS Properties** window:

- **Modem - Standard 33600 bps Modem (COM1)**
- **Phone number: **94#.**

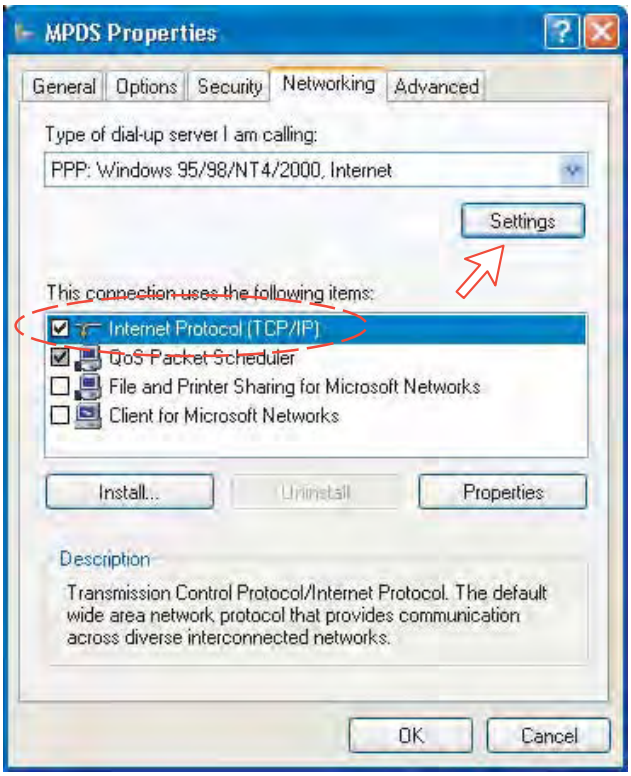
*Click **Configure**.*



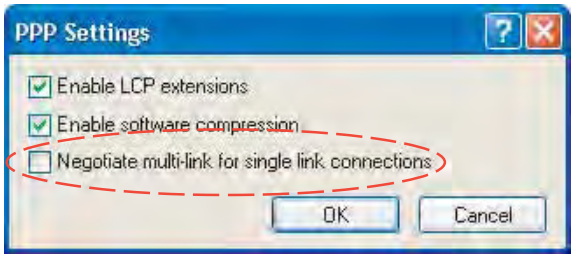
4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.



5 In the **MPDS Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected. *Click* ***Settings****.*

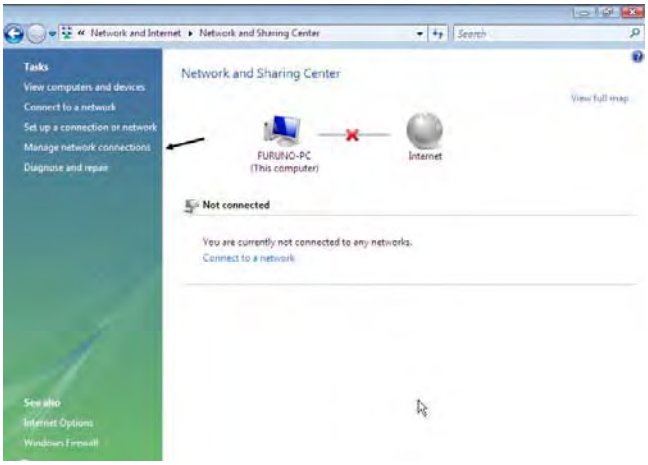


6 In the **PPP Settings** window, **Negotiate multi-link for single link connections** should be unchecked.



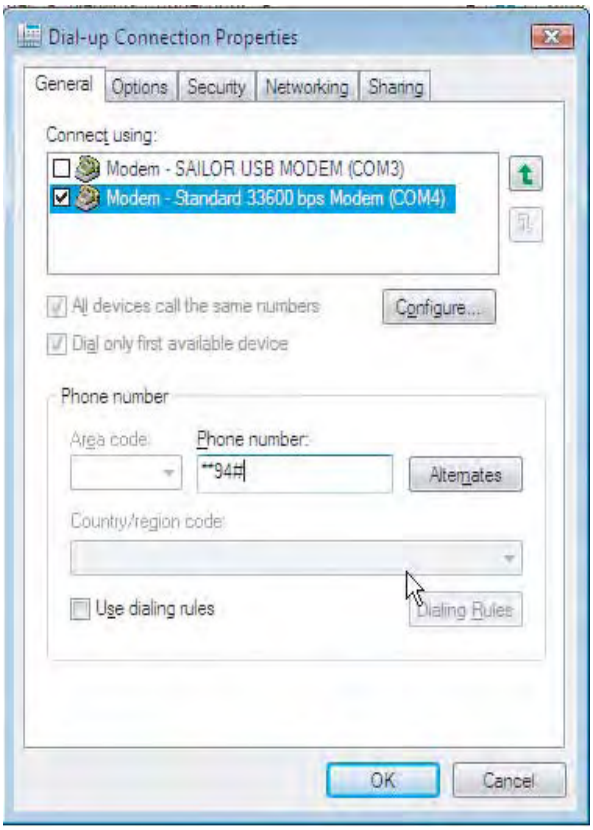
For Windows Vista

1. Open the **Control Panel** and click the **Network and Internet**, the **Network and Sharing Center** and **Manage network connection** in that order.

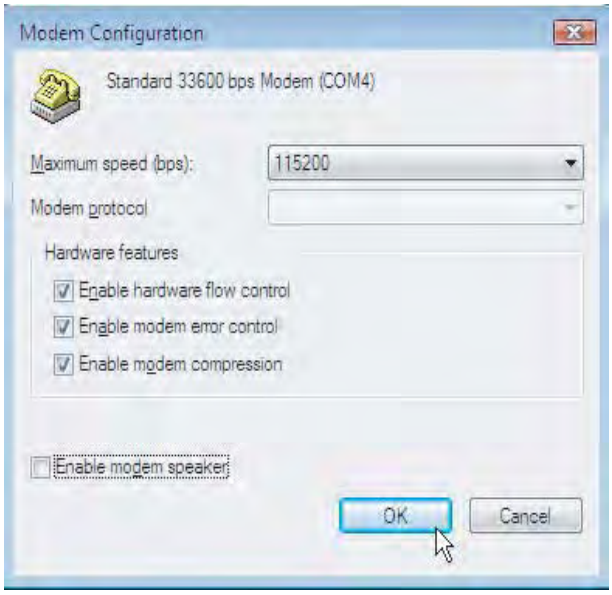


2. Right-click the **MPDS** icon that you created in the Dialup and click the **Properties**.
3. Confirm the setting contents in the **MPDS Properties** window.
   - Modem: Modem Standard 33600 bps Modem (COM4)
   - Phone number: * * 9 4 #

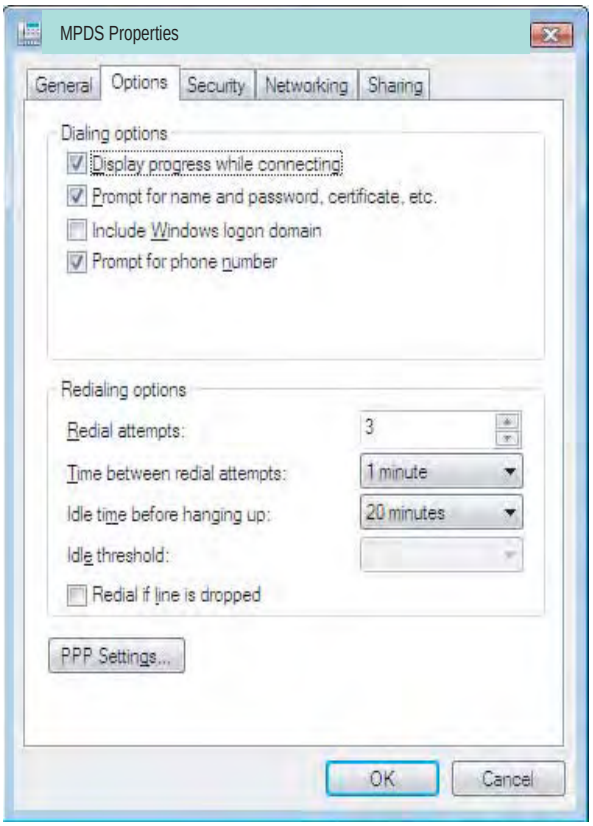
   Click the **Configure** button.



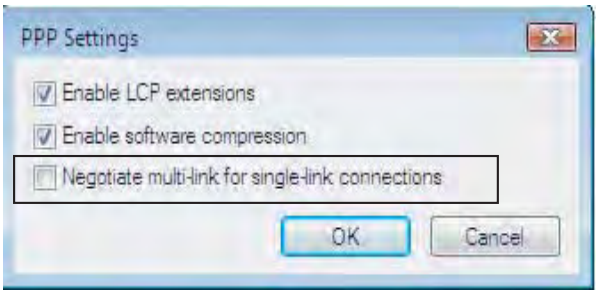
4. In the **Modem Configuration** window, confirm that the **Maximum speed (bps)** is set to 115200 and click the **OK** button.



5. Select the **Options** in the MPDS properties window and click the **PPP Settings**.



6. Confirm that the check box for **Negotiate multi-link for single-link connections** is clear in the **PPP Setting** window and click the **OK** button.



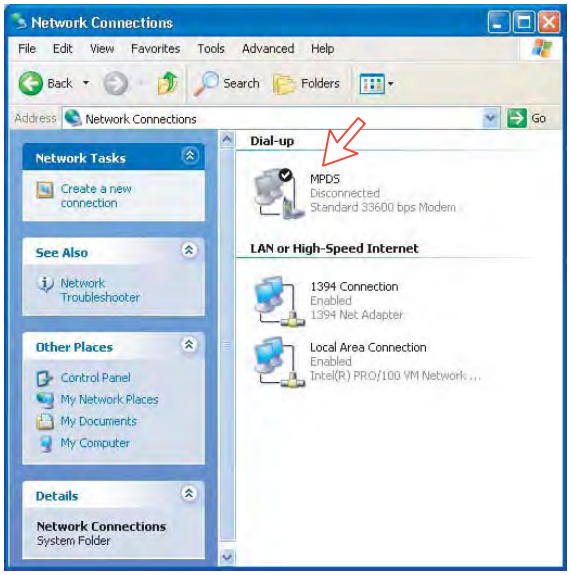
6.1.5 Connecting to server

For Window XP

Initiating an MPDS call

Open the **Control Panel** on the PC and double-click the **MPDS** icon in the **Network Connections** window *(i.e. the preset dial-up connection).*

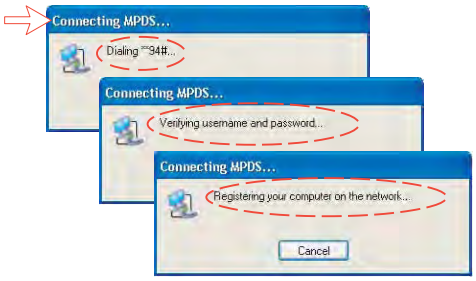
If provided for the specific server connection, enter the **User name** and **Password**.
Dialing **94# establishes the MPDS connection via the default Net provider *(to Home LES, see system overview)*.



Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*

Connection in progress

Displayed on the PC screen:

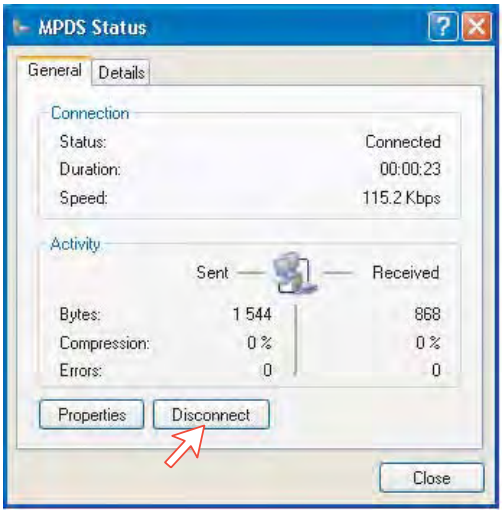


When connected:

Open the browser/program to be used on the connection.

Connection status

*Appears when right-clicking the **MPDS** dial-up icon and **Status**, or clicking the PC icons in the lower right corner of the screen.*



Note: Click **Disconnect** when shutting down the call.
It is not enough to close the browser alone.

Switching between MPDS and ISDN mode

The connection window provides sensing on the telephone number.
If dialing an international number instead of **94#, the terminal switches back to ISDN mode of operation.

Examples:
Dialing ****94#** ⇨ **MPDS** via default Net service provider (no subscriber number is sent to the Net provider).

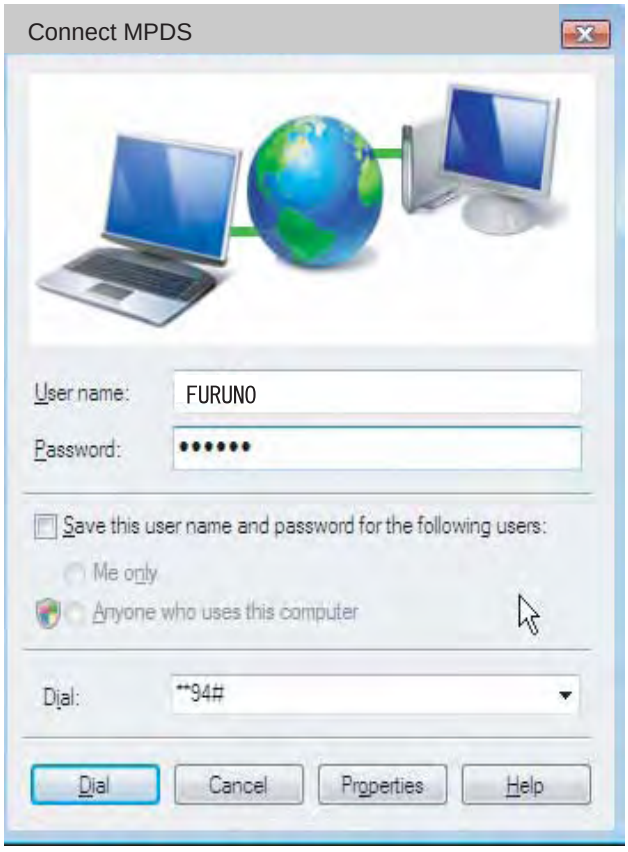
Note: Hash # may be omitted on some PCs/Windows versions.

Dialing **008166850170** ⇨ **ISDN** mode.

For Windows Vista

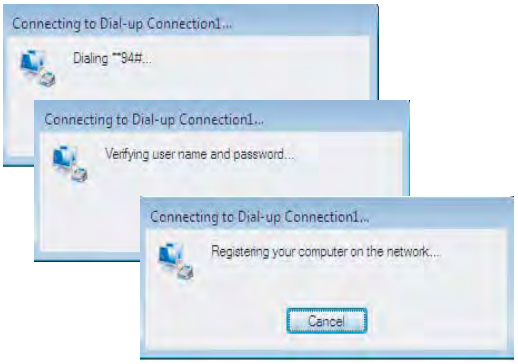
Initiating an MPDS call

Open the **Control Panel** and double-click the **Network and Internet**, the **Network and Sharing Center, Manage network connection** and **MPDS** in that order.



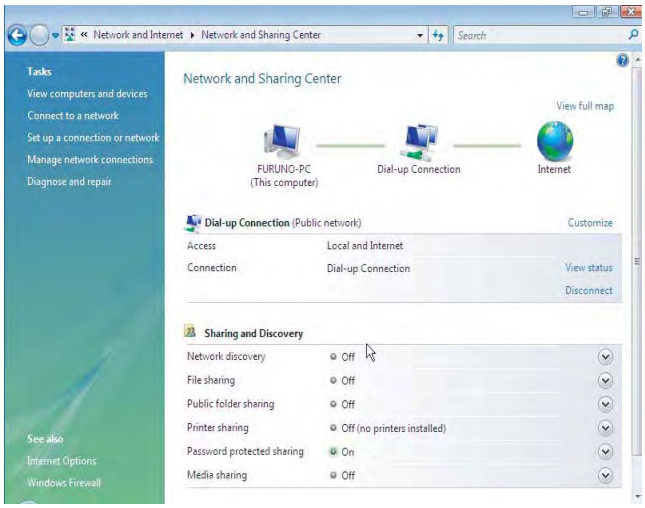
Connection in progress

Displayed on the PC screen:

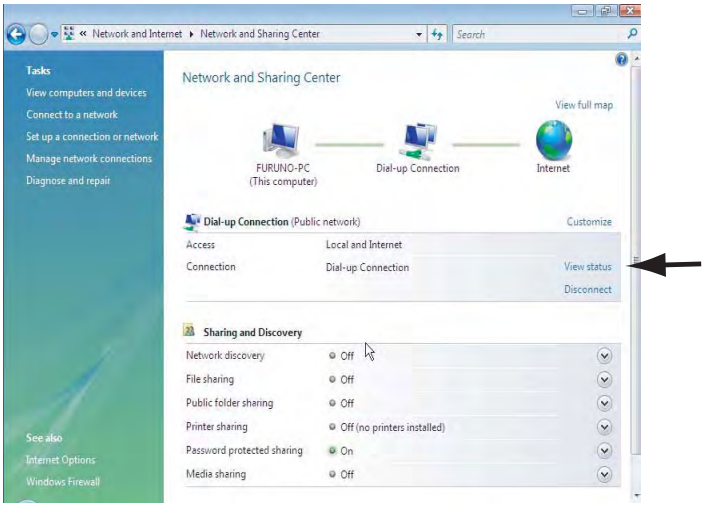


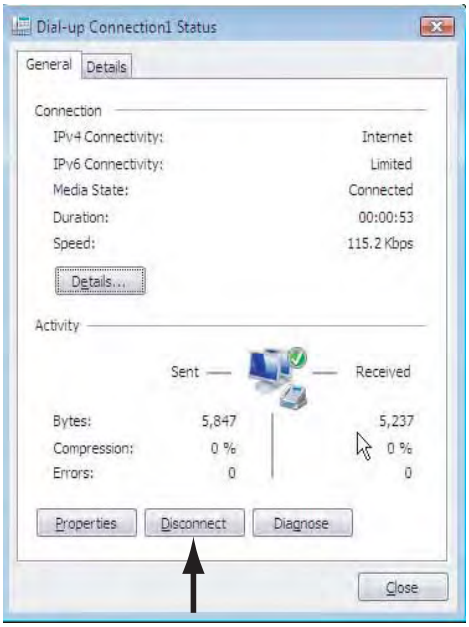
When connected

Click the **View status** to show the connection status.



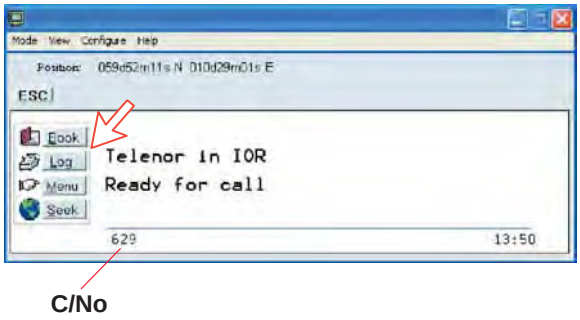
Connection status



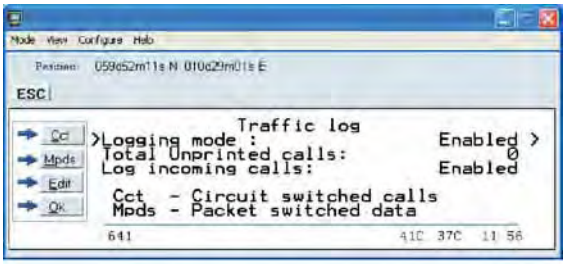


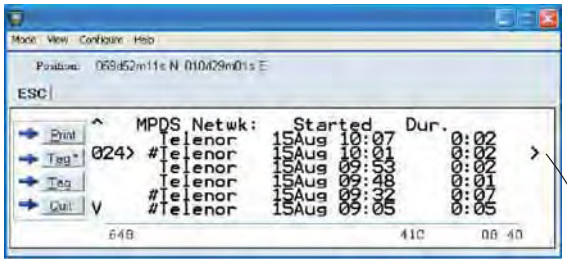
6.1.6 Traffic log

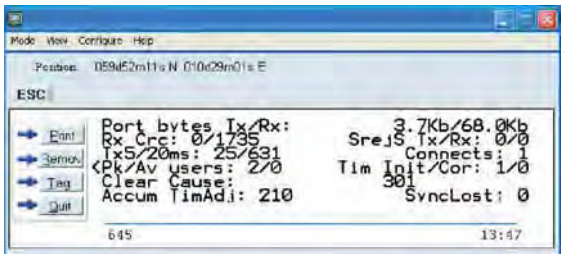
In the vtLite idle window, clicking **Log** lets you select between traffic logs for packet switched data (MPDS) and all other circuit switched call types.
Clicking the right arrow key expands the level of detail on entries listed.



In the Traffic Log window:
MPDS: note that this information is included for information only and should not be used e.g. for billing purposes. It contains some of the information also indicated in the "Real Time" status indications, and can be usefull to pinpoint any potential problem during a call. A low C/No < 535, will most likely give many retransmissions on the sattelite link. You should see this in the number of Srej TX and RX being higher than normal.







6.1.7 AT-commands

The commands listed below are performed automatically with the dial string **94#, but can be useful for advanced debugging of the MPDS system (e.g. SBS and HLES):

A T + W L E S = X X X ↵R
selects Net Provider (XXX = LES access code) for the serial port used.

Example:
A T + W L E S = 0 0 4 ↵R
selects Telenor: 004

A T + W N E R A M P D S M S N =
1 2 3 4 5 6 7 8 9 0 . . . . ↵R
sets and retrieves MPDS MSN.

Up to 22 digits are supported and the value is immediately saved to flash. The value is not used and is only provided for information.

A T + W R E G = 1 ↵R
registers the user with the default Net Service Provider.
This command will make the terminal register at the R-LES only, i.e. the terminal will not be connected to the Internet. In many cases when the MPDS system does not work it is important to verify whether the fault is in the SBS, RLES or HLES.
If this command is performed via e.g. Hyperterminal and you get the prompt Registered, then the fault is probably located in the H-LES.
If you do not get registered, your mobile is either rejected because of limited SBS resources or your mobile is not registered (commissioned) in the RLES.

A T + W R E G = 0 ↵R
deregisters the user.

A T + W S 4 5 = 4 ↵R
*sets the FELCOM 70 terminal in **MPDS** mode.*
This is implicitly done when using the **94# dial string. This command will make the FELCOM 70 terminal Register at the RLES when the Windows dial Up adapter sets up a PPP connection to the H-LES (Internet).

A T + W S 4 5 = 1 ↵R
*sets the FELCOM 70 terminal back to **Normal** mode (UDI) mode.*

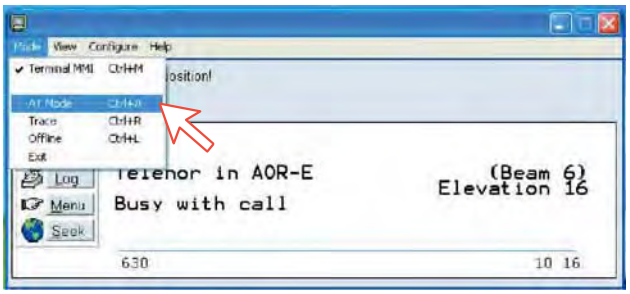
Note: Local echo of keyboard entries is set to ON with the commands:
A T E 1 ↵R

Note that all the above commands are not required if you use the Dial String **94# to select MPDS; all other Dial Strings will use SCPC.
It is included for information only. However when you are not able to establish the Dial Up Adapter, the "FURUNO" procedure has been to try the At+Wreg=1 , in order to verify whether or not this has been a SBS or RLES problem.

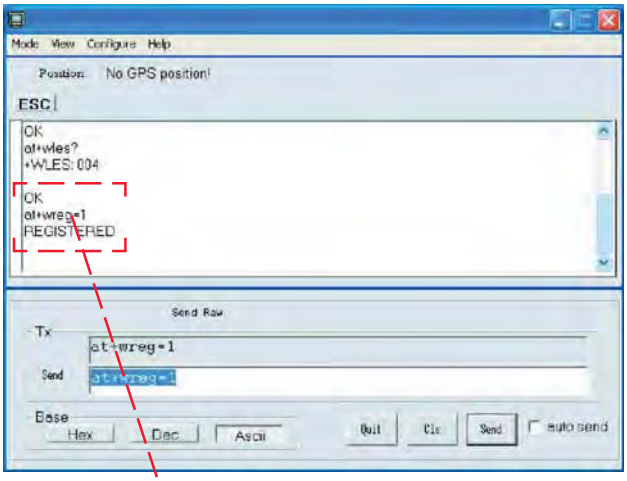
Verifying MPDS with AT-commands

Access to AT-commands

Instead of using the PC hyperterminal facility, access can easily be accomplished using SAILOR vtLite, or using Hyperterminal.



Start vtLite again:
*You can now key in **at+wreg=1** from vtLite:*



REGISTERED : MPDS is operational
FAILED : MPDS is not operational.
*Verify that MPDS is available for your terminal. See function 99, **Customization > Paid functions.***
If necessary, check that MPDS has been commissioned at your Net Service provider.

6.1.8 Troubleshooting

Problem	*Probable cause*	*Action*
1. No contact with modem or busy	Wrong setup of Communication Unit. SAILOR vtLite uses the same port.	• Make sure the vtLite settings are correct, *see* ***RS-232 configuration.*** • Try autodect if problems with the connection. • Try different speed and COM port settings. • Close SAILOR vtLite.
2. Cannot find Dial Up Networking:	Dial up connection not installed.	• Contact your PC vendor to get the software.
3. Connection unsuccessful:	Wrong connection details.	• Check the phone number, user name and password with your service provider. • Using SAILOR vtLite, check configuration in Device Manager.
4. Cable length	Guaranteed length: 1.5 m	• Recommended maximum length: 3 m
5. All dialups dial in MPDS		• Use AT+WS45=1 to set port back to normal mode.
6. User name and password illegal	Some PCs always require username/password.	• Enter any name/password to ensure a successful call.

Checking your configuration

Connection attempt fails quickly and reports a hardware error with the modem

Check that no other application for example hyperterminal or vtLite is using the serial port and check that the serial cable is properly connected between the PC and the terminal.

The MPDS real time status display starts but the connection fails to establish before timing out.

Start hyperterminal or another terminal emulator so AT commands can be entered to the terminal.
First check the LES being used AT+WLES? The terminal will reply with the LES access code being used. If this is not what you expect change the value with AT+WLES=xxx and save the new value with AT&W now check that it is possible to access the MPDS service by entering AT+WREG=1.
The real time status display should show “Allocating” “Tuning” and finally “Registered”
If instead you see “Failed” “Inactive” then the terminal has not been able to connect to the MPDS service with the given access code.
The result of the registration attempt is also shown to the AT interface.
If registration worked then deregister with AT+WREG=0.

The registration attempt succeeds but connection attempts fail

Check that the max speed of the modem that was setup is 115200bps.

Fault finding

After starting the connection as described above one should see:

a) The dial up networking connection dialogue shows the normal progression of “dialing” “verifying user name and password” and “registering your computer on the network”
b) The real time status indication on the terminal should show “Registering” then “Registered”
c) Once a “Connect” has been received from the host the Modem display/ISDN Handset will show “Connected”.
d) The connection should be established and usable after the completion of PPP negotiation.

Error and clear cause logging on the vtLite application window

The terminal includes call logging and a record of any errors that occur. To assist with improving the system please note the contents of these if a problem is encountered.

C/No display Signal Strength Indication

For data communication it is of major importance that the mobile has a high enough Carrier-to-Noise Ratio (C/No) before the call is established. (a voice call is not as sensitive to this as a data call).
Before establishing any sort of data call (HSD or MPDS) verify that the display in vtLite indicates minimum 535.

Diagnostics

To enable diagnostics open menu “Advanced Functions” -> “Configuration” -> “Enable diagnostics” “9-7-4”
And select “On”. Press ESC key 4 times to return to the idle screen.

Version information

The versions of the software components used in your system are shown in menu “Advanced functions” -> “Information available” -> “Misc version Id”.
Use the up/down arrow keys to navigate the list.

Minimum Modem software requirements:

- FELCOM 70: system version REL 3.5 and higher

6.2 Mobile Packet Data Service (USB)

6.2.1 Introduction

The **Mobile Packet Data Service** complies with the communication protocol defined by the Inmarsat Fleet F77 system.

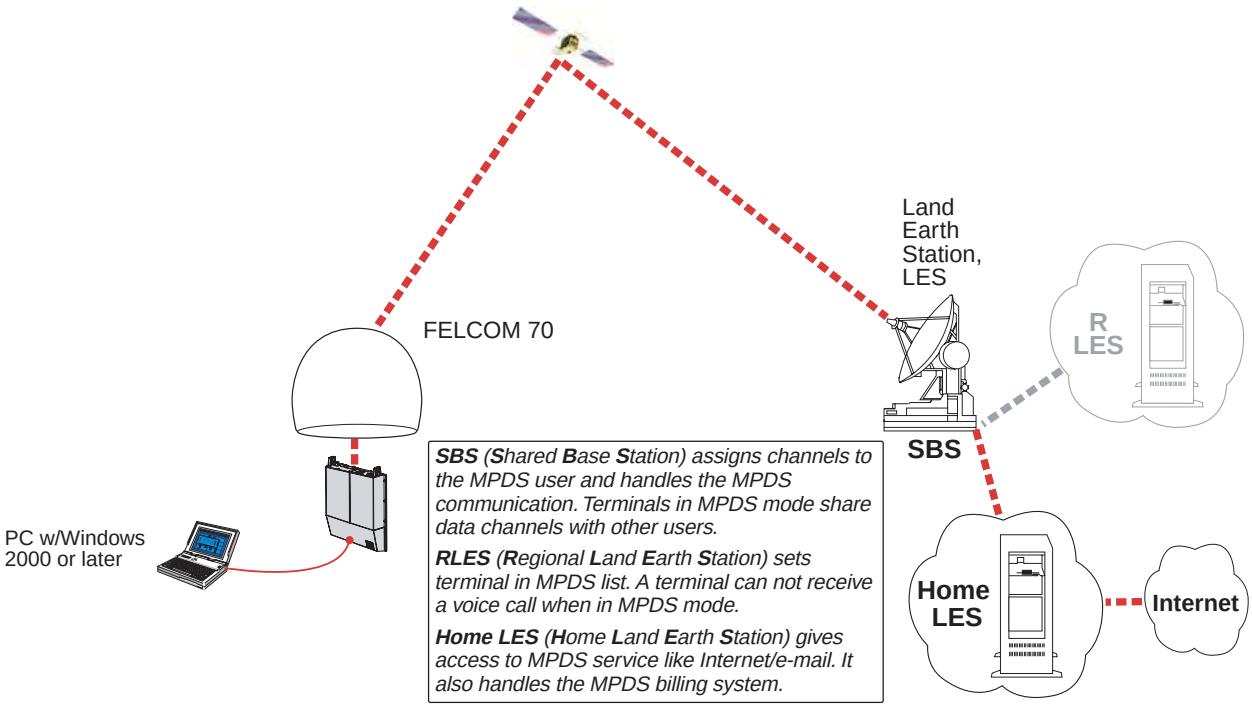
The transmission data rate over the satellite link is typically 20 kbps *(a 64 kbps channel is shared with other users).*

Switching between **MPDS** and Mobile **ISDN** service is done from the PC.

The PC must have Win 2000 or Win XP installed.

With MPDS you only pay for the amount of data received or transmitted, rather than for the time you are connected.
MPDS can be efficient for applications that involves brief bursts of communication followed by periods of inactivity, such as:

- E-mail
- Internet/intranet
- Navigational updates
- Scada
- Database queries
- E-commerce
- VPN - Virtual Private Network



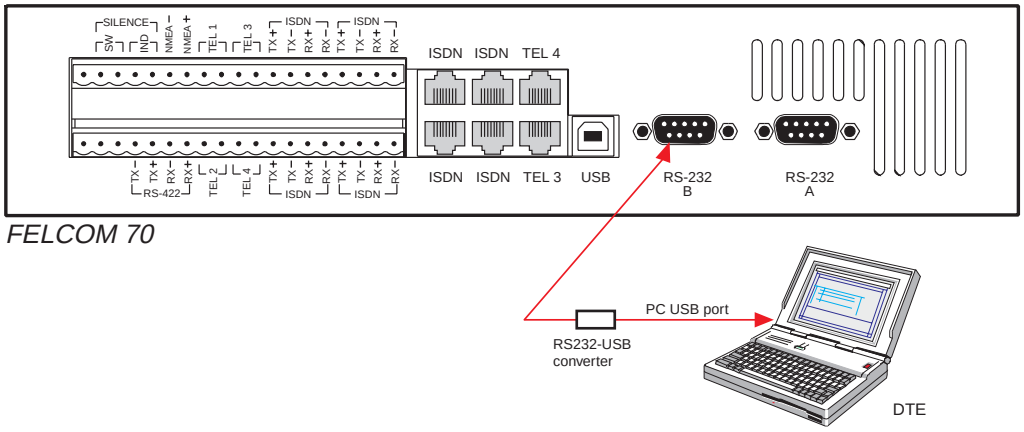
System Overview

6.2.2 Connecting up

RS-232 Connection via USB port

1. Insert the driver that is attached to a commercial RS232-USB converter, to the PC.
2. Connect the USB port of the PC and the serial port of the FELCOM 70 with a commercial RS232-USB converter.

   Windows opens the **Found New Hardware Wizard**.
3. Install the driver, referring to the instruction attached to the driver.



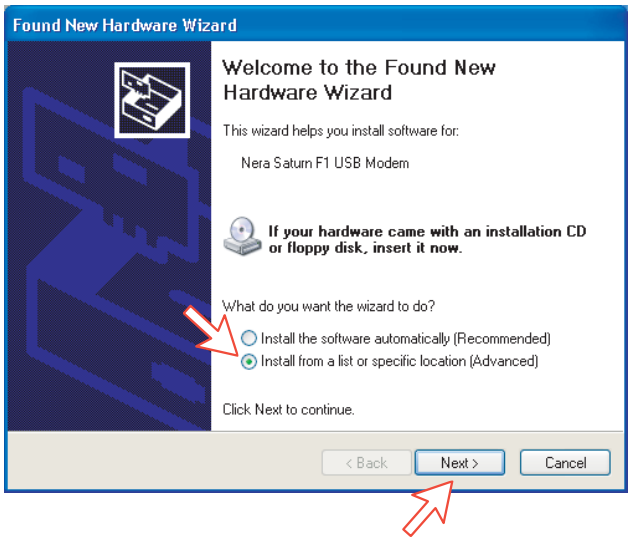
Note: The USB port can not be used. If you want to use an USB port on your PC, use a commercially available RS232-USB converter and install its driver.

6.2.3 PC setup

For Windows XP

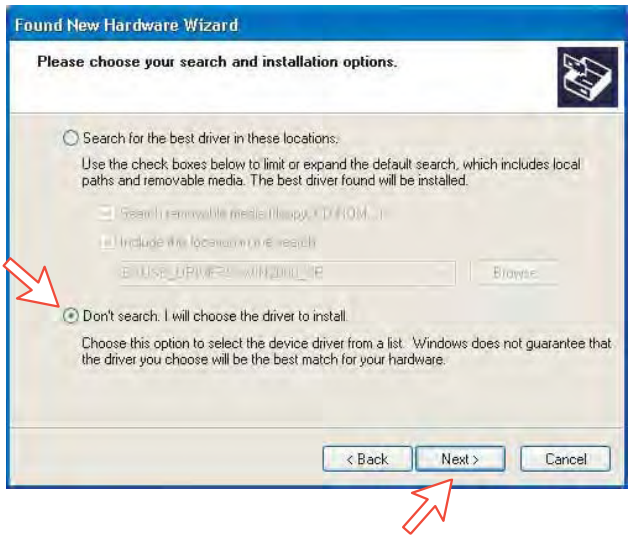
Ensure that SAILOR vtLite is closed. If connecting USB cable, restart the PC and the FELCOM 70.

1 The **Found New Hardware Wizard** opens when the USB cable has been connected.
Check "Install from a list or specific location (Advanced)" and *click* ***Next***.

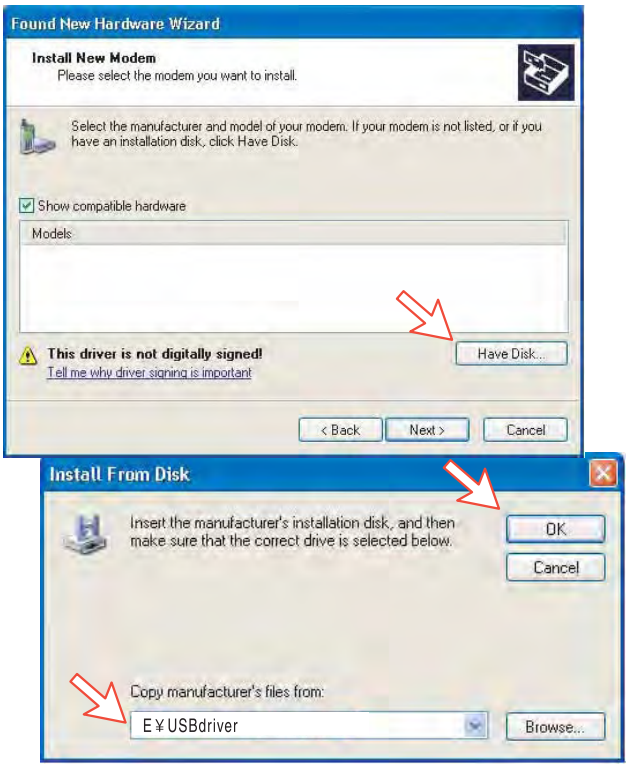


2 Check "Don't search. I will choose the driver to install".
Click ***Next****.*

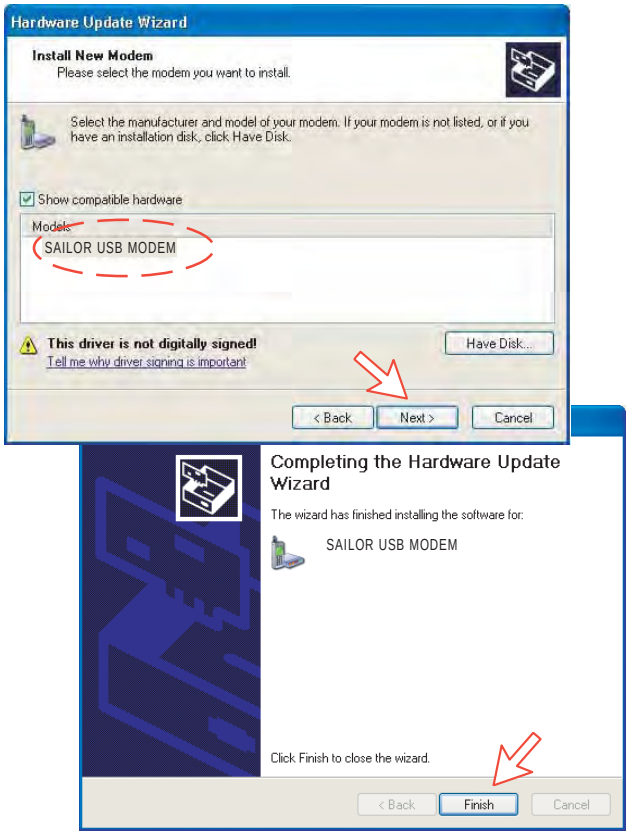
Note: Setting up is only necessary to do once.
For future connections, go directly to **Initiating an MPDS call**.



3 In the **Found New Hardware Wizard** window *click **Have disk***. Click **Browse** and specify a USB driver folder in the CD. Open **USB4SAILOR.INF** and click **OK**.



4 Select the **SAILOR USB MODEM**. *Click **Next.** Some message appears, but ignore it and click **Continue**. Click **Finish** to complete the installation.*



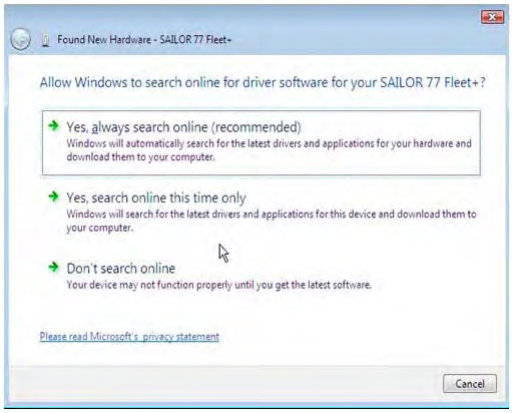
For Windows Vista

Ensure that the SAILOR vtLite is closed.

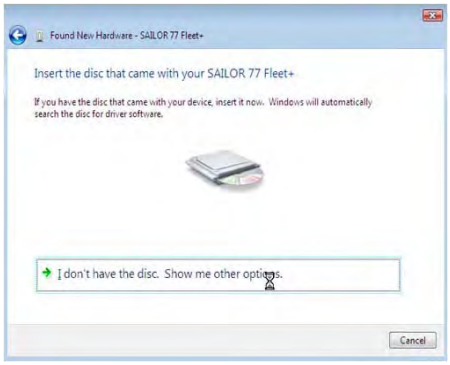
1. When connecting USB cable, the **Found New Hardware** screen appears. Click the **Locate and install driver software**.

If the **User Account Control** screen appears, click the **Continue** button.

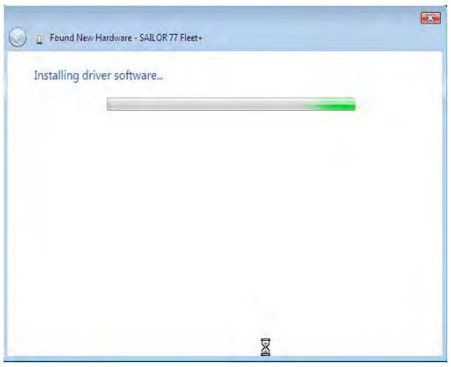
2. The **Found New Hardware – SAILOR 77 Fleet** screen appears. Click the **Don't search online**.
   Note: Setting up is only necessary to do once. For future connections, go directly to **Initiating an MPDS** call. When installing the single USB driver, the dual USB driver is installed.



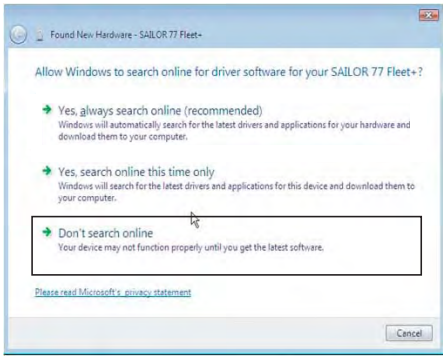
3. Insert the CD.



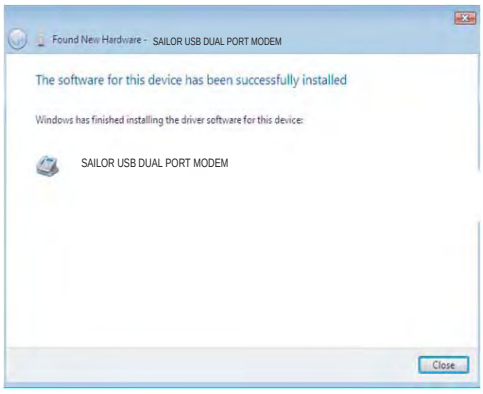
The driver software is installed.



4. The **Windows Security** wizard appears. Click the **Install this driver software anyway**.



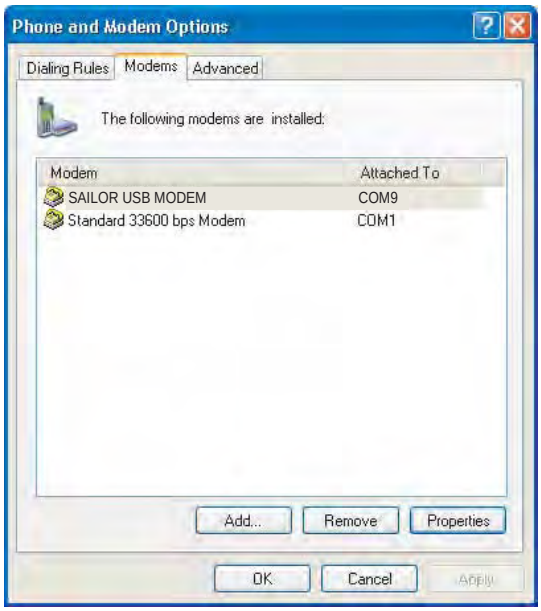
5. After completing installation, the **The software for this device has been successfully installed** appears. Click the **Close** button.



6.2.4 MPDS – setup

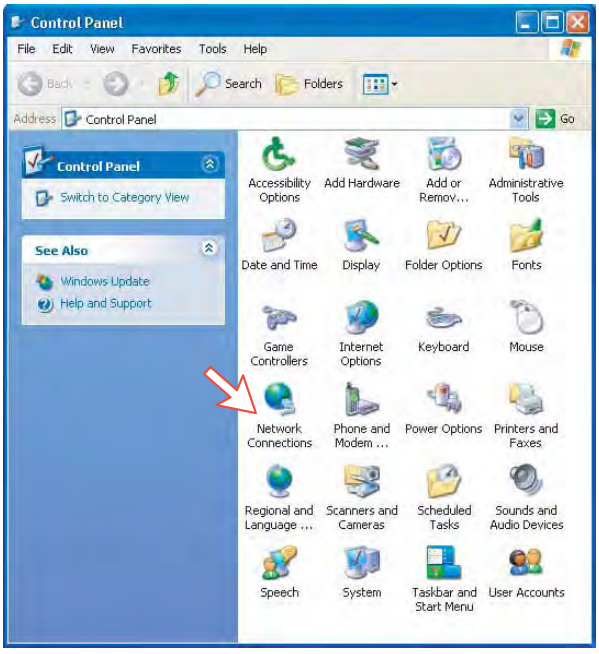
For Windows XP

1 Opening the **SAILOR USB MODEM** window confirms the established modem connection.
Select SAILOR USB MODEM.

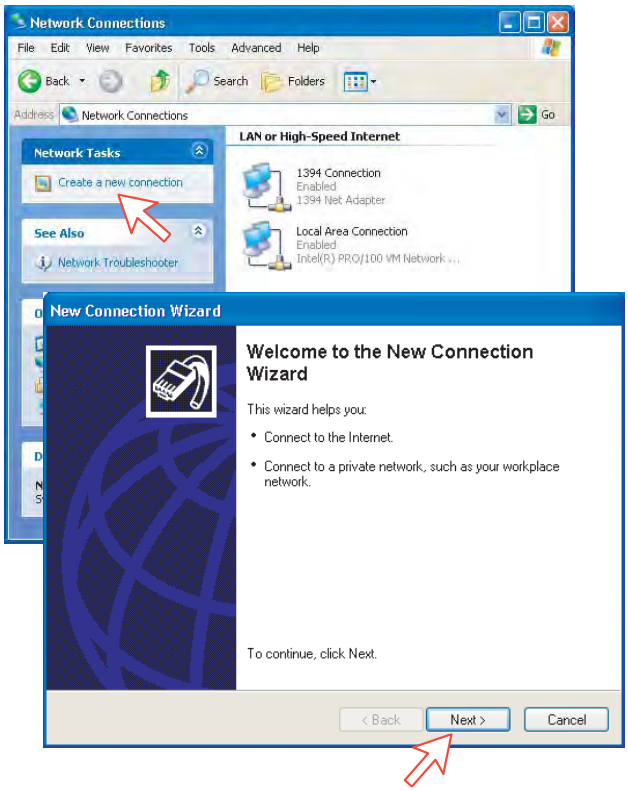


Note: The setup for data transfer to the FURUNO terminal is based on the Windows XP default parameters:
8 data bits - no parity - 1 stop bit - flow ctrl: Hardware
Clicking **Properties** allows checking the parameters.

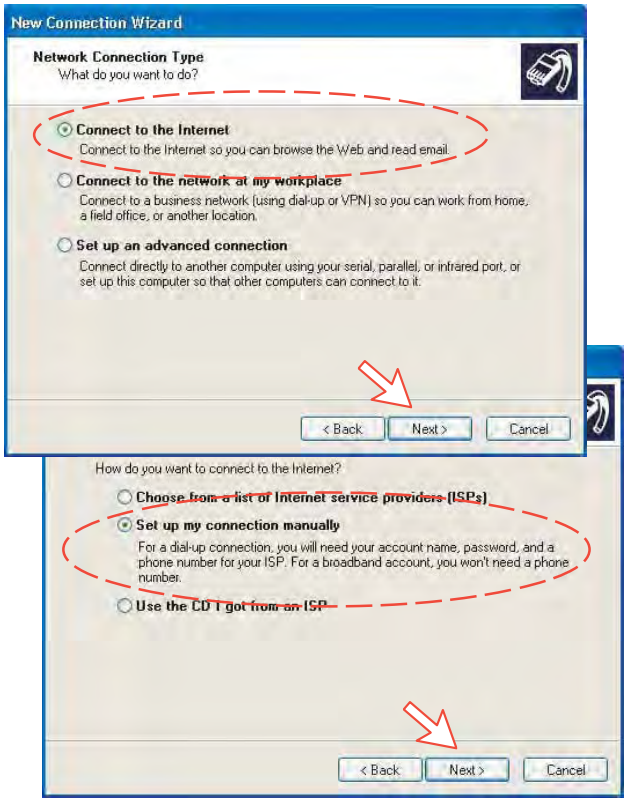
2 Open the **Control Panel** on the PC and double-click the **Network Connections** icon.



3 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*

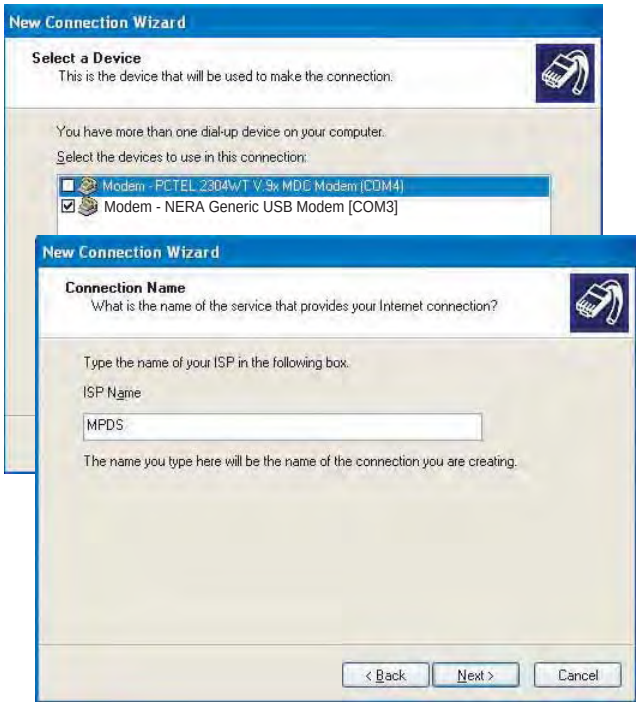


4 Check **Connect to the Internet**. *Click **Next**.* Check **Set up my connection manually**.
*Click **Next**.*



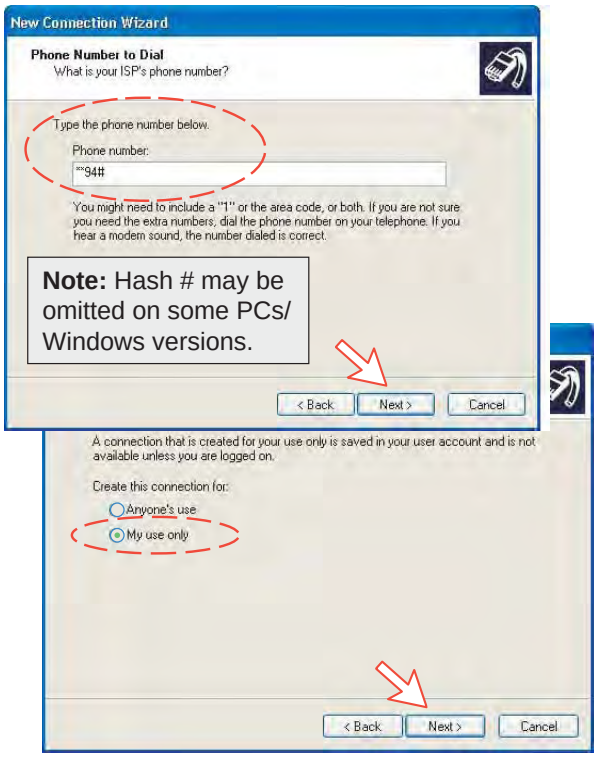
5 Check **Connect using a dial-up modem**. *Click **Next**.*

6 Check “Modem-NERA Generic USB Modem.” Click ***Nex***t. Enter the name for the connection e.g. **MPDS**. *Click **Next**.*



7 Entering phone number ****94#** automatically connects you to the Internet Service Provider through your default Net Provider. *Click* ***Next***.

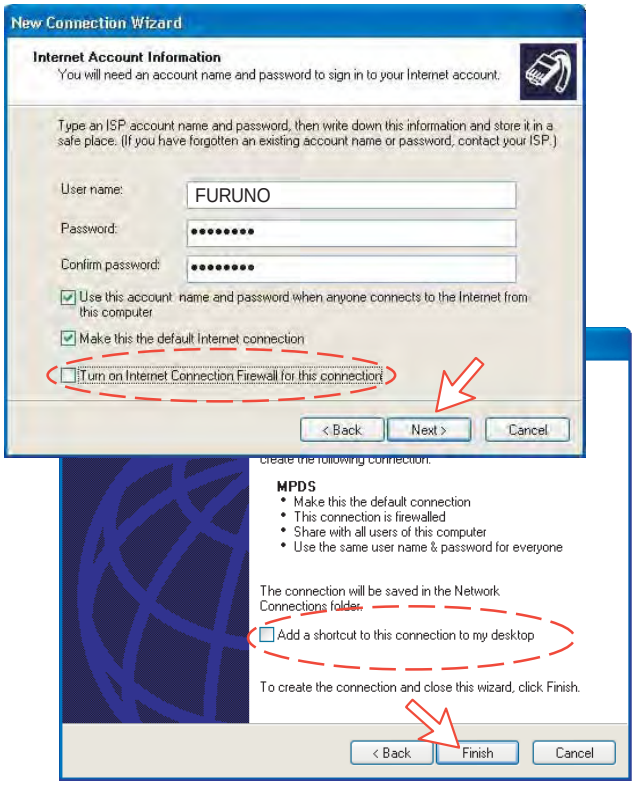
Check **Anyone's use**, *and click* ***Next***.



8 Enter name and password for the connection.

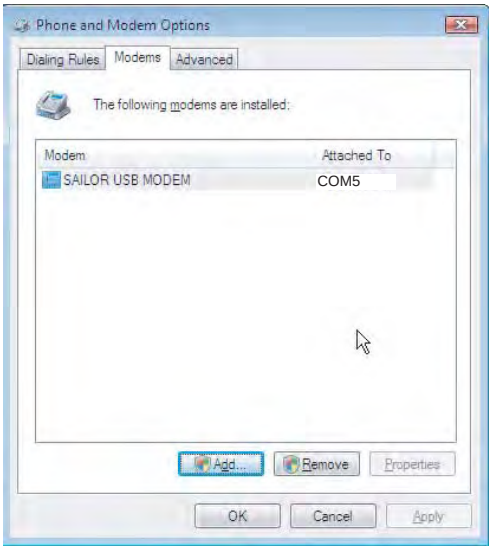
Uncheck **Turn on Internet Connection Firewall for this connection**. *Click* ***Next***.

Complete the **New Connection**, *click* ***Finish***.



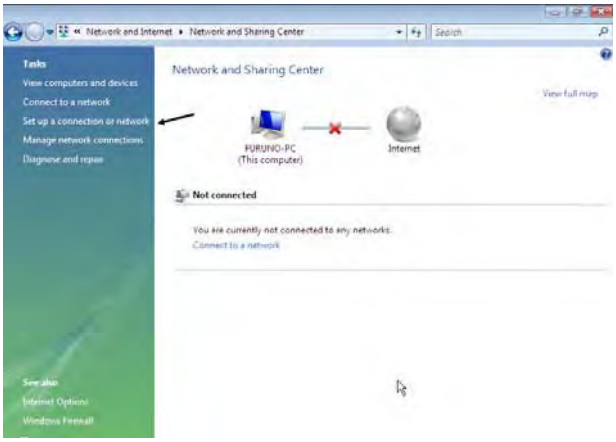
For Windows Vista

1. Open the **Phone and Modem Options** window and confirm the established modem connection. Select **SAILOR USB MODEM**.

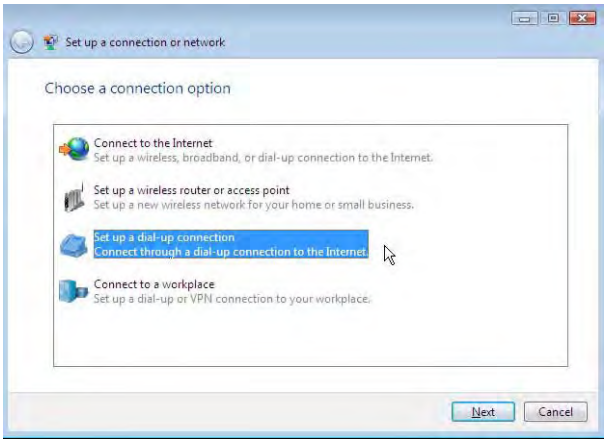


2. Open the **Control Panel** and click the **Network and Internet** and the **Network and Sharing Center** in that order.

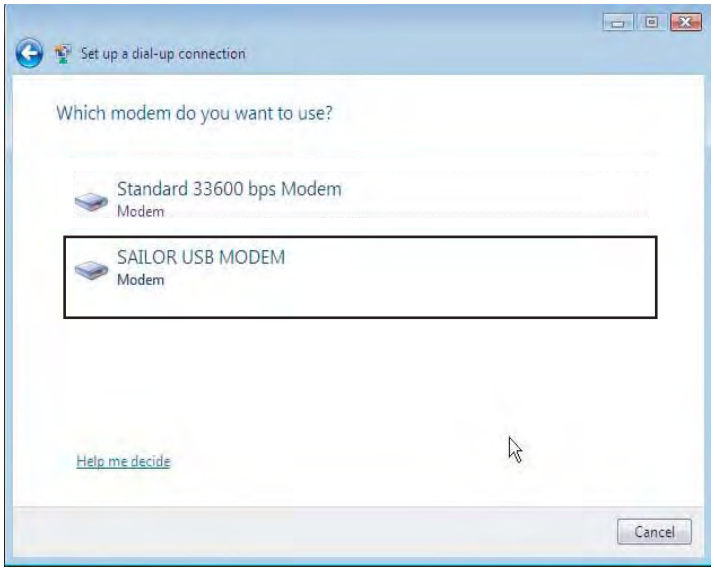
3. Click the **Set up a connection or network** to open the **Set up a connection or network** window.



4. Select the **Set up a dial-up connection** and click the **Next** button.



5. Select the **SAILOR USB Modem** and click the **Next** button.

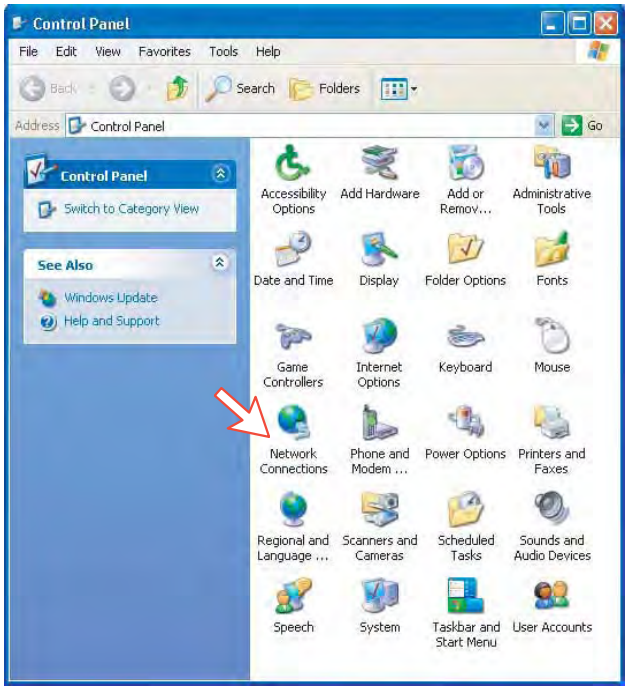


6. Enter telephone number (access code) " * * 9 4 # ", user name, password and connection name. Clear the check box **Allow other people to use this connection** and click the **Connect** button.

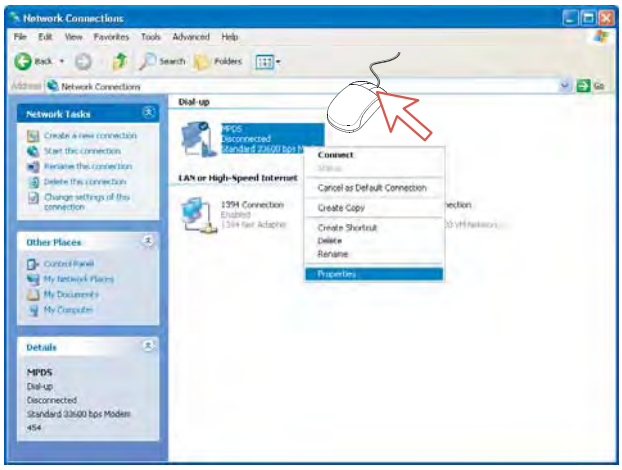
6.2.5 Checking default settings

For Windows XP

1 Double-click **Network Connections** in the **Control Panel**.



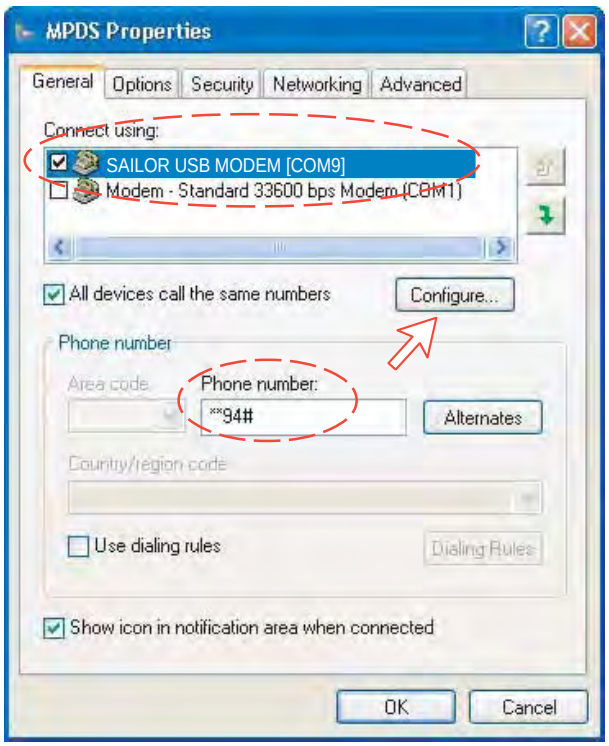
2 Right-click the **MPDS** dial-up connection and click **Properties**.



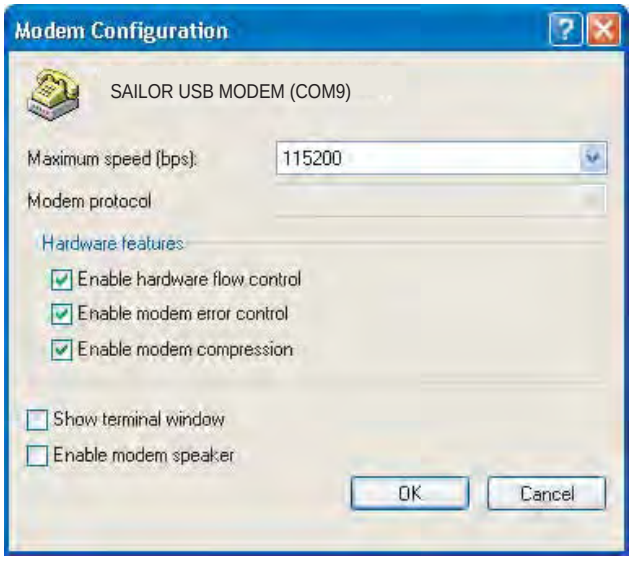
3 Confirm settings in the **MPDS Properties** window:

- "Modem – SAILOR USB MODEM [COM9]".
- Phone number: **94#

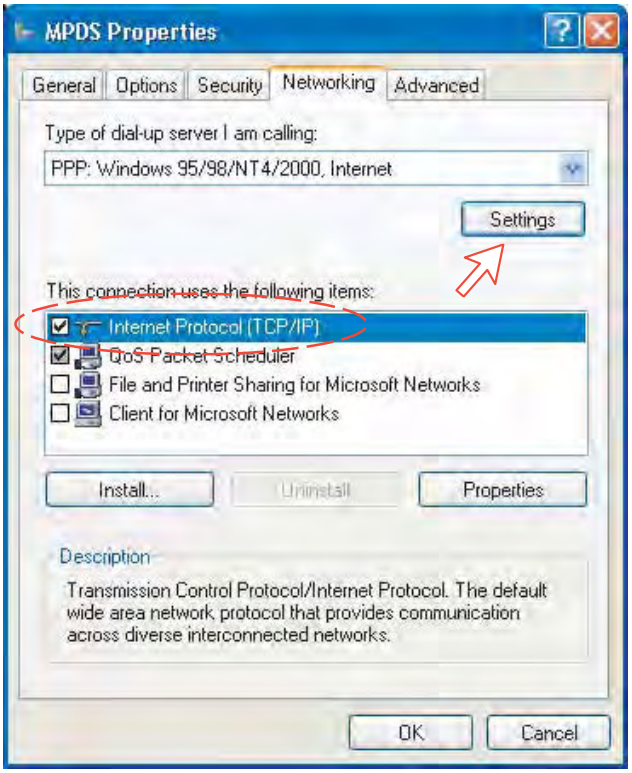
*Click **Configure**.*



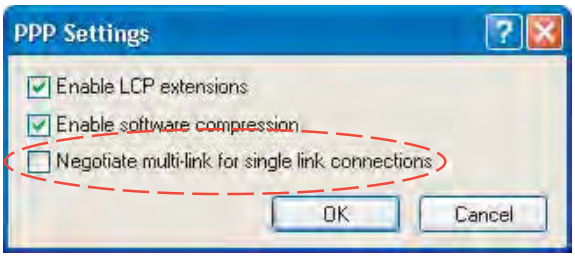
4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.



5 In the **MPDS Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected. *Click* ***Settings***.

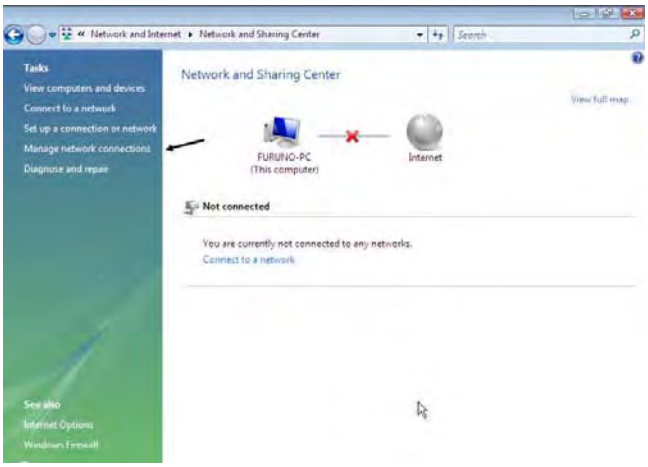


6 In the **PPP Settings** window, **Negotiate multi-link for single link connections** should be unchecked.



For Windows Vista

1. Open the **Control Panel** and click the **Network and Internet**, the **Network and Sharing Center** and **Manage network connection** in that order.

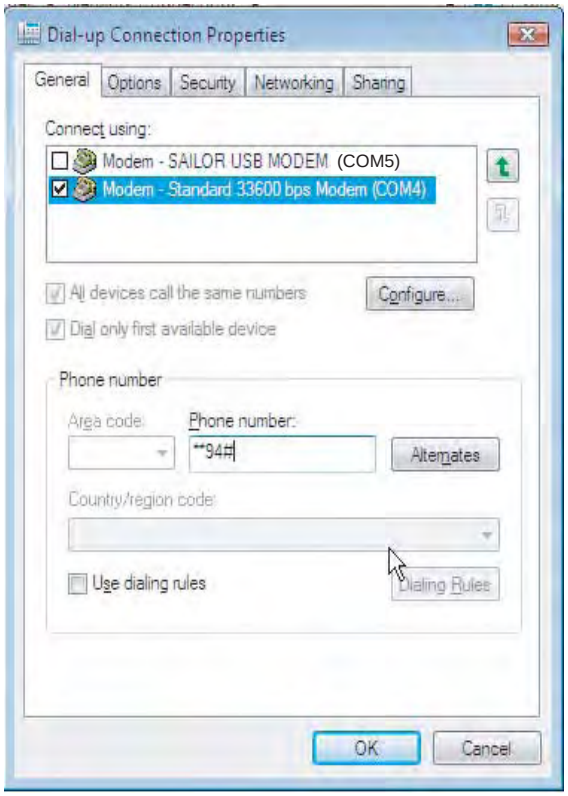


2. Right-click the **MPDS** icon that you created in the Dialup and click the **Properties**.

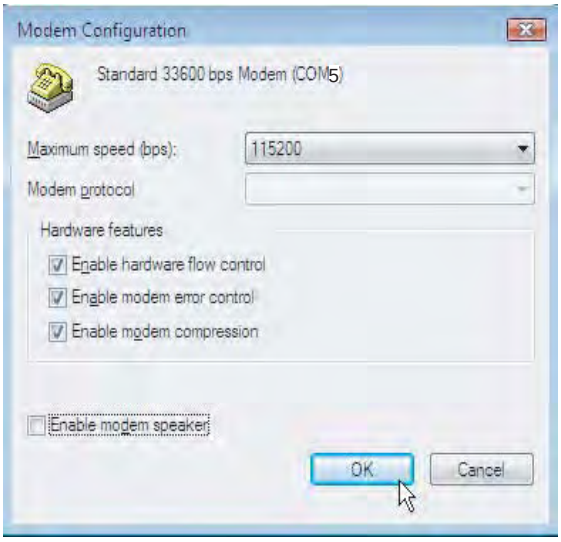
3. Confirm the setting contents in the **MPDS Properties** window.

- Modem: Modem standard 33600 bps Modem (COM5)
- Phone number: * * 9 4 #

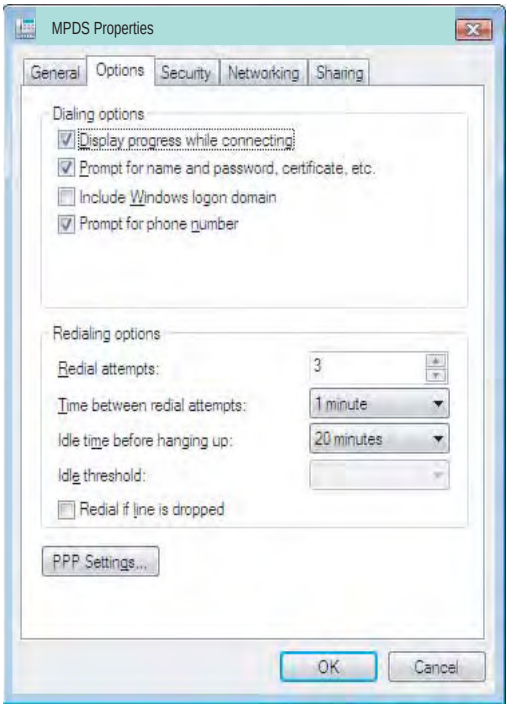
Click the **Configure** button.



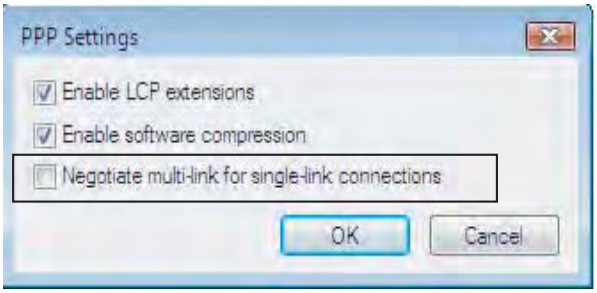
4. In the **Modem Configuration** window, confirm that the **Maximum speed (bps)** is set to **115200** and click the **OK** button.



5. Select the **Options** tab in the MPDS properties window and click the **PPP Settings**.



6. Confirm that the check box for **Negotiate multi-link for single-link connections** is clear in the **PPP Setting** window and click the **OK** button.



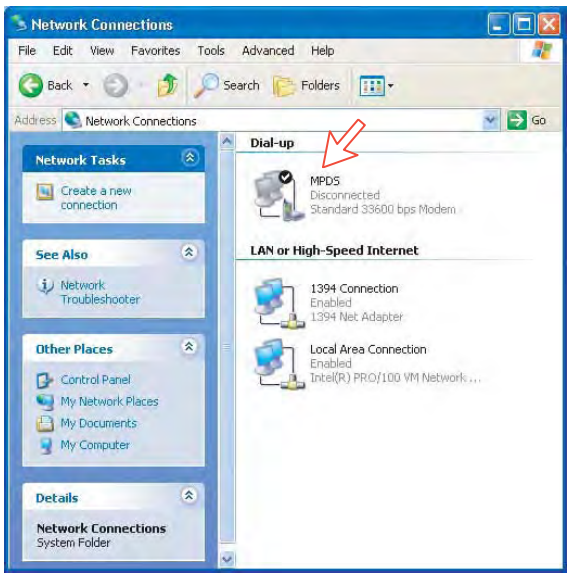
6.2.6 Connecting to server

For Windows XP

Initiating an MPDS call

Open the **Control Panel** on the PC and double-click the **MPDS** icon in the **Network Connections** window *(i.e. the preset dial-up connection).*

If provided for the specific server connection, enter the **User name** and **Password**.
Dialing **94# establishes the MPDS connection via the default Net provider *(to Home LES, see system overview)*.



Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*

Connection in progress

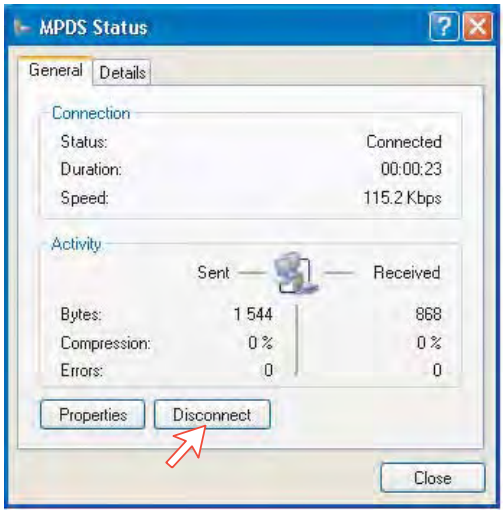
Displayed on the PC screen:

When connected:

Open the browser/program to be used on the connection.

Connection status

*Appears when right-clicking the **MPDS** dial-up icon and **Status**, or clicking the PC icons in the lower right corner of the screen.*



Note: Click **Disconnect** when shutting down the call.
It is not enough to close the browser alone.

Switching between MPDS and ISDN mode

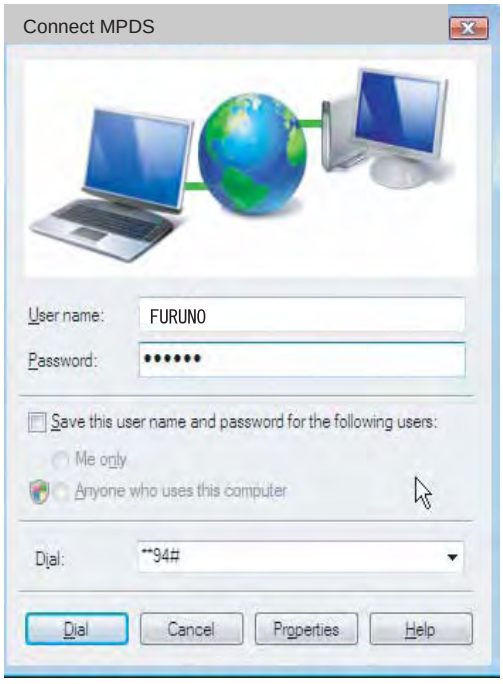
The connection window provides sensing on the telephone number.
If dialing an international number instead of **94#, the terminal switches back to ISDN mode of operation.
Examples:
Dialing **94# ⇨ **MPDS** via default Net service provider (no subscriber number is sent to the Net provider).

Note: Hash # may be omitted on some PCs/Windows versions.

Dialing **004766850170** ⇨ **ISDN** mode.

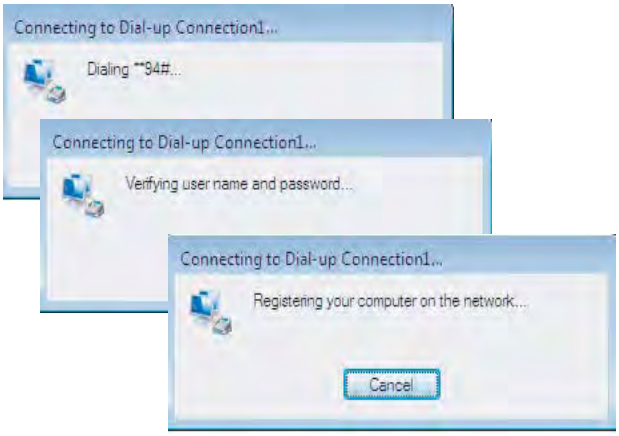
For Windows Vista

Open the **Control Panel** and double-click the **Network and Internet**, the **Network and Sharing Center, Manage network connection** and **MPDS** in that order.

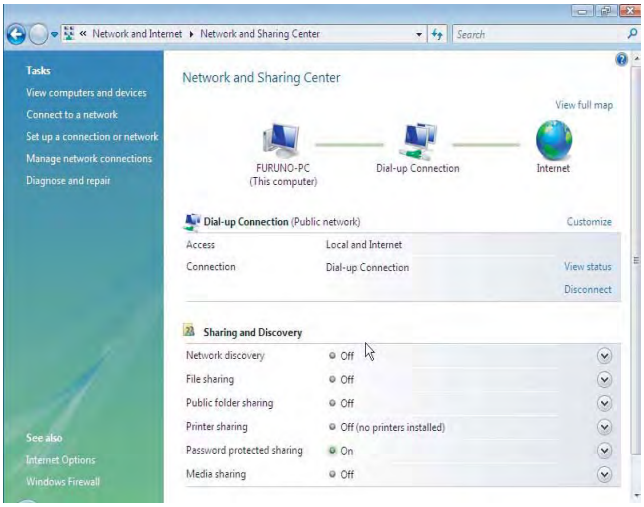


Connection in progress

Displayed on the PC screen:

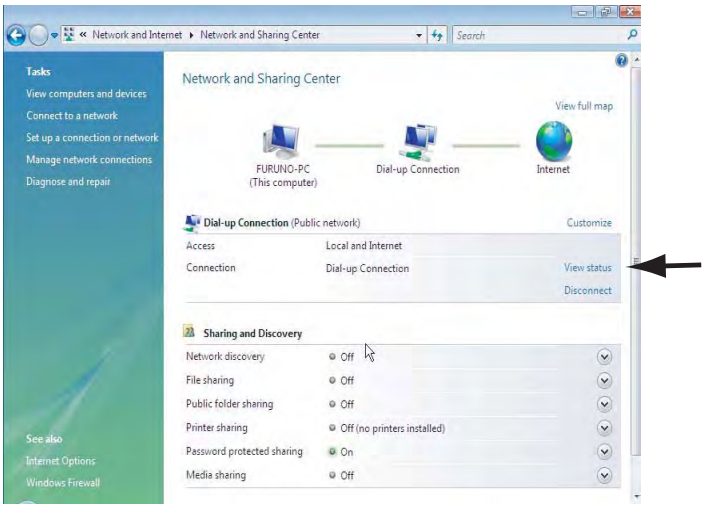


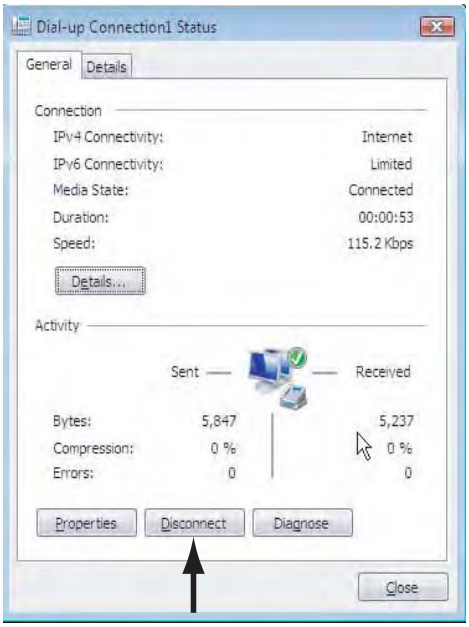
When connected



Connection status

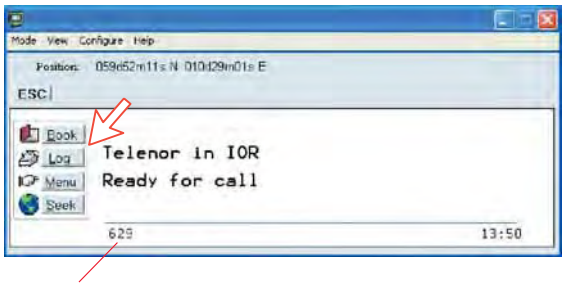
Click the **View status** to show the connection status.



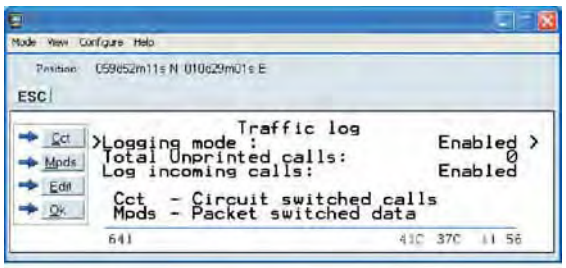


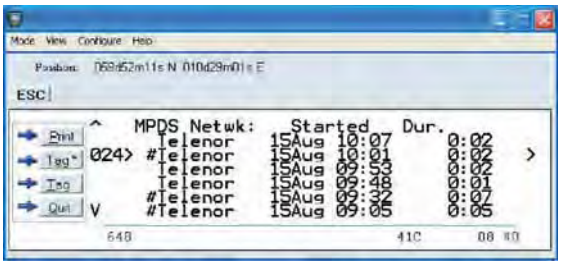
6.2.7 Traffic log

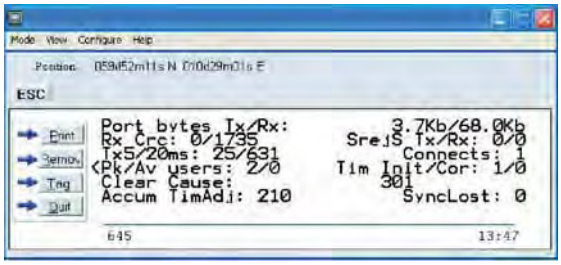
In the vtLite idle window, clicking **Log** lets you select between traffic logs for packet switched data (MPDS) and all other circuit switched call types.
Clicking the right arrow key expands the level of detail on entries listed.



In the Traffic Log window:
MPDS: note that this information is included for information only and should not be used e.g. for billing purposes. It contains some of the information also indicated in the "Real Time" status indications, and can be usefull to pinpoint any potential problem during a call. A low C/No, < 535, will most likely give many retransmissions on the sattelite link. You should see this in the number of Srej TX and RX being higher than normal.







6.2.8 AT-commands

The commands listed below are performed automatically with the dial string **94#, but can be useful for advanced debugging of the MPDS system (e.g. SBS and HLES):

[A][T] [+][W][L][E][S][=][X][X][X] [↵R]
selects Net Provider (XXX = LES access code) for the serial port used.

Example:
[A][T] [+][W][L][E][S][=][0][0][4] [↵R]
selects Telenor: 004

[A][T] [+][W][N][E][R][A][M][P][D][S][M][S][N][=]
[1][2][3][4][5][6][7][8][9][0][.][.][.][.] [↵R]
sets and retrieves MPDS MSN.

Up to 22 digits are supported and the value is immediately saved to flash. The value is not used and is only provided for information.

[A][T][+][W][R][E][G][=][1] [↵R]
registers the user with the default Net Service Provider.
This command will make the terminal register at the R-LES only, i.e. the terminal will not be connected to the Internet. In many cases when the MPDS system does not work it is important to verify whether the fault is in the SBS, RLES or HLES.
If this command is performed via e.g. Hyperterminal and you get the prompt Registered, then the fault is probably located in the H-LES.
If you do not get registered, your mobile is either rejected because of limited SBS resources or your mobile is not registered (commissioned) in the RLES.

[A][T][+][W][R][E][G][=][0] [↵R]
deregisters the user.

[A][T][+][W][S][4][5][=][4] [↵R]
*sets the FELCOM 70 terminal in **MPDS** mode.*
This is implicitly done when using the **94# dial string. This command will make the FELCOM 70 terminal Register at the RLES when the Windows dial Up adapter sets up a PPP connection to the H-LES (Internet).

[A][T][+][W][S][4][5][=][1] [↵R]
*sets the FELCOM 70 terminal back to **Normal** mode (SCPC HSD) mode.*

Note: Local echo of keyboard entries is set to ON with the commands:
[A][T][E][1] [↵R]

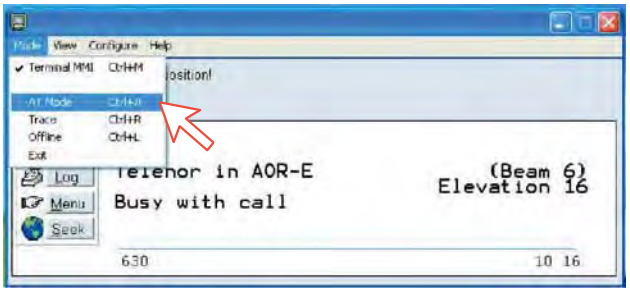
Note that all the above commands are not required if you use the Dial String **94# to select MPDS; all other Dial Strings will use SCPC.

It is included for information only. However when you are not able to establish the Dial Up Adapter, the "FURUNO" procedure has been to try the At+Wreg=1 , in order to verify whether or not this has been a SBS or RLES problem.

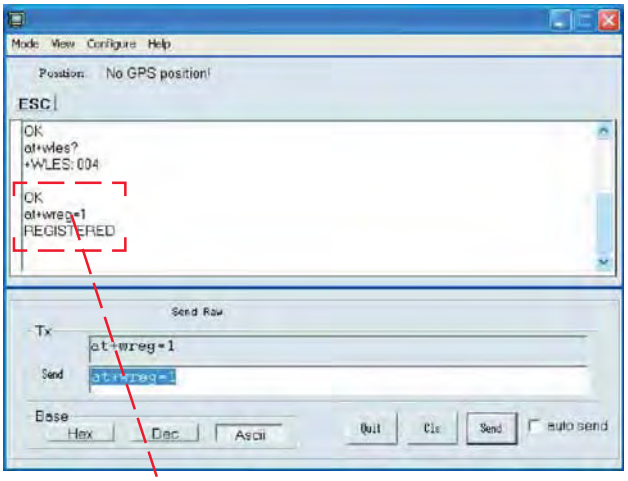
Verifying MPDS with AT-commands

Access to AT-commands

Instead of using the PC hyperterminal facility, access can easily be accomplished using SAILOR vtLite, or using Hyperterminal.



Start vtLite again:
*You can now key in **at+wreg=1** from vtLite:*



REGISTERED : MPDS is operational

FAILED : MPDS is not operational.
*Verify that MPDS is available for your terminal. See function 99, **Customization > Paid functions.***
If necessary, check that MPDS has been commissioned at your Net Service provider.

6.2.9 Troubleshooting

Problem	*Probable cause*	*Action*
1. No contact with modem:	Wrong setup of Communication Unit.	• Check cable connection. • Disconnect USB cable, and reconnect. • On PC, open Phone and Modem options and check whether USB Modem driver is connected to COM port. *If not:* 1. Remove Modem in Phone and Modem options. 2. Remove previous USB installations via Control Panel> System > Hardware > Device Manager. Double-click universal serial Bus Controller and uninstall the USB universal Host Controller. Warning! Remove all USB drivers. 3. *Start again from page 6-23.*
2. Cannot find Network Connection:	Network connection not installed.	• Contact your PC vendor to get the software.
3. Connection unsuccessful:	Wrong connection details.	• Check the phone number, user name and password with your service provider.
4. Cable length:	Guaranteed length: 1.5 m	• Recommended maximum length: 3 m
5. Using SAILOR vtLite via USB fails:		• Remove SAILOR vtLite and USB drivers, *see problem 1.* • Reinstall SAILOR vtLite.
6. Disconnects after some time:	Wrong setting in dialup.	• Check properties>options>idle time before hang up.
7. All dialups dial in MPDS mode:		• Use AT+WS45=1 to set port back to normal mode.
8. Username and password illegal:	Some PCs always require username/password	• Enter any name/password to ensure a successful call.

Checking your configuration

Connection attempt fails quickly and reports a hardware error with the modem

Check that no other application for example hyperterminal or vtLite is using the serial port and check that the serial cable is properly connected between the PC and the terminal.

The MPDS real time status display starts but the connection fails to establish before timing out.

Start hyperterminal or another terminal emulator so AT commands can be entered to the terminal.
First check the LES being used AT+WLES? The terminal will reply with the LES access code being used. If this is not what you expect change the value with AT+WLES=xxx and save the new value with AT&W now check that it is possible to access the MPDS service by entering AT+WREG=1.
The real time status display should show “Allocating” “Tuning” and finally “Registered”
If instead you see “Failed” “Inactive” then the terminal has not been able to connect to the MPDS service with the given access code.
The result of the registration attempt is also shown to the AT interface.
If registration worked then deregister with AT+WREG=0.

The registration attempt succeeds but connection attempts fail

Check that the max speed of the modem that was setup is 115200bps.

Faultfinding

After starting the connection as described above one should see:

a) The dial up networking connection dialogue shows the normal progression of “dialing” “verifying user name and password” and “registering your computer on the network”
b) The real time status indication on the terminal should show “Registering” then “Registered”
c) Once a “Connect” has been received from the host the Modem display/ISDN Handset will show “Connected”.
d) The connection should be established and usable after the completion of PPP negotiation.

Error and clear cause logging on the vtLite application window

The terminal includes call logging and a record of any errors that occur. To assist with improving the system please note the contents of these if a problem is encountered.

C/No display Signal Strength Indication

For data communication it is of major importance that the mobile has a high enough Carrier-to-Noise Ratio (C/No) before the call is established. (a voice call is not as sensitive to this as a data call).
Before establishing any sort of data call (HSD or MPDS) verify that the display in vtLite indicates minimum 535.

Diagnostics

To enable diagnostics open menu “Advanced Functions” -> “Configuration” -> “Enable diagnostics” “9-7-4”
And select “On”. Press ESC key 4 times to return to the idle screen.

Version information

The versions of the software components used in your system are shown in menu “Advanced functions” -> “Information available” -> “Misc version Id”.
Use the up/down arrow keys to navigate the list.

Minimum Modem software requirements:

- FELCOM 70: system version REL 3.5 and higher

(vtLite function no.982).

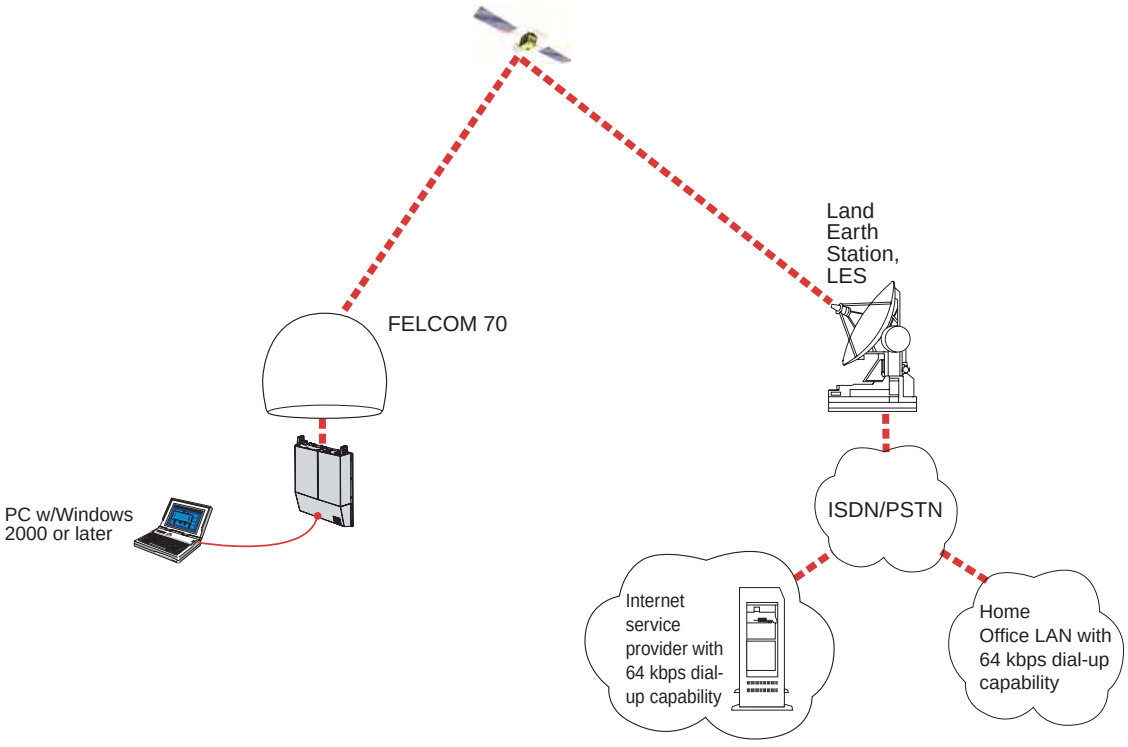
6.3 Mobile Data Service (RS-232)

6.3.1 PPP modem via RS-232

Introduction

The **Mobile Data Service** complies with the communication protocol defined by the Inmarsat Fleet77 system.
The transmission data rate over the satellite link is 64 kbps.

The **Mobile Data Service** offers 64 kbps connection to the international ISDN/PSTN network.
The service is suitable for applications such as high-speed file transfer, store-and-forward video, e-mail and internet.
(PPP = Point-to-Point Protocol).



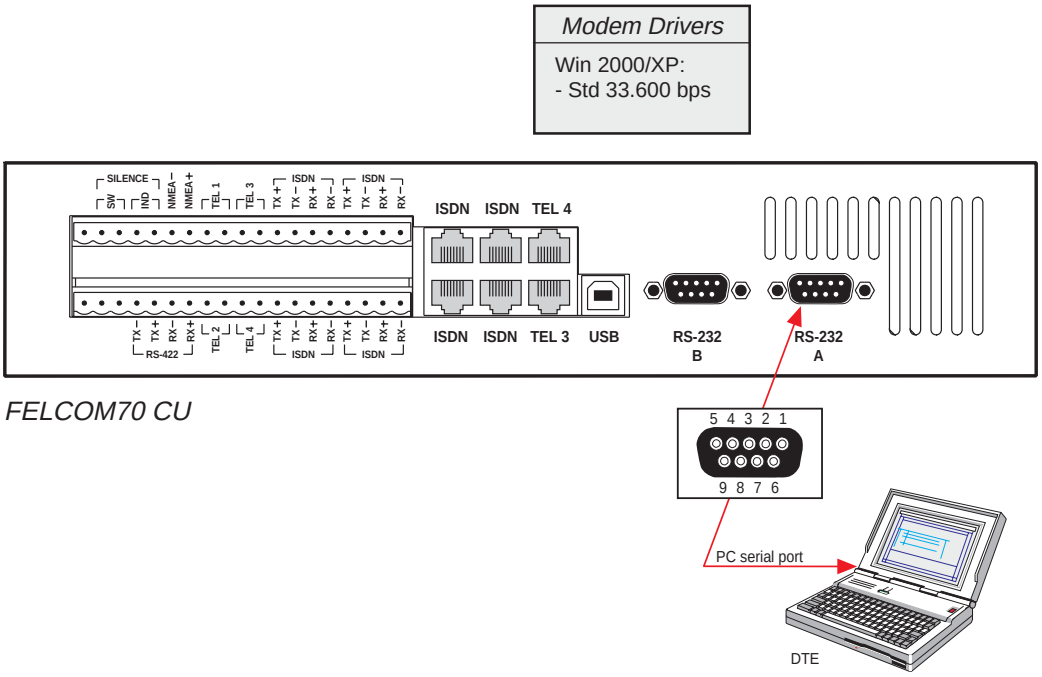
6.3.2 Connecting up

Installation

Connect the RS-232 serial cable between the serial port on the PC and the **RS-232** port on the CU.

The default settings are:

Data speed: 115200 bps
Format: 8 data bits, no parity, 1 stop bit
Flow control: Hardware (RTS/CTS)



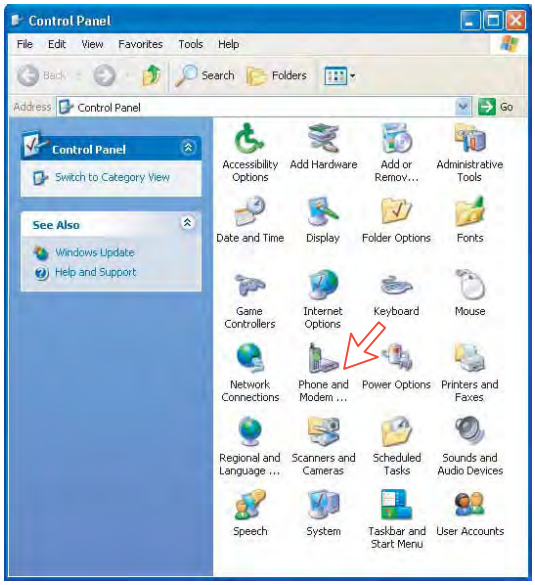
FELCOM70 CU

6.3.3 PC setup

For Windows XP

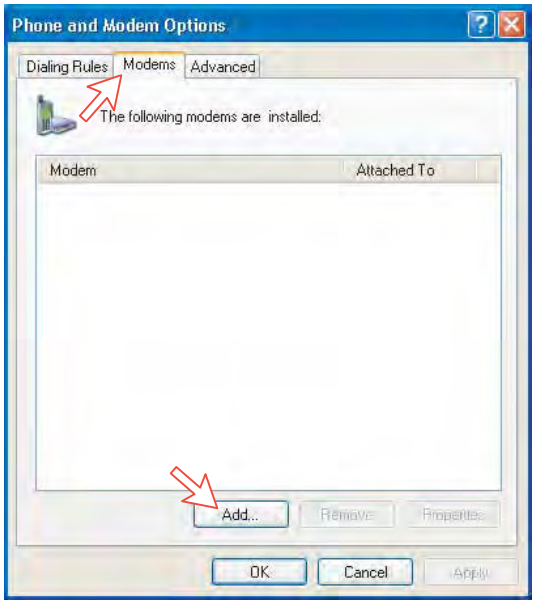
Ensure that SAILOR vtLite is closed.

1 Open the **Control Panel** on the PC and double-click the **Phone and Modem Options** icon.



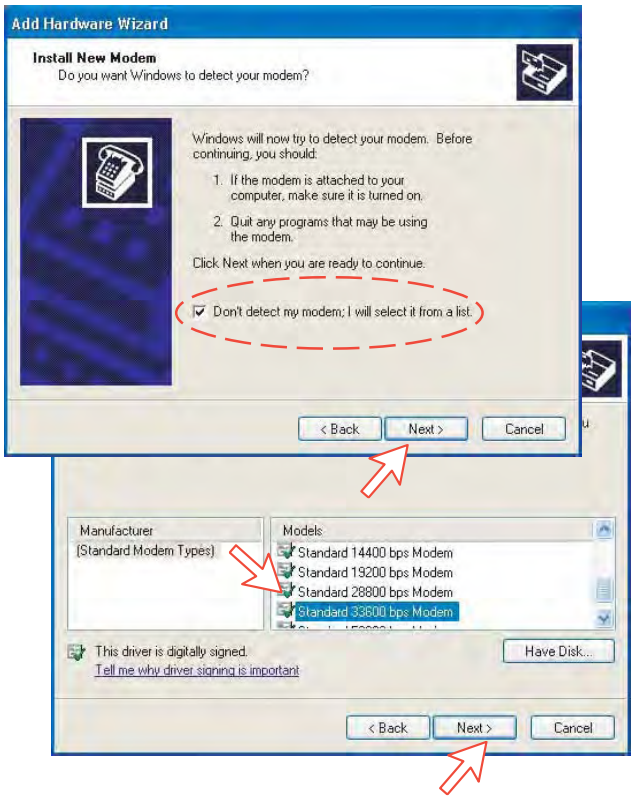
2 Click the **Modems** tab.
*Click **Add**, see next page.*

Note: Setting up is only necessary to do once.
For future connections, go directly to **Initiate a call**.



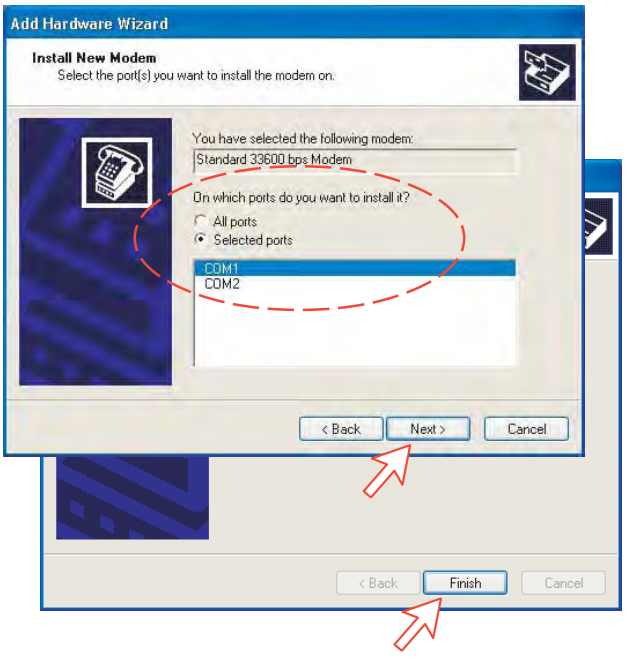
3 In the **Add Hardware Wizard** window check "Don't detect my modem", *and click* ***Next***.

Select **Standard 33600 bps Modem** in the **Models** field, *and click* ***Next***.

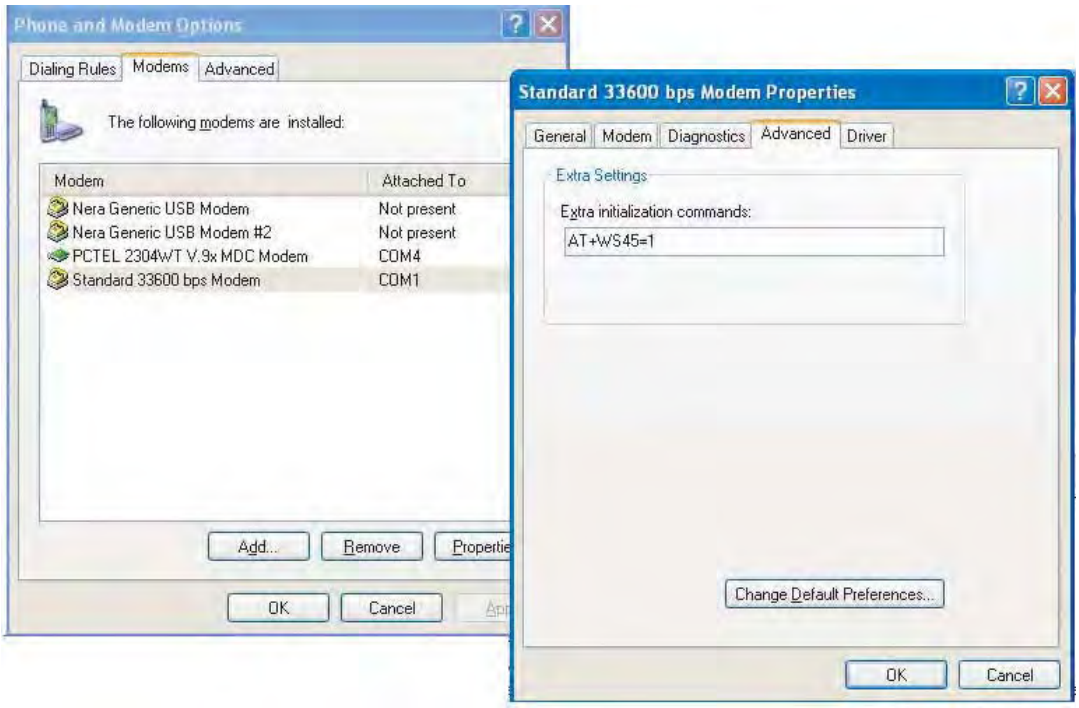


4 Select the port to which the Modem driver should be installed.

Click ***Next*** *and then* ***Finish*** *to complete the installation.*



5 Opening the **Phone and Modem Options** window confirms the established modem connection. Select “Standard 33600 bps Modem”.
Click the **Advanced** tag and enter command “AT+WS45=1.”

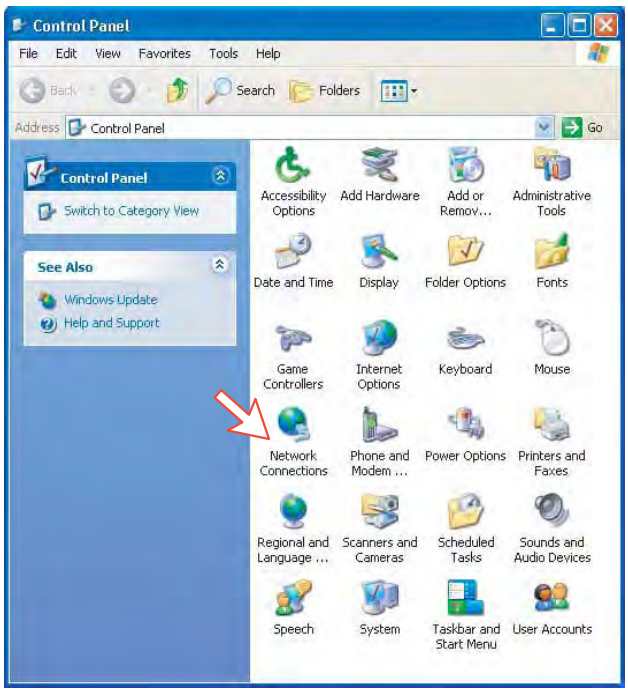


Note: The setup for data transfer to the Furuno terminal is based on the Windows XP default parameters:

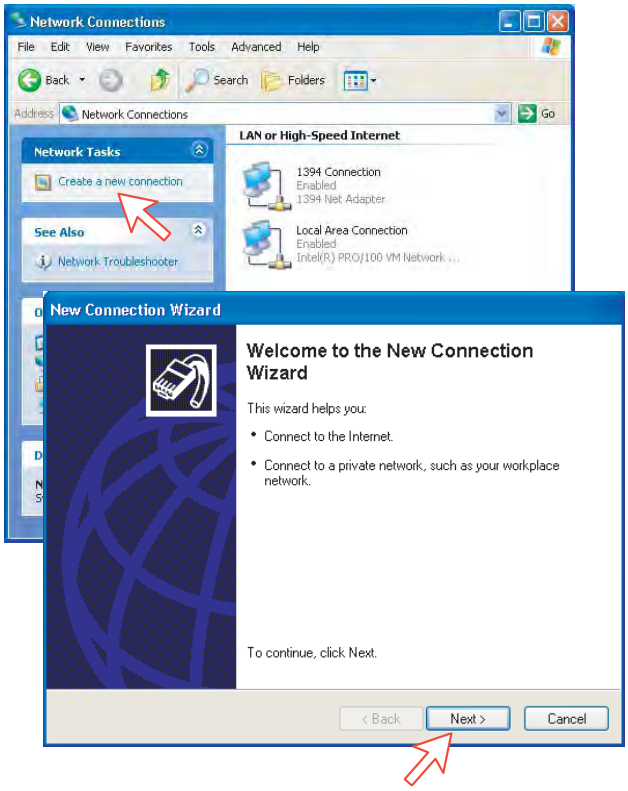
8 data bits - no parity - 1 stop bit - flow ctrl: Hardware

Clicking **Properties** allows checking the parameters.

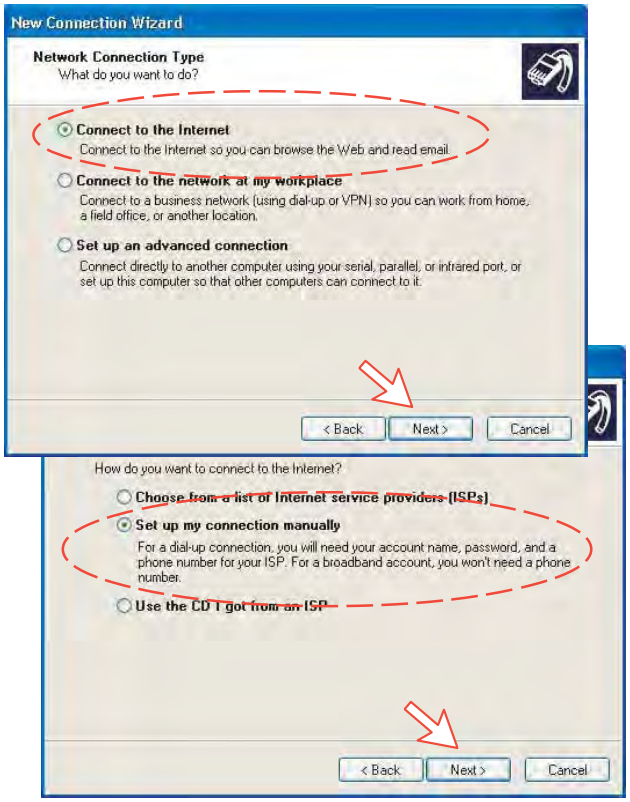
6 Open the **Control Panel** on the PC and doubleclick the **Network Connections** icon.



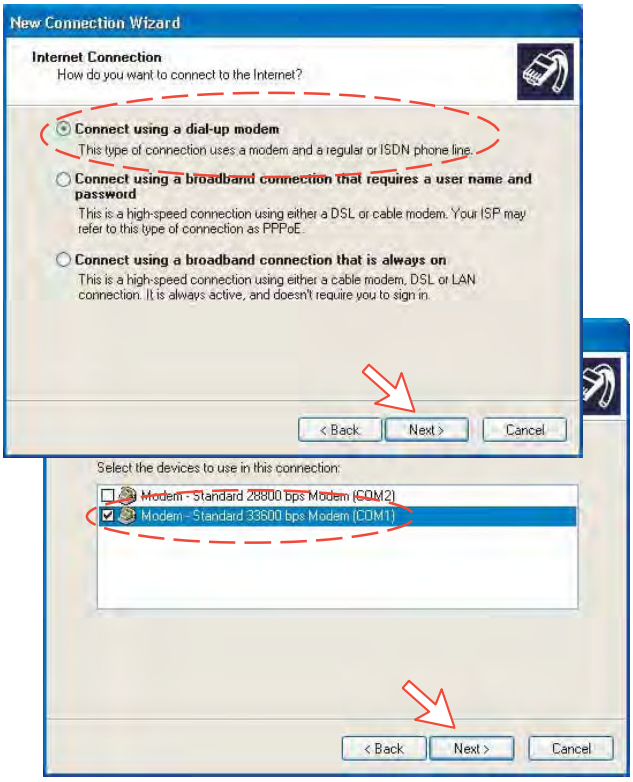
7 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*



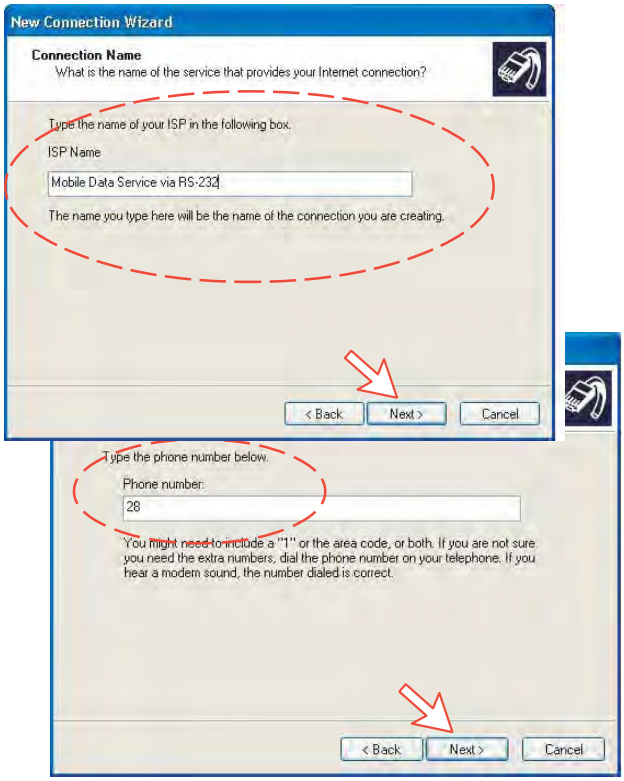
8 Check **Connect to the Internet**. *Click **Next**.* Check **Set up my connection manually.**
*Click **Next**.*



9 Check **Connect using a dial-up modem**.
Click ***Next***. Check "Modem - Standard 33600 bps Modem". *Click* ***Next***.



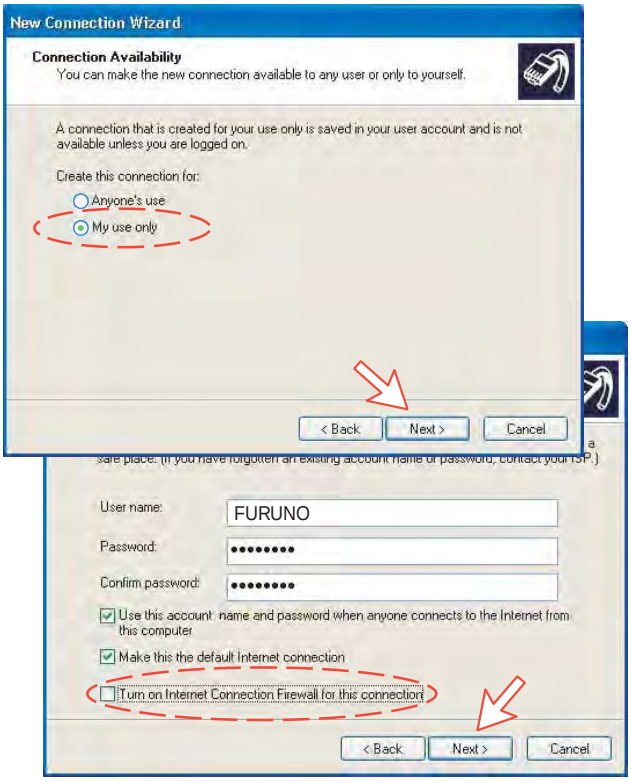
10 Enter the name for the connection e.g. **Mobile Data Service via RS-232**.
Click ***Next***.
Enter phone number. (Through some Net Providers, dialing **28** automatically connects you to the ISP - Internet Service Provider). *Click* ***Next***.



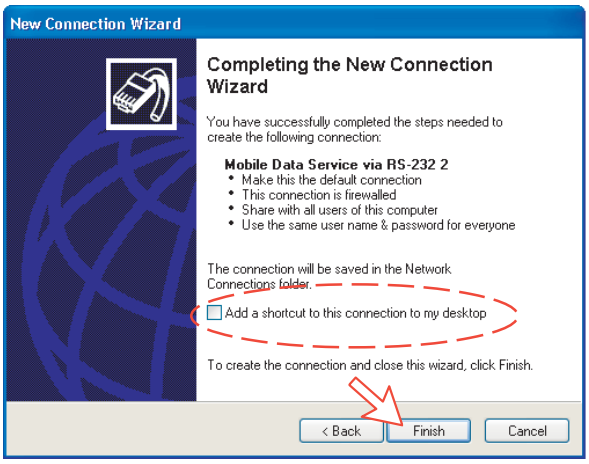
11 Check **My use only**, *and click* ***Next***.

Some Internet Service Providers require user name and password (also on number 28).

Uncheck **Turn on Internet Connection Firewall for this connection**. *Click* ***Next***.



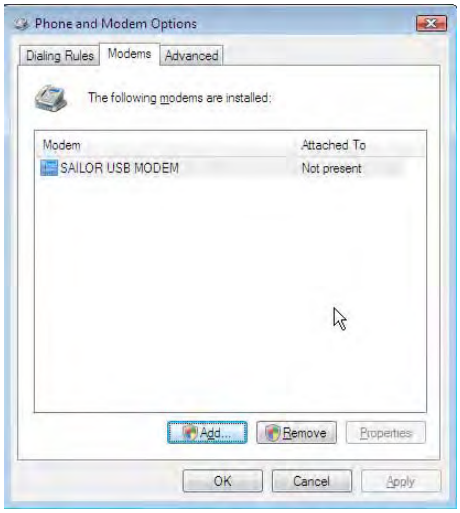
12 Complete the **New Connection**, *click* ***Finish***.



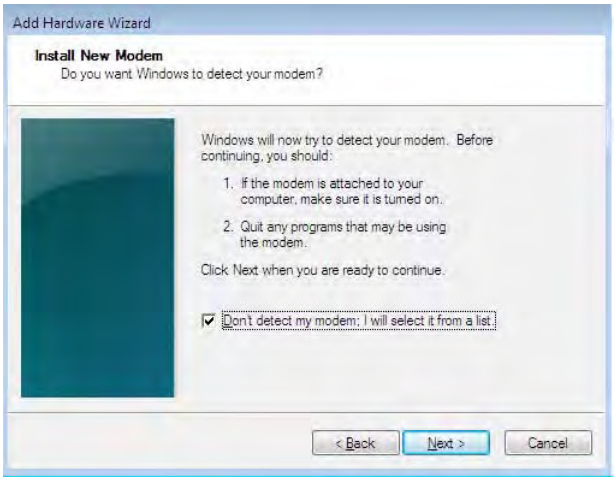
For Windows Vista

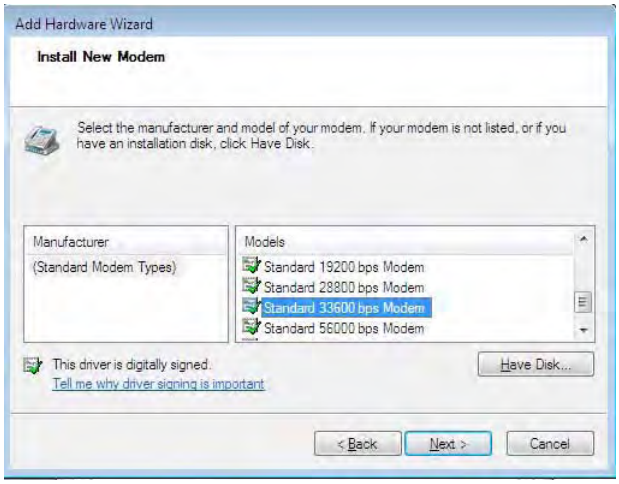
1. Open the **Control Panel** on the PC and double-click the **Hardware and Sound** and the **Phone and Modem Options** in that order.

2. Click the **Modems** tab and **Add** button.
   Note: Setting up is only necessary to do once. For future connections, go directly to **Initiate a call**.

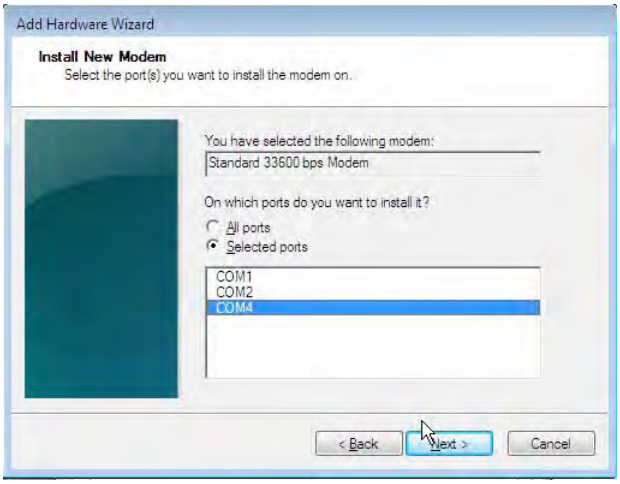


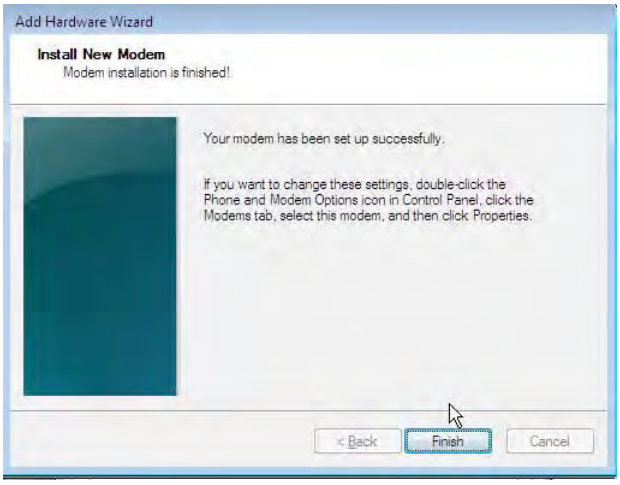
3. In the **Add Hardware Wizard** window, check the **Don't detect my modem**, and click the **Next**. Select **Standard 33600 bps Modem** in the **Models** field, and click the **Next** button.





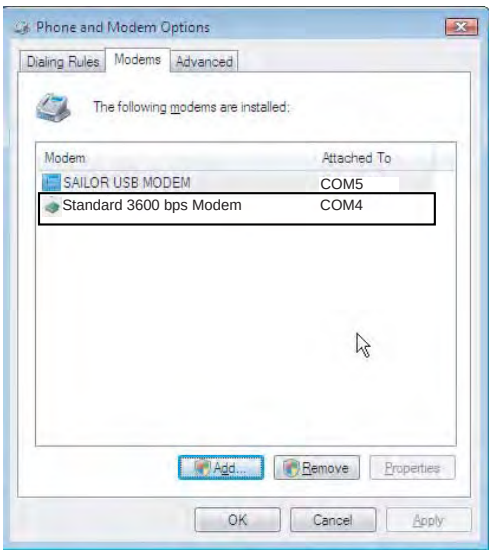
4. Select the port to which the Modem driver should be installed. Click the **Next** and then **Finish** to complete the installation.

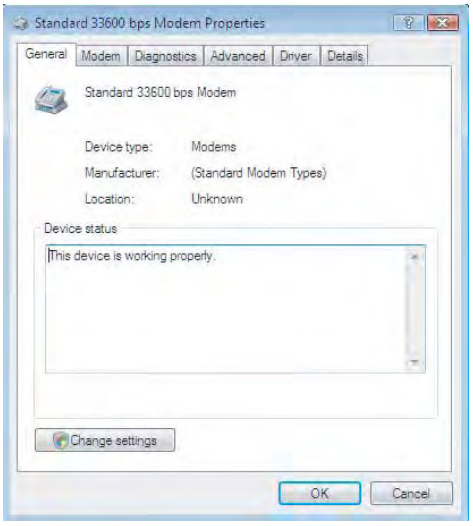


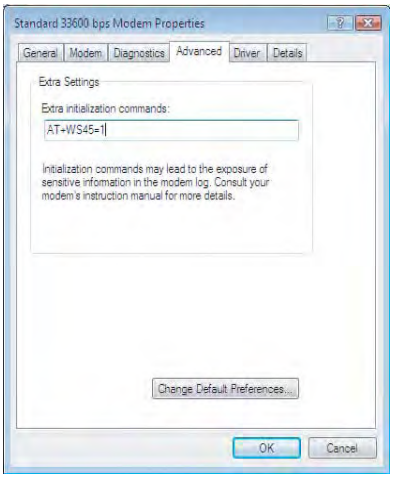


5. Open the **Phone and Modem Options** window and confirm the modem connection.

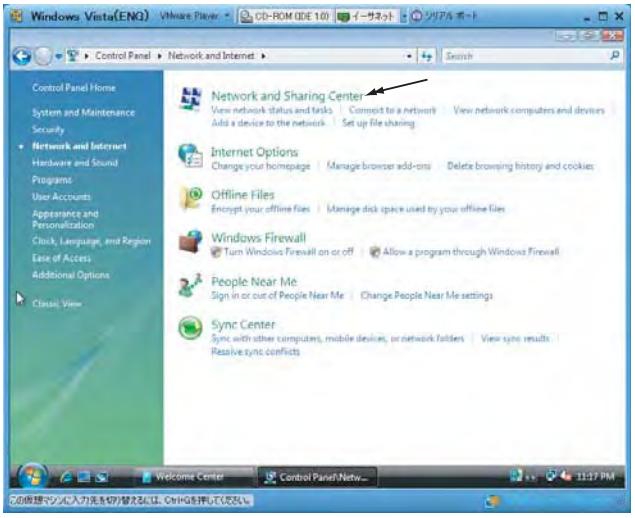
Select the **Normal 33600 bps Modem** and click the **Properties** button. Click the **General** tab in the **Normal 33600 bps Modem Properties** window and click the **Change settings**. Click the **Advanced** tab and type "**AT+WS45=1**" in the **Extra initialization command** box. Click the **OK** button.



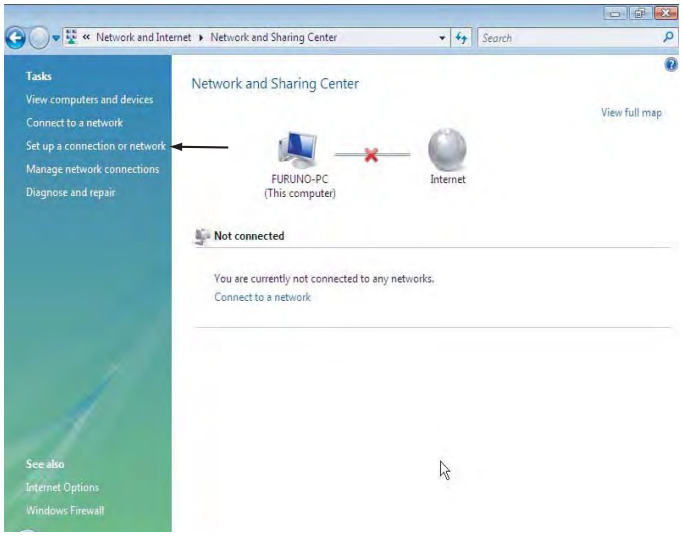




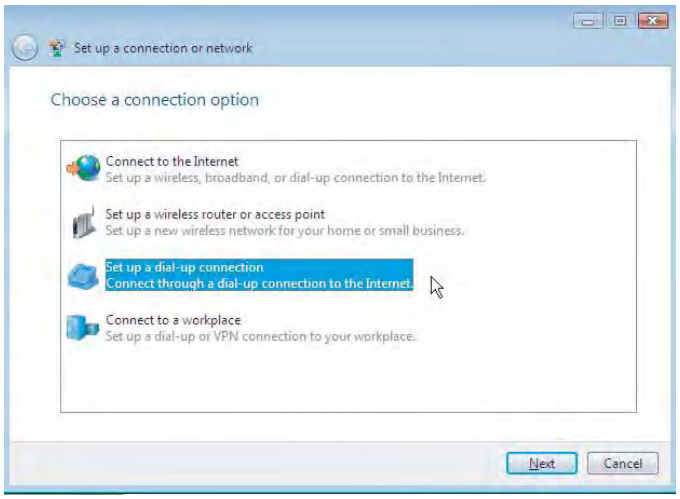
6. Open the **Control Panel** and click the **Network and Internet** and the **Network and Sharing Center** in that order.



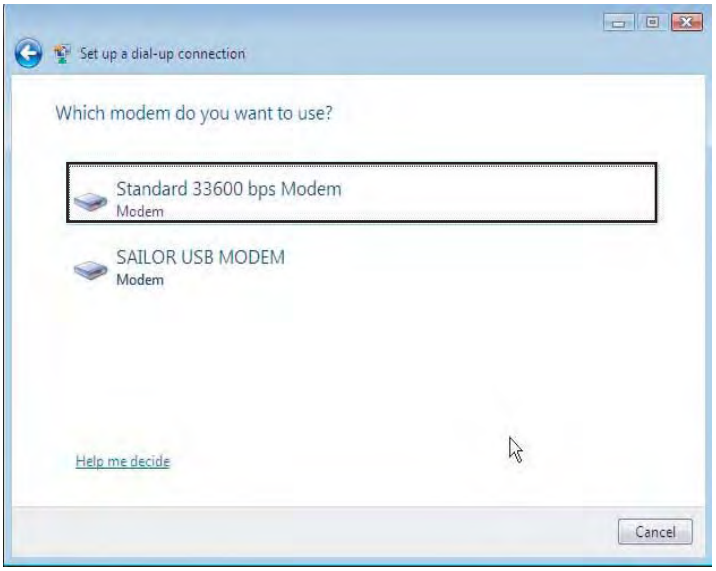
7. Click the **Set up a connection or network** to open the **Set up a connection or network** window.



8. Select the **Set up a dial-up connection** and click the **Next** button.



9. Select the **Standard 33600 bps Modem** and click the **Next** button.

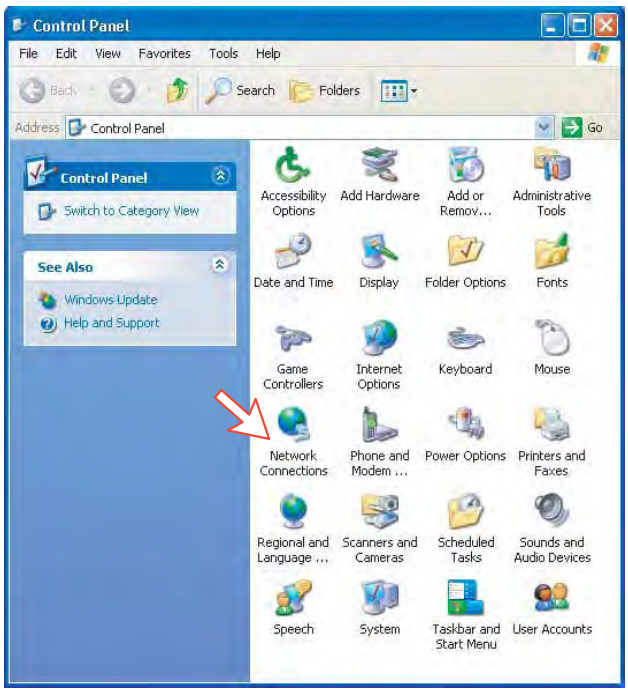


10. Enter telephone number (access code) " 2 8 # ", user name, password and connection name. Clear the check box **Allow other people to use this connection** and click the **Connect** button.

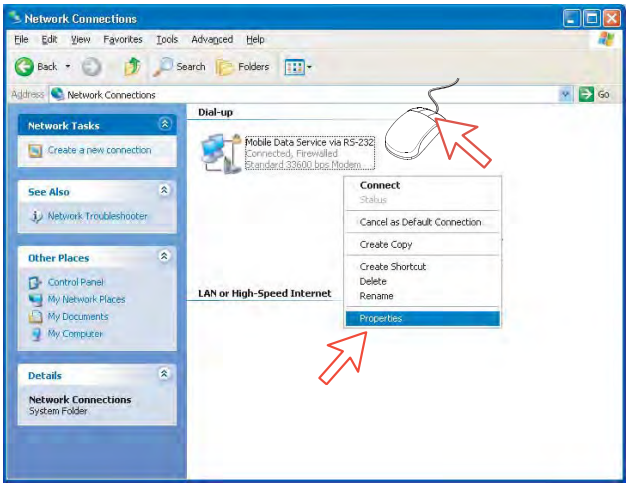
6.3.4 Checking default settings

For Windows XP

1 Double-click **Network Connections** in the **Control Panel**.



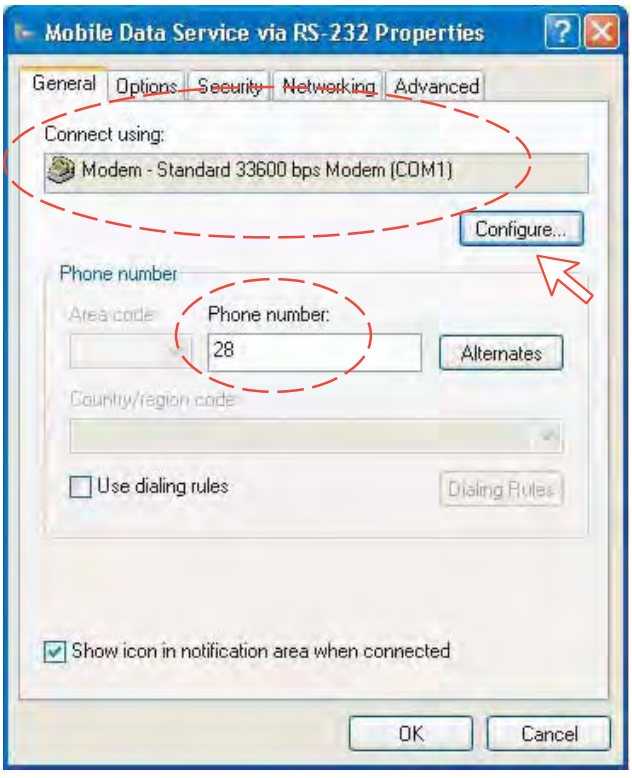
2 Right-click the **Mobile Data Service via RS-232** dial-up connection and click **Properties**.



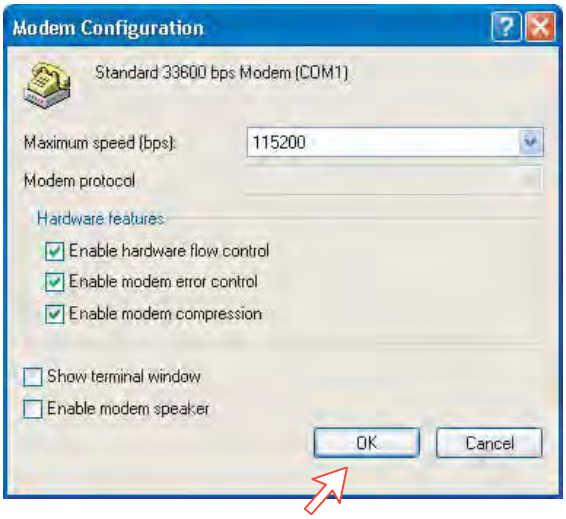
3 Check settings in the **Mobile Data Service via RS-232 Properties** window:

- **Modem - Standard 33600 bps Modem (COM1)**
- **Phone number: 28**

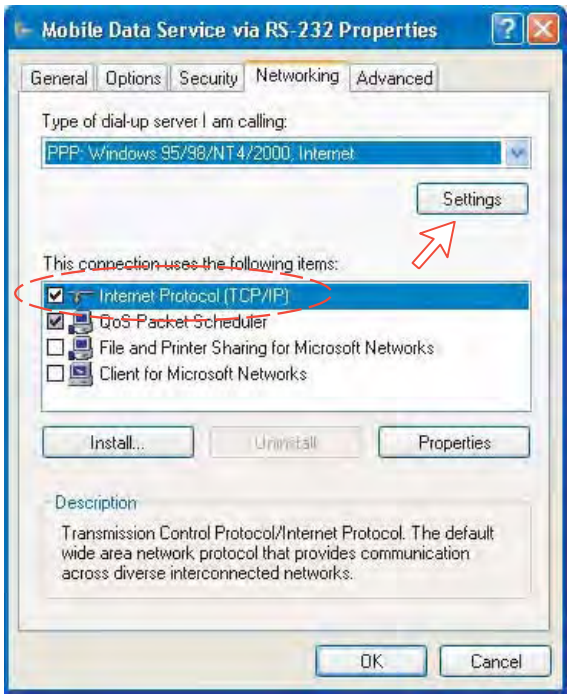
*Click **Configure**.*



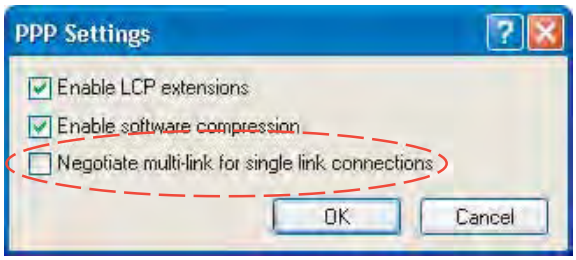
4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.
*Click **OK***



5 In the **Mobile Data Service via RS-232 Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected.
*Click **Settings**.*

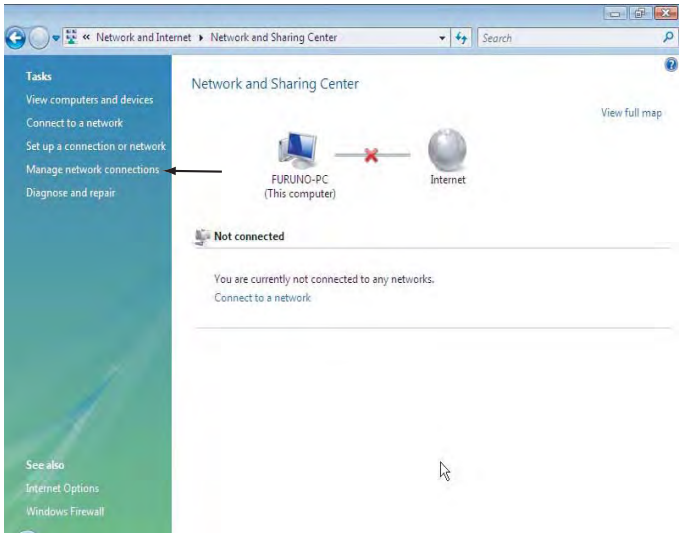


6 In the **PPP Settings** window, **Negotiate multilink for single link connections** should be unchecked.



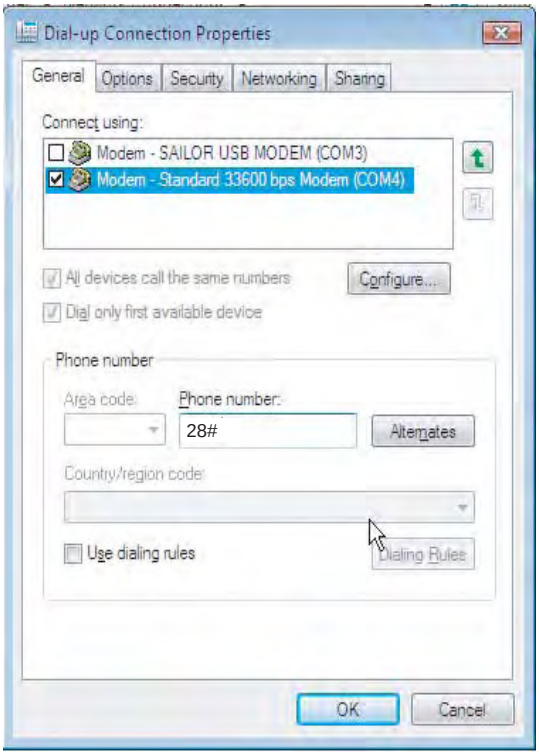
For Windows Vista

1. Open the **Control Panel** and click the **Network and Internet**, the **Network and Sharing Center** and **Manage network connection** in that order.

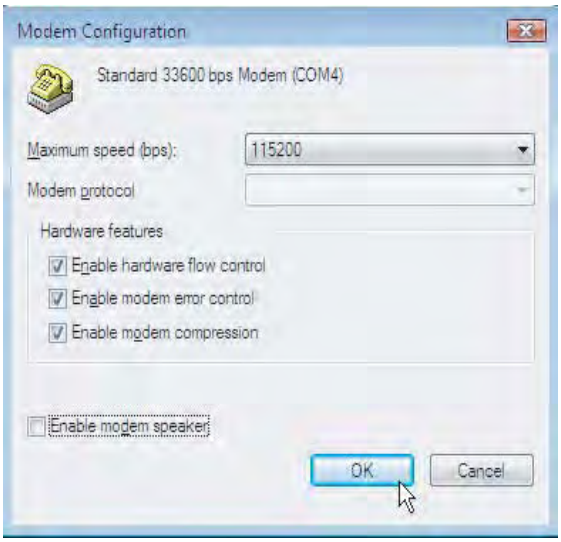


2. Right-click the **Dial-up Connection** icon that you created in the Dialup and click the **Properties**.
3. Confirm the setting contents in the **Dial-up Connection Properties** window.
   - Modem: Modem Standard 33600 bps Modem (COM4)
   - Phone number: 2 8 #

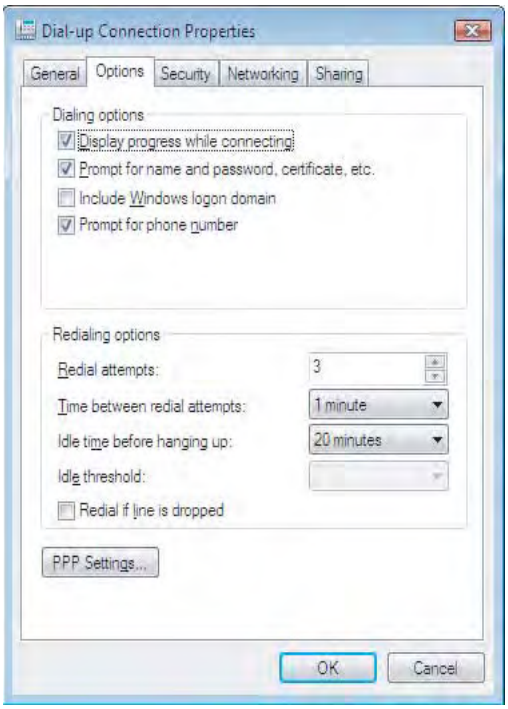
   Click the **Configure** button.



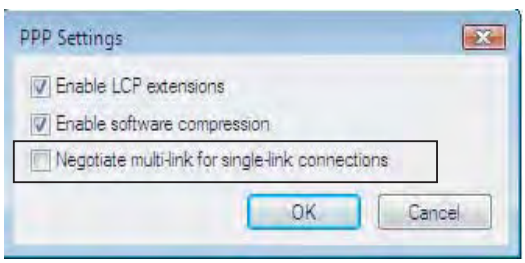
4. In the **Modem Configuration** window, confirm that the **Maximum speed (bps)** is set to **115200** and click the **OK** button.



5. Select the **Options** tab in the MPDS properties window and click the **PPP Settings**.



6. Confirm that the check box for **Negotiate multi-link for single-link connections** is clear in the **PPP Setting** window and click the **OK** button.

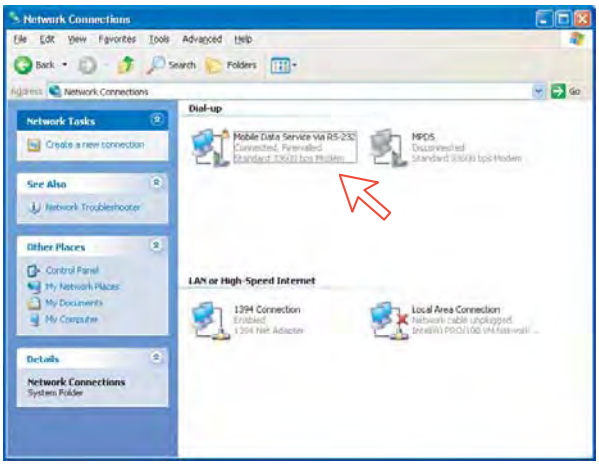


6.3.5 Connecting to server

For Windows XP

Initiate a call

Open the **Control Panel** on the PC and double-click the **Mobile Data Service via RS-232** icon in the **Network Connections** window *(i.e. the preset dialup connection)*.

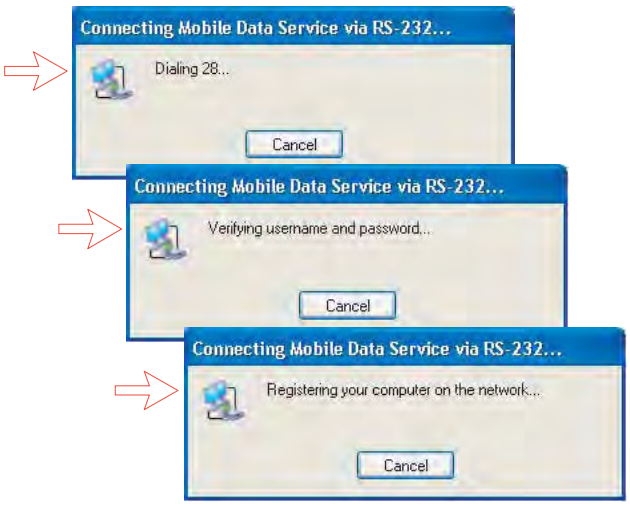


Note: The SAILOR vtLite program must be closed down prior to dialing up the server.

If provided for the specific server connection, enter the **User name** and **Password**.
Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*

Connection in progress

Displayed on the PC screen:



Open the browser/program to be used on the connection.

Connection status

*Appears when right-clicking the **Mobile Data Service via RS-232** dial-up icon and **Status**, or clicking the PC icons in the lower right corner of the screen.*

Note: Click **Disconnect** when shutting down the call.
It is not enough to close the browser alone.

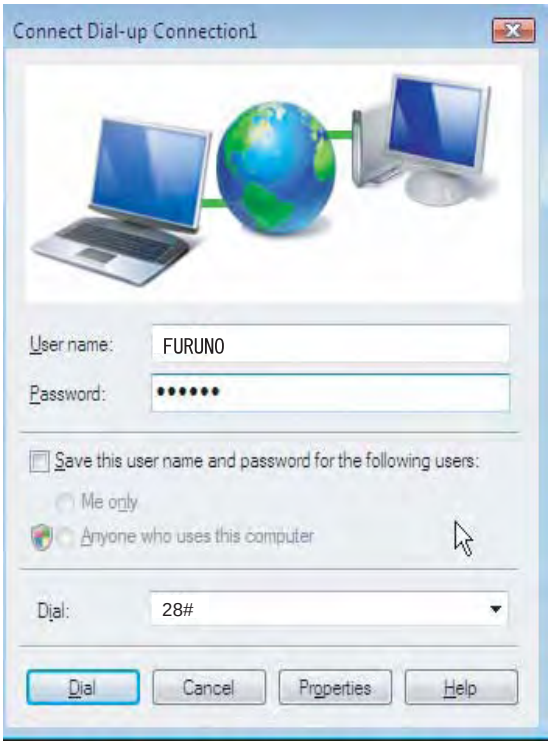
For Windows Vista

Initiating an MPDS call

Open the **Control Panel** and double-click the **Network and Internet**, the **Network and Sharing Center, Manage network connection** and **Dial-up Connection** in that order.

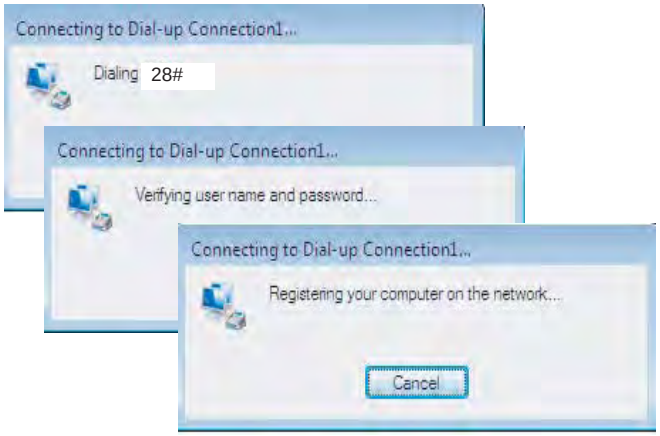
Note: The SAILOR vtLite program must be closed down prior to dialing up the server.

If provided for the specific server connection, enter the **User name** and **Password**. Click **Dial** to establish the connection to the server. See **Connection in progress**.



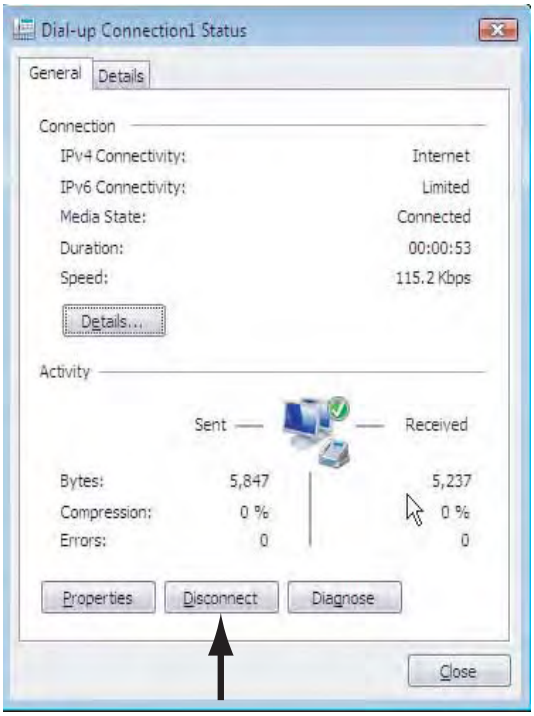
Connection in progress

Display on the PC screen



Connection status

The screen appears when clicking the **View Status** in the **Network and Sharing Center**.



Note: Click **Disconnect** when shutting down the call. It is not enough to close the browser alone.

6.3.6 Troubleshooting

Problem	*Probable cause*	*Action*
1. No contact with modem or busy	Wrong setup of Communication Unit. SAILOR vtLite uses the same port.	• Make sure the vtLite settings are correct, *see* ***RS-232 configuration***. • Try autodect if problems with the connection. • Try different speed and COM port settings. • Close SAILOR vtLite
2. Cannot find Dial Up Networking:	Dial up connection not installed.	• Contact your PC vendor to get the software.
3. Connection unsuccessful:	Other end is not an ISDN connection.	• It is not possible to use the RS-232 port if the modem on the receiver side is not an ISDN modem.
	Wrong connection details	• Check the phone number, user name and password with your service provider. • Check whether 64kbps data UDI is commissioned. • Using SAILOR vtLite, check configuration in Device Manager.
4. Cable length	Guaranteed length: 1.5 m	• Recommended maximum length: 3 m
5. All dialups dial in MPDS		• Use AT+WS45=1 to set port back to normal mode
6. User name and password illegal	Some PCs always require username/password.	• Enter any name/password to ensure a successful call.

6.3.7 AT commands

General

The **AT** command set allows you to configure the Mobile Data Service function directly from your PC keyboard.

The AT characters are a prefix to the commands you issue to the Mobile Data Service.

Most communication applications do not require knowledge of AT commands.

Every time you type AT, you are essentially asking for the Mobile Data Service's **AT**tention. For instance, if you want to answer an incoming data call, you would type ATA to answer: ATA [↵R]
When a value associated with a command is not entered, it is assumed to be 0, f.ex.: [A][T][&][D] equals [A][T][&][D][0].

Hanging up – escape sequence

Once the Mobile Data Service is online to another system, the only command it recognizes is an escape code that contains three typed pluses, (+) which forces the Mobile Data Service back to command mode.

The following should be done, when issuing the escape command:

- Wait one second after sending the last item of data.
- Type [+][+][+] with less than one second between the characters.
- Wait one second, an "OK" response should appear.

Do not type the AT prefix or Carriage Return. The guard time of one second before and after the code prevents the Mobile Data Service from misinterpreting the occurrence of +++ in the transmitted data stream.
If necessary, the character used in the escape code or the duration of the guard time can be changed by altering Register S2 or S12, *see* ***S-register commands****.*

- In response to [+][+][+], the Mobile Data Service returns to command mode.
- To hang up, key [A][T][H][↵R]
- To return to online mode, key [A][T][O][↵R]

Operating modes

The Mobile Data Service function may operate in three modes:

- ***Command mode***
  The Mobile Data Service responds to AT commands. No remote communication occurs.
- ***Online command mode***
  A data call is taking place and an escape sequence has been initiated, after which the Mobile Data Service will respond to **AT** commands during the call.
- ***Online data mode***
  Once the Mobile Data Service is connected up, anything arriving from the PC is interpreted as data and sent to the remote end and vice versa.

Basic AT commands

Note: AT commands may be entered in **either** upper or lower case (not mixed).

A T A ↵R
instructs the Mobile Data Service to connect the line and start the answer sequence of the incoming call.
Used when not configured for auto answer.

A T D 0 0 4 7 6 7 2 4 4 7 0 0 ↵R
*instructs the Mobile Data Service to dial the number **00 47 67 24 47 00** via the default Net service provider.*

A T D 4 * 0 0 4 7 6 7 2 4 4 7 0 0 ↵R
*instructs the Mobile Data Service to dial the number **00 47 67 24 47 00** via the selected Net service provider, e.g. Telenor (4 = LES access code = Telenor).*

A T D 2 3 1 1 ↵R *dials the telephone number stored under short number 11.*

A T E **[n]** ↵R
sets local echo of keyboard commands on/off:

A T E 0 ↵R turns local echo **OFF**.

A T E 1 ↵R turns local echo **ON**.
Default

AT H R
hook control:

AT H R sets the Mobile Data Service ON-hook when in Online Data Mode. Disconnects the line and terminates the call.

AT O R
returns to Online Data Mode when in Online Command Mode during a data call.

AT Q **[n]** R
sets responses sent by the Mobile Data Service:

AT Q 0 R : the Mobile Data Service **returns** responses like OK or ERROR. *Default.*

AT Q 1 R : the Mobile Data Service does not return responses.

AT S *sets and displays S register values. See **"S-Register Commands"**.*

AT V **[n]** R
sets the Mobile Data Service response format to words or numbers:

AT V 0 R selects **numeric** response.

AT V 1 R selects **verbal** response.
Default

AT X **[n]** R
selects CONNECT result code format (dial tone detection – busy detection):

AT X 0 R
basic message set: OK, CONNECT, RING, NO CARRIER, ERROR.

AT X 1 R
basic message set extended with CONNECT xxxx-yyyy.

AT X 2 R
basic message set extended with NO DIALTONE.

AT X 3 R
basic message set extended with BUSY.

A T X 4 ↵R
basic message set extended with all of the above.
Default

A T Z ↵R
resets the Mobile Data Service configuration to last saved command. Also clears the call if used when in Online Command Mode.

A / *repeats last command.*
Re-executes the last AT command string issued to the Mobile Data Service, including redialing a telephone number.

Extended AT commands

A T & C **[n]** ↵R
determines the Data Carrier Detect (DCD) behaviour:

A T & C 0 ↵R sets DCD always ON.

A T & C 1 ↵R sets DCD, only when connected. *Default.*

A T & D **[n]** ↵R
selects the Data Terminal Ready (DTR) behaviour:

A T & D 0 ↵R the Mobile Data Service ignores DTR.

A T & D 1 ↵R the Mobile Data Service enters Online Command Mode when DTR goes inactive.

A T & D 2 ↵R the Mobile Data Service **clears call** when DTR goes inactive. *Default.*

A T & F ↵R
*resets the Mobile Data Service to factory **default**. The factory default is not saved as with the AT&W command, so ATZ revokes to last saved values.*

A T & S **[n]** ↵R
selects the Data Set Ready (DSR) behavior:

A T & S 0 ↵R sets DSR permanently ON.

A T & S 1 ↵R sets DSR ON when satellite link is established. *Default.*

AT&V↵R
displays stored configuration profile.

AT&W↵R
saves active configuration profile.
(May be recalled using ATZ↵R*).*

Extended AT+G, +I and +W commands

The extended AT+I, AT+G and AT+W commands are non-standard features some of which are de-signed specially for the Inmarsat system.

AT+GCAP↵R
displays capabilities supported by FELCOM 70

AT+GMI↵R
displays manufacturer identification.

AT+GMM↵R
displays equipment identification.

AT+GMR↵R
displays software revision.

AT+ICF=[**n**<format>] [**,m**<parity>]↵R
specifies the local serial port start-stop (asynchronous) character framing between the PC and the FELCOM 70.

AT+ICF?↵R
displays current settings.

[A][T][+][I][C][F][=][?][↵R]
displays available settings.

Format reference number **n** :
1 = 8 data bits, 2 stop bits
Default **3** = 8 data bits, 1 stop bit
4 = 7 data bits, 2 stop bits
5 = 7 data bits, 1 parity bit, 1 stop bit

Parity reference number **m** :
0 = odd
1 = even
2 = mark
Default **3** = space

Example:
[A][T][+][I][C][F][=][3][,][3][↵R]
specifies a data format of 8 data bits,1 stop bit and space parity.

[A][T][+][I][C][F][=]
[**n**<WP-to-PC>] [**,m**<PC-to-WP>][;][↵R]
specifies the local flow control between the PC and FELCOM 70.

[A][T][+][I][C][F][?][↵R]
displays current settings.

[A][T][+][I][C][F][=][?][↵R]
displays available settings.

FELCOM 70 - to - PC, reference number **n** :
0 = no flow control
1 = XON/XOFF (software flow control stripped of control characters.)
Default **2** = RTS (hardware flow control)
3 = XON/XOFF (software flow control with pass-through of control characters.)

PC - to – FELCOM 70, reference number **m** :
0 = no flow control
1 = XON/XOFF (software flow control)
Default **2** = CTS (hardware flow control)

[A][T][+][I][P][R][=][**r+**(PC-to-WP rate)][↵R]
specifies the data rate at which PC – FELCOM 70 interface accepts commands.

[A][T][+][I][P][R][?][↵R]
displays current settings.

AT+IPR=? R
displays available settings.

Selectable data rates, **r** :

1200 bps
2400 bps
4800 bps
9600 bps
19200 bps
38400 bps

Example:
AT+IPR=9600 R
specifies a data rate of 9600 bps between the PC and the FELCOM 70 CU.

AT+W R
indicates which PCCA standard the Mobile Data Service complies with.

AT+WLES=XXX R
selects Net Provider (XXX = LES access code)

Example:
AT+WLES=004 R
selects Telenor.

AT+WNERADTE R
allows configuration and monitoring of the FELCOM 70.

Ctrl F *switches font.*

Ctrl X *reverts to AT-command mode.*

AT+WNERAMPDSMSN=
1234567890.... R
sets and retrieves MPDS MSN.

Up to 22 digits are supported and the value is immediately saved to flash. The value is not used and is only provided for information.

AT+WNERARESET R
gives the response: OK or ERROR.
Takes 3-5 secs to complete burn; further 15 secs until the terminal is up again. The command causes the terminal to burn all its semipermanent data to flash, e.g. the Bulletin board, and then restart.

AT+WNERAPOWRTERM=0 R
causes the terminal to enter standby state as if the power key has been pressed and held.

AT+WNERAPOWERTERM=1 R
causes wake up from standby state as if the power key has been pressed and held.

S-Register commands

S-registers are special memory locations in FELCOM 70 for storing specific configuration and operating parameters.

A T S 0 = **[n]** ↵R
specifies automatic answer at the nth ring.
0=OFF, 1-255=ON.

A T S 0 = **<n>** ↵R
sets value of register.

A T S 0 ? ↵R
displays current value of register.

A T S 0 = 0 ↵R turns automatic answer **OFF**. *Default.*

A T S 0 = 1 ↵R answers after 1 ring.
*the Mobile Data Service will terminate incoming calls after **95 secs**.*

A T S 2 = **[n]** ↵R
stores the ASCII decimal code for the escape character.
Authorized codes within: 0 to 255.
***n ≥ 128** disables the escape sequence.*

A T S 2 = **<n>** ↵R
sets value of register.

A T S 2 ? ↵R
displays current value of register.

A T S 2 = 4 3 ↵R sets the ESCAPE code to **43** (+-key). *Default.*

A T S 3 = **[n]** ↵R
stores the ASCII decimal code for the carriage return character. Authorized codes within: 0 to 127.

A T S 3 = **<n>** ↵R
sets value of register.

A T S 3 ? ↵R
displays current value of register.

A T S 3 = 1 3 ↵R sets the CARRIAGE RETURN code to **13** (↵R-key). *Default.*

A T S 4 = **[n]** ↵R
stores the ASCII decimal code for the line feed character. Authorized codes: 0 to 127.

A T S 4 = **[n]** ↵R
sets value of register.

A T S 4 ? ↵R
displays current value of register.

A T S 4 = 1 0 ↵R sets the LINE FEED code to **10**. *Default.*

A T S 5 = **[n]** ↵R
stores the ASCII decimal code for the editing character.
Authorized codes: 0 to 127.

A T S 5 = **<n>** ↵R S
sets value of register.

A T S 5 ? ↵R
displays current value of register.

A T S 5 = 8 ↵R sets the BACK SPACE code to **8**. *Default.*

A T S 2 5 = **[n]** ↵R
sets delay before examining DTR (108/2) after dialing and when online with a mobile-to-net call.
Range: 0-255 hundredths of a second.

A T S 2 5 = **<n>** ↵R
sets delay value.

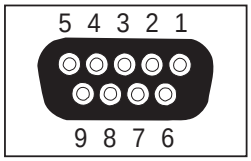
A T S 2 5 ? ; ↵R
displays current delay value.

A T S 2 5 = 5 ↵R sets delay to **5** (corresponding to 50 milliseconds). *Default.*

6.3.8 DTE interface

Pin assignments

Pin number	Mnemonic	Circuit	DIN	CCITT circuit	Signal source	Description
1	CD			109	DCE	Carrier delect
2	RXD	BB	D1	104	DTE	Received Data
3	TXD	BA	D2	103	DCE	Transmitted Data
4	DTR			108	DTE	Data terminal ready
5	GND			102		Signal ground
6	DSR			107	DCE	Data set ready
7	RTS	CA	S2	105	DTE	Request To Send
8	CTS	CB	M2	106	DCE	Clear To Send
9	RI			125	DCE	Ring indicator



Signal source DTE means the signal goes from the PC to FELCOM 70.

Signal source DCE means the signal goes from FELCOM 70 to the PC.

Signal descriptions

102 Signal Ground

Digital ground, return line.

103 Send Data

Data transmitted from DTE (PC) to DCE (FELCOM 70).

104 Receive data

Data Received from DCE (FELCOM 70) to DTE (PC).

105 Request To Send

OFF requests DCE (FELCOM 70) to suspend transmission to DTE (PC).
ON requests DCE (FELCOM 70) to resume transmission to DTE (PC).

106 Clear to send

OFF indicates that DCE (FELCOM 70) cannot accept data from DTE (PC).
ON indicates that DCE (FELCOM 70) is prepared to accept data from DTE (PC).

107 Data Set Ready

Signal from FELCOM 70 that when ON indicates that a data call setup is in progress.

108 Data Terminal Ready

Signal from PC. This signal is used in the Hotline mode and indicate when going from OFF to ON that the PC wants to make a data call. The PC clears the call by setting the signal from ON to OFF.

109 Receive Signal Indicator

Signal from FELCOM 70 that when ON indicates that connection is established and received data will be delivered on circuit 104, Received Data.

125 Ring Indicator

Signal from FELCOM 70. This signal is used in the Auto answer OFF mode and when ON indicates that an incoming call is in progress. The signal will go OFF when the call is answered by the PC by turning circuit 108 Data Terminal Ready ON.

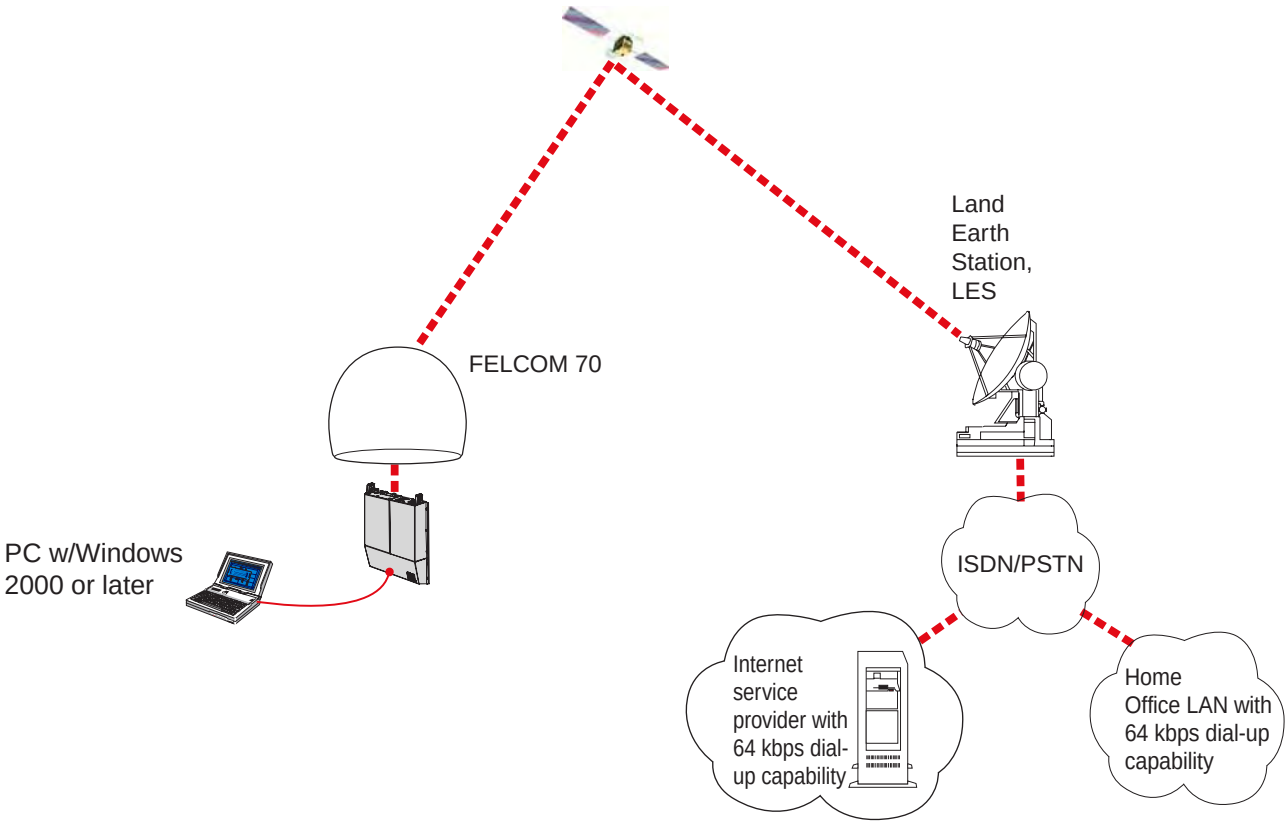
6.4 Mobile Data Service (USB)

6.4.1 PPP modem via USB

Introduction

The **Mobile Data Service** complies with the communication protocol defined by the Inmarsat Fleet77 system.
The transmission data rate over the satellite link is 64 kbps.

The **Mobile Data Service** offers 64 kbps connection to the international ISDN/PSTN network.
The service is suitable for applications such as high-speed file transfer, store-and-forward video, e-mail and internet.
(PPP = Point-to-Point Protocol).



RS232 Connection via USB port

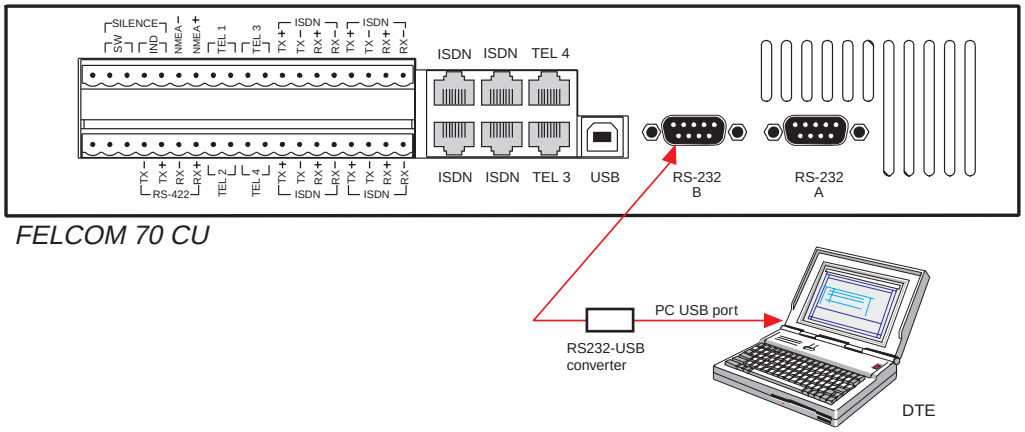
Procedure:

1 Insert the driver that is attached to a commercial RS232-USB converter, to the PC.

2 Connect the USB port of the PC and the serial port of the FELCOM 70 with a commercial RS232-USB converter.

Windows opens the **Found New Hardware Wizard**.

3 Install the driver, referring to the instruction attached to the driver.



Note that the explanation of AT commands are exactly same as RS-232 Mobile Data Service. If necessary, refer to paragraph 6.3.7 AT commands.

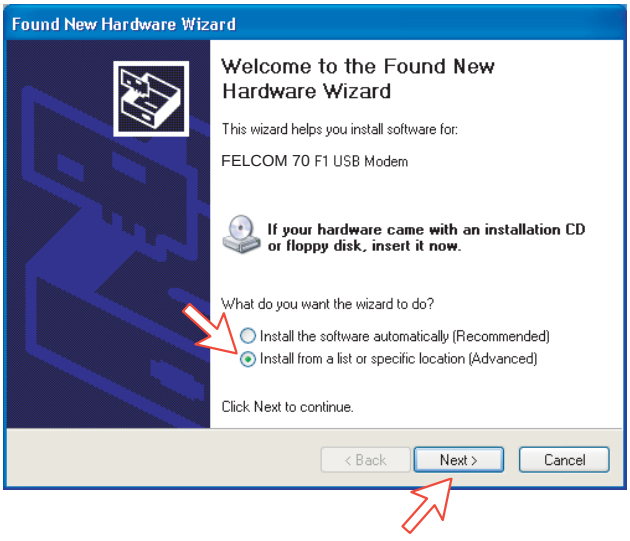
6.4.2 PC setup

For Windows XP

Ensure that SAILOR vtLite is closed. If connecting USB cable, restart the PC and the FELCOM 70.

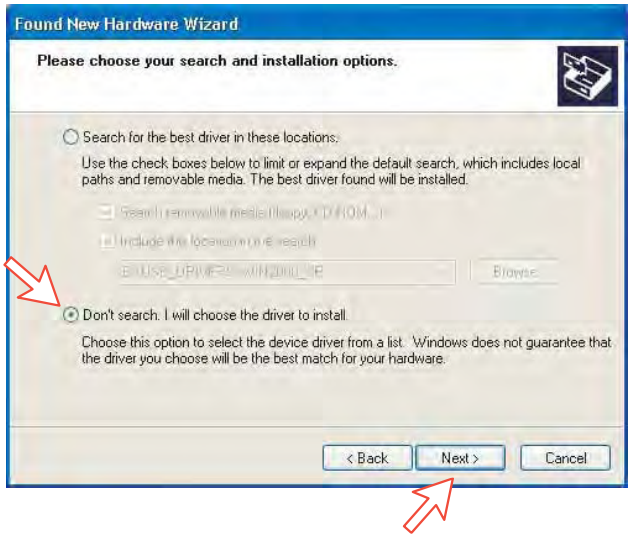
1 The **Found New Hardware Wizard** opens when the USB cable has been connected.

Check "Install from a list or specific location (Advanced)" and *click* ***Next.***

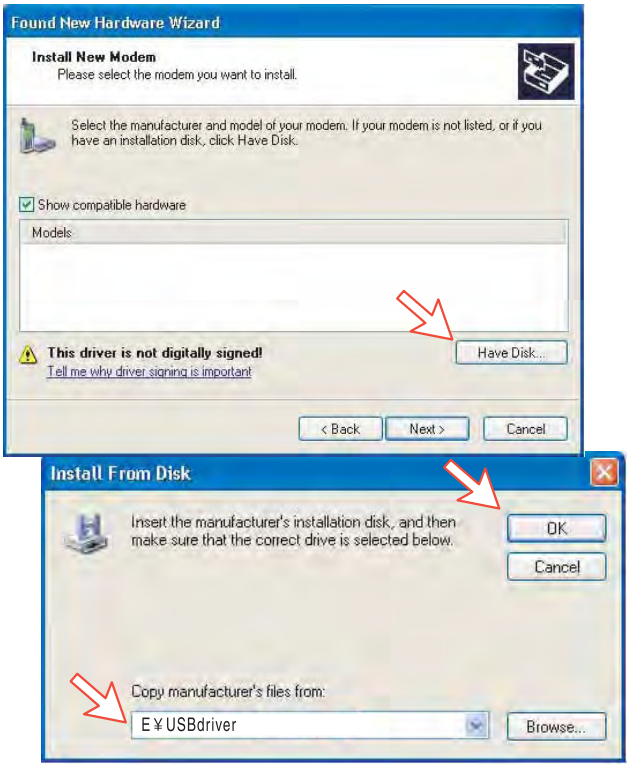


2 Check "Don't search. I will choose the driver to install".
*Click **Next***.

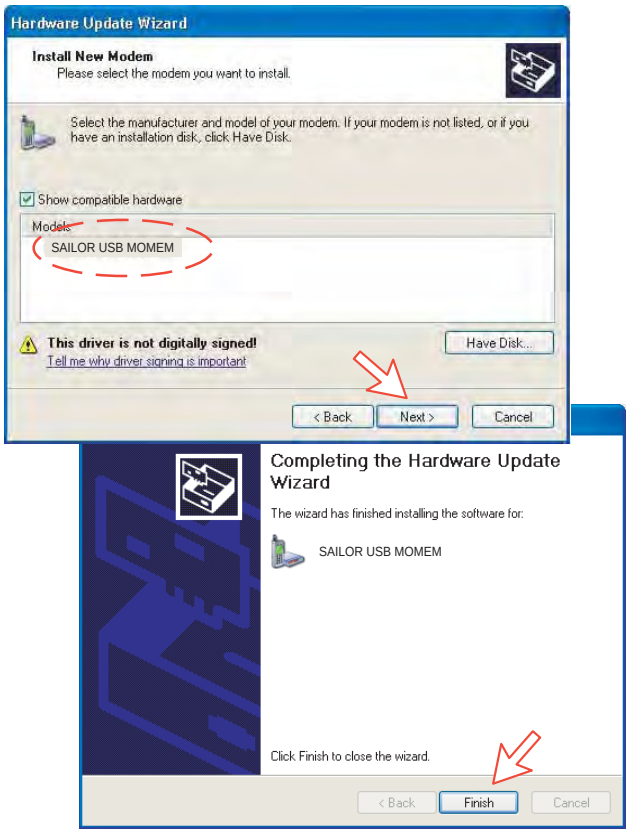
Note: Setting up is only necessary to do once.
For future connections, go directly to **Initiate a call**.



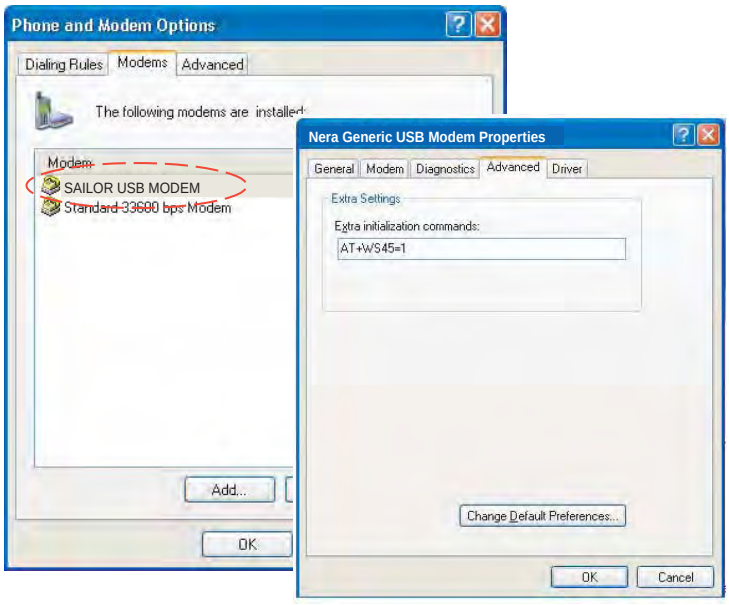
3 In the **Install new modem** window *click **Have disk***. Click **Browse** and specify a USB driver folder in the CD. Open **USB4SAILOR,INF** and click **OK**.



4 Select the **SAILOR USB MODEM**. *Click **Next.** Some message appears, but ignore it and click **Continue**. Then **Finish** to complete the installation.*



5 Opening the **Phone and Modem Options** window confirms the established modem connection. Select SAILOR USB MODEM. Click the **Advanced** tag and enter command “AT+WS45=1.”

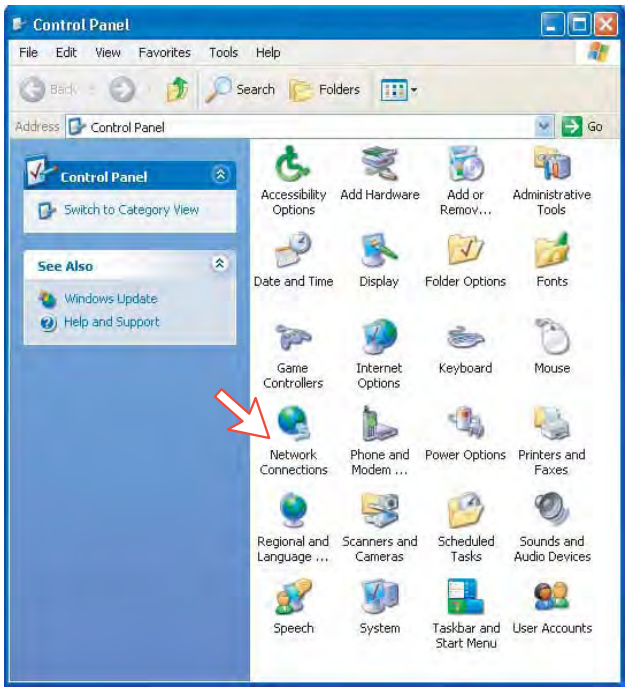


Note: The setup for data transfer to the FURUNO terminal is based on the Windows XP default parameters:

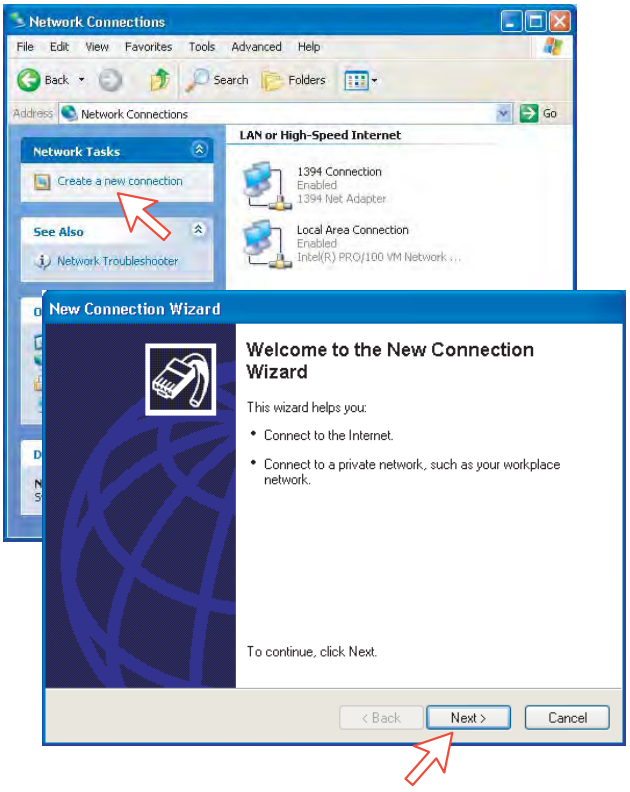
8 data bits - no parity - 1 stop bit - flow ctrl: Hardware

Clicking **Properties** allows checking the parameters.

6 Open the **Control Panel** on the PC and double-click the **Network Connections** icon.

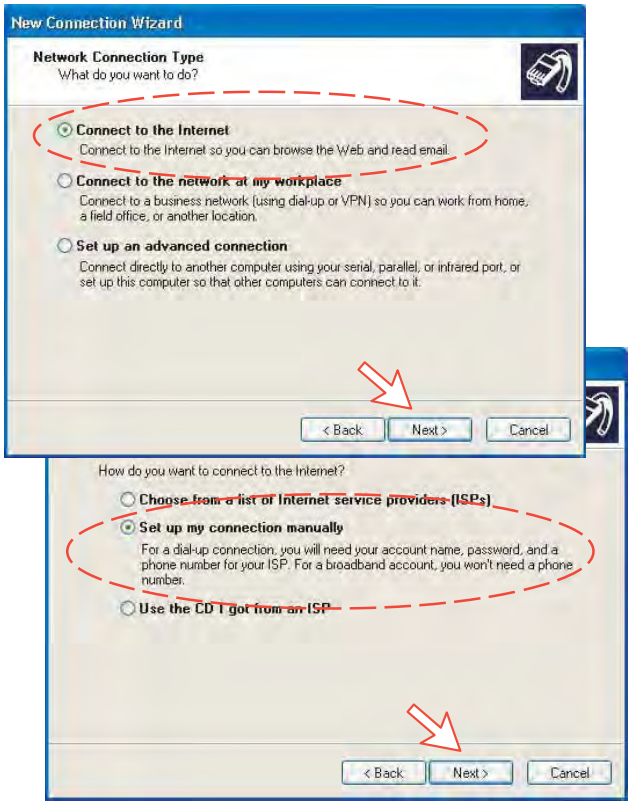


7 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*



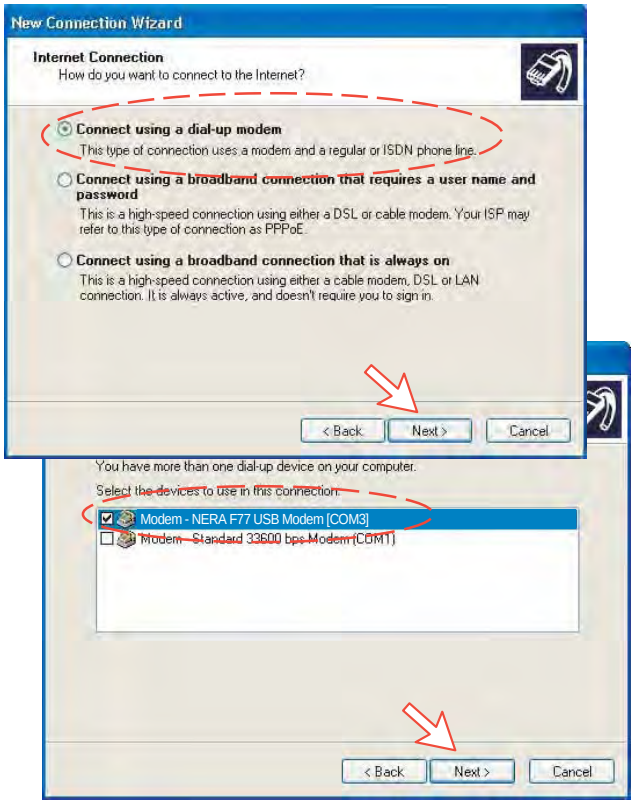
8 Check **Connect to the Internet**. *Click **Next***. Check **Set up my connection manually**.

*Click **Next***.



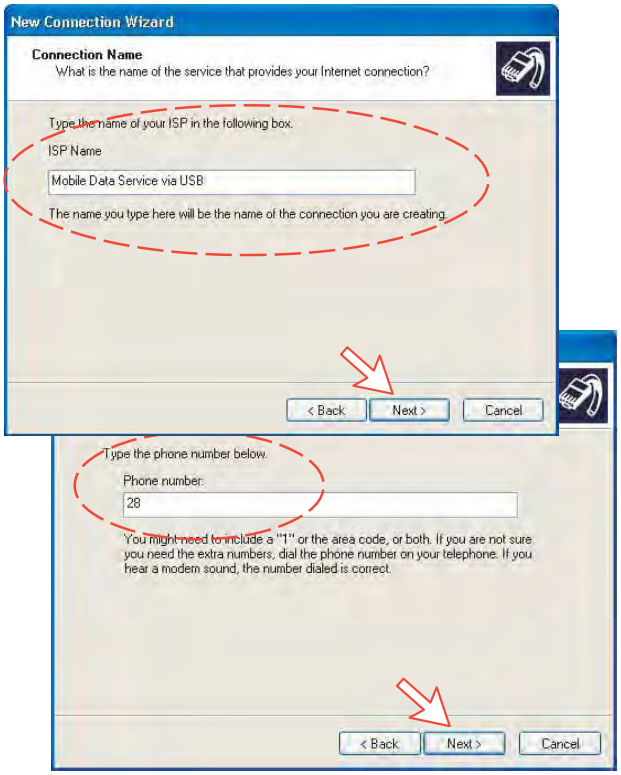
9 Check **Connect using a dial-up modem**.

*Click **Next**.* Check "Modem - NERA F77 USB Modem". *Click **Next**.*

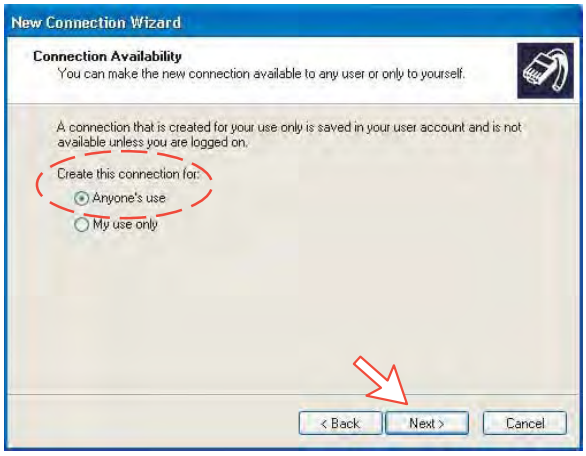


10 Enter the name for the connection e.g. **Mobile Data Service via USB**. *Click **Next***.

Enter phone number (through some Net Providers, dialing **28** automatically connects you to the ISP – Internet Service Provider). *Click **Next***.



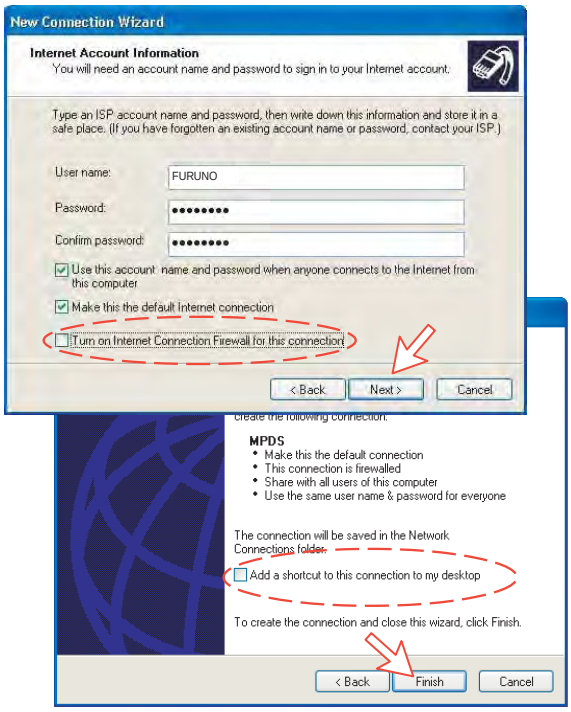
11 Check **Anyone's use**, *and click **Next***.



12 Enter name and password for the connection.

Uncheck **Turn on Internet Connection Firewall for this connection**. *Click **Next**.*

Complete the **New Connection**, *click **Finish***.



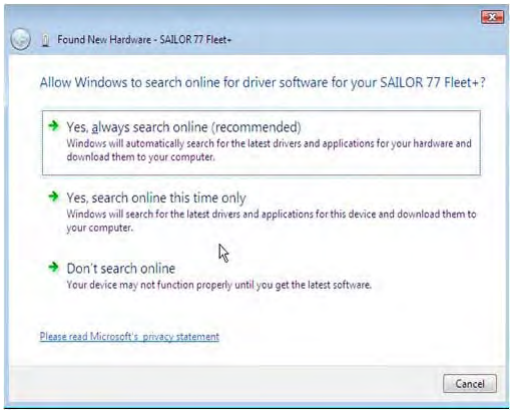
For Windows Vista

Ensure that the SAILOR vtLite is closed.

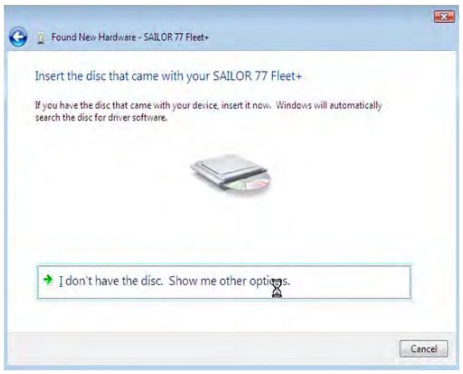
1. When connecting USB cable, the **Found New Hardware** window appears. Click the **Locate and install driver software**.

If the **User Account Control** screen appears, click the **Continue** button.

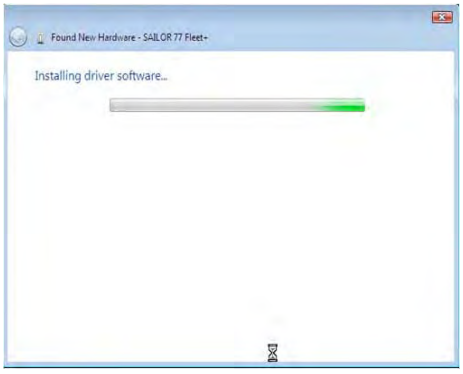
2. The **Found New Hardware – SAILOR 77 Fleet** screen appears. Click the **Don't search online**.
   Note: Setting up is only necessary to do once. For future connections, go directly to **Initiating an MPDS** call. When installing the single USB driver, the dual USB driver is installed.



3. Insert the CD.



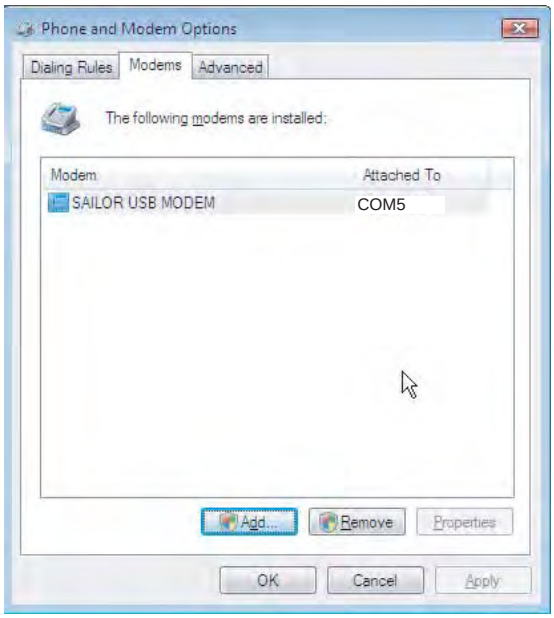
The driver software is installed.

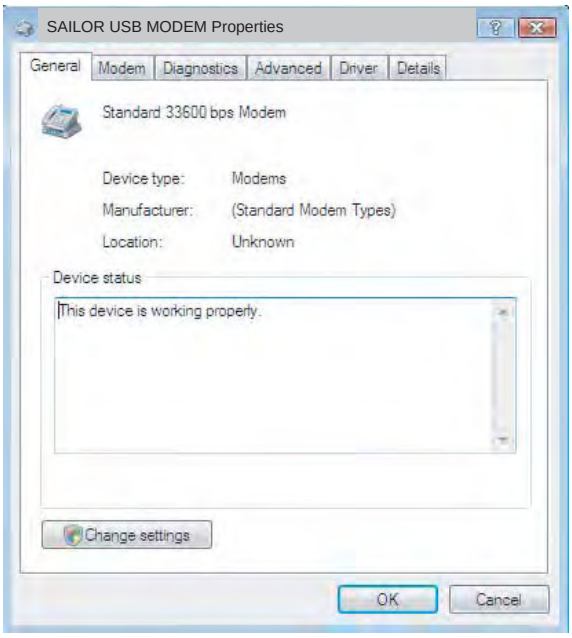


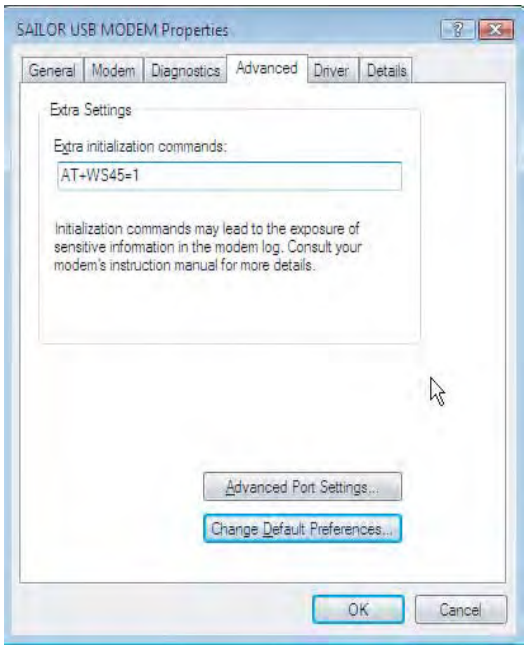
4. The **Windows Security** wizard appears. Click the **Install this driver software anyway**.

5. Open the **Phone and Modem Options** and confirm the modem connection. Select the **SAILOR USB MODEM** and click the **Properties**.

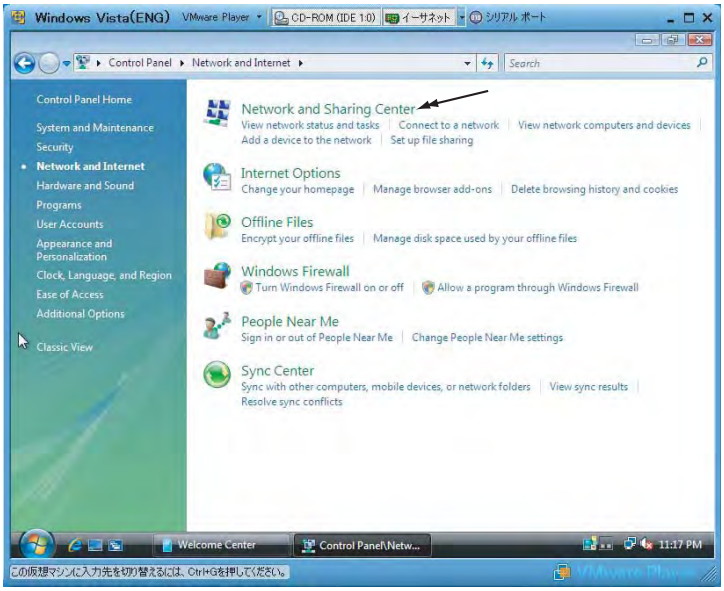
Click the **General** tab in the **SAILOR USB MODEM Properties** window and click the **Change settings**. Click the **Advanced** tab and type "**AT+WS45=1**" in the **Extra initialization command** box. Click the **OK** button.



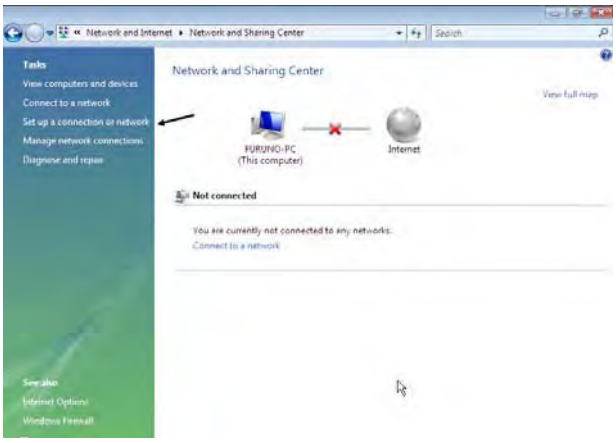




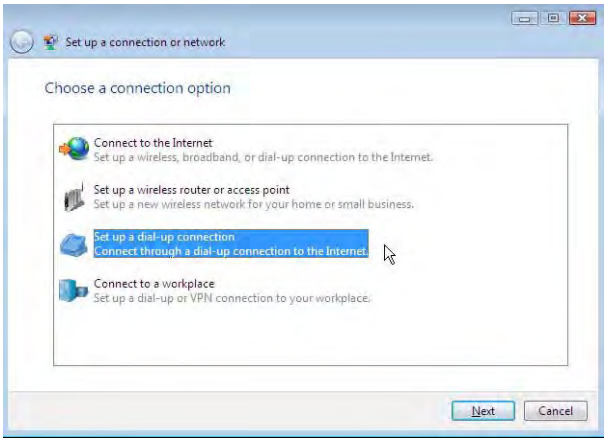
6. Open the **Control Panel** and click the **Network and Internet** and the **Network and Sharing Center** in that order.



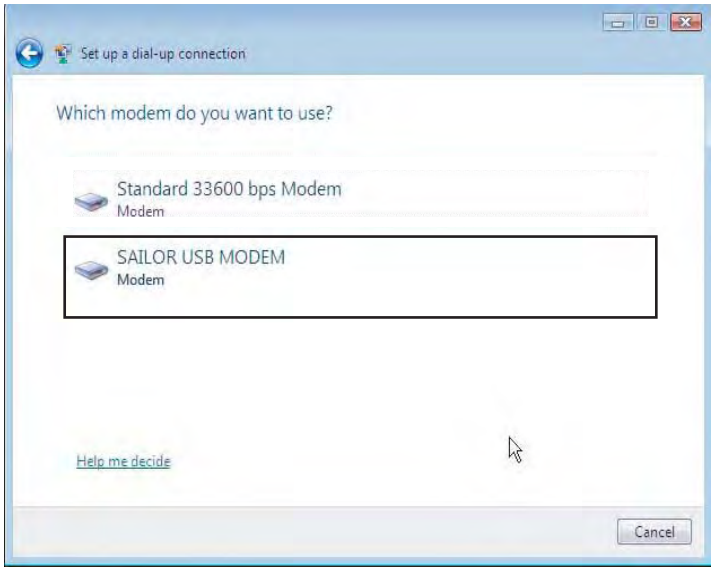
7. Click the **Set up a connection or network** to open the **Set up a connection or network** window.



8. Select the **Set up a dial-up connection** and click the **Next** button.



9. Select the **SAILOR USB Modem** and click the **Next** button.

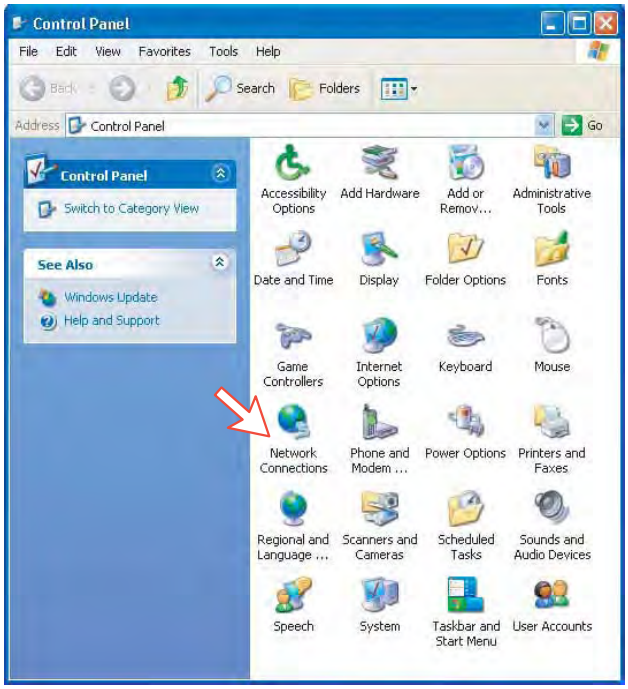


10. **Enter telephone** number (access code) " * * 2 8 # ", user name, password and connection name. Clear the check box **Allow other people to use this connection** and click the **Connect** button.

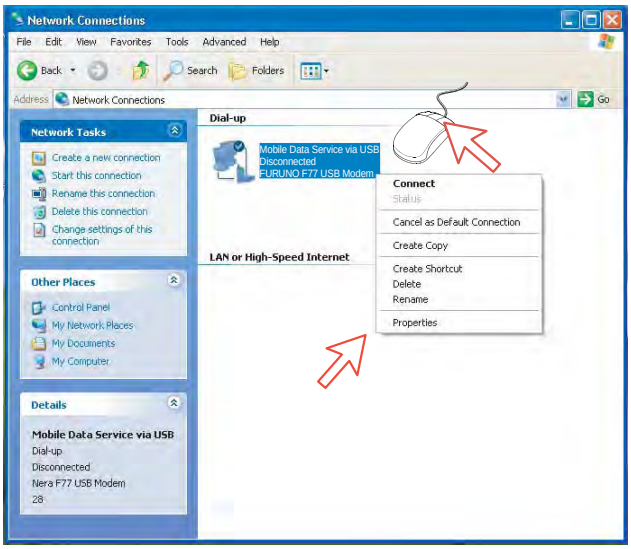
6.4.3 Checking default settings

For Windows XP

1 Double-click **Network Connections** in the **Control Panel**.



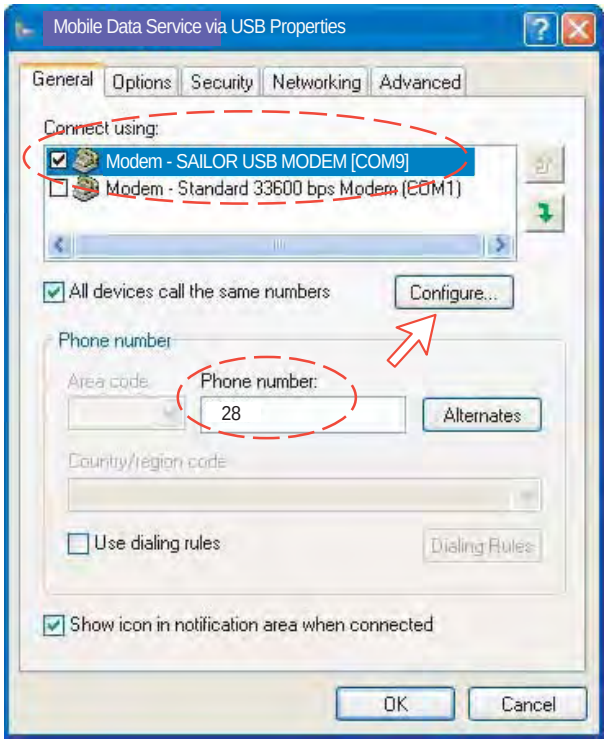
2 Right-click the **Mobile Data Service via USB** dial-up connection and click **Properties**.



3 Confirm settings in the **Mobile Data Service via USB Properties** window:

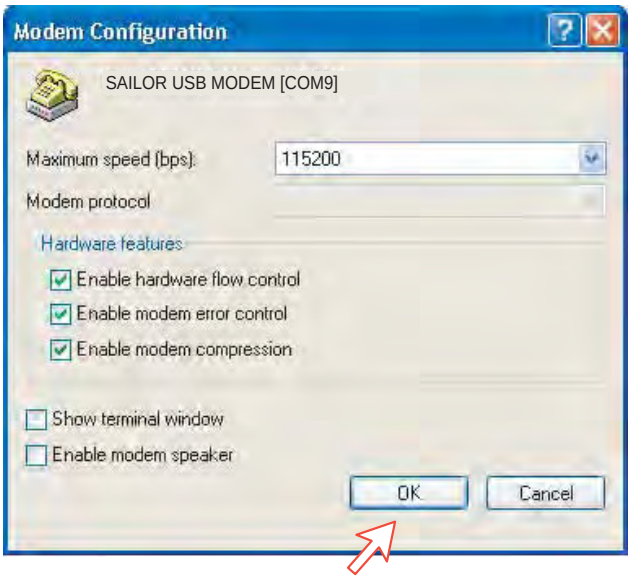
- "Modem – SAILOR USB MODEM [COM9]".
- Phone number: 28

*Click **Configure**.*

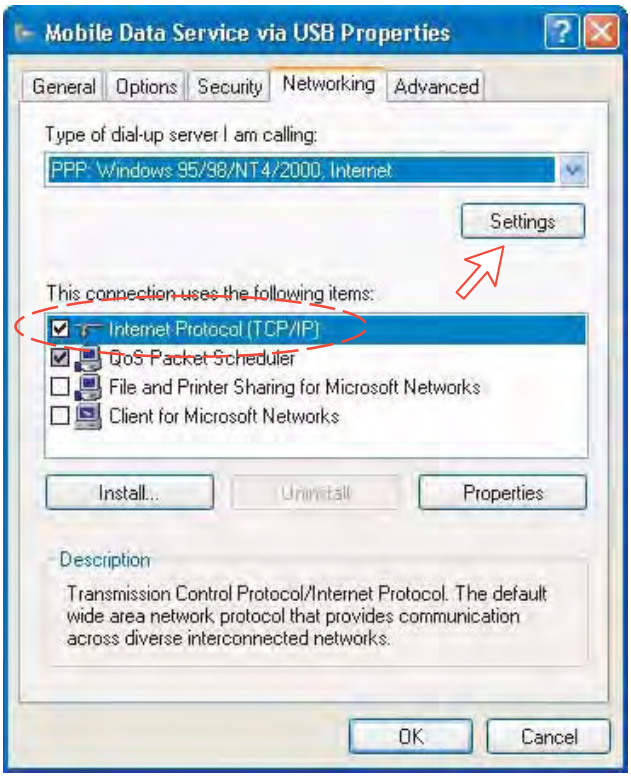


4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.

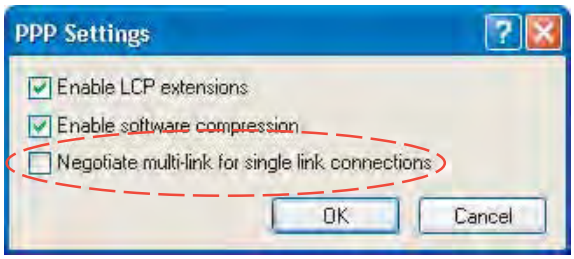
*Click **OK***



5 In the **Mobile Data Service via RS-232 Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected.
*Click **Settings**.*

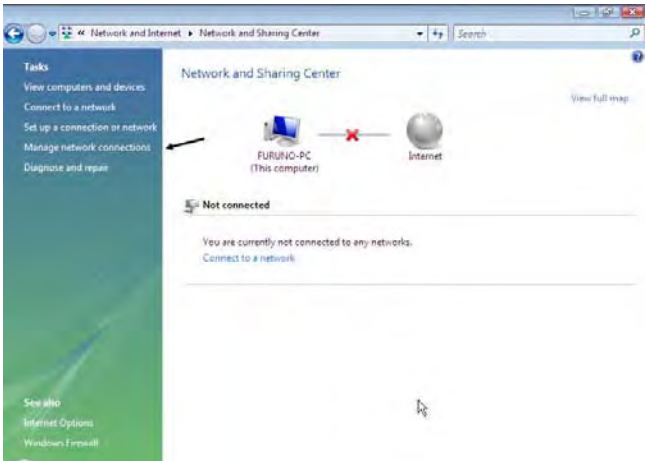


6 In the **PPP Settings** window, **Negotiate multi-link for single link connections** should be un-checked.



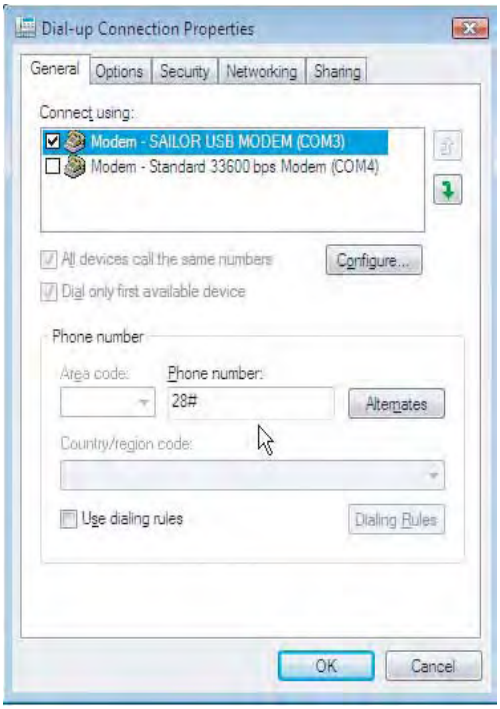
For Windows Vista

1. Open the **Control Panel** and click the **Network and Internet**, the **Network and Sharing Center** and **Manage network connection** in that order.

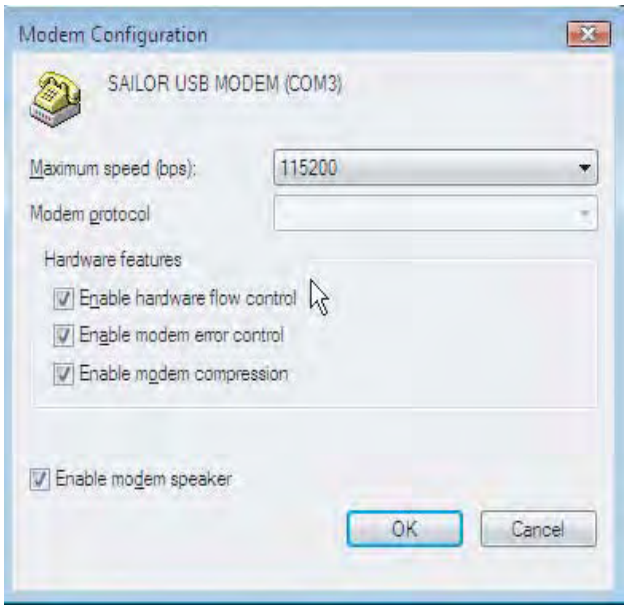


2. Right-click the **Dial-up Connection** icon that you created in the Dialup and click the **Properties**.
3. Confirm the setting contents in the **Dial-up Connection Properties** window.
   - Modem: SAILOR USB Modem (COM5)
   - Phone number: 2 8 #

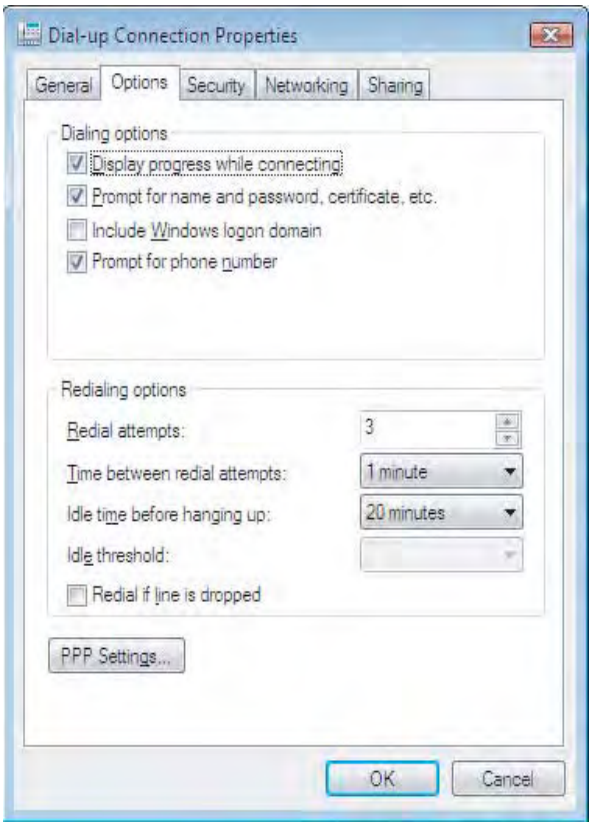
   Click the **Configure** button.



4. In the **Modem Configuration** window, confirm that the **Maximum speed (bps)** is set to **115200** and click the **OK** button.



5. Select the **Options** tab in the **Dial-up Connection Properties** window and click the **PPP Settings**.



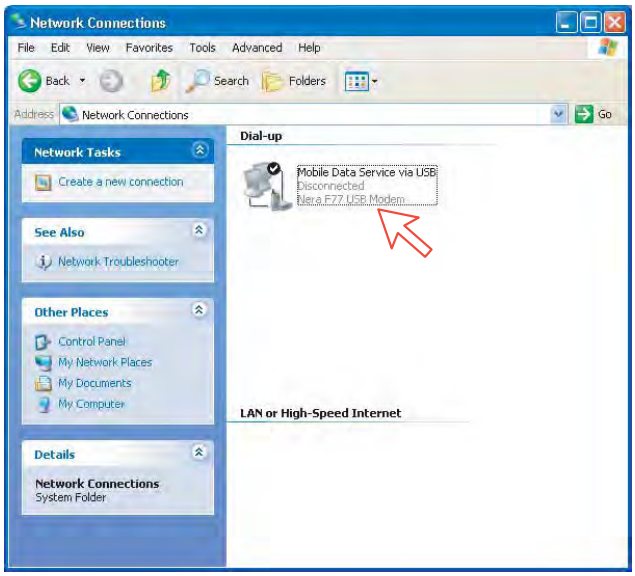
6. Confirm that the check box for **Negotiate multi-link for single-link connections** is clear in the **PPP Setting** window and click the **OK** button.

6.4.4 Connecting to server

For Windows XP

Initiate a call

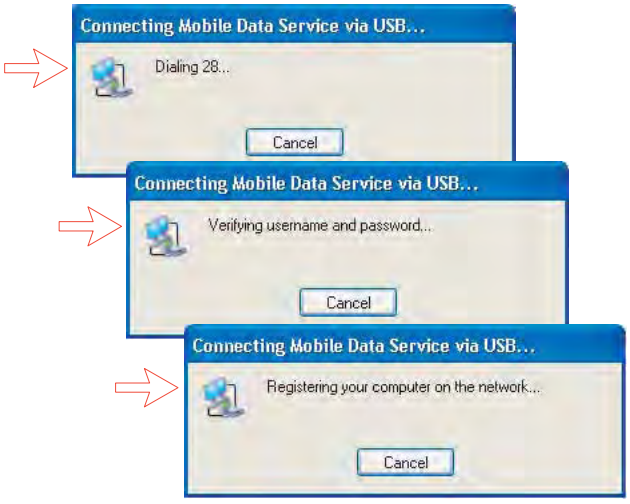
Double-click the **RS-232 port** icon in the **Dial-Up Networking** folder.



Note: The SAILOR vtLite program must be closed down prior to dialing up the server.

Enter the **User name** and **Password** provided for the specific server connection.
Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*

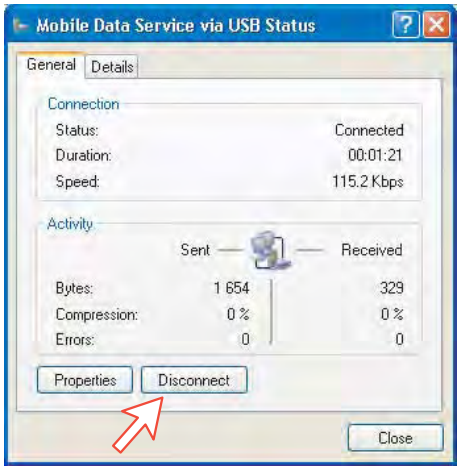
Connection in progress



Open the browser/program to be used on the connection.

Connection status

*Appears when right-clicking the **Mobile Data Service via USB** dial-up icon and **Status**, or clicking the PC icons in the lower right corner of the screen.*



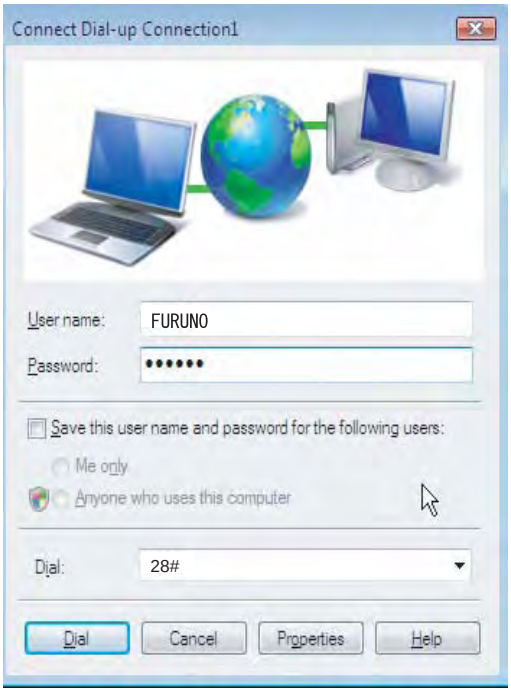
Note: Click **Disconnect** when shutting down the call.
It is not enough to close the browser alone.

For Windows Vista

Initiating an dial-up connection call

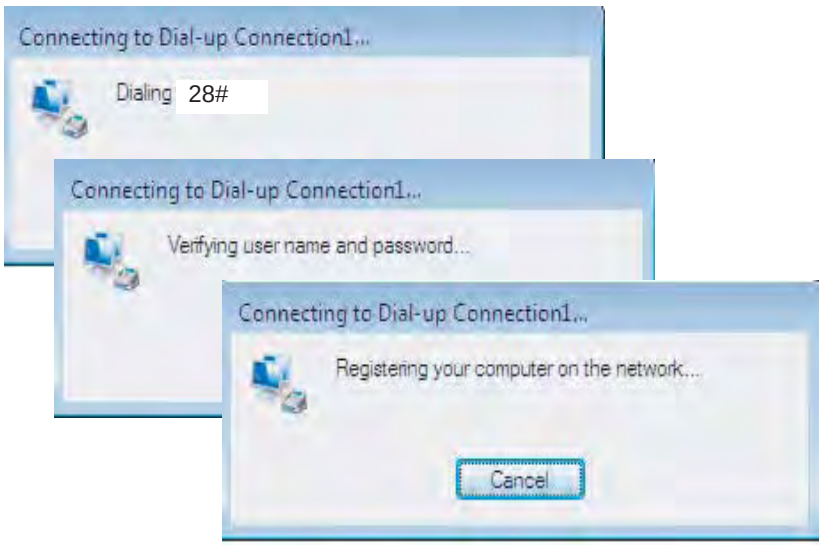
Open the **Control Panel** and double-click the **Network and Internet**, the **Network and Sharing Center, Manage network connection** and **Dial-up Connection** in that order.

Note: The SAILOR vtLite program must be closed down prior to dialing up the server. If provided for the specific server connection, enter the **User name** and **Password**. Click **Dial** to establish the connection to the server. See **Connection in progress**.



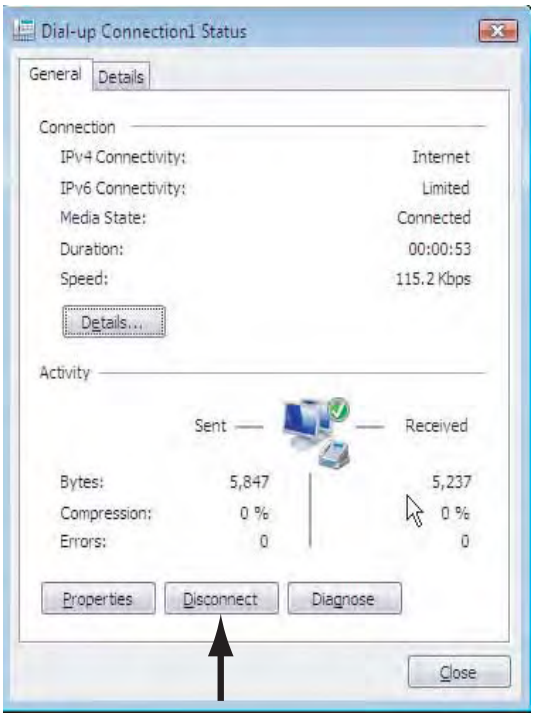
Connection in progress

Display on the PC screen



Connection status

The screen appears when clicking the **View Status** in the **Network and Sharing Center**.



Note: Click **Disconnect** when shutting down the call. It is not enough to close the browser alone.

6.4.5 Troubleshooting

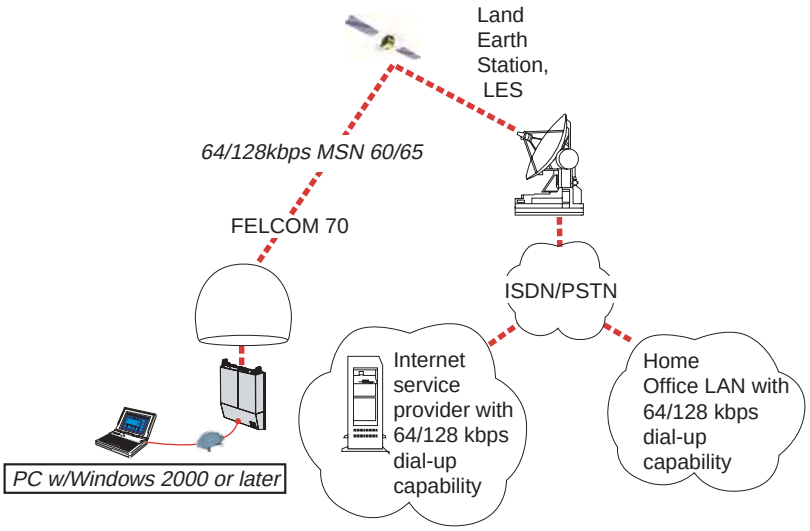
Problem	*Probable cause*	*Action*
1. No contact with modem:	Wrong setup of Communication Unit.	• Check cable connection. • Disconnect USB cable, and reconnect. • On PC, open Phone and Modem options and check whether USB Modem driver is connected to COM port. *If not:* 1. Remove Modem in Phone and Modem options. 2. Remove previous USB installations via Control Panel>System> Hardware>Device Manager. Double-click universal serial Bus Controller and uninstall the USB universal Host Controller. Warning! Remove all USB drivers. 3. Start again from page 6-71.
2. Cannot find Network Connection:	Network connection not installed.	• Contact your PC vendor to get the software.
3. Connection unsuccessful:	Other end is not an ISDN connection.	• It is not possible to use the USB port if the modem on the receiver side is not an ISDN modem.
	Wrong connection details	• Check the phone number, user name and password with your service provider. • Check whether the 64kbps data UDI is commissioned
4. Cable length	Guaranteed length: 1.5 m	• Recommended maximum length: 3 m
5. Using SAILOR vtLite via USB fails		• Remove SAILOR vtLite and USB drivers, *see problem 1*. • Reinstall SAILOR vtLite.
6. Disconnects after some time	Wrong setting in dialup	• Check properties>options>idle time before hang up.
7. All dialups dial in MPDS mode		• Use AT+WS45=1 to set port back to normal mode
8. Username and password illegal	Some PCs always require user name/password	• Enter any name/password to ensure a successful call.

6.5 Mobile Data Service (ISDN)

6.5.1 PPP modem via ISDN

The **Mobile Data Service** complies with the communication protocol defined by the Inmarsat Fleet system.
The transmission data rate over the satellite link is 64/128 kbps for FELCOM 70.
The **Mobile Data Service** offers connection to the international ISDN/PSTN network.
The service is suitable for applications such as highspeed file transfer, store-and-forward video, e-mail and internet.
(PPP = Point-to-Point Protocol).

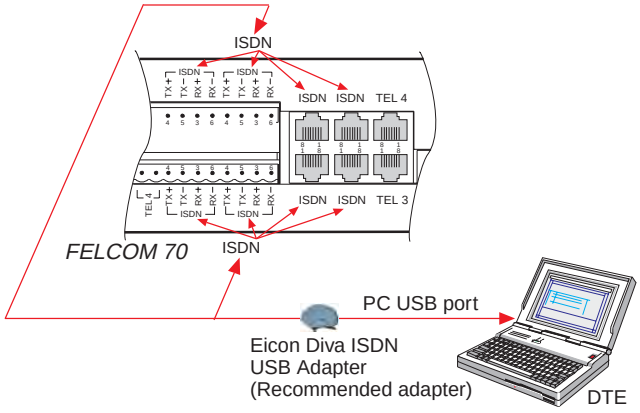
Note: 128 kbps ISDN Mobile Data Service is optional function. To install this function, consult with FURUNO dealer.



6.5.2 Connecting up

Procedure for ISDN-to-USB installation

1. Connect the USB cable between the ISDN USB adapter and the PC USB port.
2. Connect the ISDN cable between the ISDN USB adapter and the ISDN port on the communication unit of the FELCOM 70. We recommend Eicon Diva ISDN USB Adapter.
3. Turn on the FELCOM 70 and PC. Windows opens the **Found New Hardware Wizard**.



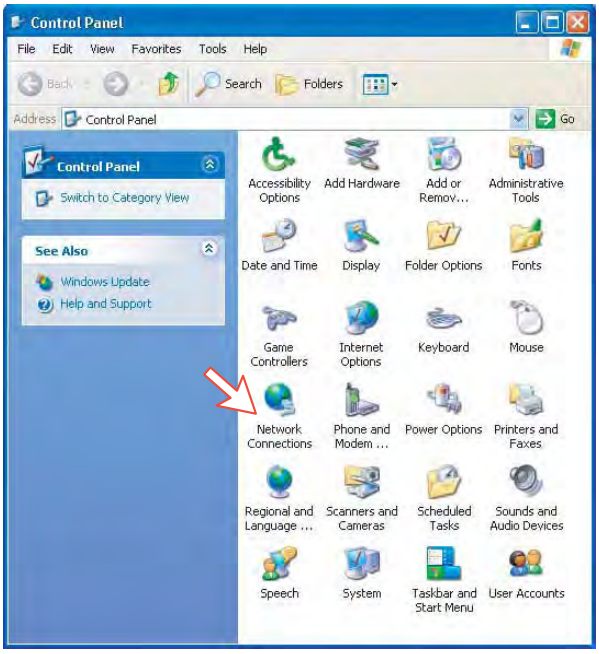
6.5.3 PC setup

For Windows XP

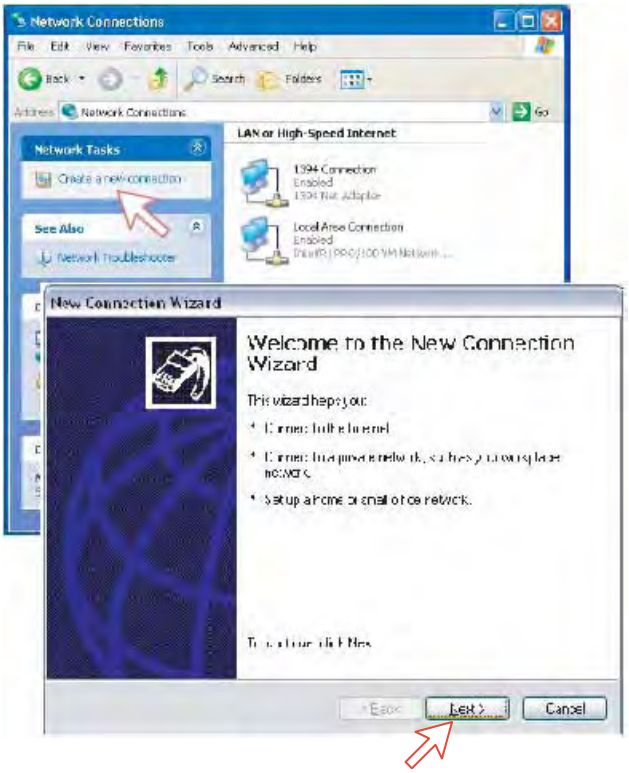
Setting up a connection

Ensure that SAILOR vtLite is closed.

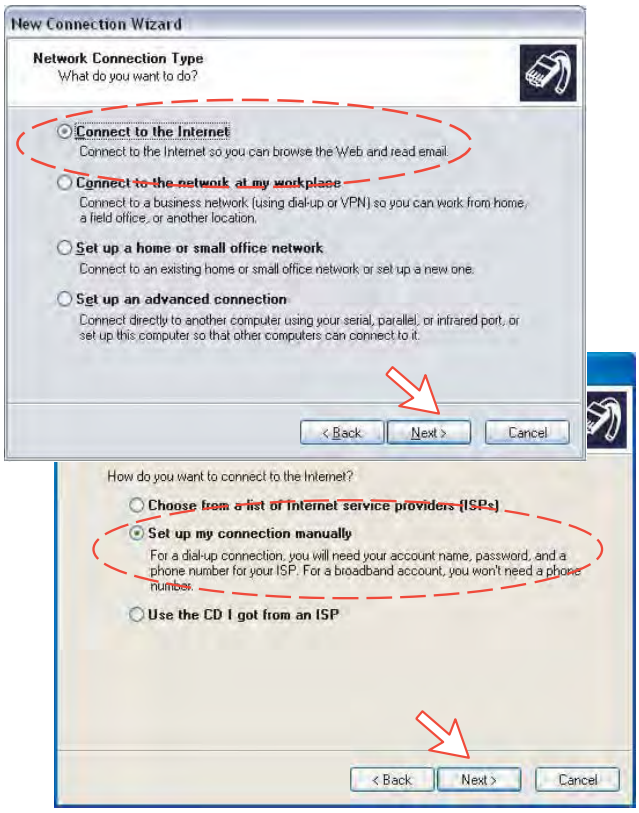
1. Open the **Control Panel** on the PC and double-click the **Network Connections** icon.



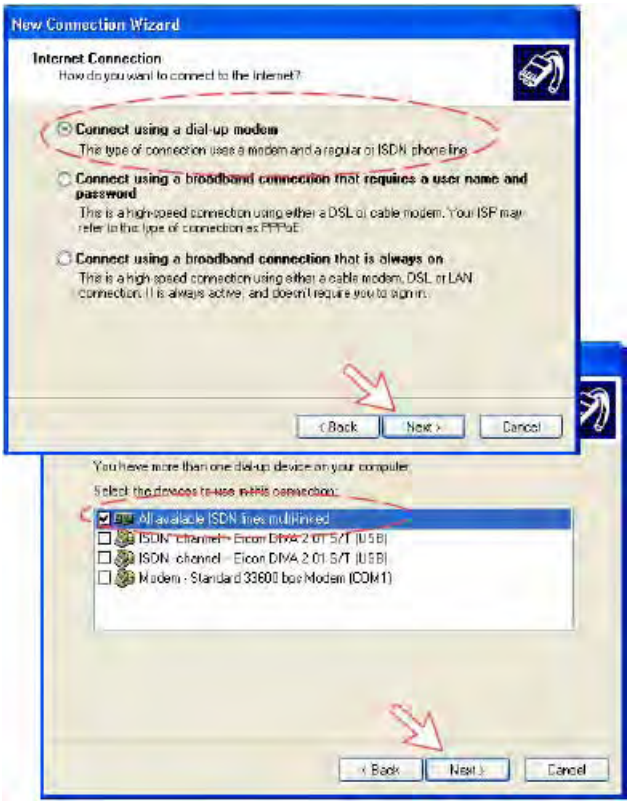
2. Click **Create a new connection** to open the **New Connection Wizard**. Click **Next**.



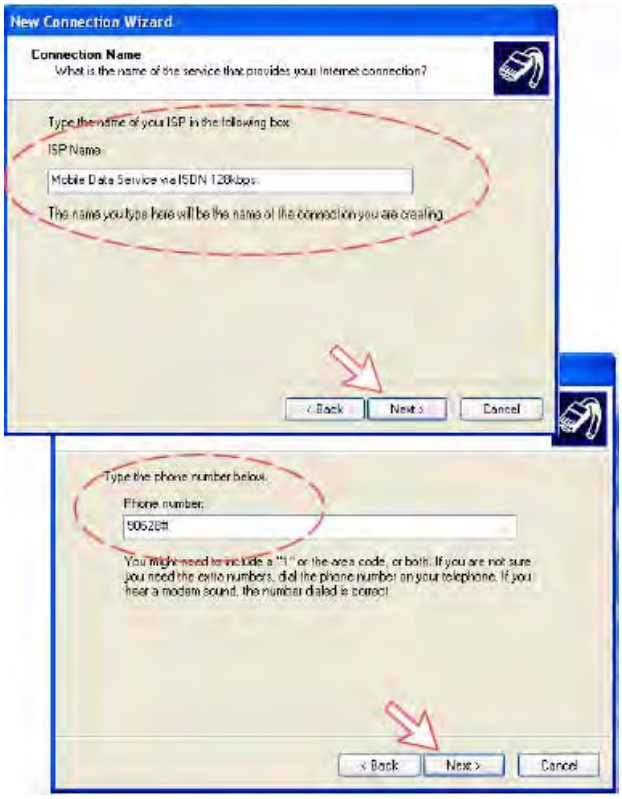
3. Check **Connect to the Internet**. Click **Next**.
4. Check **Set up my connection manually**. Click **Next**.



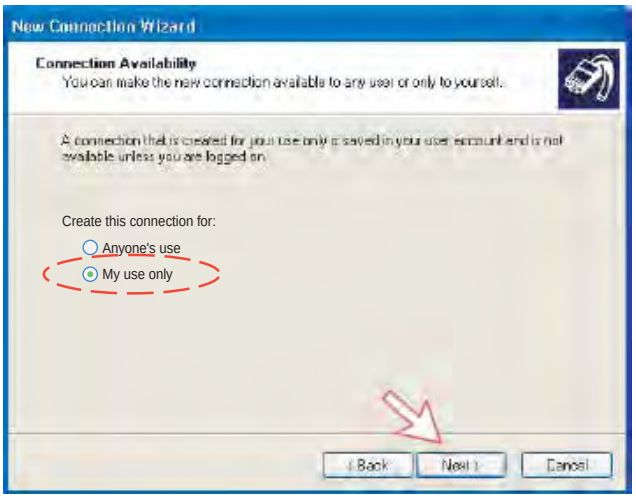
5. Check **Connect using a dial-up modem**. Click **Next**.
   Check “ISDN channel Eicon DIVA 2.01 S/T (USB)” for 64 kbps transmission, or “All available lines multi-linked” for 128 kbps (example). Click **Next**.



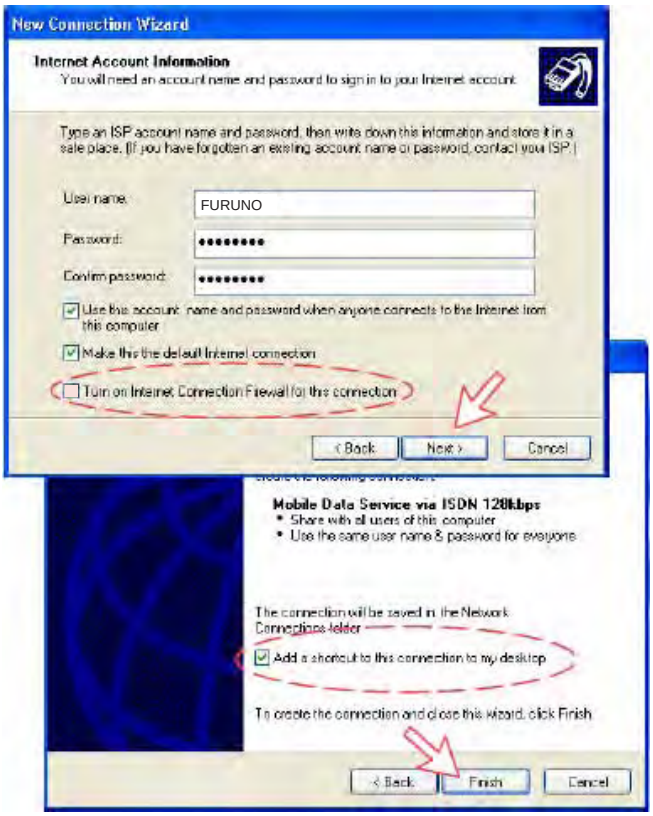
6. Enter the name for the connection e.g. **Mobile Data Service via ISDN 128 kbps** (example). Click **Next**.
   Enter phone number (through some Net Providers, dialing **90628#** automatically connects you to the ISP-Internet Service Provider).
   When set up for 64 kbps transmission, dialing **28#** connects you to the ISP.
   Click **Next**.



7. Check **My use only**, and click **Next**.



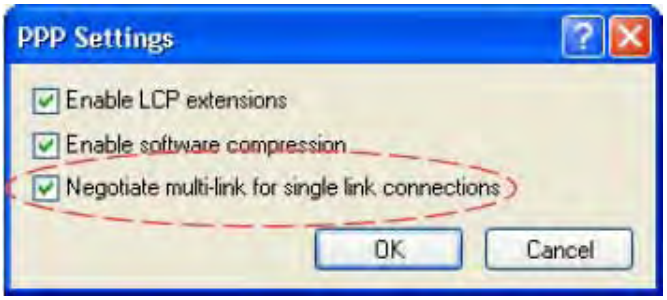
8. Enter name and password for the connection.
   Uncheck **Turn on Internet Connection Firewall for this connection**. Click **Next**.
   Complete the **New Connection**, click **Finish**.



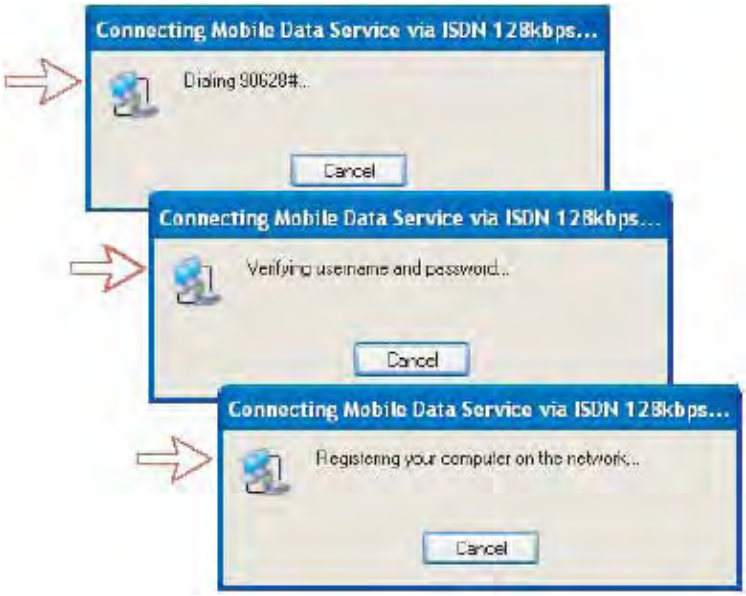
9. Click **Dial** to establish the connection to the server (the example applies to 128 kbps transmission). See **Connection in progress** later.
   If required, click **Properties** to check the **PPP Settings**.

10. In the **Mobile Data Service via ISDN 128 kbps Properties** window, click the **Networking** tab and check that **Internet Protocol (TCP/IP)** is selected. Click **Settings**.

11. In the **PPP Settings** window, **Negotiate multilink for single link connections** should be checked for 128 kbps transmission and unchecked for 64 kbps.



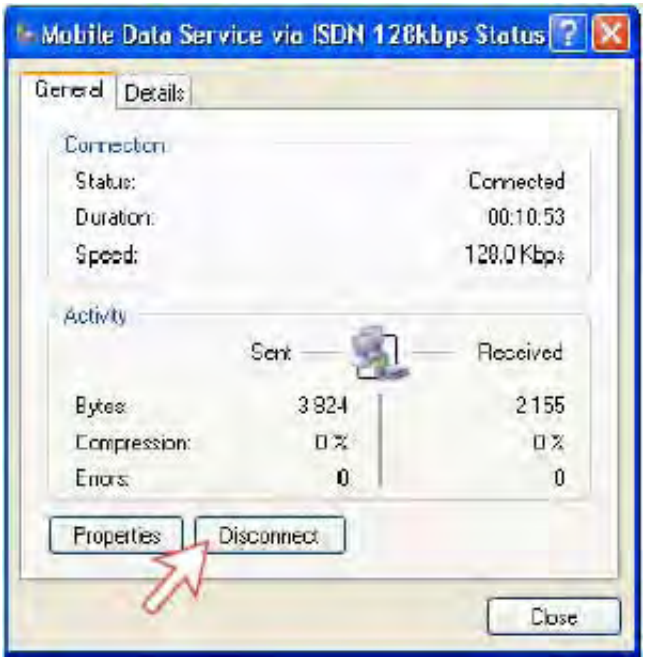
Connection in progress



Open the browser/program to be used on the connection.

Connection status

The following status window appears when right-clicking the **Mobile Data Service via ISDN 128 kbps** dial-up icon in the **Network Connections** window and clicking **Status**, or clicking the PC icons in the lower right corner of the screen.



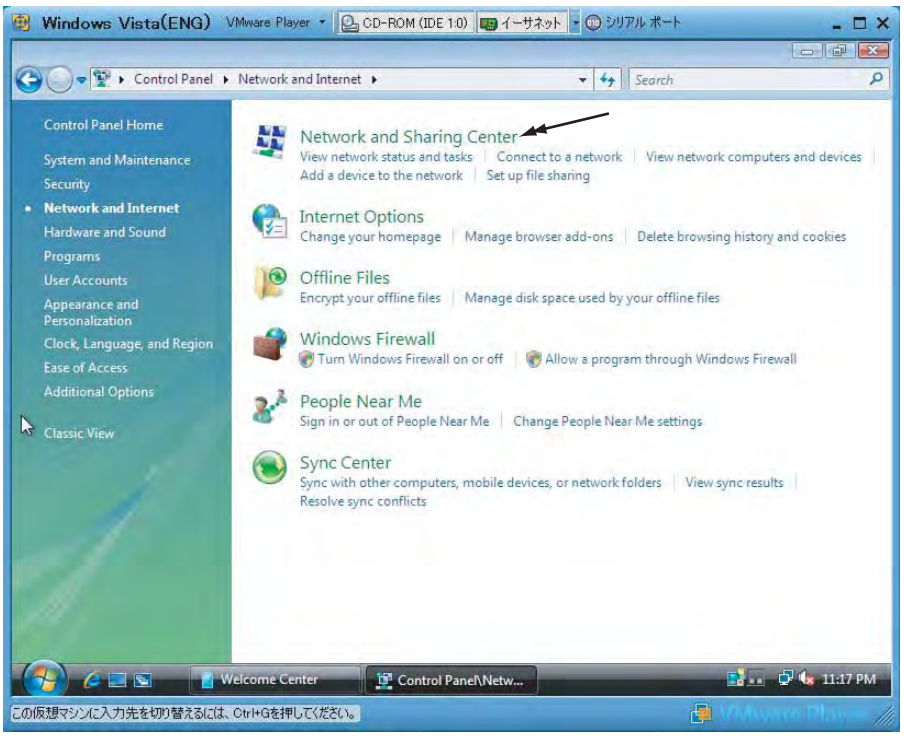
Note: Click **Disconnect** when shutting down the call. It is not enough to close the browser alone.

For Windows Vista

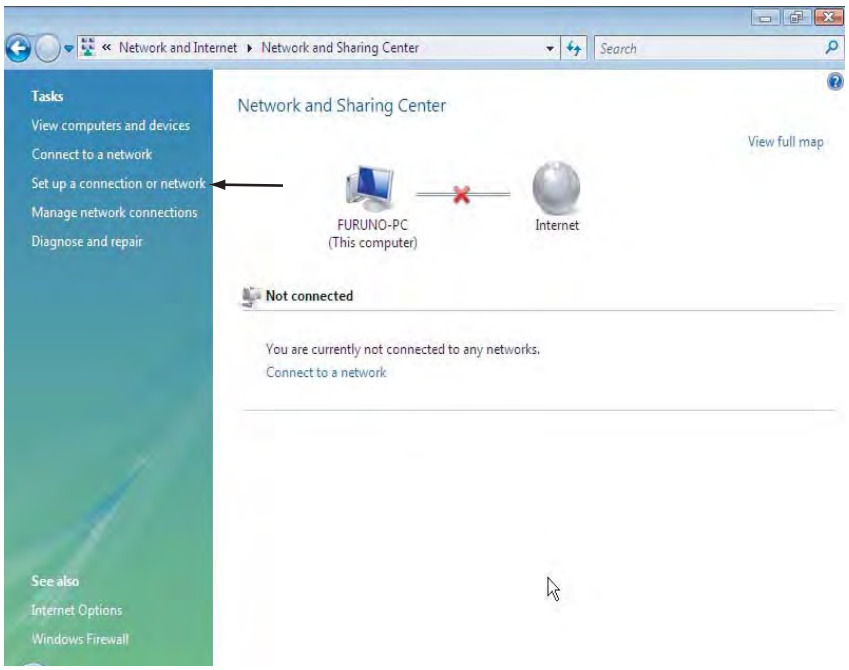
Setting up a connection

Ensure that the SAILOR vtLite is closed.

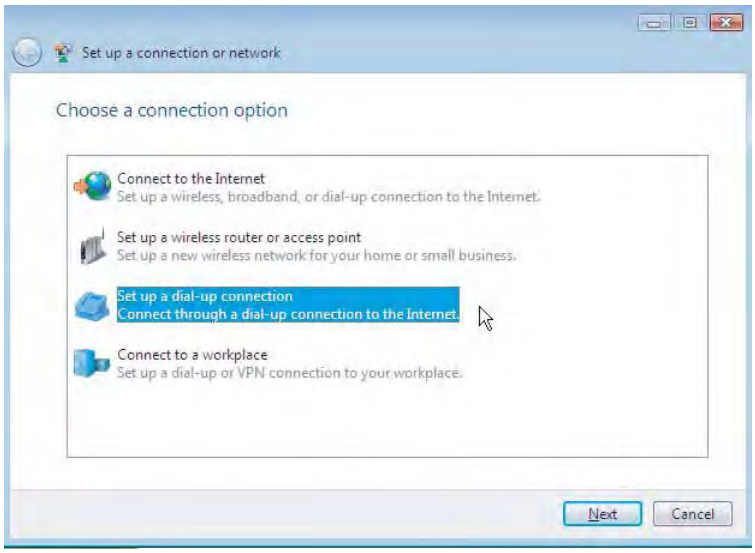
1. Open the **Control Panel** and click the **Network and Internet** and the **Network and Sharing Center** in that order.



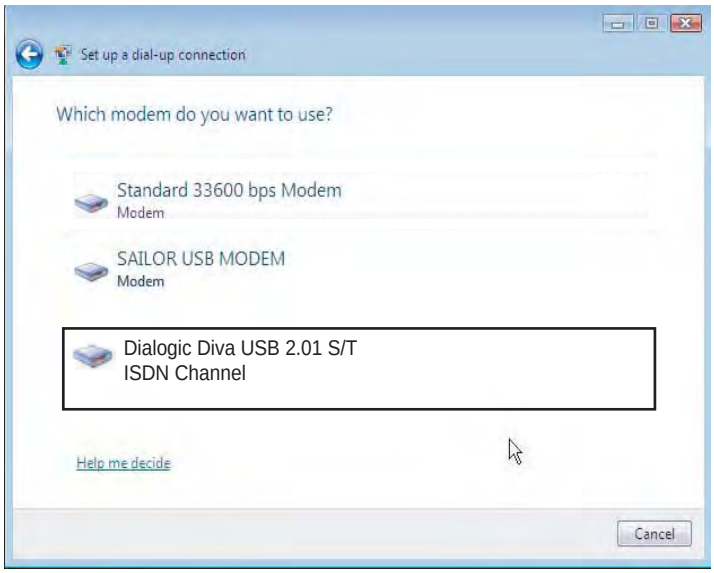
2. Click the **Set up a connection or network** to open the **Set up a connection or network** window.



3. Select the **Set up a dial-up connection** and click the **Next** button.

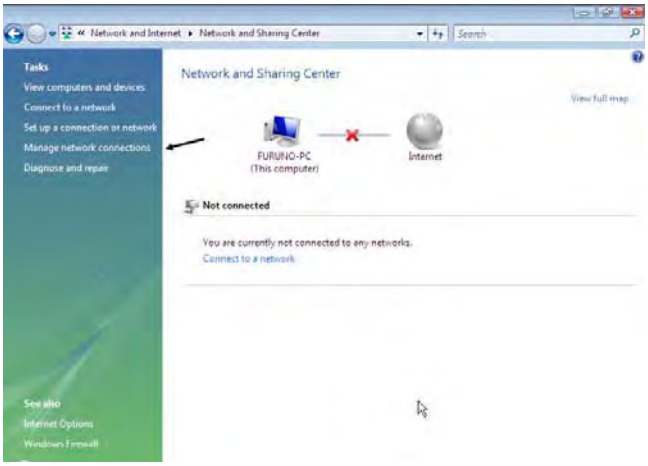


4. Select the **Dialogic Diva USB 2.01 S/T** and click the **Next** button.



5. Enter telephone number (access code) " 2 8 # ", user name, password and connection name. Clear the check box **Allow other people to use this connection** and click the **Connect** button.

6. Open the **Control Panel** and click the **Network and Internet**, the **Network and Sharing Center** and **Manage network connection** in that order.



7. Right-click the **Dialup connection** icon that you created in the **Dialup** and click the **Properties**.
8. Confirm the setting in the Dialup connection Properties window as follows.

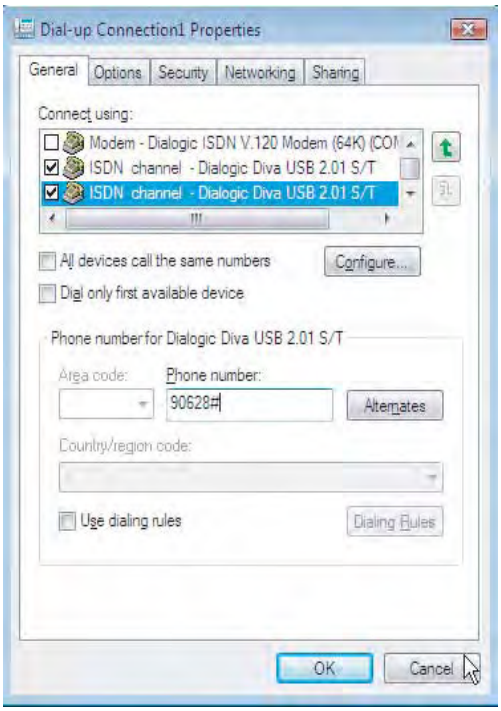
How to connect:

- For 64 kbps: Check one box **ISDN Channel – Dialog Diva USB 2.01 ST**.
- For 128 kbps: Check two boxes **ISDN Channel – Dialog Diva USB 2.01 ST**.

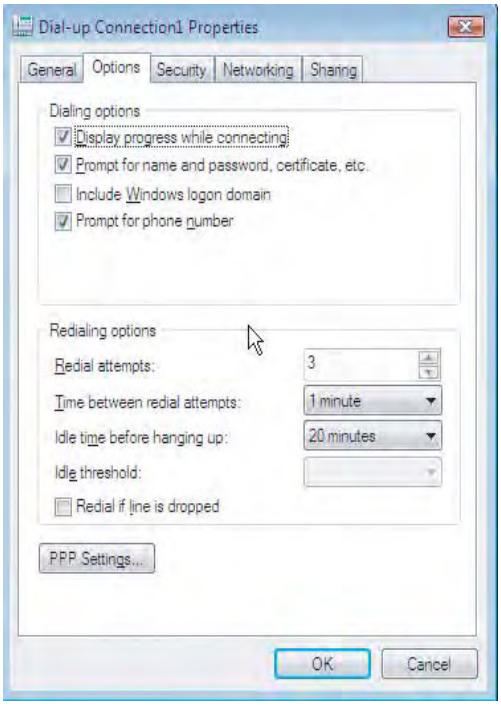
Phone number:

- For 64 kbps: 28#
- For 128 kbps: 90628#

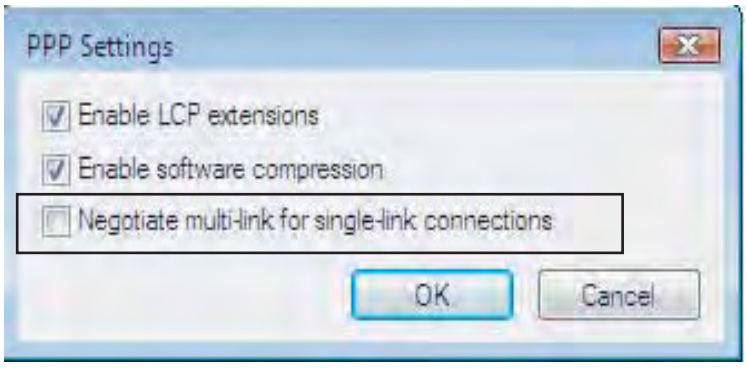
Note that for 128 kbps, clear the check boxes for **All devices call the same numbers** and **Dial only first available device**.



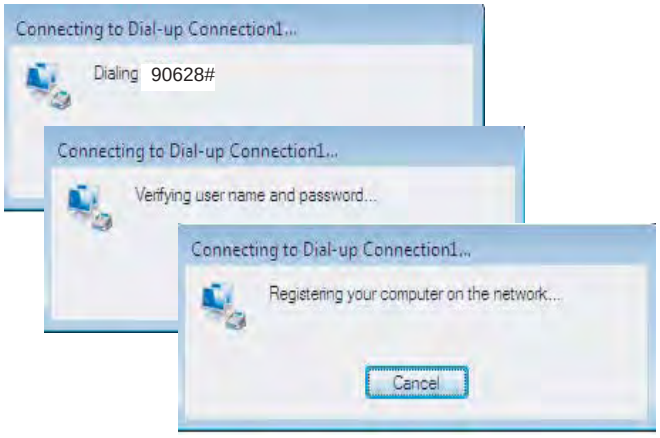
9. Click the **PPP Setting** button.



10. For 64 kbps, clear the check box for **Negotiate multi-link for single-link connections**.
For 128 kbps, check the box **Negotiate multi-link for single-link connections**.

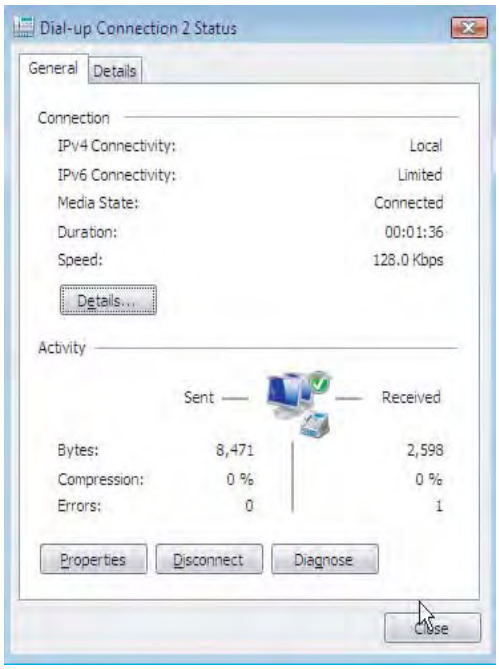


Connection in progress



Connection status

The following status window appears when clicking the **View status** in the **Network and Sharing Center**.



Note: Click **Disconnect** when shutting down the call. It is not enough to close the browser alone.

6.5.4 Troubleshooting

Problem	*Probable cause*	*Action*
1. No contact with modem:	Wrong setup of Communication Unit.	• Close vtLite if used via the USB port. • Check cable connection. • Disconnect USB or RS-232 cable, and reconnect. • On PC, open Phone and Modem options and check whether USB Modem driver is connected to COM port. If not: 1. Remove Modem in Phone and Modem options. 2. Remove previous USB installations via Control Panel > System > Hardware > Device Manager. Double-click universal serial Bus Controller and uninstall the USB universal Host Controller. Warning! Removes all USB drivers. 3. Start again from paragraph 6.5.3 PC setup.
2. Connection unsuccessful:	Other end is not an ISDN connection.	• It is not possible to use the RS-232 port if the modem on the receiver side is not an ISDN modem.
	Wrong connection details	• Check the phone number, user name and password with your service provider. • Check whether 64/128 kbps data UDI is commissioned. • Using SAILOR vtLite, check configuration in the Device Manager.
3. CU fails to dial	Incomplete dialing	• Remember to add # as last digit, e.g. 28#. • Instead of "#" try to enter **902** in front of the telephone number, e.g. 902 28#.
4. Length of USB cable	Guaranteed length: 3 m	
5. Using vtLite/ SAILOR vtLite via USB fails		• Remove SAILOR vtLite and USB drivers, see problem 1. • Reinstall SAILOR vtLite.
6. Disconnects after some time	Wrong setting in Windows dialup	• Check properties > options > idle time before hang up.
7. All dialups dial in MPDS mode		• Use AT + WS45 = 1 to set port back to normal mode
8. Username and password illegal	Some PCs always require username/ password	• Enter any name/password to ensure a successful call.
9. Problem using vtLite via USB	Wrong COM port	• VtLite only autodetects COM1 – COM6. Select appropriate port manually.
10. Unable to establish 128 kbps connection	Server rejects setup request for the 2nd 64 kbps B-channel. Occasionally, the server will not establish two connections (64 kbps) with the same username and password.	• Try again. If the problem persists, contact the Internet Service Provider.

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7. TROUBLESHOOTING

7.1 Troubleshooting

NOTICE

Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

	Problem	***Probable cause***	***Action***
1	***The FELCOM 70 CU power indicator does not light up.***	The CU is not switched ON.	• Toggle the ON/OFF switch to ON. • Switch off, wait 30 secs and switch back on.
		Power is not connected.	• Check that the power cord is properly connected.
2	***The ISDN Handset display stays completely black.***	The handset cord is not connected, damaged, or enumerating failed.	• Check that the handset cord is properly connected and inspect the cord. • Power CU off/on. • Disconnect cord from CU and connect it again.
3	***FELCOM 70 cannot find the satellite.***	No or weak signals	• Check for correct position of the antenna. Check that no obstacles block the free sight to the satellite. • The signal strength indicator should preferably exceed 550. • Check that the coax cable is connected properly. • Restart the search for any satellite, or try a satellite in a specific Ocean Region.
4	***FELCOM 70 functions abnormally.***	Faulty or no power	• Turn off power and disconnect power cable. • Connect power cable, and switch on again. • Replace fuses, if needed, located near the power switch. • Verify correct voltages to the CU: 100-240V AC.

CU: Communication Unit

	Problem	***Probable cause***	***Action***
5	***Unsuccessful call attempt***	FELCOM 70 is not properly commissioned.	• Call the Net Service Provider.
		The called party is busy. "Subscriber busy" appears in the display.	• If unsuccessful, wait for some time and try again. • Call another destination (another country). • Select another Ocean Region.
		The following messages appear in the display: "No response from net" or "Not authorized for this service".	• Check that the correct Net service provider is shown in the display. • The FELCOM 70 terminal is not properly commissioned. Check with the Net Service Provider or verily that “Network status information” function displays Region Registration: Successful.
		"Traffic log is full" message appears.	• Connect a PC to FELCOM 70 and read/print out the traffic log to allow further logging.
6	***Received signal level displayed on the vtLite screen is normal (greater than 540) and “Ready for call” is displayed on the screen. However, any call among TEL/FAX/DATA can not be established.***	Registration into the selected ocean region may not have been completed.	• Go to AT mode and reset system. Then, ocean region registration is automatically retried. (Refer to Addition 1 on this section.) However, for the system software version is REL3.3 or higher, the following status information is displayed below the” Ready for call” message. a) If region registration has not been completed, “Region registration failed and will be reattempted.” is displayed. b) If region registration has been completed, “Region registration successful” Is displayed.

	Problem	*Probable cause*	*Action*
7	***Problems with telefax or videophone***	Incomplete dialing	• Remember to press "#" as last digit before starting transmission. • Instead of "#", try to enter: 902 + 00 + country code + subscriber number.
		Some of the Inmarsat Fleet (F55/77) service providers have not implemented the 9.6kbit/s FAX service. If you initiate the 9.6kbit/s FAX call through such a provider, the call is cleared immediately after dialing a remote party fax number.	• 9.6kbit/s FAX call should be made through one of the following LESs (providers). POR: 001, 002, 003, 004, 005, 006, 011, 012, 013, 060, and 868 IOR: 001, 002, 003, 004, 005, 006, 011, 012, 013, 022, 405, 555, and 868 AORE & AORW: Not confirmed by FURUNO Recommended LES: 001, 002, 003, 004, 005, 011, 012, and 013 To change service provider, dial a number which “XXX (selected provider’s number)✱” is added at the begining of usual dialing number. (Refer to the example through 003 KDDI.) Example: 003✱ 00 81 798 XX XXXX Country code KDDI International call
		System transmission delays	• The OFF-HOOK time should be as long as possible (e.g. 2 minutes). When the fax machine is called, ringing time should be set to minimum (e.g. immediate answer). • Try a different fax machine. Check that a Group 4 fax is used on the ISDN interface, and Group 3 fax via analogue interface. (e.g. TEL4).
8	***No GPS***	GPS alarm, or no GPS readout	• Wait for 15 minutes. The GPS may use up 15 minutes if FELCOM 70 has switched off for more than 6 hours. If not the case, GPS will report position to the SAILOR vtLite and handset display when the system logs on to the satellite.

	Problem	***Probable cause***	***Action***
9	***Problems with data communication***	Wrong PC settings	• Check the PC program settings: speed 115200 bps, 8 data bits, 1 stop bit, no parity if RS232 is used (default settings in F77 CU). • If shore/land side has an analogue modem, use 3.1 kHz service in FELCOM 70. • If shore/land side has ISDN connection, use 64 kbps UDI service. • If shore/land has 56 kbps UDI (some states in America), use 56 kbps UDI data service. • Contact the PC applications vendor for help.
10	***Routing of calls***	MSN number not entered properly	• Make sure that the MSN number entered into FELCOM 70 with the Device Manager, is also entered into connected equipment. Some ISDN devices can be programmed with multiple MSNs and will answer different services and MSNs.
11	***Coast call can not be routed to a ISDN handset. (Claim from coast side): A shore-to-ship phone call is disconnected after reception of a few ring back tones.***	ISDN handset has been set to “missing”.	• On the vtLite screen of the PC terminal, click “Configure” and “Device Manager” to open the Device Manager. If a missing ISDN Handset and another Handset (available) are indicated in the dedicated Handsets column, change MSN number of the available Handset to the MSN number of the missing Handset. (Refer to Addition 2 in this section.)

	Problem	***Probable cause***	***Action***
12	***Problem with internal calls***	Wrong dialing	• Check that you call the correct MSN number. Ex: If MSN is 01, dial “**01#” or “10301#” correctly.
		Access Code is enable.	To execute an internal call, dial as follows: 1) Two methods for internal call from ISDN handset • Press  key and dial “ * * XX# ” (XX: MSN). • Press  key and key in access code. After “Accepted Number then #” appears in the handset screen, dial “103XX#” (XX: MSN). 2) Two methods for internal call from analog telepfone to ISDN handset • Hook off handset and key in the access code. After hearing the dial tone, dial “ * * XX#” (XX: MSN). • Hook off handset and key in the access code. After hearing the dial tone, dial “103XX#” (XX: MSN). 3) Internal call between analog telephones • Hook off handset and dial “ * * XX#” (XX: MSN) or “103XX#” (XX: MSN).
13	***Problem with call transfer***		• Because analog telephone does not support “R” button, it is not possible to transfer call from analogue to ISDN.
14	***Problem with Distress***	Distress Alarm	• Make sure that the ISDN Handset related to the Distress Alert Unit is properly connected. • Test distress buzzer using the ISDN Handset function **Priority Call** or SAILOR vtLite.
15	***No communication. Noisy at communication***	Displayed “All channel busy”	• Use AT command as follows to reset. ”AT + WNERARESET [ENTER]”
16	***Impossible to make MPDS or UDI call***	Some LESs do not accept an MPDS or UDI call unless a requested call includes a user name and a password specified by respective LESs.	• To make an MPDS or UDI call, specify a Phone No., a Username and a Password for LES, referring to Table 1 (page 7-14), when creating a dial-up icon.

	Problem	***Probable cause***	***Action***
17	***Impossible to transfer E-mails on MPDS/UDI***	MPDS/UDI call for an e-mail is not established if an LES, with which you are contracted for e-mail service, was not selected on the mobile terminal.	i) Following one of three procedures below, set to the LES (service provider) with which you are contracted for e-mail service. a. Setting from Handset Press **MENU** key. -> Select Set Network using ▲ or ▼ key. -> Press **OK** key. -> Select an applicable provider, using ▲ or ▼ key. -> Press **OK** key. b. Setting from vtLite Click **MENU**. -> Click "1. Set default Net provider". -> Press right arrow key twice. -> Move cursor to an applicable provider. -> Click **Select**. -> Click **Save**. -> Click **YES** on the next menu screen to specify the same provider in all ocean regions. c. In case of UDI call, the LES to be used can be selected by dialing number which "XXX (selected provider's number)*" is added at the top of a usual dialing number. Example: 003* 00 81 798 XX XXXX KDDI International call Country code ii) To transfer an e-mail over MPDS/UDI, the mobile terminal has to be registered with an LES which offer such service. See the notes of Table 2. Username and Password are issued by the LES (service provider) at registration. Then, Phone No., Username and Password for the LES must be set on the PC terminal by creating a dial-up icon, referring to Table 2.

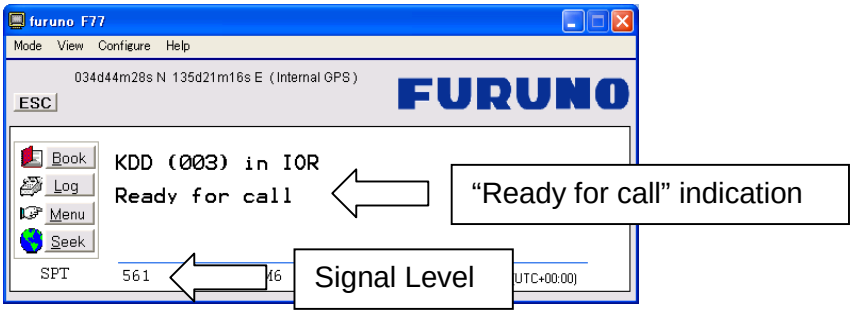
	Problem	Probable cause	Action
18	***Auto-log printing should not be set with no serial printer connected.***	If, when no serial printer connected, the mobile terminal is set to either “a” or “b” below in the Traffic log menu of vtLite, the mobile terminal outputs a call log for serial printer after a call is terminated. This causes the serial port to become busy and MPDS/UDI calls or operations by vtLite become impossible (phone call is available). a. Enabled & Automatic printing to RS-232A; or b. Enabled & Automatic printing to RS-232B	• When a serial printer is not connected to RS-232A or B port of the mobile terminal, a traffic log has to be set to “Enabled” in the Traffic log menu of vtLite. If it has been set to either “a” or “b” left, it should be changed to “Enabled”, by following the restoration procedure (See Addition 3 on page 7-16).

Addition 1

When all communications are not established (TEL/FAX/DATA), do the following:

Step 1: Starting up vtLite

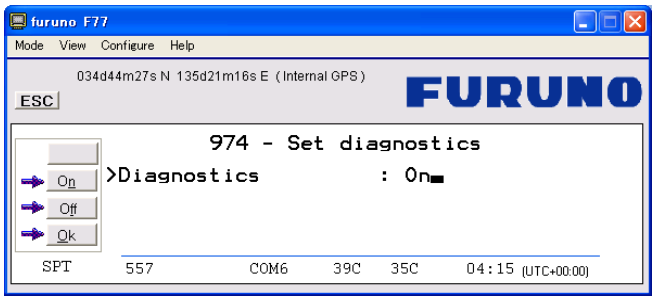
1. Start up vtLite.



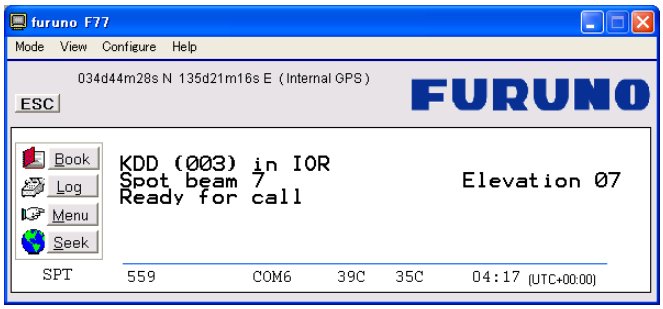
2. Confirm that Signal Level is 540 or higher.
3. Confirm that “Ready for call” is indicated.

Step 2: Turning on Diagnostics

1. Click **Menu** button and enter “974” from PC terminal keyboard to display the following screen.

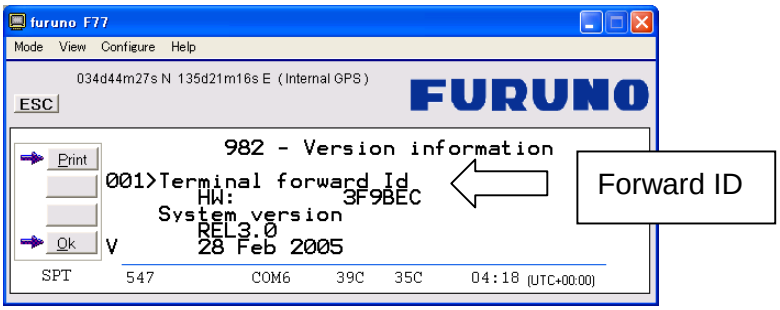


2. Click **ON** button and then click **OK** button.
3. Click **ESC** button four times to return to vtLite start-up screen.



Step 3: Checking Forward ID

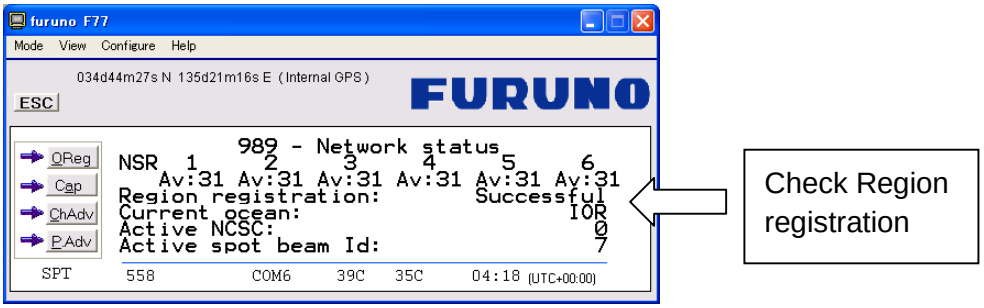
1. Click **Menu** button on vtLite start-up screen and enter “982” from keyboard to display the following screen.



2. Confirm that the forward ID matches the last 6 digits of ISN inscribed on nameplate (for ex.: 66FE01******).

Step 4: Checking Network status

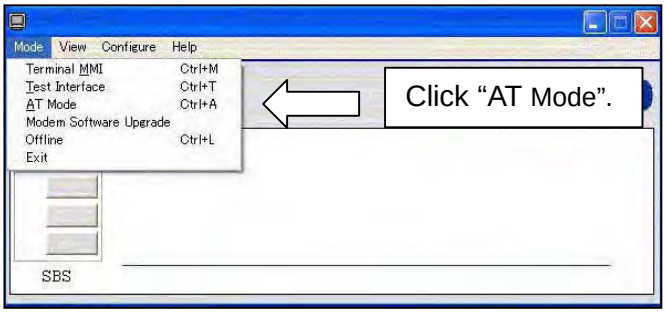
1. Click **ESC** button four times to return to vtLite start-up screen. Click **Menu** button on vtLite start-up screen and enter “989” from keyboard to display the following screen.

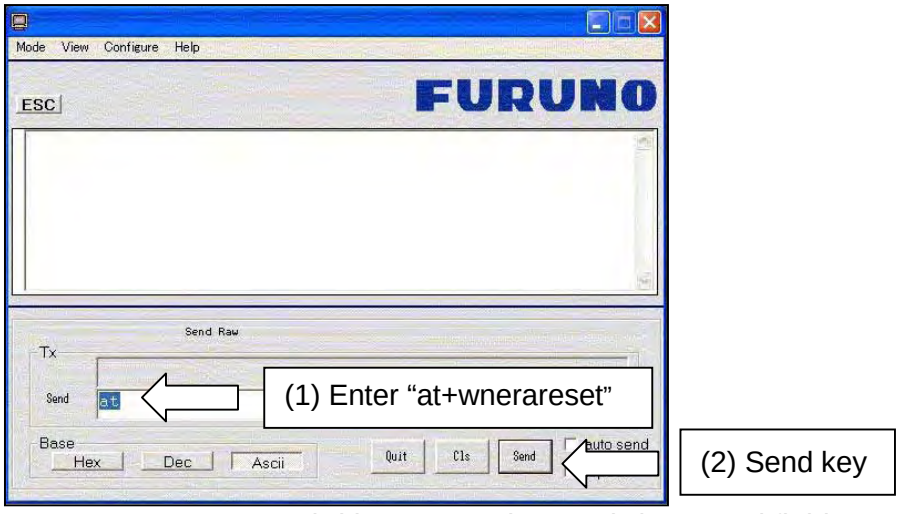


2. Check the Region registration field. If all communications are not established, “Failed” may be indicated. If communication fails in spite of “Successful” is indicated, contact FURUNO.

Step 5: Resetting in AT Mode

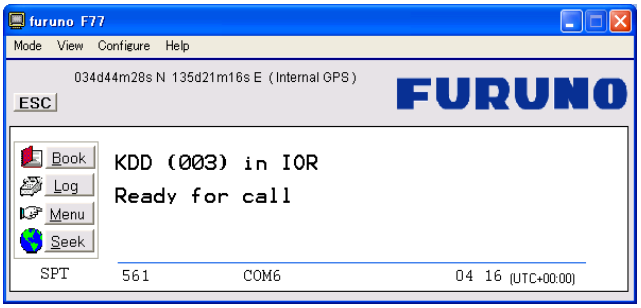
1. Click “Mode” on the menu bar and click “AT Mode”.





2. Enter “at+wnerareset” (without quotation marks) at Send field.
3. Click **Send** button.
   The Communication unit is reset (power OFF → power ON) and the system is placed under “Ready for call” status a few minutes later.

4. Close SAILOR vtLite and start up SAILOR vtLite again to display the vtLite start-up screen.



5. Turn on Diagnostics, referring to step 2.

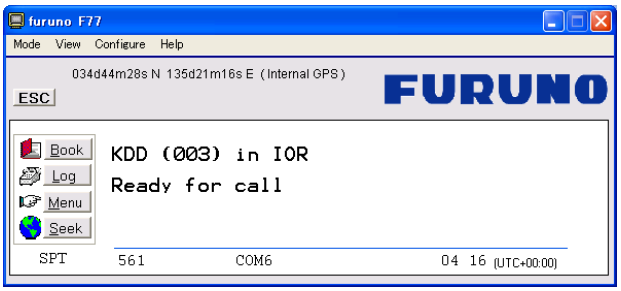
Step 6: Checking Network status

1. Display “Network status” screen, referring to step 4.
2. Confirm that “Successful” is indicated at Region registration field.

Addition 2

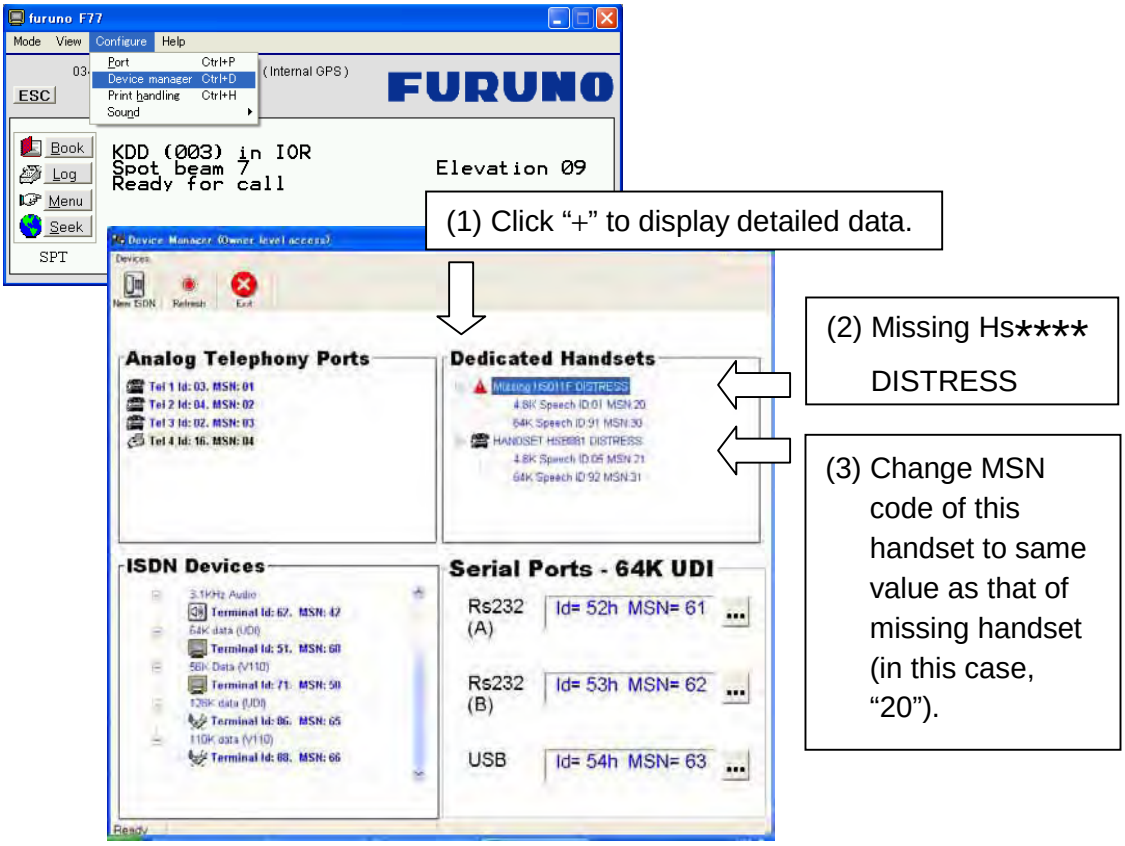
If incoming ringer tone does not sound on ISDN HANDSET, set as follows.

Step 1: Starting SAILOR vtLite



Step 2: Opening Device Manager

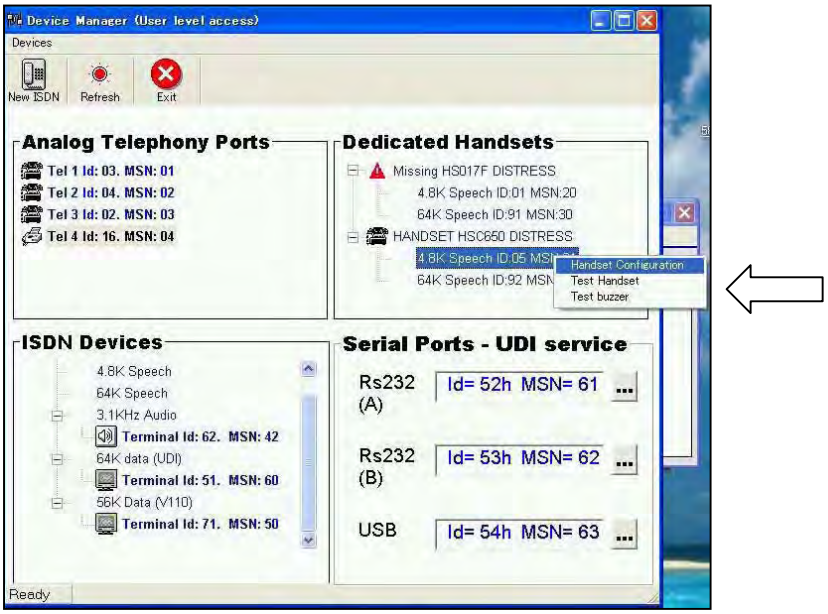
1. Click “Configure” and then “Device manager” to open the Device Manager.



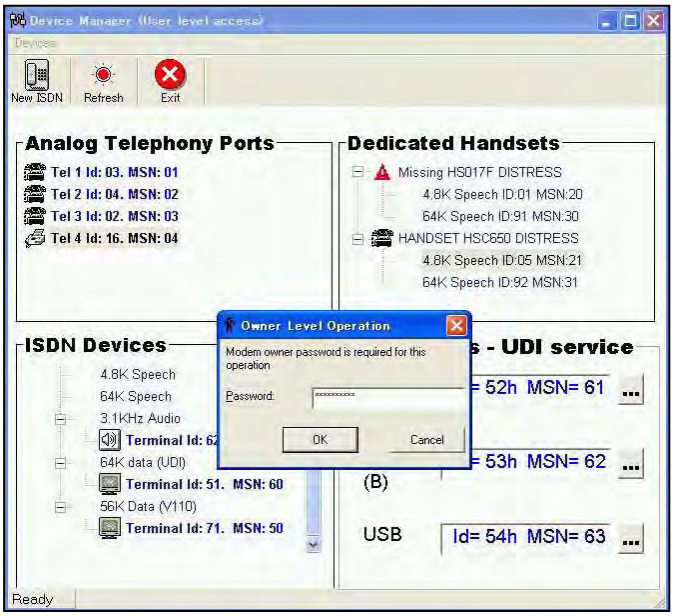
2. Click “+” at the Dedicated Handsets box to display detailed data.
3. If “Missing Hs**** DISTRESS” appears, go to step 3.

Step 3: Changing MSN codes

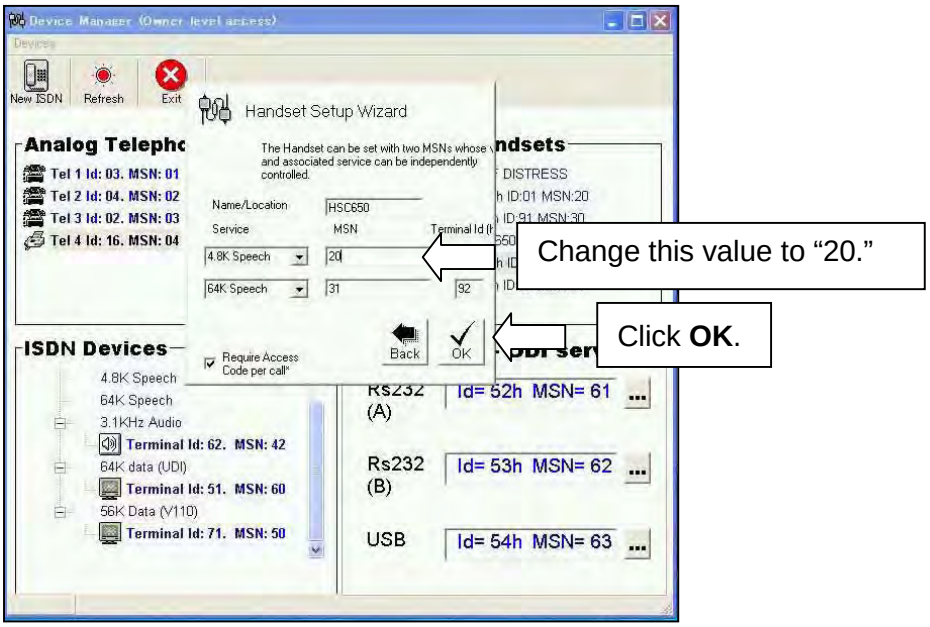
1. Right-click on the handset to change and left-click “Handset Configuration”.



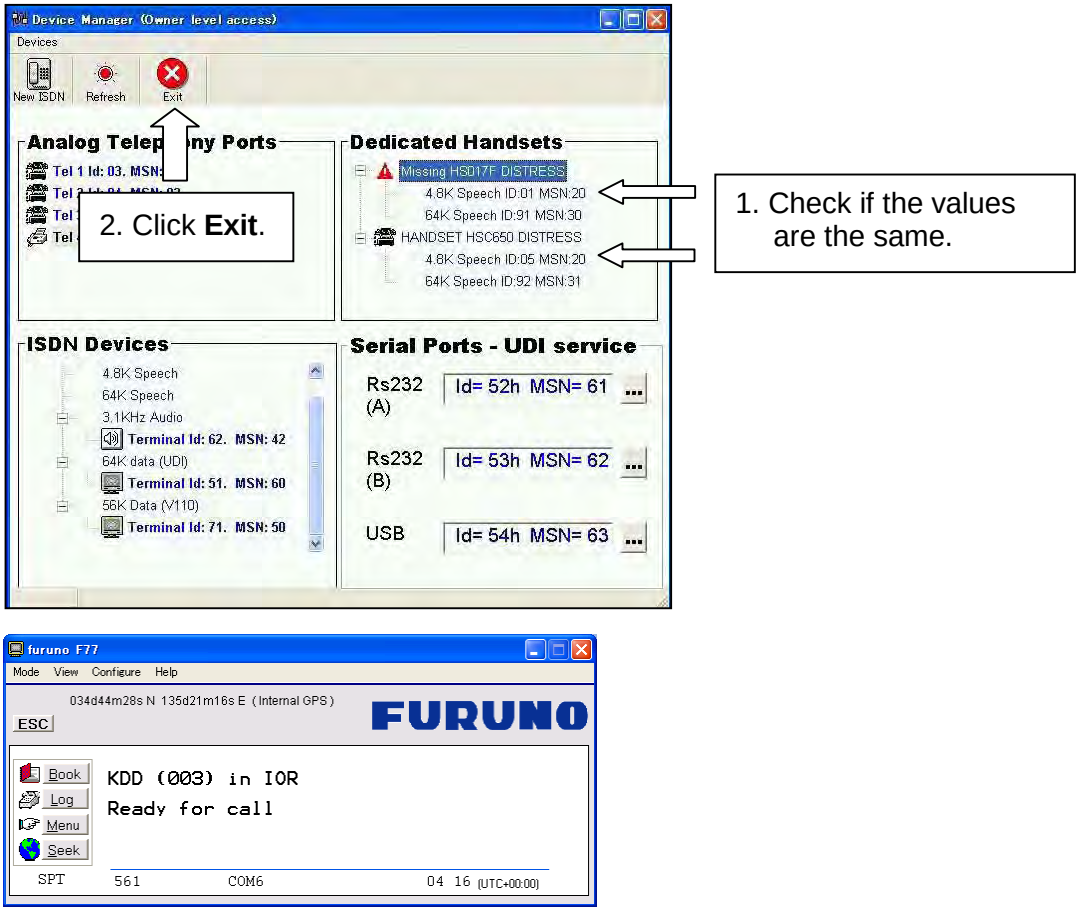
2. On the Password entry screen, enter owner's password (1234567890 by default) and click **OK**.



3. Change MSN code for 4.8k Speech and click **OK**.



4. Check that the MSN codes are the same, and then click **Exit** to quit the Device Manager.



5. Turn off the Communication unit → Wait 10 seconds, and then turn on the unit again. When “Ready for call” condition becomes available (approx. 5 minutes after power on), check operations with a test call (Outgoing/Incoming).

Table 1: Phone No., Username and Password used for Internet connection on MPDS/UDI

As of 11/05/2006

LES	MPDS			UDI			Provider
	Phone No.	Username	Password	Phone No.	Username	Password	
001	**94#	optional	optional	28#	optional	optional	Telenor
004	**94#	optional	optional	28#	optional	optional	Telenor
002	**94#	optional	optional	28#	weblink	connect	Stratos
013	not confirmed	not confirmed	not confirmed	28#	weblink	connect	Stratos
012	**94#	optional	optional	28#	weblink	connect	Xantic
003	**94#	optional	optional	28#	yam003	kddi	KDDI
011	**94#	optional	optional	28#	needed*1	needed*1	Fr Telecom
210	**94#	optional	optional	65#	needed*2	needed*2	Sing Tel
005	**94#	“Fwd Id” @otemaritime.net	Fwd Id (in capital letter)	28#	optional	optional	OTE
006	not confirmed	not confirmed	not confirmed	28#	optional	optional	Kr Telecom
060*3	**94#	optional	optional	not confirmed	not confirmed	not confirmed	Ml Telecom
555*3	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	It Telecom
868	**94#	optional	optional	not confirmed	not confirmed	not confirmed	Beijing Mar

Notes:

*1: Username and password are issued upon registering on www.francetelecom-mobilesat.com/155_3.

*2: Username and password are issued upon registering for Singtel mail 65 service.

*3: IOR only

Table 2: Phone No., Username and Password used for e-mail on MPDS/UDI

As of 11/05/2006

LES	MPDS			UDI			Provider
	Phone No	Username	Password	Phone No	Username	Password	
001	**94#	needed*[1]	needed*[1]	28#	needed*[1]	needed*[1]	Telenor
004	**94#	needed*[2]	needed*[2]	28#	needed*[2]	needed*[2]	Telenor
002	**94#	needed*[3]	needed*[3]	28#	needed*[3]	needed*[3]	Stratos
013	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	Stratos
012	**94#	needed*[4]	needed*[4]	65#	needed*[4]	needed*[4]	Xantic
222	**94#	needed*[4]	needed*[4]	65#	needed*[4]	needed*[4]	Xantic
003	**94#	needed*[5]	needed*[5]	78# (or 28#)	needed*[5]	needed*[5]	KDDI
011	**94#	needed*[6]	needed*[6]	28#	needed*[6]	needed*[6]	Fr Telecom
210	not confirmed	not confirmed	not confirmed	65#	needed*[7]	needed*[7]	Sing Tel
005	**94#	needed*[8]	needed*[8]	28#	needed*[8]	needed*[8]	OTE
006	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	Kr Telecom
060	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	Ml Telecom
555	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	It Telecom
868	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	not confirmed	Beijing Mar

Notes:

*[1]: For “E-mail Advanced” service, registration is required at the following web site:
www.telenorsatellite.com/index.cfm?oa=service.display&ser=19

*[2]: For “Eik-Email” service, registration is required at the following web site:
www.eikmail.com

*[3]: Registration is required at the following web site:
www.stratosglobal.com

*[4]: For “AMOS Connect Mail” service, a registration is required at the following web site:
www.xantic.net/default.asp?V_ITEM_ID=4141

*[5]: For e-mail service through LES 003, registration for “SatMailLiner” is required.

*[6]: For “Sky File Mail” service, registration is required at the following web site:
www.francetelecom-mobilesat.com/155_3

*[7]: For e-mail service through LES 210, registration for “Singtel mail 65 service” is required.

*[8]: For “RYDEX e-mail” service, registration is required at the following web site:
sales@otesat-maritel.com

Addition 3

Restoration procedure

The procedure is described assuming that a PC terminal is connected to RS-232A port. If a PC terminal is connected to RS-232B port, replace “RS-232A” with “RS-232B” in the descriptions below.

1. Select **Menu** -> **Ports** -> **Com Defaults** from the ISDN Handset, so as to restore the default port settings. Then, switch off the mobile terminal. Ten seconds later, switch it on again.
2. Disconnect the PC terminal from the RS-232A port and connect it to the RS-232B port. (If other equipment is connected to the RS-232B port, remove it from the B port temporarily.)
3. Start up SAILOR vtLite. Then, change the access level from User level to Owner level by clicking **Menu** -> **2:Set access level** -> **Owner** and entering the password “1234567890”.
4. Click **Log** on the start-up screen of SAILOR vtLite to show the Traffic log menu. “Logging mode : Auto RS-232A” is displayed on the screen.
5. Click **Edit** and select “Enabled” on sub screen, and then click **Select** button. “Logging mode: Enabled” is displayed on the screen.
6. Click **OK** button.
7. Switch off the mobile terminal. Change the PC terminal connection from the RS-232B port back to the RS-232A port. (If other equipment was disconnected from the RS-232B port for temporary connection of the PC terminal, reconnect to the RS-232B port.)
8. Switch on the mobile terminal and confirm that SAILOR vtLite starts up.

7.2 Alarms and messages

7.2.1 Introduction

Alarms and Messages function

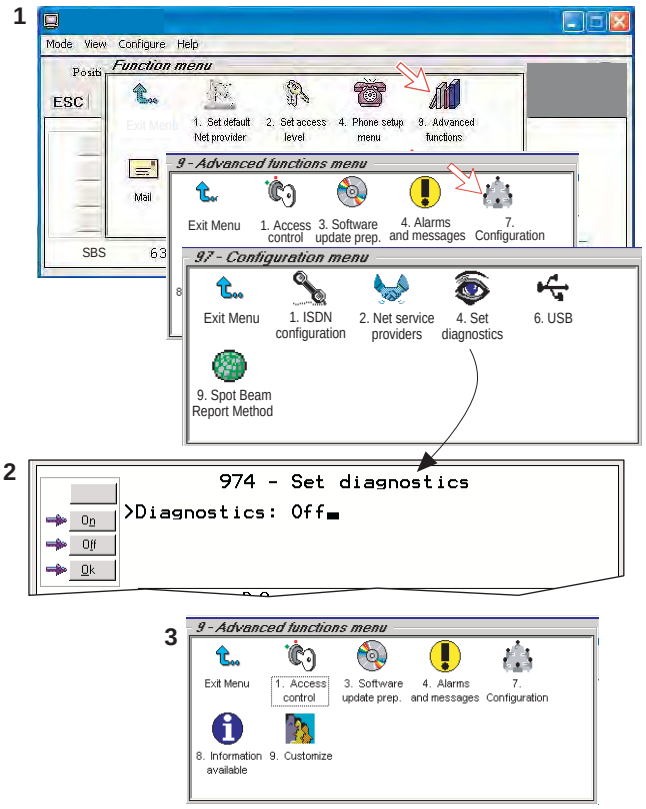
The following information may be read out:

- Active alarms and warnings that are not yet read
- Information log, list of previous alarm conditions, warnings and event information
- Clear cause log, list of abnormal conditions that have caused a call to be cleared
- Statistics list, statistics on terminal performance
- Error log
- Restart log

The **Alarms and messages** icon only appears when **Set diagnostics** is set to On.

1. Double-click the **Advanced functions** icon to open the **Configuration menu**.
2. Double-click the **Configuration** > **Set diagnostics** icons. Click **On** > **Ok** to turn on diagnostics.
3. Double-click the **Advanced functions** icon again.
   The Alarms and messages icon now appears in the **Advanced functions** menu.
4. Double-click the icon to open the Alarms and messages menu. See next page.

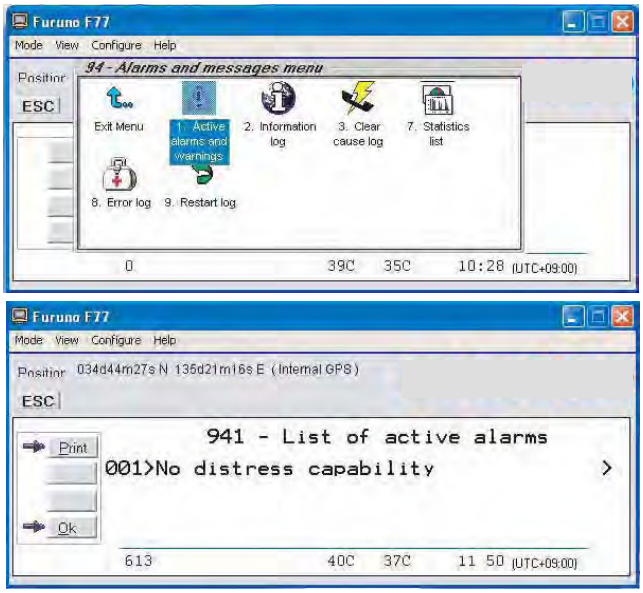
For printout, see "5.15 Print handling setup."



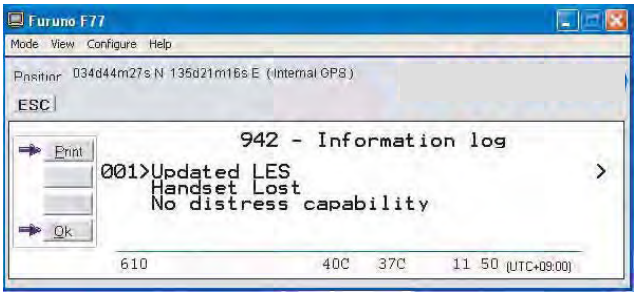
7.2.2 Alarms

Alarms and messages menu

1 Double-click **Active alarms and warnings** to open **List of active alarms** window.



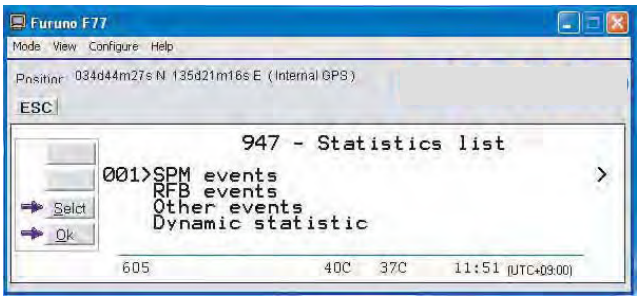
2 The **List of active alarms** displays the alarms and warnings that are not yet read.
An alarm will remain active until the problem has been solved.
Pressing right-arrow displays detailed information and moves the alarm to the **Information Log**.

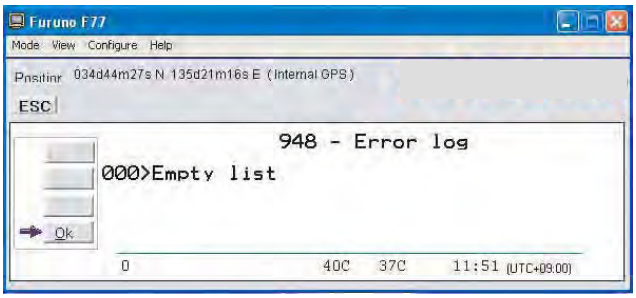


3 The **Information log** lists previous alarm conditions, warnings and event information.

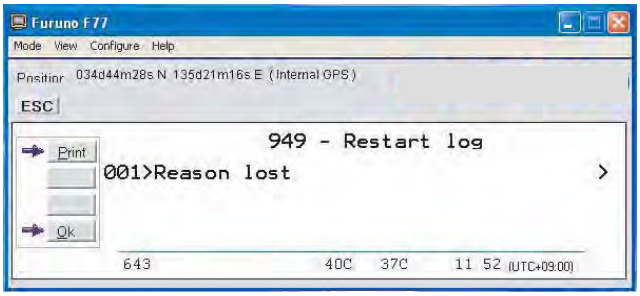
4 Double-click **Clear cause log** to open **List of clear causes** window.
The list of **CLEAR CAUSES** later in this manual indicates the possible reason for the event. Refer to page 7-8.

5 **Statistics list** and **Error log** are used for faultfinding purposes only.





6 The **Restart log** indicates why and when the system was restarted.

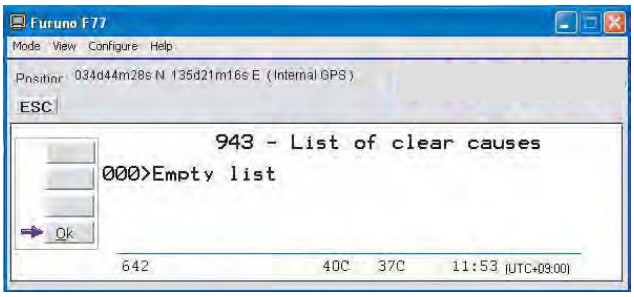


Ref.	Alarm	Information	Solution
1	Burst not sent Missing output	Internal Information	No need for action if terminal operates normally.
2	Distress Alert unit Handset failure No distress capability	The terminal does not detect the presence of a handset with a distress alert unit attached.	Check connections and restart the terminal
3	EEPROM CRC failure	Appears when terminal software was upgraded and configuration set to default	Information: does not effect terminal operation
4	External GPS position in use	The internal GPS is not providing position so the system is using the (optional) external GPS receiver	Implemented in software REL 2.0
5	Beam selection failed Not ready for call	GPS information does not convey the position	Wait 15 minutes, verify antenna view, restart MCU
6	Modem thermometer error	No connection or failure of the thermometer module on the modem unit	No need for action if terminal operates normally
7	No contact with GPS	No readings from the internal GPS module. Ignore this alarm if terminal operates normally	Wait up to 15 minutes. Replace GPS module in antenna
8	No GPS position	Readings from the module but position is not available	No GPS coverage, verify antenna view
9	Power supply thermometer error	No connection or failure of the thermometer for the power supply unit	Power unit fans will automatically be switched ON. System will operate normally, except power fans are always ONc
10	Unable to read fwd and ret ID	The Terminal ID's are stored in the CIB. Indicates that the memory circuit is defective	CIB (Connector Interface Board) should be replaced. Contact with FURUNO dealer.

Alarm list

7.2.3 Clear causes

Clear cause window



List of possible clear cause messages

1001	Call cleared by MES terminal
1011	Call failed, MES terminal busy
1012	Call cleared, MES terminal busy
1021	Call failed, MES time-out (no answer)
1081	Call failed, MES terminal not installed
1091	Call failed, MES terminal out-of-service
1092	Call cleared, MES terminal out-of-service
1141	Call cleared, MES initiated preemption
1142	Call cleared, MES initiated preemption
1143	Offered call cleared, pre-empted at MES
1144	Call cleared, MES initiated preemption
1145	Attempted call cleared, pre-empted at MES
1146	Attempted call abandoned by MES terminal

11A0	Call cleared, credit card not accepted
11D1	Call failed, Request data invalid
11D2	Call failed, insufficient digits in service address
11D3	Call failed, invalid service address
11D4	Call cleared, credit card data information invalid
11D5	Call cleared, invalid country code
11D6	Call cleared, PID information is not consistent
11D7	Call rejected, invalid service for Pri. 1 or 2 call
11D8	Call cleared, dialled number not 2 or 3 digits for Pr.1 or 2 call
11E0.	Call cleared, invalid credit card PIN at this LES
11E1.	Call cleared, too many invalid credit card call attempts
1202	Handover, MES ready
1262	Call cleared, MES time-out (Distress Test exceeded 120s)
1262	Call cleared, MES time-out (Distress Test exceeded 120s)
1281	Call failed, MES cannot accept
1291	Call failed, MES cannot accept at present
12B1	Call cleared by MES for unspecified reason
12B1/1	SES is clearing due to timeout of timer TS011, NUMBER is missing
12B1/2	SES is clearing due to CESV_OFF,Process, carrier_lost
12B1/3	SES is clearing due to timeout of timer channel_not_ready, before reception of CHANNEL_READY.
12B1/4	SES is clearing due to timeout of timer TS003, Wait for assignment from NCS during shore_call
12B1/5	SES is clearing due to timeout of timer TS008, no_distress_channel_assignment
12B1/6	SES is clearing due to timeout of timer TS005, shore_carrier_timeout
12B1/7	SES is clearing due to timeout of timer TS010, ship_carrier_timeout
12B1/8	Signal NUMBER from user carries an illegal CES access code parameter, ces_id_not_ok
12B1/9	Call rejected because a call set-up is already in progress, conflicting_call_request
12B1/10	No response from net, verify commissioning of terminal, Wait for assignment from NCS during ship_call
12B1/10	ipds_man_serv_rej / MPDS Commissioning error, contact Net provider
12B1/10	ipds_async_release / PC disconnects the MPDS call
12B1/11	SES is clearing due to timeout of timer channel_not_ready, before reception of CHANNEL_READY.
12B1/11	ipds_too_slow / MPDS connection too slow, and disconneted by MCU
12B1/12	Control did not grant access to terminal due to conflicting shore call.
12B1/13	Control did not grant access to terminal due to conflicting ship call.
12B1/14	Control did not grant access to terminal due to too frequents request

12B1/15	Control did not grant access to terminal, had better things to do. Control_busy
12B1/16	selective_clear
12B1/17	call_preempt
12B1/18	For some reason, updating a record handler etc. couldn't be done, update_failed
12B1/19	antenna_failed
12B1/21	The communication link to ACU has failed, ant_comm_failed
12B1/25	System is not ready yet after startup, control_not_started
12B1/26	Spot beam selection is being performed, spot_beam_selection
12B1/27	Bulletin board data (satellite channel information etc.) is not yet verified, bb_not_validated
12B1/30	Ocean region registration is in progress
12B1/31	Antenna is not yet ready for use, awaiting_antenna_ready
12B1/32	Channel tuning is being performed, Rf_channel_not_ready
12B1/33	No satellite synch can be achieved
12B1/34	Antenna configuration is taking place
12B1/36	Antenna is searching for satellite(s)
12B1/37	Used in CONTROL_PP to indicate a preemption of a ship- or shore-call, for a MES initiated distress-call.
12B1/38	Used in DTLXMNG_DPP to indicate a timeout of timer TS308, no mark has been received from the LES.
12B1/41	Printer not ready. Power may be turned off, cable not connected, paper empty or printer not selected/on-line
12B1/42	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_text
12B1/43	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_acknowledge
12B1/44	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_synch
12B1/45	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_Rx_lock
12B1/46	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_Tx1_lock
12B1/47	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_Tx2_lock
12B1/48	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. missing_or_illegal_channel
12B1/49	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. no_authorization
12B1/50	CHANNEL_ERROR detected by CHNL_SERVICE_CP or CHNL_ICP. burst_not_sent
12B1/51	Precharge terminal has run out of time. Must refill before call is possible. out_of_charged
12B1/52	Wrong PIN code entered. incorrect_pin_code

12B1/54	Used when access is restricted due to Enhanced Function inconsistency. ses_use_restricted
12B1/55	A command to the ACU was not accepted (4 times), link restarted. acu_cmd_failed
12B1/56	A command to the PCU was not accepted (4 times), link restarted. pcu_cmd_failed
12B1/57	Antenna initialize failed. ant_init_failed
12B1/59	Operation/Function failed
12B1/60	Operation not possible, function is busy
12B1/61	No lcm_connect received from shore after lcm_estblish sent (asd)
12B1/62	Data link failure in asd communication
12B1/63	Radio Silence activated
12B1/64	Inactivity timeout for data calls
12B1/65	Limited duration timeout for 16QAM calls. Call duration guard activated (Menu 42)
12B1/67	Various error situations releated to SIM authentication (during call).
12B1/68	Power down requested. power_down_MCU
12B1/69	Traffic log buffer is full
12B1/70	Duplex interface busy.
12B1/71	Internal call manager busy
12B1/72	Congestion, can't connect lines, internal dialing.
12B1/73	Congestion, can't get line, internal dialing.
12B1/74	Internal number unallocated
12B1/75	Incompatible destination for internal call
12B1/76	Invalid CallRef, (Too late, another call process got the call)
12B1/77	Too late, another call process got the call, (ISDN: non_selected_user_clearing)
12B1/78	Local interface too busy to handle the call
12B1/79	Used by LOADING, transfer_blocked
12B1/80	Local number analysis failed, dialled_number_rejected
12B1/81	Doppler Compensation error: Too large speed or too large error
12B1/82	Internal interface timer expired (e.g. ISDN protocols)
12B1/83	Internal retrieve error
12B1/84	Internal retrieve blocking, can't allocate or connect channels
12B1/85	Internal rearrangement error, probably race condition
12B1/86	Internal IPDS(MPDS) protocol error, int_ipds_protocol_error
12B1/87	Manual control of the system (test and type approval)
12B1/88	Internal decession to clear or abort activity due to unexpected SW sequence
12B1/89	The communication link to RFB has failed, rfb_comm_failed
12B1/90	The RFB failed to tune the digital attenuator, rfb_attenuator_failed
12B1/91	The IPDS(MPDS) service is not allowed due to local terminal configuration, restore to factory defaults
12B1/92	No originator id is defined for IPDS(MPDS), local configuration is incorrect, restore to factory defaults
12B1/93	No response was received from the IPDS(MPDS) host system within the allowed time

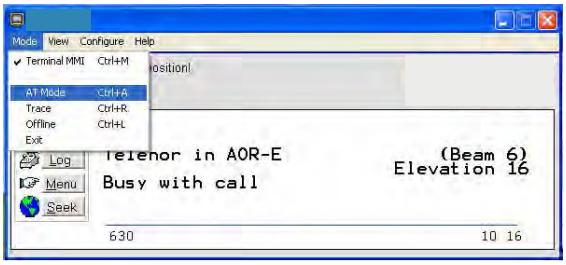
12B1/94	The device connected to the terminal (PC) cleared the call
12B1/95	The bulletin board information required for IPDS(MPDS) is unavailable
12B1/96	The IPDS(MPDS) call was disallowed or preemptied by another activity local to the MES
12B1/97	The terminal received a request to de register from the IPDS(MPDS) host
12B1/98	Synch to the LESP was lost during a call, ipds_sync_lost, verify correct user name/password
12B1/99	Unable to tune to one of the IPDS(MPDS) channels
12B1/100	Modem unit hardware does not support IPDS(MPDS) service,
12B1/101	RFB hardware does not support IPDS(MPDS) service,
12B1/102	The attempt to register with IPDS(MPDS) was rejected
12B1/103	The attempt to establish a IPDS(MPDS) connection was rejected
12B1/105	Timeout is attempt to setup a IPDS(MPDS) connection
12B1/106	Attempt to establish a IPDS(MPDS)connection was rejected
12B1/107	The MES failed to handle the IPDS(MPDS) data within the allowed time, ipds_too_slow
12B1/108	Internal error within the IPDS(MPDS) software
12B1/114	The call was preempted by a call waiting
12C2	Call cleared, no credit card valid message received
12C3	Call failed, MES time-out (no terrestrial answer)
12C4	Call cleared, authentication query not received
12C5	Call cleared, supplementary services signalling error
12C6	Call cleared, supplementary services signalling error
12C7	Call cleared, supplementary services signalling error
12C8	Handover failed, LES not detected
12D1	Call failed, Spot-beam data invalid
12D2	Call failed, invalid scrambling vector
1351	Call cleared, insufficient free memory
1361	Call cleared by MES cable unwrap
1362	Call cleared, long interruption in reception at MES
1391	Call cleared, travelled distance exceeds 700km
1392	Call cleared, spot beam transition
1393	Call cleared, cooperative mode
1451	Call failed, terrestrial circuits congested
1452	Call failed, LES congested (no channel and no circuit)
1502	Handover, LES ready, normal clear
1551	Call failed, LES congested (no channel)
1581	Call failed, service not provided at this LES
1591	Call failed, service temporarily not available at this LES
1592	Call cleared, credit card type not supported
15A1	Call failed, MES not authorised at this LES
15A2	Call failed, service not authorised at this LES
15A3	Call cleared, credit card not authorised
15A4	Call cleared, authentication reply invalid
15A5	Call failed, PID not authorised for any service

15A6	Call failed, PID not authorised for requested service
15A7	Call cleared, dialled number illegal for Pri. 1 or 2 call
15B1	Call cleared by LES for unspecified reason
15C1	Call failed, LES time-out (no assignment)
15C2	Call failed, LES time-out (no service address)
15C3	Call failed, LES time-out (no scrambling vector)
15C4	Call failed, no service address and no scrambling vector
15C5	Call cleared, incomplete credit card data information
15C7	Call failed, LES time-out (no MES Connect)
15C9	Call cleared, no authentication reply
15CA	Call cleared, notification ack not received
15CB	Call cleared, invalid sequence number in notification ack

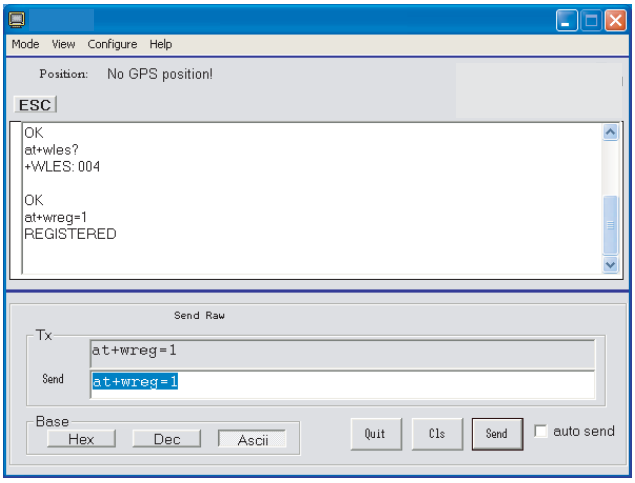
7.2.4 Troubleshooting: Real time status indications

Access to AT-commands

Instead of using the PC hyperterminal facility, access can easily accomplished using SAILOR vtLite.



Start vtLite again:
You cab now key **at + wreg =1** from vtLite.



Note: For access to all advanced status indications, enable traffic log.

Read information

MPDS status:	
inactive	- MPDS is not active
allocating	- internal pre processing
tuning	- terminal is tuning to the LESP
tuned	- the terminal is tuned to the LESP and awaits a registration possibility
registering	- the terminal has sent one or more registration bursts
registered	- the terminal has successfully registered with MPDS
connected	- CONNECT has been received from the dialled host
deregistering	- the terminal awaits deregister ack
reregister_chan	- the terminal was told to regregister to a new channel
reregister_les	- the terminal was told to regregister with a new LES
handover	- the terminal is following a handover instruction
failed	- the last operation failed

MPDS in traffic log explanation:

SRejTx: <count1>
Rx <count2>

The counters are respectively the number of SREJ supervisory frames send and received. This indicates errors in the forward and return path respectively.

Tx 5ms: <count1>
Tx20ms: <count2>

The counters are respectively the number of 5 ms and 20 ms bursts sent by the terminal. These are a diagnostic tool for users with technical knowledge of the MPDS system operation.

Rx CRC: <count1>
/: <count2>

The counters are the number of PDUs received with bad CRCs and the number of PDUs with correct CRCs. Take note of this ration when reporting problems related to throughput.

Connections:
<count>

The count is an estimate of the number of active connections on the shared bearer. A high number here has a bearing on the throughput that can be expected from the MPDS system.

Timt init: <count1><value1>
Timecorrection: <count2><value2>

The counts are the number of timing inits and timing corrections received by the terminal respectively. The values are the last received values in symbols of the aforementioned items.

Port bytes Tx/Rx:

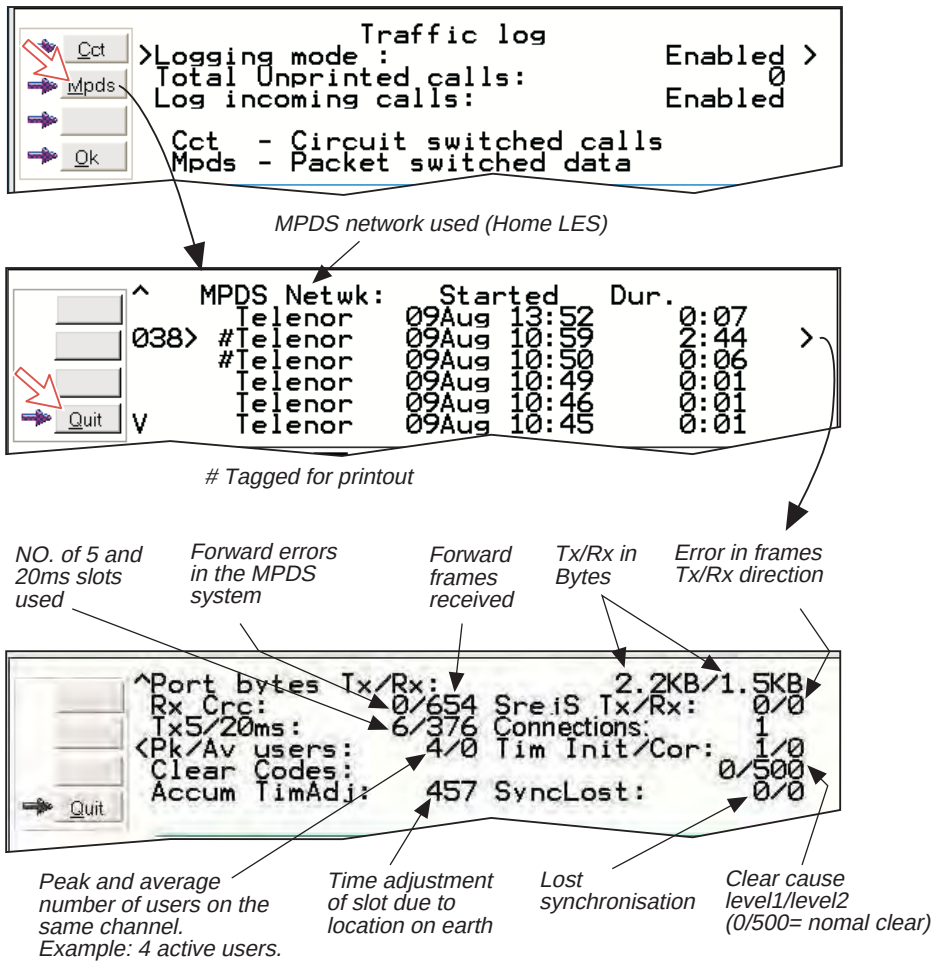
The counts are the number of bytes received from the PC and the ones sent to PC from MCU respectively.

7.2.5 Troubleshooting: Other logs

Mobile Packet Data Service calls

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

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



7.3 Throughput

In case of low throughput in data communication

In the Inmarsat satellite line, approximately 240ms delay time occurs. The delay causes the throughput of the TCP/IP protocol in the satellite line to go lower than the terrestrial line. In this case, if you change the window size of the TCP, the throughput may improve.

The window size of the TCP can be changed in the registry of Windows OS. However, wrong setting of the registry may cause fatal error. Therefore, we recommend that you use the following software which changes only the registry concerned with the TCP.

Example: Dr.TCP http://www.dslreports.com/drtcp/

Note: FURUNO assumes no responsibility or liability for this software. Be sure to backup the registry BEFORE changing it.

The method required to change window size may differ depending on OS or router.

About throughput variation

Throughput variation, resulting from time delay, may occur when TCP/IP protocol is used on the satellite line.
Throughput variation occurs when the load on a server used by a terrestrial client fluctuates greatly because many clients are accessing the server at the same time. Additionally, it may occur depending on the terminal adapter pairing between mobile and terrestrial clients.

8. LIST OF TERMS

AC Alternating Current
AOR-E Atlantic Ocean Region East.
AOR-W Atlantic Ocean Region West.
Azimuth horizontal direction angle between north and, e.g. the direction to the satellite.
Bit rate the number of bits transmitted per second (bps).
Bps Bits per second.
CHV2 higher access level on the SIM card, corresponding to FELCOM 70 "owner" level.
DC Direct Current.
DECT Digital Enhanced Cordless Telecommunication
DID Destination terminal IDentification.
DSP Digital Signal Processor.
DTE Data Terminal Equipment.
Elevation vertical angle to the satellite, i.e. the height of the satellite above the horizon.
Fleet F77 Inmarsat's single integrated voice, fax, Mobile Data Service and Mobile Packet Data Service.
FWD ID forward Id, telephone network identity.
GAN Inmarsat Global Area Network.
Home LES Home Land Earth Station gives access to MPDS service like Internet / e-mail and handles MPDS billing system.
IMN Inmarsat Mobile Number, a unique 9-digit number which identifies each device connected to FELCOM 70.
Inmarsat International Maritime Satellite Organisation.
IOR Indian Ocean Region.
ISDN Integrated Services Digital Network.
ISN Inmarsat Serial Number, individual number assigned to each FELCOM 70 terminal.
ITU International Telecommunications Union
Kbps Kilobits per second.
LAN Local Area Network.
LES Land Earth Station, a station that interconnects fixed telecommunications networks with the Inmarsat system; may also be called a CES (Coast Earth Station) or a GES (Ground Earth Station).
M4 Inmarsat Multi-Media Mini-M.
MES Mobile Earth Station, a user terminal for an Inmarsat system;
the FELCOM 70 terminal is an MES for the Inmarsat GAN system; MES may also be called SES (Ship Earth Station) or, if on aircraft, AES (Aeronautical Earth Station).
MPDS Inmarsat Mobile Packet Data Service.
MSN Multiple Subscriber Number, the extension number that connected equipment responds to. Also used for internal calls.

NCS Network Coordination Station, station that supervises all messages and signals sent in the Inmarsat system; one in each Ocean Region.
OID Originating terminal IDentification.
Ocean Region the coverage area of an Inmarsat satellite within which FELCOM 70 may communicate.
PABX Private Automatic Branch Exchange.
PIN Personal Identification Number.
POR Pacific Ocean Region.
PPP Point-to-Point Protocol, protocol used for serial data communication via the FELCOM 70 RS-232 or USB port.
PUK Personal Unblocking Key, code that allows unblocking a SIM card.
RF Radio Frequency.
R LES Regional Land Earth Station sets terminal in MPDS list.
S/A operator StandAlone operator who maintains connectivity in the event of Network Coordinating Station failure.
SBS Shared Base Station assigns channels to the MPDS user and handles the MPDS communication.
SIM Subscriber Identity Module.
SMS Short Message System.
Spot Beam an Ocean Region is divided into sub-regions, each “spotlighted” by a beam from the region satellite.
Terrestrial Network a fixed telecommunications network, such as a telephone network or a data network, which connects to the Inmarsat system at an LES/NCS.
UDI Unrestricted Digital Information.
USB Universal Serial Bus.
UTC Coordinated Universal Time, referenced to Greenwich Mean Time (GMT).

9. SYSTEM DESCRIPTION

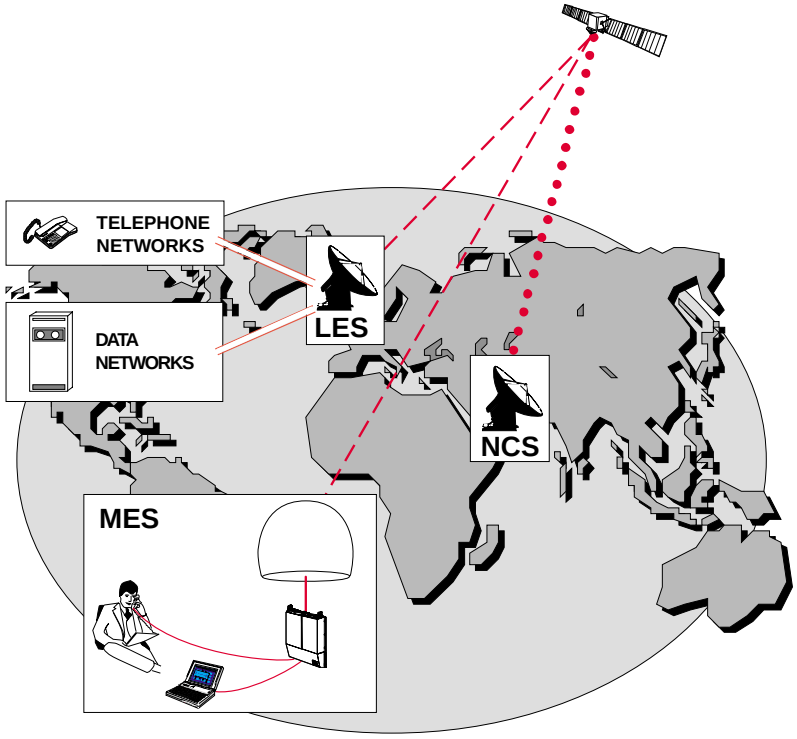
Inmarsat Fleet F77

The Inmarsat Fleet F77 system provides a truly portable 64 kbps ISDN communications service for data and voice transmissions to and from mobile/fixed subscribers anywhere within the worldwide coverage of the Inmarsat 3 spot Beam system, *see map later in the Service Guide.*

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 (FELCOM 70, user terminal for the Inmarsat system).*



Overview of the Inmarsat GAN system.

System satellites

The satellites are positioned in a geostationary orbit above the equator at approximately 35700 km altitude. See figure below.
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.
FELCOM 70 can communicate via the four satellite Ocean Regions:

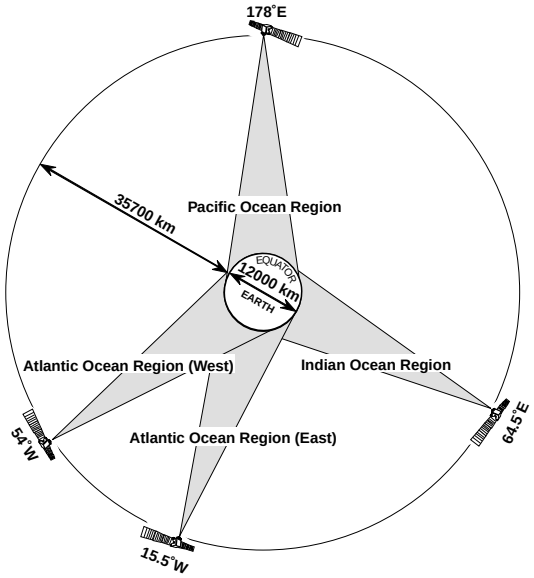
AOR-W Atlantic Ocean West Region
AOR-E Atlantic Ocean East Region
IOR Indian Ocean Region
POR Pacific Ocean Region

The coverage area of the satellites for FELCOM 70 (GAN) is shown on page 3-4. Communication is possible in areas marked with ellipse.

Transmission frequencies

The Inmarsat GAN 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



Satellite positions.

A large number of channels are available (20 kHz channel separation), offering either 4.8 or 64 kbps voice communication, as well as 3.1 kHz audio or 64 kbps (56 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

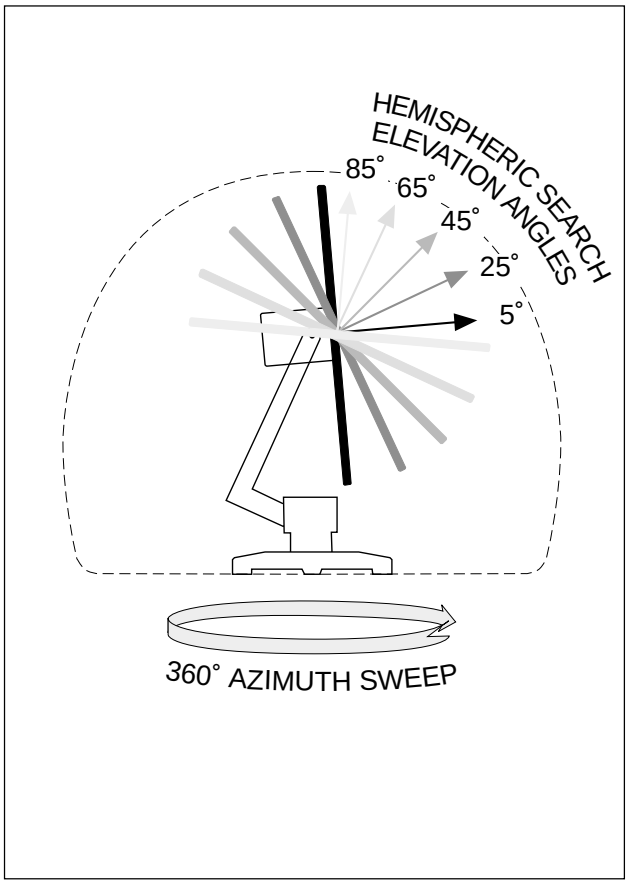
A 360° rotation of the antenna in azimuth at a fixed elevation angle.

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 FELCOM 70 Communication Unit (CU).
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 CU for verification of valid NCSC.
If no valid signal is detected, no further automatic action occurs until the CU initiates a new search.
A search request from the CU may contain channel frequency and an order to make a full 360° *search at a specific elevation*, calculated from map and GPS information. If the request contains channel frequency, a hemispheric search will be performed.

Tracking

At the end of a search, FELCOM 70 performs a fine-tuning of the antenna position around the strongest detected signal. The fine-tuning is obtained by conical scan function based on an antenna rate sensor and a tilt sensor.



Communication services

FELCOM 70 provides the following services:

- **ISDN:**
  - 4.8 kbps speech
  - 64 kbps speech
  - 64 kbps / 128 kbps data service (UDI)
  - 56 kbps / 110 kbps data service (V110)
  - 3.1 kHz audio
  - 9.6 kbps fax
- **RS-232/RS422:**
  - 64 kbps data service (UDI)
  - MPDS
- **USB**
  - 64 kbps data service (UDI)
  - MPDS

  Requires PC with MS Windows 2000 / XP

- **ANALOGUE**
  - 3.1 kHz audio
  - 4.8 kbps speech
  - 64 kbps speech
  - 9.6 kbps fax

The FELCOM 70 CU has following ports (see figure):

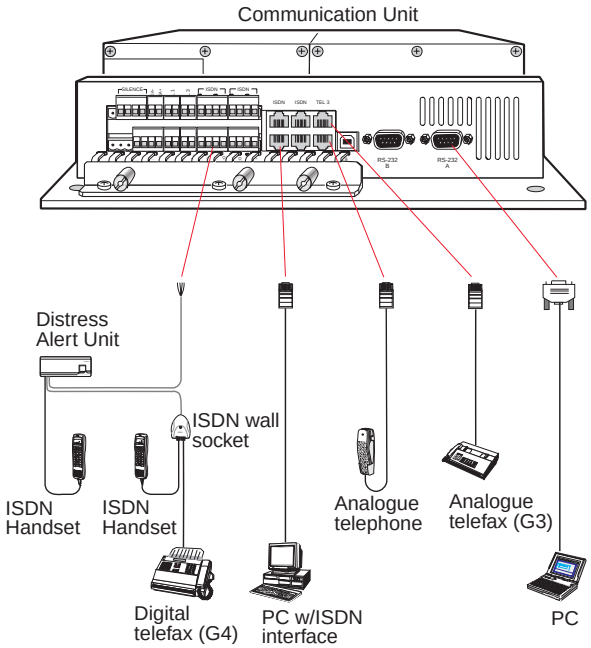
- ISDN ports for connection of ISDN telephones, telefax (Gr.4) or data equipment; a total of 7 devices.
- RS-232/RS422 and USB ports for connection of data equipment.

Internal communication

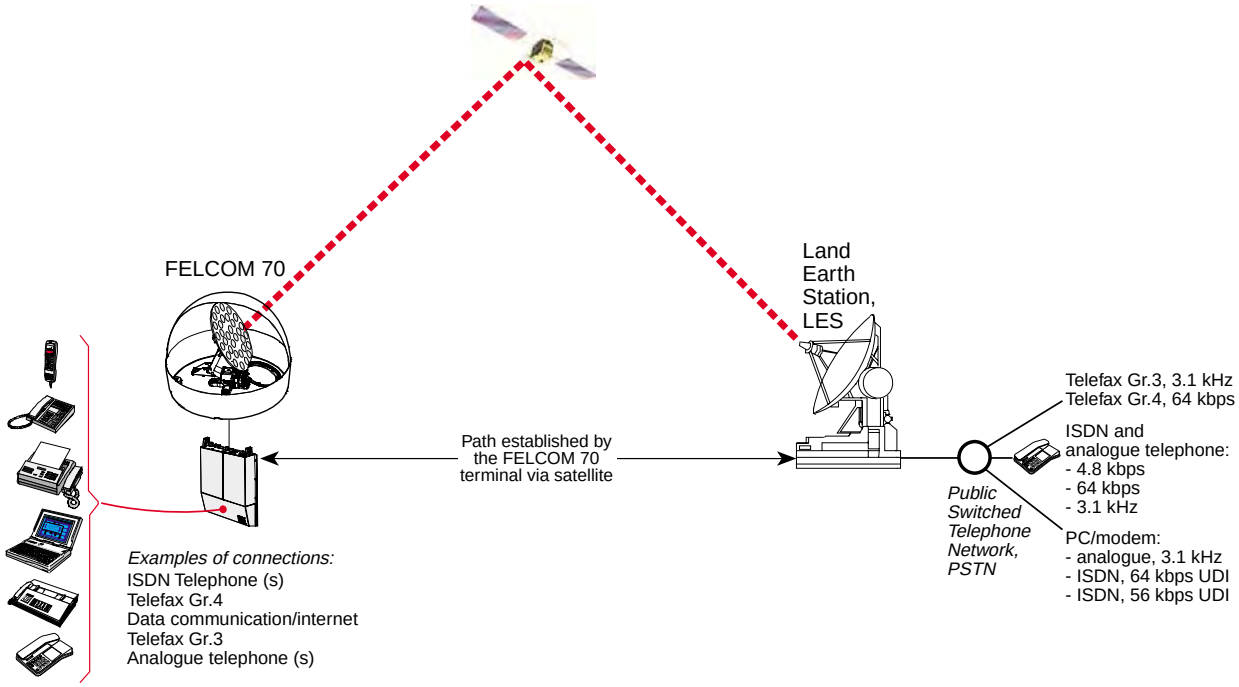
Equipment connected to the various interfaces may communicate with each other via an internal MSN (Mobile Subscriber Number) assigned to each unit.

Control interface

The **RS-232** or **USB** port allows connection of a PC for configuration of FELCOM 70. A PC program that provides the software to operate and configure FELCOM 70 terminal is supplied on the enclosed CD.



FELCOM 70 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 FELCOM 70 may respond to individual IMN numbers, giving the possibility to transfer a call directly to each device attached to it.

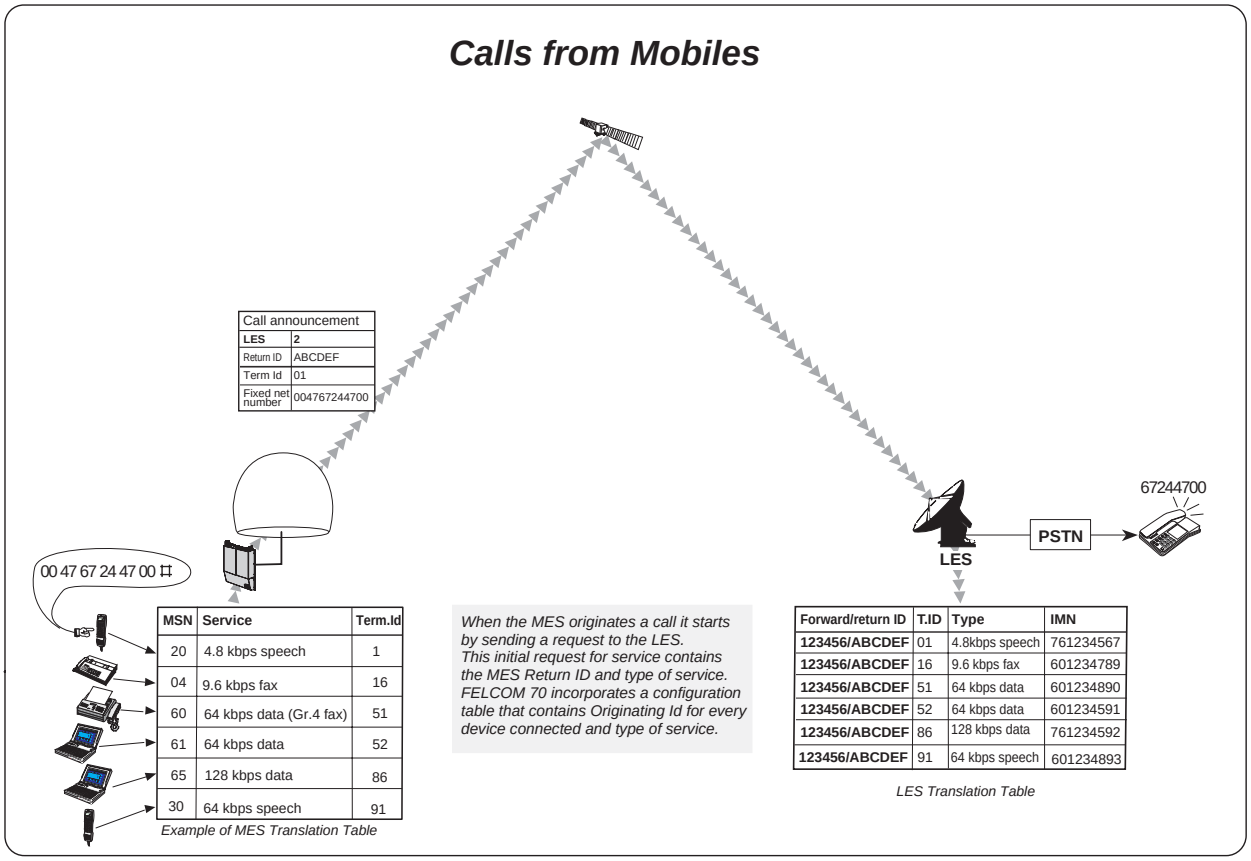
Note: TermID is a term that includes both Originating Identity (OID) and Destination Identity (DID).
The DID is used from LES to MES to identify the service, whereas OID is used from MES to LES to identify the service.TermID is used in this manual because the DID and OID have the same value.

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.



MSN	Service	Term.Id
20	4.8 kbps speech	1
04	9.6 kbps fax	16
60	64 kbps data (Gr.4 fax)	51
61	64 kbps data	52
65	128 kbps data	86
30	64 kbps speech	91

Forward/return ID	T.ID	Type	IMN
123456/ABCDEF	01	4.8kbps speech	761234567
123456/ABCDEF	16	9.6 kbps fax	601234789
123456/ABCDEF	51	64 kbps data	601234890
123456/ABCDEF	52	64 kbps data	601234591
123456/ABCDEF	86	128 kbps data	761234592
123456/ABCDEF	91	64 kbps speech	601234893

Calls to Mobiles

See figure.
The FELCOM 70 terminal receives incoming calls via the IMN phone numbers. IMN numbers are assigned to the following ports by the user:

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

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.

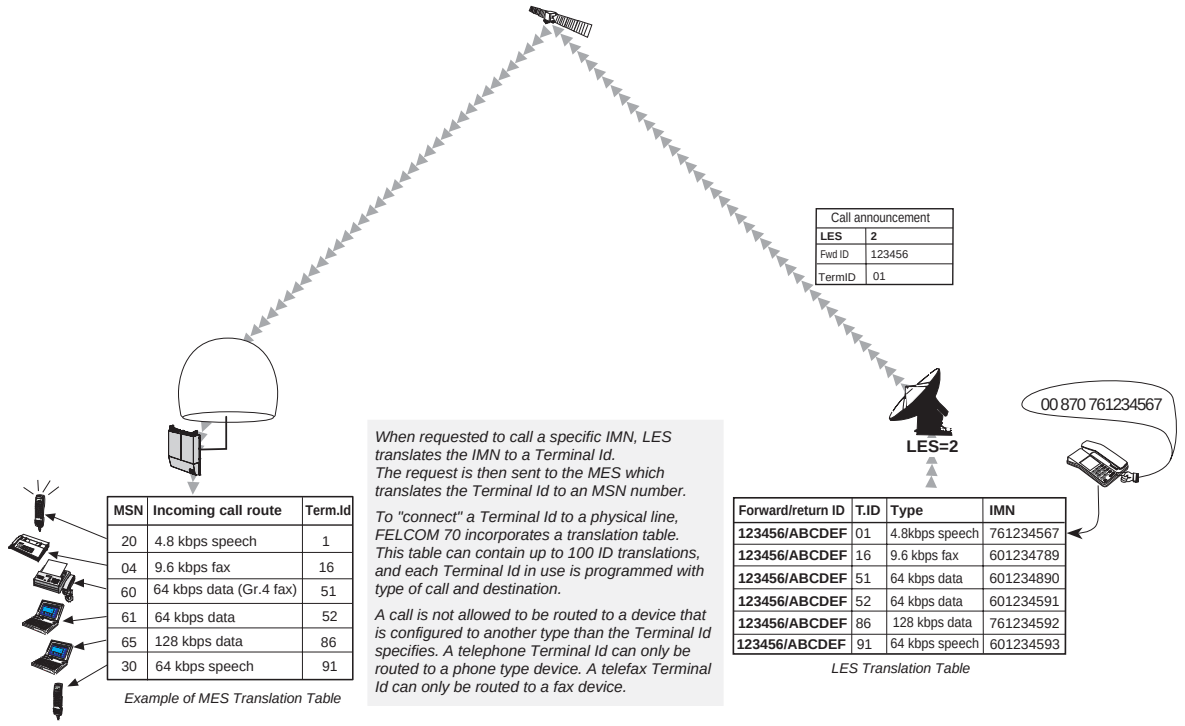
*The common Ocean Region access no. **870** connects the call to the dialed FELCOM 70 regardless of the Ocean Region the user currently communicates through.*
*If the Net service provider does not support access no. **870**, call the Ocean Region directly:*

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 (TermlD) to identify the IMN number and the service in use.
The FWID together with the TermlD 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 TermlD identifying the MES. The MES identifies the FWID and the TermID and routes it to a Multiple Subscriber Number (MSN) which is programmed in the attached equipment. FURUNO provides a table to identify which TermlD is routed to an MSN.

Calls to Mobiles



MSN	Incoming call route	Term.Id
20	4.8 kbps speech	1
04	9.6 kbps fax	16
60	64 kbps data (Gr.4 fax)	51
61	64 kbps data	52
65	128 kbps data	86
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, FELCOM 70 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	T.ID	Type	IMN
123456/ABCDEF	01	4.8kbps speech	761234567
123456/ABCDEF	16	9.6 kbps fax	601234789
123456/ABCDEF	51	64 kbps data	601234890
123456/ABCDEF	52	64 kbps data	601234591
123456/ABCDEF	86	128 kbps data	761234592
123456/ABCDEF	91	64 kbps speech	601234593

LES Translation Table

APPENDIX: TERMINAL IDENTITIES

Term. Id	Service	Inmarsat services
01 - 0F	Voice	**B:** 16.8, **M:** 4.8, **Mini-M:** 4.8, **F77/F33/F55:** 4.8
11 - 1F	Fax	**B:** 9.6, **M:** 2.4, **Mini-M:** 2.4, **F33/F55:** 9.6
16-1F	Fax	**F77:** 9.6
21 - 2F	ASD	**B:** 9.6, **M:** 2.4, **Mini-M:** 2.4, **F33:** 9.6
31 - 3F	Telex	**B**
41 - 4F	HSD	**B**
51 - 5F	64k Data (UDI)	**GAN/F77/F55**
61 - 6F	3.1kHz Audio	**GAN/F77/F55**
71 - 7F	56K Data	**GAN/F77/F55**
86	B1-128 k Data (UDI) B2-128 k Data (UDI)	**F77**
88	B1-128 k Data (V110) B2-128 k Data (V110)	**F77**
91 - 9F	64K Speech	**GAN/F77/F55**

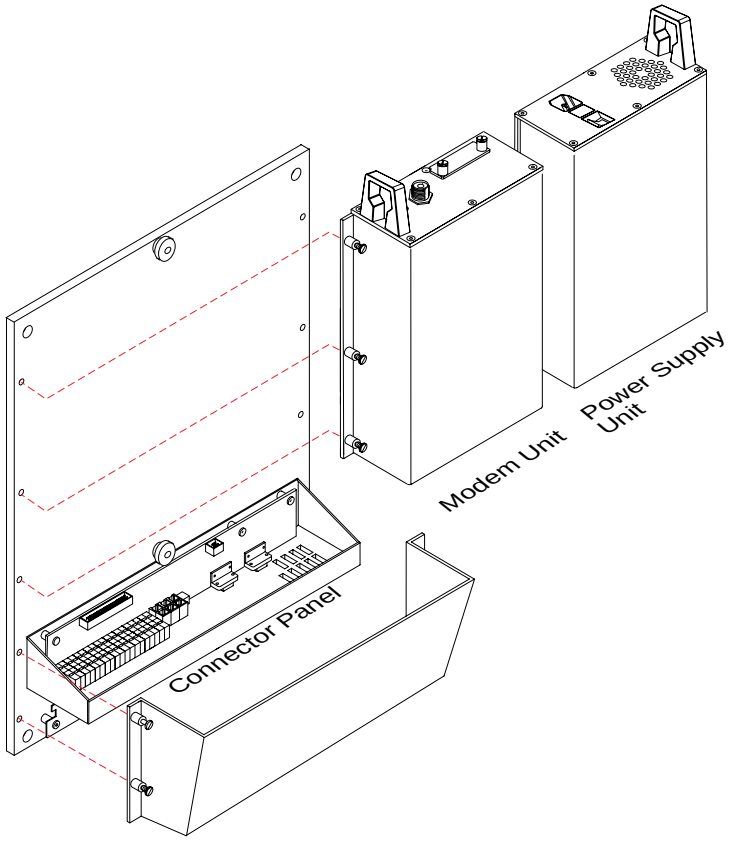
Terminal Identities and the corresponding Inmarsat Services

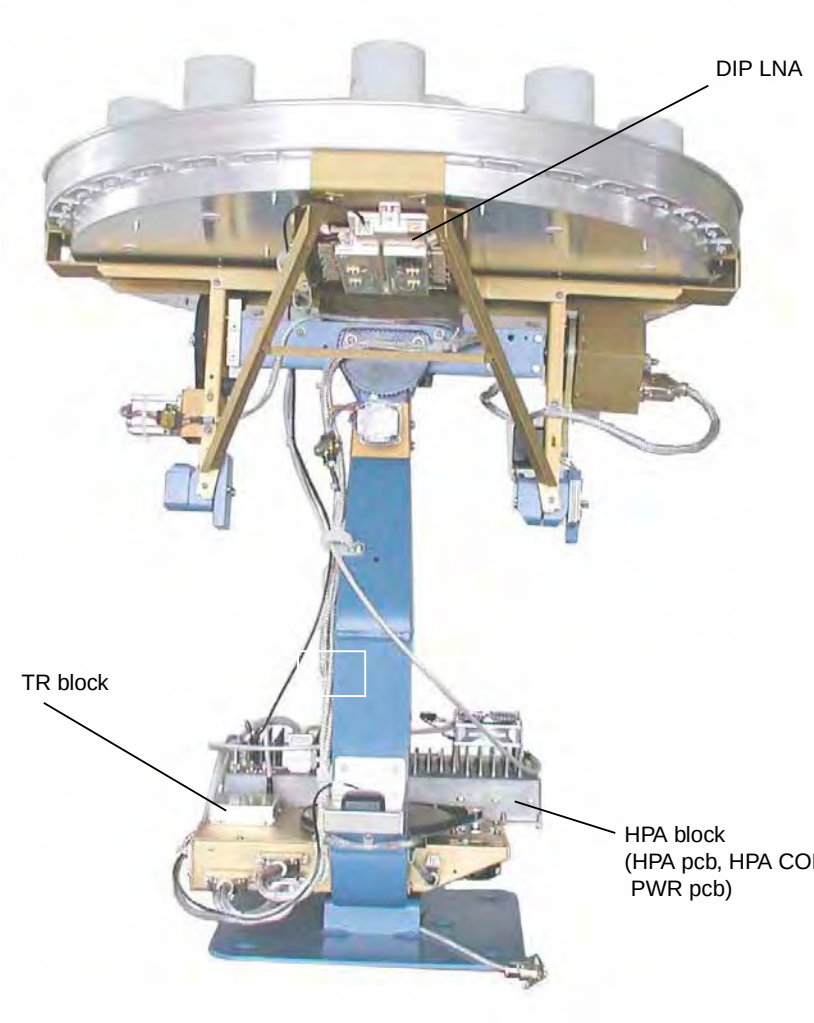
Note: MPDS is given the Terminal Id A1 (not programmabler)

APPENDIX: MAINTENANCE PARTS

This equipment contains complex modules in which fault diagnosis and repair down to component level are not practical (IMO A.694(17)/8.3.1. Only some discrete components are used. FURUNO Electric Co., Ltd. believes identifying these components is of no value for shipboard maintenance; therefore, they are not listed in the manual. Major modules can be located on the parts location photos on the next several pages.

Name	Code no.	Remarks
DIP LNA	004-446-530	
PWR 16P0192	004-446-570	
TR block	004-446-770	T. RECIVER pcb
HPA block	004-446-950	HPA pcb, HPA CONT pcb, PWE pcb
Terminal adapter 102196	000-148-909	
MUB 102195 Rev 2.0	000-148-908-01	
Power unit 103807	000-148-907	
Cable assy. R906686	000-148-340	
Fuse NGH24104/5	000-148-338	




DIP LNA
TR block
HPA block
(HPA pcb, HPA CONT pcb,
PWR pcb)

SPECIFICATIONS OF THE INMARSAT FLEET F77 MOBILE EARTH STATION
FELCOM 70

1. ANTENNA UNIT

Gain	Greater than 20.3dBi
Axial Ratio	Less than 2.0dB
Antenna Beamwidth	16 deg. approx. (at -3dB)
Stabilization	Triple-axis control type
Positioning	AZ: 0° to 360°
	EL: 5° to 90°
Positioning Accuracy	AZ: Better than ±3°
	EL: Better than ±3°
Tracking	Circular tracking system

2. COMMUNICATION UNIT

Standard Functions	Duplex voice 4.8 kbps
	56/64 kbps ISDN (voice, G3 and G4 Telefax or Data)
	MPDS packet data service
	Distress alert
Transmit Frequency	1626.5MHz to 1660.5MHz
Receiver Frequency	1525.0MHz to 1559.0MHz
Channel Interval	1.25 kHz (Min) at test mode
	5 kHz (Voice)
	40 kHz (ISDN/MPDS)
G/T	Better than - 4dB/K
EIRP	BPSK/O-QPSK 20 dBW
	16QAM 32 dBW
Modulation	
-Voice (4.8 kbps AMBE)	O-QPSK/5.6 kbps
-MES Signaling	BPSK/3 kbps
-ISDN Operation	16QAM/33.6k Symbols/s
-MPDS	16QAM/33.6 k Symbols/s
-Access Method	SCPC/FDMA Audio, HSD
	TDMA/FDMA MPDS

3. INTERFACE

PC:	RS-232/RS-422
Navigator:	IEC 61162-1 ed.2 (2000/7)/NMEA0183
USB:	B connector
ISDN:	Max 7 ports (RJ-45 connector and 4-terminals)
Analogne telephone/Telefax:	Max 6 ports (RJ-45 connector and 2-terminals)

4. POWER SUPPLY

Power supply & rated Current	100-240 VAC: 1.5 A – 0.9 A

5. ENVIRONMENTAL CONDITION

Category of unit	Antenna unit: To be installed in an exposed area Others: To be installed in a protected area
Ambient Temperature	Complies with Inmarsat SDM and IEC60945 (Ed.4) Antenna unit: -25°C to +55°C Communication unit: -15°C to +55°C Handset: -15°C to +55°C
Relative Humidity	95% at 40°C (Inmarsat SDM 95 & IEC60945)
Waterproofing	Complies with IEC 60529; Antenna Unit: IPX6 Communication Unit: IPX0 Handset: IPX0
Vibration	Complies with Inmarsat SDM and IEC60945
Motion	Roll: ± 30°/8s, Pitch: ± 10°/6s, Yaw: ± 8°/50s, Surge: ± 0.2G, Sway: ± 0.2G, Heave: ± 0.5G, Rotation: 6°/s, Speed: 30 kt

6. COATING COLOR

Antenna Unit	Munsell N9.5
Communication Unit	Munsell N1.0
ISDN Handset	Munsell N1.0
Distress Alert Unit	Munsell N1.0

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Publication No. DOCQA0020

Declaration of Conformity

0560

We FURUNO ELECTRIC CO., LTD.

(Manufacturer)

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan

(Address)

declare under our sole responsibility that the product

Inmarsat-F77 Ship Earth Station Type: Felcom 70

(Model name, type number)

to which this declaration relates conforms to the following standard(s) or normative document(s)

IMO Resolutions
IMO Resolution A.570(14)
IMO Resolution A.694(17)
IMO Resolution A.808(19)
IMO Resolution A.888(21)
IMO Resolution MSC.130(75)
IMO Resolution MSC/Circ.862

Test standards
EN 60945: 2002-10 Ed. 4
IEC 61097-13: 2003-5 Ed. 1

(title and/or number and date of issue of the standard(s) or other normative document(s))

For assessment, see

- EC type-examination (Module B) certificate N° 09212004 issued by Telefication b.v. (0560), The Netherlands
- Production Quality System (Module D) certificate No. P 112 issued by Telefication b.v. (0560), The Netherlands

This declaration is issued according to the provisions of European Council Directive 96/98/EC on marine equipment amended by Commission Directive 2008/67/EC.

On behalf of Furuno Electric Co., Ltd.

Takahiko Kusuda
Manager, QMS Secretariat
Quality Assurance Department

Nishinomiya City, Japan
June 23, 2009

(Place and date of issue)

(name and signature or equivalent marking of authorized person)