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FURUNO

OPERATOR'S MANUAL

INMARSAT FLEET F33
SHIP EARTH STATION

MODEL FELCOM 30

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

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ECF
(Elemental Chlorine Free)
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⚠ SAFETY INSTRUCTIONS

⚠ WARNING



ELECTRICAL SHOCK HAZARD
Do not open the equipment.
Only qualified personnel should work inside the equipment.



Do not approach the radome closer than 1 meter when it is transmitting.
The radome emits radio waves which can be harmful to the human body, particularly the eyes.

RF power density on antenna aperture	Distance
100 w/m^2	0.35 m
25 w/m^2	0.65 m
10 w/m^2	1.00 m

Leave the equipment powered while underway.
Distress cannot be communicated unless the equipment is powered.

⚠ WARNING

Do not disassemble or modify the equipment.
Fire, electrical shock or serious injury can result.

Any repair work must be done by a licensed radio technician.
Improper repair work can cause electrical shock or fire.

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.

Important Notice

- No part of this manual may be copied or reproduced without written permission.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and equipment specifications are subject to change without notice.
- The example screens (or illustrations) shown in this manual may not match the screens you see on your display. The screen you see depends on your system configuration and equipment settings.
- This manual is intended for use by native speakers of English.
- FURUNO will assume no responsibility for the damage caused by improper use or modification of the equipment or claims of loss of profit by a third party.
- Please carefully read and follow the operation and maintenance procedures set forth in this manual.
- Store this manual in a convenient place for further reference.

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FOREWORD

A Word to the Owner of the FURUNO FELCOM 30

Congratulations on your choice of the FURUNO FELCOM 30 Inmarsat Fleet F33 Mobile Earth Station. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.
For over 50 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 30 mainly consists of an antenna unit, communication unit, and a handset. The FELCOM 30 provides telephone, facsimile, and data services.

The main features of the FELCOM 30 are

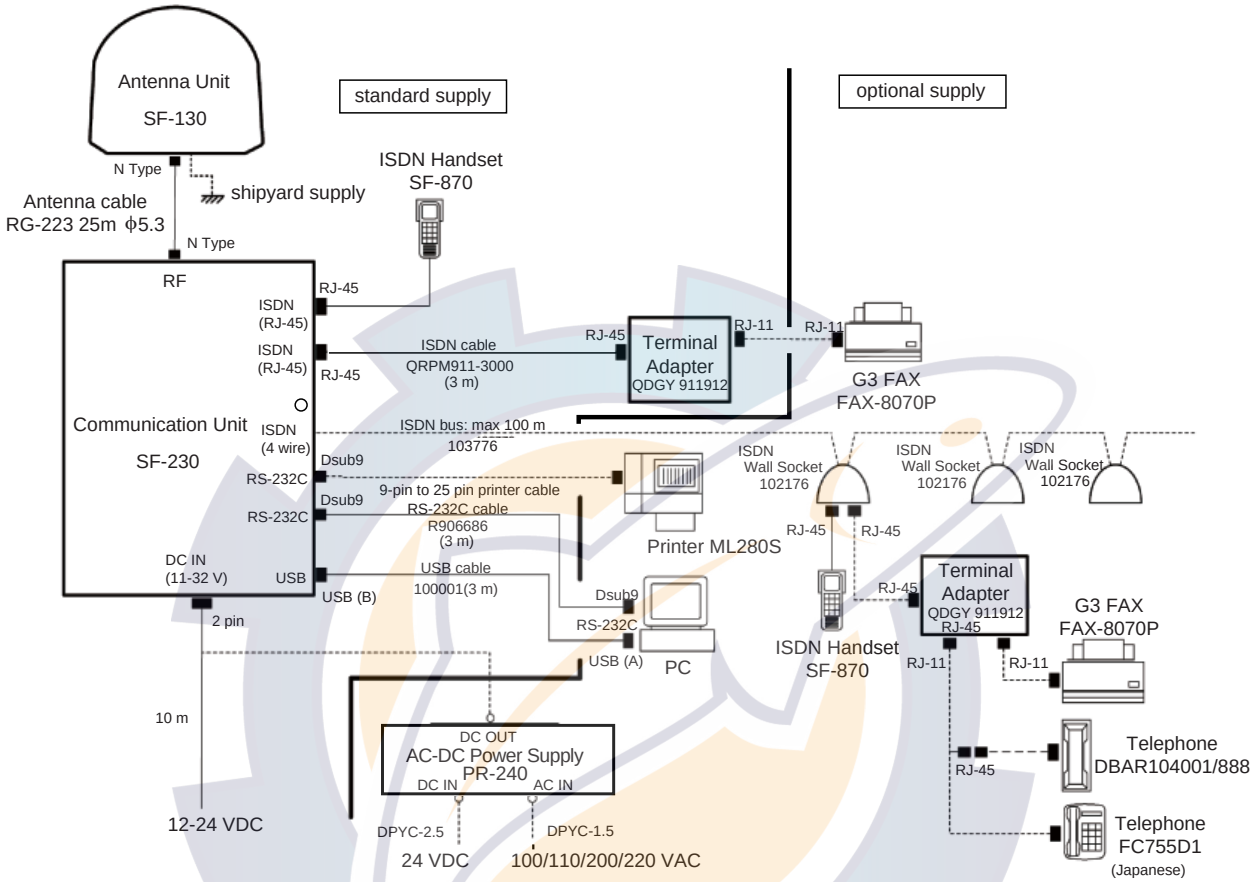
- Conforms to the following standards: INMARSAT MINI-M SDM, CN-MM056, 059, IEC 60945 (Ed. 4), IEC 60529 (Ed. 2), IEC 61162-1 (Ed. 2)
- Voice communication: 4.8 kbps
- Facsimile: G3-9.6 kbps
- Always-on Internet connections via MPDS
- Compact antenna unit: ϕ400x400 mm, 8 kg

Program number

System version of the communication unit: REL 2.1
Software for PC, vtLite: 6.2

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SYSTEM CONFIGURATION



Environmental Category

Antenna unit	To be installed in an exposed area
Communication unit ISDN handset, etc	To be installed in a protected area

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SPECIFICATIONS OF THE INMARSAT FLEET F33 SHIP EARTH STATION
FELCOM 30

1. ANTENNA UNIT

Gain	Greater than 13 dBi
Axial Ratio	Less than 2.0 dB
Polarization	Right circularly polarized wave
Antenna Beamwidth	60 deg. approx. (at –3 dB)
Stabilization	Triple-axis control type
Positioning	AZ: 0° to 360°, EL: 5° to 90°
Tracking	Step tracking system

2. COMMUNICATION UNIT

Standard Functions	Global beam: 4.8 kbps voice
	Spot beam: 4.8 kbps voice
	9.6 kbps G3 FAX
	9.6 kbps data built-in compression provides up to 40 kbps
	MPDS 64 kbps forward, 28.8 kbps return
Transmit Frequency	1626.5 MHz to 1660.5 MHz
Receiver Frequency	1525.0 MHz to 1559.0 MHz
G/T	Better than -12.5 dB/K
EIRP	BPSK: 20 +1/-2 dBW
	0-QPSK (4.8 kbps voice): 20 +1/-2 dBW
	0-QPSK (9.6 kbps FAX): 20 +1/-2 dBW
	0-QPSK (9.6 kbps data): 20 +1/-2 dBW

3. INTERFACE

PC:	RS-232/RS-422
Navigator:	IEC 61162-1 ed.2 (2000/7)/NMEA0183
USB:	B connector
ISDN:	Max 3 ports (2-RJ-45 connectors and 1-terminal)

4. POWER SUPPLY

Power Supply	12-24 VDC
Rated Current	1.3 A (St-by), 3.5 A (Tx) at 24 VDC

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5. ENVIRONMENTAL CONDITION

Ambient Temperature	Complies with Inmarsat SDM and IEC 60945 (Ed.4) Antenna unit: -25°C to +50°C Communication unit: -15°C to +55°C Handset: -15°C to +55°C
Relative Humidity	95% at 40°C (Inmarsat SDM 95 & IEC 60945)
Waterproofing	Complies with IEC 60529; Antenna Unit: IPX6 Communication Unit: IPX0 Handset: IPX0
Vibration	Complies with IEC 60945 ● 2 - 5 Hz and up to 13.2 Hz with an excursion of ±1 mm ±10 % (7 m/s^2 maximum acceleration at 13.2 Hz) ● 13.2 - 100 Hz with a constant maximum acceleration of 7 m/s^2 Complies with Inmarsat SDM ADU: Frequency 4-10 Hz: Max. vibration 2.54 mm Frequency 10-15 Hz: Max. vibration 0.76 mm Frequency 15-25 Hz: Max. vibration 0.40 mm Frequency 25-33 Hz: Max. vibration 0.23 mm BDU: Frequency 4-15 Hz: Max. vibration 0.76 mm Frequency 15-25 Hz: Max. vibration 0.40 mm Frequency 25-33 Hz: Max. vibration 0.23 mm Frequency 33-40 Hz: Max. vibration 0.13 mm Frequency 40-50 Hz: Max. vibration 0.07 mm
Motion	Roll: ± 30°/8s, Pitch: ± 10°/6 s, Yaw: ± 8°/50s, Surge: ± 0.2 G, Sway: ± 0.2 G, Heave: ± 0.5 G, Rotation: 6°/s, Speed: 30 kt

6. COATING COLOR

Antenna Unit	Munsell N9.5
Communication Unit	Munsell N1.0
ISDN Handset	Munsell N1.0

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1. INTRODUCTION

1.1 General

The FELCOM 30 consists of the Above Deck Equipment (ADE) and Below Deck Equipment (BDE).

Above Deck Equipment - ADE

The FELCOM 30 Above Deck Equipment consists of:

- Servo stabilized antenna dish with RF-Transceiver
- GPS receiver
- Radome
- Optional tower or mast mounting

Below Deck Equipment - BDE

The **FELCOM 30 Communication Unit (CU)** - which constitutes the major electronic part - is designed for wall or desktop installation.
The CU mains input is 12-24 VDC (actual power 11-32 VDC). The power requirement is approx. 40 W in receive/idle mode, and approx. 110 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.

CD

The CD ROM supplied with FELCOM 30 contains program for PC (vtLite Mobile and driver software.

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1.2 Communication services

FELCOM 30 provides the following services:

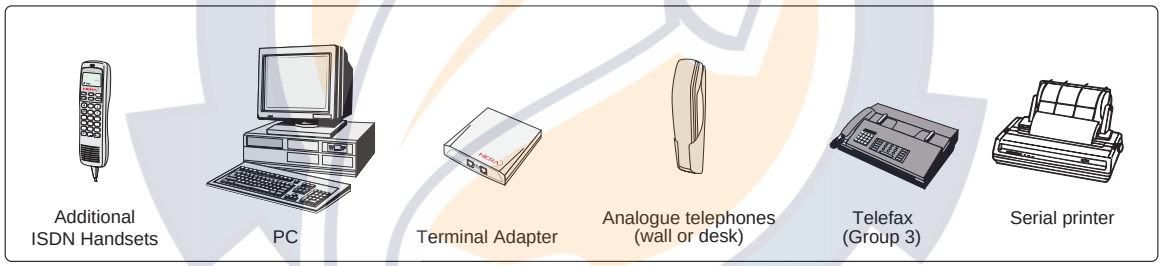
- **Speech:** 4.8 kbps
- **Data:** 9.6 kbps, built-in compression provides up to 40 kbps
- **MPDS:** Mobile Packet Data Service
  FWD = 64 kbps, RTN = 28.8 kbps
  Shared channel
- **Telefax:** 9.6 kbps Group 3 via Terminal Adapter (TA)

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** or **USB** port allows connection of a PC for configuration of the FELCOM 30 Communication Unit (CU).
A PC program (vtLite Mobile) that provides the software to operate and configure the CU is supplied on the enclosed CD (requires at least Windows 98).

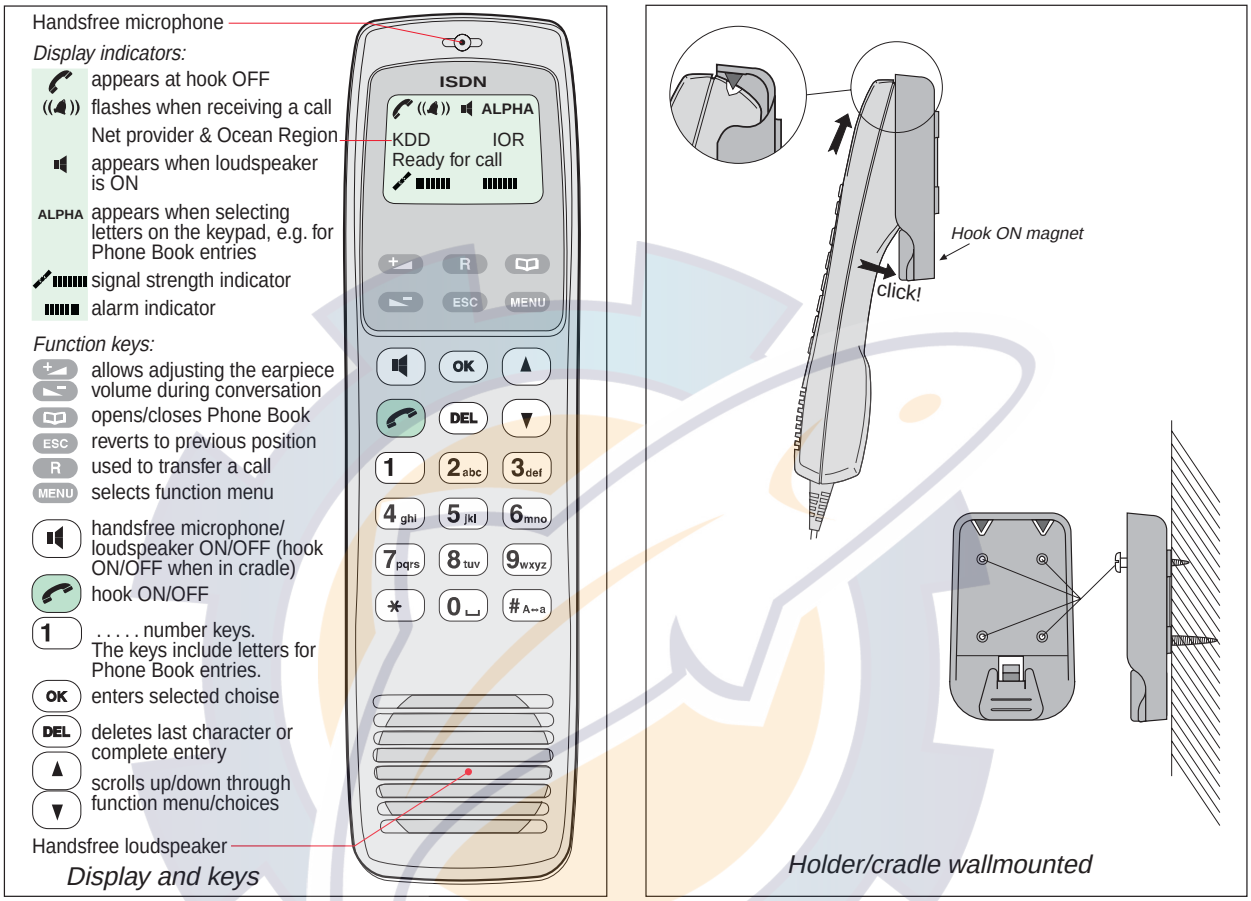


Additional equipment

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2. OPERATION FROM HANDSET

2.1 Display Panel and Key Panel of ISDN Handset



Display and keys

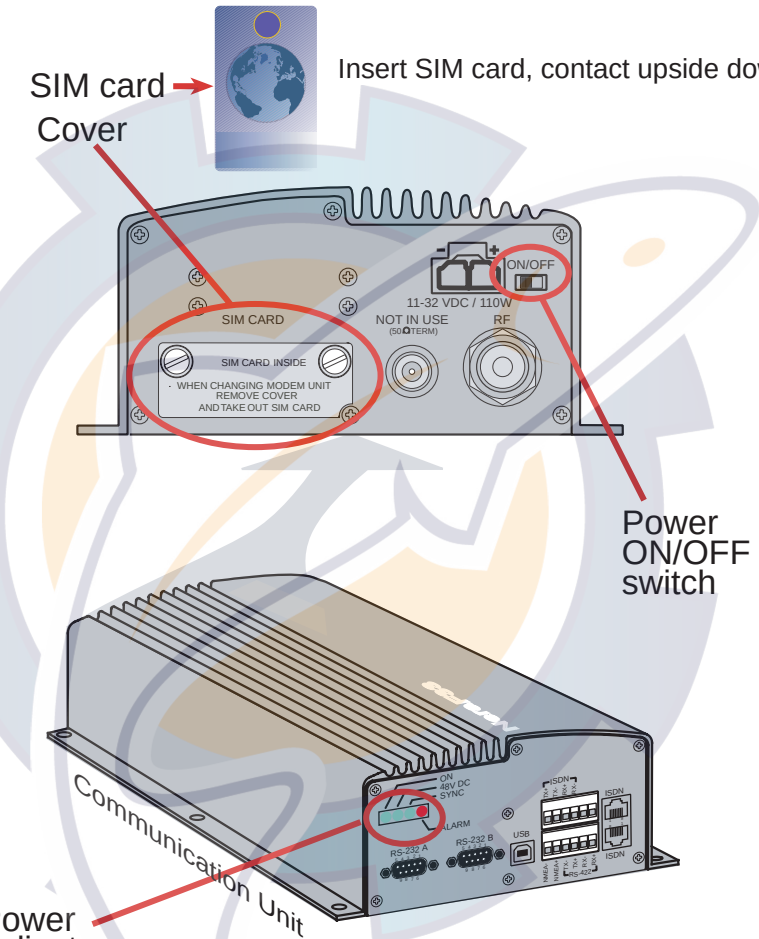
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2.2 Switching ON

The **ON/OFF** switch located on the rear panel of the Communication Unit switches all basic units of the FELCOM 30 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

Note: Wait about 10 seconds to turn on the power after turning it off.

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2.3 SIM card

The SIM card carries subscription information from your Net service provider on an integrated circuit. The FELCOM 30 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 30 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.:

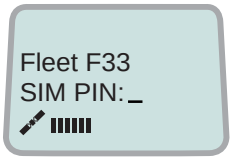
- PIN code (Personal Identification Number)
- Phone book
- Allowed Net service providers

Note: FELCOM 30 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 rear panel 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 is turned off instantaneously, eject the SIM card and turn the power off and on again.

When entering SIM card, the terminal prompts you for SIM PIN:



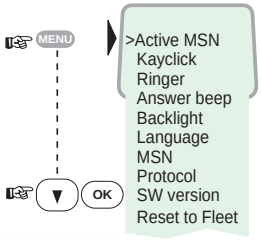
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2.4 ISDN Handset

When connected initially, the handset is automatically set to Fleet mode, providing an idle display as shown on next section.
To switch back to ISDN Handset mode, press and hold down DEL when turning ON power.

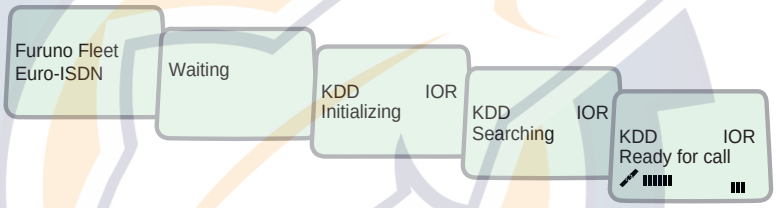
Switching back to Fleet mode is then achieved as follows:

1. Open the **MENU** and scroll down to **Reset to Fleet**
2. Press OK.
   The handset will now stay in Fleet mode.



2.5 FELCOM 30 starts up

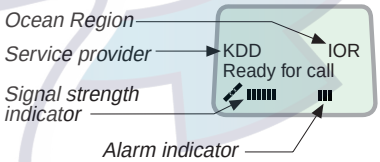
FELCOM 30 automatically initializes the system and searches for the satellite.



*See **"3.2 Satellite search"** in this manual to restart a search manually.*
*If required, see **"3.4 Selecting default Net service provider"**.*

Idle

When idle, the ISDN Handset displays as follows.



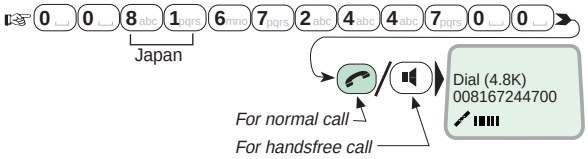
The alarm indicator flashes when an alarm condition occurs. The indicator stops once the alarm has been read in the Display Handset by pressing MENU > *Information > Alarms & messages"*.
The indicator continues to be displayed if the alarm condition persists.

Note: If the searching begins suddenly due to satellite blocking, restart a search manually, specifying your ocean region. See page 3-3 for details.

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2.6 Making a call

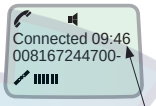
1. Dial 00, country code and subscriber number, e.g.:



- When entered, the display reads:



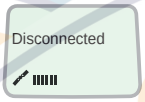
- When the remote end answers, the display reads:



The timer starts.

Timer, minutes:seconds

2. End the call by pressing hook ON/OFF, or replacing the handset in the cradle.



Use DEL key to modify entries: Pressing DEL key once, erases one digit.
Holding the key more than 0.5 second erases the whole number.
Use the handsfree key to toggle the loudspeaker ON/OFF.

Alternative dialing:
Press or to get the dialing tone, then dial the number.



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2.7 Redialing

The Redial Memory stores the last 30 called and received numbers (incoming IMN numbers are not conveyed from “ashore”).
The data are erased when disconnecting the handset or FELCOM 30 is switched off.

To redial calls made:

1 Press the arrow up key to recall the latest number dialed.

2 Use the arrow keys to scroll through the list.

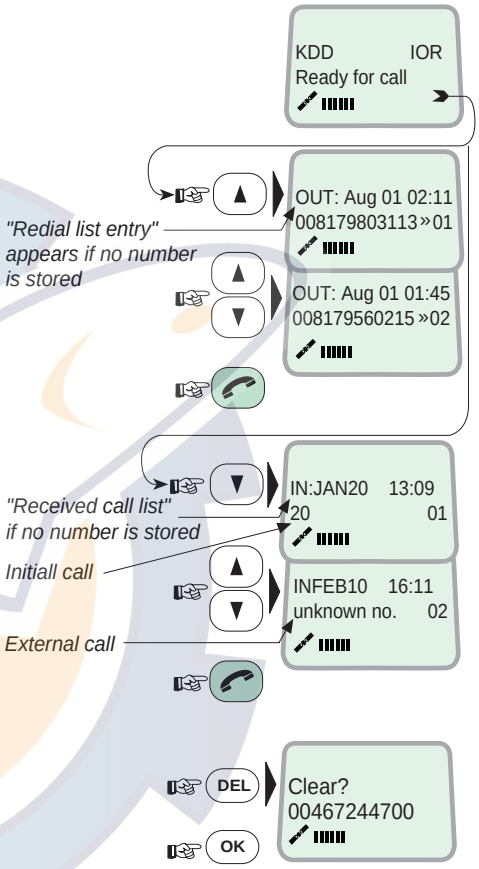
3 Pressing hook ON/OFF sends the chosen number.

To view calls received:

4 Press the arrow down key to recall the last number received. Scroll through list.

To delete a listed number:

5 Press DEL to clear the chosen number from list.
Press OK to delete:
Revert to idle:

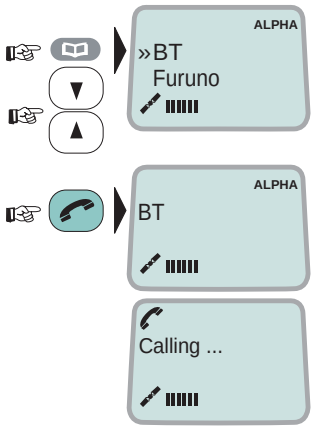


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2.8 Dialing from phone book

1 Press the phone book key and scroll through the phone book.

2 Press the hook ON/OFF key to call the selected number.

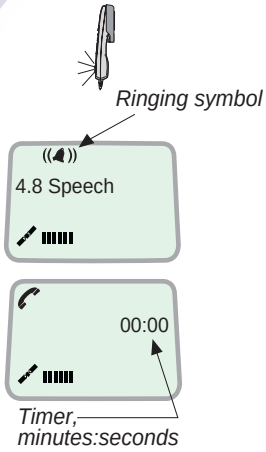


2.9 Incoming calls to handset

The handset rings when receiving a call. The ringing symbol flashes until the call is answered.

- Answer the call by pressing hook ON/OFF key or handsfree key

With the ISDN Handset in the cradle, the loudspeaker and microphone are ON for handsfree operation.
If lifting the handset, the loudspeaker turns off.
Use the handsfree key to toggle the loudspeaker on/off.



- End the call by pressing hook ON/OFF key, or replacing the handset in the cradle.
- Reject the call by pressing **DEL** key.

Note: If the ringing symbol is displayed when in idle, you have missed a call.

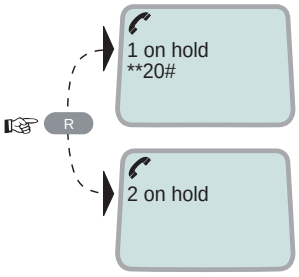
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2.10 Call hold and transfer

Pressing R during a conversation will put the current call on hold. Another internal call may now be made.

Switching between the two calls:

- After putting the 1st call on hold by pressing R, the 2nd call is established by keying:
  R * * [MSN] #
- The 1st call is put on hold, and the 2nd is connected.
- Toggling between the two calls is achieved by pressing R repeatedly.



Call transfer (connection via satellite):

MSN/Handset Id
R * * 2 0 # *Hang up*
R *toggles between subscribers*

Exception!
Transfer from analogue to ISDN is not possoble.

2.11 Internal communication

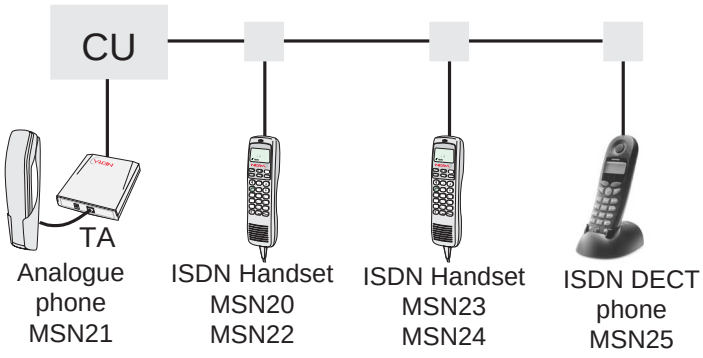
FELCOM 30 allows calls to be made internally between the connected ISDN and analogue telephones.

Internal calls:

MSN *(example)*
* * 2 0 #

When receiving a call to an ISDN phone, the caller's MSN number will appear in the display (if programmed). When FELCOM 30 is busy with a satellite link call, it is possible to make internal calls.

Example of internal call connections:



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2.12 Various call procedures

Call from a standard telephone

0 0 8 1 6 7 2 4 4 7 0 0 #

Short number dialing from Phone Book (prefix 23)

2 3 1 5 # fetches and sends the telephone number stored in the Phone Book under short number 15.

Short number dialing (prefix 23) through selected Net service provider

3 * 2 3 1 5 # fetches and sends the telephone number stored under short number 15 via the selected Net service provider (KDDI=no.3).

Service calls

Special information services are accessible with 2-digit service address code.

Note: Not all Net service providers offer every service.

Examples:
Obtaining assistance from the International Operator:

1 1 #

Calling the technical staff of the Land Earth Station (LES):

3 3 #

Telefax

On a telefax with keypad, enter # as the last digit before starting transmission.

0 0 8 1 6 7 2 4 4 6 2 1 # START

Note: Some types of equipment do not have # implemented in software even if the #-key is on the keypad. Then in front of the telephone number use.
903 if dialing the number digit by digit, or
902 if for the number to be sent as a block. e.g.:

9 0 2 0 0 4 7 6 7 2 4 4 7 0 0

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2.13 To call FELCOM 30

Dial 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 30 terminal regardless of the Ocean Region the terminal 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)

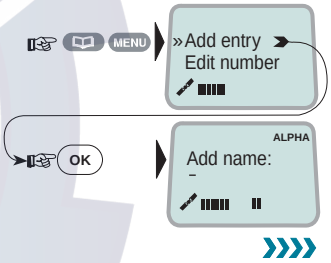
2.14 Phone book entry

The entries in the FELCOM 30 phone book may consist of maximum 100 numbers. The number/name list is stored in the Communication Unit.

Programming:

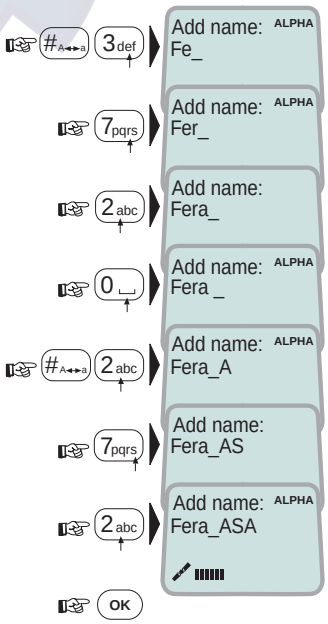
1 Open the **phone book > menu**.

2 Open the **Add entry** function by pressing **Ok** before starting to key in characters:



3 Enter the name, e.g. Fera ASA:

Press [3] key three time to enter "F" and as follows:



Note that the additional characters accessible with the key appear momentarily.
See the character table on next page.

For modifying an entry,
*see **"2.15 Phone book editing**."*

An entry can be erased by pressing DEL

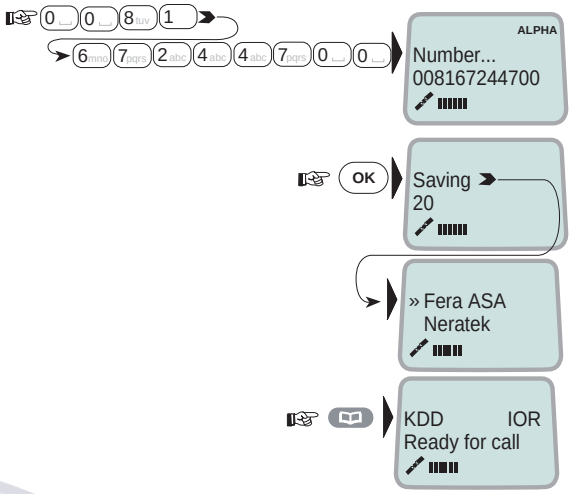
4 Press the OK key.

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5 Enter the telephone number e.g.:

6 Pressing OK stores the entry in the phone book.

7 Press 📖 to revert to idle.



The character table shows all the characters accessible.

Notes:

- The # -key toggles between upper-case and lower-case characters.
- Names written with none Anglo-American characters such as Æ, Ø, Å etc., can only contain 6 different special characters (however, 2 equal characters count as 1).

Key	Uppercase	Lowercase
1	. , ? ! - : ; / 1	. , ? ! - : ; / 1
2 abc	ABCÆÅÄ2	abcæåä2
3 def	DEF3	def3
4 abc	GHI4	ghi4
5 jkl	JKL5	jkl5
6 mno	MNOØÖ6	mnoøö6
7 pqrs	PQRS7	pqrs7
8 tuv	TUVÜ8	tuvü8
9 wxyz	WXYZ9	wxyz9
0 ␣	_0	_0

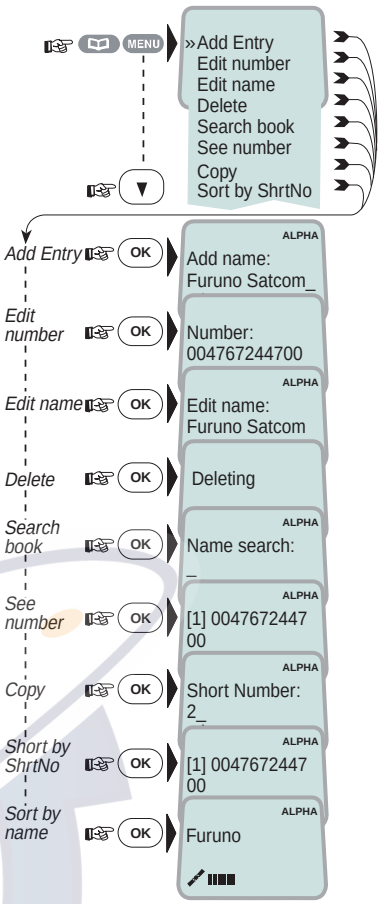
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2.15 Phone book editing

Open phone book menu and scroll down to the required function.
If "Sort by ShrtNo" is selected, the function switches to "Sort by Name".

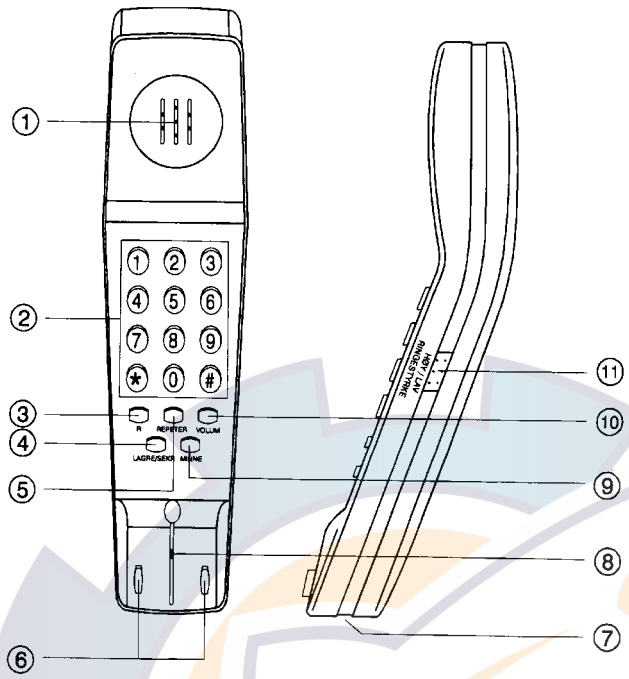
ALPHA *appears when letters are to be entered.*

Use DEL *to modify entries.*



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2.16 Analogue telephone



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 dialled subscriber, you can lift the handset, receive new dial tone and then press the [REPETER] button.
Note that this button is for manually dialled 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.

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Abbreviated call

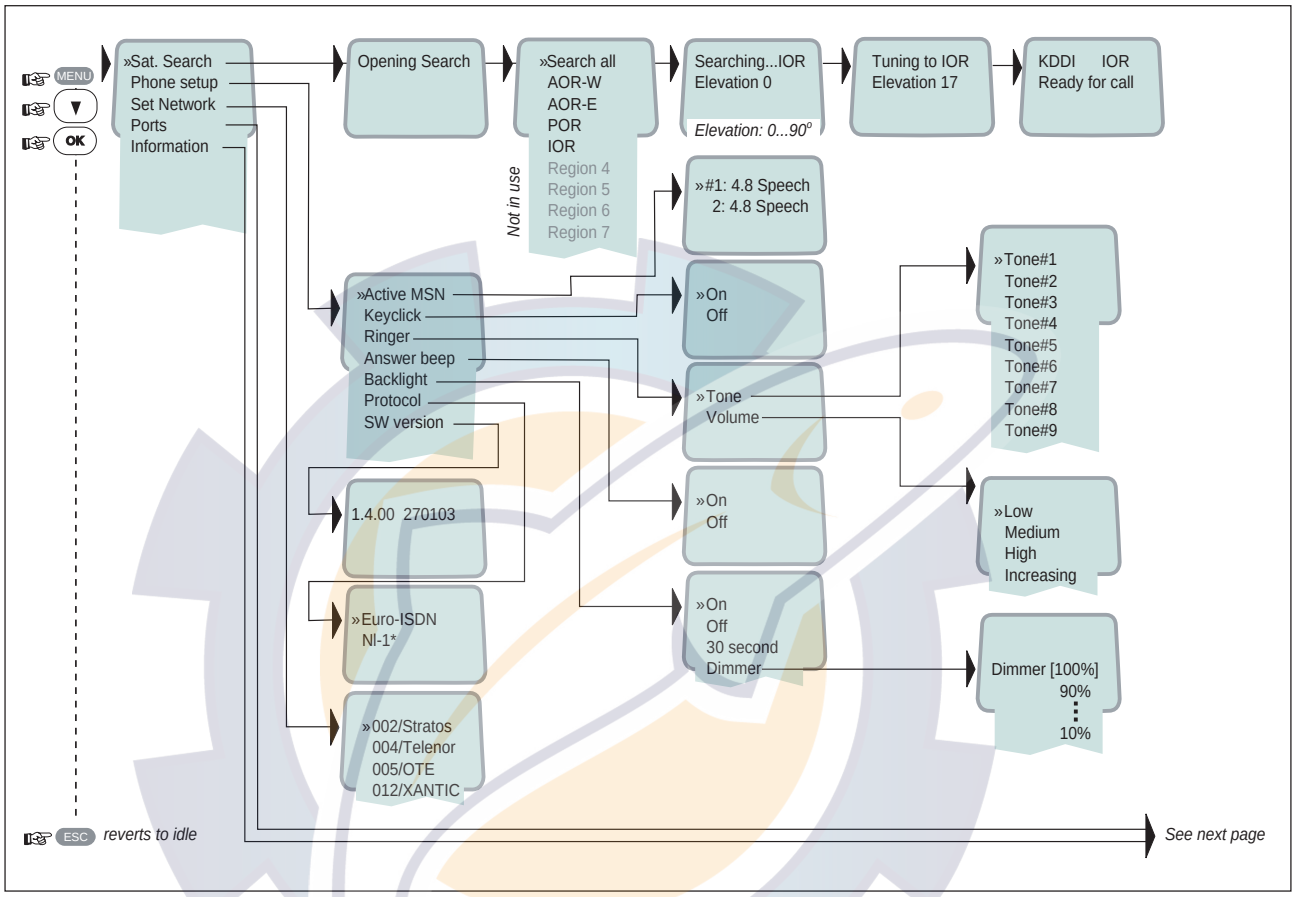
1 Lift handset and receive dial tone
2 Press [MINNE] button.
3 Press relevant storing address (0 – 9). The subscriber number is automatically dialled.

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

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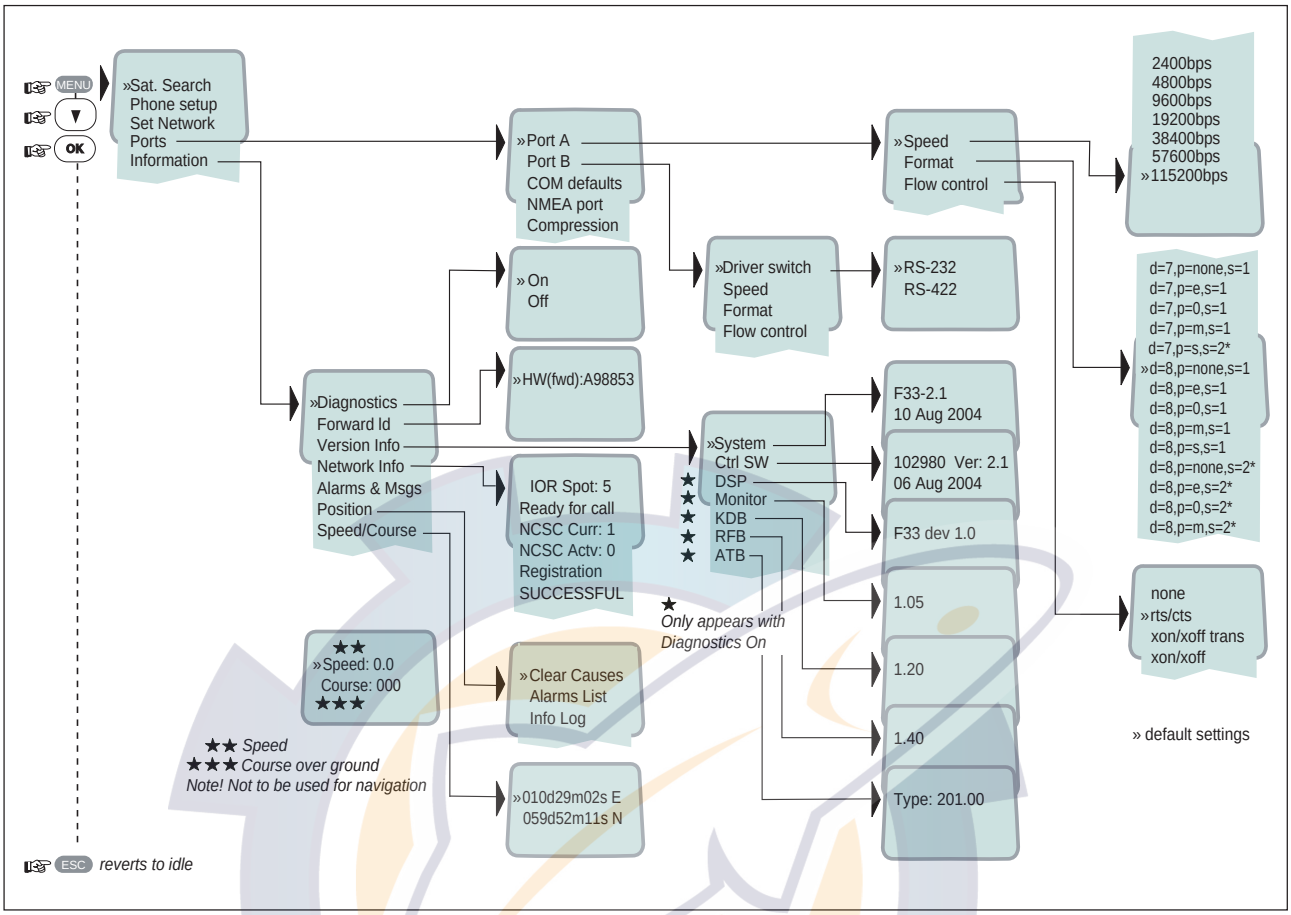
3. HANDSET FUNCTIONS

3.1 Overview



*: NI-1 can not be used.

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*: Can not be used.

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3.2 Satellite search

Some geographic locations allow contact with more than one Ocean Region satellite. It is recommended to choose an Ocean Region providing good signal quality and cost-effective communication.
Use the **Satellite Coverage Map** on next page to select the Ocean Region at your location:

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

Regions 4-7 are not in use.

To select another Ocean Region:

1 Open the **MENU** and press **Sat. Search**.

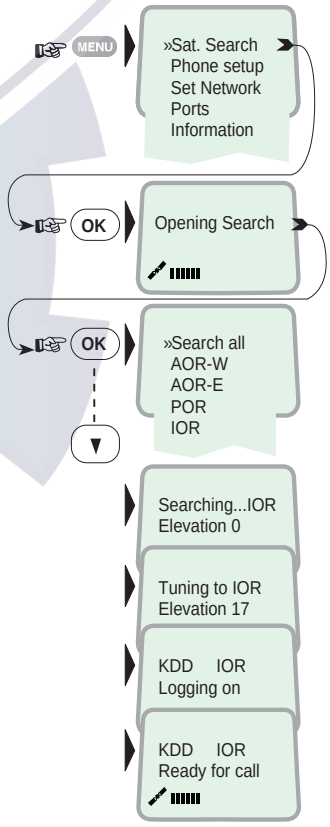
Pressing OK opens the list of searching alternatives.

2 Select as required.

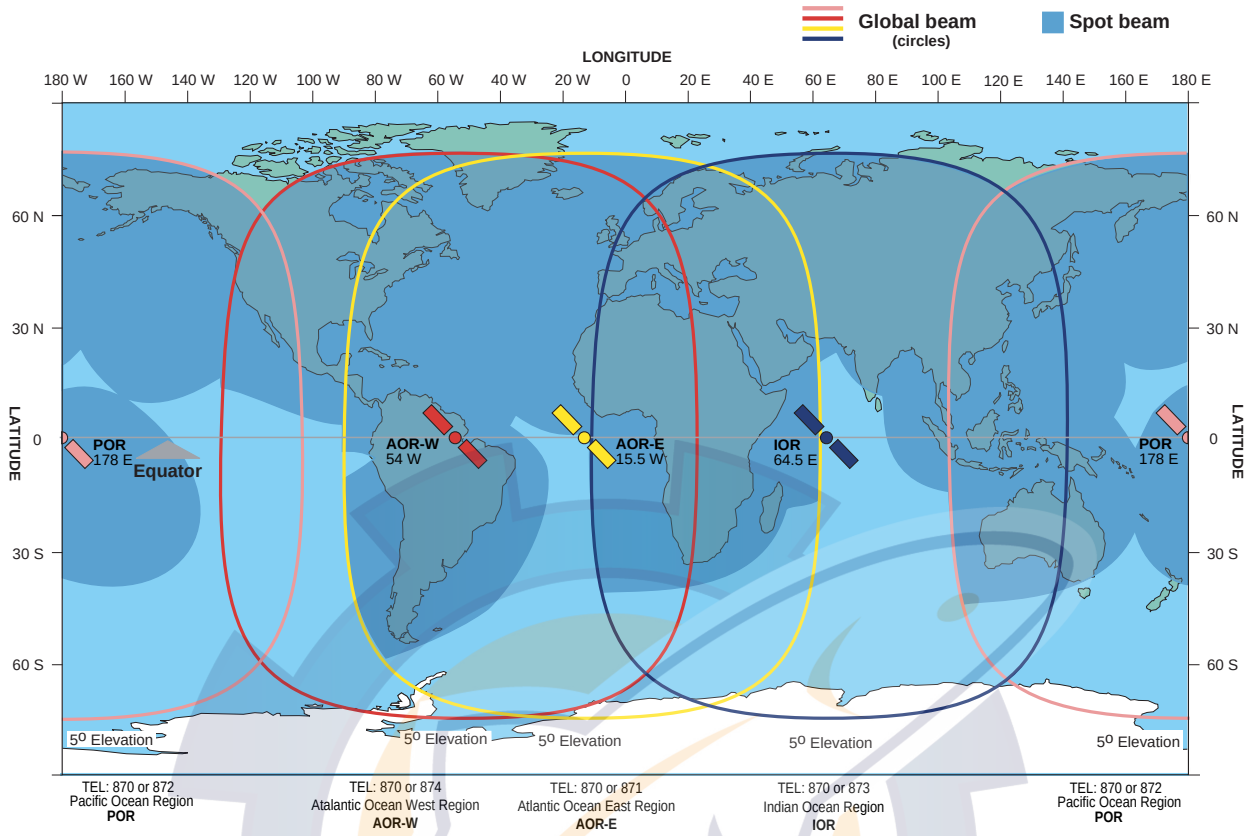
*When selecting **Search all**, the antenna searches one Ocean Region after the other until a satellite signal is found.*

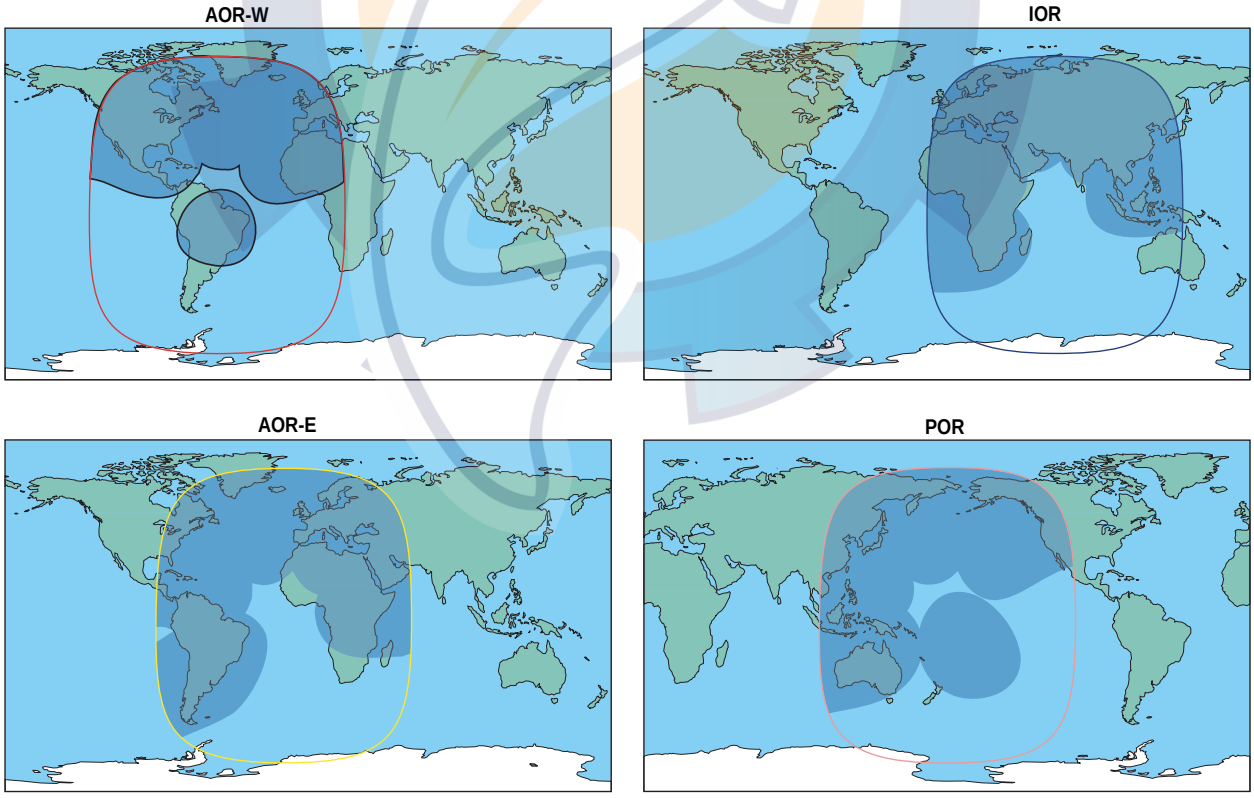
When selecting a specific Ocean Region (**AOR-W, AOR-E, POR** or **IOR**) the system knows the elevation and will find the satellite fast if visible.

The antenna performs an hemispheric search at antenna elevation angles varying within 0° through 90°.



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Satellite Coverage Map

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3.3 Phone setup (ISDN Handset)

3.3.1 Active MSN (Multiple Subscriber Number)

When making a call , the device connected to FELCOM 30 identifies itself locally by its MSN number.

The first ISDN Handset connected has the following MSN numbers:

Identity	*MSN number*	*Speech quality*
01:	20	4.8 k Speech
03:	22	4.8 k Speech

3.3.2 Keyclick

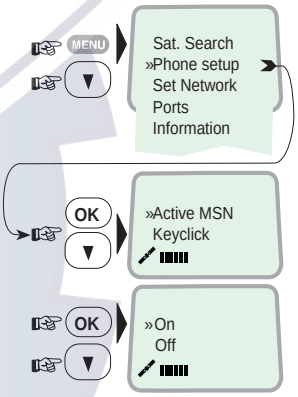
When activated, a click is heard when pressing a key. The keyclick can be turned on/off as follows.

1 Open the **MENU** and scroll down to **Phone setup**.

2 Select the **Keyclick** function.

3 Press (OK) and scroll to On or Off, as required.

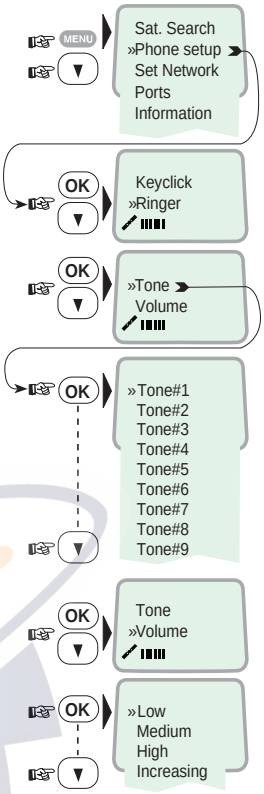
4 Press (OK) to store the setting.



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3.3.3 Ringer

The tone sound and level heard when the phone rings may be selected as follows.



1 Open the **MENU** and select **Phone setup > Ringer**.

2 Press (OK) to select the **Tone** function.

3 Press (OK) again and scroll down to required tone.

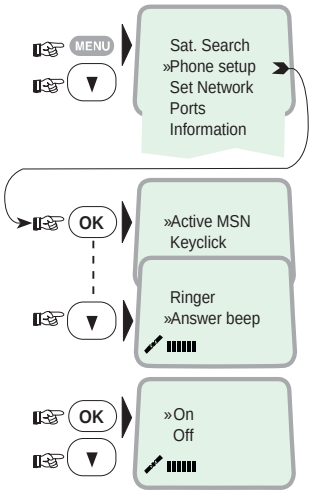
4 Press (OK) to store the selected one.

5 Select the **Ringer** function again and scroll down to the **Volume** function.

6 Pressing (OK) lists the choices. Scroll down to required sound level, and press (OK) to store it.

3.3.4 Answer beep

FELCOM 30 may be set to emit a signal in the handset when an outgoing call is answered. The signal will also sound when a call is transferred at the remote end.
The signal is not active during handsfree calls.
The answer beep can be turned on/off as follows.



1 Open the **MENU** and scroll down to **Phone setup**.

2 Scroll down to the **Answer beep** function.

3 Press (OK) and scroll to On or Off, as required.

4 Pressing (OK) stores the chosen mode.

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3.3.5 Backlight On/Off

The display and keypad backlight can be set to:

- **On**, permanently ON
- **Off**, permanently OFF
- **30 second**s ON when pressing a key or receiving a call, and stays ON 30 secs after last event.
- **Dimmer**, intensity adjustable in 10 steps.

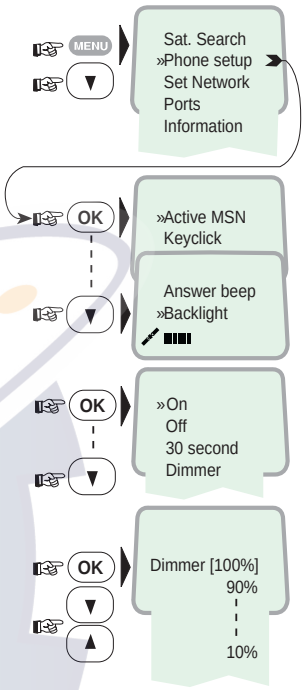
Changing the setting:

1 Open the **MENU** and scroll down to **Phone setup**, and scroll down to the **Backlight** function.

2 Press OK and scroll down to required setting.

3 Pressing OK at **Dimmer** opens the backlight adjustment window.
Adjust with up/down arrows.

4 Press OK to store.



3.3.6 Protocol

FELCOM 30 allows selection between the following ISDN protocols.

- **Euro ISDN** for connection to equipment conforming to the European ISDN standard (default)
- **NI-1** protocol: Not used

Note: All ISDN device and the CU must use the same protocal.

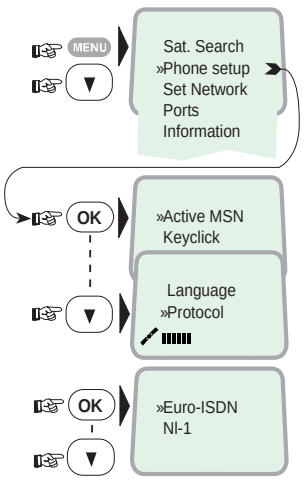
The check for current protocol:

1 Open the **MENU** and scroll down to **Phone setup**, and select the **Protocol** function.

2 Press OK and scroll required protocol.

3 Pressing OK stores the chosen ISDN protocol.

To change the default setting in the CU, see “5.9.1 ISDN protocol configuration”.

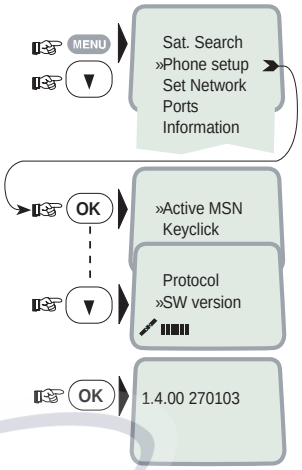


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3.3.7 Software version

This function displays the ISDN Handset software version.

1 Open the **MENU** and scroll down to **Phone setup**, and select the **SW version** function.



2 Press OK to read.

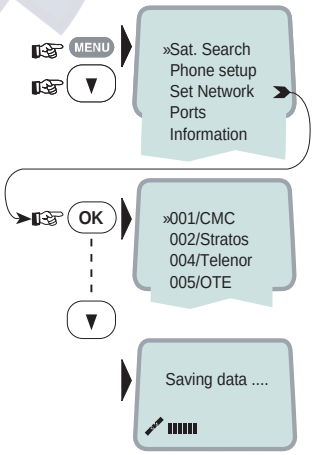
3.4 Selecting default Net service provider

The default Net service provider for a satellite (Ocean Region) is automatically used when dialing ship-to-shore.

When using SIM card, selection of a Net service provider is restricted to the one stored on the SIM cards!

Changing default Net service provider:

1 Open the **MENU** and Scroll down to **Set Network**.



2 Scroll down to the required Net service provider.

3 Store the new Net service provider for the current Ocean Region.

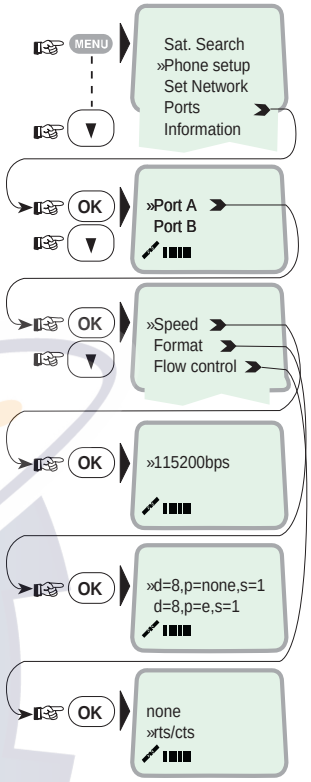
To preprogram Net provider for all Ocean Regions, “vtLite Mobile” software must be used. See chapter 5.

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3.5 Setting ports

Serial ports A and B

The data speed, format and flow control for the **RS-232** serial ports **A** and **B** are set up as follows:



1 Open the **MENU** and scroll down to **Ports**.

*See **"3.1 Overview"** for available choices.*

2 Select the parameter to be set for Port A.

3 Select the listed data **Speed** 115200bps (default).
Note that 1200 bps can not be used.

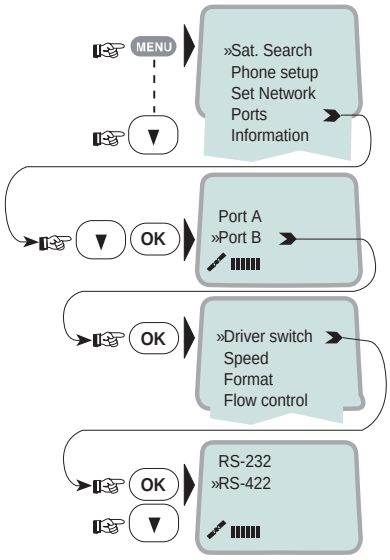
4 Select listed **format:**
8 data bits, no parity and 1 stop bit (default)
Note that items of "S=2" (stop bit: 2 bits) can not be used.

5 Set flow control to **rts/cts** (default).
Note that "xon/xoff trans" can not be used.

Port B driver switch

Select data speed, format and flow control as described above.

Switching the driver from RS-232B to RS-422:



6 Select **Ports,** and scroll down to **Port B.**

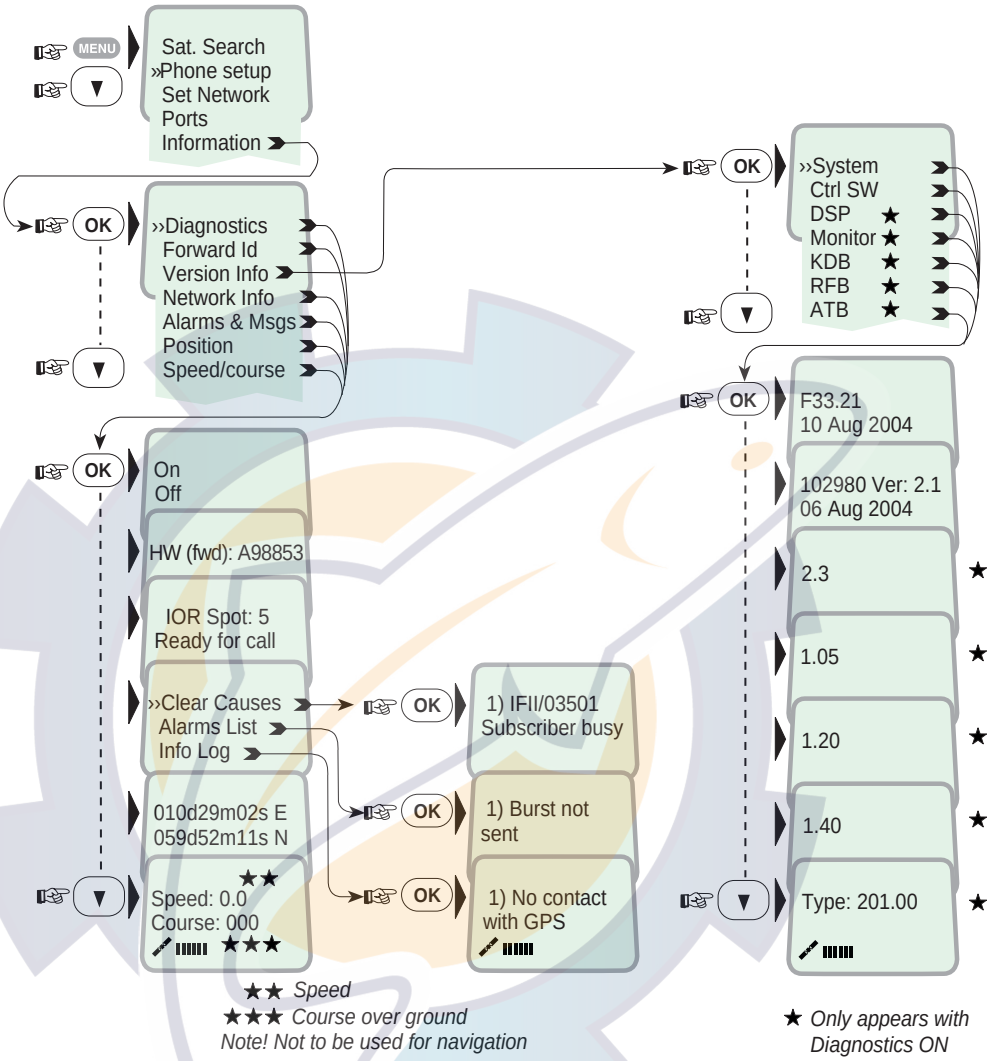
7 Open the **Driver switch** function and scroll down to **RS-422.**

*The **RS-422** terminal block is now activated for connection of e.g. PC using cables of up to 100 m.*
*The **RS-232** serial port **B** is disconnected.*

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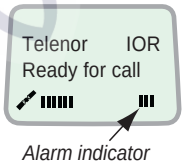
3.6 Information available

Open the menu and scroll down to read various information, as indicated (examples):



Alarm

The alarm indicator flashes when an alarm condition occurs:



The indicator stops once the alarm has been read in the Display Handset by pressing MENU ***> Information > Alarms & messages.***
The indicator continues to be displayed if the alarm condition persists.

The red alarm indicator on the CU (see next page) flashes in step with the alarm indicator in the display.

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4. OPERATION FROM PC

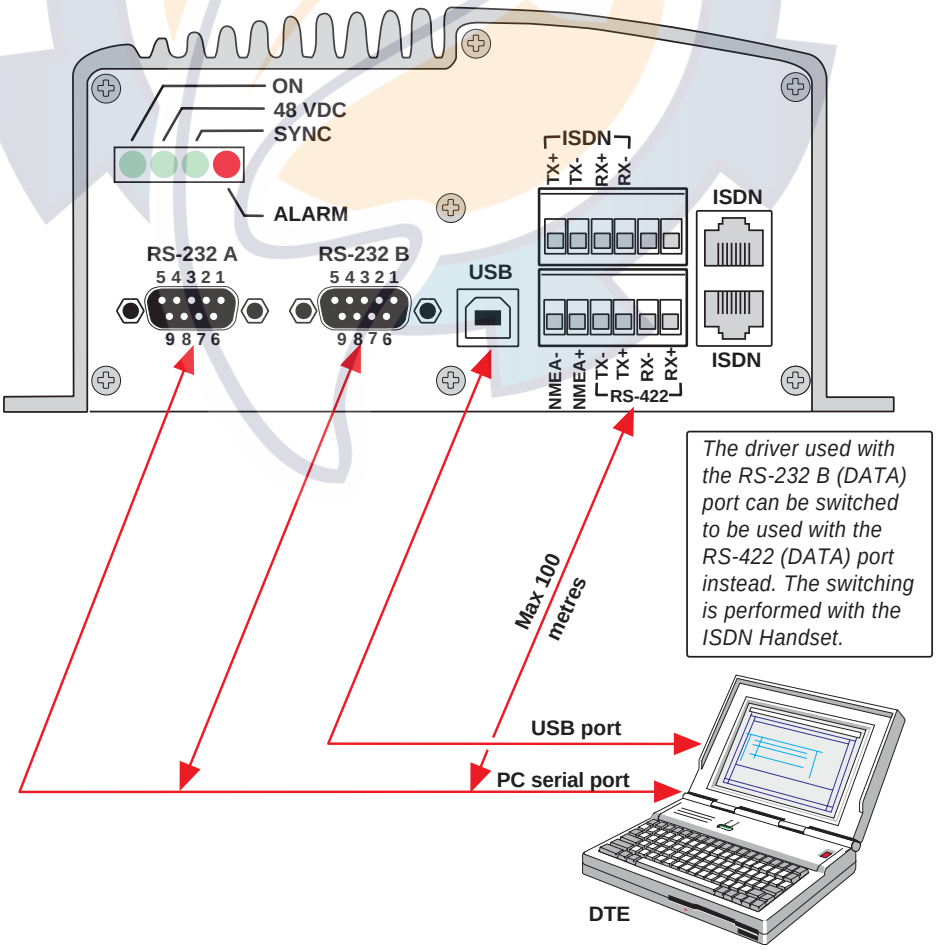
4.1 Installing the PC program

The **vtLite Mobile** program allows FELCOM 30 to be operated or configured from a PC, including functions such as:

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

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

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



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Procedure:

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

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

a. Open the “vtLite 6.2” folder.

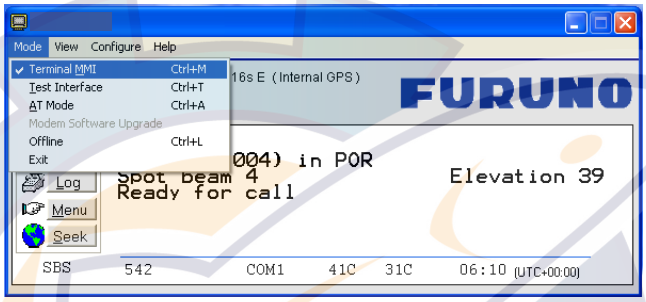
b. Double-click the “setup.exe” icon and follow the instruction displayed.

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

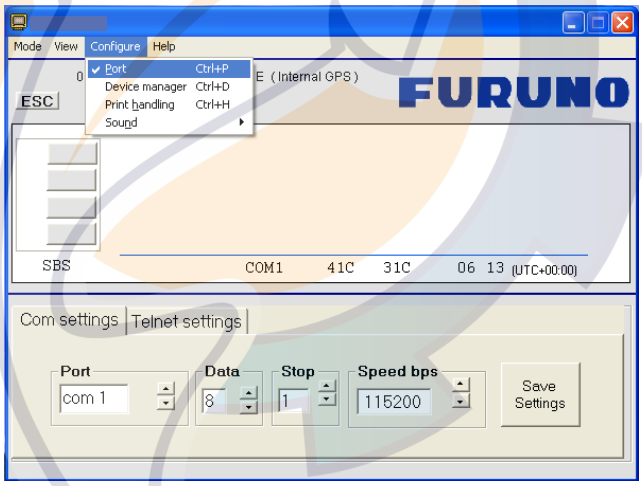
3 Connect the serial cable between the PC serial port and one of the RS-232 ports on the FELCOM 30 Communication Unit. *See previous page*.

4 Switch ON the Communication Unit.

5 Start the vtLite Mobile program by clicking **Start>Programs>vtLite Mobile**. If no contact, click **Mode>Terminal MMI**.



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



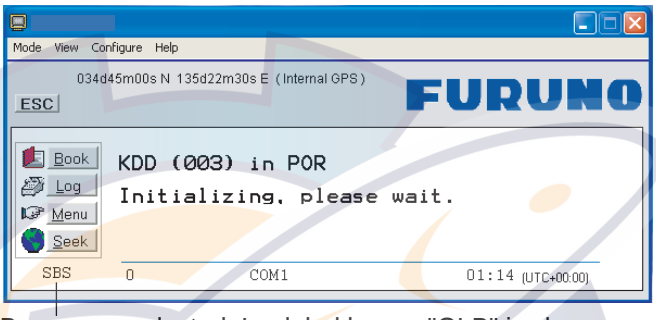
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4.2 Starting up

- Switch ON FELCOM 30. *See figure on page 2-2 for location of the ON/OFF switch*.
- Turn ON the PC and click **Start>Programs>vtLite Mobile**.

Note: The vtLite can only be used on one PC at a time.

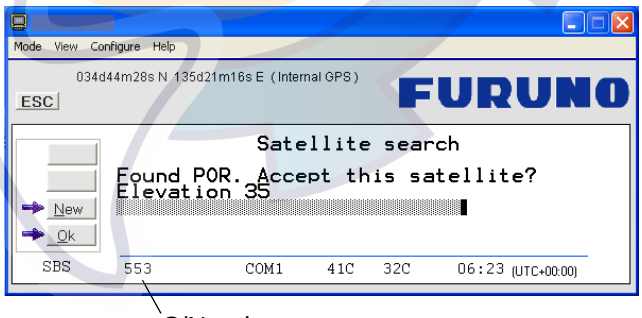
1 The satellite search program is initialized.
*See also **"3.2 Satellite search"**.*



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

2 FELCOM 30 starts searching for **last known satellite/elevation** (Ocean Region) as default.

3 When receiving a satellite signal, a signal strength bar will appear in the search window.
The longer the signal bar or higher the signal strength indicator value, the better the signal quality. The maximum marker indicates the highest signal strength achieved during the current search.



S/N ratio

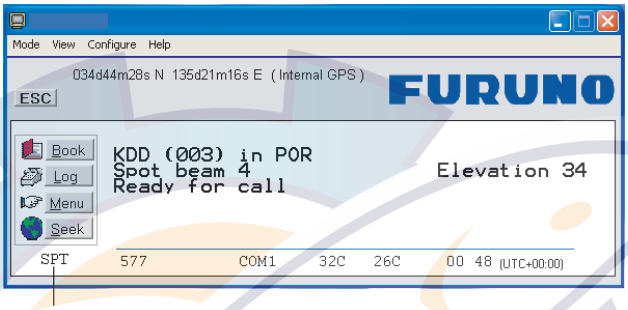
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Note: It is recommended that the signal strength reading (**S/N**=**S**ignal/**N**oise ratio) should be at least 500, typically 540. The antenna will automatically fine-tune to the best signal and accept it.

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

*See also **"5.4 Selecting default Net service provider"**.*

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



SPT is shown with a spot beam selected.

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

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4.3 Phone book

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

Phone book capacity

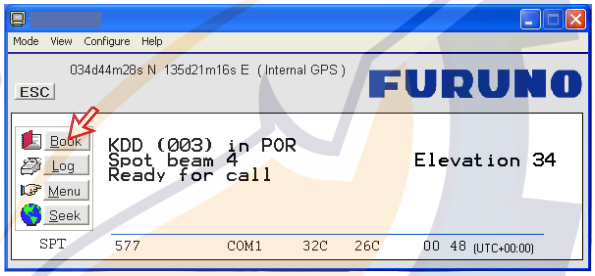
	CU	SIM card (Data vary with card type)
Phone numbers:	100 entries	100 entries
Number length:	19 digits	19 digits
Name length:	29 characters	12 characters
Entry numbers:	0 – 99	100 and up

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**.

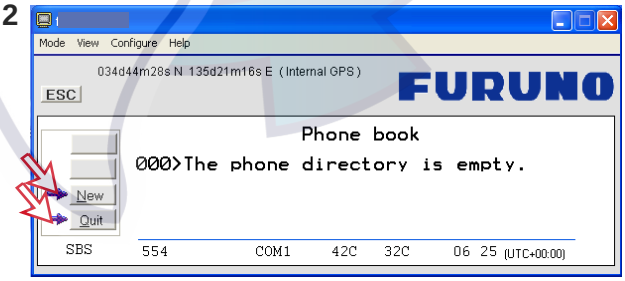
1



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 10.

2



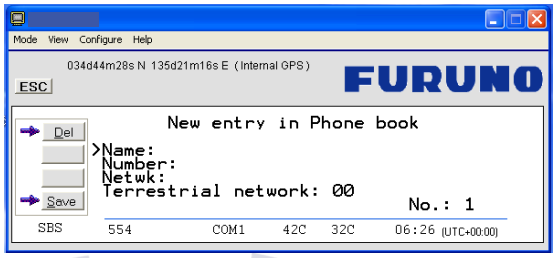
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Adding or editing entries

3 Clicking **New** (window **2** on previous page) opens the window used to add an entry to the book.

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.

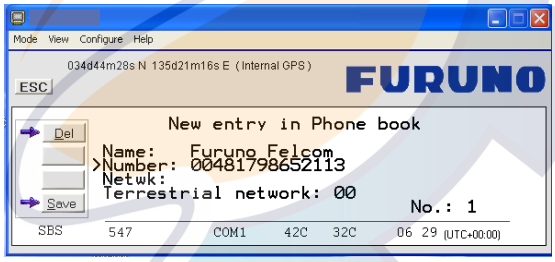
Netwk=Net provider

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

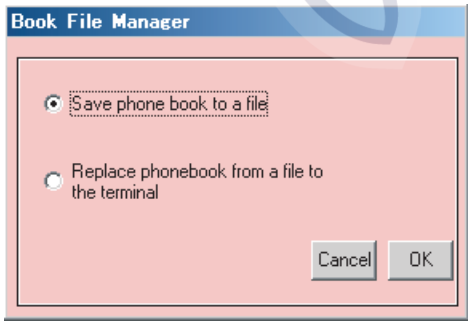
It is possible to change Terrestrial network on the selected Net provider (00 is most common). Call your Net provider for more information.

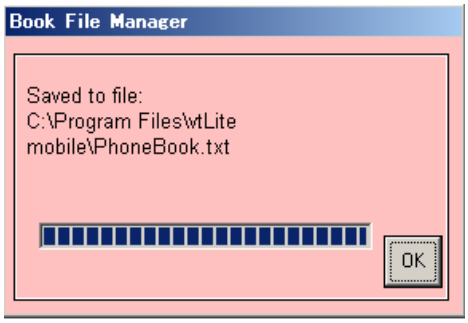
4



Saving entries to/from PC (Owner level only)

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





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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:

- Speech
- fax
- data

Packet switched data calls (Mpds) including:

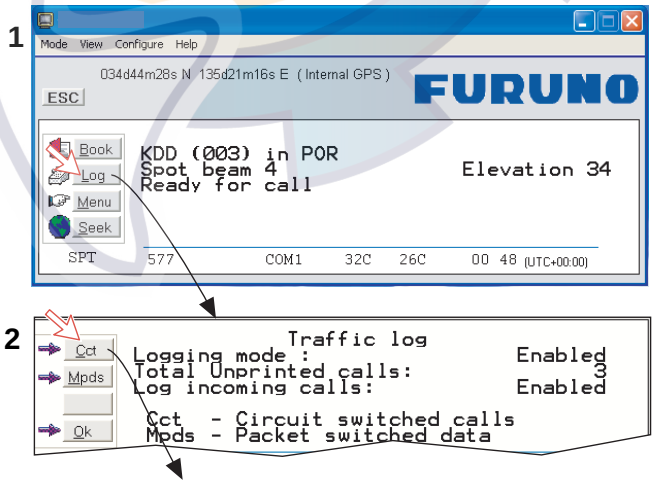
- Mobile Packet Data Service calls

The FELCOM 30 owner may set the log output mode as follows, *(see **"4.5 Traffic log settings**"):*

- paused
- cleared (stops logging and clears the log)
- enabled

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.)

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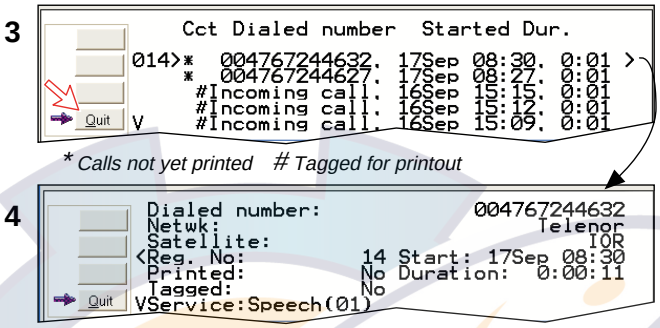
Circuit switched calls:

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:

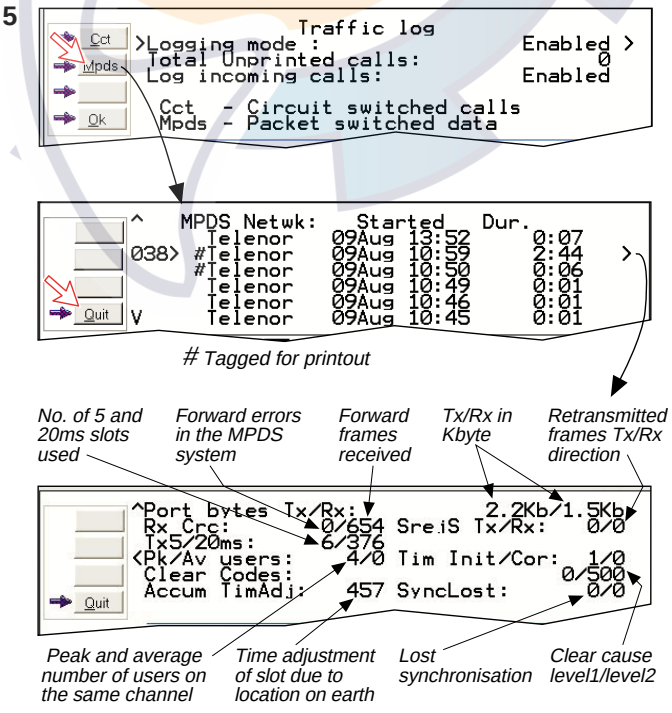
5 Clicking **Mpds** displays the list of *Mobile Packet Data Service* calls.

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.



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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.

- Click **Edit** or ⇨ to open **Logging mode** window.
- **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

Scroll ⇧/⇩ to wanted mode, and click or press ENTER to select.

- Scroll down ⇩ to **Log incoming calls** and click **Edit** or ⇨ to enable or disable logging of incoming calls. Press ENTER to select.

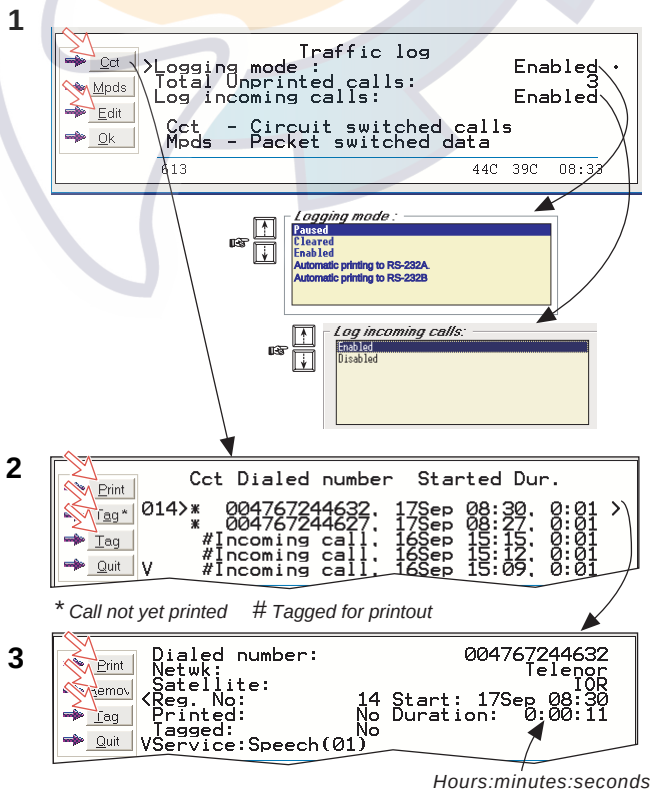
Circuit switched calls:

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.



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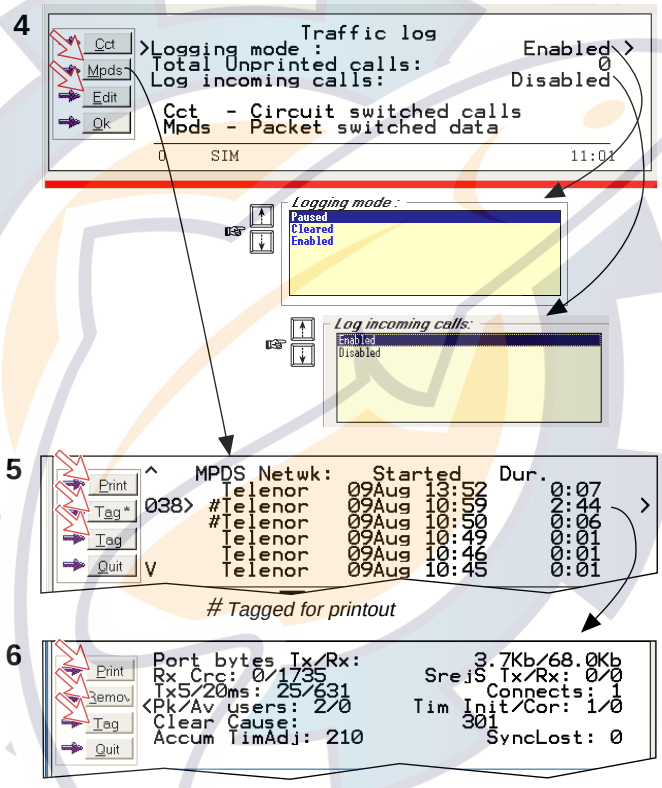
Mobile Packet Data Service calls:

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.

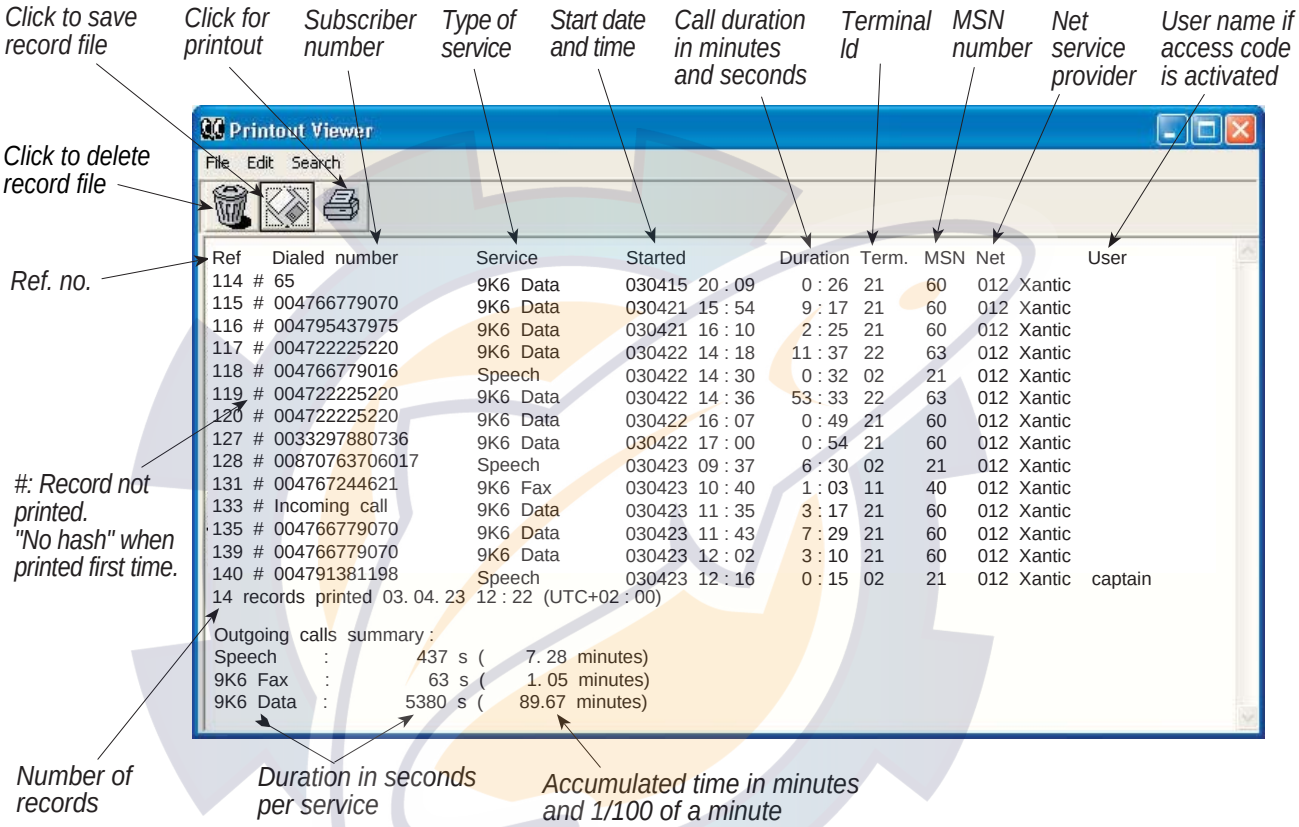


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4.6 Traffic log printout viewer

4.6.1 Normal calls (Cct)

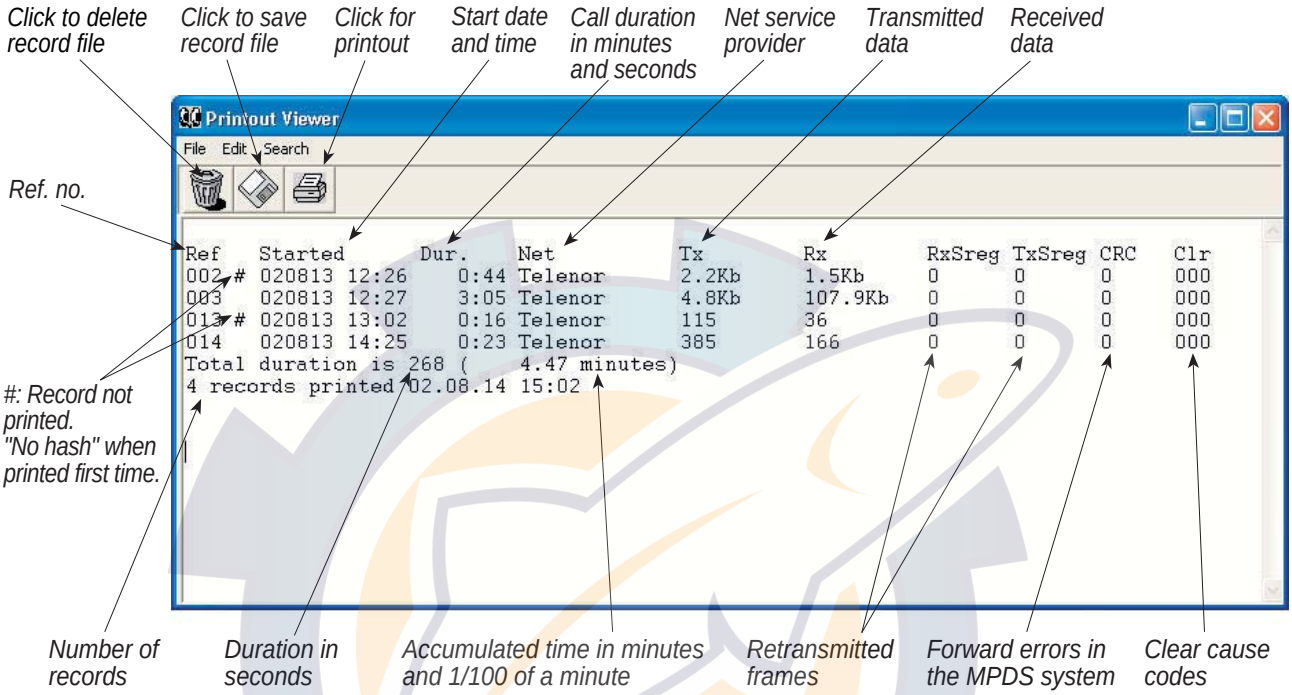
The viewer lists tagged call records. Records that have not been printed out are marked with a hash. The record file can be printed out or saved to disk. For default setup, *see "**5.15 Print handling setup**".*



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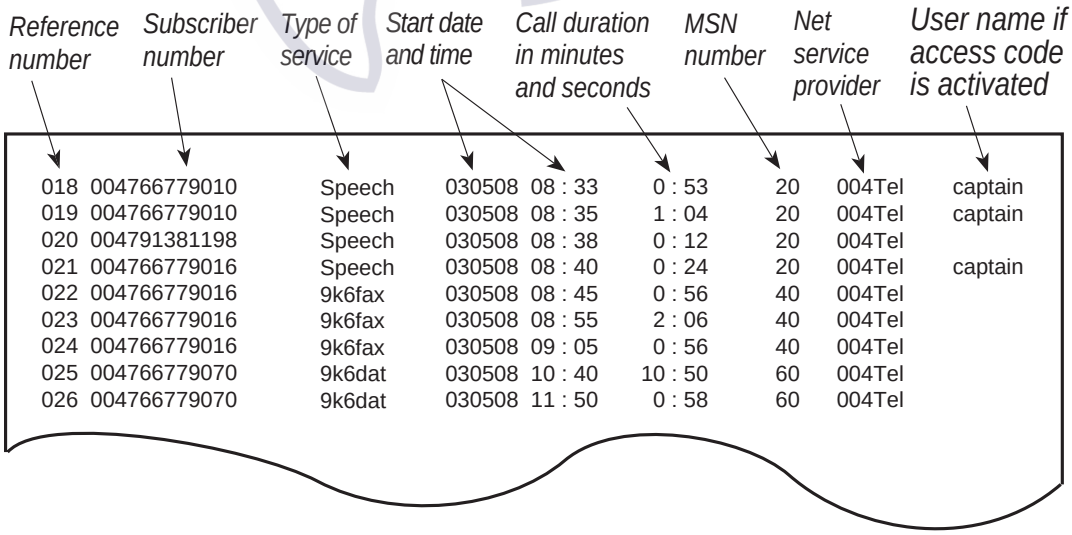
4.6.2 Mobile Packet Data Service calls (MPDS)

The viewer lists tagged call records. Records that have been not printed out 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 output to serial printer

When connected, traffic log details are automatically output as indicated below. One line is printed out after each call.
*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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4.8 Telefax service

General

FELCOM30 provides access to Group 3 telefax service via Terminal Adapter. The transmission rate is 9.6 kbps.

Limitations

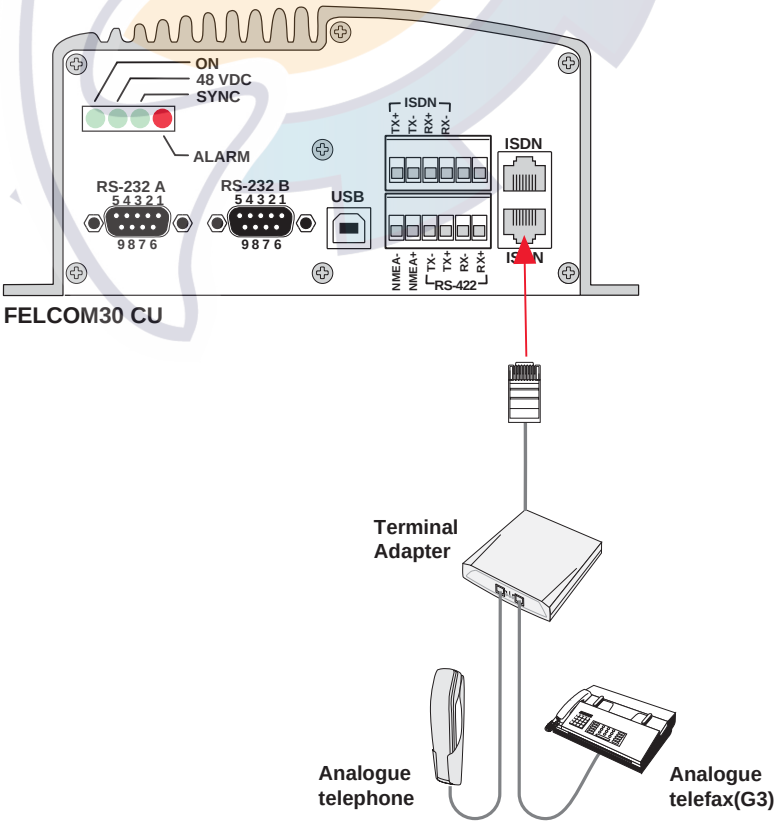
FELCOM30 is fully compatible with the world's leading telefax machines and telefax software standards. However, transmission may not be possible through some of the telefax machines available on the market. Please check with your Net service provider/FURUNO Distributor before purchasing a telefax for use with FELCOM30.

Transmission

Telefax calls made by FELCOM30 are telefax only. Any telephone handset connected to the telefax machine can not be used.
To send a fax, use the same dialing sequence as when making a call. See *"**2.12 Various call procedures**" earlier in this manual.*

> *Note! On a telefax with keypad, enter # as the last digit before starting transmission.*

Telefax transmissions normally take 1 minute per standard text page using standard resolution. Using superfine or halftone resolution will double the transmission time. To save time, avoid using a separate cover page.
If a call failure should occur while sending a multi-page document, re-send only the failed pages.



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4.9 Data service

9.6 kbps data transmission

FELCOM30 provides access to asynchronous data services through its built-in modem capability. The transmission rate over the satellite is 9.6 kbps, and any standard PC with a serial port can be used.

Installation

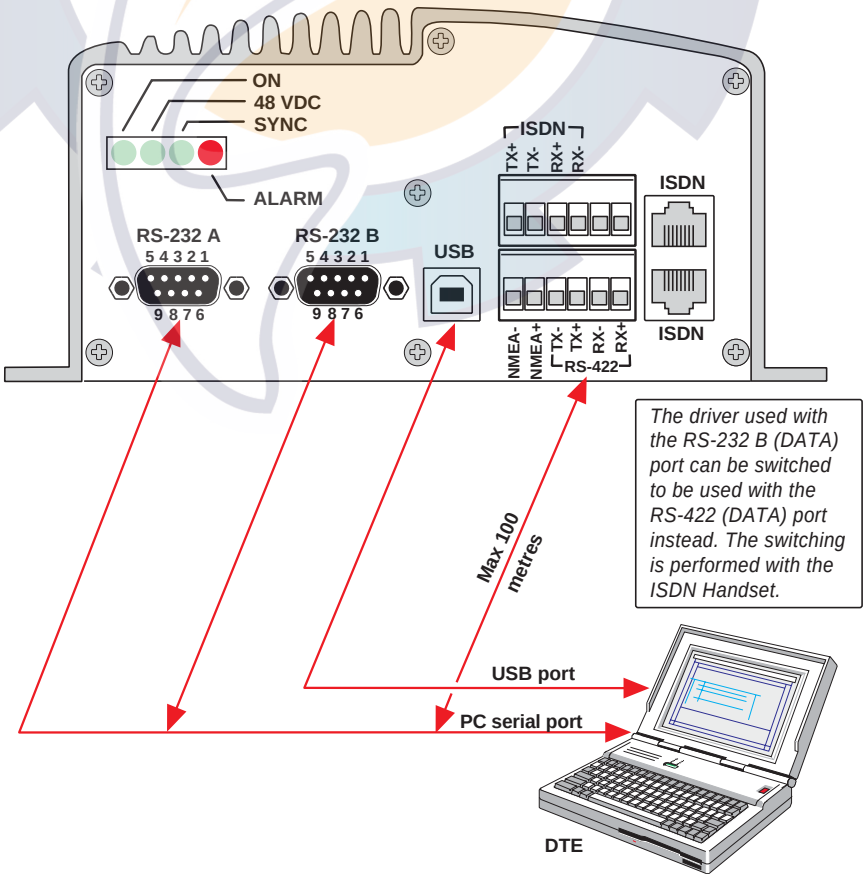
Connect the RS-232 serial cable between the serial port on the PC and one of the 9-pin **RS-232** ports on the FELCOM30 CU.
*For connecting up and configuration, see "**6.1 Mobile Packet Data Service (RS-232)**" or "**6.2 Mobile Packet Data Service (USB)**".*

Compressed data transmission

Built-in V42 bis/44 compression provides up to 4x9.6 kbps increase in transfer speed between FELCOM30 and shore of:

-text files
-web browsing
-e-mail

This mode takes affect when the remote end is prepared for communication using the V42 bis/44 modem protocol.
FELCOM30 will compress data if possible. No setup is needed.
*For more information, see "**6.5 Data Service with Compression**".*

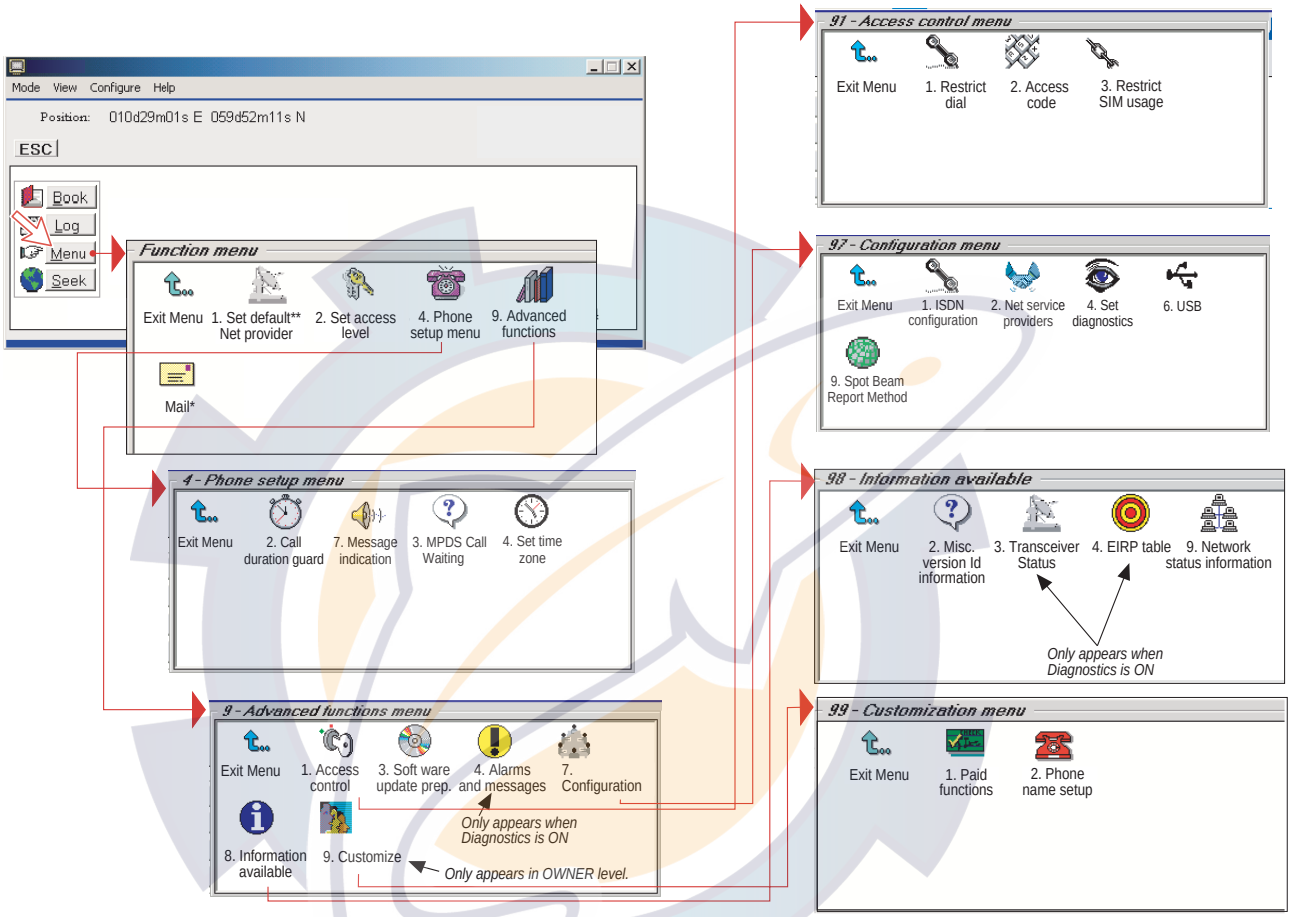


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5. CONFIGURATION FROM PC

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.

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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 9.6 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 30.*
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 chapter 7.*
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.*
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.*

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5.3 Access level

The FELCOM 30 user program (vtLite Mobile) 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 30 in operation.

5.3.1 Activating/Changing user PIN code

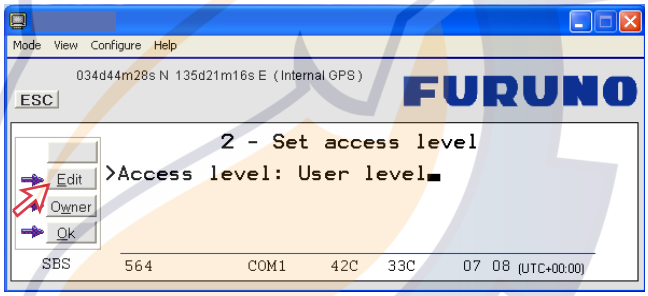
1 Double-click the **Set access level** icon on the **Function menu**.

1



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

2

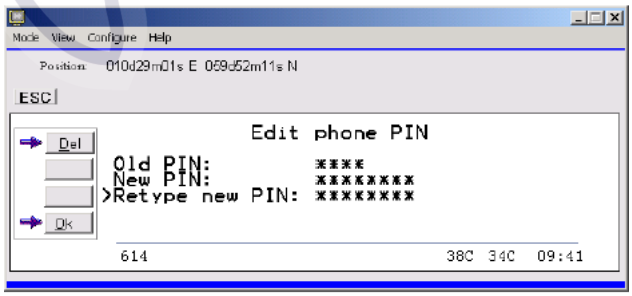


3 Key in:

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

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

3



Note: Clicking **Ok** without entering any numbers for **New PIN** and **Retype new PIN** disables the PIN code.

Note: The **Old PIN** code must be entered to reactivate the previous PIN code.

Note: If the PIN is accidentally lost, it is possible to reset the user's password to default (1234) by logging in as owner:
"[*] + owner's password" (Resetting is not possible on SIM card.)

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5.3.2 Functions requiring owner level

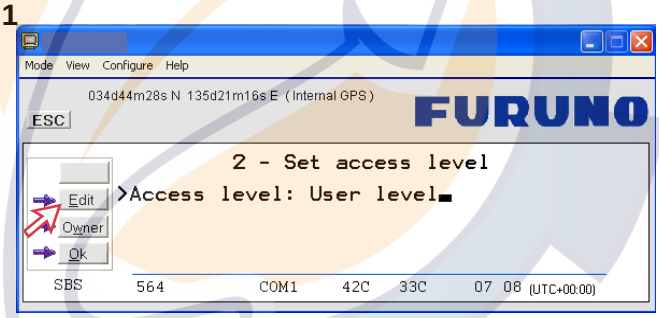
Programming of the functions below requires that the user access is set to **OWNER LEVEL:**

- 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.

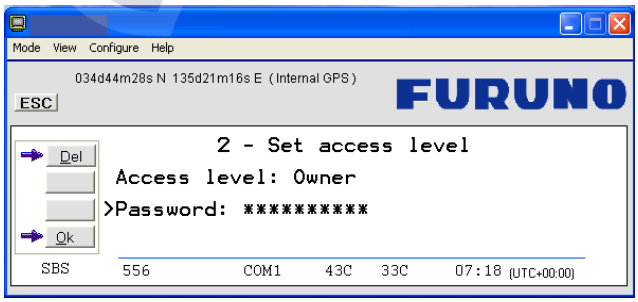
1



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



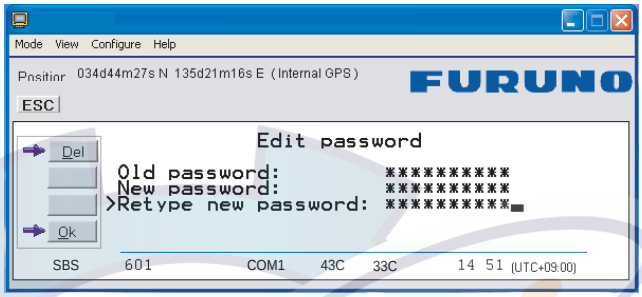
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Changing owner level password

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** for each entry and store new password.

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

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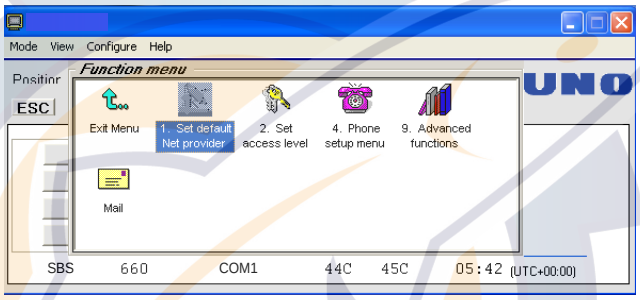
5.4 Selecting default Net service provider

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:

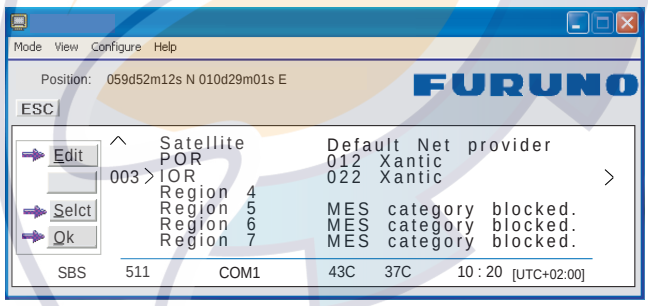
1 On the **Function menu**, double-click the **Set default Net provider** icon to display the current selections.

1



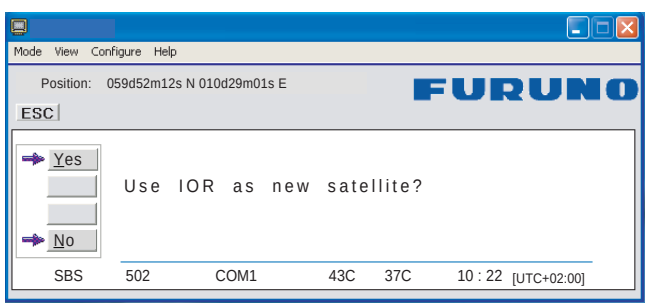
2 Scroll up/down to change satellite: ↑/↓.

2



3 Clicking **Selct** or pressing/opens the window promting 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.

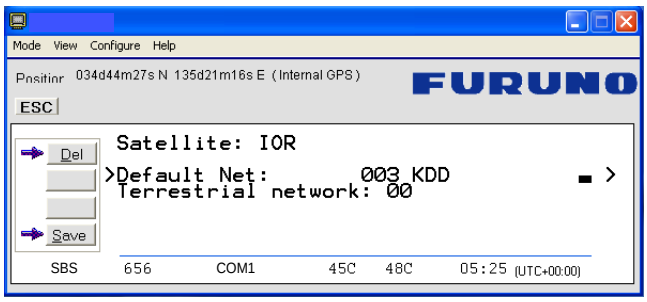
3



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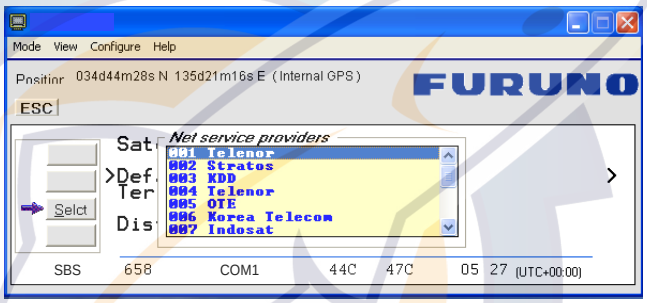
4 Clicking **Edit** or pressing [→] at the satellite region selected in step **2**, displays the list of available Net service providers.

4



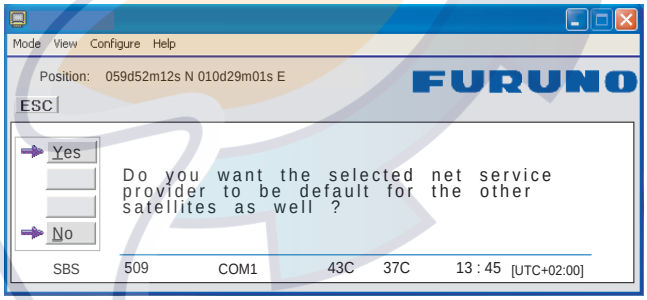
5 Scroll to required Net provider: [↑]/[↓], and press [↵R] to enter chosen Net as default.
Save stores the selected Net provider for this satellite (Ocean Region).

5



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

6



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5.5 Phone setup

This phone setup menu includes the functions:

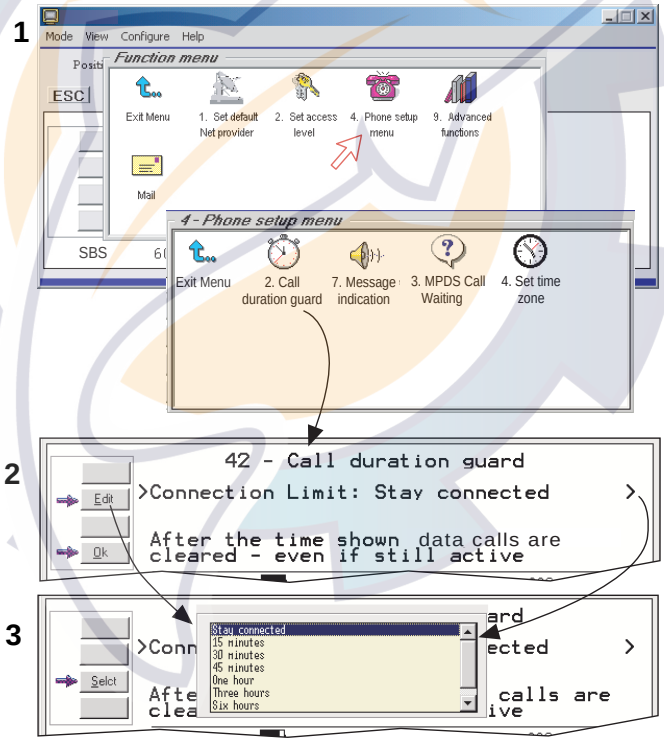
- Limitation of call duration
- Setting time zone
- Indication of received calls(See next page.)

*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 **Selct** to store the setting.

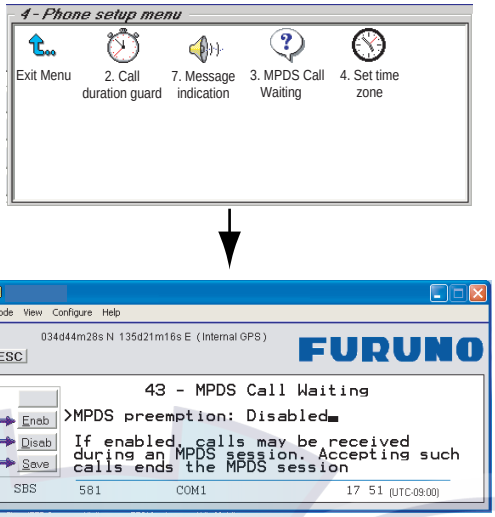


MPDS call waiting

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.

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



2 Click the **Enab** or **Disab** button.

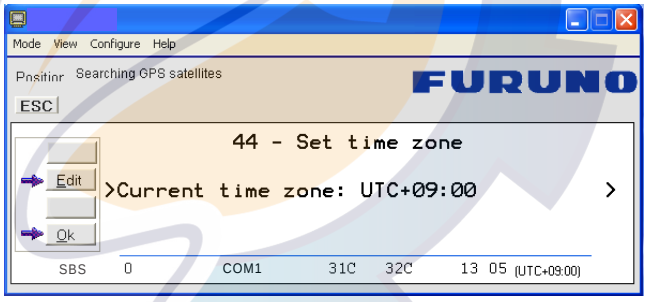
3 Click the **Save** button to store the setting.

Setting time zone

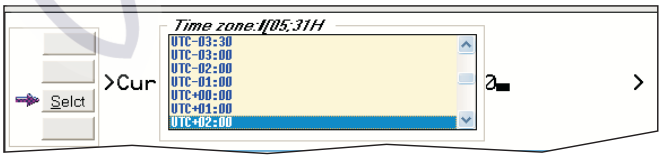
The function sets the time displayed in the windows.

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

2 Press the **Edit** button to open the List.



3 Scroll ↑/↓ to select the required zone. Click **Selct** to store the selected zone.



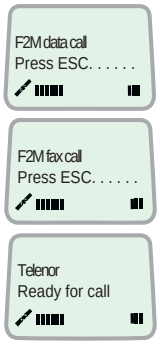
Message indication

When the Massage Indication function is set On, a received data and/or fax call is signaled in all FELCOM 30 Display Handsets:

♫♫♫ ♫♫♫ ♫♫♫ ♫♫♫ ....

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



Data call:

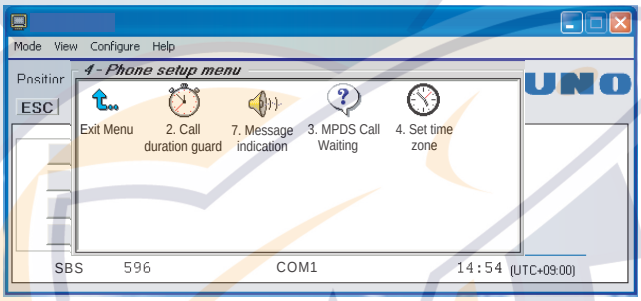
Fax call:

(F2M = Fixed-to-Mobile)

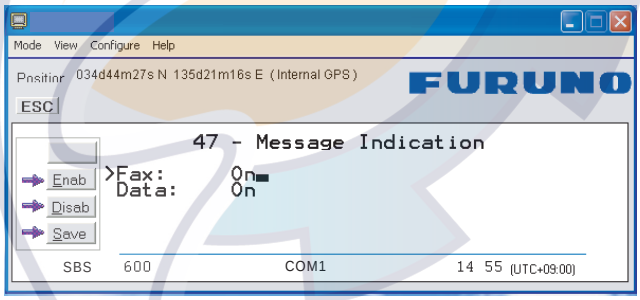
When the call is finished, the display reverts to idle.

Setup:

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



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

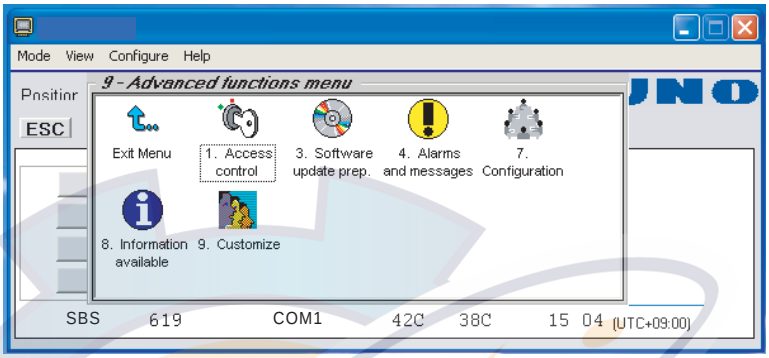


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5.6 Advanced functions

"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
  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

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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 30 for dialing from Phone Book only. The restricted dialing modes prevent misuse of FELCOM 30.

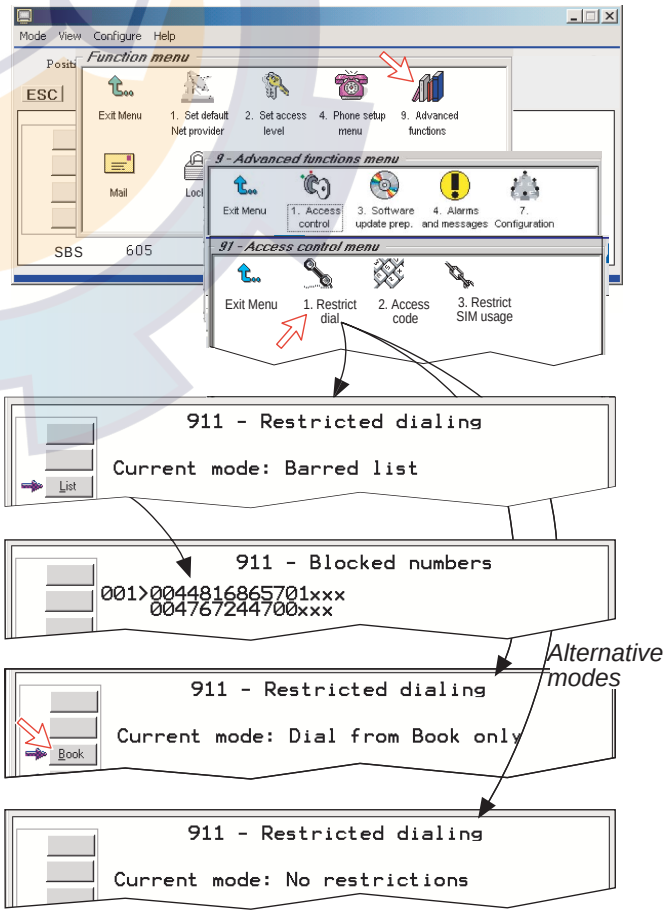
- **Barred list**, which may contain up to 10 phone numbers or part of numbers that **can not** be called. E.g. the entry "0087" in the barred list prevents all mobile-to-mobile calls.
- **Dial from Book only**, which restricts calls to the numbers in FELCOM 30 Phone Book. It is still possible to append: 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*



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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.

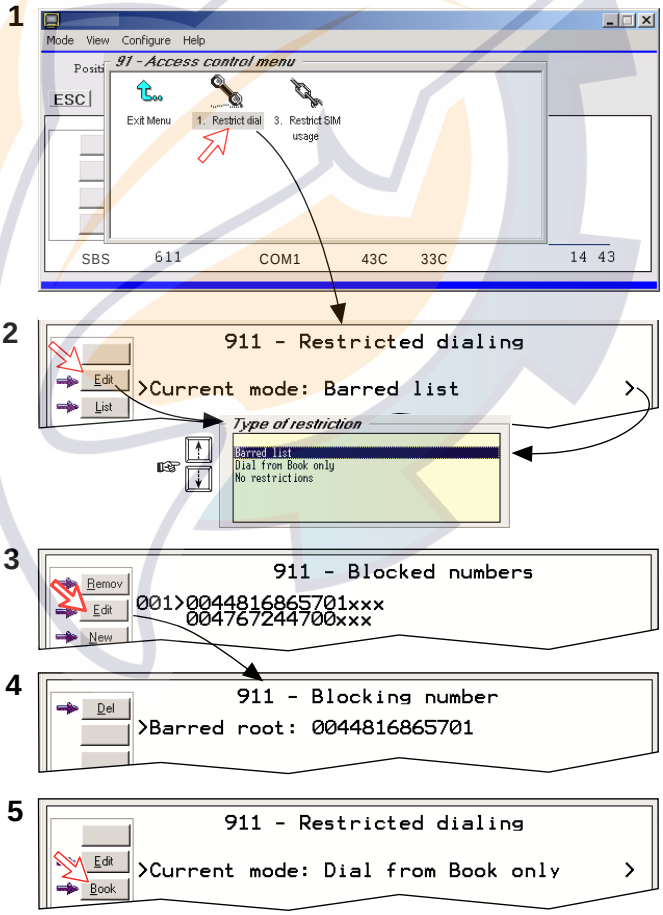
2 The **Restricted dialing** window shows which list is currently active.
Edit allows selection of restriction mode. Scroll up/down to select.
(**Selct** enters the chosen mode)

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.

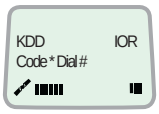
Note: Remember to revert to **user** level



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5.7.3 Access code (owner level only)

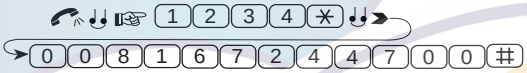
Access code can be activated for 4.8 kbps speech only.
When the access code function has been activated, the user is always prompted for a 1-8 digit personal code when making a call.
*All telephones are activated. To release a telephone for use without access code, see **"5.13 MSN configuration"**. Entering the personal code allows the subscriber number to be dialed, e.g.:*



ISDN Handset:

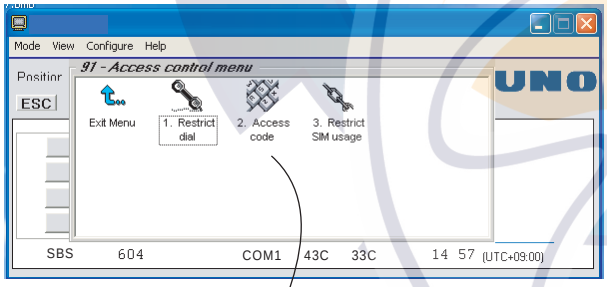


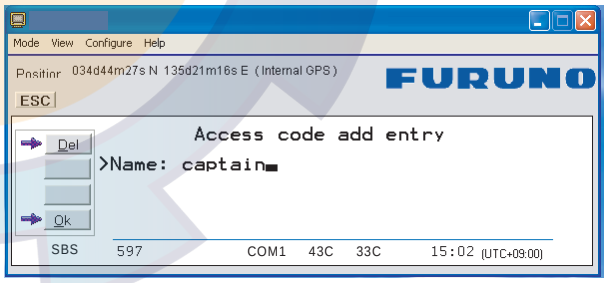
Analogue telephone:

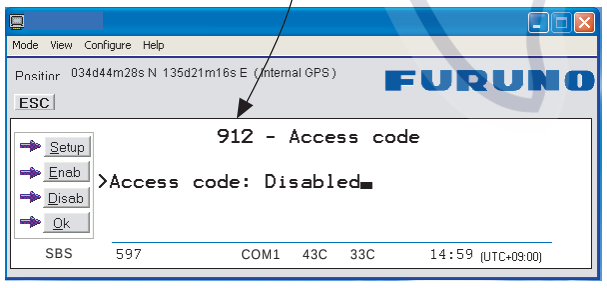


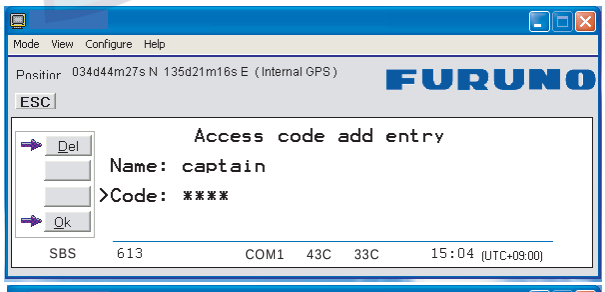
Setup:

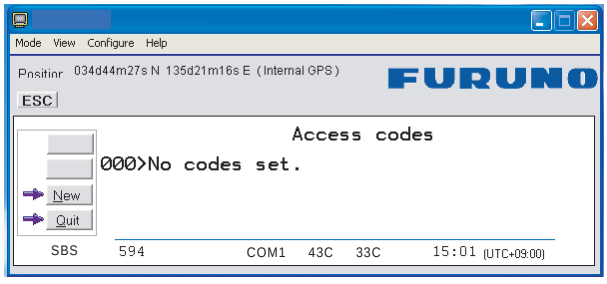
1. Double-click the **Access code** icon in the **Access control menu** and press the Setup button.
2. Pressing **New** opens the **Access code add entry** window, allowing a name associated with the particular code to be entered.
3. Pressing **Ok** allows entering the personal code. Pressing **Ok** 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.

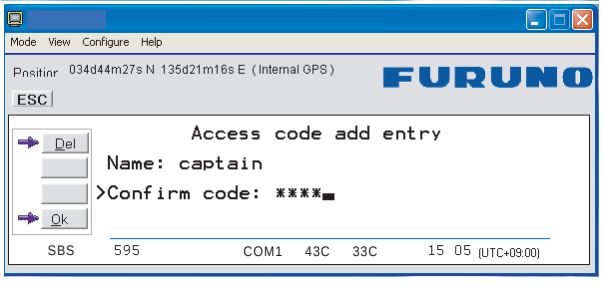












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5.7.4 Restricted SIM usage

Allowed SIM
FELCOM 30 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 30 for operation from a specific card only.

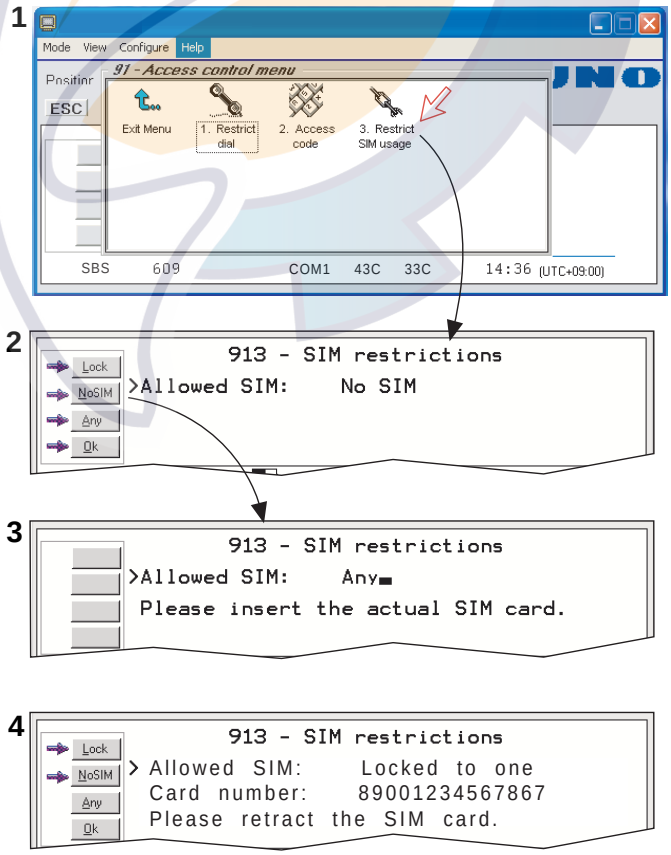
Lock SIM:

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

FELCOM 30 can now be operated with that specific card only.

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

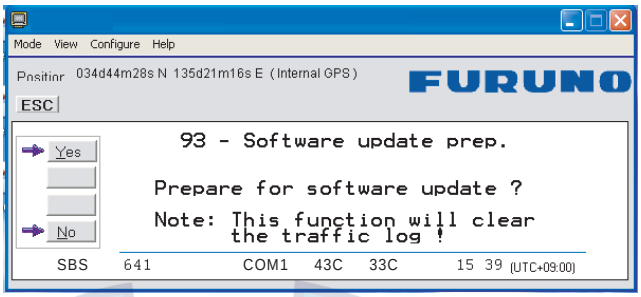
Ok stores the settings.



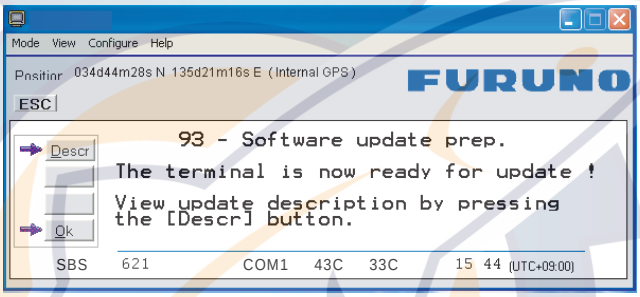
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5.8 Software update preparation

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.

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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 30.

3 Press the up or down arrow key to select a 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**

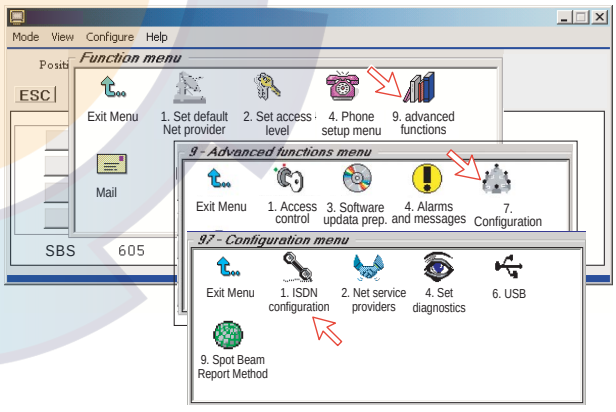
The layer 2 connection is deactivated after some idle time as default. Some ISDN devices interpret this as an alarm situation. Layer 2 deactivation can then be disabled.

- **Default service**

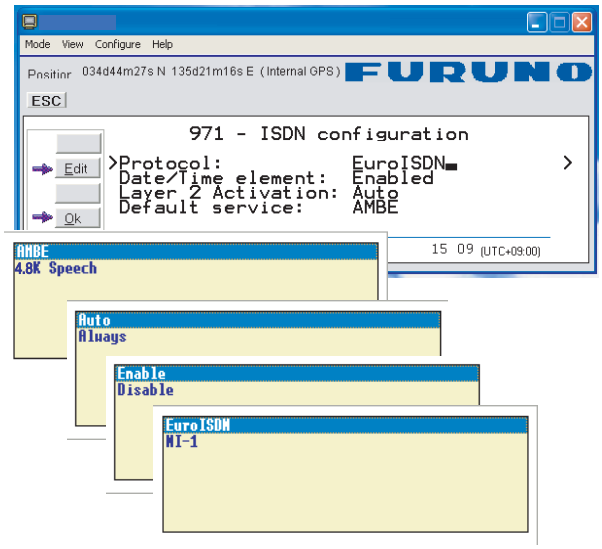
Some ISDN devices can not signal their own MSN number. Such a phone will be able to use the 64 kbps service since all “unknown” speech devices are required to use the 4.8 kbps speech service. The user can set FELCOM 30 to map all “unknown” devices to 4.8 kbps speech service.

Note: Remember to revert to user level.

1



2



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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.

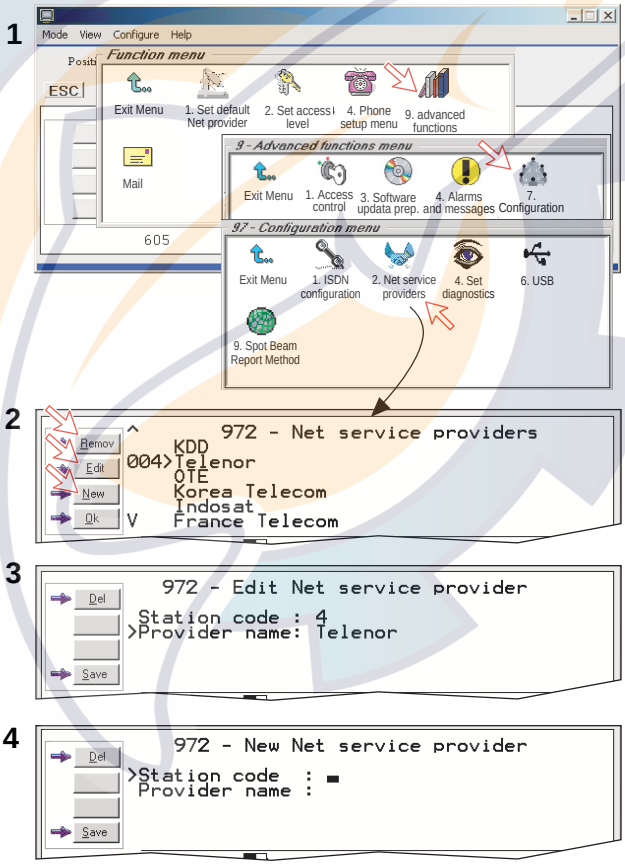
Remov deletes entry.

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.



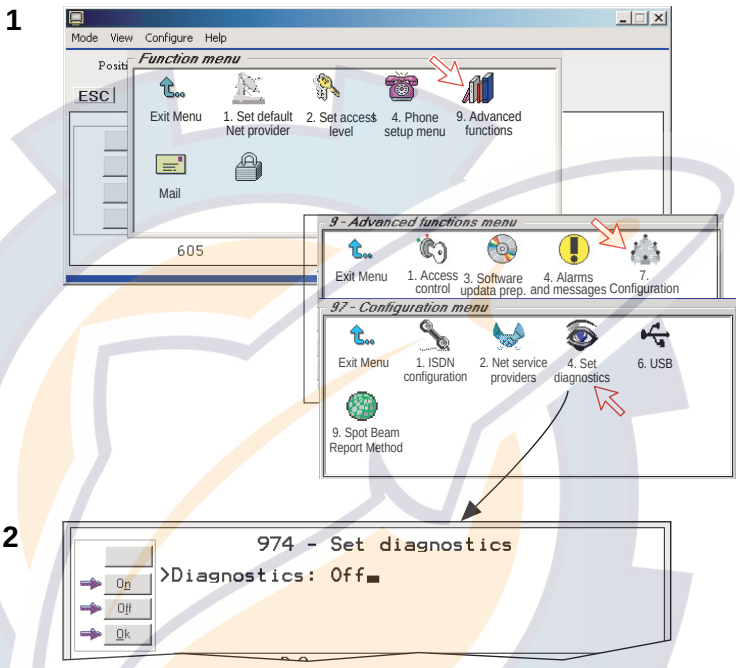
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5.9.3 Set diagnostics

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

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

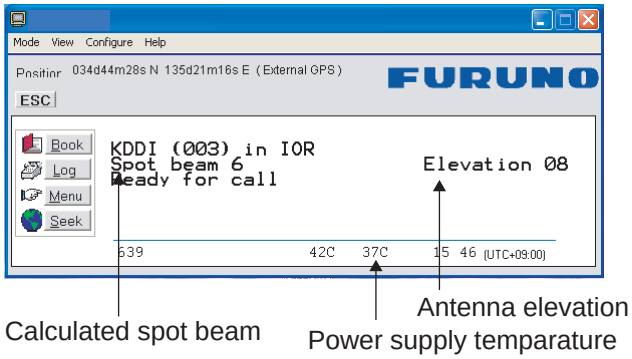
1 Double-click the **Set diagnostics** icon via the **Function menu > Advanced functions menu > Configuration menu**.
2 Click **On** or **Off** as required.



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

- Alarm and message icon (menu 9)
- Transceiver status icon (menu 9-3)
- EIRP table icon (menu 9-4)
- Power supply unit temperature
- Calculated spot beam
- Antenna elevation

When pointing at the time indication, a popup window shows the year and date.



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5.9.4 Dual-port USB

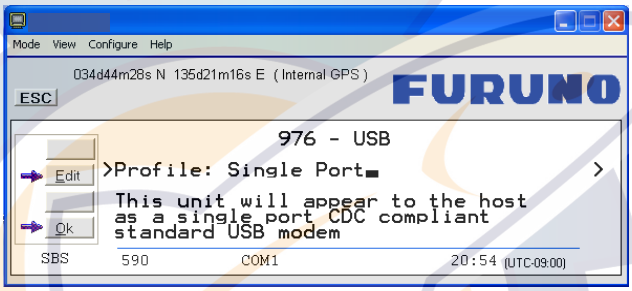
The Dual-port USB allows several programs to operate at the same time via a single USB port. Connect a USB cable between the USB port of the communication unit and the USB port of PC.

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

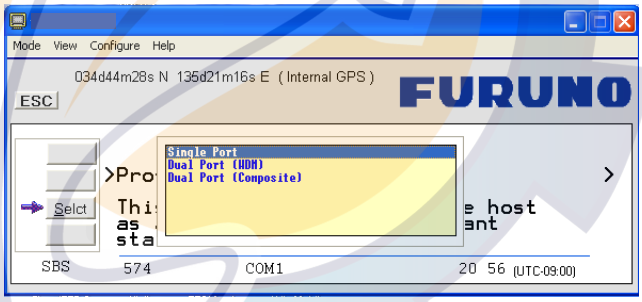
The default setting is “Single port”.

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.

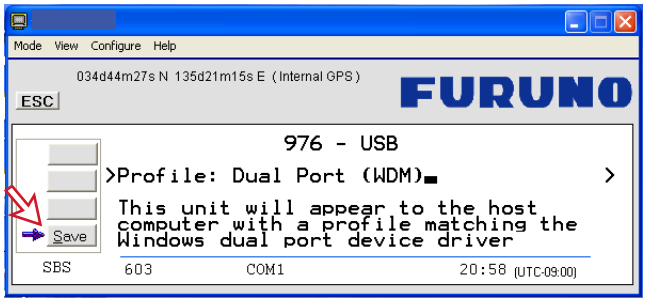


- Single port: This unit will appear to the host PC as a single port CDC compliant standard USB Modem.
- Dual port WDM: This unit will appear to the host computer with a profile matching the Windows dual port device driver.
- Dual port (composite): Not in use.

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

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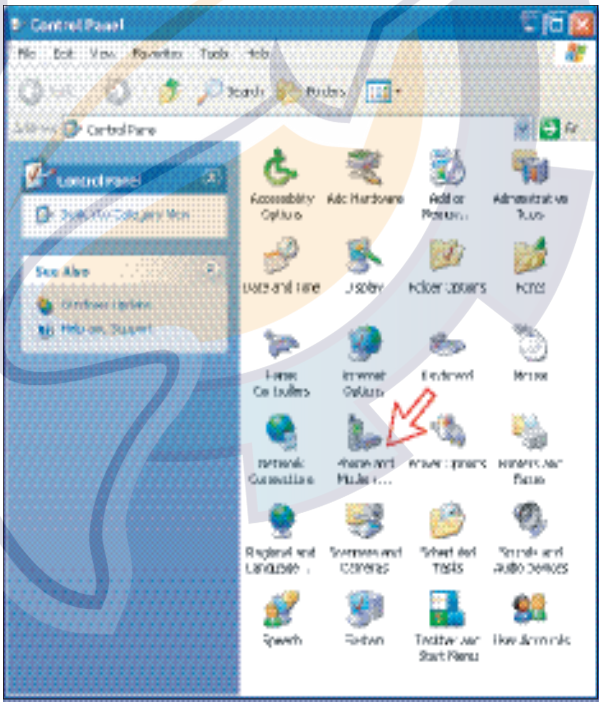
4 Clicking **Save** opens **Welcome to the Found New Hardware Wizard** which allows the selection of new USB drivers required to achieve parallel operation via the USB port.



5 The **Welcome to the Found New Hardware Wizard** installs the **Nera dual port modem** driver required for Dual Port operation.
*Click **Next** and then **Finish** to complete the installation.*

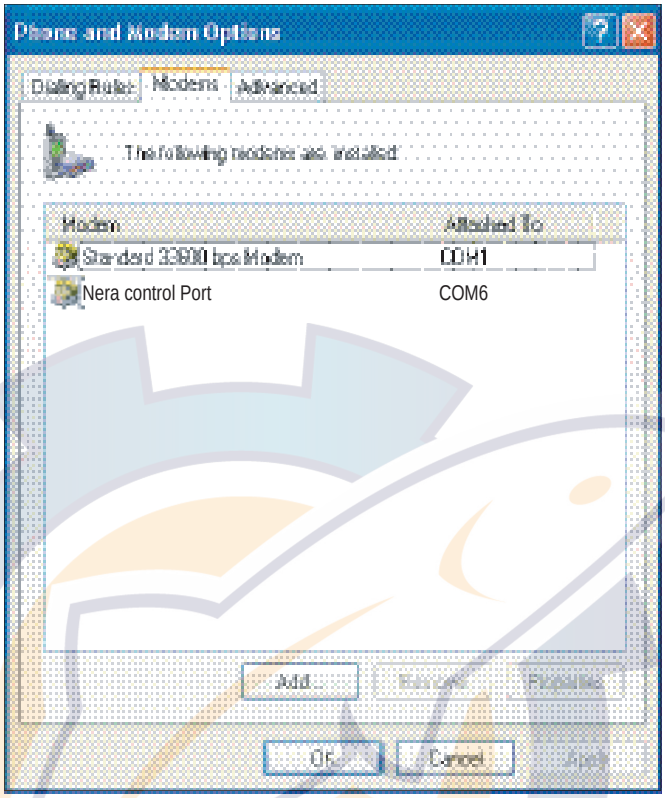
6 The **Welcome to the Found New Hardware Wizard** now automatically reopens for installation of the **Nera control driver.**
*Click **Next** and then **Finish** to complete the installation.*

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

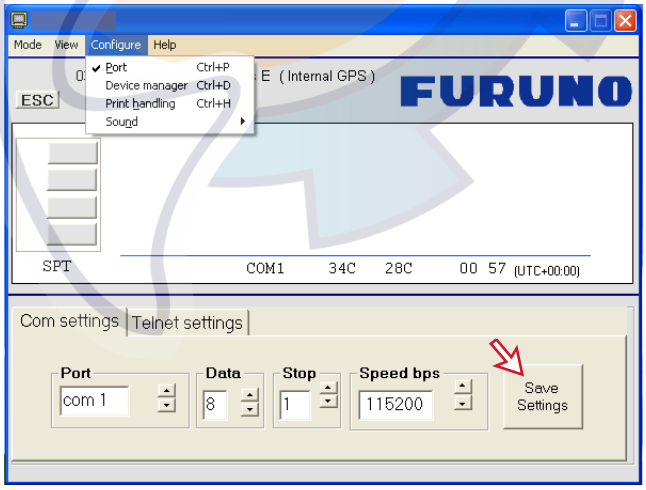


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8 Clicking the **Modem** tab shows the new driver installations (examples):
COM6 to be used for vtLite Mobile
COM3 to be used for dial-ups



9 Open **vtLite Mobile** 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 **vtLite Mobile.** 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

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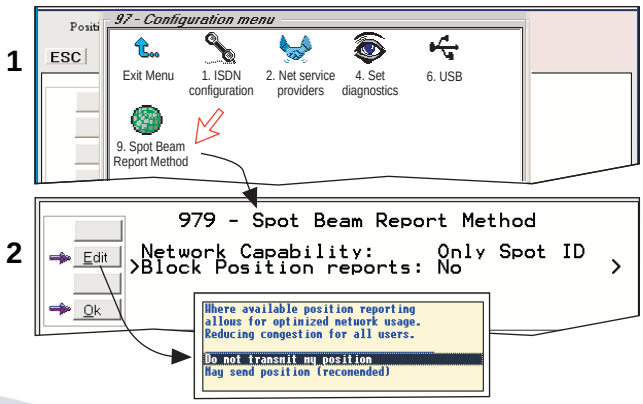
5.9.5 Spot beam report method

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***



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5.10 Information available

Miscellaneous version Id information

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

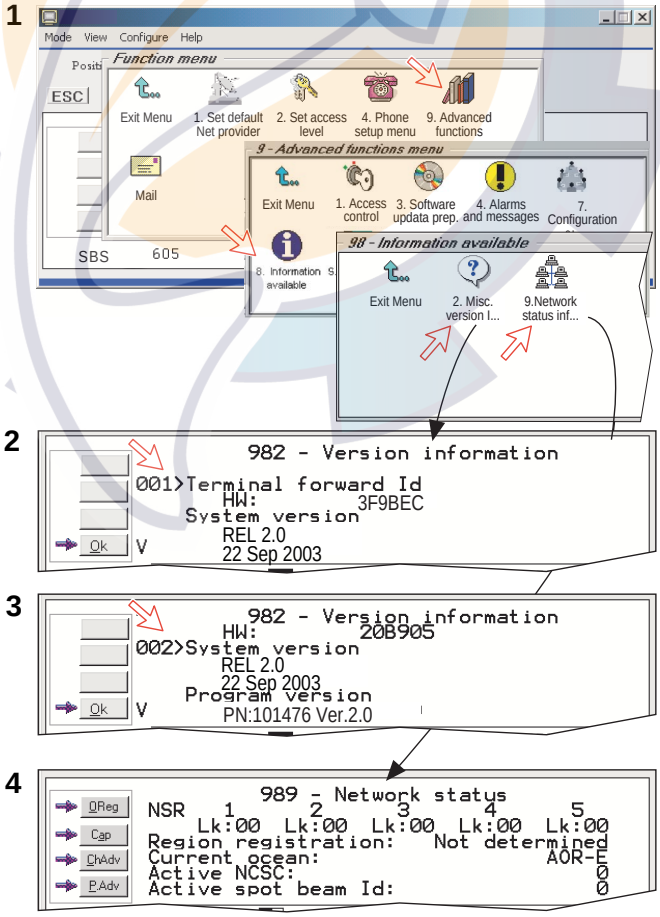
1 Open the **Function menu > Advanced functions menu > Information available** menu.
2 Double-clicking the **miscellaneous version Id information** icon displays the available data.
3 With **Diagnostics On**, pressing ⏎ opens a series of version information windows.

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.



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5.11 Customization menu (owner level only)

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

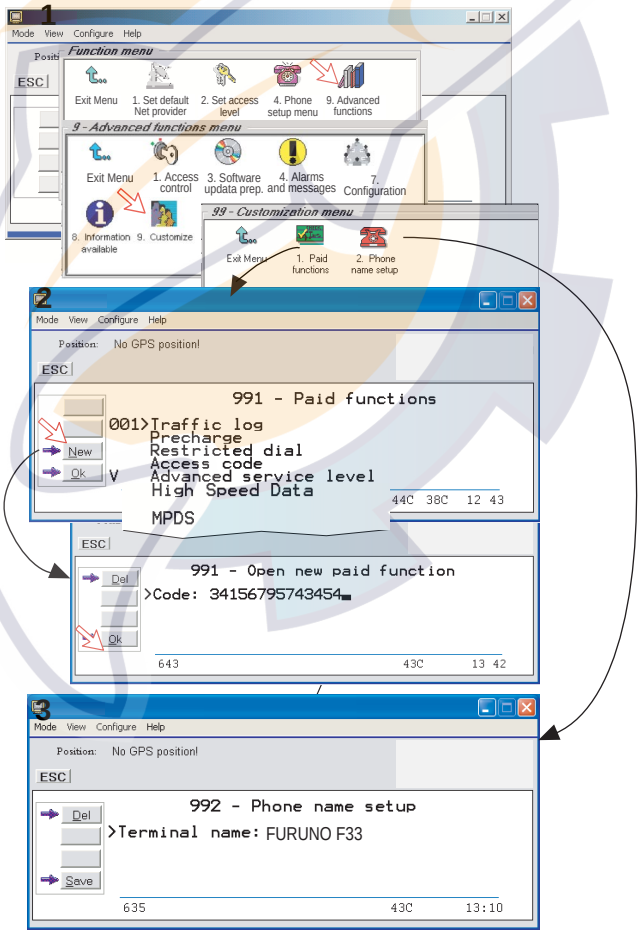
Paid functions

This function is not supported by the FELCOM 30.

Phone name setup

2 Double-clicking the **Phone name setup** icon in the **Customization menu** displays the Phone name, i.e. FURUNO F33. 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.



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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 30 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).

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

VALID TERMINAL IDs AND MSN NUMBERS					
ISDN PORTS		**ISDN/RS-232/USB PORTS**		**9.6 FAX VIA TA**	
4.8 kbps speech		*9.6 kbps data*		*9.6 kbps fax*	
Term.Id	MSN	Term.Id	MSN	Term.Id	MSN
01*	***20****	***21****	***60****	***11****	***40***
02*	***21****	***22****	***61****	***12***	***41***
03*	***22****	***23****	***62****	***13***	***42***
04	23	24	63		
05	24	25	64		
06	25	26	65		
07	26	27	66		
08	27	28	67		
09	28	29	68		
01/20: -first ISDN Handset		*21/60, preset for RS-232A port*		*11/40: -fax on TA*	
03/22 -first ISDN Handset		*22/61, preset for RS-232B port*			
02/21 -analogue phone on TA		*23/62, preset for USB port*			

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Routing of incoming calls (examples)

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

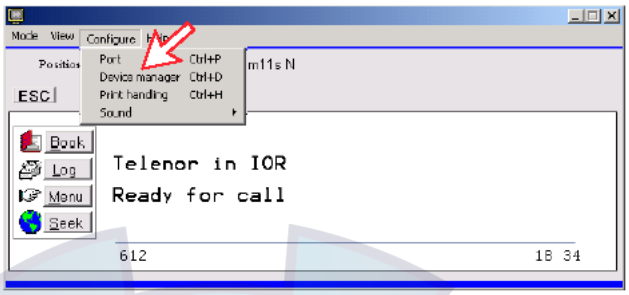
Note: If the Net service provider does not specify which Terminal Id should be used with the various IMN numbers, select Term. Id no.1 for the first 4.8 kbps telephone, then no. 2 for the second phone. Use the same principle for the other type services. It is advisable to note down the selections.

Name		***Service***	***MCU ports***	***Provided by ISP:***	
				Term.Id	***IMN (examples)***
Bridge	*MSN**20**** 	4.8 kbps speech		*01**	762420510
TA	*MSN**21**** 	4.8 kbps speech		***02****	762420511
Bridge	*MSN**22**** 	4.8 kbps speech		***03****	762420512
TA	*MSN**40**** 	9.6 kbps fax		***11****	762420513
Data	*MSN**60**** 	9.6 kbps data		***21****	762420514
Data	*MSN**61**** 	9.6 kbps data		***22****	762420515
Data	*MSN**62**** 	9.6 kbps data		***23****	762420516

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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.*



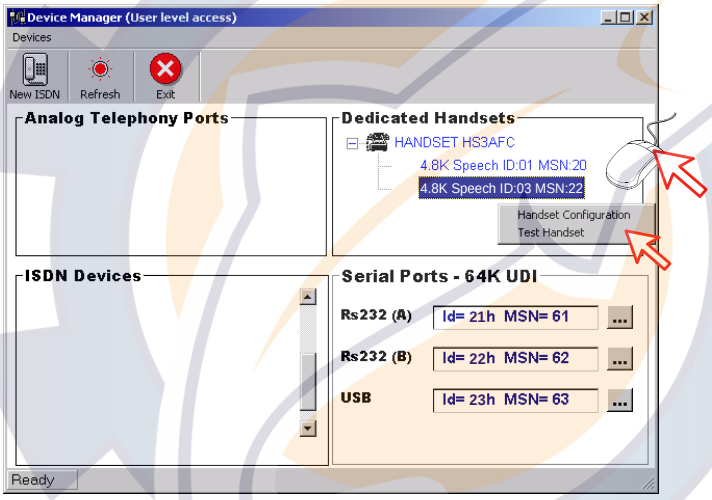
Click to open Device Manager for configuration of ISDN/RS-232/ RS-422/USB.

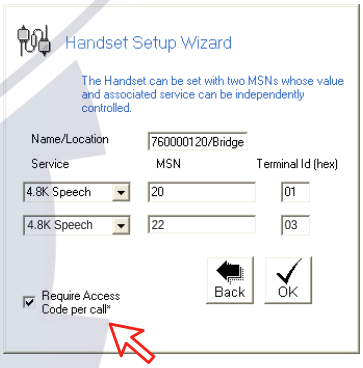
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5.13.1 ISDN Handset

- ISDN Handsets will automatically be configured with Handset MSNs in the Device Manager.
- The first ISDN Handset connected will be given MSN20 and MSN22.
- The next ISDN Handset will be the next available MSNs.
- 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 equipment*





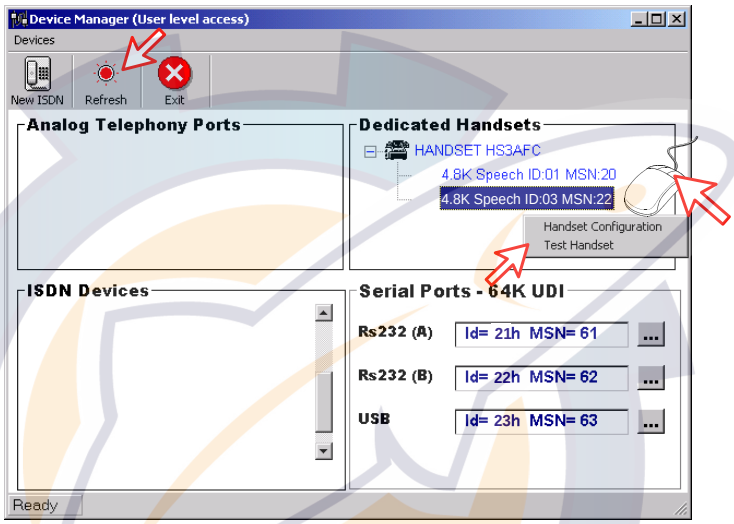
Require Access Code *must be unchecked to allow this Handset to be used without entering a code.*

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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.*

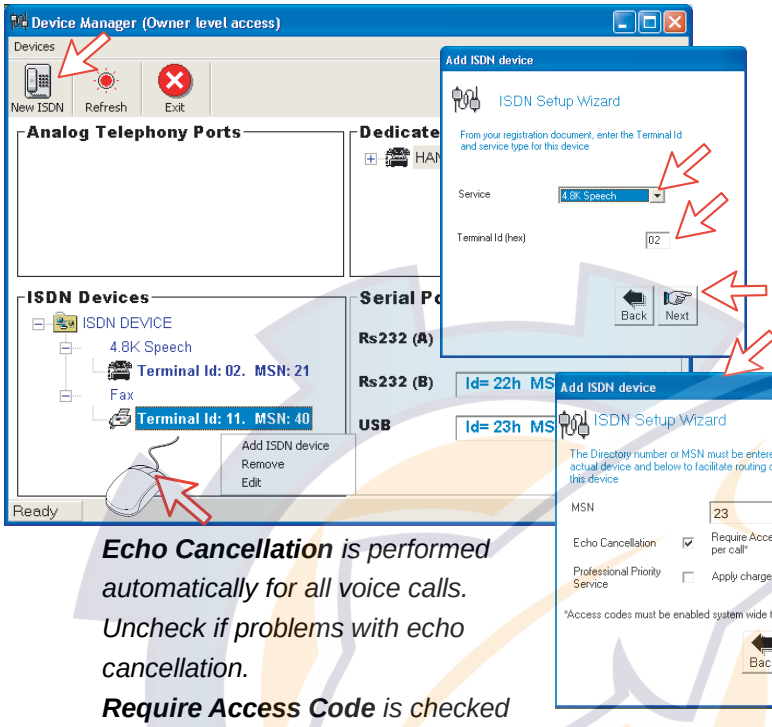


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5.13.2 ISDN port

Selection example: 4.8k speech

*Open device manager and click the **New ISDN** button to open ISDN Setup Wizard.*



Select the required service:
- 4.8 kbps standard speech service
- fax (9.6 kbps fax)

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

Key in MSN number if not using the recommended one.

Access Code is not used for ISDN data.

Click to enter number.

***Echo Cancellation** is performed automatically for all voice calls. Uncheck if problems with echo cancellation.*

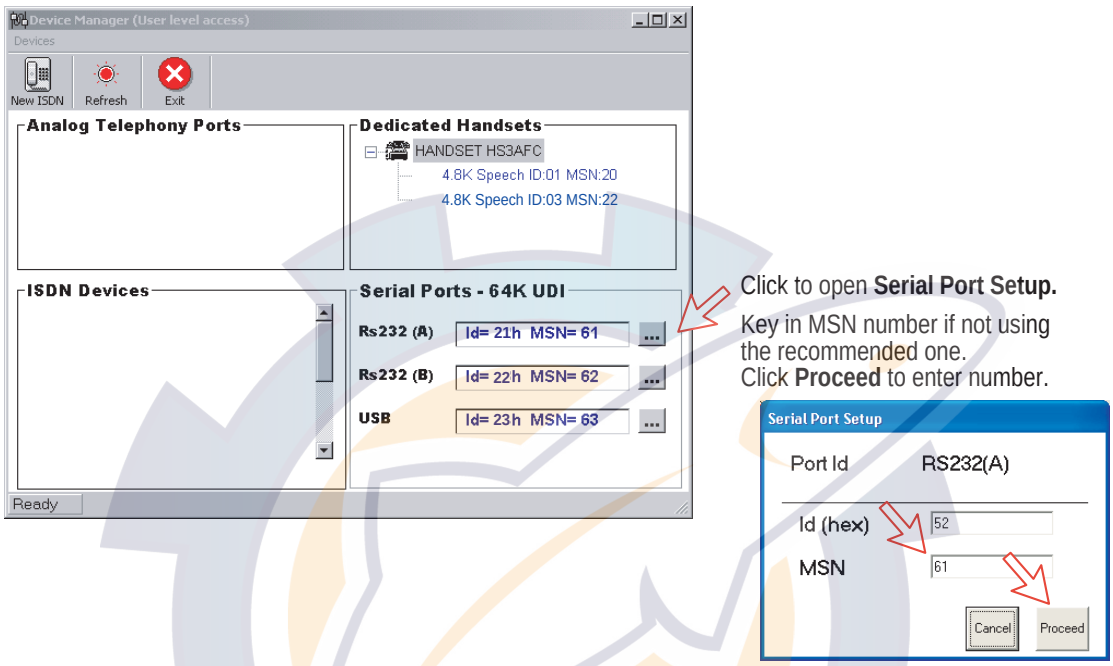
***Require Access Code** is checked when used for 4.8k speech.*

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

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5.13.3 RS-232 port

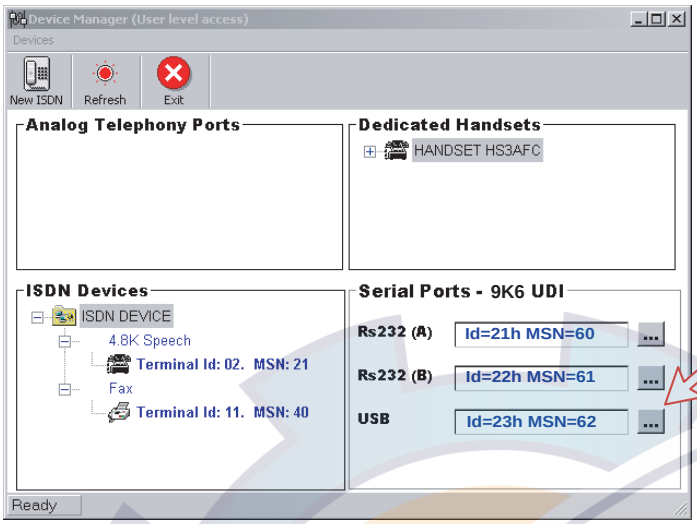
Open device manager and click [---] button of the RS232 on the **Serial Ports-64K UDI** to open Serial Port Setup window.
Key in MSN number if not using the recommended one. Click **Proceed** button to enter number.



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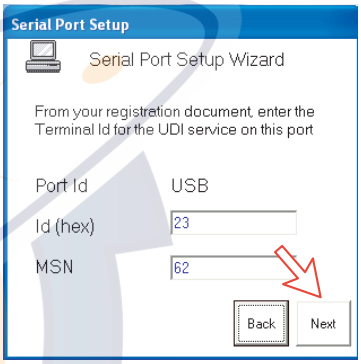
5.13.4 USB port

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



Click to open **Serial Port Setup.**

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



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5.14 Saving and reloading configurations

The FELCOM 30 configuration settings may be stored on the PC hard disk, e.g. prior to replacing software.

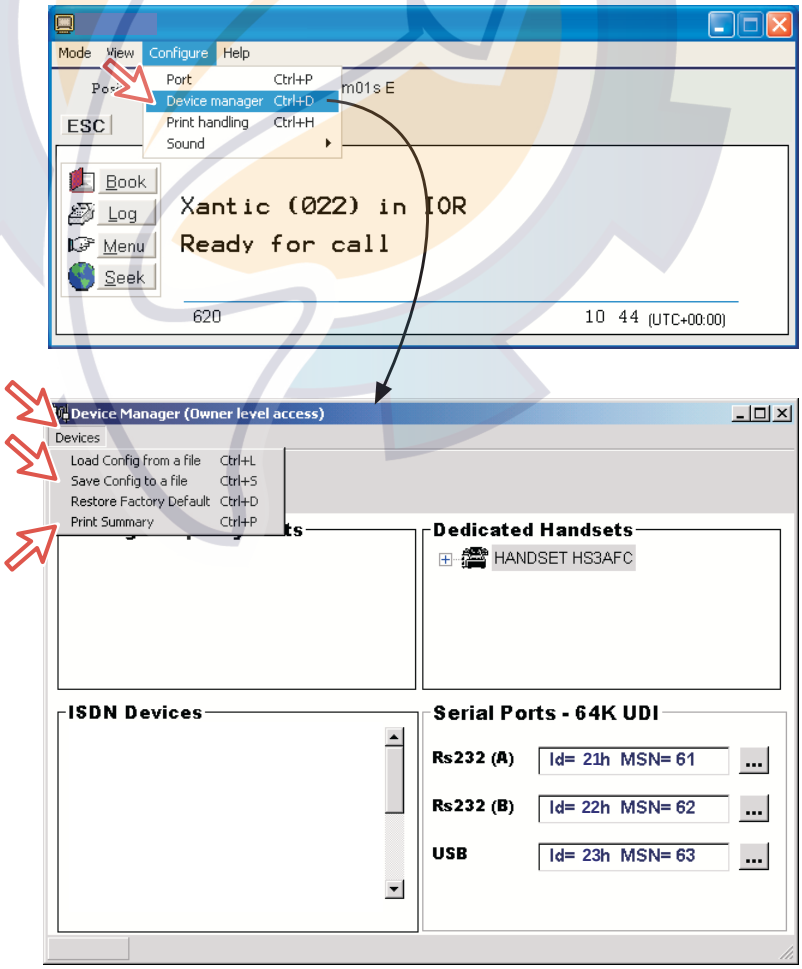
Procedure

1 Open the Device Manager window as indicated.
2 Clicking **Devices > Save config to a file** automatically stores the data in a "Config. cgf" file in the vtLite directory **c:/program files/vtLite Mobile**.
3 After installing the software, the settings may be transferred back to FELCOM 30 by pressing **Load**.
4 Clicking **Restore Factory Defaults** loads default FELCOM 30 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.

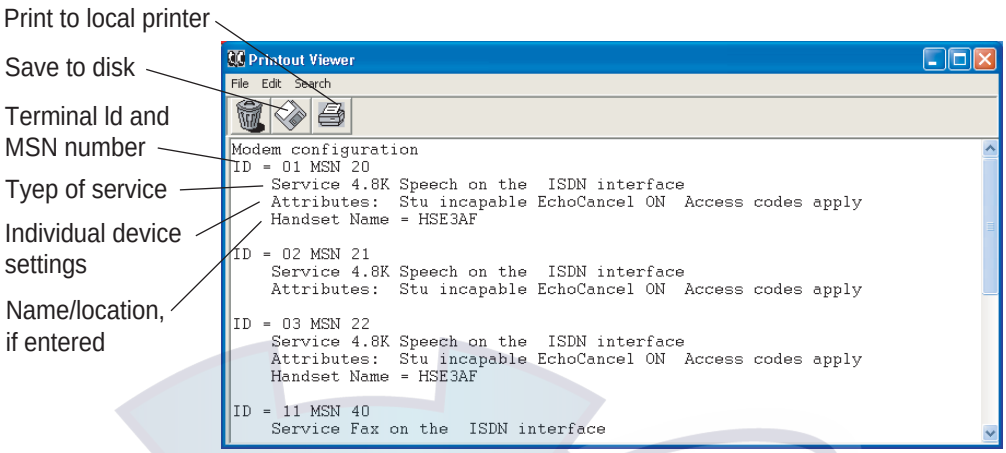
Note: Save config to a file only saves the **Device Manager settings**. Setting such as Net provider / Access codes / ISDN protocol are not saved. Phone book data and traffic log must be saved in the **Book** and **Log** menus.



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Configuration printout viewer

The list is sorted by Terminal Id.



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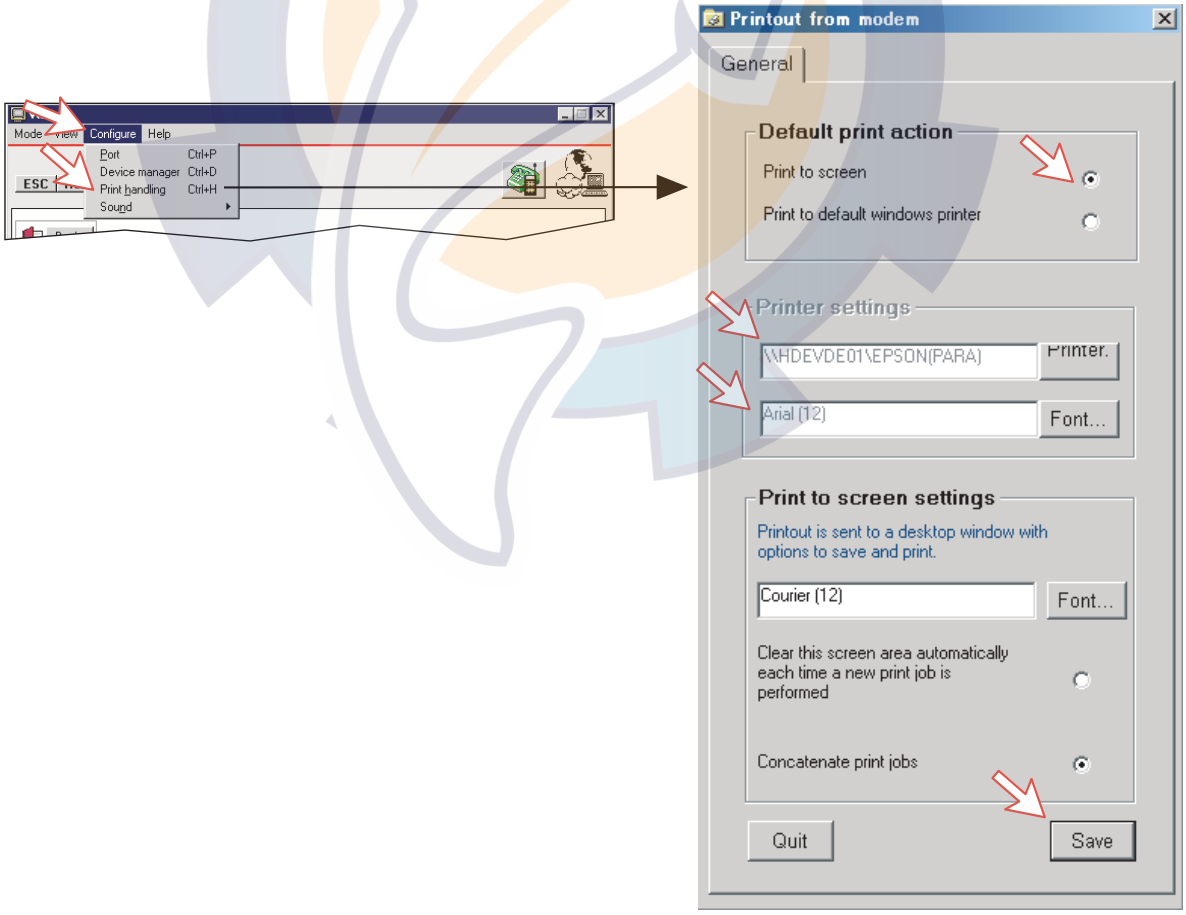
5.15 Print handling setup

The **Printout from modem** window is used for setting of default output of Traffic log, Modem configuration, etc.
Clicking **Configure > Print handling** opens the **Printout from modem** window. The following settings are selectable.

Default print action:
Normally, choose **Print to screen** which causes the file to be output via the Printout viewer. For an example, see "**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.

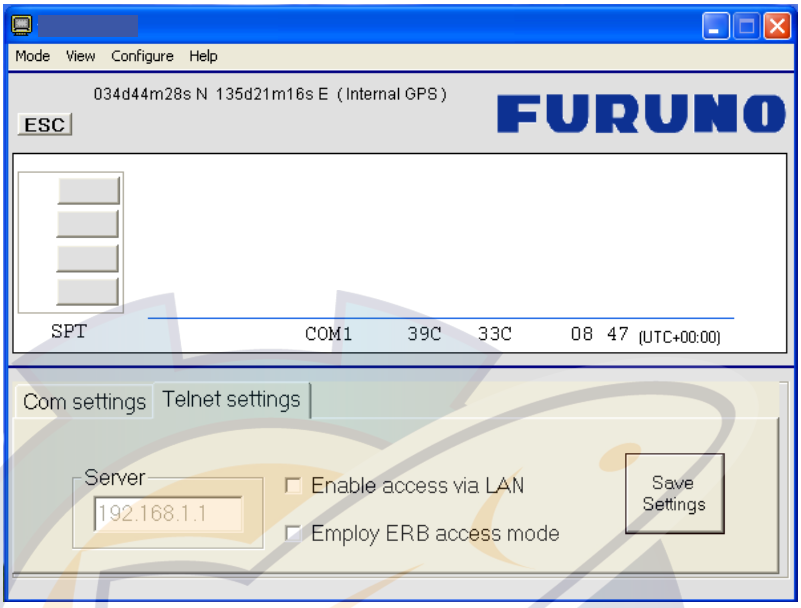
Printer settings:
For hardcopy printout, make sure that the appropriate printer and font are selected.



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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 system.

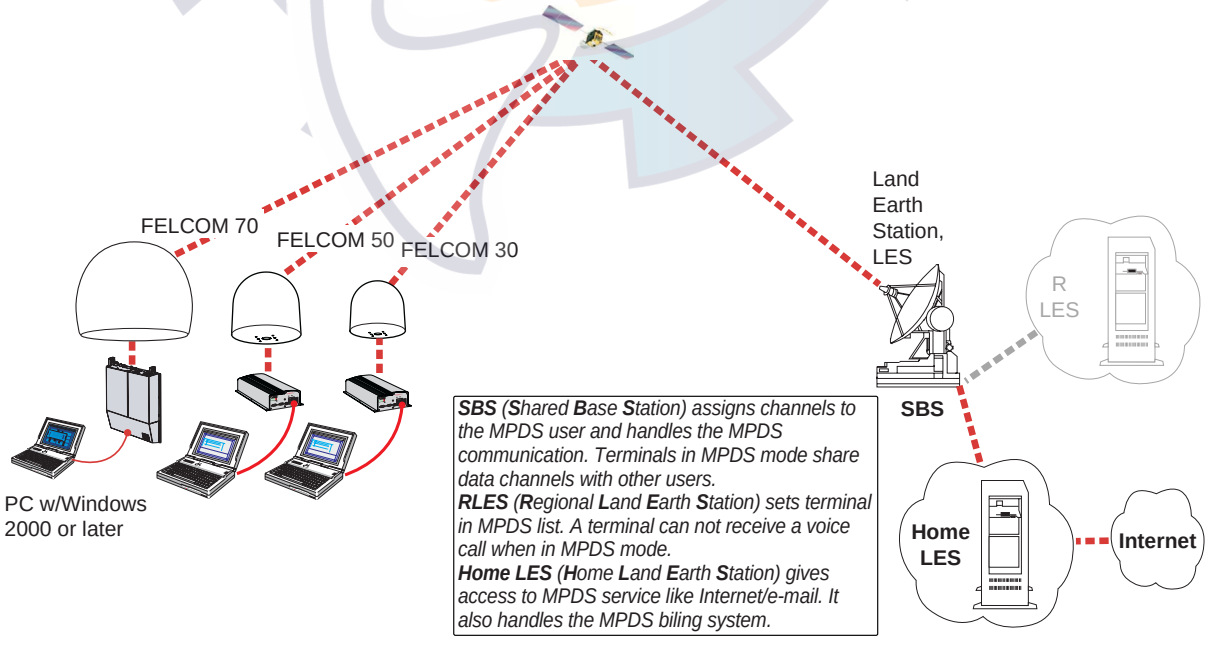
The transmission data rate over the satellite link is typically 20 kbps *(a 64 kbps channel is shared with other users).*

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

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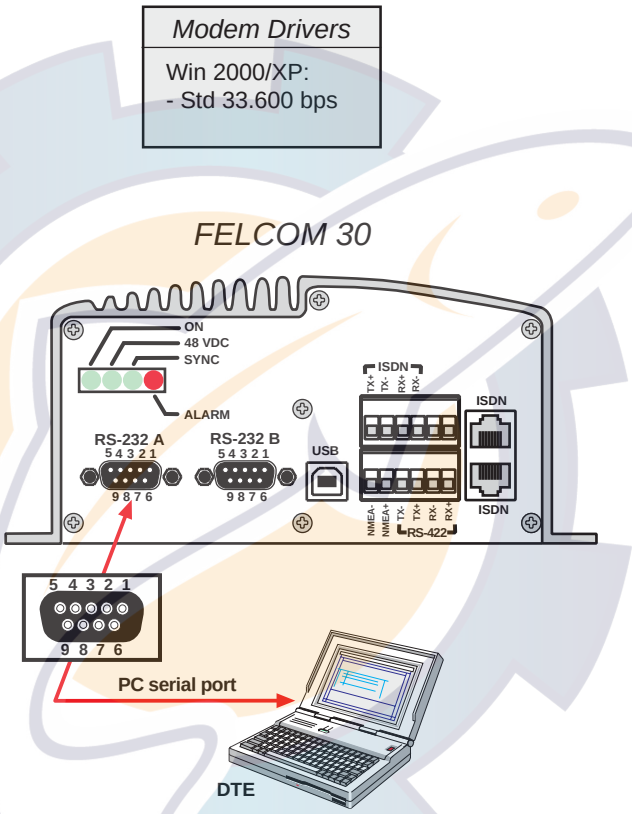
6.1.2 Connecting up

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)



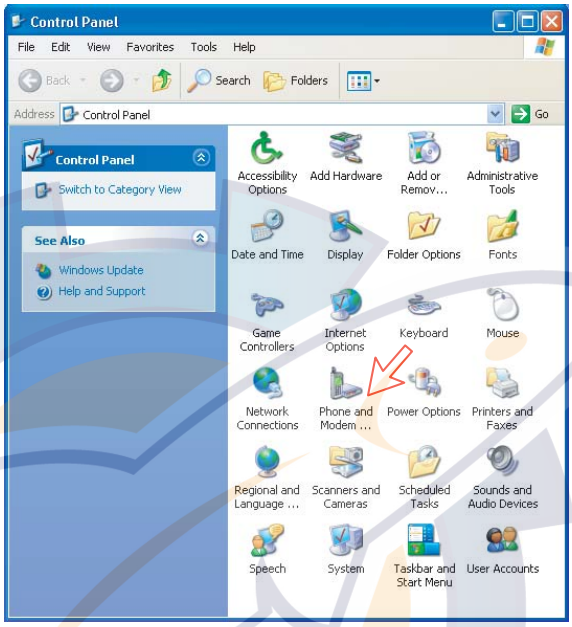
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6.1.3 MPDS - setup

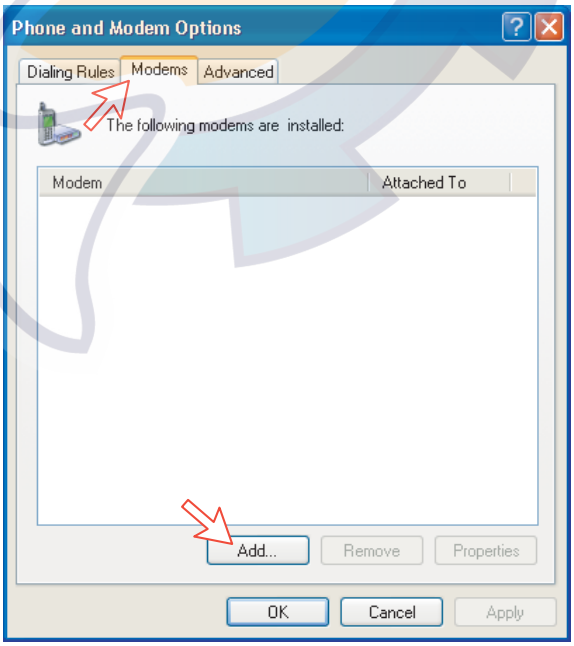
(Windows XP is used as an example)

Ensure that vtLite Mobile is closed.

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



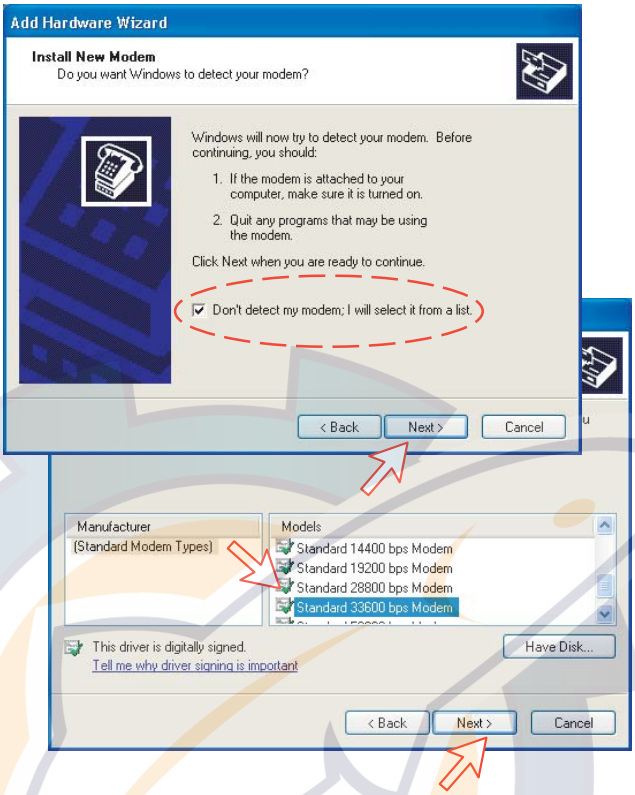
2 Click the **Modems** tab.
*Click **Add**, see next page.*



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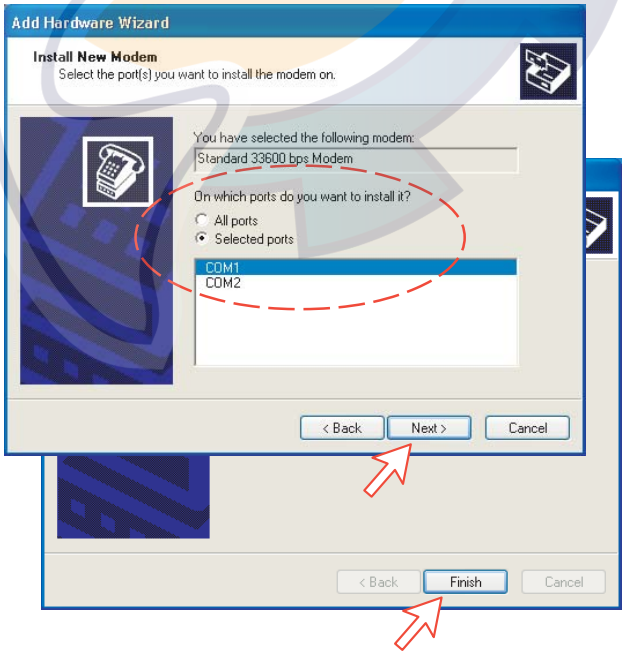
3 In the **Add Hardware Wizard** window check "Don't detect my modem", *and click* ***Next***.

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



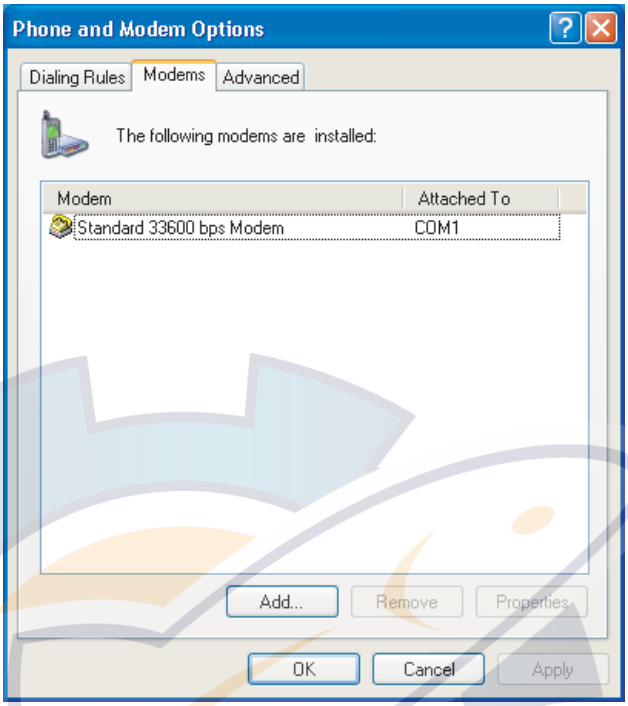
4 Select the port to which the Modem driver should be installed.

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



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

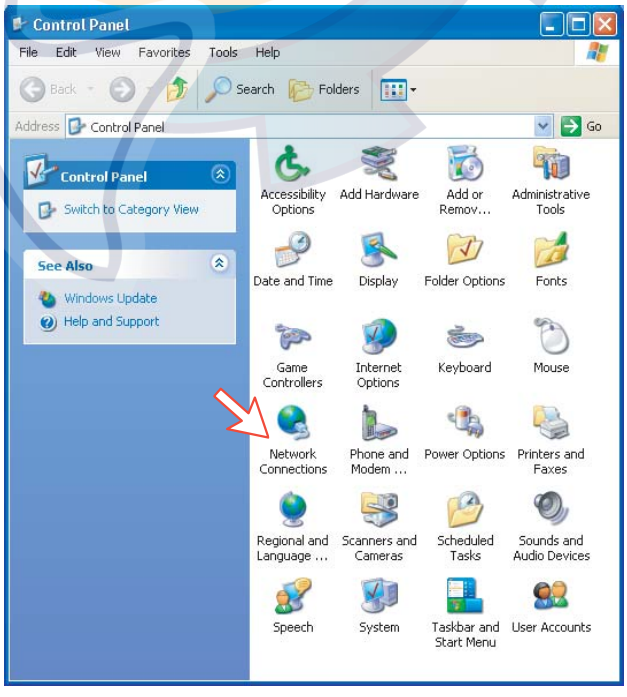


Note: The setup for data transfer to the CU is based on the Windows 2000/XP default parameters:

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

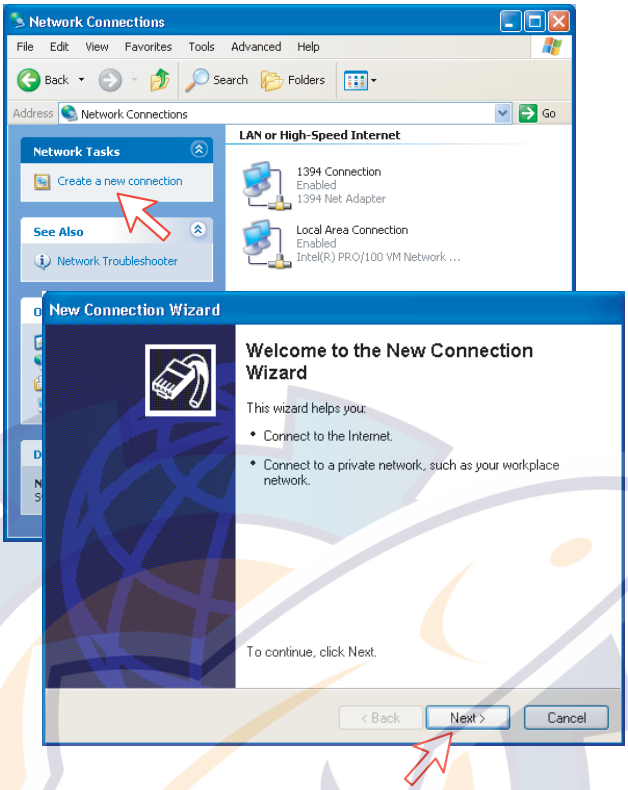
Clicking **Properties** allows checking the parameters.

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

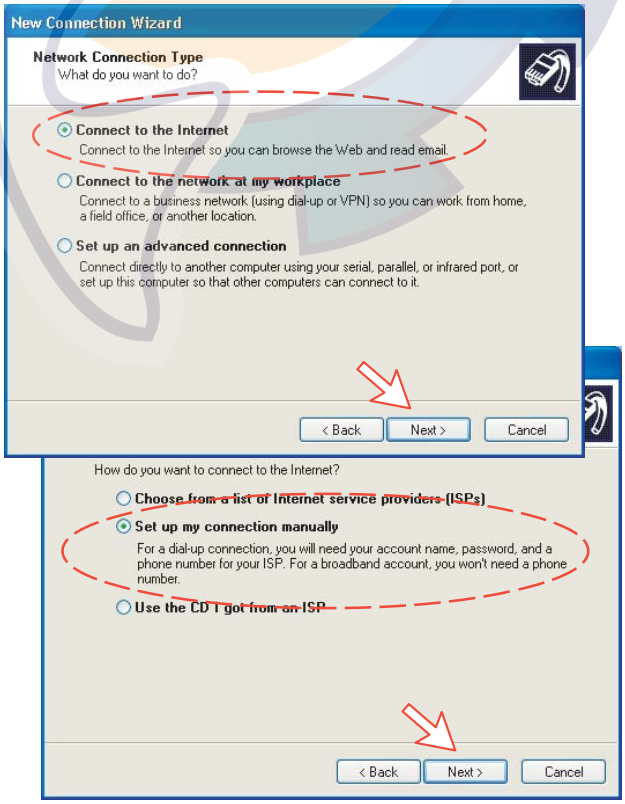


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7 Click **Create a new connection** to open the **New Connection Wizard**. *Click **Next**.*

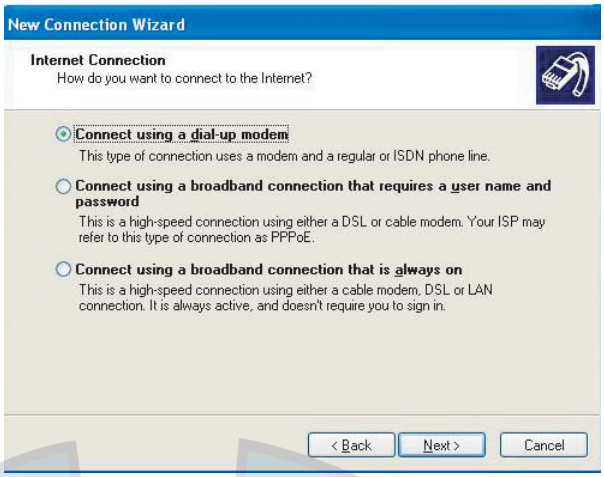


8 Check **Connect to the Internet**. *Click **Next**.*
Check **Set up my connection manually**.
*Click **Next**.*

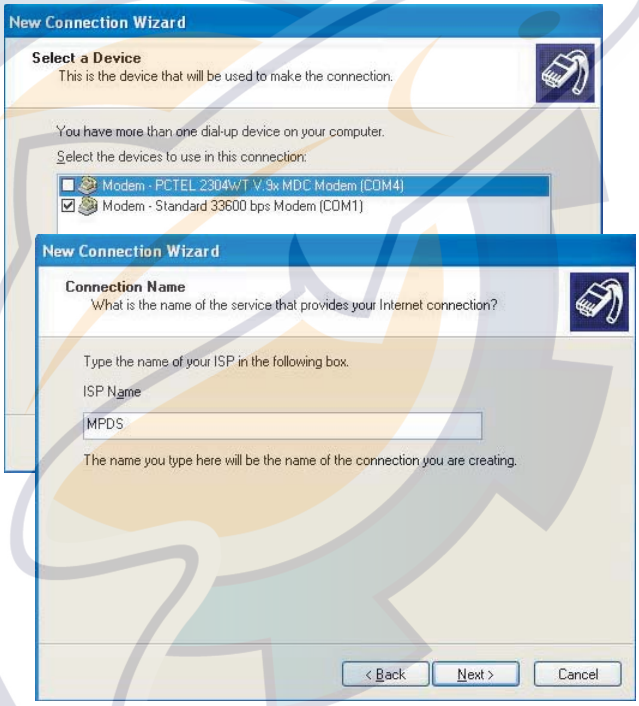


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9 Check “Connect using a dial-up modem”. *Click* ***Next****.*



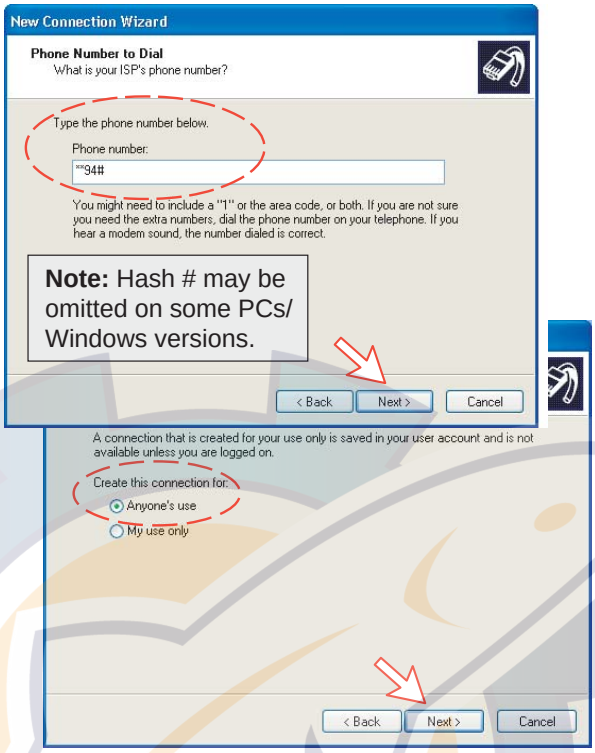
10 Check “Modem Standard 33600 bps Modem.” Click ***Nex***t. Enter the name for the connection e.g. **MPDS**. *Click* ***Next****.*



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

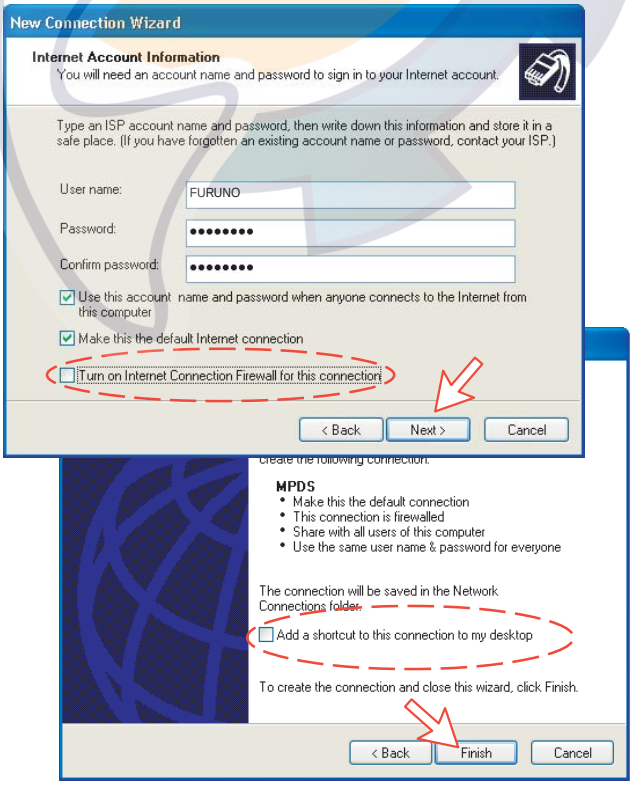
Check **Anyone's use**, *and click **Next***.



12 Enter name and password for the connection.

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

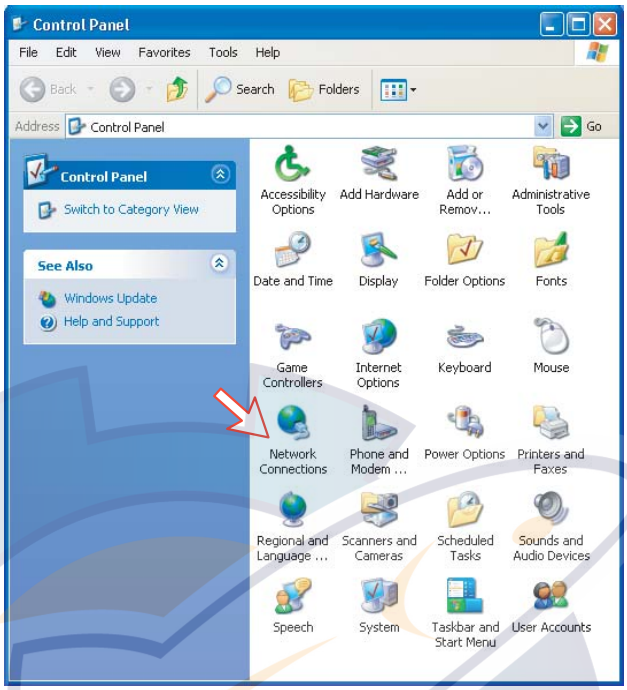
Complete the **New Connection**, *click **Finish***.



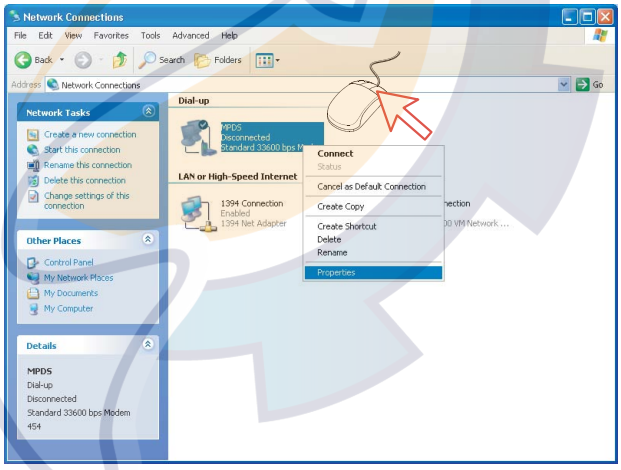
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6.1.4 Checking default settings

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



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

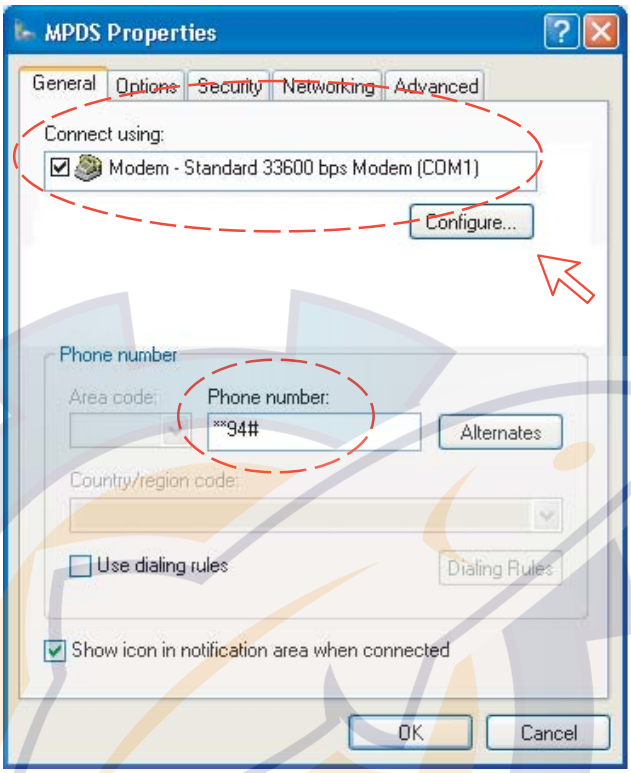


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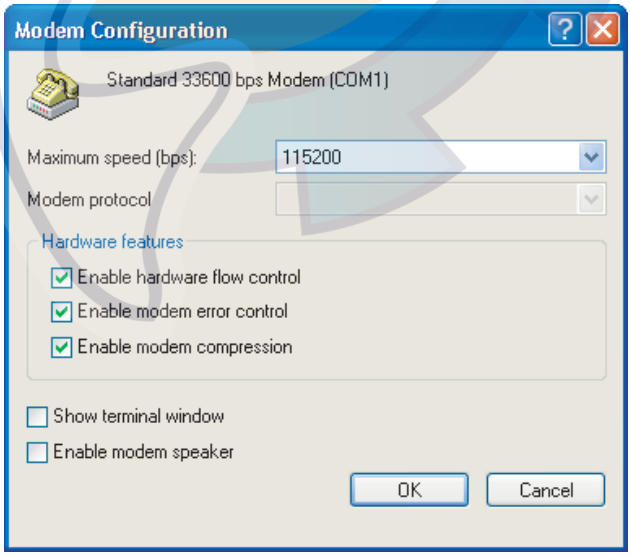
3 Check settings in the **MPDS Properties** window:

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

*Click **Configure**.*

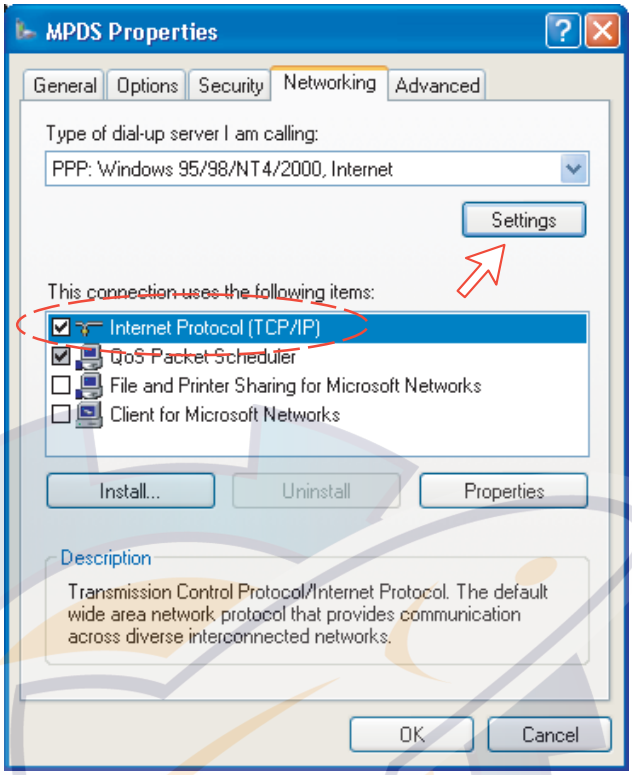


4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.

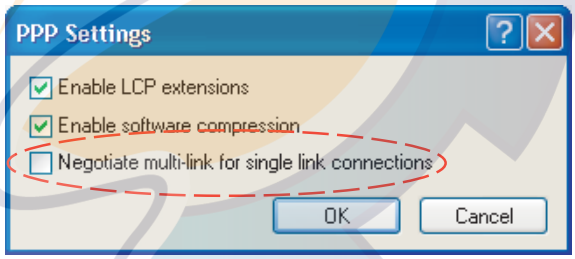


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5 In the **MPDS Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected. *Click* ***Settings***.



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



7 Click **OK** button to finish.

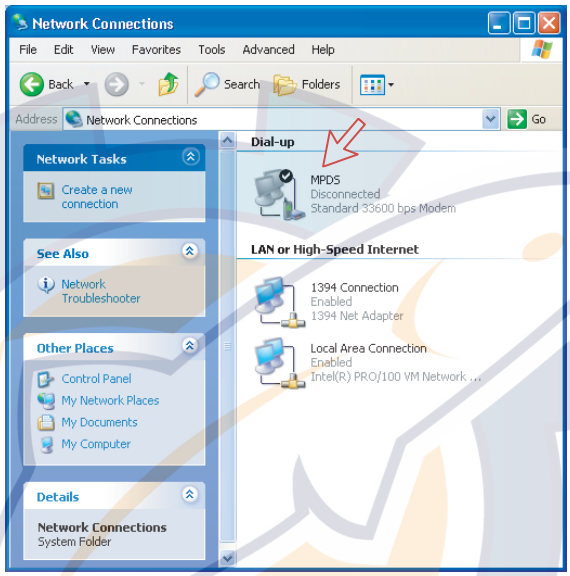
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6.1.5 Connecting to server

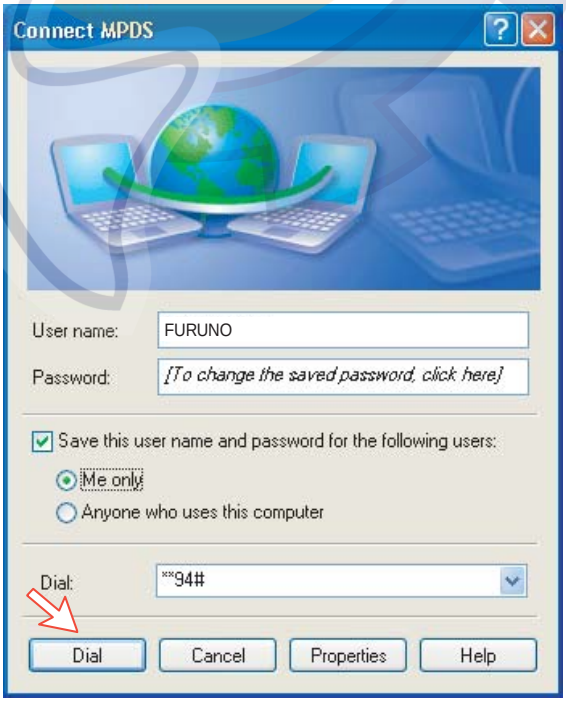
Initiating an MPDS call

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 HomeLES, see system overview)*.



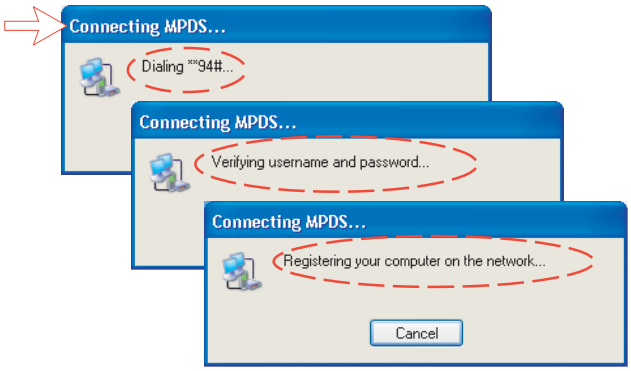
Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*



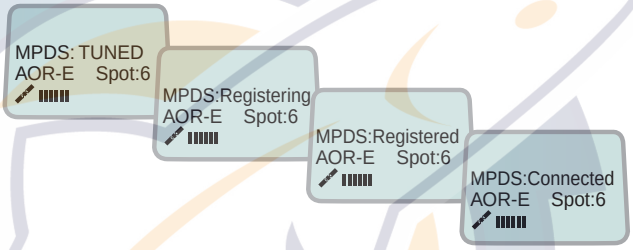
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Connection in progress

Displayed on the PC screen:



The FELCOM 50 ISDN Handset displays:
(must be in diagnostic mode).



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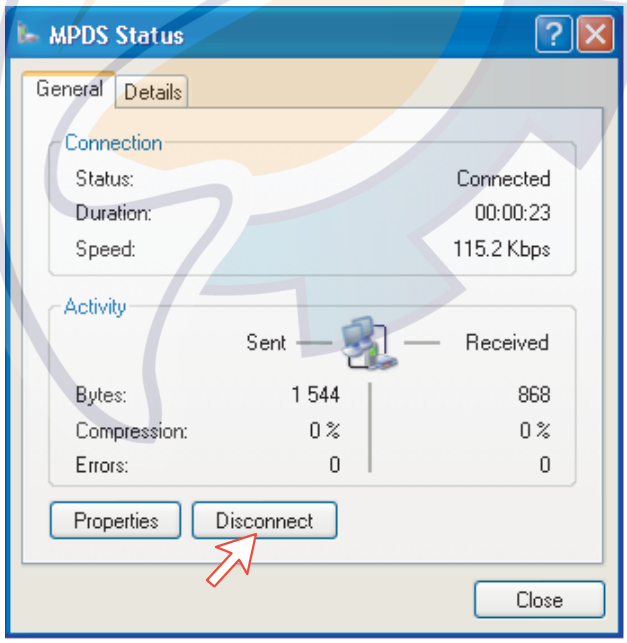
When connected:

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



Connection status

*Appears when right-clicking the **MPDS** dial-up icon 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.

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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.

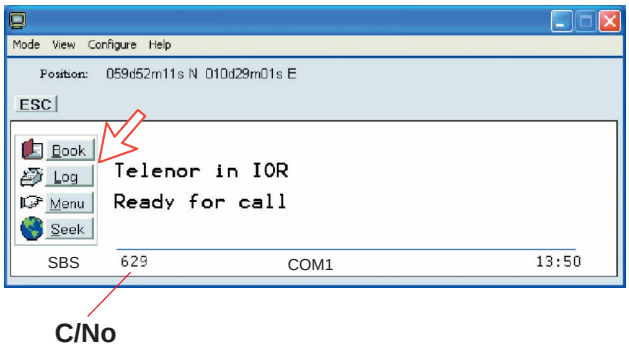
Examples:
Dialing ****94#** ⇨ **MPDS** via default Net service provider (no subscriber number is sent to the Net provider).

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

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

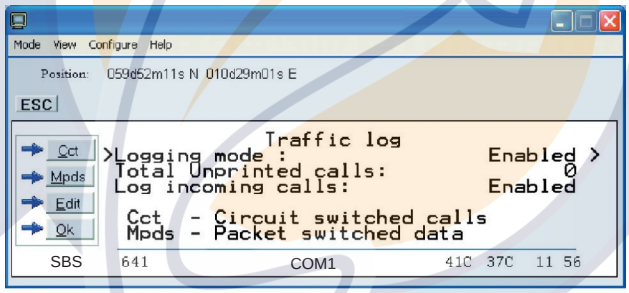
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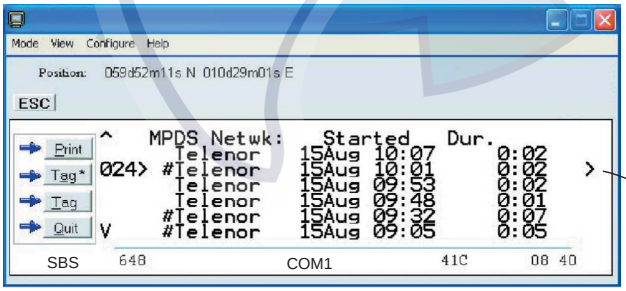
6.1.6 Traffic log



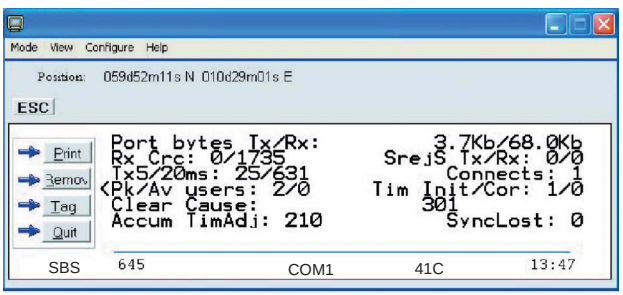
In the vtLite idle window, clicking **Log** lets you select between traffic logs for packet switched data (MPDS) and all other circuit switched call types. Clicking the right arrow key expands the level of detail on entries listed.

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.





Press [→] key.



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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):

AT+WLES=XXX ↵R
selects Net Provider (XXX = LES access code) for the serial port used.

Example:
AT+WLES=004 ↵R
selects Telenor: 004

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+WREG=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.

AT+WREG=0 ↵R
deregisters the user.

AT+WS45=4 ↵R
*sets the FELCOM 30 terminal in **MPDS** mode.*
This is implicitly done when using the **94# dial string. This command will make the FELCOM 30 terminal Register at the RLES when the Windows dial Up adapter sets up a PPP connection to the H-LES (Internet).

AT+WS45=1 ↵R
*sets the FELCOM 30 terminal back to **Normal** mode (UDI) mode.*

Note: Local echo of keyboard entries is set to ON with the commands:
AT E1 ↵R

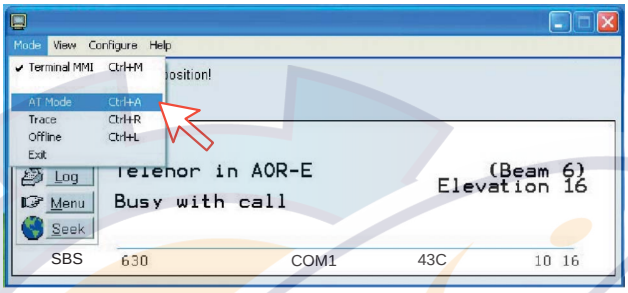
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Note that all the above commands are not required if you use the Dial String **94# to select MPDS; all other Dial Strings will use SCPC.
It is included for information only. However when you are not able to establish the Dial Up Adapter, the "FURUNO"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

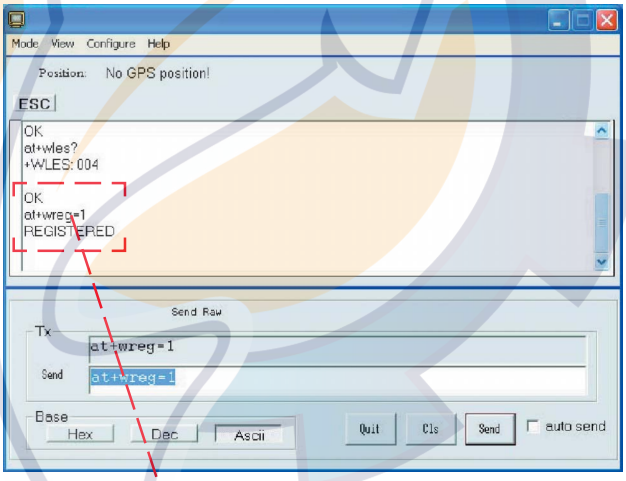
Verifying MPDS with AT-commands

Access to AT-commands

Instead of using the PC hyperterminal facility, access can easily be accomplished using vtLite Mobile, 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.

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6.1.8 Troubleshooting

Problem	*Probable cause*	*Action*
1. No contact with modem or busy	Wrong setup of Communication Unit. vtLite Mobile 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 vtLite Mobile.
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 vtLite Mobile, check configuration in Device Manager.
4. Length of serial cable ***Length of USB cable***	Guaranteed length: 3 m Guaranteed length: 5 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.

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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.

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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 30: 2.1 system version

(vtLite function no.982).

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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 system.

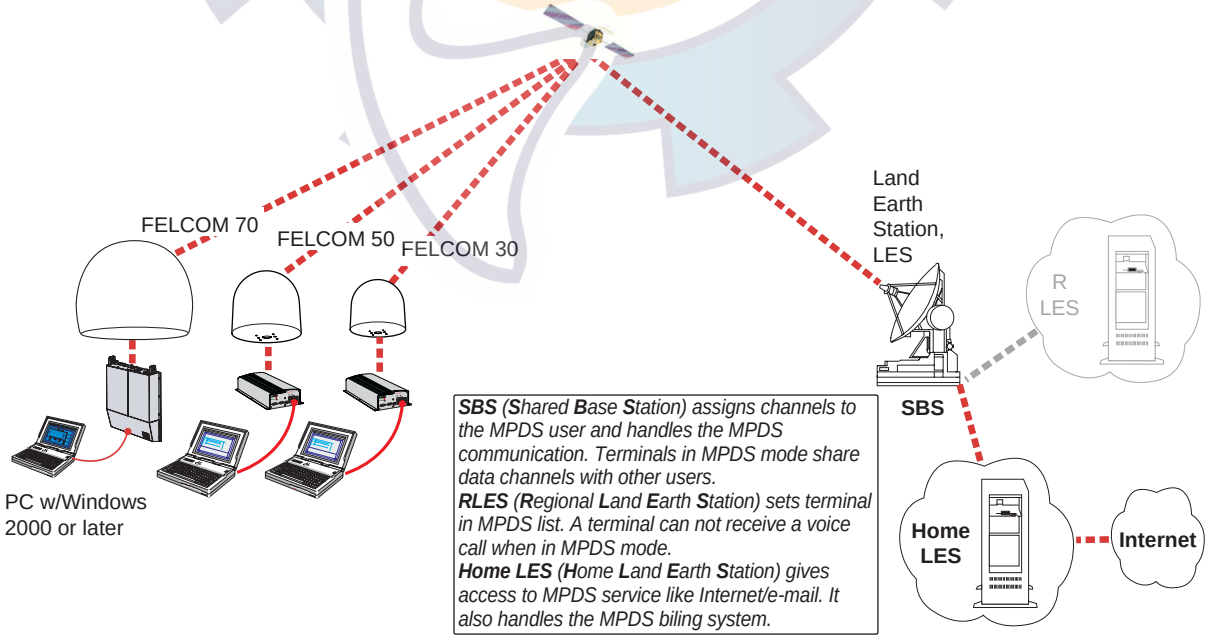
The transmission data rate over the satellite link is typically 20 kbps *(a 64 kbps channel is shared with other users).*

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

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6.2.2 Connecting up

USB driver installation

Prior to installing the USB drivers, remove vtLite Mobile if it is to be used via USB.
Remove all programs that use virtual COM ports, such as RVS.
The programs may be reinstalled when the USB installation has been completed.

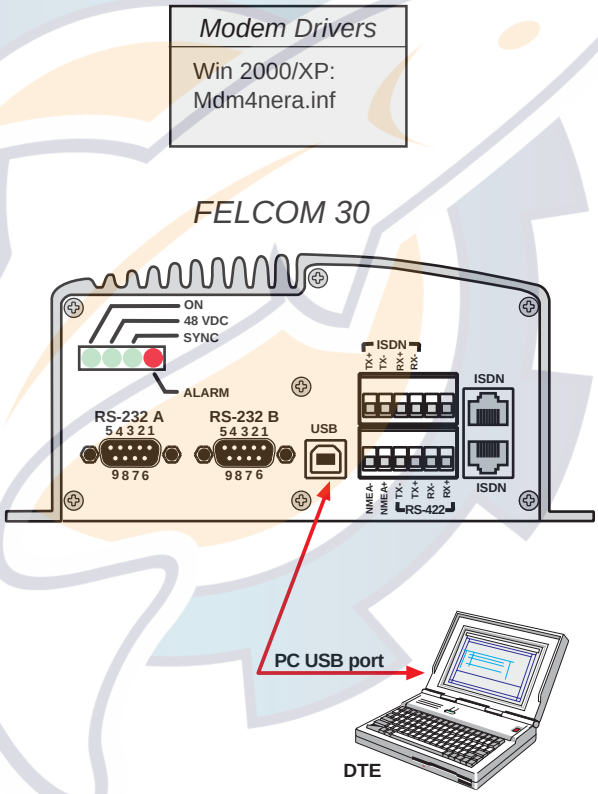
Procedure:

1 Insert the CD enclosed with the manual.

2 With the terminal ON, connect the USB port of a PC and FELCOM 30 as shown below.

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

See next page.



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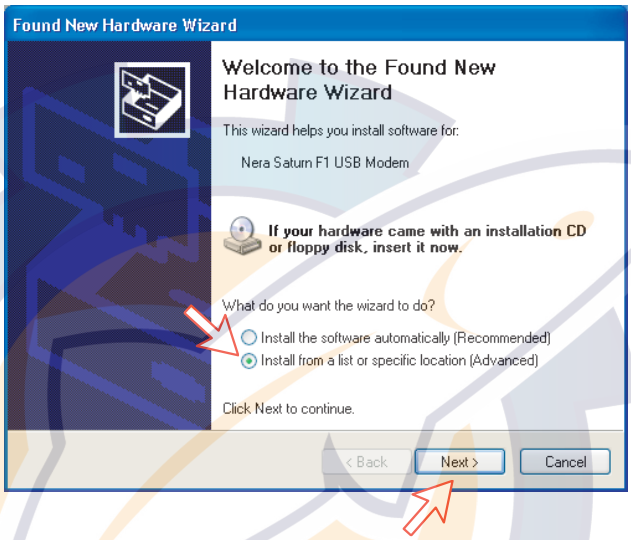
6.2.3 PC setup

Setting up a connection

(Windows XP is used as an example)

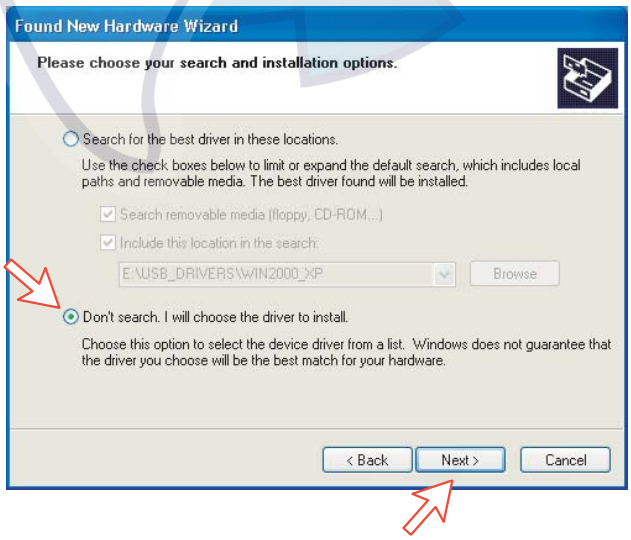
Ensure that vtLite Mobile is closed.

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***.



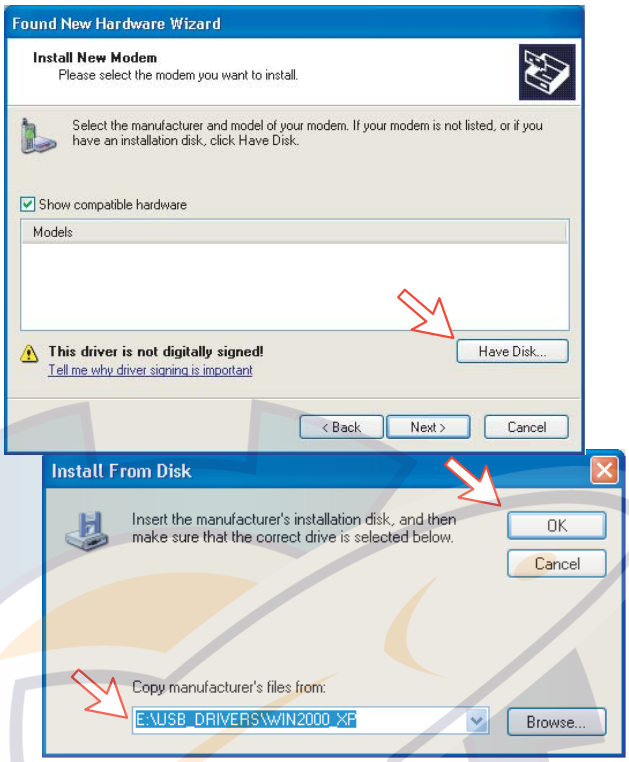
2 Check "Don't search. I will choose the driver to install".
*Click **Next**.*

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

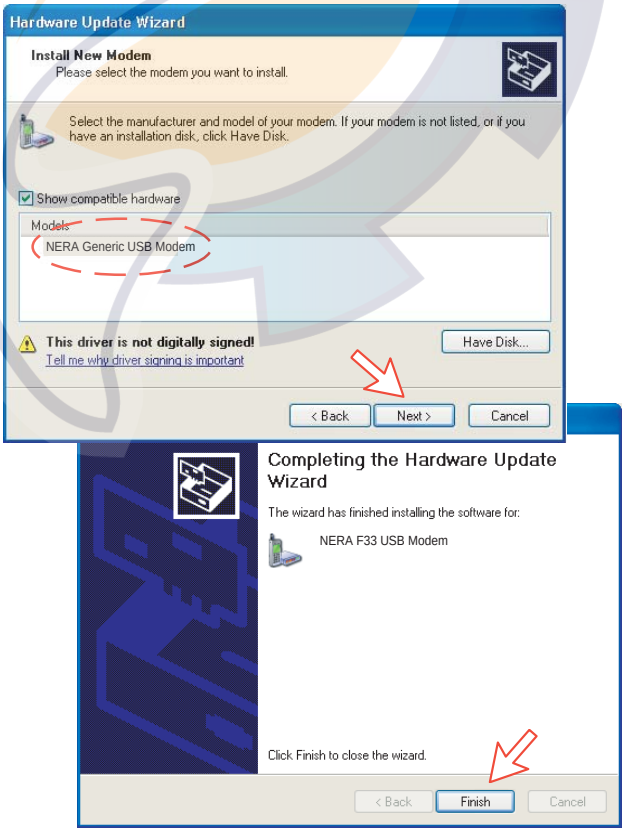


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3 In the **Install new modem** window *click* ***Have disk***. Windows selects the CD drive and detects the USB driver on the CD automatically. *Click* ***Ok***.



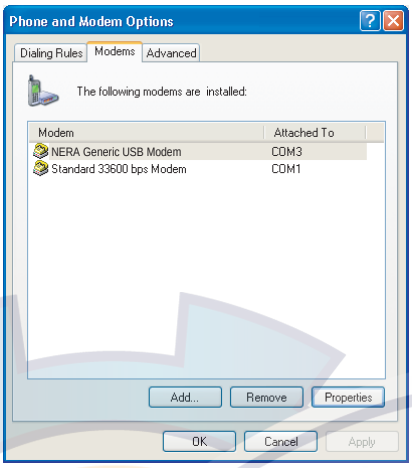
4 Select the **NERA Generic USB Modem**. *Click* ***Next*** *and then* ***Finish*** *to complete the installation.*



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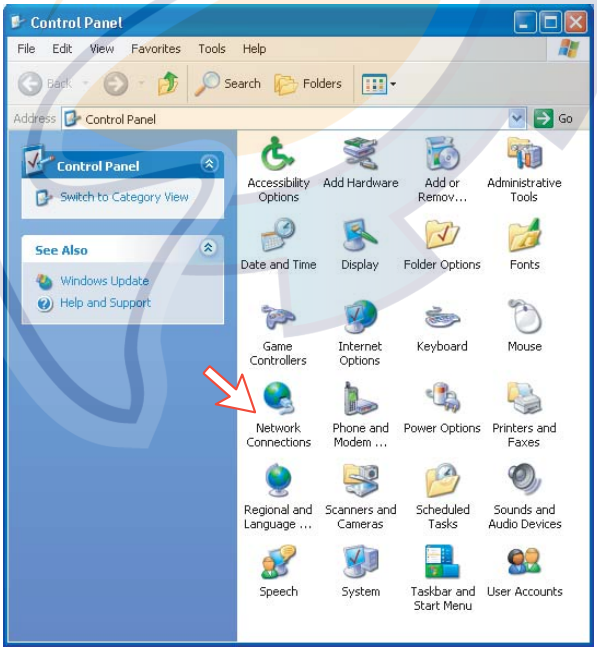
6.2.4 MPDS – setup

1 Opening the **Phone and Modem Options** window confirms the established modem connection.
Select Nera Generic USB Modem.



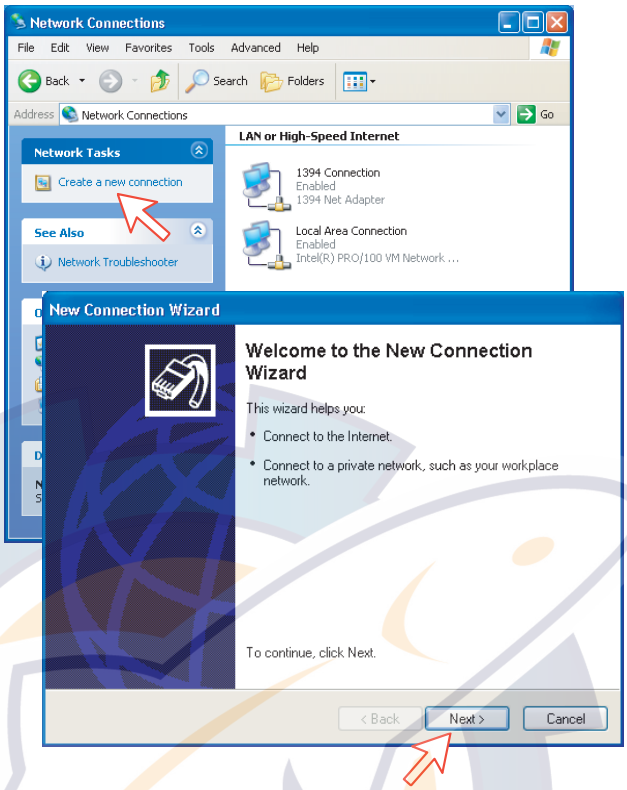
Note: The setup for data transfer to the FURUNO terminal is based on the Windows 2000/XP default parameters:
8 data bits - no parity - 1 stop bit - flow ctrl: Hardware
Clicking **Properties** allows checking the parameters.

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

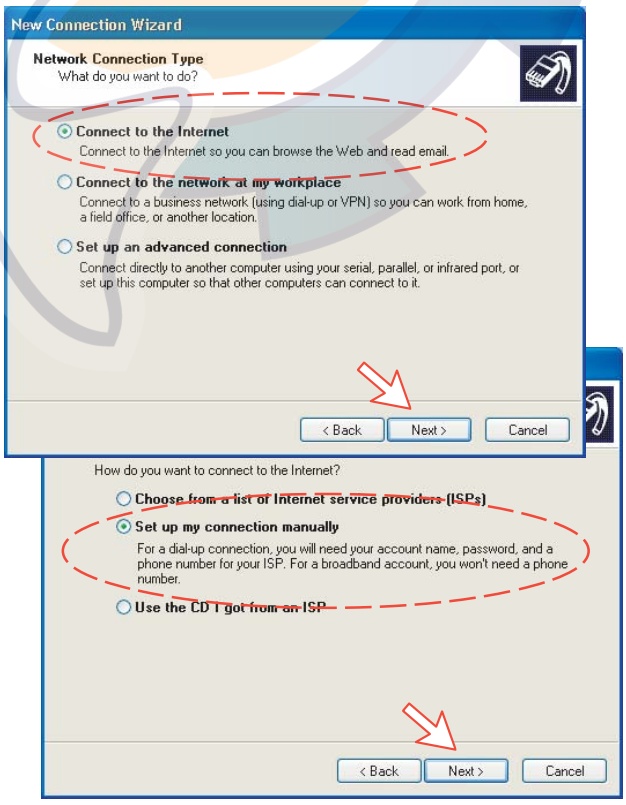


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3 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*

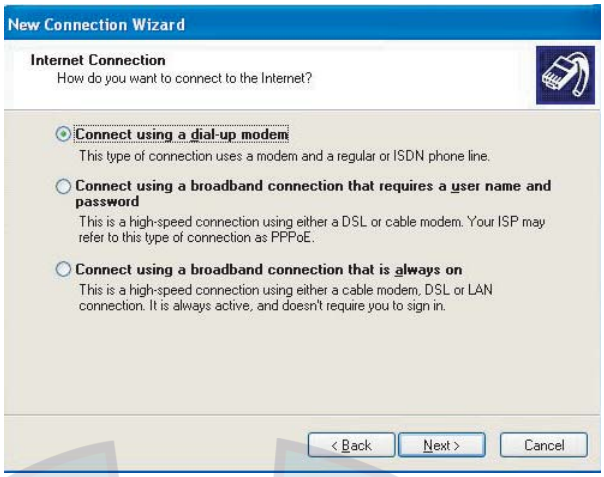


4 Check **Connect to the Internet**. *Click **Next**.* Check **Set up my connection manually**.
*Click **Next**.*

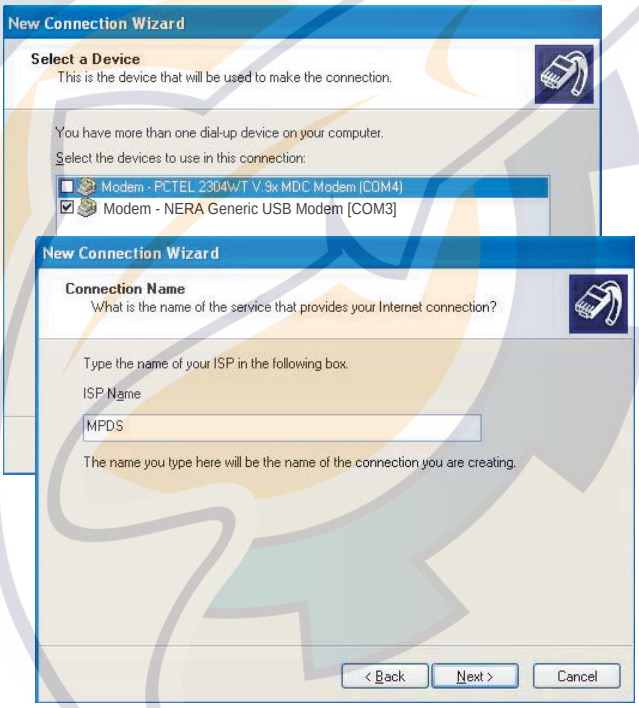


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5 Check **Connect using a dial-up modem**. *Click **Next**.*

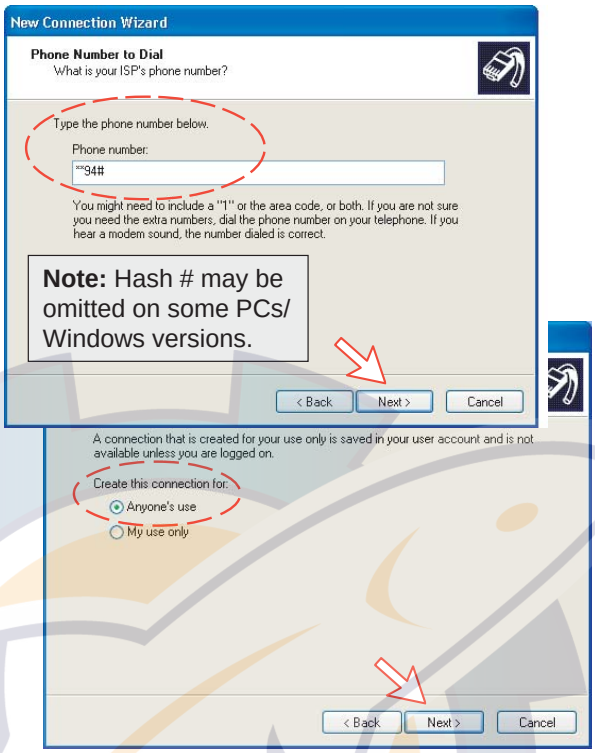


6 Check “Modem-NERA Generic USB Modem.” Click ***Nex***t. Enter the name for the connection e.g. **MPDS**. *Click **Next**.*

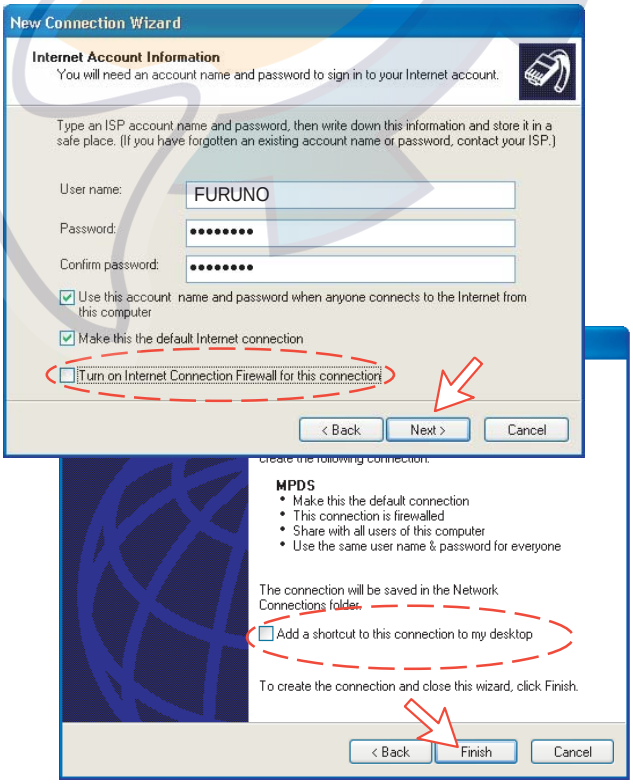


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7 Entering phone number ****94#** automatically connects you to the Internet Service Provider through your default Net Provider. *Click* ***Next***.
Check **Anyone's use**, *and click* ***Next***.



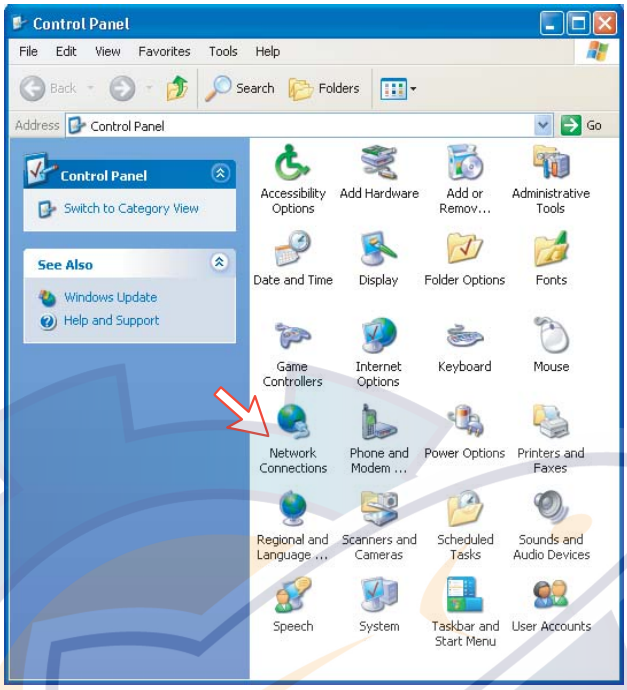
8 Enter name and password for the connection.
Uncheck **Turn on Internet Connection Firewall for this connection**. *Click* ***Next***.
Complete the **New Connection**, *click* ***Finish***.



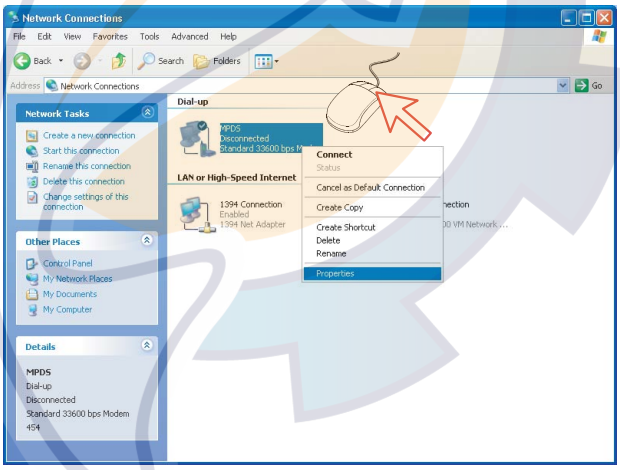
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6.2.5 Checking default settings

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

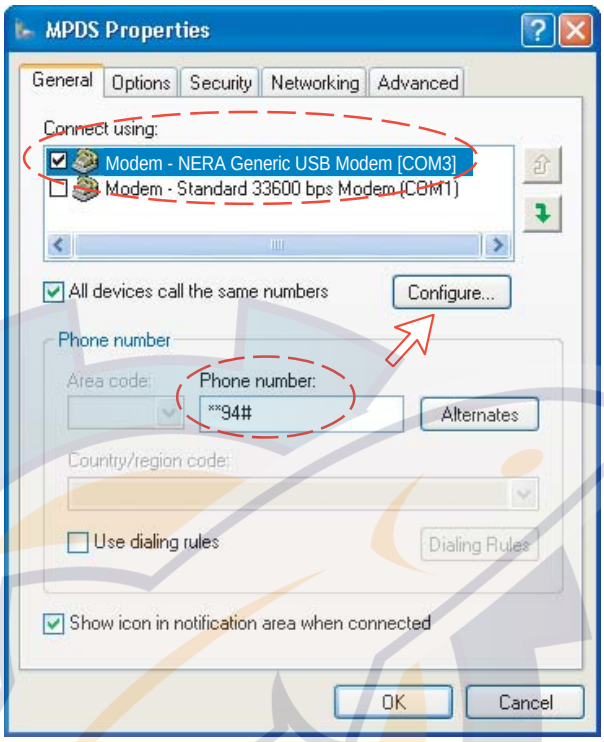


2 Right-click the **MPDS** dial-up connection and click **Properties**.

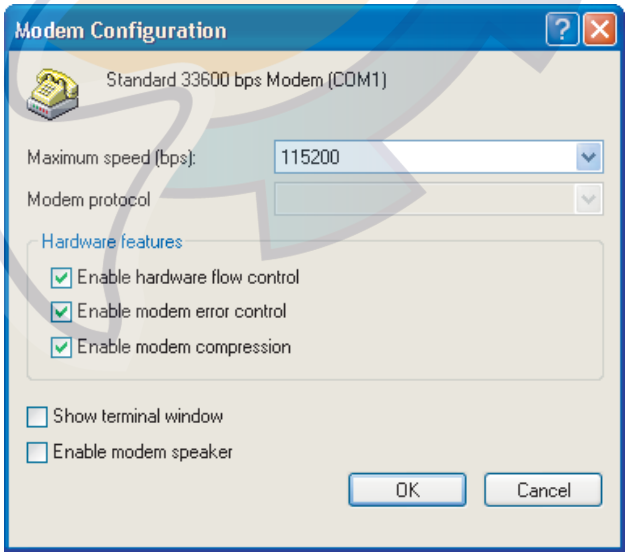


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3 Confirm settings in the **MPDS Properties** window:
"Modem - NERA Generic USB Modem".
Phone number: **94#
*Click **Configure**.*

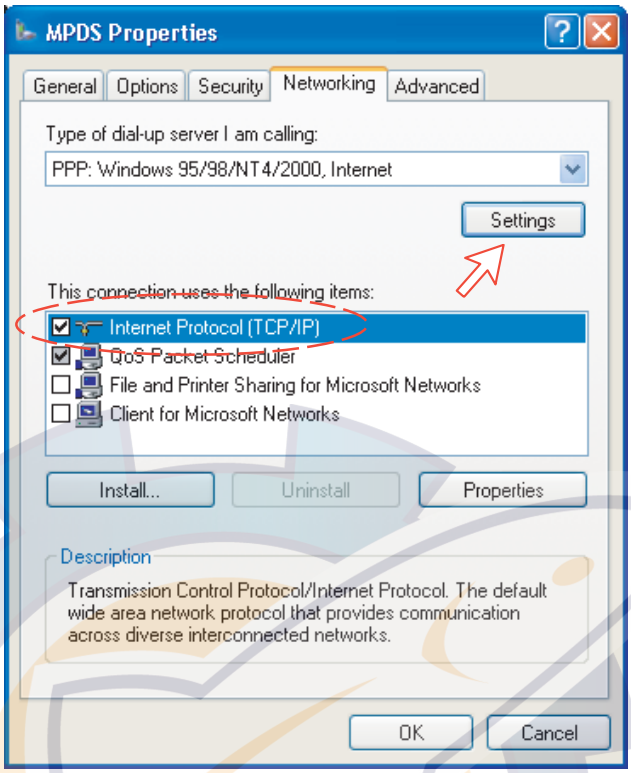


4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.

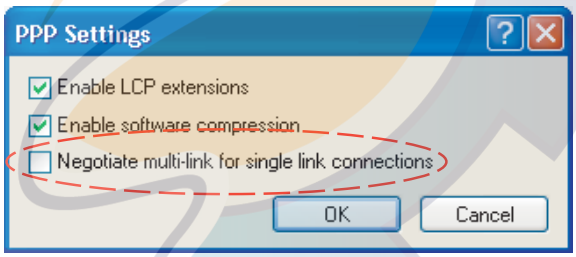


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5 In the **MPDS Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected. *Click* ***Settings***.



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



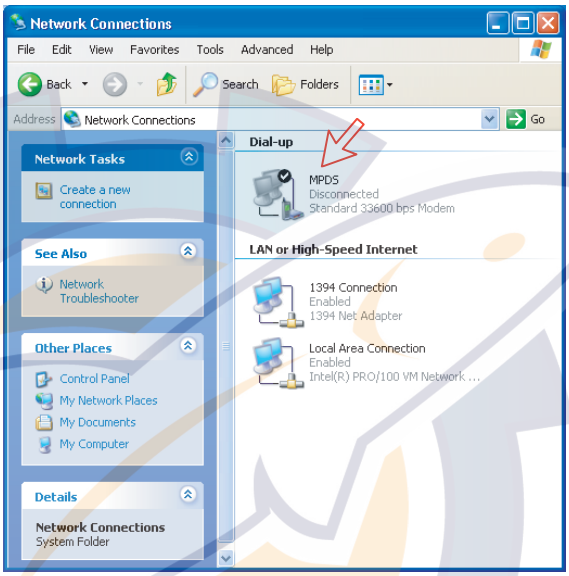
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6.2.6 Connecting to server

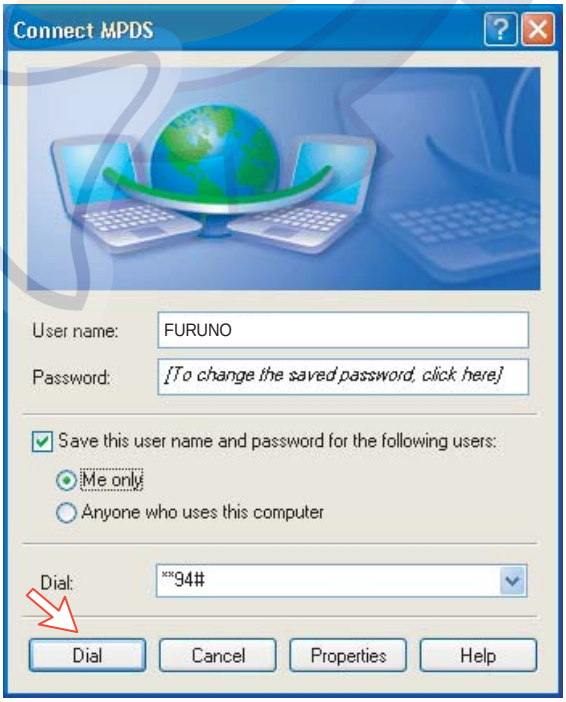
Initiating an MPDS call

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 HomeLES, see system overview)*.



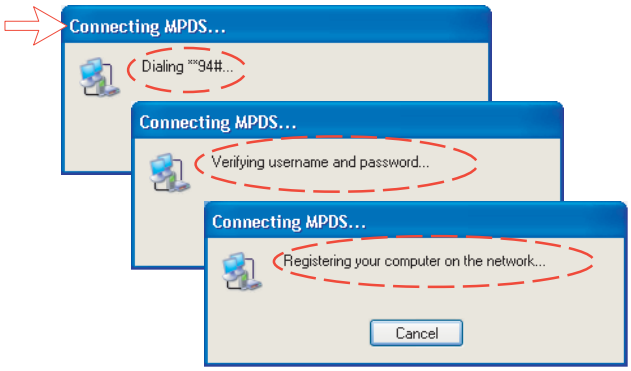
Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*



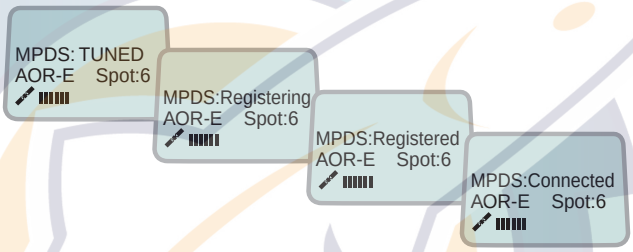
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Connection in progress

Displayed on the PC screen:



The FELCOM 50 ISDN Handset displays:
(must be in diagnostic mode).



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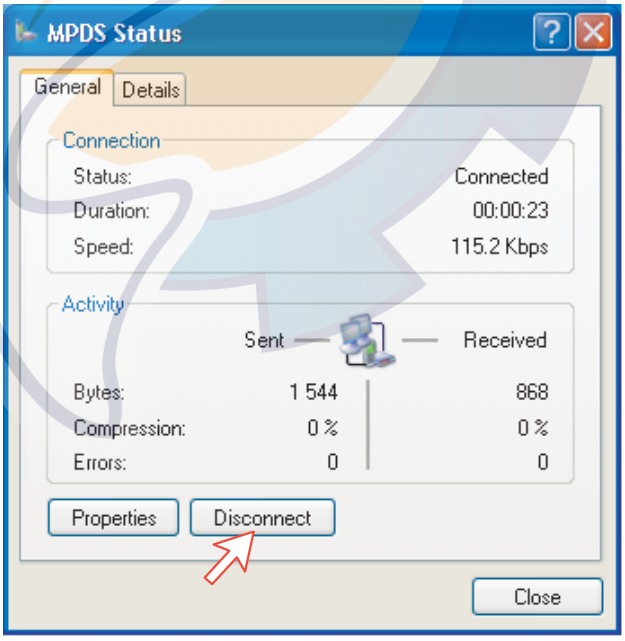
When connected:

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



Connection status

*Appears when right-clicking the **MPDS** dial-up icon 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.

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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.

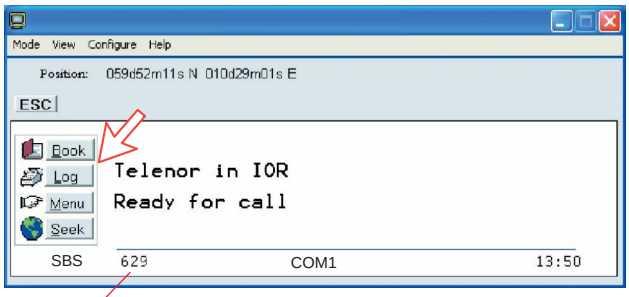
Examples:
Dialing ****94#** ⇨ **MPDS** via default Net service provider (no subscriber number is sent to the Net provider).

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

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

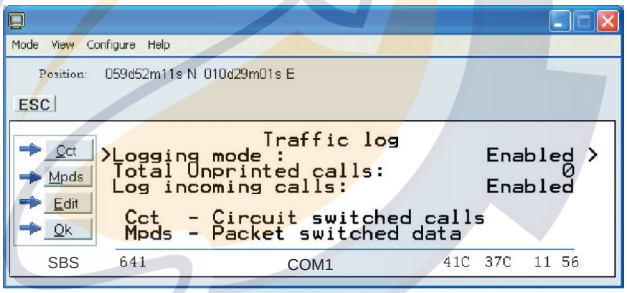
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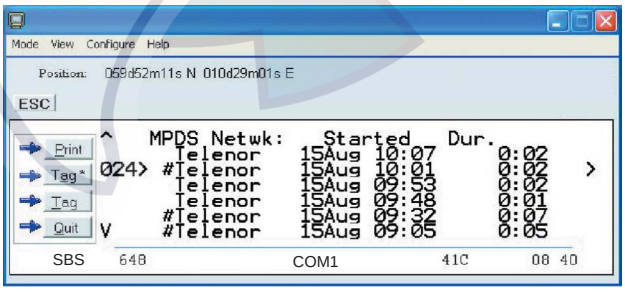
6.2.7 Traffic log

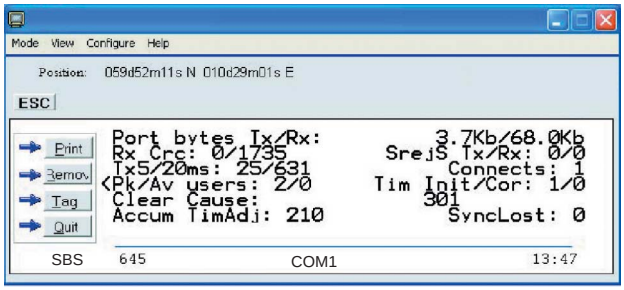


In the vtLite idle window, clicking **Log** lets you select between traffic logs for packet switched data (MPDS) and all other circuit switched call types. Clicking the right arrow key expands the level of detail on entries listed.

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.







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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 30 terminal in **MPDS** mode.*
This is implicitly done when using the **94# dial string. This command will make the FELCOM 30 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 30 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

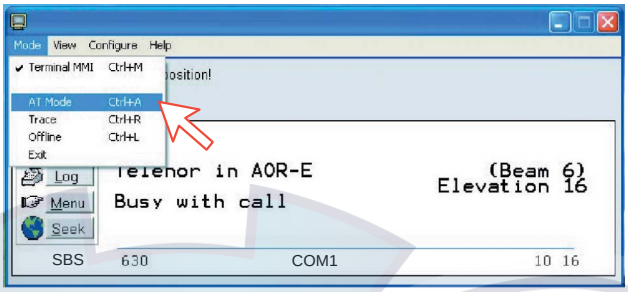
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the Dial Up Adapter, the "FURUNO" procedure has been to try the At+Wreg=1 , in order to verify whether or not this has been a SBS or RLES problem.

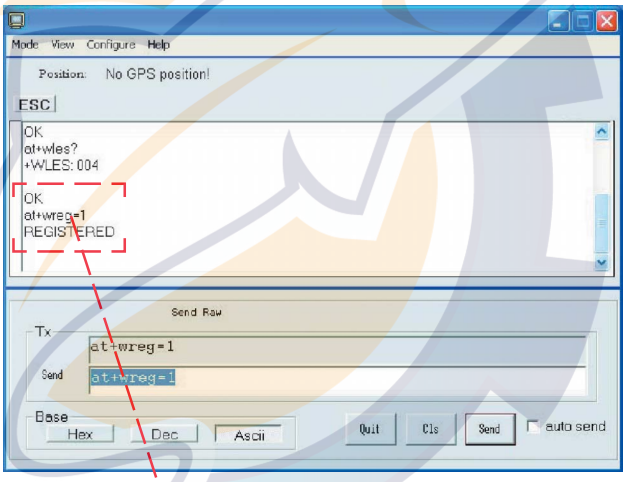
Verifying MPDS with AT-commands

Access to AT-commands

Instead of using the PC hyperterminal facility, access can easily be accomplished using vtLite Mobile, 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.

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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. Length of serial cable:	Guranteed length: 3 m	
Length of USB cable:	Guranteed length: 5 m	

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Problem	Probable cause	Action
5. Using vtLite Mobile via USB fails:		• Remove vtLite Mobile and USB drivers, *see problem 1.* • Reinstall vtLite Mobile.
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.

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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.

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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 30: 2.1 system version

(vtLite function no.982).

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6.3 Mobile Data Service (RS-232)

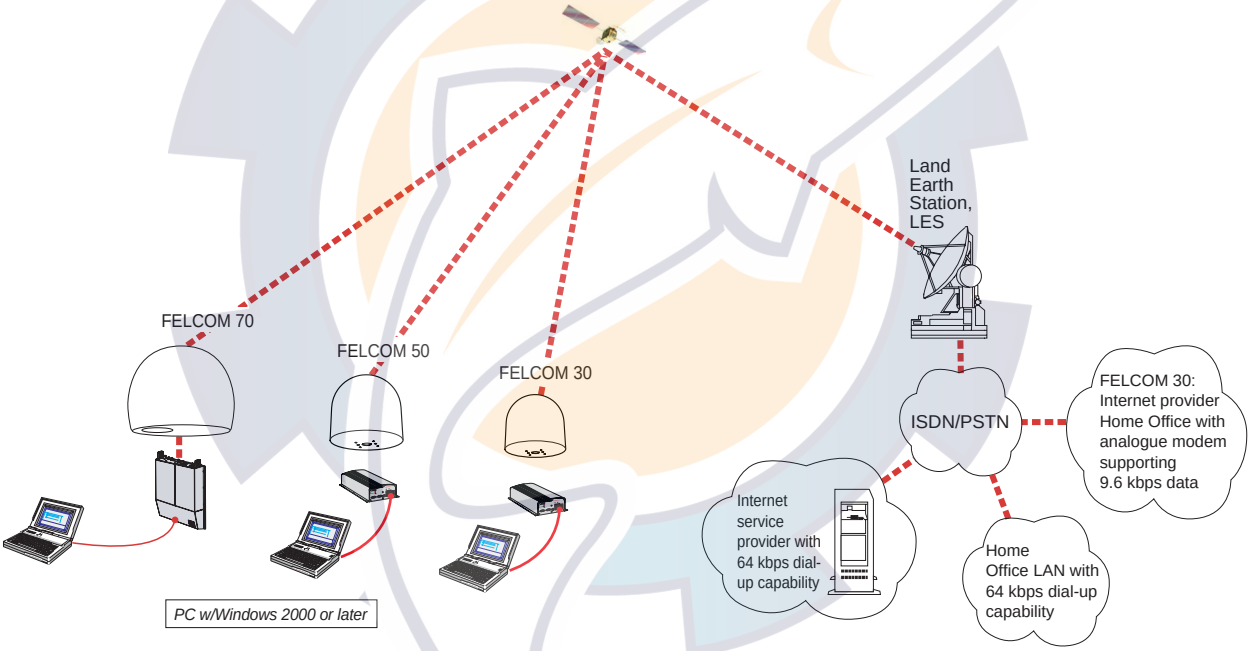
6.3.1 PPP modem via RS-232

Introduction

The **Mobile Data Service** complies with the ommunication protocol defined by the Inmarsat Fleet system.
The transmission data rate over the satellite link is:

F77/F55	64 kbps
F33	9.6 kbps

The **Mobile Data Service** offers 64 kbps connection to the international ISDN/PSTN network for F77/F55.
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).



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6.3.2 Connecting up

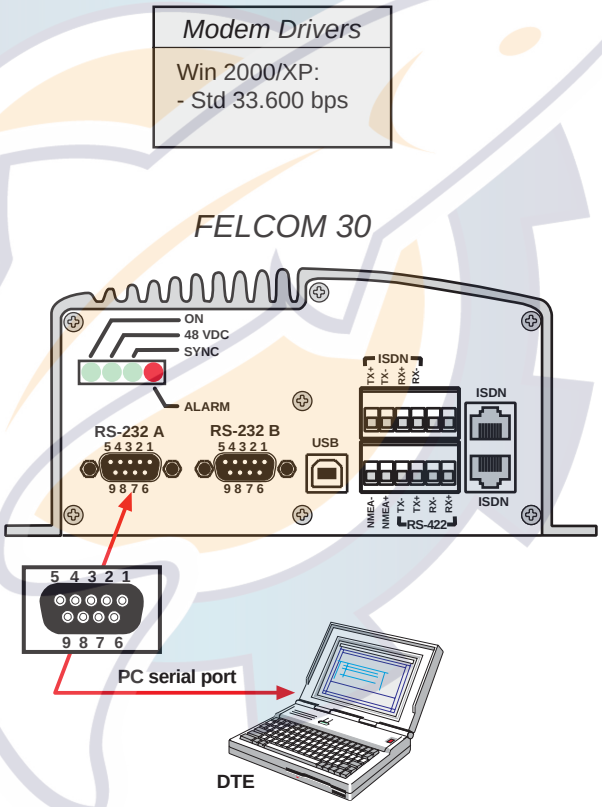
Installation

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)

To change the default setting, see ***"3.7 Setting ports"***.



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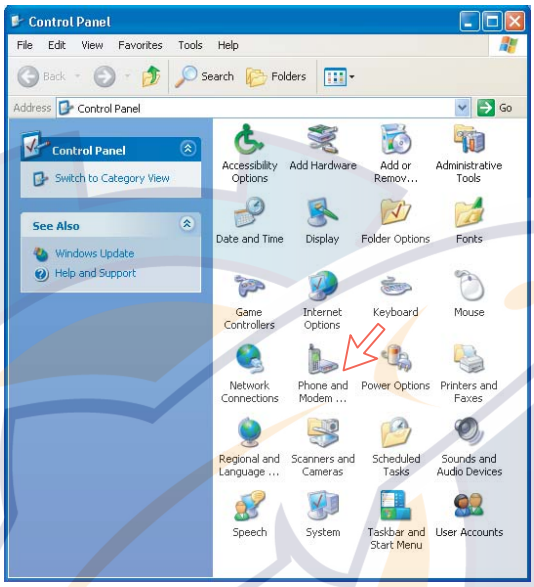
6.3.3 PC setup

Setting up a connection

(Windows XP is used as an example)

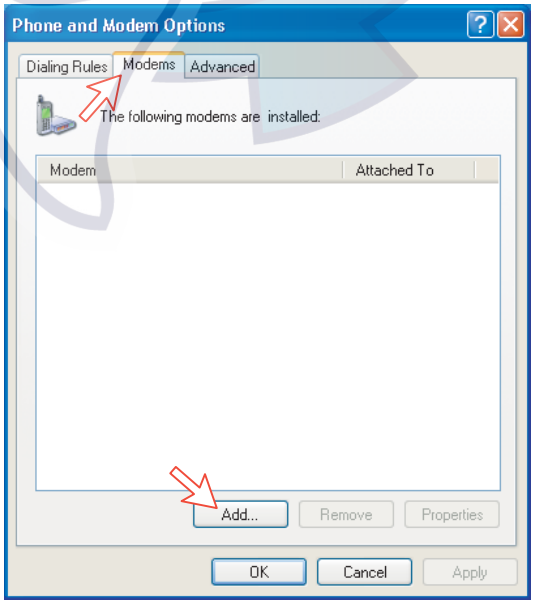
Ensure that vtLite Mobile is closed.

1 Open the **Control Panel** on the PC and doubleclick the **Phone and Modem Options** icon.



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

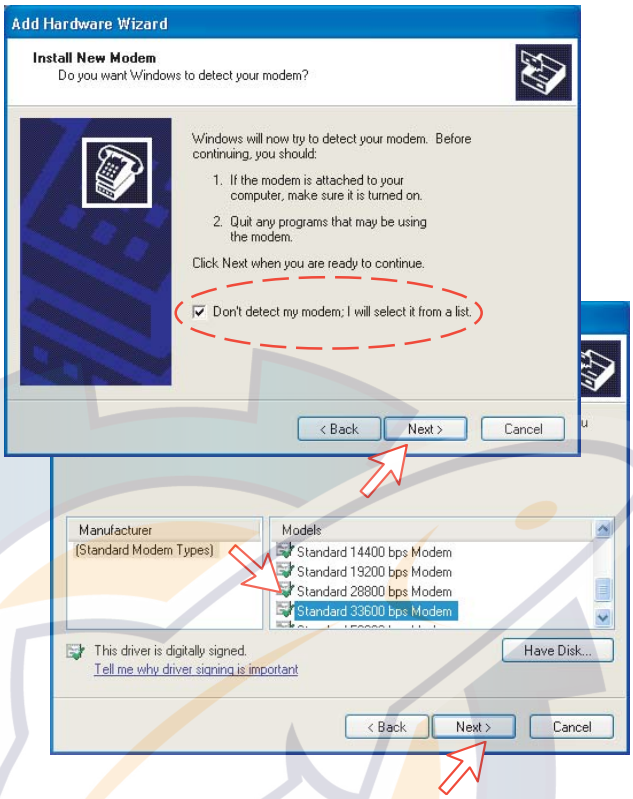
Note: Setting up is only necessary to do once.
For future connections, go directly to **Initiate a call**.



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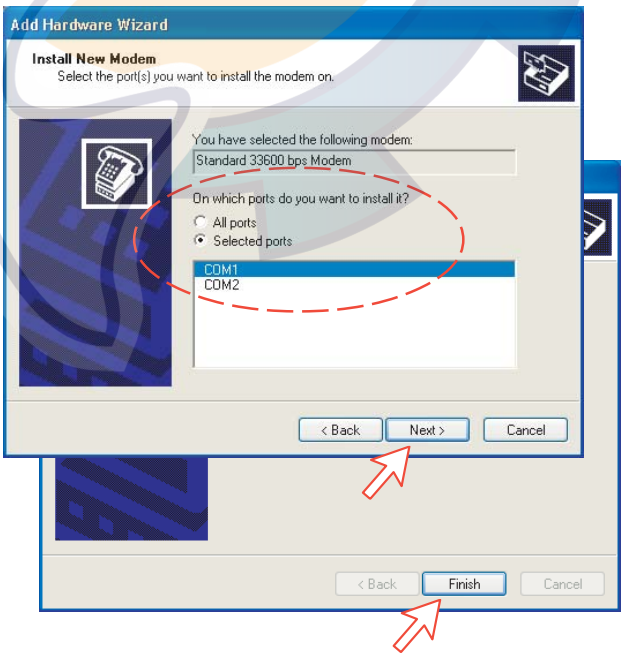
3 In the **Add Hardware Wizard** window check "Don't detect my modem", *and click* ***Next***.

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



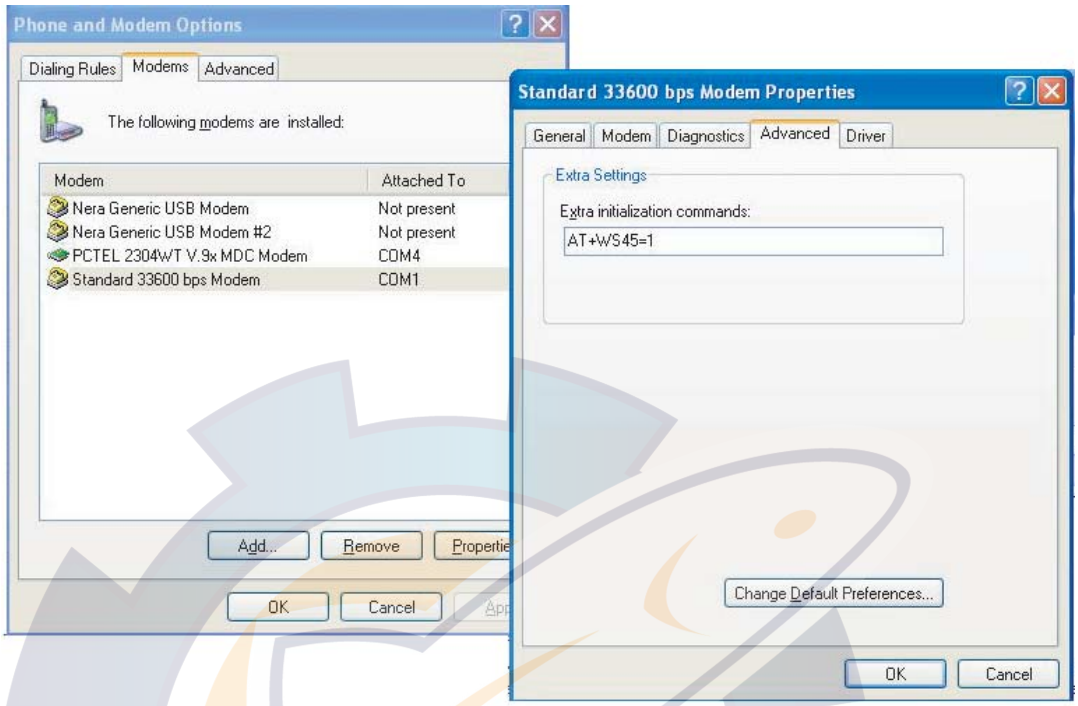
4 Select the port to which the Modem driver should be installed.

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



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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.”

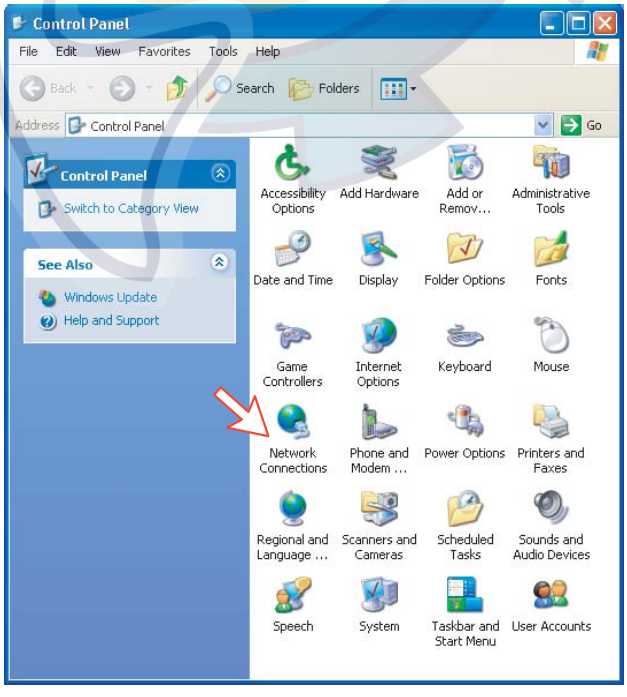


Note: The setup for data transfer to the Furuno terminal is based on the Windows 2000/XP default parameters:

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

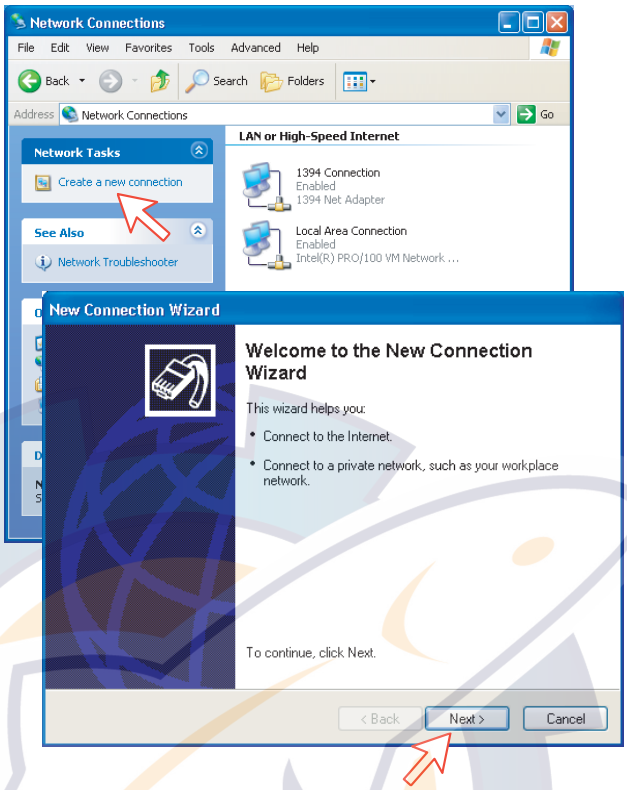
Clicking **Properties** allows checking the parameters.

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

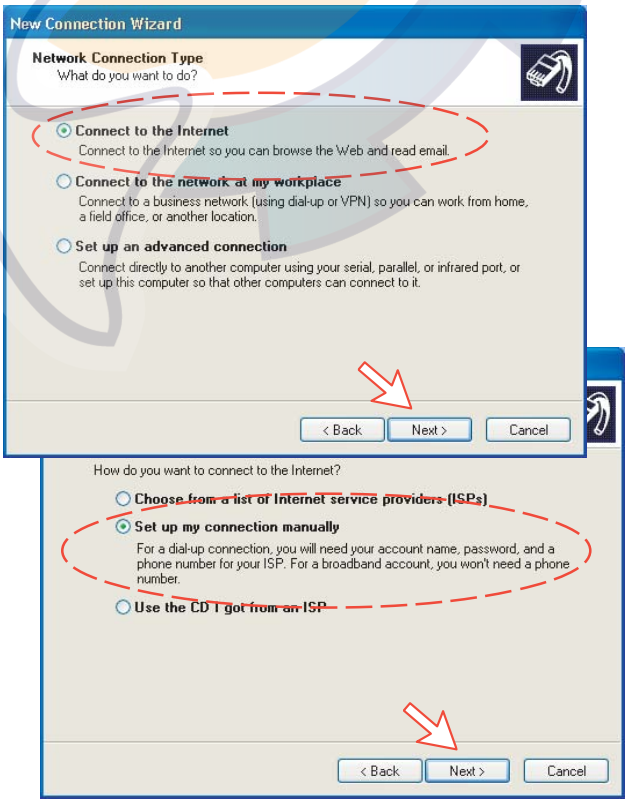


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7 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*

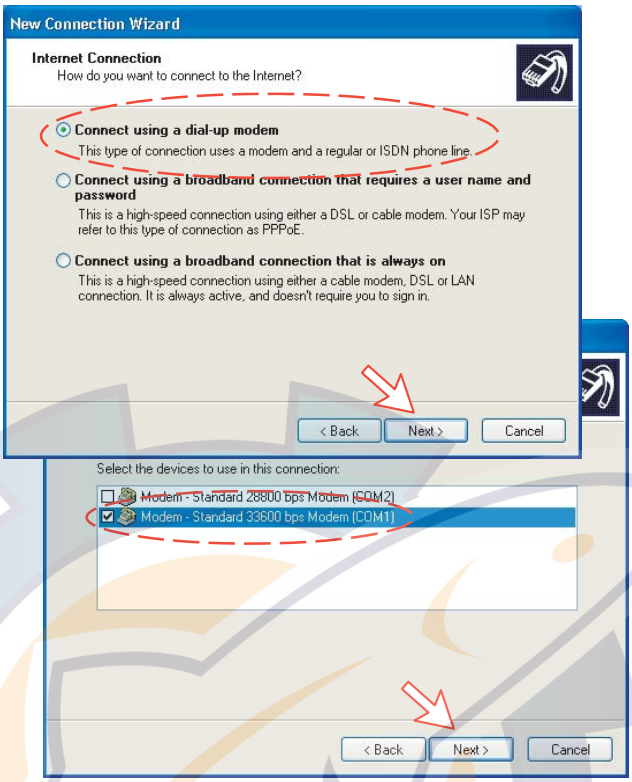


8 Check **Connect to the Internet**. *Click **Next**.* Check **Set up my connection manually.**
*Click **Next**.*

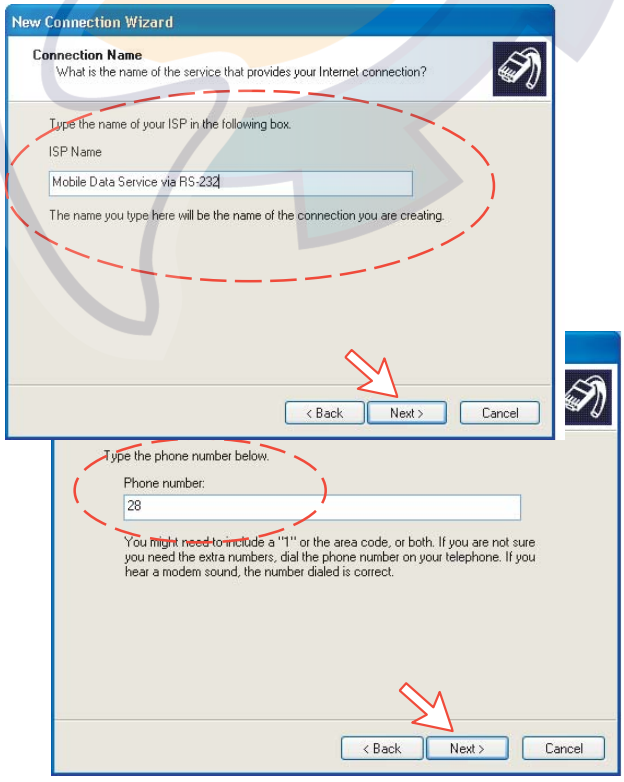


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9 Check **Connect using a dial-up modem**.
Click ***Next***. Check "Modem - Standard 33600 bps Modem". *Click* ***Next***.



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***.

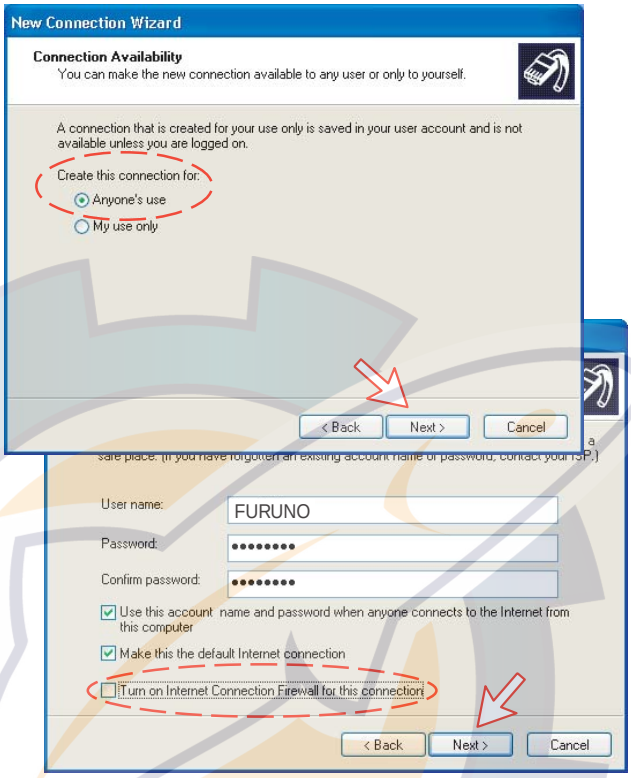


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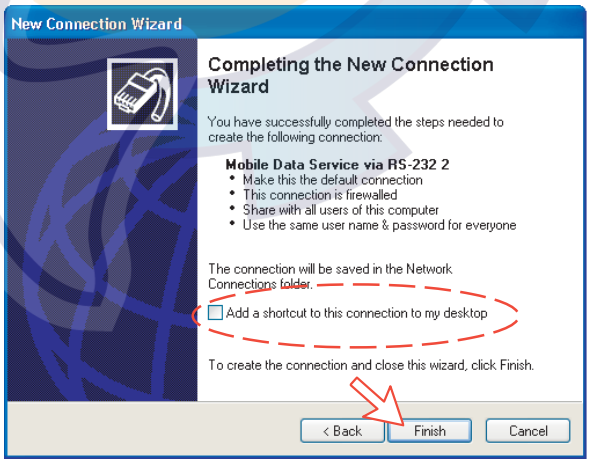
11 Check **Anyone's use**, *and click **Next***.

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

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



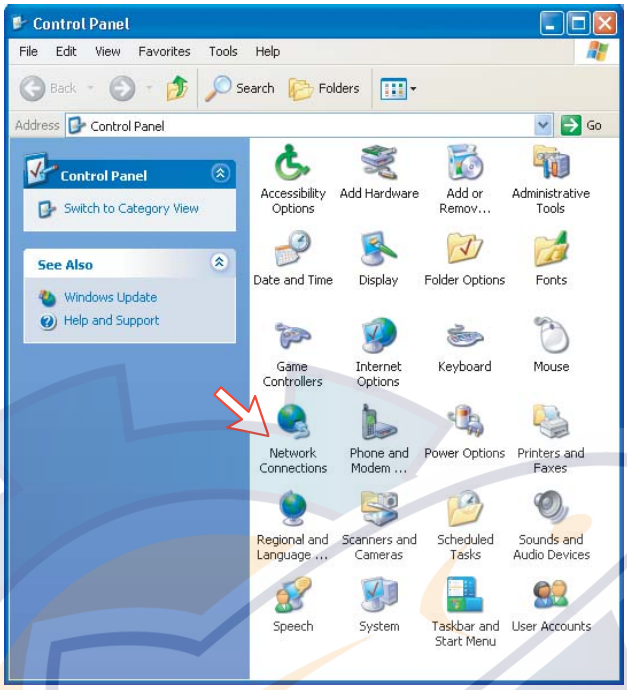
12 Complete the **New Connection**, *click **Finish**.*



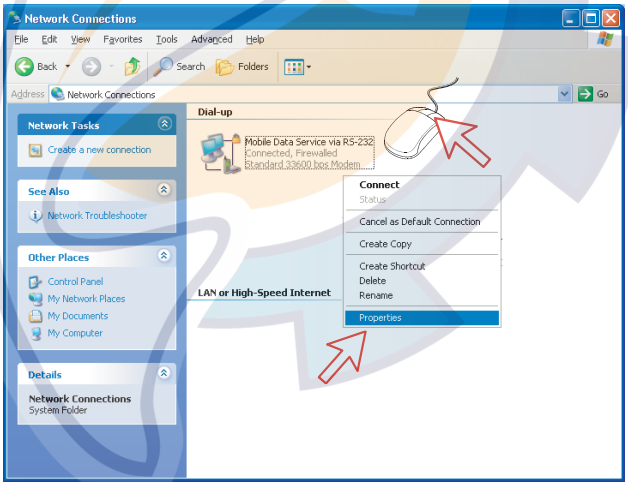
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6.3.4 Checking default settings

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**.

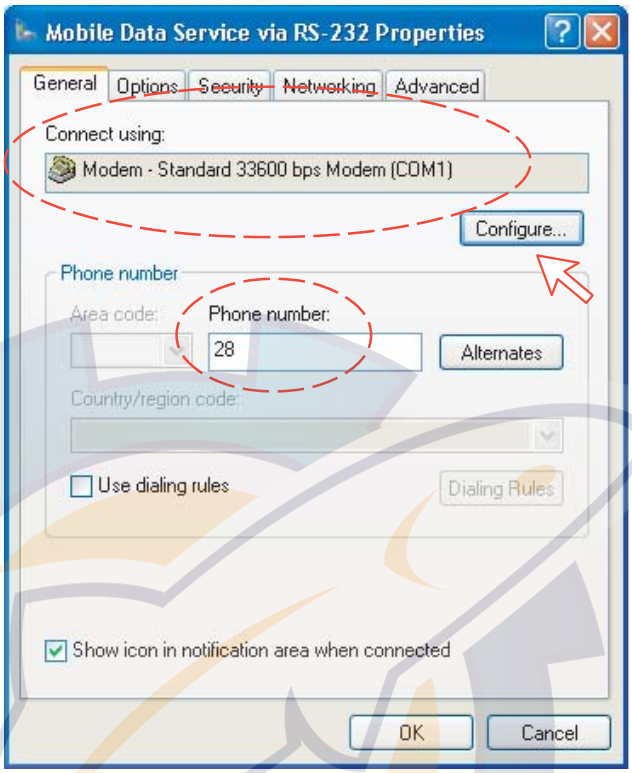


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3 Check settings in the **Mobile Data Service via RS-232 Properties** window:

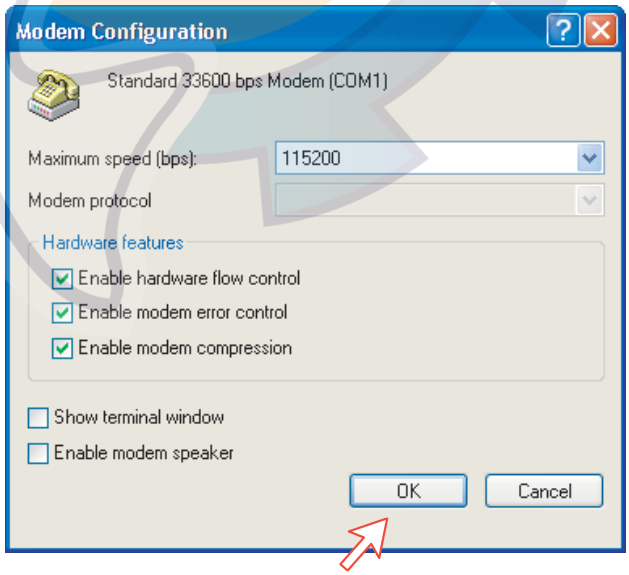
- **Modem - Standard 33600 bps Modem (COM1)**
- **Phone number: 28**

*Click **Configure**.*



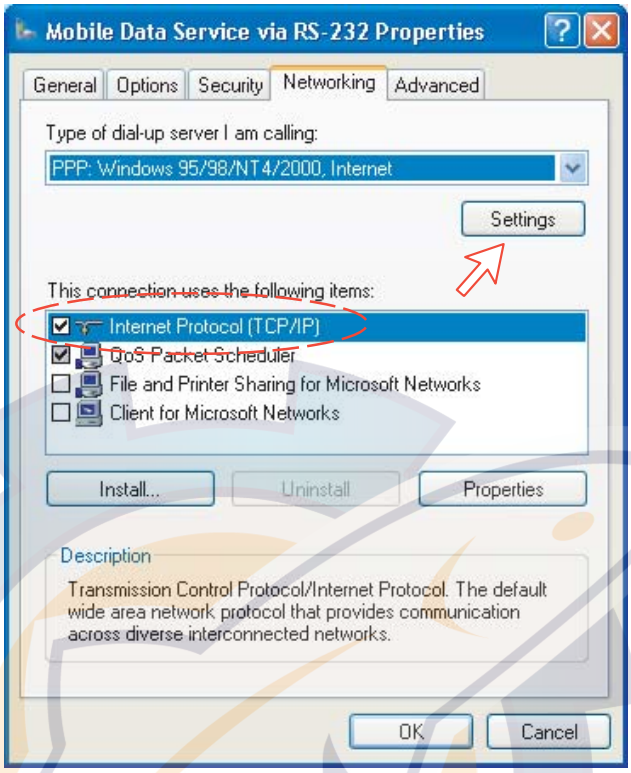
4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.

*Click **OK***

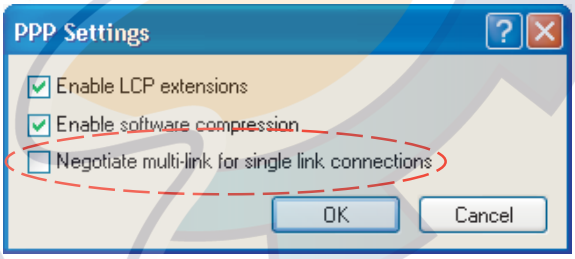


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5 In the **Mobile Data Service via RS-232 Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected.
*Click **Settings**.*



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

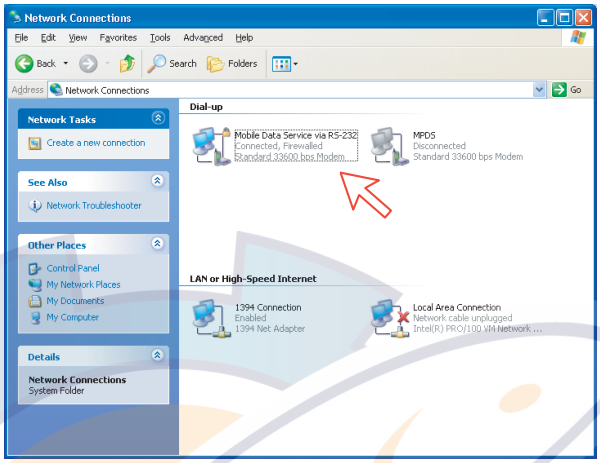


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6.3.5 Connecting to server

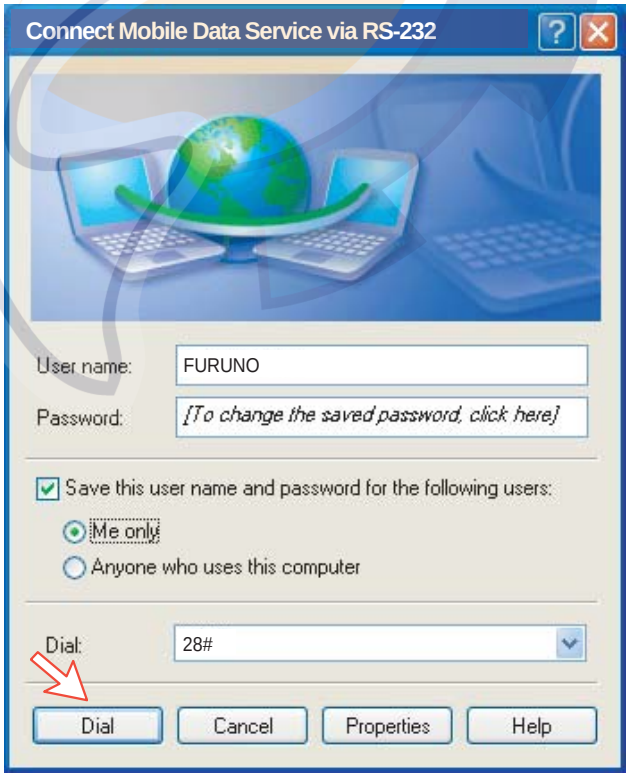
Initiate a call

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 vtLite Mobile program must be closed down prior to dialing up the server.

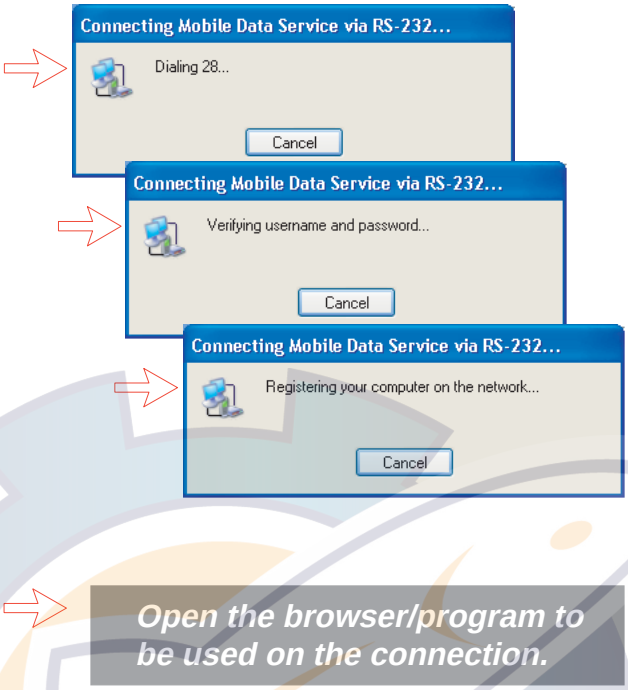
If provided for the specific server connection, enter the **User name** and **Password**.
Click **Dial** to establish the connection to the server.
*See **Connection in progress** on next page.*



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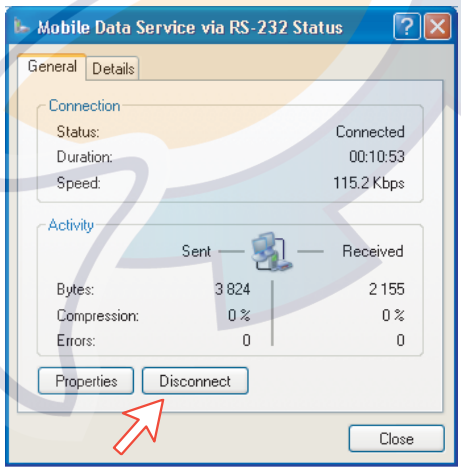
Connection in progress

Displayed on the PC screen:



Connection status

*Appears when right-clicking the **Mobile Data Service via RS-232** dial-up icon 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.

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6.3.6 Troubleshooting

Problem	*Probable cause*	*Action*
1. No contact with modem or busy	Wrong setup of Communication Unit. vtLite Mobile 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 vtLite Mobile
2. Cannot find Dial Up Networking:	Dial up connection not installed.	• Contact your PC vendor to get the software.
3. Connection unsuccessful: ***- FELCOM 70*** ***- FELCOM 50***	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 vtLite Mobile, check configuration in Device Manager.
4. Connection unsuccessful: ***- FELCOM 30***	Other end is not an analogue line.	• It is not possible to dial into an ISDN line.
	Wrong connection details	• Check phone number, use name and password. • Check whether 9.6 kbps data is commissioned. • Using vtLite Mobile, check configuration in the Device Manager.
5. Cable length	Guaranteed length: 3 m	
6. All dialups dial in MPDS		• Use AT+WS45=1 to set port back to normal mode
7. Using Win 98/NT		• Win 98 requires a user name and a password even if Net provider does not. • “Logging onto network” should be unchecked. • Driver 28800 bps can also be used. Remember 115000bps port speed
8. User name and password illegal	Some PCs always require username/password.	• Enter any name/password to ensure a successful call.
9. Disconnects after some time	Wrong setting in dialup	• Check properties>options>idle time before hang up.

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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.: AT&D equals AT&D0.

Hanging up – escape sequence

Once the Mobile Data Service is online to another system, the only command it recognises 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 ATH↵R
- To return to online mode, key ATO↵R

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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

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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.

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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.*

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AT&S**[n]**R
selects the Data Set Ready (DSR) behaviour:

AT&S0R sets DSR permanently ON.

AT&S1R sets DSR ON when satellite link is established. *Default.*

AT&VR
displays stored configuration profile.

AT&WR
saves active configuration profile.
(May be recalled using ATZR*).*

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 designed specially for the Inmarsat system.

AT+GCAPR
displays capabilities supported by FELCOM 30/50/70

AT+GMIR
displays manufacturer identification.

AT+GMMR
displays equipment identification.

AT+GMRR
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 30/50/70.

AT+ICF?R
displays current settings.

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AT+ICF=?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:
AT+ICF=3,3R
specifies a data format of 8 data bits,1 stop bit and space parity.

AT+ICF=
[**n**<WP-to-PC>] [**,m**<PC-to-WP>];R
specifies the local flow control between the PC and FELCOM 30/50/70.

AT+ICF?R
displays current settings.

AT+ICF=?R
displays available settings.

FELCOM 30/50/70 - 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 30/50/70, reference number **m** :
0 = no flow control
1 = XON/XOFF (software flow control)
Default **2** = CTS (hardware flow control)

AT+IPR=[**r+**(PC-to-WP rate)]R
specifies the data rate at which PC – FELCOM 30/50/70 interface accepts commands.

AT+IPR?R
displays current settings.

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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 30/50/70 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+WNERACLEARCALL=X R
clears UDI/MPDS call on the following ports:
X=0 DTE (RS-232A)
X=1 DTE (RS-232B)
X=2 USB

AT+WNERADTE R
allows configuration and monitoring of the FELCOM 30/50/70.

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.

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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.

AT+WS45=[n] R

sets the requested satellite and terrestrial error correction scheme for data calls.

AT+WS45=? R

displays current setting.

AT WS45=? R

displays available setting.

Parameter reference number

n:	Sat. err. corr.	Terr. err. corr.	End-to-end
0	non-ARQ	non-V.42	NARQ
1*	ARQ	V.42	ARQ
200	non-ARQ	V.42	NARQ
201	ARQ	non-V.42	NARQ

*: Default & recommended

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S-Register commands

S-registers are special memory locations in FELCOM 30/50/70 for storing specific configuration and operating parameters.

AT S0 = **[n]** R
specifies automatic answer at the nth ring.
0=OFF, 1-255=ON.

AT S0 = **<n>** R
sets value of register.

AT S0 ? R
displays current value of register.

AT S0 = 0 R turns automatic answer **OFF**. *Default.*

AT S0 = 1 R answers after 1 ring.
*the Mobile Data Service will terminate incoming calls after **95 secs**.*

AT S2 = **[n]** R
stores the ASCII decimal code for the escape character.
Authorized codes within: 0 to 255.
***n ≥ 128** disables the escape sequence.*

AT S2 = **<n>** R
sets value of register.

AT S2 ? R
displays current value of register.

AT S2 = 4 3 R sets the ESCAPE code to **43** (+ -key). *Default.*

AT S3 = **[n]** R
stores the ASCII decimal code for the carriage return character. Authorized codes within: 0 to 127.

AT S3 = **<n>** R
sets value of register.

AT S3 ? R
displays current value of register.

AT S3 = 1 3 R sets the CARRIAGE RETURN code to **13** (R -key). *Default.*

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AT S4 = **[n]** R
stores the ASCII decimal code for the line feed character. Authorized codes: 0 to 127.

AT S4 = **[n]** R
sets value of register.

AT S4 ? R
displays current value of register.

AT S4 = 1 0 R sets the LINE FEED code to **10**. *Default.*

AT S5 = **[n]** R
stores the ASCII decimal code for the editing character.
Authorized codes: 0 to 127.

AT S5 = **<n>** R S
sets value of register.

AT S5 ? R
displays current value of register.

AT S5 = 8 R sets the BACK SPACE code to **8**. *Default.*

AT S2 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.

AT S2 5 = **<n>** R
sets delay value.

AT S2 5 ? ; R
displays current delay value.

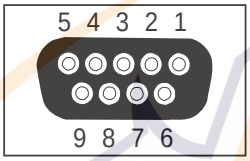
AT S2 5 = 5 R sets delay to **5** (corresponding to 50 milliseconds). *Default.*

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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 30/50/70.

Signal source DCE means the signal goes from FELCOM 30/50/70 to the PC.

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Signal descriptions

102 Signal Ground

Digital ground, return line.

103 Send Data

Data transmitted from DTE (PC) to DCE (FELCOM 30/50/70).

104 Receive data

Data Received from DCE (FELCOM 30/50/70) to DTE (PC).

105 Request To Send

OFF requests DCE (FELCOM 30/50/70) to suspend transmission to DTE (PC).
ON requests DCE (FELCOM 30/50/70) to resume transmission to DTE (PC).

106 Clear to send

OFF indicates that DCE (FELCOM 30/50/70) cannot accept data from DTE (PC).
ON indicates that DCE (FELCOM 30/50/70) is prepared to accept data from DTE (PC).

107 Data Set Ready

Signal from FELCOM 30/50/70 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 30/50/70 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 30/50/70. 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.

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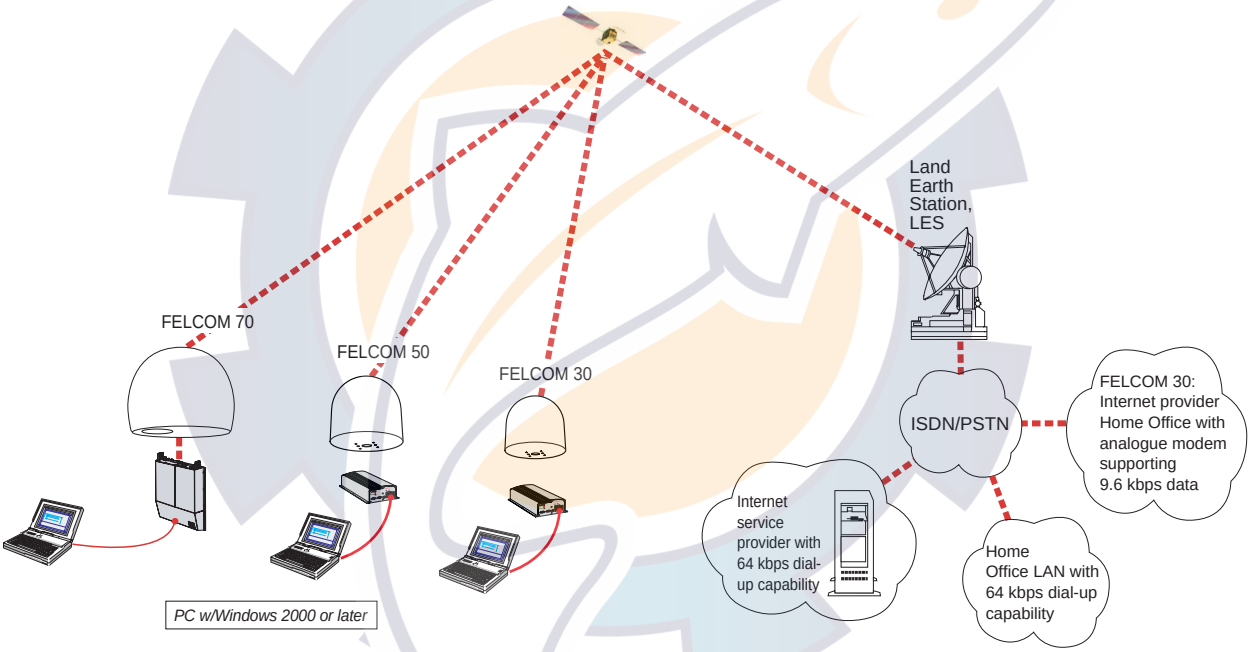
6.4 Mobile Data Service (USB)

6.4.1 PPP modem via USB

Introduction

The **Mobile Data Service** complies with the communication protocol defined by the Inmarsat Fleet system.
The transmission data rate over the satellite link is 64 kbps, except for Fleet 33 which provides a data rate of 9.6 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).



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USB driver installation

Prior to installing the USB drivers, remove vtLite if it is to be used via USB. Remove all programs that use virtual COM ports, such as RVS.
The programs may be reinstalled when the USB installation has been completed.

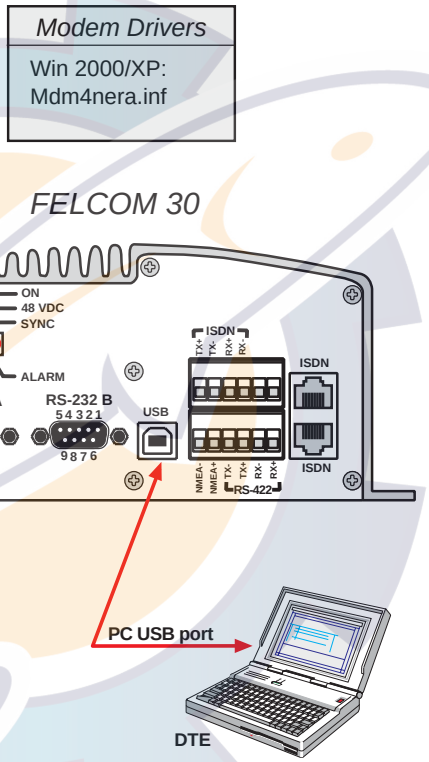
Procedure:

1 Insert the CD enclosed with the manual.

2 With the terminal ON, connect the USB port of a PC and FELCOM 30 as shown below.

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

See next page.



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.

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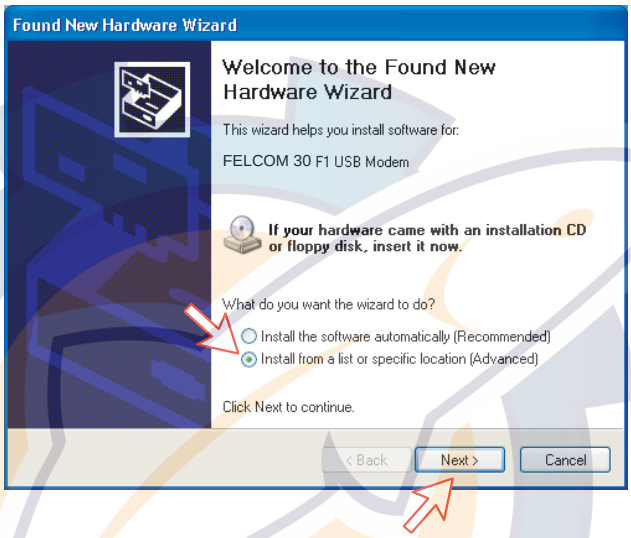
6.4.2 PC setup

Setting up a connection

(Windows XP is used as an example)

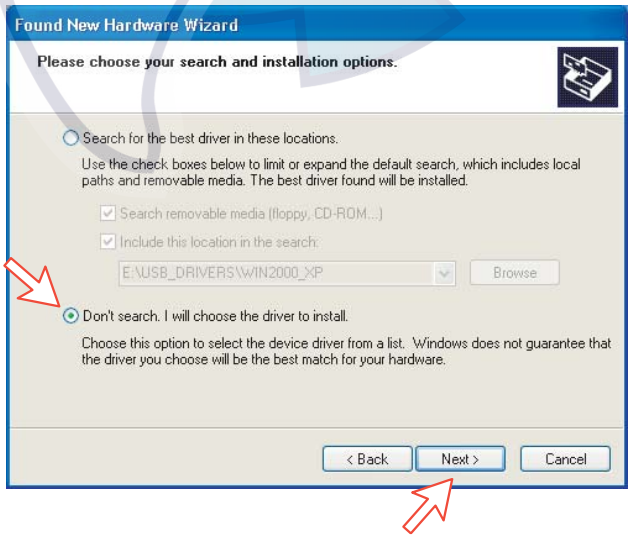
Ensure that vtLite Mobile is closed.

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.***



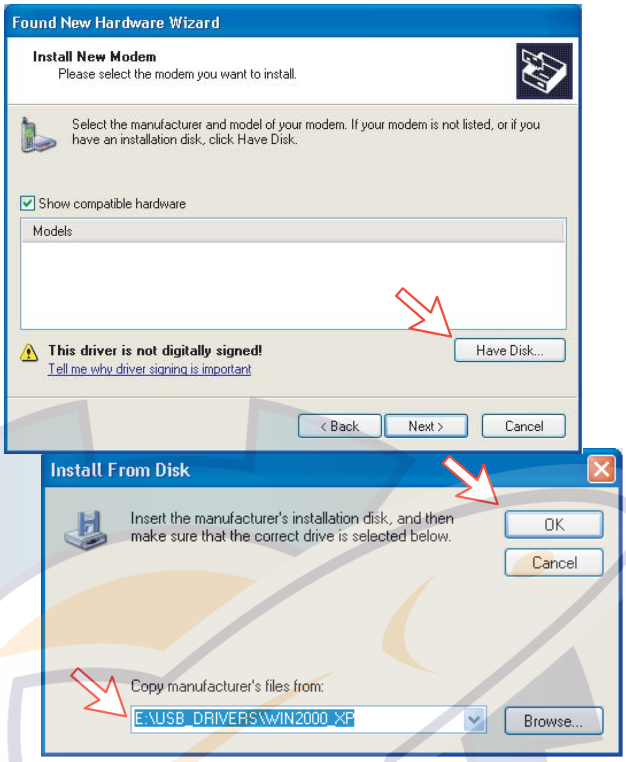
2 Check "Don't search. I will choose the driver to install".
Click ***Next***.

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

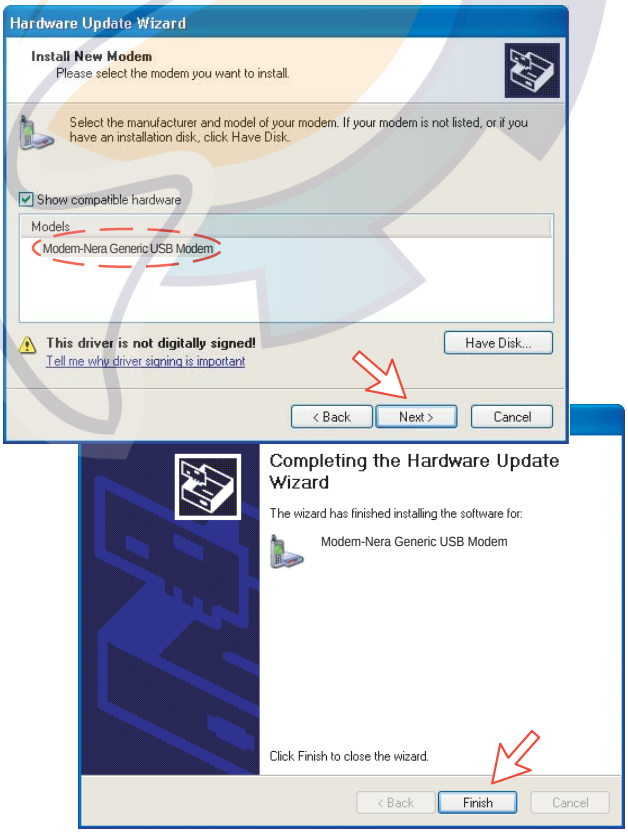


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3 In the **Install new modem** window *click* ***Have disk***. Windows selects the CD drive and detects the USB driver on the CD automatically. *Click* ***Ok***.

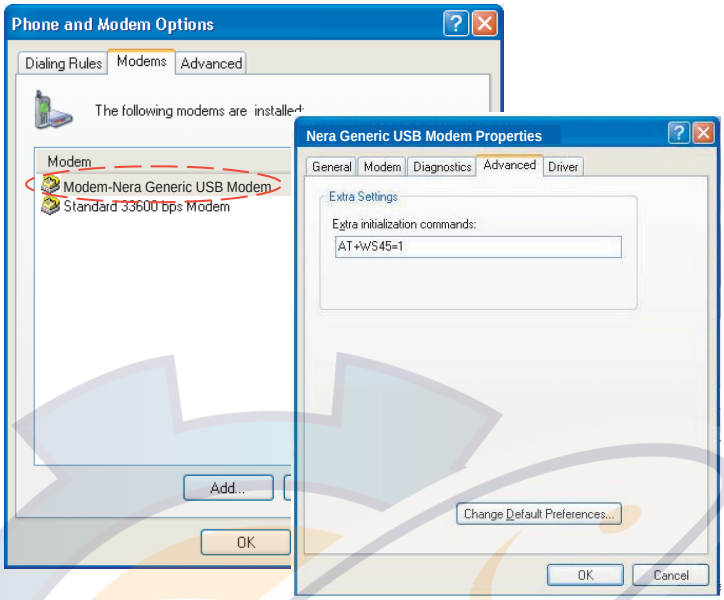


4 Select the **Modem-Nera Generic USB Modem**. *Click* ***Next*** *and then* ***Finish*** *to complete the installation.*



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

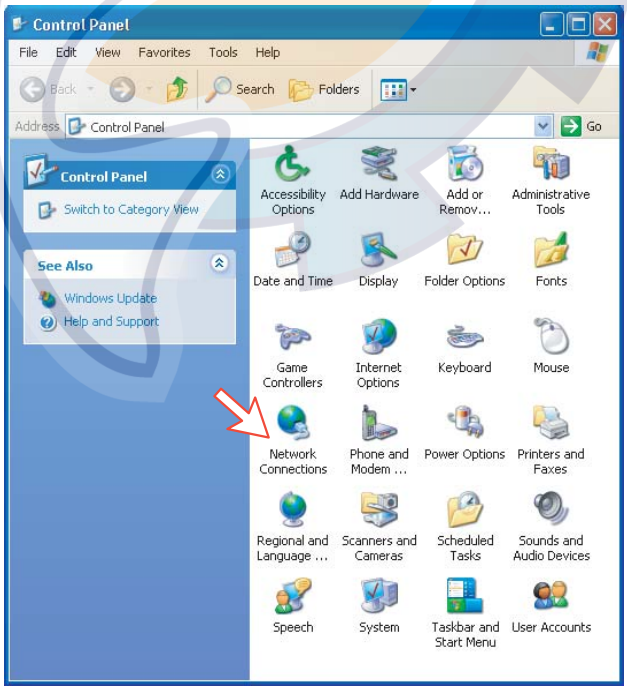


Note: The setup for data transfer to the FURUNO terminal is based on the Windows 2000/XP default parameters:

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

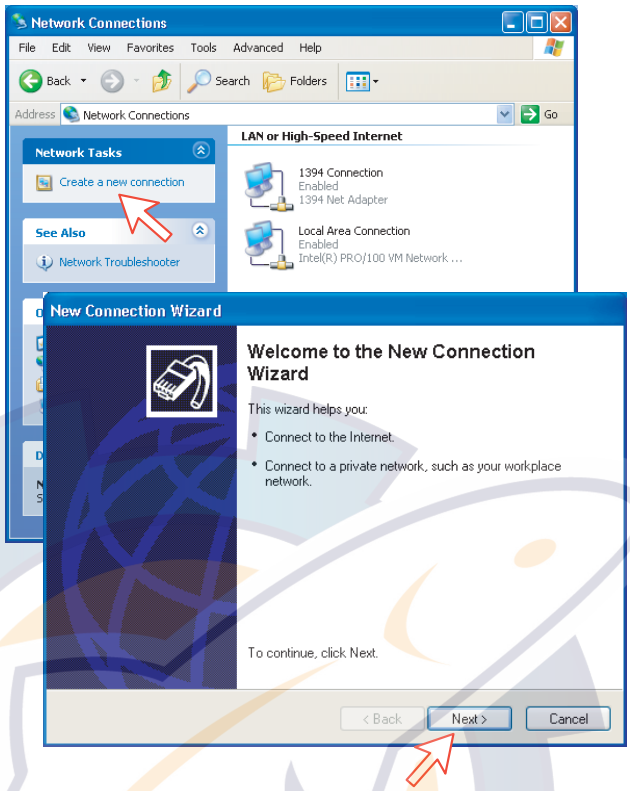
Clicking **Properties** allows checking the parameters.

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

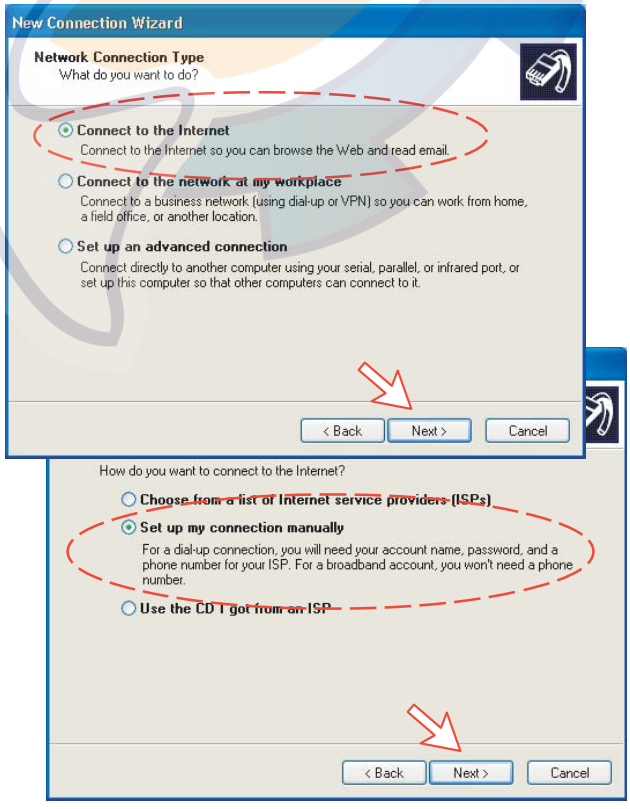


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7 Click **Create a new connection** to open the **New Connection Wizard**.
*Click **Next**.*

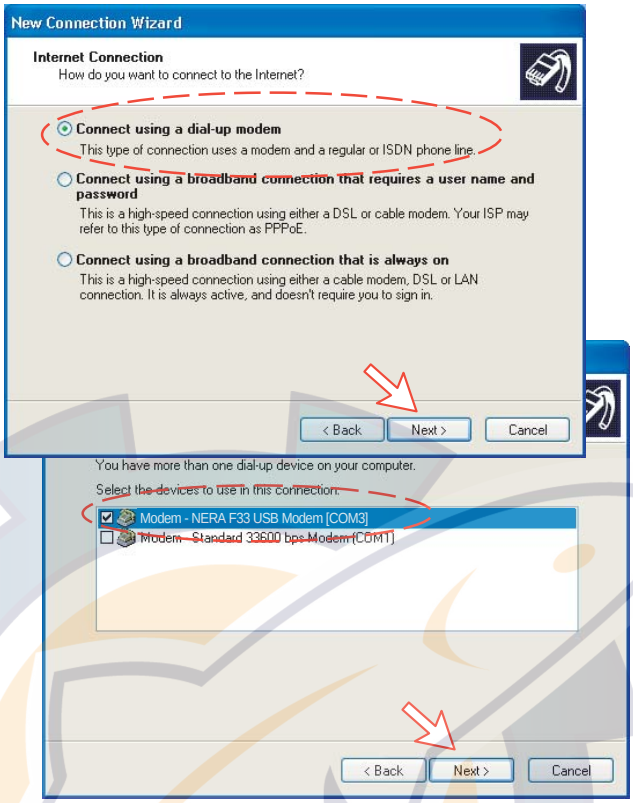


8 Check **Connect to the Internet**. *Click **Next***. Check **Set up my connection manually**.
*Click **Next**.*

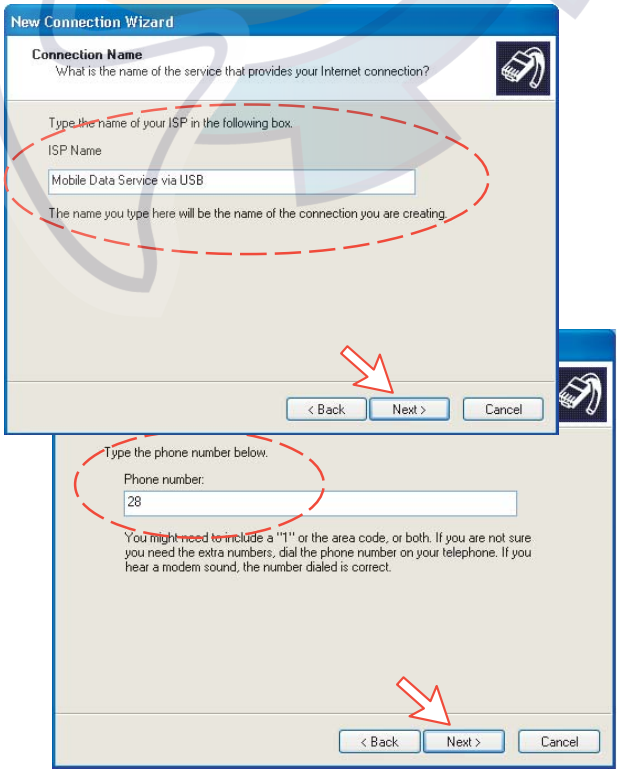


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9 Check **Connect using a dial-up modem**.
*Click **Next**.* Check "Modem-Nera USB Modem". *Click **Next**.*

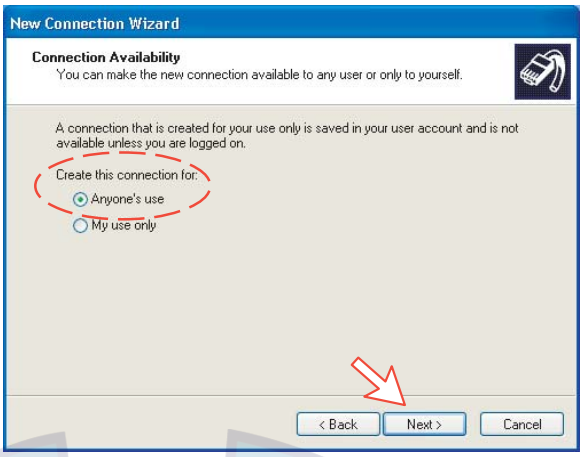


10 Enter the name for the connection e.g. **Mobile Data Service via USB**. *Click **Next***.
Enter phone number (through some Net Providers, dialing **28** automatically connects you to the ISP – Internet Service Provider). *Click **Next***.



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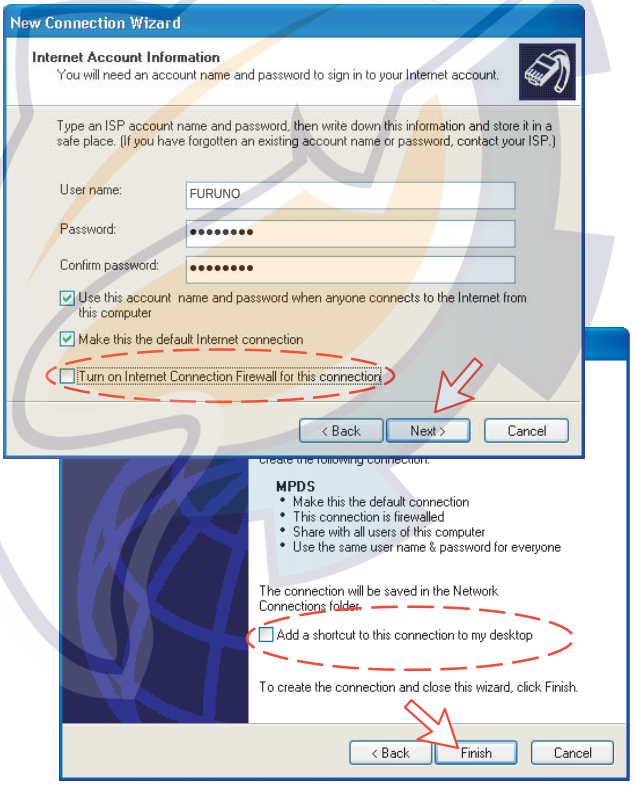
11 Check **Anyone's use**, *and click **Next***.



12 Enter name and password for the connection.

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

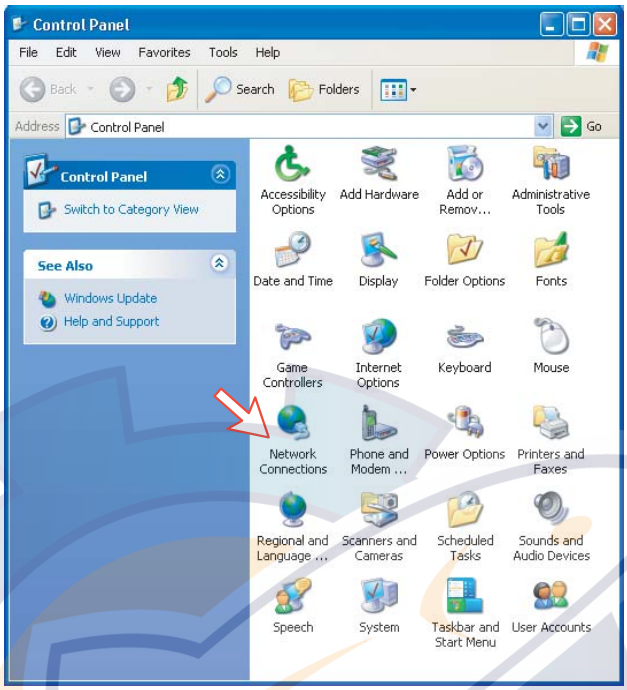
Complete the **New Connection**, *click **Finish***.



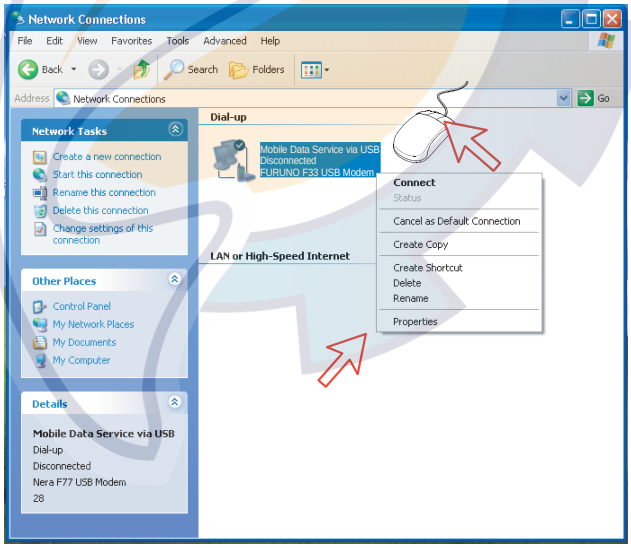
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6.4.3 Checking default settings

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

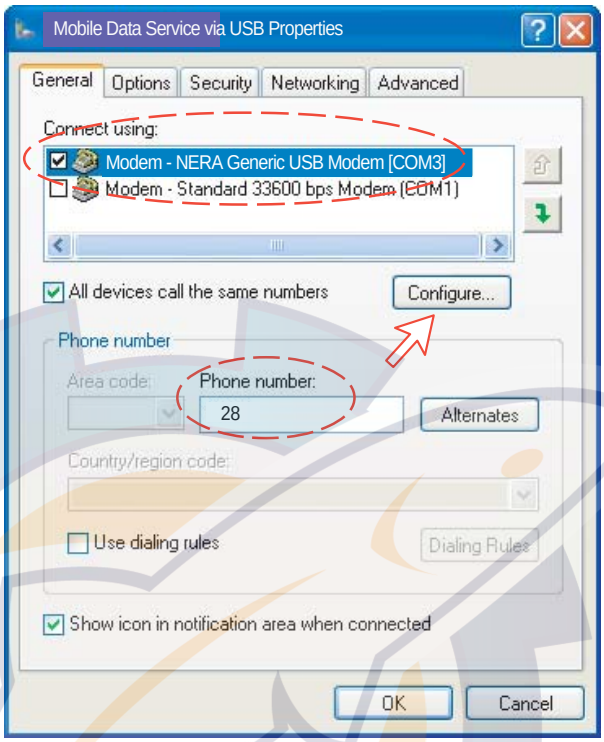


2 Right-click the **Mobile Data Service via USB** dial-up connection and click **Properties**.

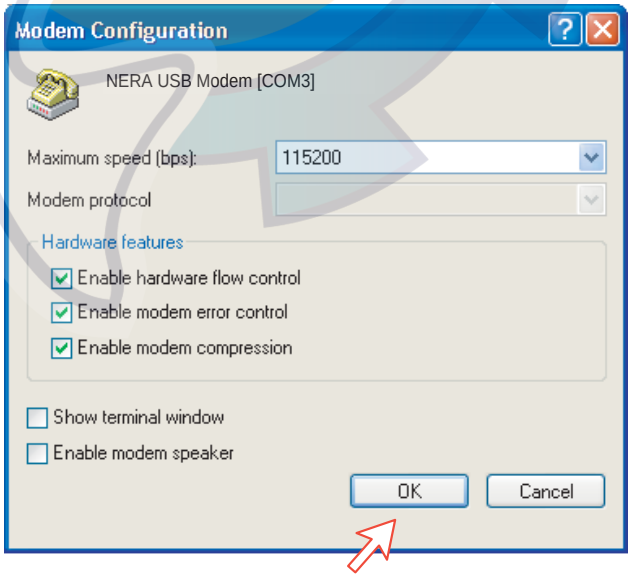


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3 Confirm settings in the **Mobile Data Service via USB Properties** window:
"Modem – NERA Generic USB Modem".
Phone number: 28
*Click **Configure**.*

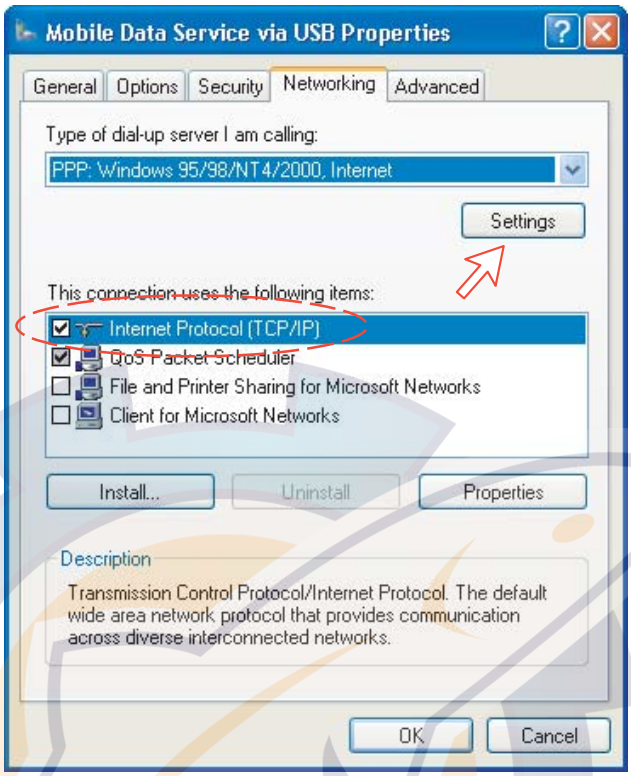


4 In the **Modem Configuration** window, check that the **Maximum speed (bps)** is set to **115200**.
*Click **OK***

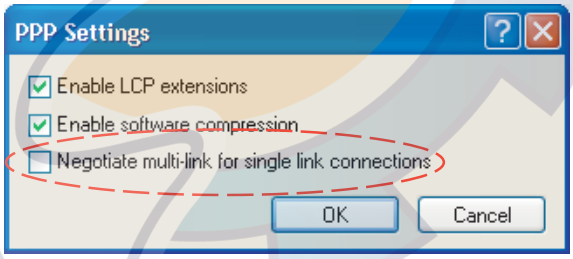


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5 In the **Mobile Data Service via RS-232 Properties** window, click **Networking** and check that **Internet Protocol (TCP/IP)** is selected.
*Click **Settings**.*



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

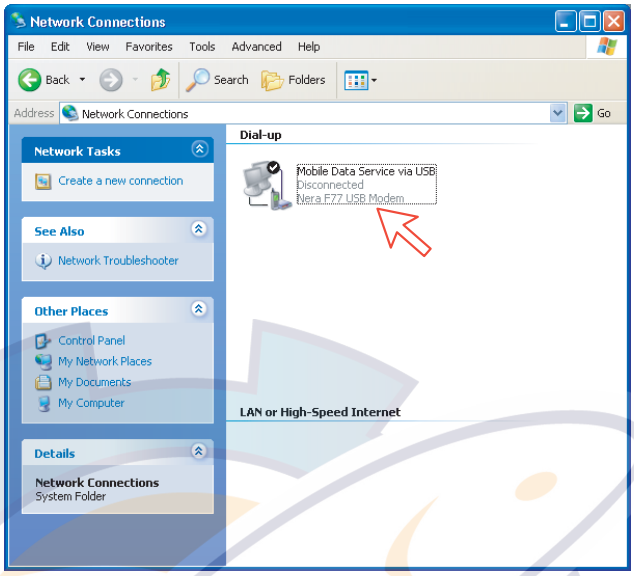


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6.4.4 Connecting to server

Initiate a call

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



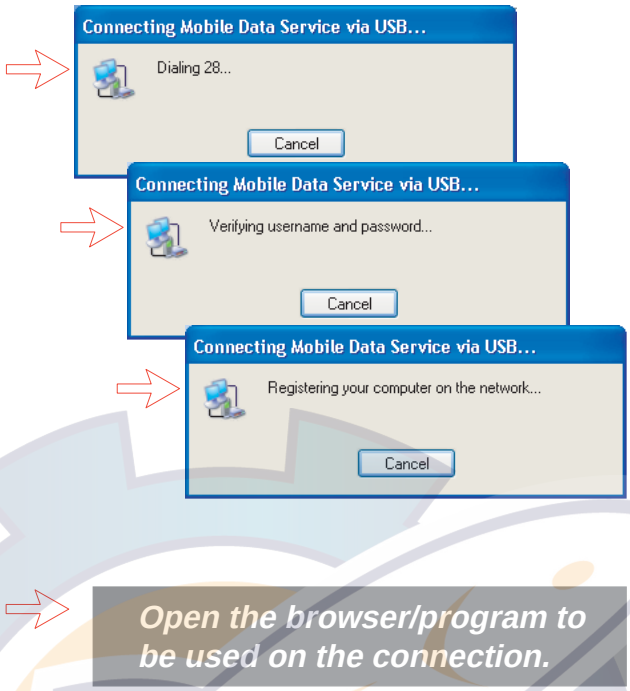
Note: The vtLite Mobile program must be closed down prior to dialing up the server.

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.*



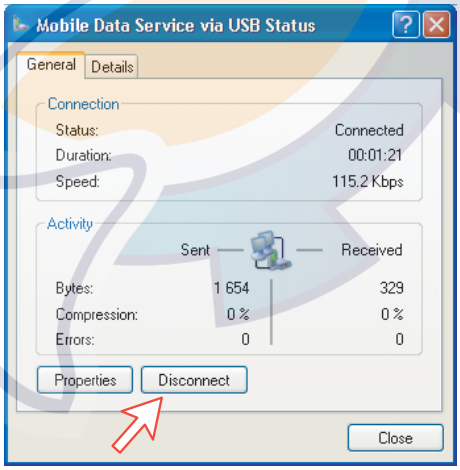
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Connection in progress



Connection status

*Appears when right-clicking the **Mobile Data Service via USB** dial-up icon 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.

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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 6-33.
2. Cannot find Network Connection:	Network connection not installed.	• Contact your PC vendor to get the software.
3. Connection unsuccessful: ***- FELCOM 70*** ***- FELCOM 50***	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 64 kbps data UDI is commissioned. • Using vtLite Mobile, check configuration in the Device Manager.
4. Connection unsuccessful: ***- FELCOM 30***	Other end is not an analogue line.	• It is not possible to dial into an ISDN line.
	Wrong connection details	• Check the phone number, user name and password. • Check whether the 9.6 kbps data is commissioned. • Using vtLite Mobile, check configuration in the Device Manager.
5. Cable length	Guranteed length: 5 m	

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Problem	*Probable cause*	*Action*
6. Using vtLite Mobile via USB fails		• Remove vtLite Mobile and USB drivers, *see problem 1*. • Reinstall vtLite Mobile.
7. Disconnects after some time	Wrong setting in dialup	• Check properties>options>idle time before hang up.
8. All dialups dial in MPDS mode		• Use AT+WS45=1 to set port back to normal mode
9. Using Win 98		• Not Supported
10. Username and password illegal	Some PCs always require user name/password	• Enter any name/password to ensure a successful call.
11. Problem using vtLite via USB	Wrong COM port	• VtLite only autodetects COM1-COM6. Select appropriate port manually.

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6.5 Data Service with Compression

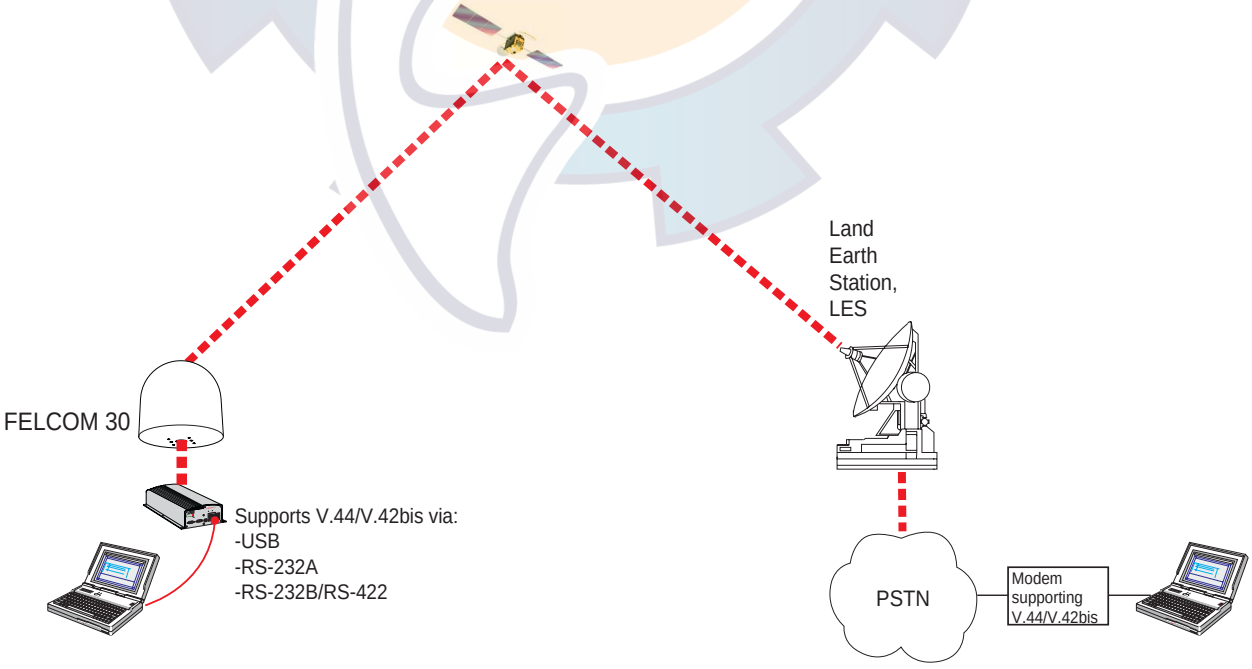
Note: *For dial-up with data compression, see the application:*
*"**6.3 Mobile Data Service (RS-232)**" or*
*"**6.4 Mobile Data Service (USB)**".*

6.5.1 Introduction

FELCOM 30 incorporates a data compression function providing up to four times 9.6 kbps increase in the transfer speed between the mobile and shore of:

- text files
- web browsing
- e-mail

Be aware that files that are already compressed such as jpeg, mpeg, zip files are not compressed during the data transfer.
The compression is nondestructible.
The files transferred are completely recovered at the remote end.
*However, as can be seen in the **DATA TRANSFER SPEED** graph, it is recommended to leave the compression function enabled.*
The FELCOM 30 satellite terminal supports the V.44 and V.42bis standards.
During “negotiation” with the terrestrial modem, FELCOM 30 announces that it supports both these compression standards.
If the shore modem also supports V.44 then this is used in preference to V.42bis.
If V.42bis only is supported, this will be used. If the called party does not support compression then the call will proceed without compression applied.
V.44 will typically yield a 20% improvement in compression ratio compared to V.42bis.



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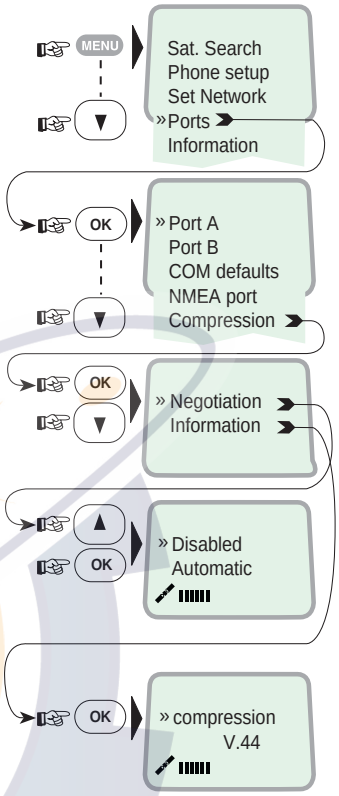
6.5.2 Compression setup

Compression function

With the compression function set to **automatic** negotiation (default), the data call will proceed using the standard preferred by the shore modem.
If the shore modem has no compression software, the data transfer will be uncompressed.

To set up and/or verify the compression:

1 Open the **MENU** and scroll down to **Ports**:



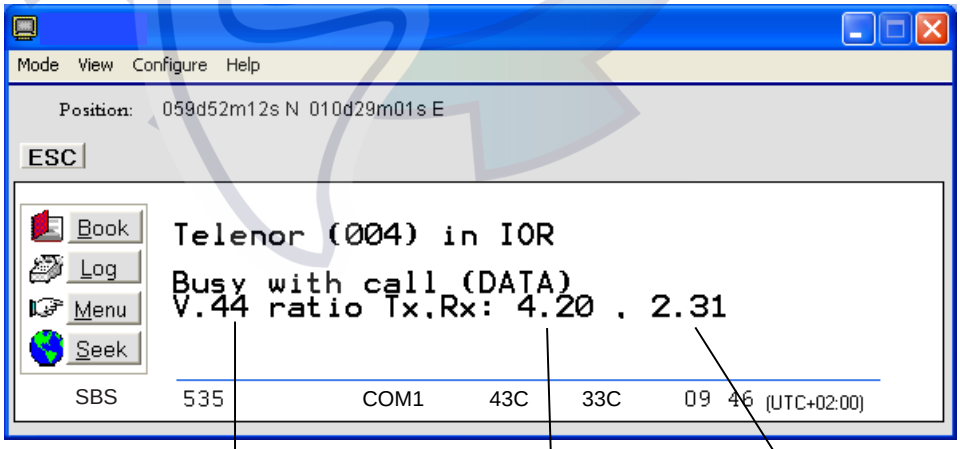
2 Scroll down to **Compression**:

3 Selecting **Negotiation** allows setting the compression function to **Automatic** or **Disabled**, as required:
(applies to all three serial ports).

4 During transfer, selecting **Information** shows type of protocol used:

- V.44
- V.42bis
- compression inactive

When set up for data compression, the idle window in vtLite Mobile appears as shown below.



Examples:

Compression standard used.

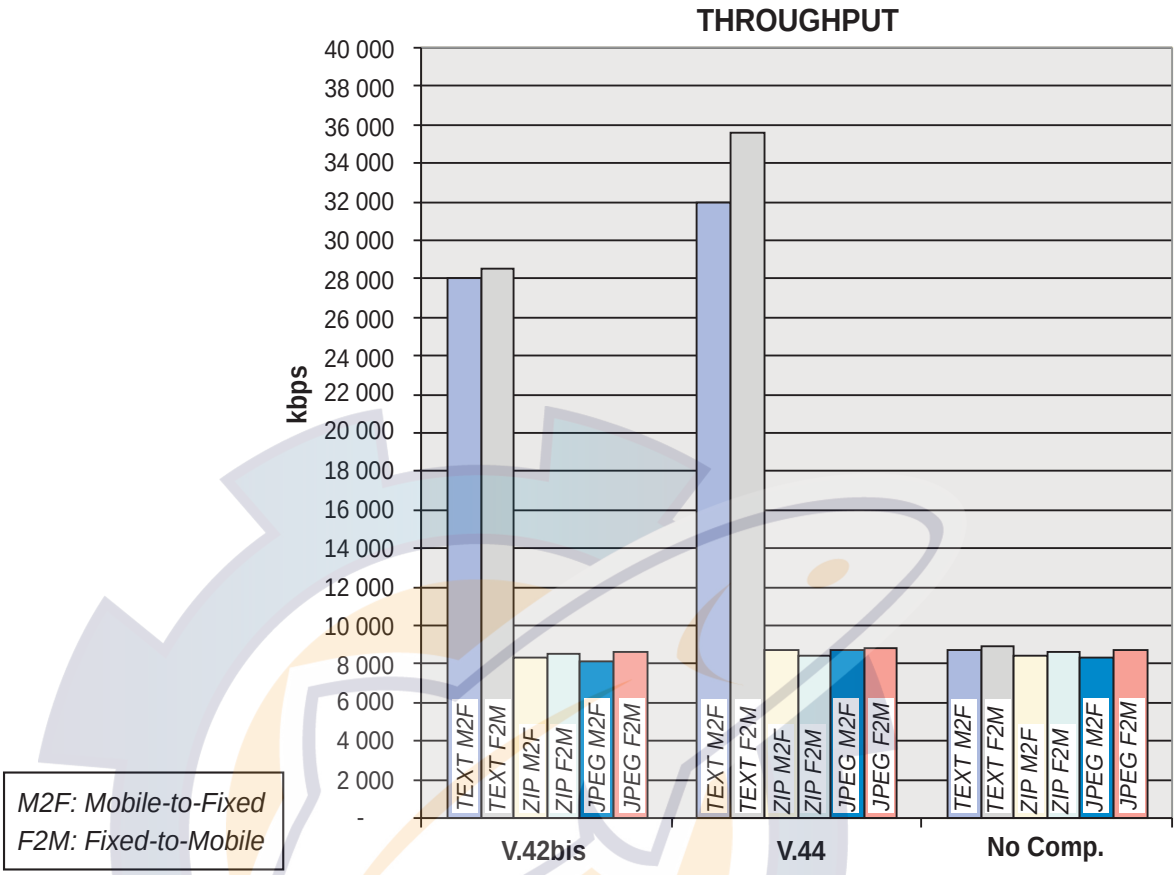
Transmitted file compressed approx. four times.

Received file compressed approx. two times.

Note: ***Disabled*** *means no compression.*
Automatic *means that AT command settings are valid, see* ***"Compression settings".***
If problems with the transfer, try reducing the port speed from 115200 bps to 57600 bps (recommended).
The speed can be set from the Display Handset.

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Data transfer speed



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6.5.3 Compression settings by AT commands

Note that the compression protocol chosen by the AT command is valid for that port only.

Some AT commands:

AT+WCOMPSTD?

Check which compression protocol is set for the current port.

0=no compression, 1=V.42bis, 2=V.44, 3=negotiation (default)

AT+WCOMPSTD=n

Sets the current port to use a specific compression protocol, with n=0, 1, 2, 3 as above.

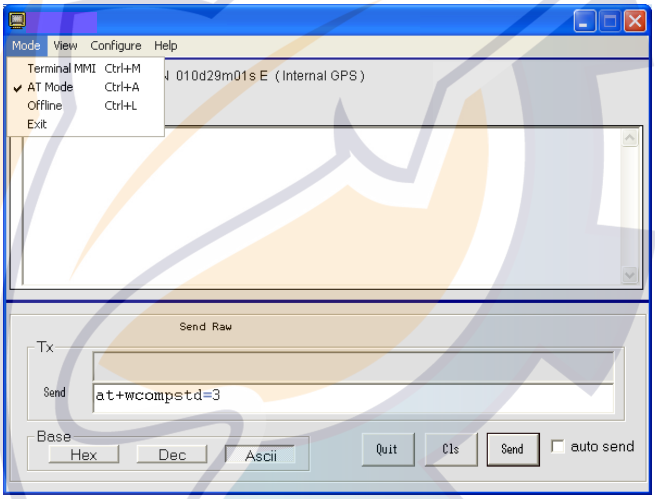
*Only valid when you have selected **Automatic** in the Handset, see **"compression function".***

AT&W

Saves the port settings. If this command is not run, the port settings are turned back to default or previous settings after an MES restart.

AT+WXRS=1

Reports the connection status; you can for example see the connection speed (9600kbps), ARQ mode, V.42bis or V.44 etc.



***Note:** The vtLite Mobile AT mode window can be used to send AT commands to the port used. Use the **Send** button. Hyper Terminal may also be used.*

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7. TROUBLESHOOTING

General

No regular maintenance is required of the FELCOM 30 satellite terminal.
It is recommended, however, to clean the antenna radome every once in a while.
The real time clock is automatically updated by the built-in GPS.

7.1 Troubleshooting

	Problem	*Probable cause*	*Action*
1	***The FELCOM 30 CU power indicator does not light up.***	The CU is not switched ON.	• Set the ON/OFF switch to ON (rear panel). • Switch off, wait 10 secs and switch back on.
		Power is not connected.	• Check that the power cord is properly connected to 11-32 VDC power source.
2	***The ISDN Handset display freezes or stays completely black.***	The handset cord is not connected or damaged.	• 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 30 cannot find the satellite.***	No or weak signals. Sight to satellite obstructed.	• Check that no obstacles block the free sight to the satellite.
4	***Low signal reception***	Obstructions	• The signal strength indicator should preferably exceed 500 in vtLite Mobile, or 4 bars in the handset display. • Check that no obstacles block the free sight to the satellite. • Restart the search for any satellite, or try a satellite in a specific Ocean Region.
5	***FELCOM 30 functions abnormally.***		• Turn off power and disconnect power cable. Connect power cable, and switch on again. • Verify correct voltages to the CU: 11-32 VDC

CU: Communication Unit

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	Problem	Probable cause	Action
6	***Unsuccessful call***	FELCOM 30 is not commissioned.	• Check clear cause. • 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 vtLite display: "No response from net." (HS: Disconnected)	• Check that the correct Net service provider is shown in the display. • The FELCOM 30 terminal is not commissioned. Check with the Net Service Provider. • Verily in ISDN handset menu> Information> Networkinfo> (scroll down) successful=commissioned, failed=not commissioned.
		The called party is busy. "Subscriber busy" appears in HS display.	• Wait for some time and try again. • Call another subscriber.
7	***Problems with telefax***	Incomplete dialing	• Remember to press "#" as last digit before starting transmission. • Instead of "#", try to enter: 902 + 00 + country code + subscriber number.
		Fax fails to work in Global Beam (0)	• Works in spot beam only.
		Service not commissioned	• *See problem 6.*
		System transmission delays	• The OFF-HOOK time for handshake 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). • Set error correction to OFF. • Try a different fax machine. Check that the telefax (G3) is properly connected to the Terminal Adapter. • Contact the Distributor.

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	Problem	Probable cause	Action
8	***No GPS:*** ***"Beam selection failed"*** ***"Not ready for call"***	GPS alarm, or GPS not received	• Wait for 15 minutes. The GPS may use up 15 minutes if FELCOM 30 has switched off for more than 6 hours. If not the case, GPS will report position to the vtLite Mobile and handset display when GPS sync. GPS is needed to select satellite.
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 F33 CU). • Shore/land has not an analogue modem. • Read the application guide in this manual. • Contact the PC applications vendor for help.
		Data Service fails in Global Beam (0)	• Works in spot beam only.
10	***Routing of calls***	MSN number not entered properly	• Make sure that the MSN number entered into FELCOM 30 with the Device Manager, is also entered into connected equipment. Some devices can be programmed with multiple MSNs. • Call handset to verify MSN of other phones. • Read Handset MSN by pressing "R" button.
11	***Problem with local calls***	Wrong dialing	• Check that you call the correct MSN number. If Access Code is used, you need to enter this code first. • ✳ ✳ MSN #
12	***Problem with call transfer***		• Phone does not support "R" button. • Not possible to transfer call from analogue to ISDN.

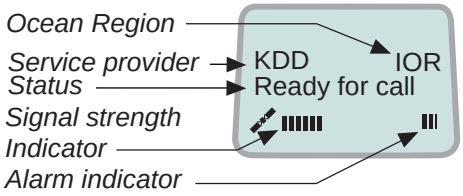
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7.2 Alarms and messages

7.2.1 Introduction

ISDN Handset in idle

When idle, the ISDN Handset displays as follows.

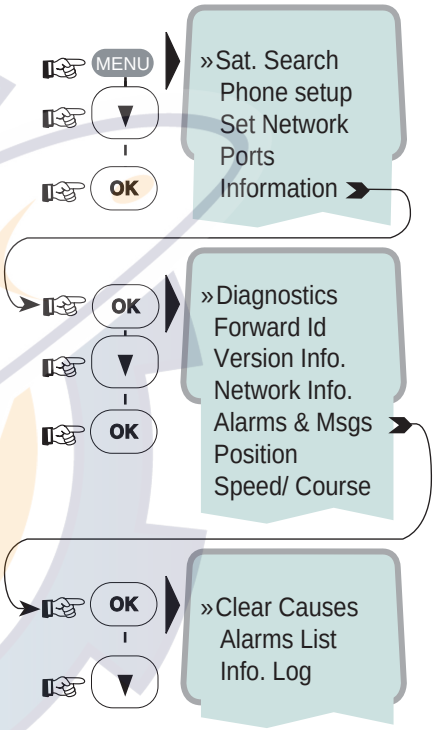


The alarm indicator flashes when an alarm condition occurs.

The indicator stops once the alarm has been read in the Display Handset by pressing MENU > Information > Alarms & messages".

The alarm indicator continues to be displayed if the alarm condition persists.

The red alarm indicator on the CU flashes in step with the alarm indicator in the display.



Clear Causes and Alarm List are cleared each times the CU is restarted or switched ON.
The Info stores the last 50 messages.

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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.

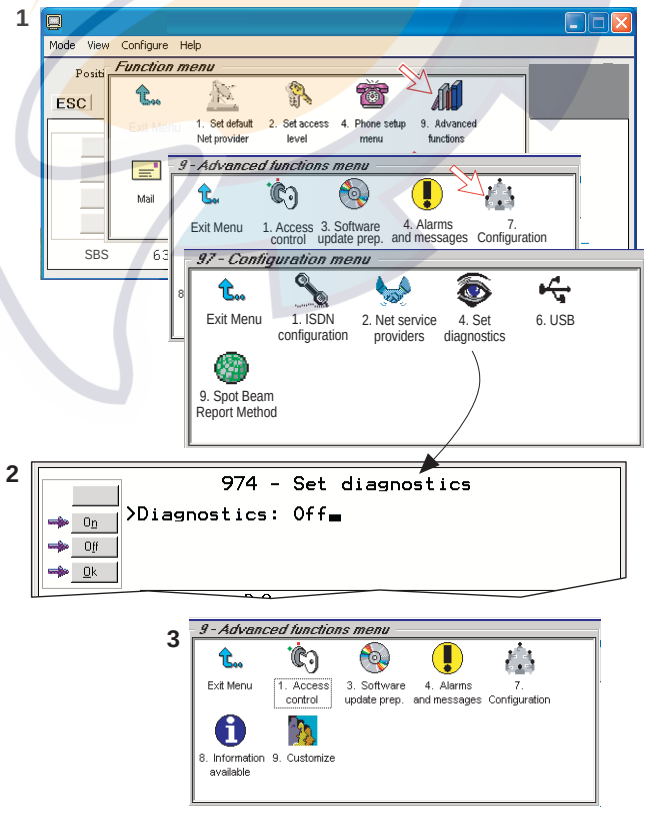
1 Double-click the **Advanced functions** icon to open the **Configuration menu**.

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."

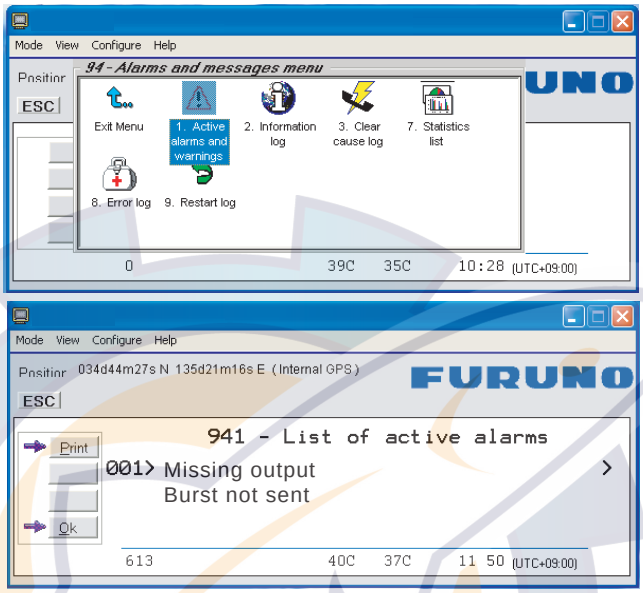


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7.2.2 Alarms

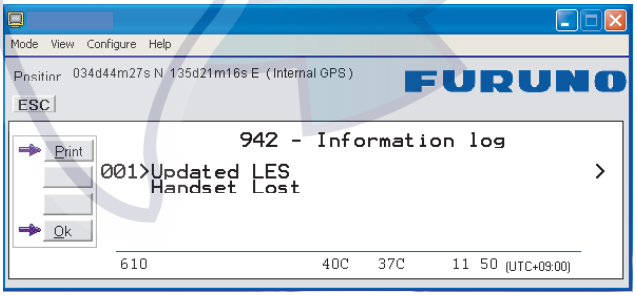
Alarms and messages menu

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.
Typical alarm conditions are listed in **ALARMLIST** on page 7-8.

Pressing right-arrow displays detailed information and moves the alarm to the **Information Log**.

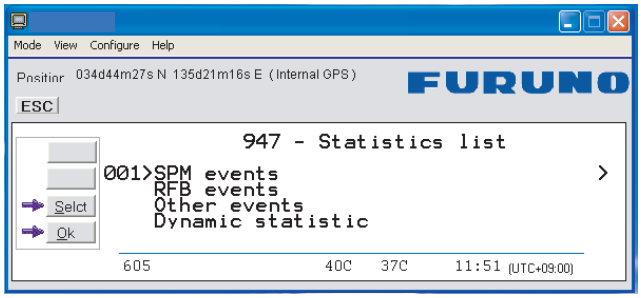


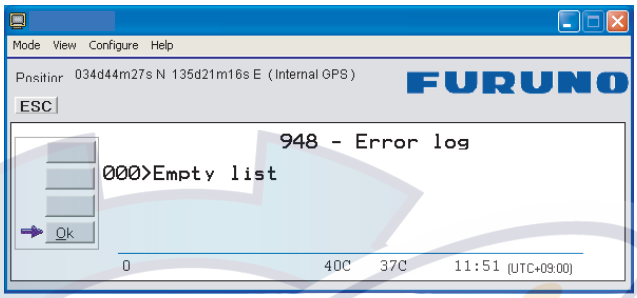
3 The **Information log** lists previous alarm conditions, warnings and event information.

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.

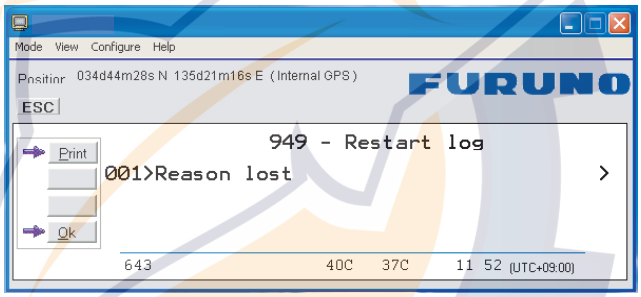
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5 **Statistics list** and **Error log** are used for faultfinding purposes only.





6 The **Restart log** indicates why and when the system was restarted.



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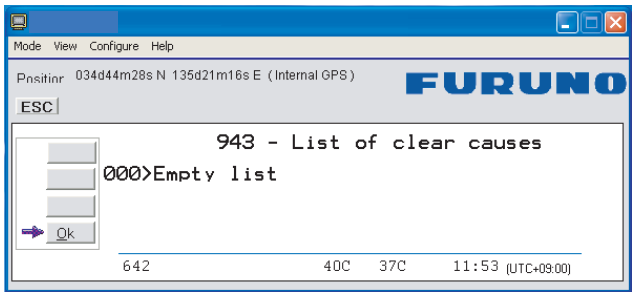
Alarm list

Ref.	*Alarm*	*Information*	*Solution*
1	Burst not sent Missing output	Internal Information	No need for action if terminal operates normally. Replace transceiver
2	EEPROM CRC failure	Appears when terminal software was upgraded and configuration set to default	Information: does not effect terminal operation
3	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
4	Beam selection failed Not ready for call	GPS information does not convey the position	Wait 15 minutes, verify antenna view, restart CU
5	Modem thermometer error	No connection or failure of the thermometer module on the modem unit	No need for action if terminal operates normally
6	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
7	No GPS position	Readings from the module but position is not available	No GPS coverage, verify antenna view
8	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
9	RFB reported 28 V too high	28 V is down-converted by RF unit, used by control and tracking unit	Replace antenna Transceiver
10	RFB reported 28 V too low	28 V is down-converted by RF unit, used by control and tracking unit	Replace antenna Transceiver
11	RFB reported 48 V too high	48 V is supported from CU to RF unit via antenna coax	Verify voltage from CU/coax
12	RFB reported 48 V too low	48 V is supported from CU to RF unit via antenna coax	Verify voltage from CU/coax, verify cable/connectors
13	Terminal adapter not found	The terminal does not detect the presence of TA	Restart the terminal. Verify TA connection. Replace TA
14	TFB Temperature Sensor defective	TFB = transceiver front end board Antenna	Fans will automatically switch ON. System will operate normally, except power fans are always ON
15	TFB Temperature too high	Errors where operational conditions go out of range	Terminal will automatically switch OFF, if necessary
16	TMB Temperature Sensor defective	TFB = transceiver main board Antenna	Fans will automatically switch ON. System will operate normally, except power fans are always ON
17	TMB Temperature too high	Errors where operational conditions go out of range	Terminal will automatically switch OFF. If necessary switch ON CU
18	Unable to read fwd and ret ID	The Terminal ID's are stored in a secure flash chip on the CIB. Indicates that the chip is defective	Replace CIB, Connector Interface Board
19	Printer failure	Serial printer on RS-232A/RS-232B for Traffic Log lost contact with CU	Turn printer ON Check printer cable Check printer DIP switches
20	Wrong antenna	Mismatch between CU software and antenna type	Download correct Fleet CU SW. Verify antenna type FELCOM 30/50/70

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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 IO out-of-service, verify configuration
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

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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 CU
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)

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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

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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

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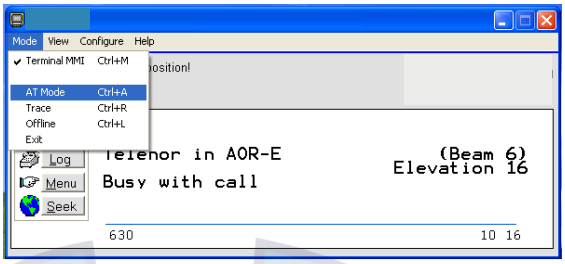
12C2	Call cleared, no credit card valid message received
12C3	Call failed, MES time-out (no terrestrial answer)
12C4	Call cleared, authentication query not received
12C5	Call cleared, supplementary services signalling error
12C6	Call cleared, supplementary services signalling error
12C7	Call cleared, 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

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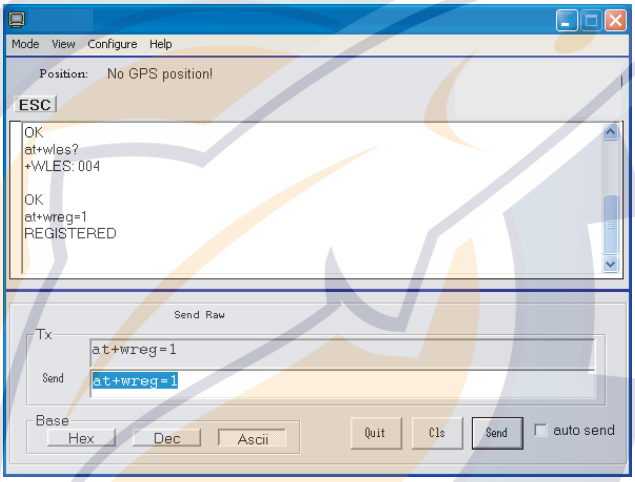
7.2.4 Troubleshooting: Real time status indications

Access to AT-commands

Instead of using the PC hyperterminal facility, access can easily accomplished using vtLite Mobile.



Verify MPDS status: key in **at + wreg =1** to register.
key in **at + wreg =0** to deregister.



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
deregistered	- the terminal has successfully deregistered and is set to normal mode.

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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 CU respectively.

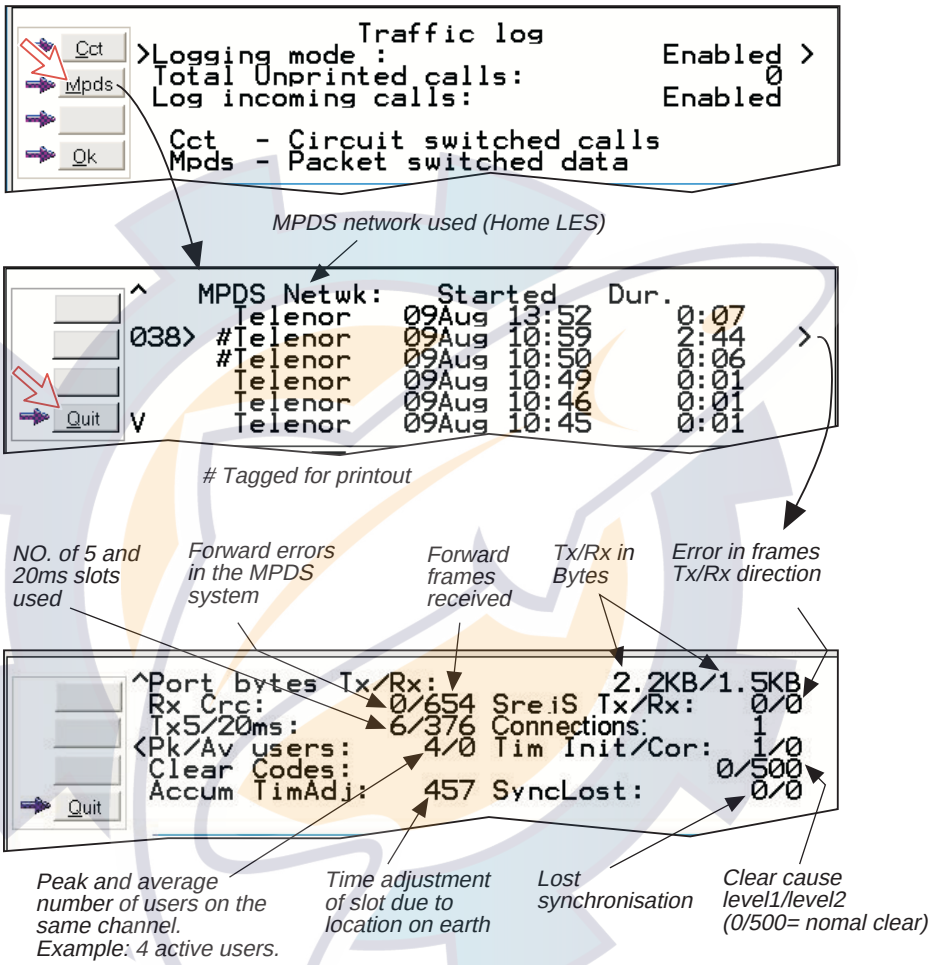
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7.2.5 Troubleshooting: Other logs

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.



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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 30 "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 F33 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 30.
Inmarsat International Maritime Satellite Organisation.
IOR Indian Ocean Region.
ISDN Integrated Services Digital Network.
ISN Inmarsat Serial Number, individual number assigned to each FELCOM 30 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 30 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.

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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 30 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 30 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).

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9. SYSTEM DESCRIPTION

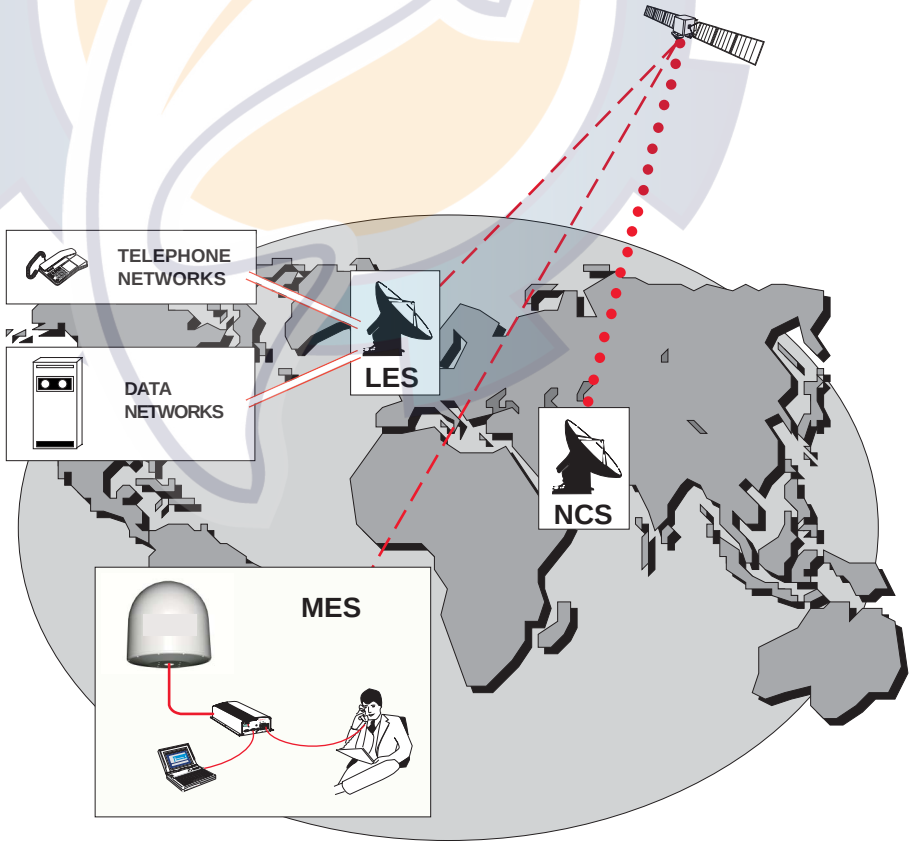
Inmarsat Fleet F33

The Inmarsat Fleet F33 system provides 4.8 kbps voice communications service and 9.6 kbps data transmissions to and from mobile/fixed subscribers anywhere within the worldwide coverage of the Inmarsat 3 spot Beam system, *see **"Satellite Coverage Map"** on page 3-4.*

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 30, user terminal for the Inmarsat system).*



Overview of the Inmarsat system.

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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 30 can communicate via the four satellite Ocean Regions:

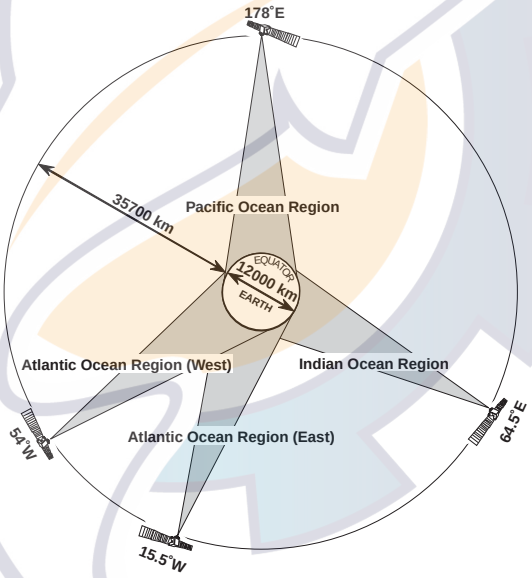
AOR-W	Atlantic Ocean West Region
AOR-E	Atlantic Ocean East Region
IOR	Indian Ocean Region
POR	Pacific Ocean Region

The coverage area of the satellites for FELCOM 30 is shown on page 3-4.

Transmission frequencies

The Inmarsat terminals operate in the following frequency bands:

- MES *transmission* frequencies:1626.5 MHz - 1646.5 MHz
- MES *receiving* frequencies:1530.0 MHz - 1559.0 MHz



Satellite positions.

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

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Antenna search pattern

Azimuth sweep

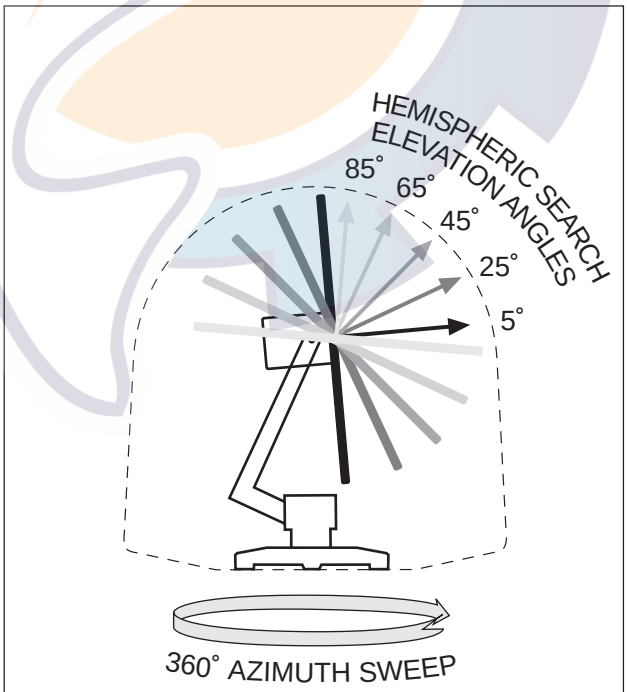
A 360° rotation of the antenna in azimuth at a fixed elevation angle.

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 30 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 no satellite is found, a hemispheric search will be performed.

Tracking

At the end of a search, FELCOM 30 performs a fine-tuning of the antenna position around the strongest detected signal. The fine-tuning is obtained by a squinting function based on satellite signal quality.



Note: FELCOM 30 remembers the last used Ocean Region when switching the terminal off/on.

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Communication services

FELCOM 30 provides the following interfaces & services:

- **ISDN:**
  - 4.8 kbps speech
  - 9.6 kbps fax via Terminal Adapter
- **RS-232/RS422:**
  - 9.6 kbps data service
  - MPDS
- **USB**
  - 9.6 kbps data service
  - MPDS

    Requires PC with MS Windows 2000/XP.

The FELCOM 30 CU has following ports (see figure):

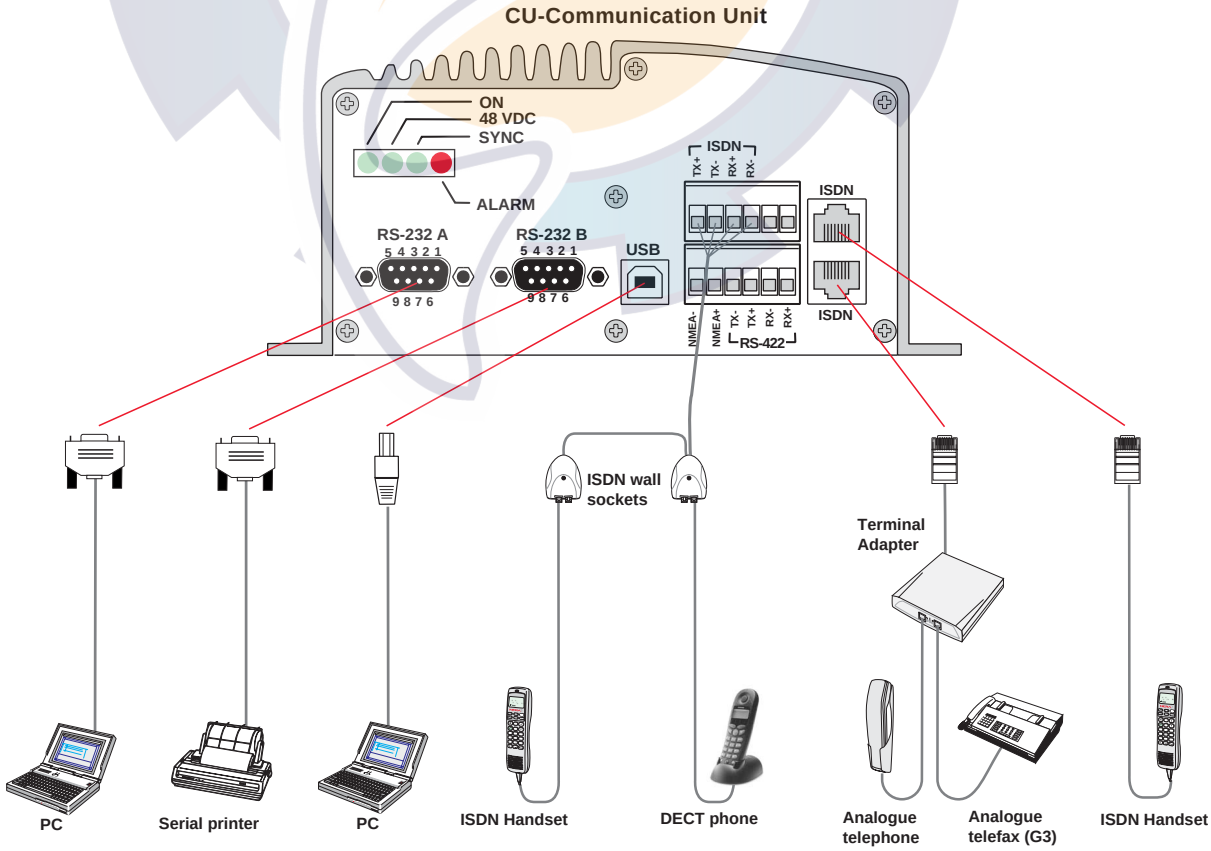
- ISDN ports for connection of ISDN telephones, or Terminal Adapter; a total of 8 devices.
- RS-232/RS422 and USB ports for connection of data equipment.

Internal communication

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

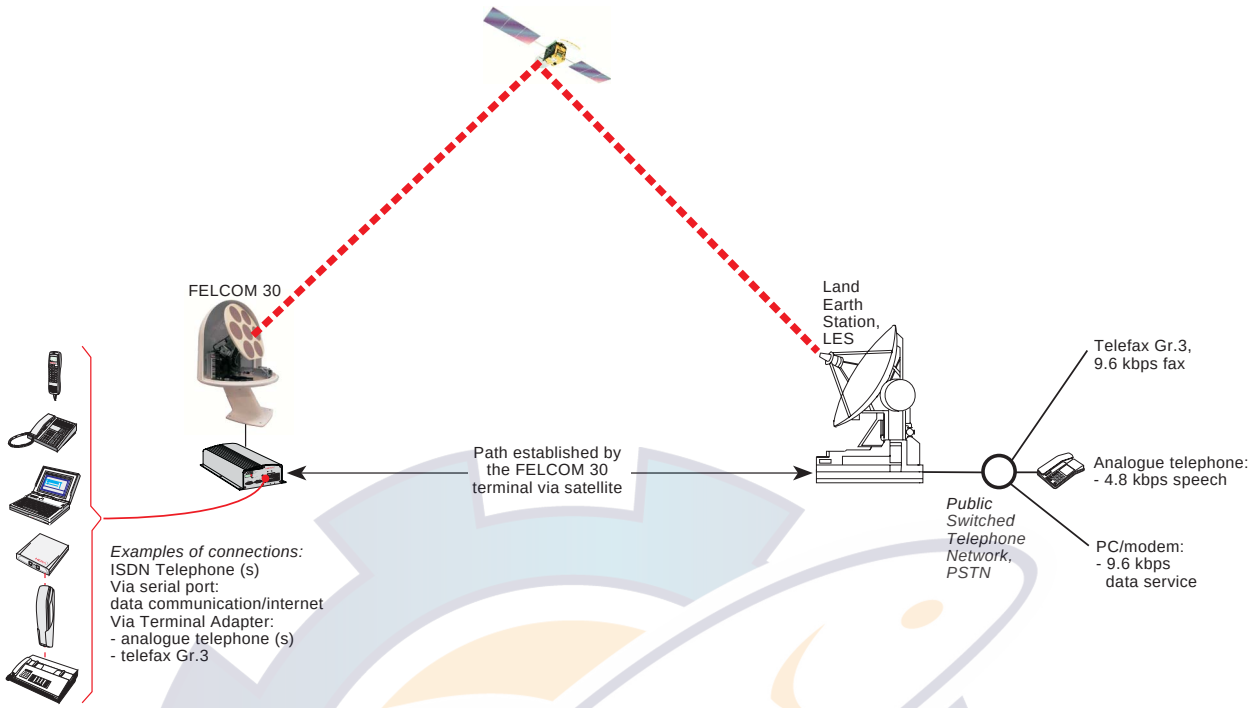
Control interface

The **RS-232** or **USB** port allows connection of a PC for configuration of FELCOM 30. A PC program (vtLite Mobile) that provides the software to operate and configure FELCOM 30 terminal is supplied on the enclosed CD.



FELCOM 30 ports.

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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 30 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.

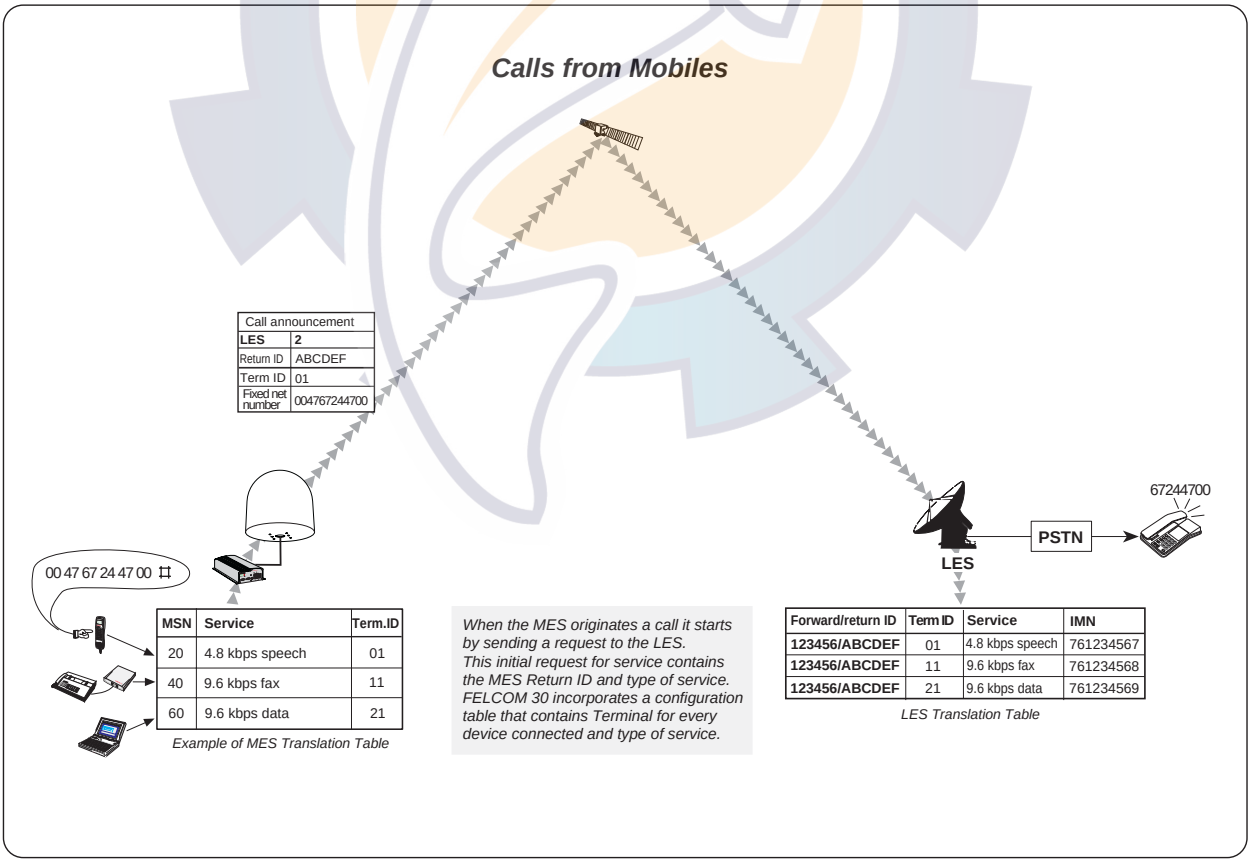
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Calls from Mobiles

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	01
40	9.6 kbps fax	11
60	9.6 kbps data	21

Example of MES Translation Table

Forward/return ID	Term ID	Service	IMN
123456/ABCDEF	01	4.8 kbps speech	761234567
123456/ABCDEF	11	9.6 kbps fax	761234568
123456/ABCDEF	21	9.6 kbps data	761234569

LES Translation Table

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Calls to Mobiles

See figure.
The FELCOM 30 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*

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.

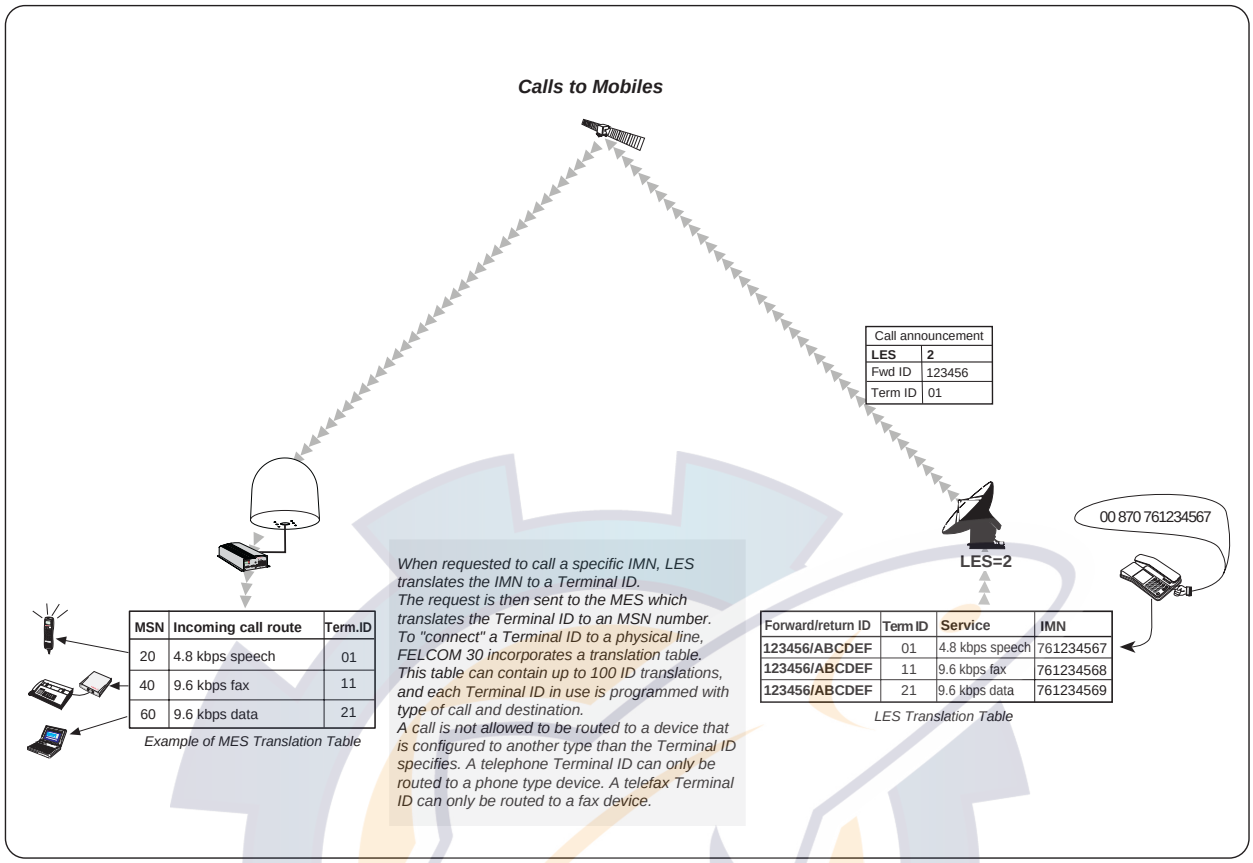
*The common Ocean Region access no. **870** connects the call to the dialed FELCOM 30 regardless of the Ocean Region the user currently communicates through.*
*If the Net service provider does not support access no. **870**, call the Ocean Region directly:*

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.

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MSN	Incoming call route	Term.ID
20	4.8 kbps speech	01
40	9.6 kbps fax	11
60	9.6 kbps data	21

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 30 incorporates a translation table. This table can contain up to 100 ID translations, and each Terminal ID in use is programmed with type of call and destination. A call is not allowed to be routed to a device that is configured to another type than the Terminal ID specifies. A telephone Terminal ID can only be routed to a phone type device. A telefax Terminal ID can only be routed to a fax device.

Forward/return ID	Term ID	Service	IMN
123456/ABCDEF	01	4.8 kbps speech	761234567
123456/ABCDEF	11	9.6 kbps fax	761234568
123456/ABCDEF	21	9.6 kbps data	761234569

LES Translation Table

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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, **F77, F33, F55:** 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	64 k Data (UDI)	**F77/F55**
61 - 6F	3.1 kHz Audio	**F77/F55**
71 - 7F	56 K Data	**F77/F55**
	N.C.	
91 - 9F	64 K Speech	**F77/F55**

Terminal Identities and the corresponding Inmarsat Services.

Note! MPDS is given the Terminal ID: A1 (not programmable)

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Pub NO. DOC-714

Declaration of Conformity CE 0434

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 Fleet F33 Mobile Earth Station Type FELCOM 30
(Model name, serial number)

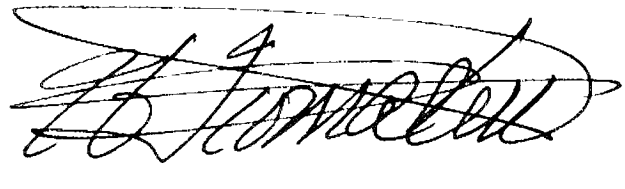
is in conformity with the essential requirements as described in the Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment (R&TTE Directive) and satisfies all the technical regulations applicable to the product within this Directive

EN 301 843-1: February 2001
ETSI EN 301 444: May 2000
EN 60945: 1997-01 (IEC 60945 Third edition: 1996-11)
EN 60950: 2000 (IEC 60950 Third edition: 1999-04)
(title and/or number and date of issue of the standard(s) or other normative document(s))

For assessment, see

- Certificate of Assessment – EC N°.: 2003-OSL-R&TTE-0111 of 16 May 2003 issued by DET NORSKE VERITAS, Norway
- Declaration of Conformity 103186 of 9 April 2003 issued by Nera SatCom AS, Norway
- Technical Report No. 2003-3147 of 28 April 2003, No. 2003-3155 of 26 May 2003 prepared by DET NORSKE VERITAS, Norway
- Type Approval Certificate No. 66FE30 of 1 June 2004 issued by Inmarsat, United Kingdom
- Type Approval Particulars No. 66FE30 of 1 June 2004 issued by Inmarsat, United Kingdom

On behalf of Furuno Electric Co., Ltd.



Hiroaki Komatsu
Manager,
International Rules and Regulations
(name and signature or equivalent marking of authorized person)

Nishinomiya City, Japan
August 5, 2004
(Place and date of issue)