NERA

Nera WorldPro 1000
▶ **User Guide**

RADIATION WARNING

ANTENNA RADIATION

SAFETY DISTANCE 0.5 METRE IN FRONT OF ANTENNA

High levels of radio frequency radiation are considered health hazardous. Although no single value of "safe radiation level" has been agreed upon by all countries, the American National Standards Institute (ANSI/LEEE C95.1-1992) recommends that people should not be exposed to radiation stronger than 1 milliwatt per square centimetre at the frequencies used in the Nera WorldPro 1000 terminal. Accordingly, the operator of the terminal should ensure that the area extending 0.5 metre from the front of the antenna be kept clear of personnel when the terminal is transmitting.

OBTAINING LICENSING FOR INMARSAT TERMINALS

Under rights given under ITU Radio Regulations, local telecommunications administrations establish and enforce national rules and regulations governing types of emissions, power levels, and other parameters that effect the purity of signal, which may be radiated in the various frequency bands of the radio spectrum.

To legally operate an Inmarsat terminal, it is necessary to obtain permission from the local telecommunications regulatory authorities of the country you are operating within. Using your terminal in any country without permission causes you to run the risk of confiscation of the terminal or legal action from local authorities. Normal practice for taking telecommunications into another country is to apply for a license before travel. If a license has not been obtained before travel, the equipment may be put into storage by local authorities until such time as a license is obtained.

All specifications are subject to change without notice.

FCC Notice

USE CONDITIONS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

EXPOSURE TO RADIO FREQUENCY RADIATION

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna used for this transmitter must be installed to provide a separation distance of at least 50 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

CAUTION

Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by FCC, to operate this satellite terminal Nera WordPro 1000.

CE : 0434
FCC ID : TSF 107020
IC : 6200A - 107020
GMPCS

The Nera WorldPro 1000 terminal fully complies with the R&TTE directive.

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Nera WorldPro 1000

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Nera WorldPro 1000

General

The Nera WorldPro 1000 satellite terminal is a small lightweight satellite terminal providing transmission via Inmarsat's BGAN broadband data and voice service.

The Inmarsat BGAN system can be compared with the 3G Mobile network for cellular phones.

The terminal can be separated into two parts, so users can choose between indoor and outdoor use, with no need for an external antenna.

Combined with the Nera WorldSet for voice telephony, it is ideal for single users, who need to set up a complete broadband mobile office in frequently changing locations.

Voice and data connections can be used simultaneously.

All services are supported in spot beam, see the Satellite Coverage Map.

Applications

Remote access - high-speed access to your corporate network, enabling access to company and customer information.

Internet access - access the Internet at speeds up to 384kbps.

Email - send and receive email via the Internet or email applications.

Telephony - make phone calls via a peripheral handset at the same time as accessing data applications.

Streaming - select guaranteed quality of service up to 64kbps on demand, e.g. for video, audio.

File transfer - send and receive large files.

Store and forward - save and send files e.g. video.

Key benefits

Ultimate portability - at around half the size of a laptop and weighing less than 1 kilo, it is the smallest and lightest terminal in the range.

Simultaneous voice and broadband data - access your data applications and make a phone call at the same time, via the Nera WorldSet. The terminal can also be configured directly from the handset.

Highly flexible - uniquely designed to split into two separate units, so the antenna can be placed outside, while you work indoors in comfort - with no requirement for an additional external antenna.
The terminal can be connected to a laptop via the USB port or Bluetooth, and via Ethernet from Q2 2006.

Global coverage - provides service anywhere within the BGAN coverage area.

Easy to use - with the one-patch antenna design, it takes less than a minute to locate a satellite communications signal. The service can be accessed via BGAN LaunchPad on your laptop, or an on-box user interface with self-explanatory indicators.

Robust - purposely designed to operate in challenging environmental conditions.

Completely secure - connect seamlessly via your preferred VPN application.

Nera WorldPro 1000   7

Standard equipment

- Interface Unit with built-in Bluetooth
- Antenna Unit with built-in GPS receiver (camera stand compatible mounting nut integrated)
- USB cable
- Rechargeable battery
- AC/DC adapter 110 - 240 VAC power w/Europlug
- Quick Start manual with CD containing the BGAN LaunchPad PC interface and additional guides/information.

Accessories

- Nera WorldSet, *see **Appendix A - Nera WorldSet***
- Split cable for interconnection of separated Interface unit and Antenna Unit, 3, 10 and 20 m
- Bluetooth handset
- DC/DC adapter, 10 - 32 VDC
- Soft case
- Hard case
- Extra battery packs
- Solar panel
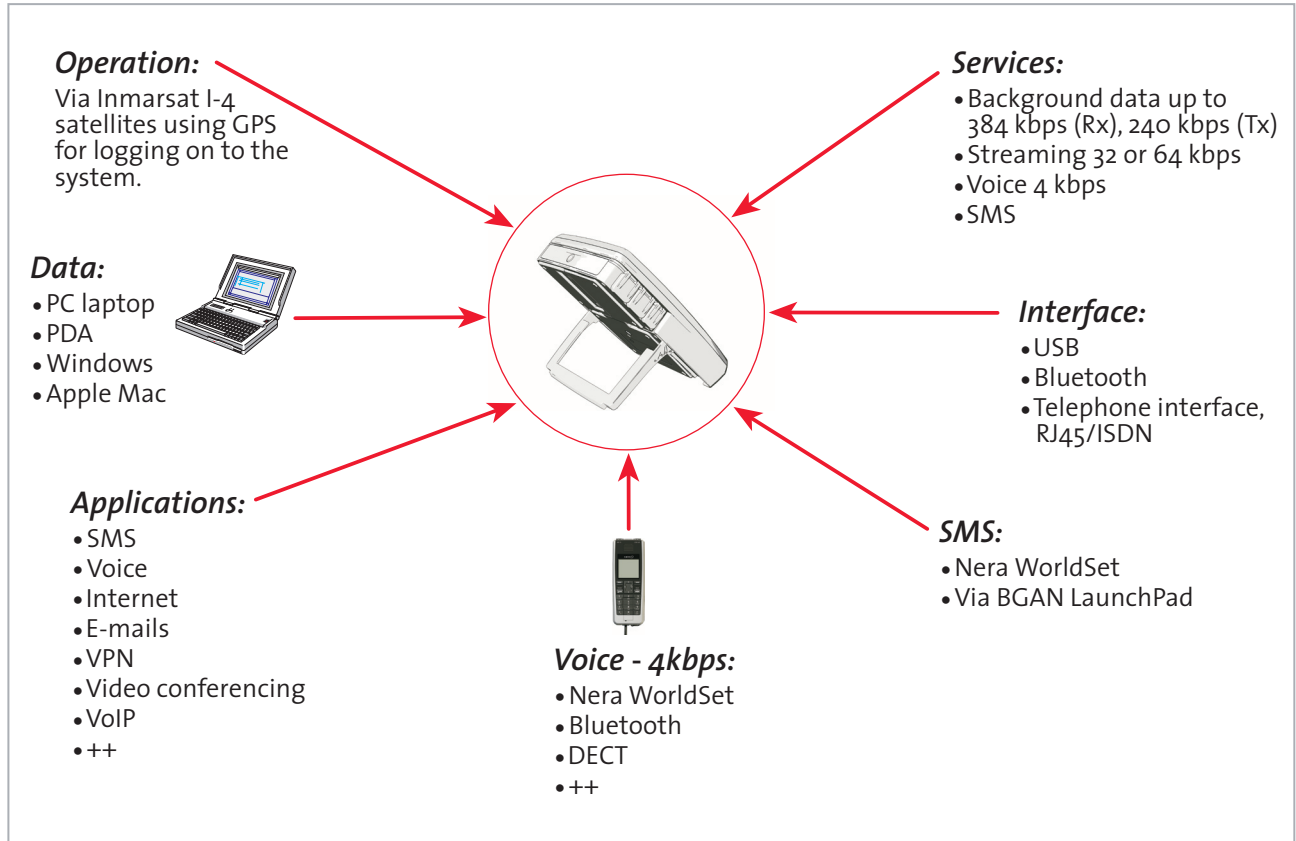- Bracket mounts for antenna
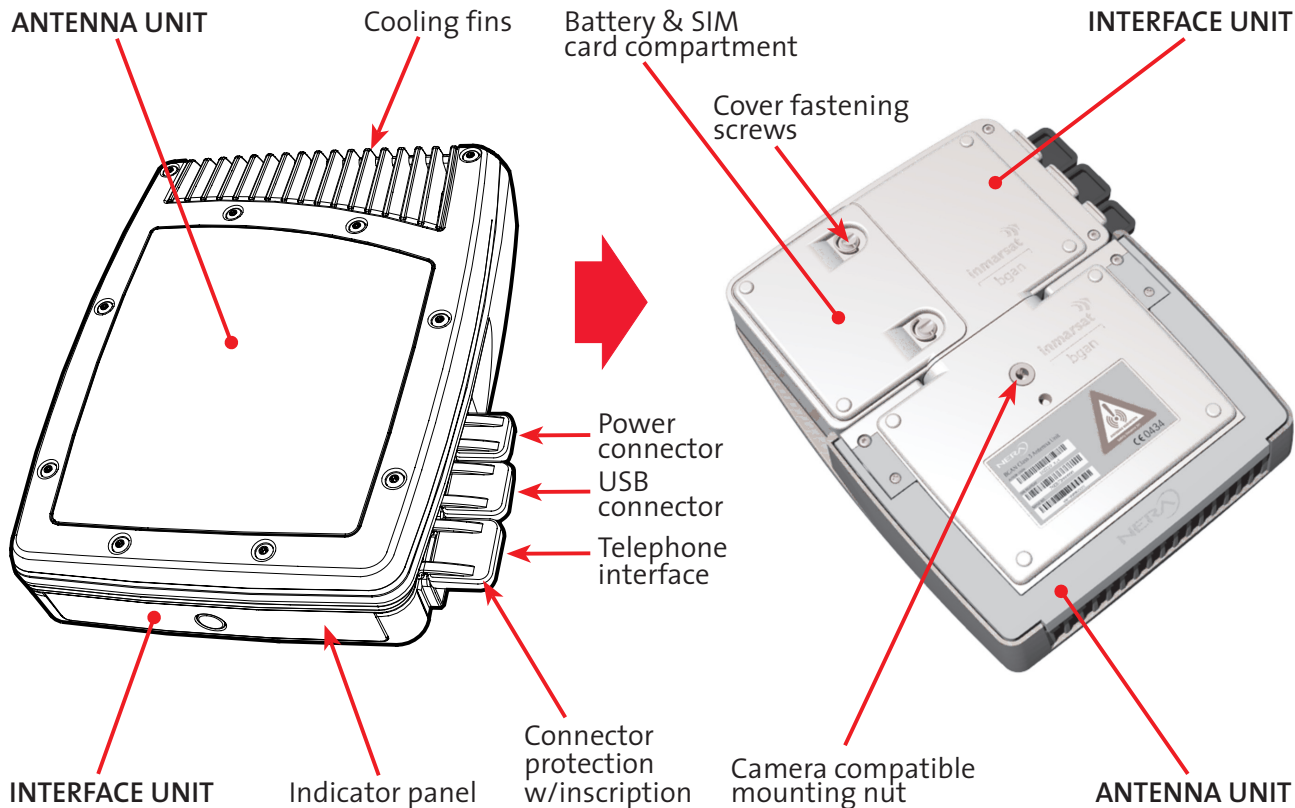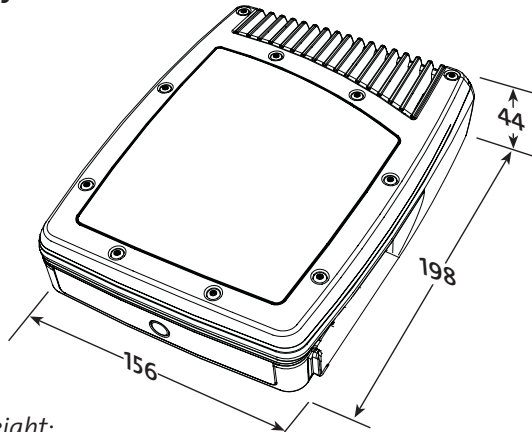- Cable for car power plug

Nera WorldPro 1000

Operation:
Via Inmarsat I-4 satellites using GPS for logging on to the system.

Data:
- PC laptop
- PDA
- Windows
- Apple Mac

Applications:
- SMS
- Voice
- Internet
- E-mails
- VPN
- Video conferencing
- VoIP
- ++

Services:
- Background data up to 384 kbps (Rx), 240 kbps (Tx)
- Streaming 32 or 64 kbps
- Voice 4 kbps
- SMS

Interface:
- USB
- Bluetooth
- Telephone interface, RJ45/ISDN

SMS:
- Nera WorldSet
- Via BGAN LaunchPad

Voice - 4kbps:
- Nera WorldSet
- Bluetooth
- DECT
- ++

Figure 1 Nera WorldPro 1000, functions and services.

Nera WorldPro 1000

ANTENNA UNIT   Cooling fins   Battery & SIM card compartment   INTERFACE UNIT

Cover fastening screws

Power connector

USB connector

Telephone interface

Connector protection w/inscription

Camera compatible mounting nut

INTERFACE UNIT   Indicator panel   ANTENNA UNIT

Figure 2 Nera WorldPro 1000, identification.

Nera WorldPro 1000

Physical data

Weight:
< 1 kg including battery

Figure 3 Nera WorldPro 1000, dimensions and weight.

Interfaces

See figure 4

Bluetooth:	Built-in antenna, Bluetooth v1.2 Class 2
Distance to device:	Maximum 20 m
Bluetooth devices:	Up to 4 devices connected at the same time
Bluetooth profiles:	Cordless Telephony Profile (CTP) Serial Port Profile (SPP) Dial up Networking (DUN)

Telephone:	1 RJ45 connector for Nera WorldSet and ISDN phones. Max drain 1.5 W Euro ISDN (1B+D) 1 x 64 kps + 16 kbps
USB device port:	1 connector, USB v1.1 (USB v2.0 compatible)
Dual port support:	- control port/serial port profile - DUN (dial up networking)
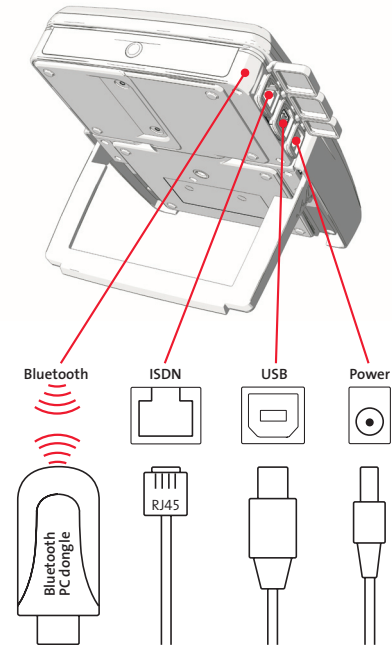
Figure 4 Nera WorldPro 1000 connectors.

Nera WorldPro 1000

Packet Switched (PS) service

Shared channel (Variable Bit Rate service - VBR)
Pay for data sent/received

Transmit: Up to 240 kbps
Receive: Up to 384 kbps
Internet
E-mail
Any application supporting variable bit rates

Symmetrical (Constant Bit Rate service - CBR)
Pay per minute

Streaming data: 32 kbps, 64 kbps QoS options
(Quality of Service - QoS)

Video conferencing
Voice over IP
IP facsimile

SMS - Short Message Service

- To/from other BGAN terminals
- To/from mobile cellular telephones
- Editable in BGAN LaunchPad/Nera WorldSet

Voice - Circuit Switched (CS) service

Land line quality speech - 4kbps
Pay per minute

- Calls made via Nera WorldSet connected to the Telephone Interface (ISDN compatible), or e.g. Bluetooth handset (options).
- Voice mail (SMS notification).
- Call line identification, who is calling.
- Call forwarding.
- Call waiting/toggling
- Call barring

Battery

Type: 7.2 V - 2400 mAh Li-Ion re-chargeable
Standby: 36 hours
Typical use: 5 hours - 20% activity factor
Streaming data: 2.5 hours at 64 kbps
Maximum transmission: 1 hour continuous transmission at > 72 kbps at nominal EIRP at edge of coverage and edge of beam.
Charging: Via DC power input
Charge to maximum: 3 hours in standby, longer if using the terminal (no charging when transmitting)
Charging temperature: 0°C to +55°C ambient

Nera WorldPro 1000 can be operated from AC/DC adapter or 12VDC input with or without battery.

Nera WorldPro 1000

AC/DC adapter

Input voltage:	100 - 240 VAC ±10%, 50 - 60 Hz, 800 mA
Default:	Euro plug
Output voltage:	12VDC ±10%
Output current:	2.5A max 35W

DC power connector on terminal

Center pin:	Positive polarity
Input voltage:	12VDC, -10%/+30% feed (10.8VDC to 15.6VDC)
Plug dimensions:	Inner dia 2.1mm, outer dia 5.5 mm length 10mm

Power consumption

Nera WorldPro 1000 is designed for minimum battery consumption

Sleep mode:	0.5W
Transmission:	<20W (depending on satellite signal, devices connected, activity factor)

Antenna performance

Gain:	Tx 8.5 dBic, Rx 8.5 dBic (right-hand circular polarisation)
Beamwidth:	±30° at -3dB point
G/T:	-18.5 dB/K

EIRP:	10 dBW
Frequency range:	L-band Tx 1626.5-1660.5 MHz Rx 1525.0-1559.0 MHz

Environmental

Storage device:	-40°C to +80°C without battery -20°C to +60°C incl. battery
Operational:	-20°C to +55°C, 95 % humidity (non-condensing)
Infrared:	500 W/m^2
Ultra violet:	54 W/m^2
Visible sunshine:	1150 W/m^2 MIL-SPEC 810E 505.3
Ice:	6mm (non-operational)

Nera WorldPro 1000 CD

The CD ROM supplied with Nera WorldPro 1000 contains:

- BGAN LaunchPad program for operation from PC
- manuals
- application guides
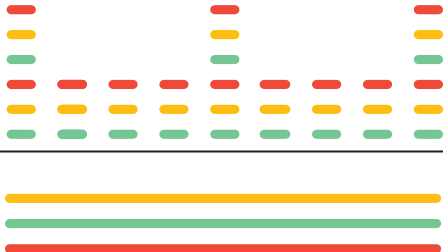- USB modem drivers
- and other useful information.

Nera WorldPro 1000

Satellite coverage map

F3
178°E
POR

F2
53°W
AOR-W

F1
64°E
IOR

F3
178°E
POR

	F1 I-4 satellite		F2 I-4 satellite (Planned by mid 2006)		F3 I-4 satellite (To be defined)

The map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions.

www.inmarsat.com
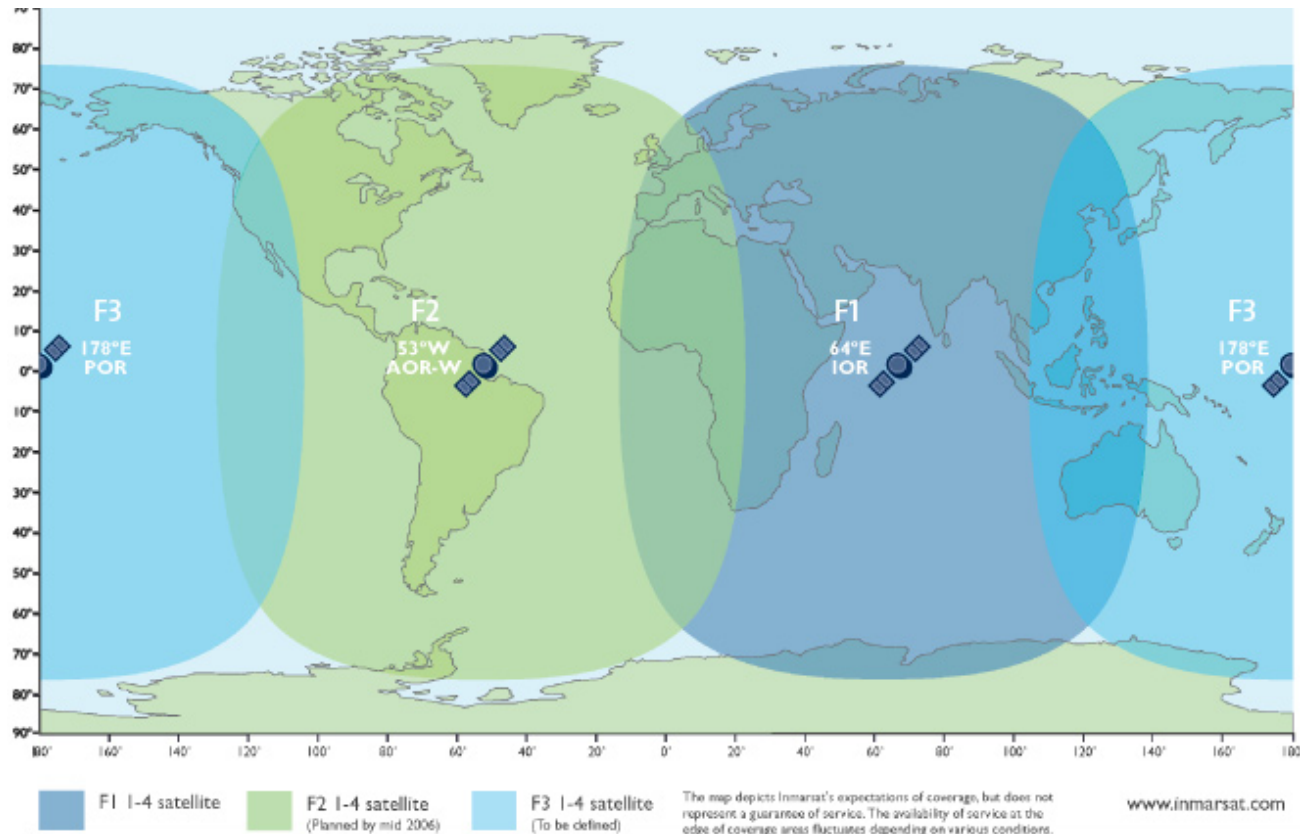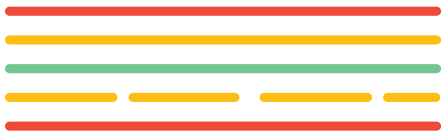
Indicator panel

All indicators light GREEN for approx. 30 secs when powering ON.

bgan inmarsat Activate Battery Signal Bluetooth Message

All indicators light RED for approx. 10 secs when powering OFF.

Battery 🔋		
▬ red	0 - 10% battery capacity	
▬ yellow	10 - 40% battery capacity	
▬ green	40 -100% battery capacity, or fully charged	
▬ yellow blink	Battery charging	*Blink rate 2 secs*
▬ red	No battery installed	

Signal 📡		
Antenna pointing		
red/yellow/green blink	No satellite signal: no GPS fix	*Blink rate 2 secs*
	" stored GPS fix	*Beep rate 2 secs*
	" new GPS fix	
red/yellow/green fast blink	Satellite signal OK: no GPS fix	*Blink rate 0.3 sec*
	" stored GPS	*Continuous sound varying*
	" new GPS	*with received signal strength.*

Operational mode		
▬ yellow	Registration in progress or lost satellite sync	*Beep every 1 sec during registration*
▬ green	Attached to BGAN	
▬ red	Network rejection	

Bluetooth ⓑ		
▬ yellow	Bluetooth enabled, no device connected	
▬ green	Bluetooth enabled, device connected	
▬ yellow blink	Bluetooth firmware update	*Blink rate 0.5 sec*

Message ✉		
red blink	New alarm	*Blink rate 0.5 sec for 30 secs*
▬ red	Alarm present	
green blink	Incoming voice call	*Blinks until answered/on-hook*
green blink	Receiving SMS	*Blink rate 0.5 sec for 10 secs*
▬ green	Lost voice call or unread SMS	
yellow blink	PIN/PUK validation necessary	

In sleep mode, only the battery indicator lights

SIM card

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

The card must be of the type USIM, which are subscriber identity modules designed for 3G mobile telephony.

The SIM card has its own set of Inmarsat Mobile Numbers (IMN) on which the user can be contacted irrespective of the Nera WorldPro 1000 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 entering wrong PIN code, operation with that particular SIM card will lock-up after three failed at-tempts. You must then use the SIM unblock code (PUK code) provided by your Net service provider to unlock the card. Contact your Net service provider if you do not have the PUK code.

To change or disable the PIN code, see later in this manual.

The SIM card can store various information, e.g.:
- SIM PIN code (Personal Identification Number)
- APN (Access Point Name)
- Phone book
- SMS messages sent and received
- Allowed and preferred Net service providers.
- Inmarsat Mobile Number (IMN)
- Service Provider information

Nera WorldSet SIM PIN prompt

BGAN LaunchPad SIM PIN prompt

Installing SIM card and battery

1 Remove the battery compartment cover by loosening the two fastening screws.

2 The SIM card must be installed prior to installing the battery.

3 The battery is enclosed with the Nera World-Pro1000, and must be installed before it can be charged. Charge for 24 hrs the first time.

Normal charge time is 3 hrs.
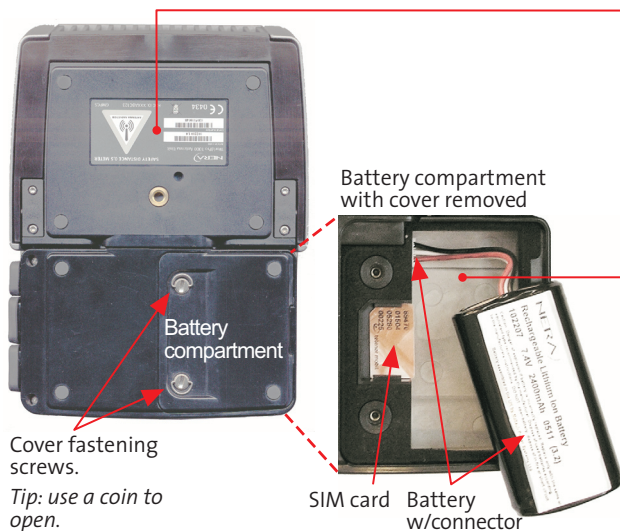
Equipment labels

One label is attached to the back of the Antenna Unit, whereas the Interface Unit has a label attached inside the battery compartment.

Article number

Serial number
Example:
03 05 11 0001
YEAR MONTH NUMBER

SAFETY DISTANCE 0,5 METER
NERA
WorldPro 1000 Antenna Unit
Article code
102210 r.r
Serial number
yyyyMMxxxxx
CE 0434
ANTENNA RADIATION
IC: 6200A-107020
FCC ID: TSF107020   GMPCS

Article number
IMEI number
Serial number

NERA
WorldPro 1000 Interface Unit
Article code
104530 r.r
IMEI number
nnnnnn-nn-nnnnnn-n
Serial number
yyyyMMxxxxx
CE 0434
GMPCS
IC: 6200A-107020
FCC ID: TSF107020

Battery compartment
with cover removed

Battery
compartment

Cover fastening
screws.
*Tip: use a coin to
open.*

SIM card   Battery
w/connector

GPS

The Global Positioning System (GPS) uses 24 low orbital satellites to fix the position of the terminal anywhere on the globe.

GPS SYSTEM SATELLITES

GPS RECEIVER ANTENNA
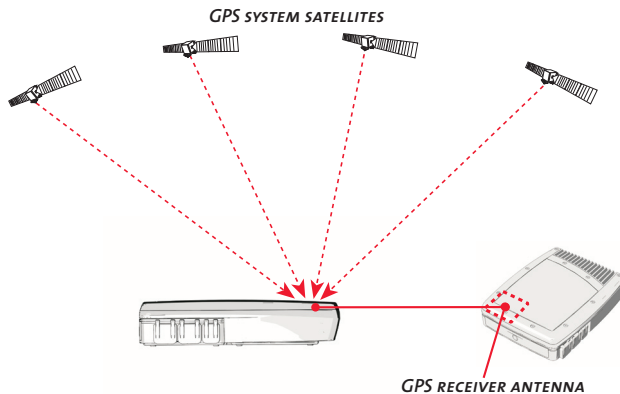
Obtaining a GPS Fix

In normal operation, the GPS receiver built in to the Nera WorldPro 1000 needs to be able to receive signals from at least three satellites so that it can calculate a latitude and a longitude – this position fix is referred to as a 2-dimensional or 2-D fix.

The GPS receiver may take between a few seconds and 20 minutes to obtain a GPS fix, depending on how frequently the GPS receiver is being used. The frequency of use determines the how quickly the GPS terminal is able to start.

Hot start - if the GPS receiver is being used frequently, (that is, at least every two to six hours), it is regularly updated with data from the GPS satellites, and so only takes a short time to obtain a GPS fix after being switched on.

Warm start - if a GPS receiver has not been used for more than six hours, then it will take longer to obtain a GPS fix, perhaps up to 45 seconds.

Cold start - if the GPS receiver has not been used for some time or is 300 km or more from where it was last used, it can take between 10 and 20 minutes to obtain a valid position fix.

The time taken to obtain a valid GPS fix can also be affected by the visibility that the GPS receiver has of the GPS satellites. The GPS system is relatively tolerant of atmospheric conditions such as heavy cloud or rainfall.

However, physical blockages, such as tall buildings or terrain can significantly degrade the ability of the GPS receiver to obtain a fix. For this reason, ensure that the GPS receiver has as clear a view of as much open sky as possible.

From inside a window

A GPS fix (yellow **Signal** indicator) may be difficult to obtain or take a long time, especially if the view is limited. The way around this is to go outside the building while the terminal is in pointing mode. Wait until the **Signal** indicator turns yellow. Then move to your location inside and find the Inmarsat satellite.

Nera WorldPro 1000

Satellite communications

Three satellites are positioned stationary above equator.

The satellites provide the coverage shown on the map.

The Nera WorldPro 1000 searches for all satellites as default.

F3 - POR

37.500km →

F2 - AOR-W

F1 - IOR
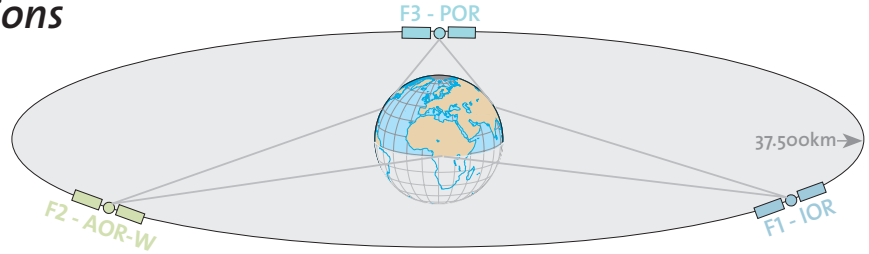
The Nera WorldPro 1000 provides communication via satellite; which requires free line of sight.

Azimuth

Elevation

Nera WorldPro 1000 w/antenna

SE		SE	SW SE
F3 178°E POR	F2 53°W AOR-W	F1 64°E IOR	F3 178°E POR
	N	NW NE	

| F1 I-4 satellite | F2 I-4 satellite (Planned by mid 2006) | F3 I-4 satellite (To be defined) |

The map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions.

www.inmarsat.com
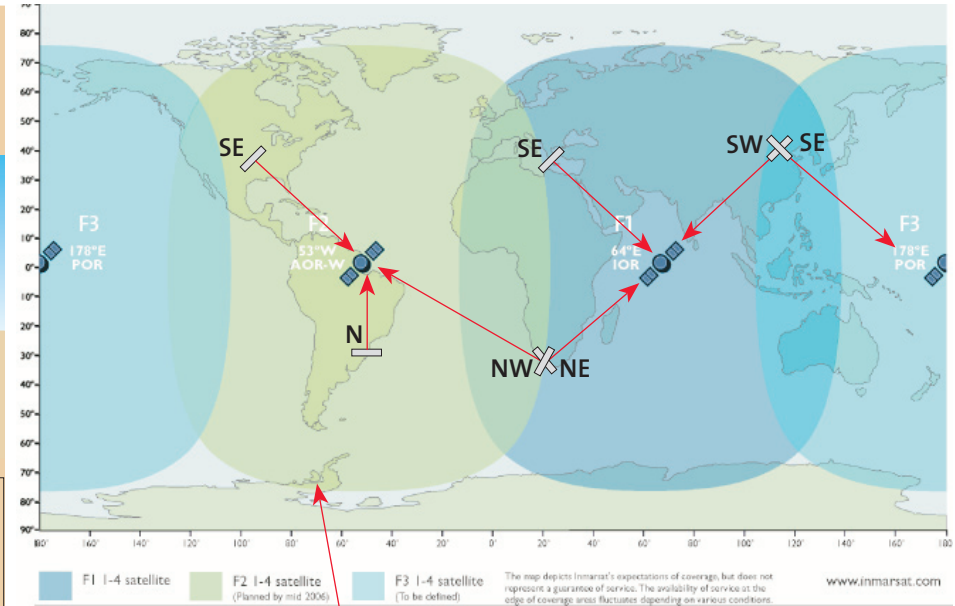
A location 72°S or 72°N should give coverage. Further south or north can not be guaranteed, and reduction in data rate is expected.

Setting up procedure

1 Power on terminal by pressing Activate ⊙ for 1.5 seconds:
- All indicators light **GREEN** for approx. 30 seconds.
- Buzzer in antenna beeps slowly, **Signal** indicator blinks **RED** .
  *The terminal is automatically set in **Antenna Pointing** mode.*

Activate button   **Signal** indicator
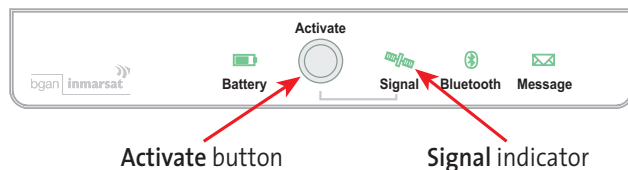
2 Find a location:
- Place the terminal in a location where you believe GPS fix can be obtained. At the same time it is possible to look for any Inmarsat satellite.
- Wait until the **Signal** indicator lights **YELLOW** , GPS fix is obtained.
- If the terminal is new, or have not been used for some time, a GPS fix may take up to 10 - 20 minutes.
  A GPS fix is required for logging onto the Inmarsat system.

3 Find the best signal:
- Align the antenna for the best possible satellite signal at your location.
- Use the buzzer pitch and the **GREEN** blinking **Signal** indicator.
  The pitch increases as the satellite signal improves. A good satellite signal is necessary to obtain a stable network connection.

Alternatively, the Nera WorldSet or BGAN LaunchPad can be used as an aid in pointing the Nera WorldPro 1000, see next page.

4 Logging on:
- When the **Signal** indicator blinks **GREEN** (green only) and the buzzer pitch is as high as you can get it, press **Activate** ⊙ to exit **Antenna Pointing** mode to log onto the **Inmarsat BGAN** network.

5 Start communications:
- When the **Signal** indicator remains steady **GREEN** , you have successfully logged on and can start making voice calls, send SMS or set up a data connection on your PC.

  If the **Signal** indicator switches to **RED** , your logon attempt has failed. Press **Activate** ⊙ and start again from step **2**.

Nera WorldSet signal strength bar
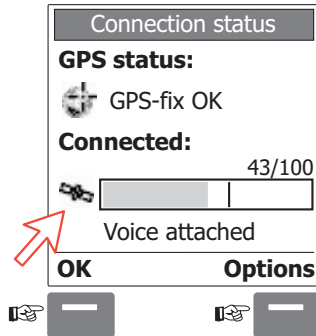
BGAN LaunchPad signal strength bar
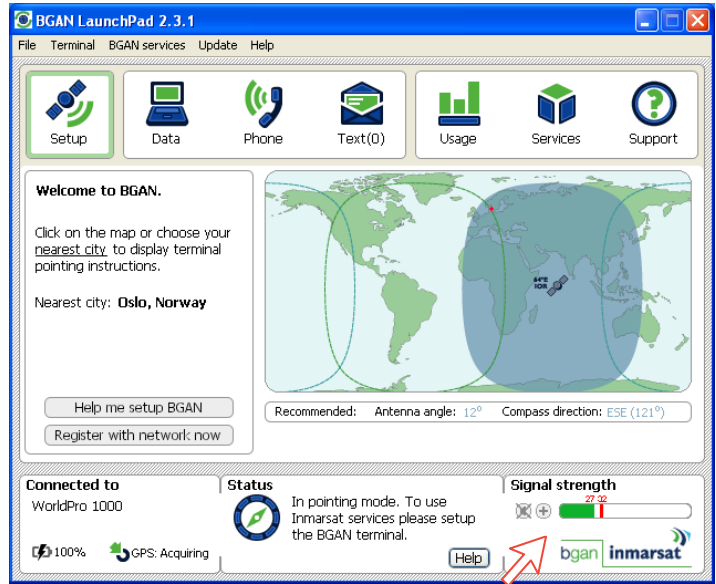
Antenna pointing

The Inmarsat satellite is positioned stationary above **equator**. Aim the antenna towards the estimated position of the satellite, or make a slow scan across the hemisphere with the vertical angle 45°.
The vertical angle ranges stepwise from 10° to 90°.

Free line of sight to the satellite is required.

Observe the satellite **Signal** indicator. It blinks with increasing rate as the signal gets stronger.

*See also **Indicator panel**.*
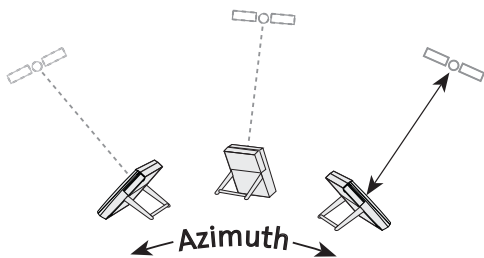
A compass can be handy to prepare for a location. (Must be bought separately).

The alignment buzzer in the Antenna Unit will sound with increasing pitch in steps when closing in on the satellite.

A strong signal helps saving battery power.

Acknowledge the satellite signal by pressing **Activate** momentarily.

The Nera WorldPro 1000 is now ready for call.

Alternatively, the Nera WorldSet or BGAN LaunchPad can be used as an aid in pointing the Nera WorldPro 1000, *see previous page.*
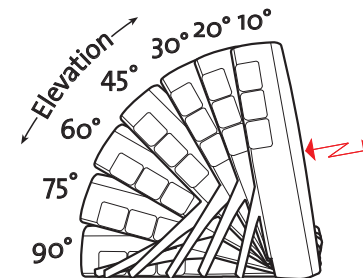
Satellite signal at low elevation angles

Angles below 10°

Inmarsat satellites are geostationary and are located in fixed positions in the sky above equator. A fixed antenna installation is therefore possible. However, a geostationary satellite moves slightly (3° in azimuth + 1° in elevation) during a 24 hrs cycle.

At low elevations (< 10 degrees), variations in the satellite signal must be expected. This normally does not affect the communication. Only if the surface in front of the antenna is completely flat, e.g. roof or calm water, can it cause reduction in signal strength and/or data rate.

The solution is to change the height above ground 30 cm up/down. On a flat roof the antenna should be installed close to the edge or horizontally on the roof,

especially for a permanent installation. This is not an issue if the terrain in front of the antenna is uneven.
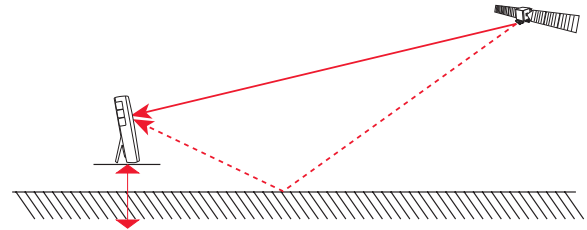
AVOID REFLECTIONS AT 10 DEGREE ELEVATION OR LESS. To find the best possible satellite signal when pointing the antenna, adjust the terminal height above the surface up or down in steps of 30cm.

Cables and lengths

Split cable

3, 10, 20 metres, allows separation of Antenna & Interface Unit. Dust & moist protection.

Split cable (option)
3 m - **107425** / 10 m - **106495** / 20 m - **107450**

Interface Unit — Dust & moist protection → Antenna Unit
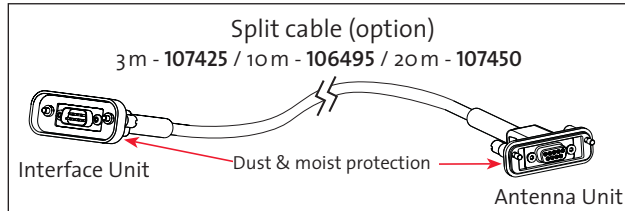
USB cable

Standard 1.8 metre cable. Dust & moist protection.

106500
A-MALE — Dust & moist protection — B-MALE
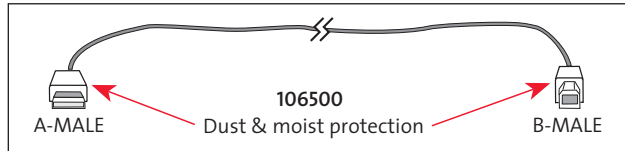
Telephone interface cable

4-wire/2 metres. Dust and moist protection.

RJ45 — **106499** — RJ45
Dust & moist protection

Power adapters

AC/DC adapter - **102208**

3m total length — Europlug

DC/DC adapter - **102228** (option)

3.5m total length — Supports 12mm and 9mm car power connector

DC cable - **107572** (option)

2.5m total length
Dust & moist protection
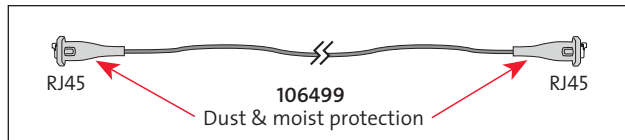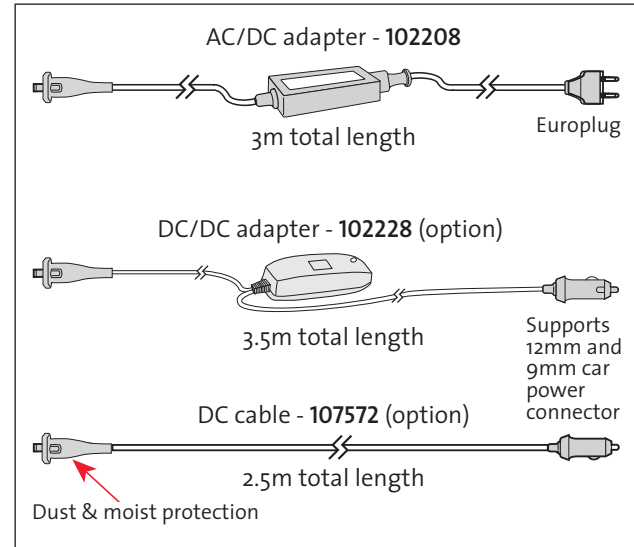
Note!

All cables provide the best possible IP protection on the terminal. Nera WorldPro 1000 should only be used with these cables and accessories.

The Nera WorldPro 1000 terminal including the Nera WordSet telephone can be used outdoor in all weather conditions: heavy/rain/snow/hot/cold.

Data connection via USB

Installing USB drivers

Two Nera USB drivers must be installed prior to con-
necting the PC to Nera WorldPro 1000.

The drivers are installed using the Nera USB Wizard

Insert the Nera WorldPro 1000 **CD** and click:

Software Installation > Installing Nera BGAN USB Drivers

*See the **Connecting to PC** Application Guide.*

Connecting up

Connect the PC to the USB connector on the Nera
WorldPro 1000 to start the BGAN LaunchPad and set up
a data connection or SMS.

*See **Installing the BGAN LaunchPad** later in this manual.*

Antenna Unit and Interface Unit assembled

Inmarsat Satellite

Free line of sight to the satellite

Activate button

Support

USB cable

PC w/BGAN LaunchPad
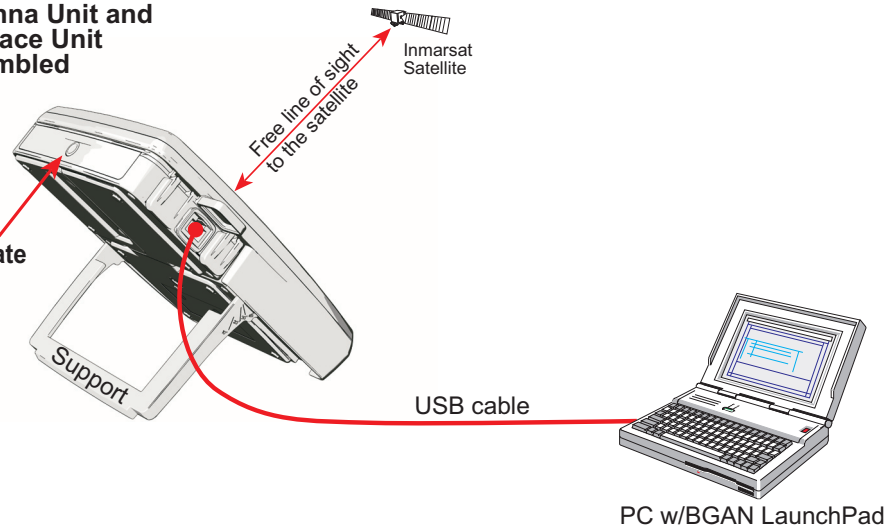
Voice communication via Nera WorldSet

Connect the Nera WorldSet to the telephone interface. For antenna pointing, you can use the Nera Worldset display. Adjust for maximum signal.

To call a subscriber, dial:
    00 + country code + subscriber number + 📞
To call the Nera WorldPro 1000, dial:
    00870 + Inmarsat Mobile Number (IMN)

*For use, see **Nera WorldSet - User Guide***

Antenna Unit and Interface Unit assembled

Inmarsat Satellite

Free line of sight to the satellite

Support

Satellite signal strength   Battery status

Nera WorldPro 1000
'Service Provider'

17:23

Menu   Contact
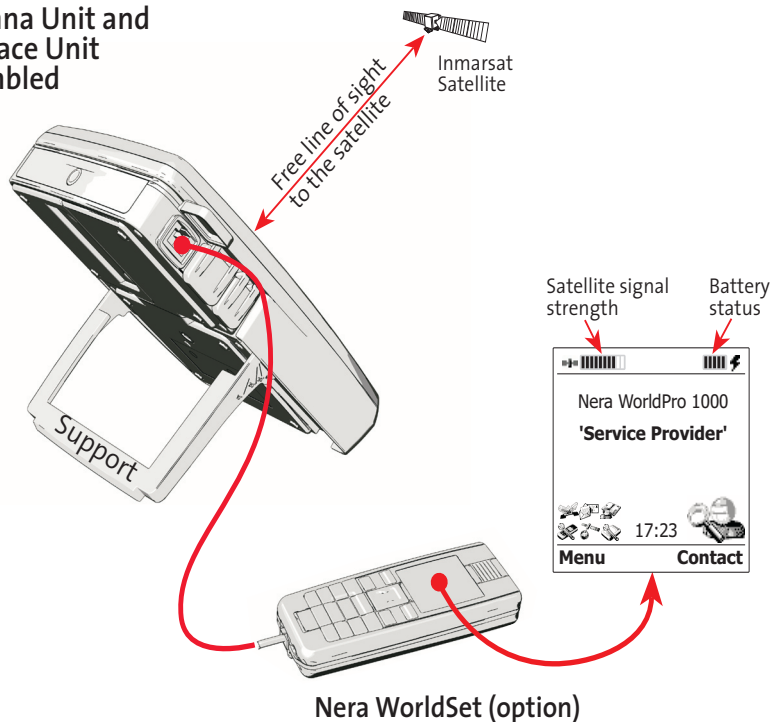
Nera WorldSet (option)

Split operation

The Nera WorldPro 1000 can also be operated with the **Interface Unit** separated from the **Antenna Unit**.

The Nera split cable interconnects the two units, allowing e.g. the Interface Unit to be placed inside a building and the Antenna Unit outside.
The split cable is optional (max 20 m).

*Activate buttons on the **Interface Unit** and the **Antenna Unit** can both be used for starting/accepting the satellite signal, and reading signal status..*

Antenna Unit and Interface Unit separated

Activate
Signal

Split cable
(option)

Interface Unit

Activate

PC w/BGAN LaunchPad

Nera WorldSet (option)
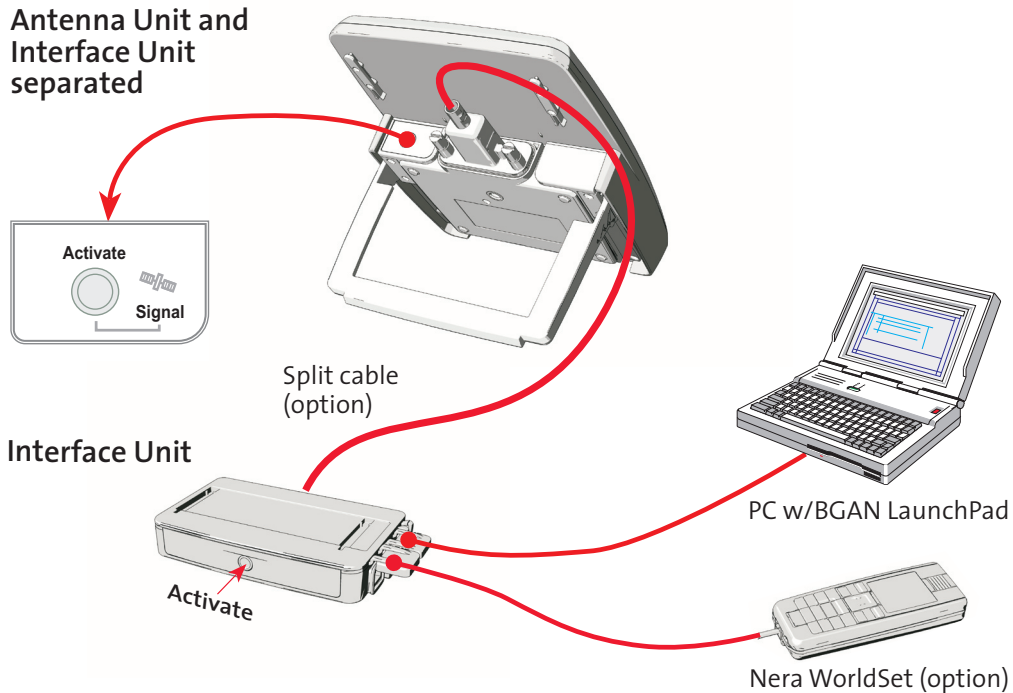
Communication via Bluetooth

If not integrated in the PC, plug the Bluetooth adapter into the USB port. Switch on the PC and, if required, install the self-running software enclosed with the Bluetooth adapter.

Bluetooth handsets are available as option.

Use the BGAN LaunchPad or Nera WorldSet to enable the Bluetooth interface. The **Bluetooth** indicator lights up.

Enable Bluetooth on the PC/Bluetooth handset using the default passkey "0000" for connection to the Nera WorldPro 1000 terminal.

The **Bluetooth** indicator lights **green** when the PC is connected. Nera WorldPro 1000 is now ready for operation via Bluetooth.

*For detailed description for PC, see the **Connecting to PC** Application Guide on the CD.*

*See also the **Bluetooth handset** manual.*

Built-in Bluetooth antenna

Bluetooth handset

Bluetooth to USB adapter

Max Bluetooth distance 20 m

PC

Activate

bgan Inmarsat

Battery   Signal   Bluetooth   Message
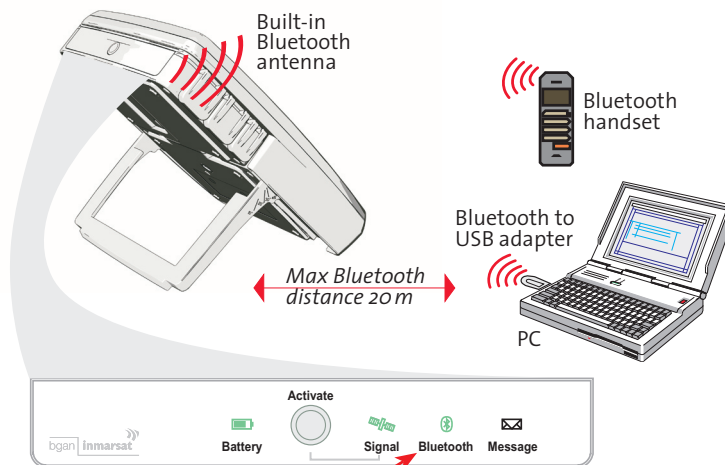
Bluetooth indicator:
- Bluetooth radio disabled when off.
- green when PC or Bt handset is connected.
- steady yellow when Bluetooth enabled with no Bt device connected.
- flashes green when waiting for user to send passkey initially.

Nera WorldPro 1000

BGAN LaunchPad

Installation

The **BGAN LaunchPad** allows you to set up and manage your satellite communications. You can open and monitor data connections, send and receive text messages and manage your phone call history and contact details.

The program is available on the enclosed CD and must be installed on the PC harddisk.

1 Insert the CD:

The StartPage opens automatically in a few seconds.

(Alternatively, open the Acrobat file "Nera WorldPro StartPage" on the CD. If necessary, install Acrobat Reader by clicking "AdbeRdr60_enu_full.exe" in the "SW Installation" folder.)

2 To install on PC, click **Software Installation** and then **BGAN LaunchPad**.

3 Nera USB drivers must be installed in the PC prior to connecting to the USB cable between the PC and Nera WorldPro 1000, *see **USB drivers** previously in this manual.*

5 Switch ON Nera WorldPro 1000.

6 Start the BGAN LaunchPad program by clicking **Start > Programs > BGAN LaunchPad**.

BGAN LaunchPad is also available for Apple Mac.

Overview

Satellite pointing aid

Data connection setup

Phone book

Read/ write SMS

Data and call duration information

Distribution Partner information

Help and service

Information only!
Not your exact position, but if city is selected satellite pointing guidance is available.

Launch zone

Control zone

Status zone

Battery status

GPS status

Register status, and available services

Signal strength will normally vary when using different services. In pointing mode, make sure to obtain the best possible signal strength.

Nera WorldPro 1000

GPS status

Data connection

LaunchPad help

Terminal log

Audio and lights setup

Inmarsat BGAN system

The Inmarsat Broadband Area Network service (BGAN) provides both voice and broadband data through a truly portable device on a global basis.

Data and voice transmissions to and from mobile/fixed subscribers is offered anywhere within the worldwide coverage of the Inmarsat 4 spot beam system, *see map later in the User Guide.*

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

Each satellite region is under the control of a **Satellite Access Station (SAS)**, which controls and monitors the traffic between the MESs and the SAS.

SAS: *Satellite Access Station w/Distribution Partners (interconnects fixed telecommunication networks with the Inmarsat system, two in each Ocean Region).*

MES*: Mobile Earth Station (Nera WorldPro 1000, a user terminal for the Inmarsat system).*

IOR

DATA NETWORKS

MOBILE NETWORKS 2G 2.5G 3G

TELEPHONE NETWORKS

SAS

MES
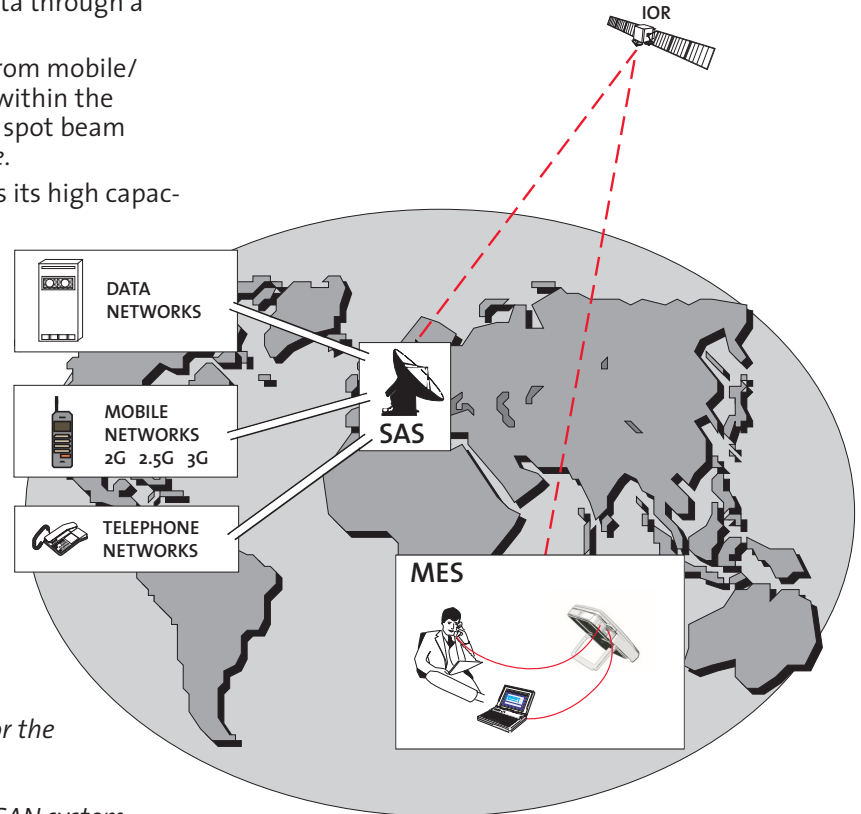
Figure A-1 Overview of the Inmarsat BGAN system.

Nera WorldPro 1000

System satellites

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

See figure A-2.

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.

The Nera WorldPro 1000 can communicate via the three satellite Ocean Regions:

> **F1**   Indian Ocean Region
>
> **F2**   Atlantic Ocean Region
>
> **F3**   Pacific Ocean Region

*The coverage area of the satellites for Nera World-Pro 1000 (BGAN) is shown on the **Satellite coverage map**, see earlier in this manual. Communication is possible in areas marked with brown and reddish brown (light grey and grey when printed in black), indicating spotbeam coverage.*

Transmission frequencies

The Inmarsat BGAN terminals operate in the following L-band frequencies:

MES *transmission* frequencies:
> 1626.5 MHz - 1660.5 MHz

MES *receiving* frequencies:
> 1525.0 MHz - 1559.0 MHz
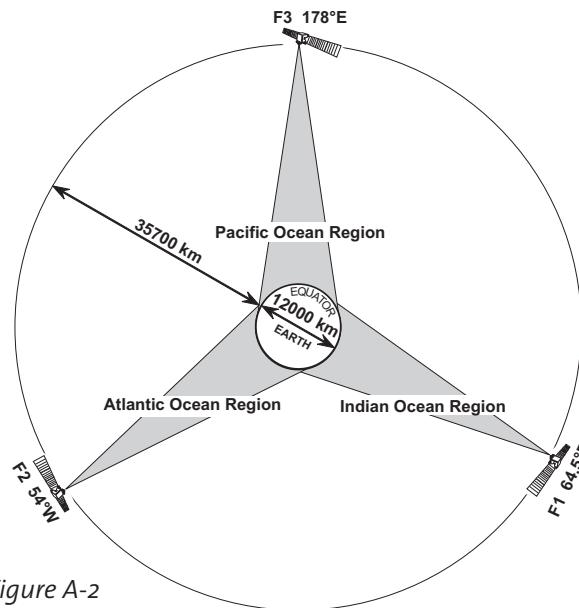
Figure A-2
Satellite positions.

SAS (Satellite Access Station)

Two SAS stations cover both the IOR and AOR-E satellite regions. *See figure A-3.*

The SASs provide the interface to the international networks for telephony and data: PSTN (Public Switched Telephone Networks), PSDN (Packet Switched Data Networks) and Mobile Telephone Networks.
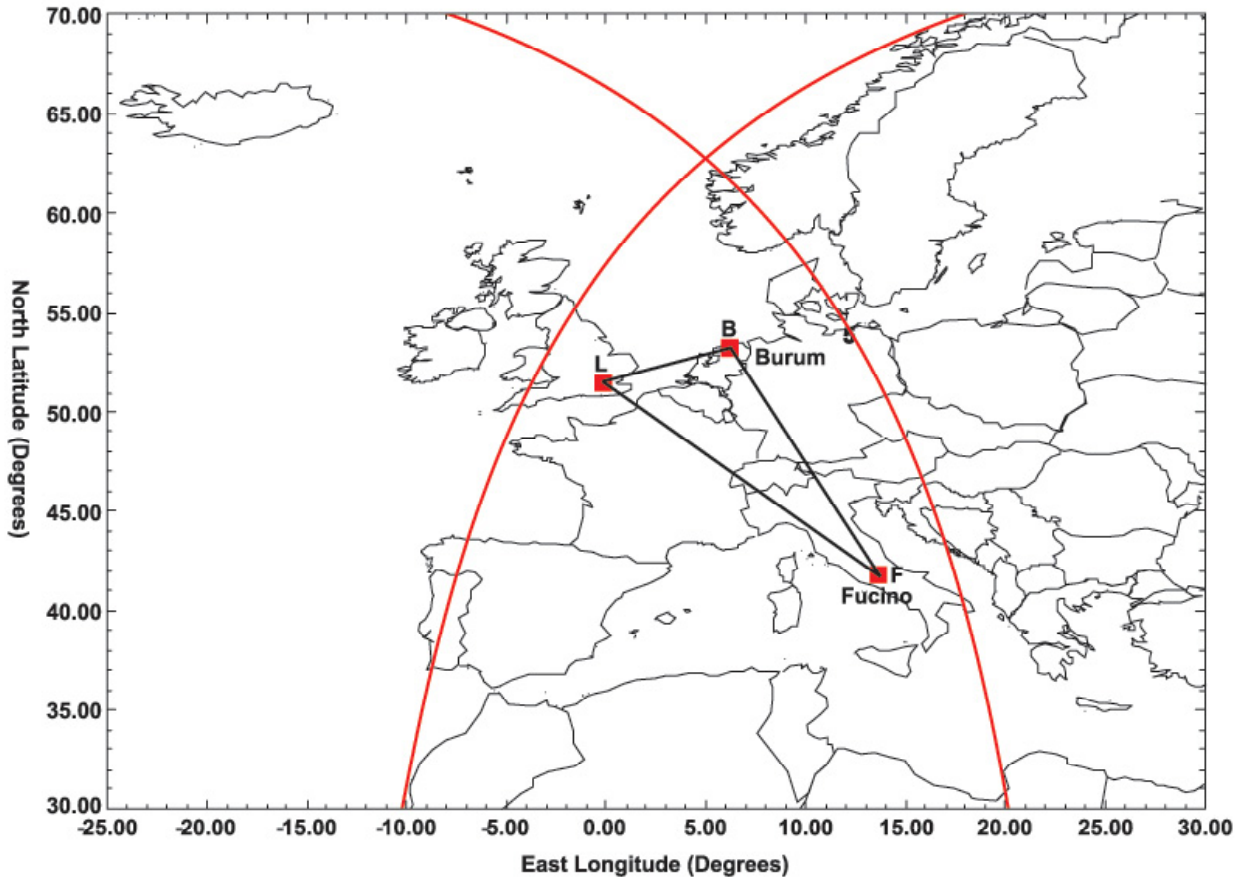
Nera WorldPro 1000

Figure A-3 BGAN Satellite Access Station.

Communication path

Nera WorldPro 1000

Nera WorldSet

*Recognized using
APN (Access Point Name)
stored on your SIM card*

SAS
Satellite
Access
Station

IP
network

DP
Distribution
Partner

SP
Service
Provider

PSTN/
ISDN

Other
Mobile
network

Time delay ~0.25 second
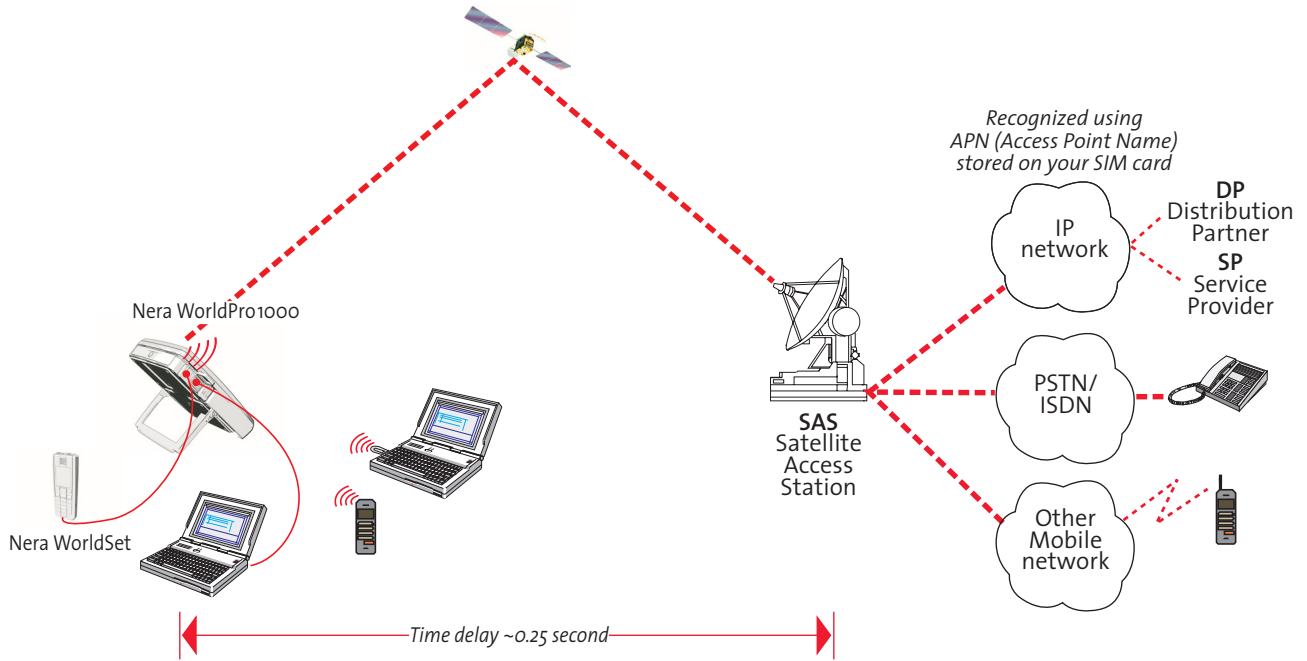
Nera WorldPro 1000 baseline - 107020

- Interface unit - **104530**

- Antenna Unit- **102210**

- Document package incl. CD - **107014**

- AC/DC adapter - **102208**
  (input 100-240VAC ±10% 50-60Hz
  800mA, output 12VDC ±10% 2.5A)

- Battery package - **102207**
  (7.2V 2400mA Li-Lon,
  charging max 3hours)

- USB cable (1.8 meter) - **106500**

AC Alternating Current

AOR Atlantic Ocean Region West (F2 - 53°West).

APN Access Point Name

Azimuth horizontal direction angle between north and, e.g. the direction to the satellite.

Bit rate the number of bits transmitted per second (bps).

Bluetooth Wireless computer interface.

Bps Bits per second.

BGAN Inmarsat Broadband Global Area Network, mobile communications service providing simultaneous voice and data.

BT Bluetooth

CBR Constant Bit Rate

CHV2 higher access level on the SIM card.

CS Circuit Switched service.

DC Direct Current.

Dongle Bluetooth device that connects to the PC.

DP Distribution Partner

DSP Digital Signal Processor.

DTE Data Terminal Equipment.

DUN Dial Up Network.

Elevation vertical angle to the satellite, i.e. the height of the satellite above the horizon.

Ethernet Local Area Network (LAN)

FWD ID forward Id, telephone network identity.

GPRS General Packet Radio Service.

GPS Global Positioning System.

IMN Inmarsat Mobile Number, a unique 9-digit number which identifies each device connected to the Nera WorldPro 1000.

Inmarsat International Maritime Satellite Organisation.

IMEI International Mobile Equipment Identifier, a unique number that can be found on the label inside the battery compartment of the Interface Unit.

IMSI a unique SIM card number

IOR Indian Ocean Region (F1 - 64° East).

IP Internet Protocol

IPDS Inmarsat Packet Data Service.

ISDN Integrated Services Digital Network.

ISN Inmarsat Serial Number, individual number assigned to each WorldPro terminal.

ITU International Telecommunications Union

Kbps Kilobits per second.

LAN Local Area Network.

LaunchPad Inmarsat BGAN PC software.

LED Light Emitting Diode

MES Mobile Earth Station, a user terminal for an Inmarsat system; the Nera WorldPro 1000 is an MES for the Inmarsat BGAN system.

Modem Device/driver for conveying digital data.

Nera WorldPro 1000

MSN Multiple Subscriber Number, the extension number that connected equipment responds to.

OID Originating terminal IDentification.

Ocean Region the coverage area of an Inmarsat satellite within which the Nera WorldPro 1000 may communicate.

PABX Private Automatic Branch Exchange.

Passkey Bluetooth enabling key

PIN Personal Identification Number.

POR Pacific Ocean Region (F3 - 178°East).

PPP Point-to-Point Protocol used for serial data communication via the Nera WorldPro 1000 USB port or Bluetooth connection.

PS Packet Switched data service.

PSTN Public Switched Telephone Network

PUK Personal Unblocking Key, code that allows unblocking a SIM card.

QoS Quality of Service

RF Radio Frequency.

SAS Shared Access Station, a station that interconnects fixed telecommunications networks with the Inmarsat system.

SIM Subscriber Identity Module

SMS Short Message System.

SP Service Provider

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 SAS.

UDI Unrestricted Digital Information.

UMTS Universal Mobile Telecommunications System.

USB Universal Serial Bus.

USIM SIM card designed for 3G mobile telephony.

UTC Coordinated Universal Time, referenced to Greenwich Mean Time (GMT).

VBR Variable Bit Rate.

VoIP Voice over Internet Protocol, broadband internet telephone communications.

VPN Virtual Private Network.

Nera WorldPro 1000

Setting up problem	*Probable cause*	*Action*
1. *The indicators do not light up:*	The Interface Unit is not switched ON	• Press **Activate** button for 1.5 secs.
	Power is not connected. Battery is not installed.	• Check that the power adapter is properly connected, use any DC source in the range 10.8 - 15.6 V.
2. *The Nera WorldSet display freezes or stays completely blank:*	The handset cord is not connected or damaged	• Check that the handset cord is properly connected and inspect the cord. Uses the RJ45 pins 3, 4, 5 and 6 only. • Disconnect cord from Interface Unit and connect it again.
3. *Nera WorldPro 1000 cannot find the satellite:*	No or weak signals. Sight to satellite obstructed	• Check that no obstacles block the free sight to the satellite. • Check with the coverage map.
4. *Low signal reception:*	Obstructions	• The signal strength indicator should preferably exceed 50% in BGAN LaunchPad, or 5 bars in the Nera WorldSet display. • Check that no obstacles block the free sight to the satellite. • Restart the search for any satellite by pressing the **Activate** button.
5. *Nera WorldPro 1000 functions abnormally:*	All signal indicators stay red	• Turn off the terminal by pressing the **Activate** button, and switch on again. May be necessary to press **Activate** for 10secs or remove battery. • Verify correct voltages to the terminal: 10.8 - 15.6 VDC. • Download new software from the Nera website. (preferably done by a Nera Regional Service Centre)

Nera WorldPro 1000

Setting up problem	*Probable cause*	*Action*
6. Nera WorldPro 1000 functions abnormally:	All signal indicators stay yellow. **Activate** button has been pressed and held for more than 10seconds.	• Terminal in software upgrade mode. To exit the upgrade mode, switch OFF the terminal and switch it ON again. • Download new software from the Nera website. (preferably done by a Nera Regional Service Centre)
7. Unsuccessful call:	The following messages appear in the BGAN LaunchPad or Nera WorldSet display: "SIM Not Inserted/SIM PIN".	• Check that the SIM card is installed. • The terminal is black listed (*IMEI* number). • The SIM card is black listed (*IMSI* number).
8. No GPS: "Not ready for call" Signal indicator flashes green/red	GPS alarm, or GPS not received.	• Wait up to 20 minutes. The GPS may use up to 20 minutes if Nera WorldPro 1000 has been switched off. If not the case, GPS will report position to BGAN LaunchPad and Nera WorldSet display when GPS is acquired. GPS is needed to select satellite beam and log onto the Inmarsat system. Find another location.
9. Problems with data communication:	Wrong PC settings	• Verify DUN (Dial Up Network) settings. Number to dial should be *98# • *Read* **Connecting to PC** *application guide on CD.* • Contact the PC applications vendor for help.
10. SIM not installed	**Message** indicator flashes red	• Insert SIM card. Must be a G3 SIM (USIM) provided by an Inmarsat DP/SP. • Read alarms in BGAN LaunchPad or Nera WorldSet. • Check SIM card installation/orientation.

Nera WorldPro 1000

Problems connecting to PC	*Probable cause*	*Action*

1. No contact with modem using USB:	Wrong setup of USB driver.	• 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:
		Alt. A
		  1. Remove Modem in Phone and Modem options.
		  2. Run the Nera USB wizard.
		  3. Reconnect the Nera WorldPro 1000
		  4. Follow the New Hardware Wizard in Windows. Click next, and repeat procedure 3 times: Nera Dual Port/Control port 1/2
		Alt. B
		  1. Remove previous USB installations via Control Panel>System>Hardware>Device Manager. Double-click universal serial Bus Controller and uninstall the USB universal Host Controller. Warning! Removes all USB drivers.
		  2. *Repeat installation of USB driver*

2. Cannot find Network Connection:	Network connection not installed.	• Contact your PC vendor to get the software.

Nera WorldPro 1000

Problems connecting to PC	Probable cause	Action
3. Connection unsuccessful:	Other end does not reply No answer from SAS	• Verify that you are logged on to the system. • Verify satellite signal
	Wrong connection details	• Check the APN address (located on the SIM card) with your Distribution Partner (DP). Select correct user name and password. If required, enter data using BGAN LaunchPad. • Check whether your SIM card is registered.
4. Terminal fails to connect in data mode	Incomplete dialing	• Verify satellite signal indicator. • Using BGAN LaunchPad, check status and network registration. • Using BGAN LaunchPad, make sure to select data connection. • Select background data. • Try again.

5. Length of cables:
    USB
    Ethernet
    Bluetooth
	Guranteed length:
	   3 m
	   TBD
	   20m	

6. Using LaunchPad fails		• "Help" BGAN LaunchPad to connect. • Select correct COM port manually • See problem 1 for USB problems. • Reinstall BGAN LaunchPad. • Check that the SIM card is inserted in terminal.

Nera WorldPro 1000

Problems connecting to PC	Probable cause	Action
7. *Disconnects after some time*	Wrong setting in dialup (DUN)	• Check properties>options>idle time before hang up. • Check satellite signal, can vary in some locations, *see **User Guide**.*
8. *Low throughput*	Many users logged on the system	• Try later • Use another Ocean Region *Note! You only pay for data sent/received* • Check satellite signal
9. *Streaming fails*	Not available service	• Check with your DP (Distribution Partner) on the availability on your SIM card. • Using BGAN LaunchPad, verify APN located on SIM card using. • Nera WorldPro1000 supports QoS streaming 32 and 64kbps
10. *Out of range*		• Not within the Inmarsat coverage. • Check GPS • Check satellite signal
11. *How do I set a DUN not using BGAN LaunchPad*		• Read the application guide Setting up a DUN.

Nera WorldPro 1000

Operation problem	*Probable cause*	*Action*
1. *Unsuccessful call:*	Network busy	• Try again
	Nera WorldPro 1000 is not commissioned.	• Check event log for information. • Call the Net Service Provider/Distribution Partner.
	The called party is busy. "Subscriber busy" appears in Nera WorldSet display	• Wait for some time and try again. • Call another subscriber.
2. *Problems with making a voice call.*	Incomplete dialing	• Always use the International prefix e.g. 004767244700. • Remember to key "#" as the last digit before starting transmission. Not needed on Nera WorldSet.
	Service not commissioned	• SIM card is not accepting phone calls.
	Not logged on to the Inmarsat system	• No valid GPS • Check **Signal** indicator • Check BGAN LaunchPad • Press **Activate** button and repeat the satellite pointing.
3. *Problems with incoming voice call.*		• Subscriber must dial International prefix e.g. 00870772420510. • Voice device not properly connected to terminal.

NERA