NERA

Nera WorldPro 1000
▶ **User Guide**

bgan inmarsat

RADIATION WARNING

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.

ANTENNA RADIATION

SAFETY DISTANCE 0.5 METRE IN FRONT OF ANTENNA

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.

Nera WorldPro 1000

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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 additional external antenna.

Combined with the Nera WorldSet for voice source, it is ideal for 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.

Easy configuration - the terminal can also be configured directly from the Nera WorldSet.

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

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
- QuickStart manual with CD containing the BGAN LaunchPad PC interface and additional guides/ information.

Accessories

- Nera WorldSet,
  see **Nera WorldSet - User guide**
- 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
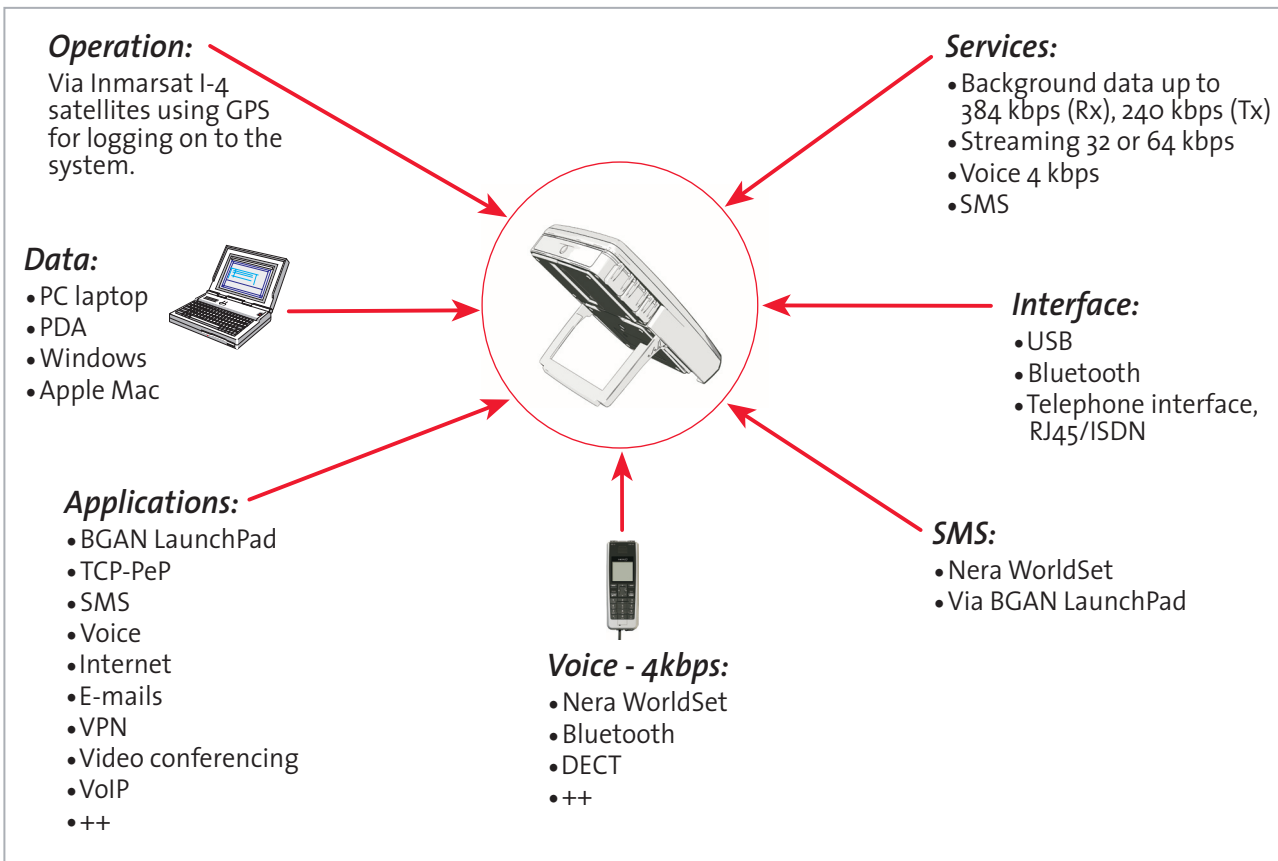- Bracket mounts for antenna
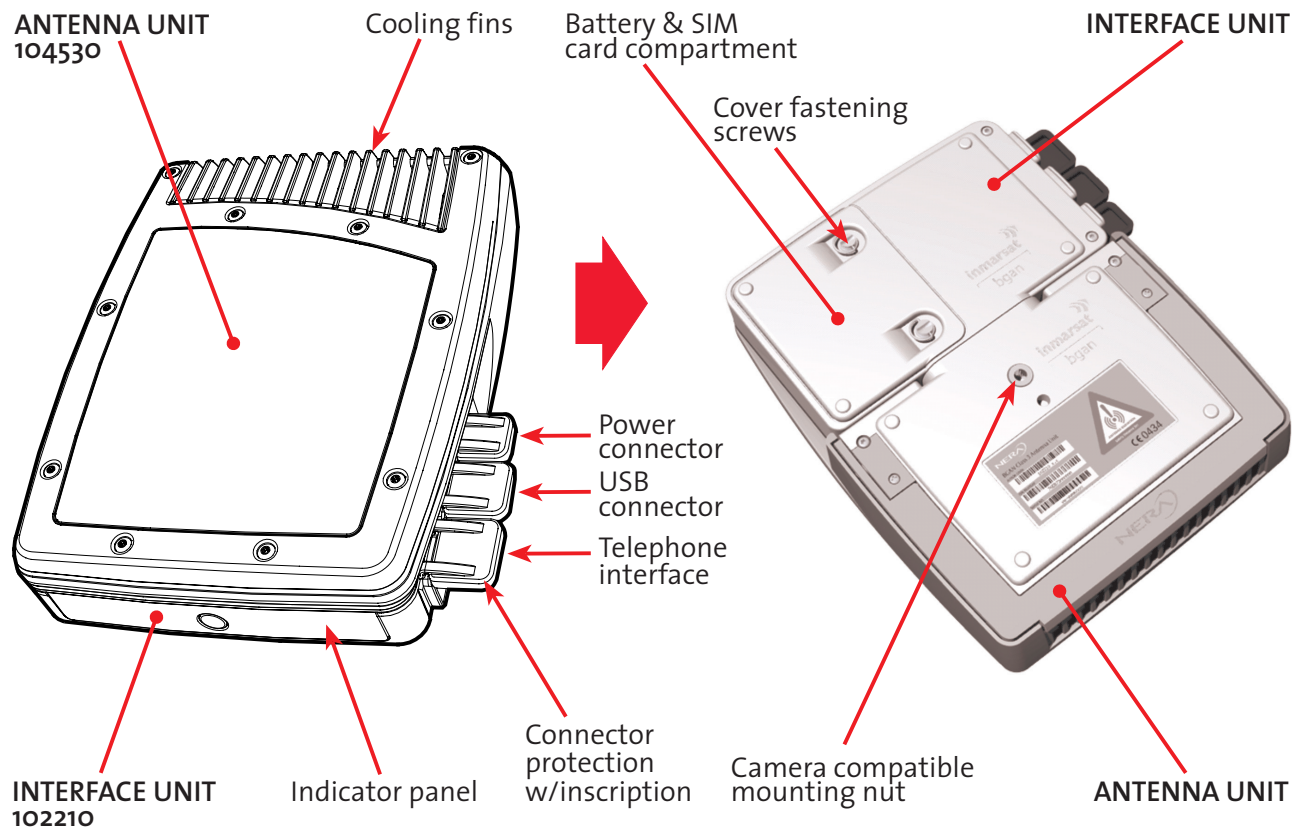- Cable for car power plug

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:
- BGAN LaunchPad
- TCP-PeP
- 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
104530

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

ANTENNA UNIT

INTERFACE UNIT
102210
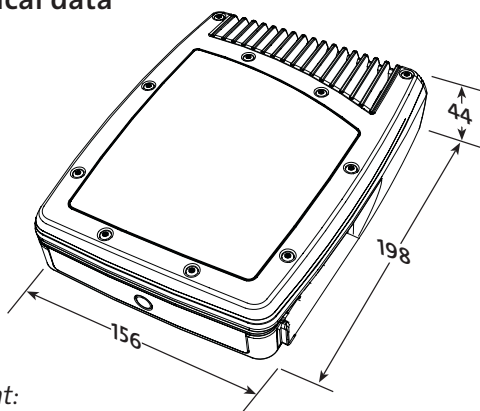
Indicator panel

Figure 2 Nera WorldPro1000, 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.

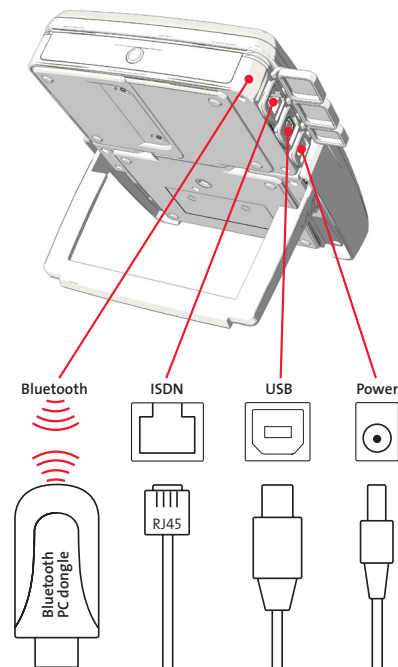|	
	Max drain 1.5 W Euro ISDN (1B+D) 1 x 64 kbps + 16 kbps
USB device port:	1 connector, USB v1.1 (USB v2.0 compatible)
Dual port support:	- control port/serial port profile - DUN (dial up networking)

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 - 102207

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 - 102208

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

DC power connector on terminal

Centre 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

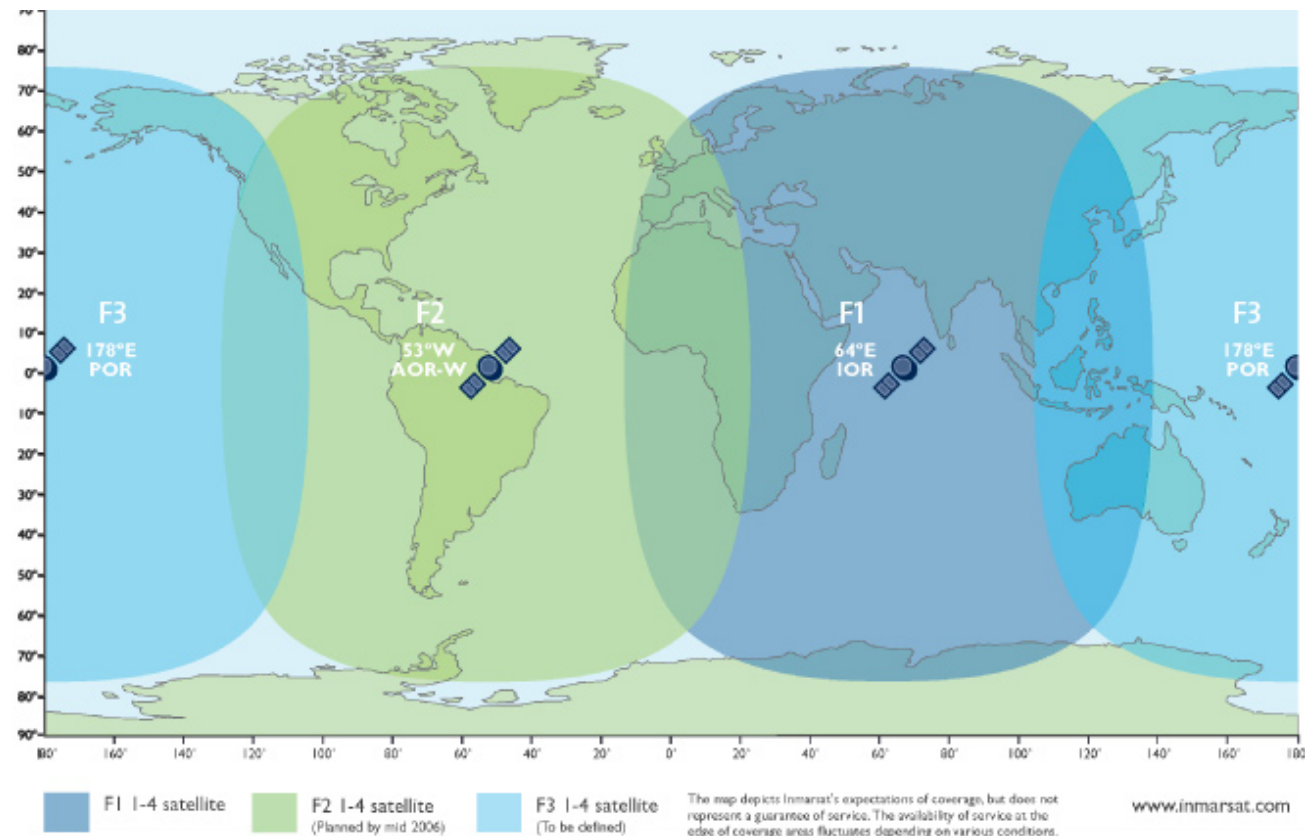|	
Storage device:	-40°C to +80°C
Operational:	-20°C to +55°C, 95 % humidity (non-condensing)
Infrared:	500 W/m²
Ultra violet:	54 W/m²
Visible sunshine:	1150 W/m² MIL-SPEC 810E 505.3
Ice:	6mm (non-operational)
IP:	44 - all in one configuration 44 - antenna 42 - Interface Unit/use of cables

Documentation package supplied with Nera WorldPro 1000 - 107014

The CD ROM included in the package contains:
• BGAN LaunchPad program for operation from PC
• manuals
• application guides
• USB modem drivers
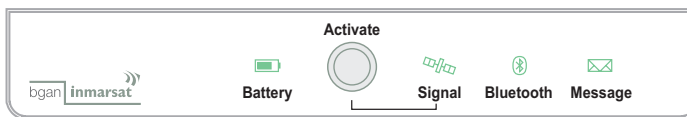• and other useful information.

Nera WorldPro 1000

Satellite coverage map

| 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 |
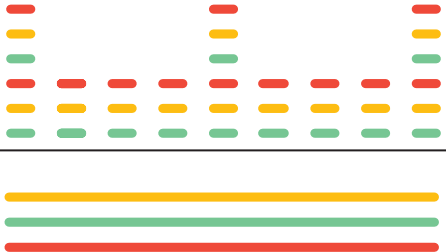
Indicator panel

|		
All indicators light GREEN for approx. 30 secs when powering ON	Activate — Battery, Signal, Bluetooth, Message (bgan inmarsat)	All indicators light RED for approx. 10 secs when powering OFF

Battery

0 - 10% battery capacity
10 - 40% battery capacity
40 -100% battery capacity, or fully charged
Battery charging   Blink rate 2 secs
No battery installed

Signal

Antenna pointing
No satellite signal: no GPS fix   Blink rate 2 secs
         "   stored GPS fix   Beep rate 2 secs
         "   new GPS fix
Satellite signal OK: no GPS fix   Blink rate 0.3 sec
         "   stored GPS   Continuous sound varying
         "   new GPS   with received signal strength.

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

Bluetooth

Bluetooth enabled, no device connected
Bluetooth enabled, device connected
Bluetooth firmware update   Blink rate 0.5 sec

Message

New alarm   Blink rate 0.5 sec for 30 secs
Alarm present
Incoming voice call   Blinks until answered/on-hook
Receiving SMS   Blink rate 0.5 sec for 10 secs
Lost voice call or unread SMS
PIN/PUK validation necessary

In sleep mode, only the battery indicator lights

Nera WorldPro 1000

Terminal modes

Toggling between **Pointing mode** and **Standby mode** is done using the **Activate** button.
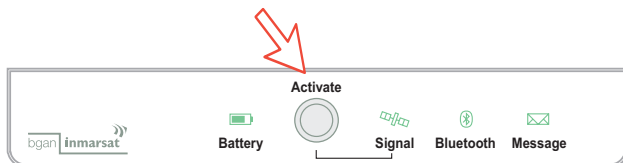
Pointing mode

Nera WorldPro 1000 enters the pointing mode automatically when powered on. The terminal exits pointing when pressing **Activate** or registering onto the Inmarsat BGAN Network via BGAN LaunchPad or Nera Worldset.

The buzzer in the Antenna Unit is active when in pointing mode.
The buzzer can be turned off/on, or its level adjusted from LaunchPad or Nera WorldSet.

Standby mode

In this mode the terminal logs onto the Inmarsat BGAN system and becomes operational.

When charging the battery indoors with no intention to operational, you can exit the **Pointing mode** (turn off the sound) by switching to **Standby mode**.

*Toggle between Pointing mode and Standby mode by pressing the **Activate** button.*

Sleep mode

Sleep mode is a state the terminal enters after a few minutes in Standby mode, when logged onto the Inmarsat BGAN system and running on batteries only.

The terminal will wake up when activities occur like:
• Incoming calls / incoming SMS
• When using BGAN LaunchPad / Nera WorldSet.
• Making a call / sending SMS.
• Loosing satellite signal / alarm ocurred.

In sleep mode only the battery indicator blinks slowly.

Nera WorldPro 1000

Battery charging

The Nera WorldPro 1000 will charge the battery as long as DC power is connected, and the terminal is switched on using the **Activate** button, *see the previous page.*

When connecting DC input, the terminal will automatically be powered on and starts charging.

*For alternative DC input devices, see **Cables and lengths > Power adapters** earlier in this manual.*

DC power connector data:
• Center pin = positive polarity
• Hollow plug: ⌀2.1 x ⌀5.5 x 10.0 mm
• 12 VDC -10% / +30% feed (10.8 VDC - 15.6 VDC)

Power consumption:
The terminal can be operated on battery, and is designed to minimise power consumption.
• Sleep mode: 0.5 W
• Transmission: less than 20 W (depending on satellite signal, devices connected, activity factor)

DC input level:
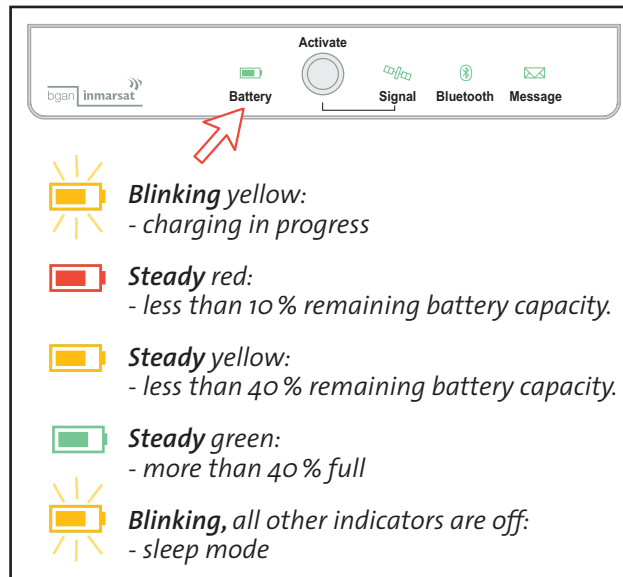If the DC power source available exceeds 15.6 volts, the DC/DC adapter must be used.

Solar panel:
Solar panel can be connected for operation and charging. The output power should be 20 W or more.

Charging time:
Charging time will vary depending on how full the battery is and activities on the terminal when charging. The battery is typically fully charged within 3 hrs.

Battery status indications:

Blinking *yellow:*
- charging in progress

Steady *red:*
- less than 10 % remaining battery capacity.

Steady *yellow:*
- less than 40 % remaining battery capacity.

Steady *green:*
- more than 40 % full

Blinking, *all other indicators are off:*
- sleep mode

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)
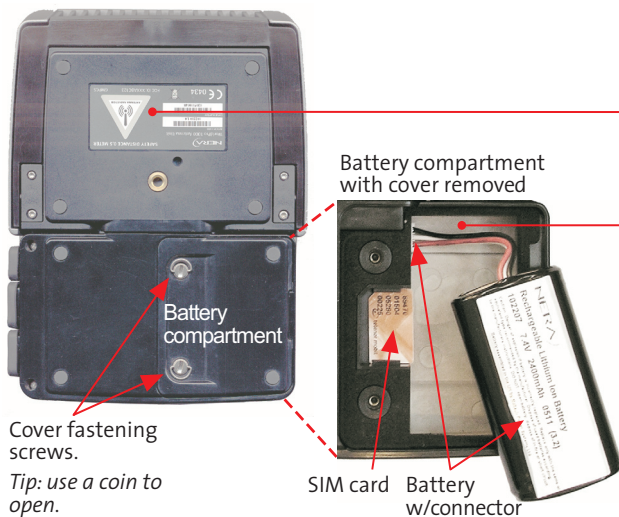- Service Provider information

Nera WorldSet SIM PIN prompt

BGAN LaunchPad SIM PIN prompt

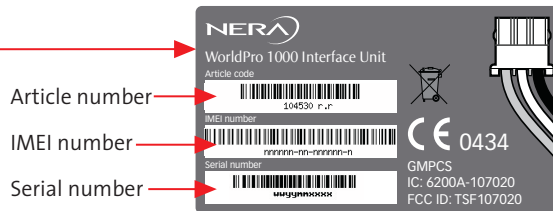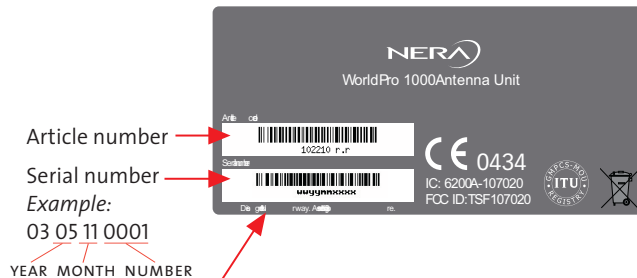**Nera WorldPro 1000**

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 WorldPro1000, and must be installed before it can be charged. Charge for 24 hrs the first time.

Normal charge time is 3 hrs.

Battery compartment

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

SIM card   Battery w/connector

Battery compartment with cover removed

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.

NERA
WorldPro 1000 Antenna Unit

Article number

Serial number
Example:
03 05 11 0001
YEAR MONTH NUMBER

IC: 6200A-107020
FCC ID:TSF107020
0434

NERA
WorldPro 1000 Interface Unit
Article code

Article number

IMEI number

Serial number

GMPCS
IC: 6200A-107020
FCC ID: TSF107020
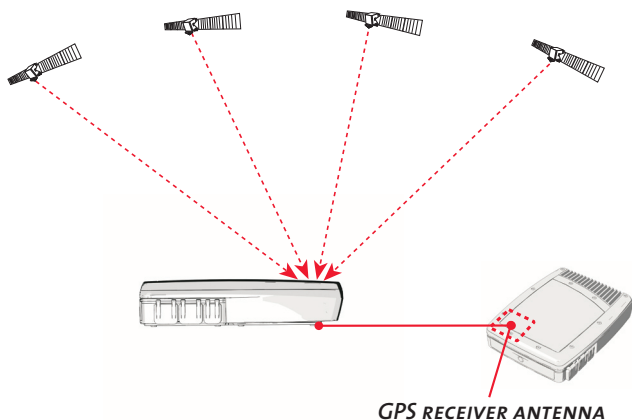0434

Nera WorldPro 1000

GPS

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

GPS SYSTEM - 24 LOW ORBITAL SATELLITES

GPS RECEIVER ANTENNA

GPS fix required

The BGAN network requires a valid GPS fix to success-fully register your terminal.

The frequency of use determines how quickly the GPS receiver built-in to the terminal *(see above)* can obtain a fix - it may take between a few seconds and 5 minutes.

To obtain a GPS fix

1 Check the **Signal** indicator status to see if your ter-minal has a GPS fix. For possible statuses, *see **Antenna pointing** later in this manual.*

2 Place the terminal in a position where it has the best view of the open sky. The best results are ob-tained if you lay the terminal flat.

The GPS receiver is located in the top left corner of the terminal *(see figure)*. Therefore make sure this area of the Antenna unit in particular has a clear line of sight to the sky.

3 If the **Signal** indicator lights steadily yellow, the ter-minal has a stored GPS fix. It is highly recommended to wait for a new GPS fix.

A stored GPS fix can be used when registering onto the network, but only if the terminal has not been moved since it was last used, or is within the same area (less than 300 km).

4 When you have a blinking green **Signal** indicator, you are ready to point the terminal to the Inmarsat satellite and register with the BGAN network.

When you power down the terminal, the GPS position is stored, and you are able to move the Nera World-Pro 1000 to a place where you do not obtain a GPS fix, for example your hotel window.
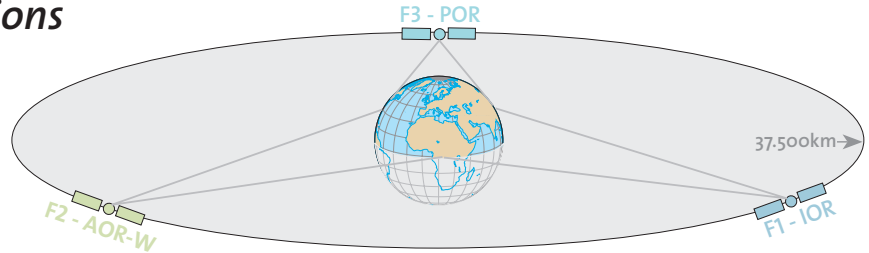
Satellite communications

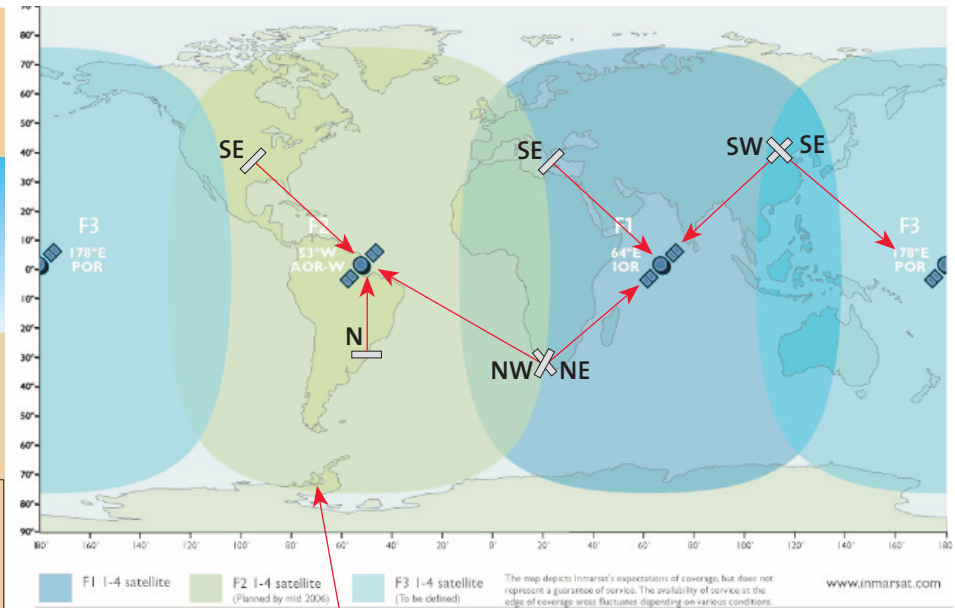Three satellites are positioned stationary above equator.

The satellites provide the coverage shown on the map.

The Nera WorldPro 1000 searches for all satellites as default.

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

Nera WorldPro 1000 w/antenna

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.

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

Nera WorldPro 1000

First time setting up

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** (**YELLOW** if old GPS fix is stored in terminal).

  *The terminal is automatically set in **Antenna Pointing** mode, i.e. it attempts to find the Inmarsat BGAN satellite and/or to obtain a GPS fix which is needed to log onto the BGAN network.*

Activate button   **Signal** indicator
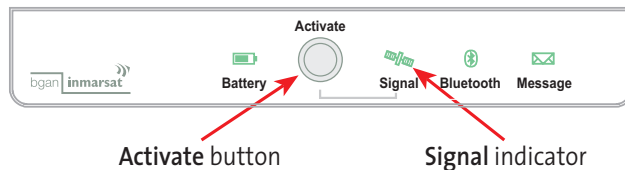
2 Obtaining a GPS fix:

- Place the terminal in a location outdoor or inside a window. At the same time it is possible to look for any Inmarsat satellite.
- Wait until the **Signal** indicator lights **GREEN**, GPS fix is obtained.
- If the terminal is new, or have not been used for some time, a GPS fix may take up to 5 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, *see also **Antenna pointing***.

  Use the buzzer pitch and the **GREEN** blinking **Signal** indicator. The buzzer 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.
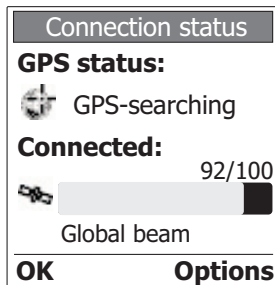
4 Logging on:

- When the **Signal** indicator blinks **GREEN** and the buzzer pitch is as high as you can get it, press **Activate** ◯ to log automatically onto the **Inmarsat BGAN** network and exit **Antenna Pointing** mode.

5 Start communications:

- When the **Signal** indicator lights steadily **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**.
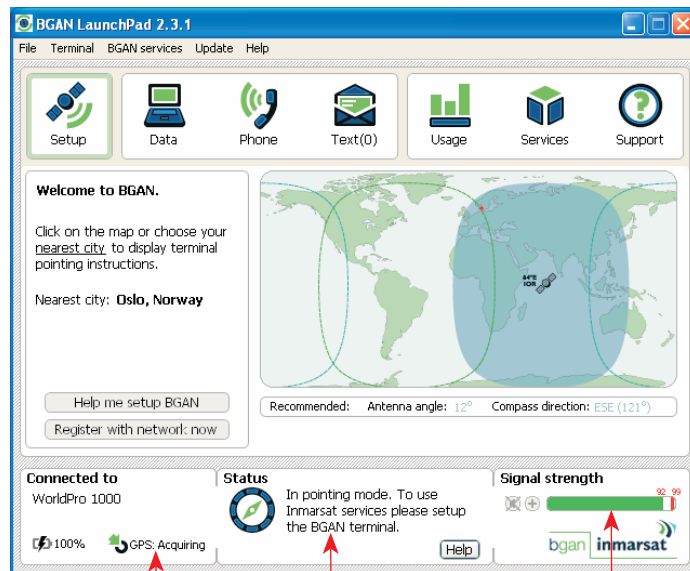
Nera WorldSet signal strength bar

```
Connection status
GPS status:
   ⊕  GPS-searching
Connected:
                    92/100
   📡  ▓▓▓▓▓▓▓▓▓▓▓█
   Global beam
OK              Options
```
☞ ▭   ☞ ▭

When in pointing mode, this is how Nera WorldSet or BGAN LaunchPad will help you to verify GPS fix and satellite signal quality.

BGAN LaunchPad signal strength bar

Waiting for GPS   In pointing mode   Signal bar varying depending on satellite signal quality, typically more than 50

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, *see figure*.
See also **Indicator panel**.

Azimuth
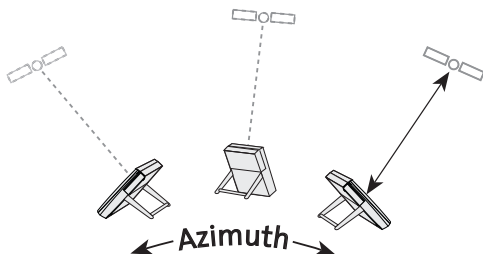
*A compass can be handy to
prepare for a location
(must be bought separately).*
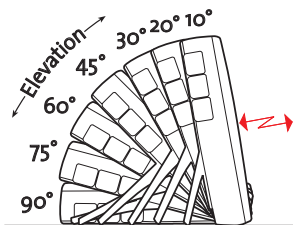
The alignment buzzer in the Antenna Unit will sound with increasing pitch in steps when closing in on the satellite.

A strong signal helps saving power when you are running on battery only.

Acknowledge logging on to the Inmarsat system 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*.

Signal-indicator

Slow red blink:
- not ready for logging on

Slow yellow blink:
- not ready for logging on

Fast yellow blink:
- ready, but old GPS fix may fail

Slow green blink:
- not ready, but new GPS fix ok

Fast green blink:
- ready for logging onto Inmarsat system

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.
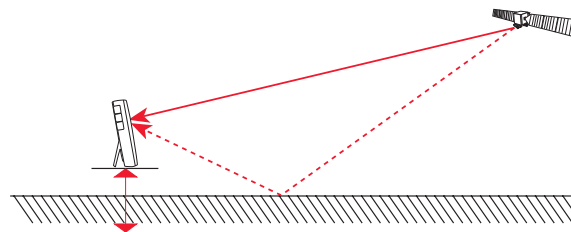
AVOID REFLECTIONS AT 10 DEGREE ELEVATION OR LESS. To find the best possible satellite signal when pointing the antenna, adjust the terminal height above the surface up or down in steps of 30cm.

Logging on

Pressing **Activate** logs terminal onto the Inmarsat BGAN system, providing the following possible **Signal** indications:

***Steady** red:*
- logging on attempt failed

***Steady** yellow:*
- registration in progress or lost satellite signal.

***Steady** green:*
- logging on successful

Terminal ready for voice/SMS/data

*If failed, redo **Antenna pointing**, making sure to acquire a new GPS fix, and/or find a better satellite signal.*
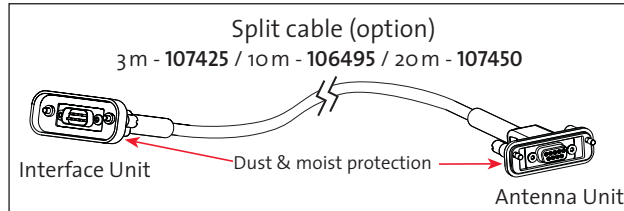
*See also **Appendix C - Troubleshooting***
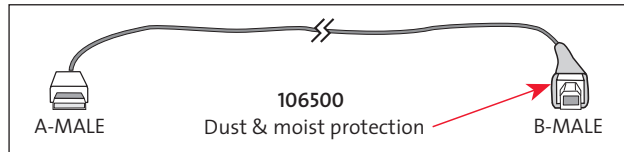
Cables and lengths

Split cable

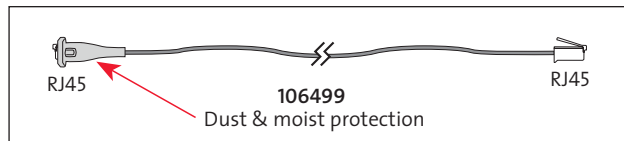3, 10, 20 metres, allows separation of Antenna & Interface Unit. Dust & moist protection.

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.

A-MALE   **106500** Dust & moist protection   B-MALE

Telephone interface cable

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

RJ45   **106499** Dust & moist protection   RJ45

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
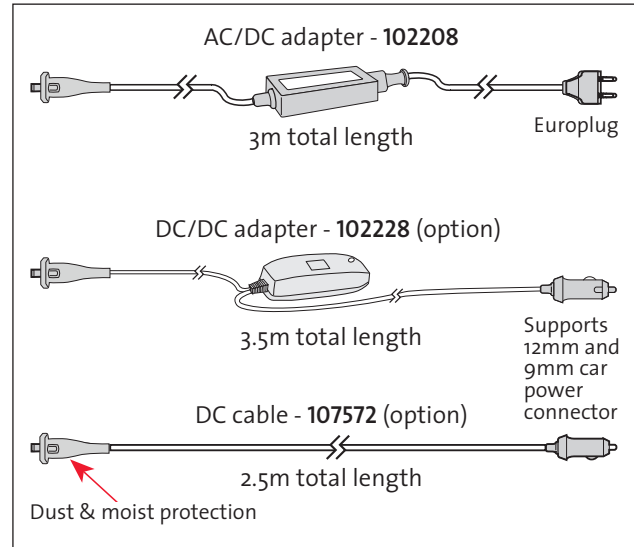
Note!

All cables provide the best possible protection on the terminal (IP44). 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.

Nera WorldPro 1000   27

Data connection via USB

Installing USB drivers

Two Nera USB drivers must be installed prior to connecting the PC to Nera WorldPro 1000.

It is only necessary to install the drivers the first time you connect the Nera WorldPro 1000 to your computer.

The drivers are installed using the Nera USB Wizard

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

Software Installation > Installing Nera BGAN USB Drivers

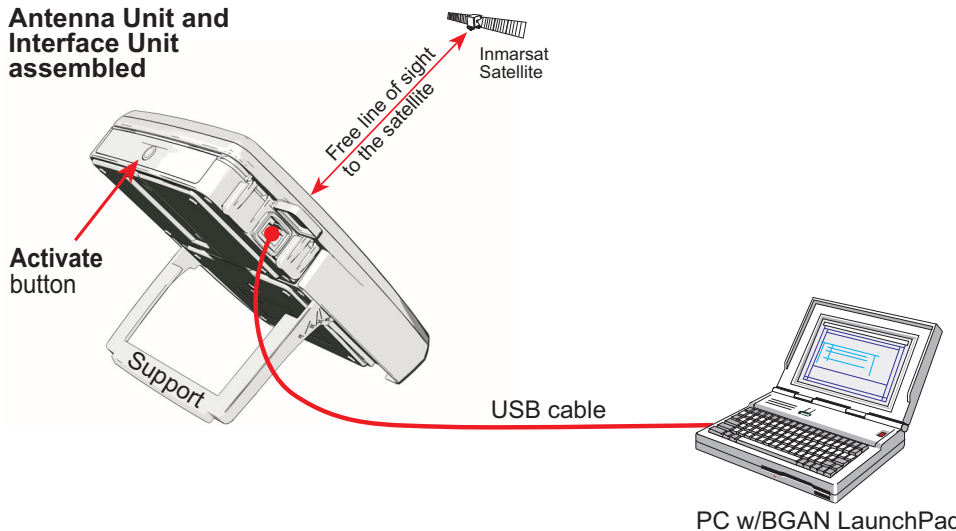*See the **Connecting to PC** Application Guide.*

Connecting up

Connect the PC to the USB connector on the Nera WorldPro 1000.

When connecting to the PC the first time, a pop-up window occurs, prompting you to start the BGAN LaunchPad to set up a data connection or send/receive 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.
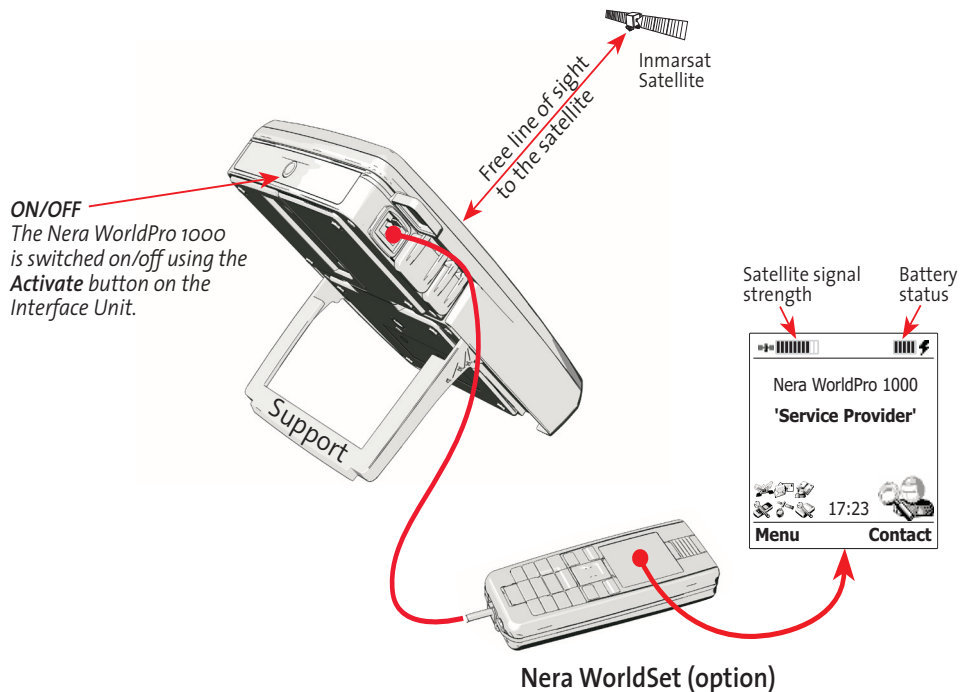
To call a subscriber, dial:

00 + country code + subscriber number + 📞

To call the Nera WorldPro 1000, dial:

00870 + Inmarsat Mobile Number (IMN), e.g. 00870771234567

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

Inmarsat Satellite

Free line of sight to the satellite

ON/OFF
*The Nera WorldPro 1000 is switched on/off using the **Activate** button on the Interface Unit.*

Satellite signal strength

Battery status

Nera WorldPro 1000
'Service Provider'

17:23

Menu   **Contact**

Support

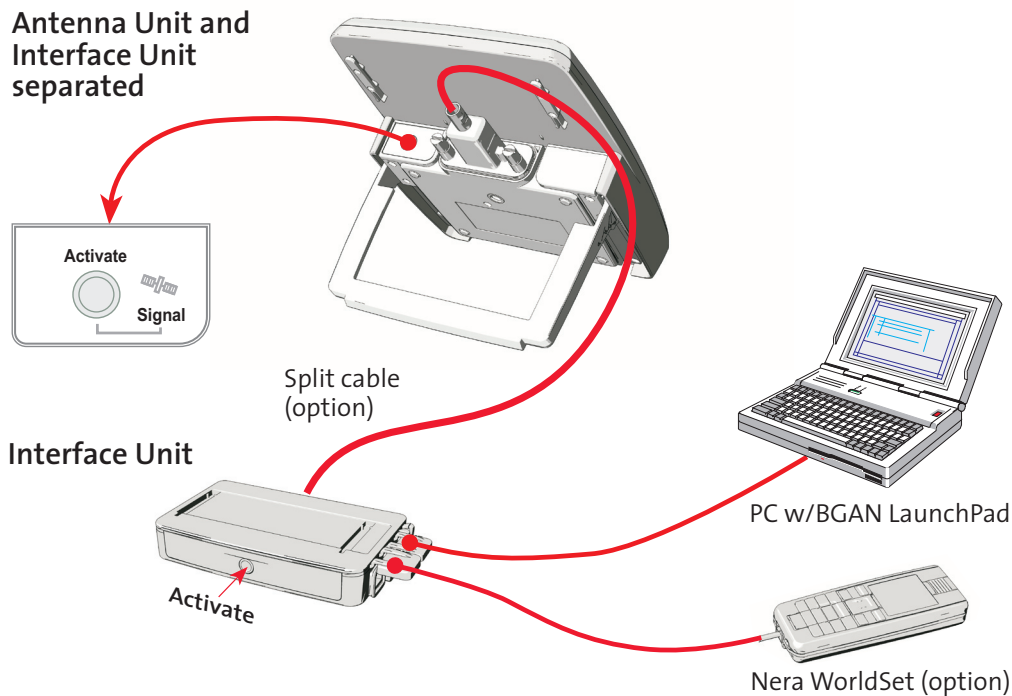**Nera WorldSet (option)**

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).

*For more information on cables, see **Cable and lengths** previously in this manual.*

*__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.

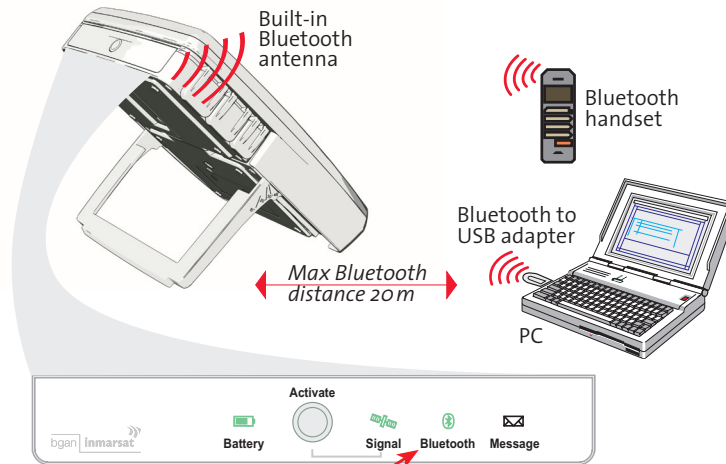Bluetooth handsets are available as option.

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

Launch zone

Control zone

Status zone

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

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.

Status

Terminal in pointing mode. Search for best possible signal strength.
Typically 50% or higher.

GPS status

Searching for GPS fix, please wait.

Please register by pressing **Activate** on terminal, or clicking.

Stored GPS fix can be used if terminal has not been moved since used last time.

Login to Inmarsat system failed.

BGAN LaunchPad 2.3.1

File   Terminal   BGAN services   Update   Help

Setup   Data   Phone   Text(0)   Usage   Services   Support

Welcome to BGAN.

Click on the map or choose your nearest city to display terminal pointing instructions.

Nearest city: **Oslo, Norway**

Help me setup BGAN

Register with network now

Recommended: Antenna angle: 12°   Compass direction: ESE (121°)

Connected to
WorldPro 1000

🔋 100%   GPS: Acquiring

Status
In pointing mode. To use Inmarsat services please setup the BGAN terminal.

Help

Signal strength
92 99

bgan **inmarsat**

Data connection

①

② Background data connected. Terminal is online.

Streaming 32kbps

Streaming 64kbps

③ Connected to network. Standard background data:
- transmit: up to 240 kbps
- receive: up to 384 kbps

LaunchPad help

Terminal log

Click **Display** to list terminal events. The last 100 events are stored.

The list can be saved to file.

Events log file lists information/alarms that have occurred on the terminal.
Active alarms will pop up on the screen and are also displayed along with red alert message on Interface Unit.
Alarms are repeated in the event log until solved.
Information is stored in event log for information only.

Audio and lights setup on terminal

BGAN LaunchPad 2.3.1

File Terminal BGAN services Update Help

Current PC/Terminal Interface
ISDN Interface Settings
Audio and Lights
Change PINs
Require PINs
Reset to Factory Default

Registration status

You are registered with Inm

Registered: 10.27
                  2nd jan 0

Latitude: 59°52'N
Longitude: 10°29'E

Nearest city: Oslo
Local time: 10:34

BGAN Terminal Audio and Lights

Buzzer volume
High
Medium
Low
Disabled

Indicator lights

Indoor unit   ⦿ Enable   ◯ Disable

Outdoor unit   ⦿ Enable   ◯ Disable

OK   Cancel   Apply   Help

Support

ion: ESE (121°)

Connected to
WorldPro 1000

100%

Status
Standard Data connection open.
Ready for Phone, Text and Data.

Help

Signal strength

bgan inmarsat

Enable Bluetooth

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

SAS

TELEPHONE NETWORKS

MES

Figure A-1 Overview of the Inmarsat BGAN system.

Nera WorldPro 1000

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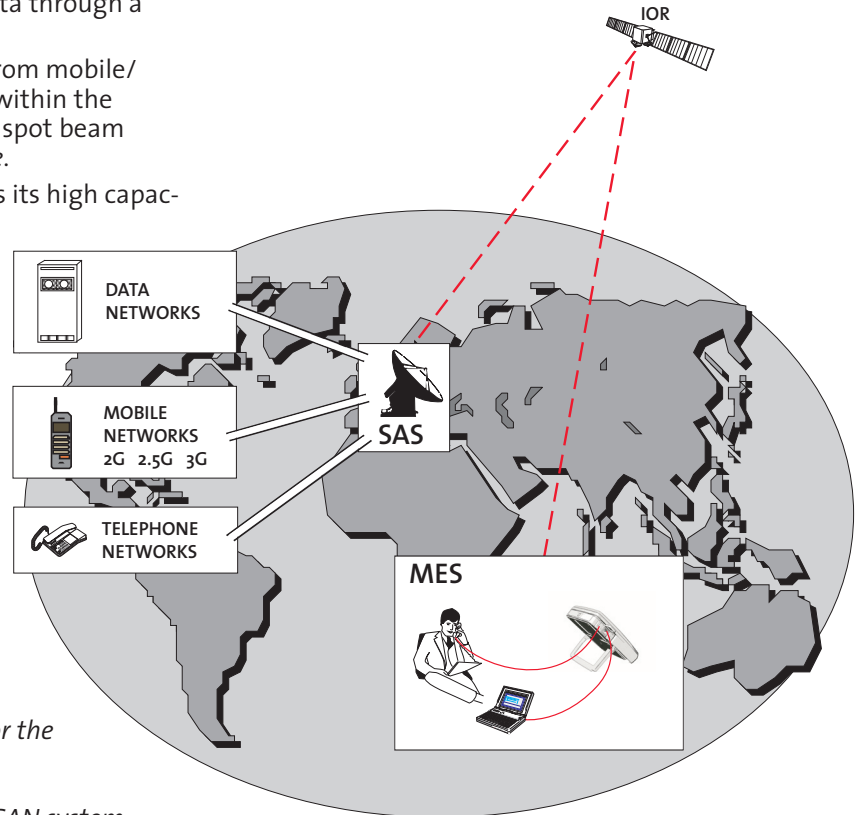
The satellites are positioned in a geostationary orbit above the equator at approximately 35700km altitude.

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
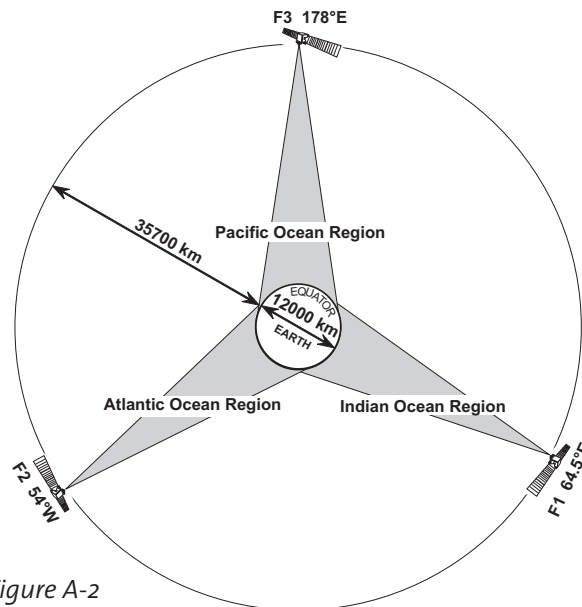
Figure A-2
Satellite positions.

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.
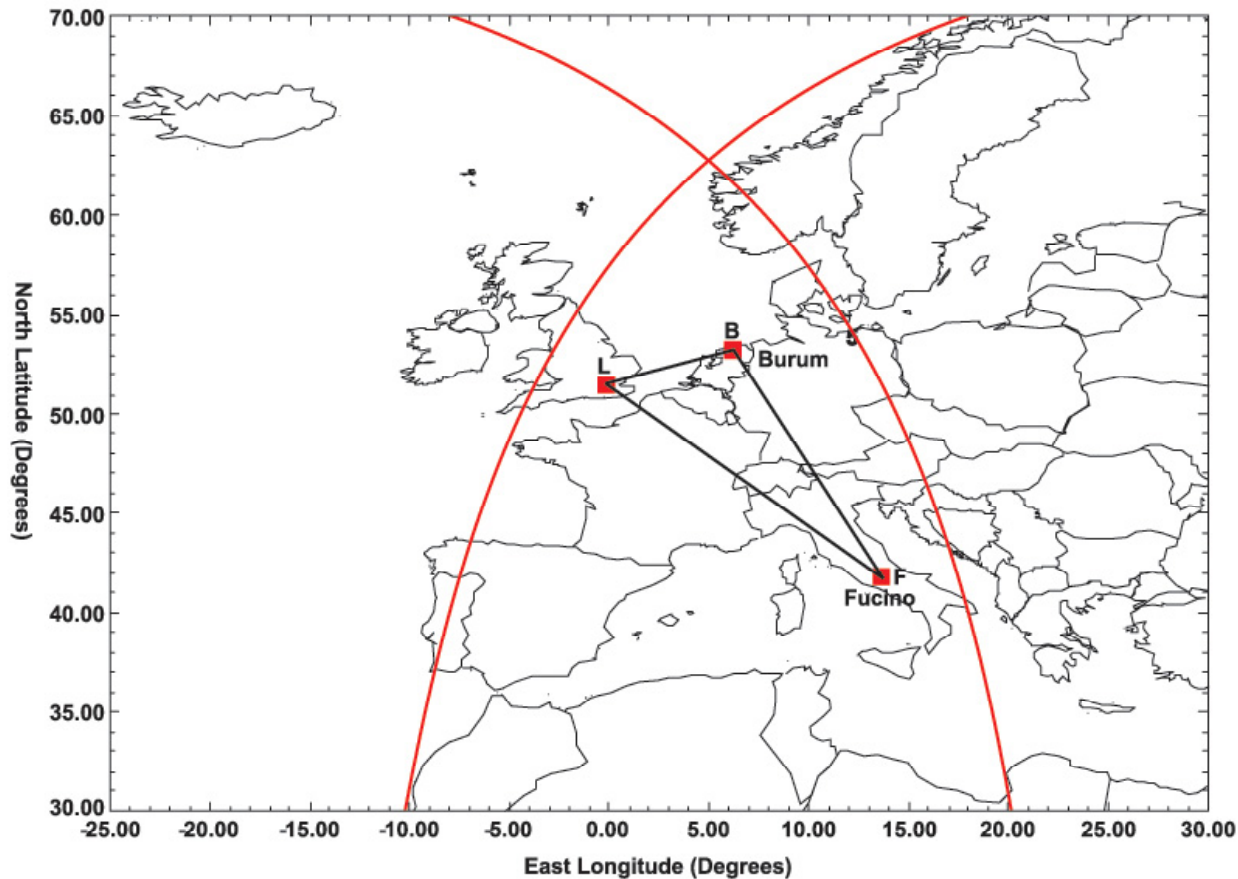
Figure A-3 BGAN Satellite Access Station.

Nera WorldPro 1000

Communication path

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

Nera WorldPro 1000

DP
Distribution
Partner

IP
network

SP
Service
Provider

SAS
Satellite
Access
Station

PSTN/
ISDN

Nera WorldSet

Other
Mobile
network

Time delay ~0.25 second
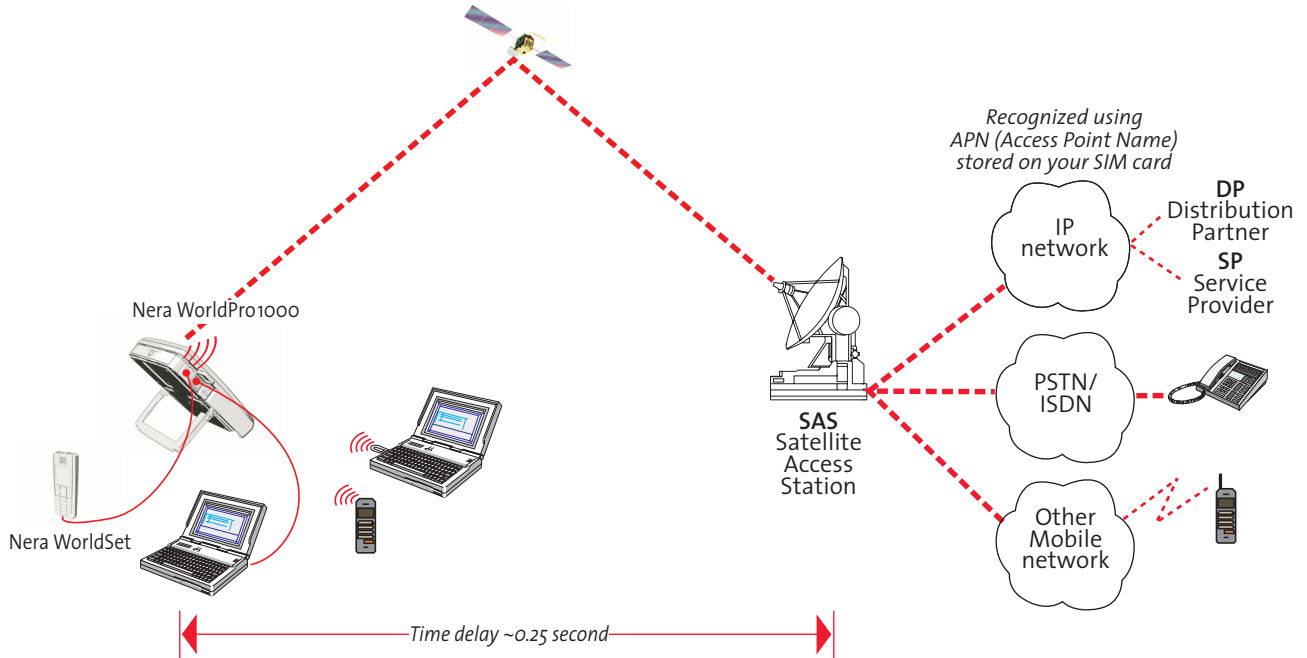
AC Alternating Current

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 Satellite 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. SIM not installed	**Message** indicator blinks 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.
4. Message indicator blinks yellow	**SIM PIN needs to be entered**	With SIM card installed a SIM/PUK code is required. Use Nera WorldSet or BGAN LaunchPad to enter PIN.
5. 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.
6. 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.

Nera WorldPro 1000

Setting up problem	Probable cause	Action
7. *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)
8. *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)
9. *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).
10. *No GPS: "Not registering with network" Signal indicator blinks red*	GPS alarm, or GPS not received.	• Wait up to 5 minutes. The GPS may use up to 5 minutes if Nera WorldPro 1000 has been upgraded with new terminal SW, or the stored GPS time stamp is too old. 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.

Setting up problem	Probable cause	Action
11. Signal indicator flashes yellow	Terminal has a stored GPS and a new fix is not yet obtained	• Wait up to 5 minutes. However, it is possible to log onto the Inmarsat system if the stored GPS position is within the same region as you are in new.
12. 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.

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 WorldPro1000
		  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.
3. **Satellite Signal indicator turns red**	Logging onto the Inmarsat system failed	• Terminal has no GPS fix, or stored fix is rejected. • Satellite signal too low. • Make sure to acquire a GPS fix. • Verify satellite signal.

Nera WorldPro1000

Problems connecting to PC	Probable cause	Action
4. 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.
5. 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.

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

7. 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
8. 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**.*
9. 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
10.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
11. Out of range		• Not within the Inmarsat coverage. • Check GPS • Check satellite signal
12. 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 WorldPro 1000

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