



Nera WorldPro1000/1010



User Guide



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/IEEE 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 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 WorldPro.

End User Licence Agreement

WindRiver/France Telecom/DVSI

PLEASE CAREFULLY READ THE LICENSE AGREEMENT BELOW BEFORE USING THE PRODUCT THIS MANUAL DESCRIBES. IN THE EVENT YOU CANNOT ACCEPT THESE TERMS AND CONDITIONS, YOU SHOULD RETURN THE PRODUCT TO THE PLACE OF PURCHASE FOR A REFUND OF THE PRICE PAID.

This Product contains embedded software from:

- WindRiver (WxWorks and GNAT). See license agreement below.
- France Telecom (TurboCodes). France Telecom – TDF – Groupe des écoles des telecommunications Turbo Codes patents license.
- Digital Voice Systems, Inc. (AMBE +2™ voice compression technology) See license agreement below.

WindRiver License Agreement.

End User shall take all steps necessary to protect Wind River's and its licensors' proprietary rights.

This Agreement strictly prohibits End User from

- (i) copying the Run-Time Module, except for archive purposes consistent with the End User's archive procedures;
- (ii) transferring the Run-Time Module to a third party apart from the Target Application;
- (iii) modifying, decompiling, disassembling, reverse engineering or otherwise attempting to derive the Source Code of the Run-Time Module;
- (iv) exporting the Run-Time Module or underlying technology in contravention of applicable U.S. and

- (v) foreign export laws and regulations; and
- (v) using the Run-Time Module other than in connection with operation of the Target Application.

Furthermore, the End User shall observe that:

- (i) the Run-Time Module is licensed, not sold. The Supplier and its licensors retain ownership of all copies of the Run-Time Module;
- (ii) all implied warranties, including without limitation the implied warranties of merchantability, fitness for a particular purpose, title and non-infringement shall be disclaimed;
- (iii) liability for any special, indirect, punitive, incidental and consequential damages are excluded; and
- (iv) any further distribution of the Run-Time Module shall be subject to the same restrictions set forth herein.

With respect to the Run-Time Module, Wind River and its licensors are third party beneficiaries of the End User License Agreement and that the provisions related to the Run-Time Module are made expressly for the benefit of, and are enforceable by, Wind River and its licensors."

Digital Voice Systems, Inc License Agreement.

Digital Voice Systems, Inc. The AMBE+2™ voice compression technology embodied in this product is protected by intellectual property rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice compression technology is licensed solely for use, as is, within the Inmarsat satellite communications system. US Patent Nos. 6,199,037, 6,161,089, 5,826,222, 5,754,974, 5,701,390, 5,715,365, 5,630,011, 5,649,050, 5,247,579, 5,870,405 and 5,226,084.

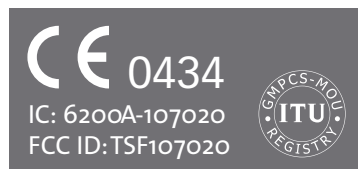


INTRODUCTION.....	7	OPERATION.....	15
<i>General</i>	7	<i>Satellite coverage map</i>	15
Applications.....	7	<i>Indicator panel</i>	16
Key benefits.....	7	<i>Terminal modes</i>	17
Standard equipment - Nera WorldPro1000		Pointing mode.....	17
8		Standby mode.....	17
107020.....	8	Sleep mode.....	17
Standard equipment - Nera WorldPro1010		<i>Battery charging</i>	18
8		<i>SIM card</i>	19
107730.....	8	<i>Installing SIM card and battery</i>	20
Accessories.....	8	<i>Equipment labels</i>	20
		<i>GPS</i>	21
		GPS fix required.....	21
		To obtain a GPS fix.....	21
		<i>Satellite communications</i>	22
		<i>First time setting up</i>	23
		Nera WorldSet signal strength bar.....	24
		BGAN LaunchPad signal strength bar.....	24
		<i>Antenna pointing</i>	25
		<i>Satellite signal at low elevation angles</i>	26
		<i>Register with Network</i>	27
		<i>Message indicator</i>	27
		<i>Emergency call - dial 911</i>	28
		<i>Cables and lengths</i>	29
		Split cable.....	29
		Telephone interface cable.....	29
		Ethernet cable.....	29
TECHNICAL DATA	11		
Physical data	11		
Interfaces.....	11		
Packet Switched (PS) service.....	13		
SMS - Short Message Service	13		
Voice - Circuit Switched (CS) service	13		
Battery - 102207.....	13		
AC/DC adapter - 102208.....	14		
DC power connector on terminal	14		
Power consumption	14		
Antenna performance	14		
Environmental.....	14		
Documentation package supplied with			
Nera WorldPro - 107014.....	14		





USB/Telephone dongle	29
<i>Data connection via USB</i>	31
Installing USB drivers	31
Connecting up	31
<i>Data connection via Ethernet</i>	32
Local area network	32
<i>Voice communication via Nera WorldSet</i>	33
<i>Split operation</i>	34
<i>Communication via Bluetooth</i>	35
<i>Enabling Bluetooth using BGAN LaunchPad</i>	36
<i>Enabling Bluetooth with AT commands using HyperTerminal</i>	36
<i>Enabling Bluetooth using Nera WorldSet</i>	36
<i>Indication on Nera WorldPro</i>	36
<i>Tenovis Bluetooth handset</i>	37
<i>BGAN LaunchPad</i>	38
<i>Installation</i>	38
Updates	38



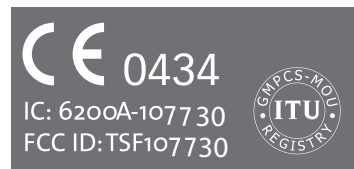
Overview	39
Status	40
GPS status	40
Data connection	41
LaunchPad help	42
Terminal log	43
Audio and lights setup on terminal	44

APPENDIX A - SYSTEM OVERVIEW A-1

<i>Inmarsat BGAN system</i>	A-1
<i>System satellites</i>	A-2
<i>Transmission frequencies</i>	A-2
<i>SAS (Satellite Access Station)</i>	A-2
<i>Communication path</i>	A-4

APPENDIX B - LIST OF TERMS B-1

APPENDIX C - TROUBLESHOOTING.. C-1



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

© Nera SatCom AS, 2006



General

The Nera WorldPro satellite terminal is a small light-weight 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.

SMS - Short Message Service

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 BGAN 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.



Standard equipment - Nera WorldPro 1000

107020

- 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

Standard equipment - Nera WorldPro 1010

107730

- Interface Unit with built-in Bluetooth
- Antenna Unit with built-in GPS receiver (camera stand compatible mounting nut integrated)
- Ethernet 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 - 32VDC
- Soft case
- Extra battery packs
- Bracket mounts for antenna
- Cable for car power plug
- Bluetooth headset
- Coloured antenna cover
- ISDN/USB dongle

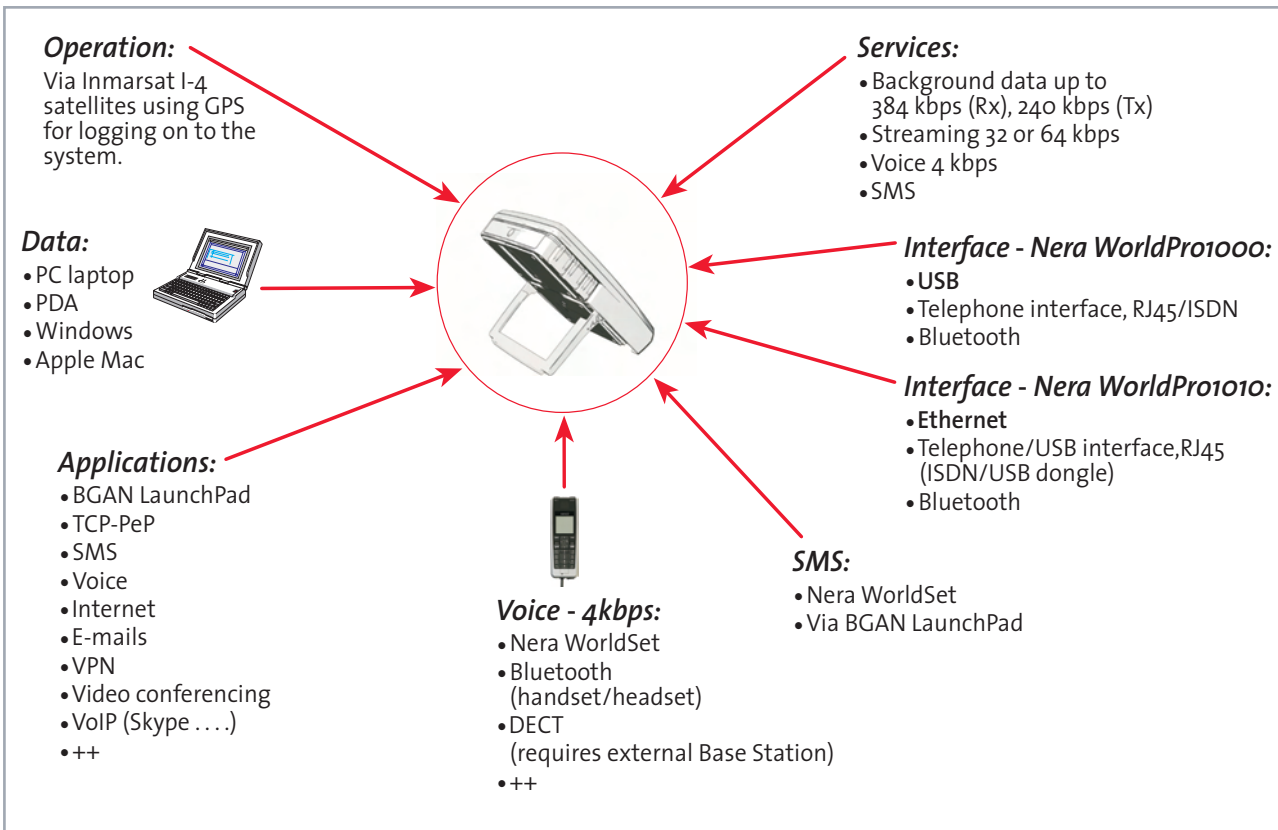


Figure 1 Nera WorldPro, functions and services.

Nera WorldPro 1000 complete: 107020
Nera WorldPro 1010 complete: 107730

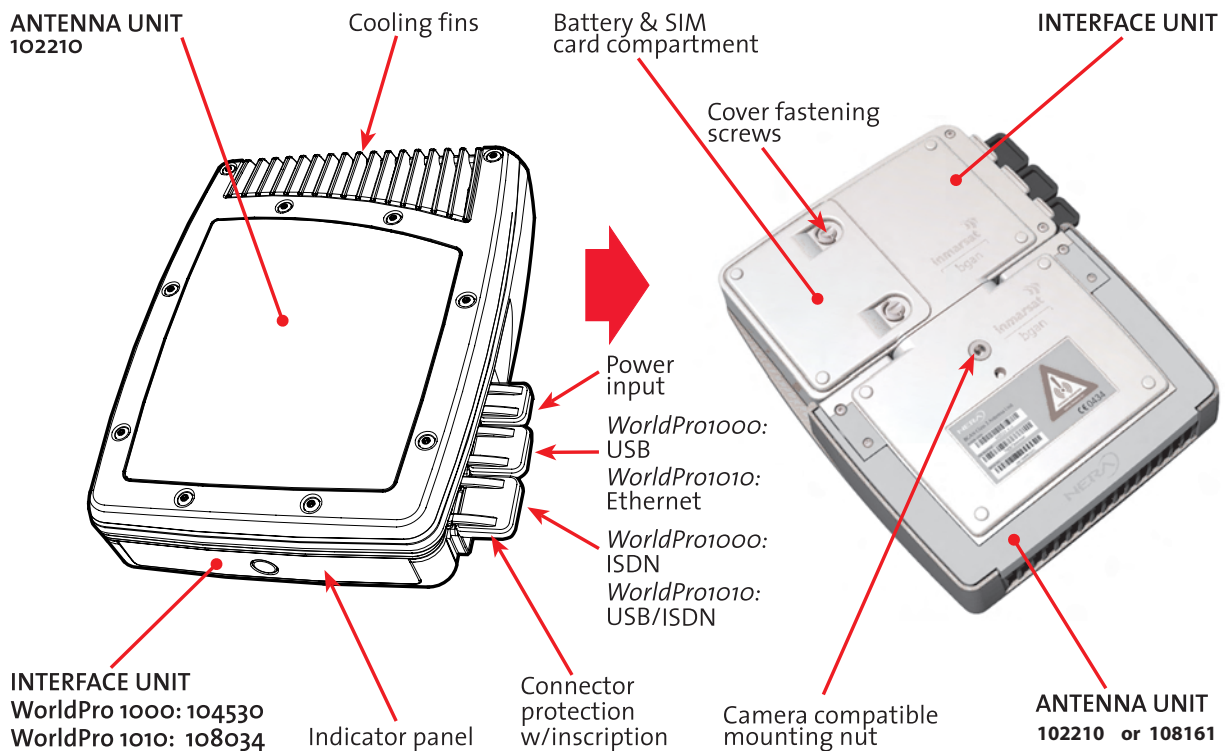
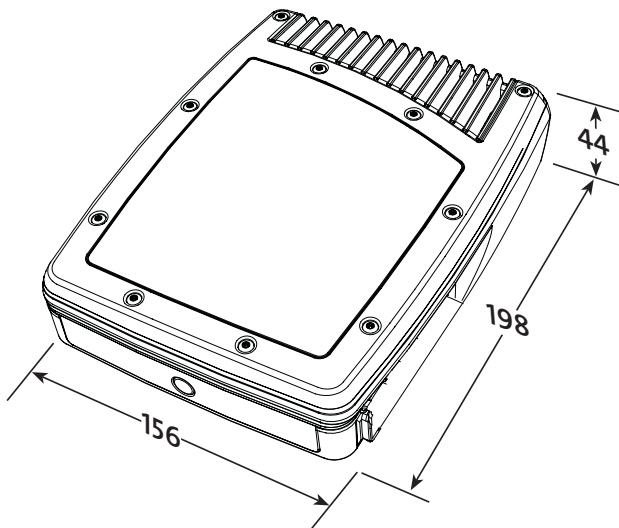


Figure 2 Nera WorldPro, identification.



Physical data



Weight:
< 1 kg including battery

Figure 3 Nera WorldPro, dimensions and weight.

Interfaces

Bluetooth:	Built-in antenna, WP1000 = Class 2 (approx. Range 10m) WP1010 = Class 1 (approx. Range 30m) Maximum distance 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) Headset profile
Telephone:	1 RJ45 connector for Nera WorldSet and ISDN phones. Max drain 1.5 W Euro ISDN (1B+D) 1x 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)

Nera WorldPro1010 only

Ethernet:	1 connector, RJ45 10 Base-T 100 Mb/s IEEE 802.3 MDIX Compliant Transparent forwarding
Telephone/USB:	1 connector, RJ45 combined to RJ45/USB through splitter

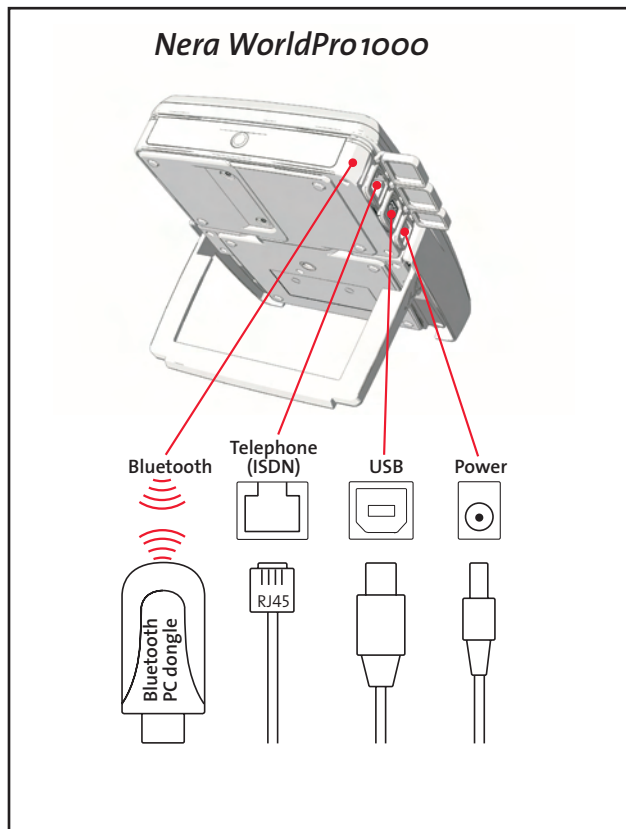


Figure 4a Nera WorldPro1000 connectors.

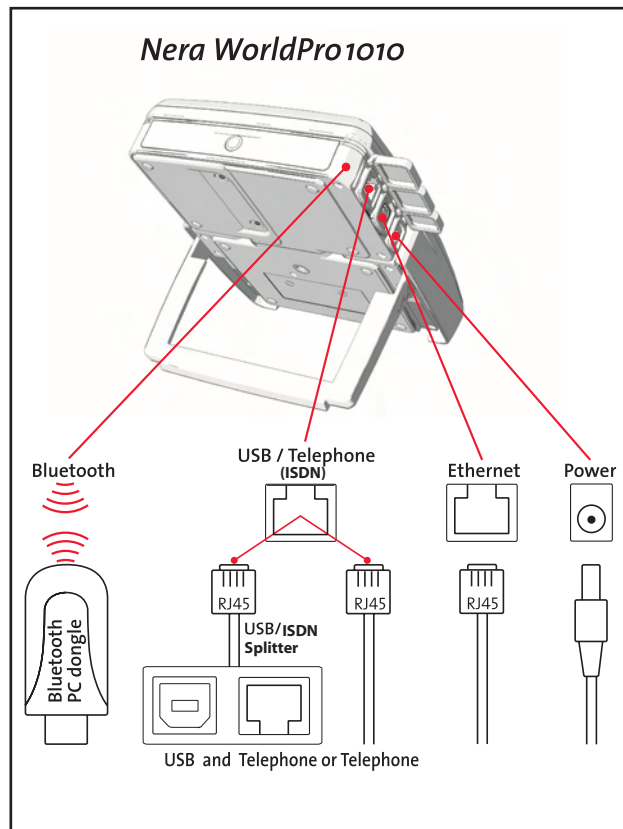


Figure 4b Nera WorldPro1010 connectors.



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: 7.2V - 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 can be operated from AC/DC adapter or 12VDC input with or without battery.



AC/DC adapter - 102208

Input voltage:	100 - 240VAC $\pm 10\%$, 50 - 60 Hz, 800 mA
Default:	Euro plug
Output voltage:	12VDC $\pm 10\%$
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 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:	$\pm 30^\circ$ 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/m ²
Ultra violet:	54 W/m ²
Visible sunshine:	1150 W/m ² MIL-SPEC 810E 505.3
Ice:	6 mm (non-operational)
IP:	44

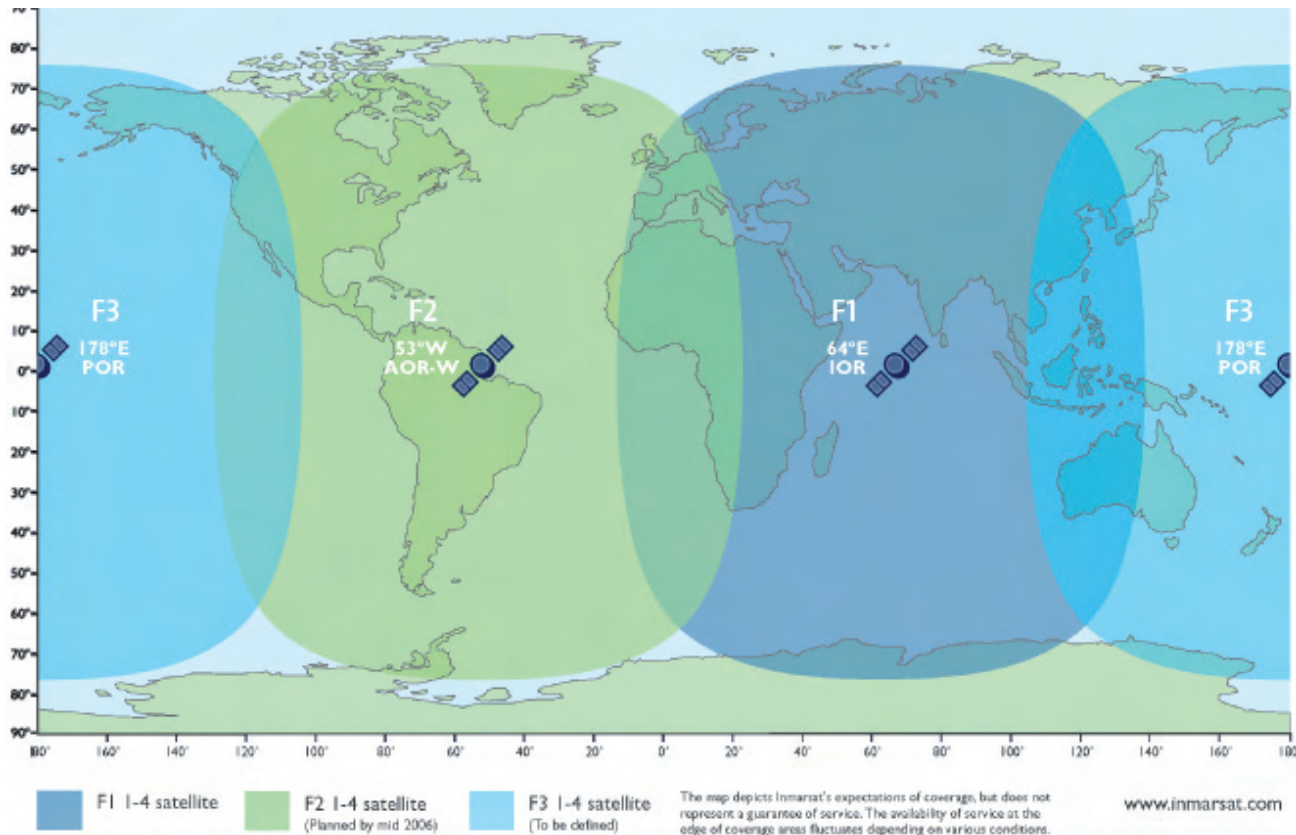
Documentation package supplied with Nera WorldPro - 107014

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.



Satellite coverage map





Indicator panel

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



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

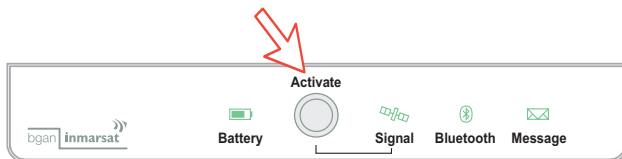
<p>Battery</p>		<p>0 - 10% battery capacity 10 - 40% battery capacity 40 - 100% battery capacity, or fully charged Battery charging <i>Blink rate 2 secs</i> No battery installed</p>
<p>Signal</p>		<p>Antenna pointing</p> <p>No satellite signal: no GPS fix } <i>Blink rate 2 secs</i> " stored GPS fix } <i>Beep rate 2 secs</i> " new GPS fix } Satellite signal OK: no GPS fix } <i>Blink rate 0.3 sec</i> " stored GPS } <i>Continuous sound varying</i> " new GPS } <i>with received signal strength.</i></p> <p>Operational mode</p> <p>Registration in progress or lost satellite sync } <i>Beep every 1 sec</i> Attached to BGAN } <i>during registration</i> Network rejection }</p>
<p>Bluetooth</p>		<p>Bluetooth enabled, no device connected Bluetooth enabled, device connected Bluetooth firmware update <i>Blink rate 0.5 sec</i></p>
<p>Message</p>		<p>New alarm <i>Blink rate 0.5 sec for 30 secs</i> Alarm present Incoming voice call <i>Blinks until answered/on-hook</i> Receiving SMS <i>Blink rate 0.5 sec for 10 secs</i> Lost voice call or unread SMS PIN/PUK validation necessary</p>

In sleep mode, only the battery indicator lights



Terminal modes

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



Pointing mode

Nera WorldPro 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 10 seconds 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.
- Losing satellite signal / alarm occurred.

In sleep mode only the battery indicator is ON.



Battery charging

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** later in this manual.

DC power connector data:

- Center pin = positive polarity
- Hollow plug: $\varnothing 2.1 \times \varnothing 5.5 \times 10.0$ mm
- 12VDC -10% / +30% feed (10.8VDC - 15.6VDC)

Power consumption:

The terminal can be operated on battery, and is designed to minimise power consumption.

- Sleep mode: 0.5W
- Transmission: less than 20W (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 20W 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:



The diagram shows a status bar with the following elements from left to right: the Inmarsat logo, a battery icon, an 'Activate' button, a signal strength indicator, a Bluetooth icon, and a message icon. A red arrow points to the battery icon.

-  **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
-  **ON, and 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 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

A screenshot of a mobile device screen showing a PIN entry prompt. At the top, it says "Enter PIN" in a grey header. Below that is a padlock icon and the text "Enter PIN number". There is a text input field containing "****". At the bottom, there are two buttons: "Enter" and "<Back".

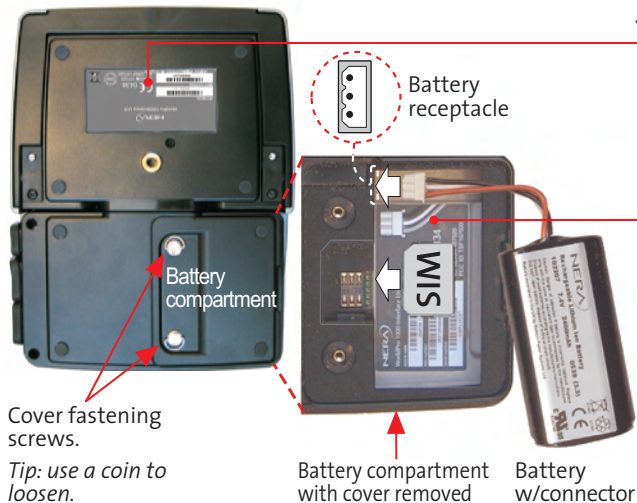
BGAN LaunchPad SIM PIN prompt

A screenshot of a BGAN LaunchPad SIM PIN prompt window. The window title is "Authenticate SIM PIN" with a red close button in the top right corner. Inside the window, it says "Enter SIM PIN" followed by a text input field containing "****". At the bottom, there are two buttons: "OK" and "Cancel".



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. SIM card to be slid all the way into the slot.
 - 3 The battery is enclosed with the Nera WorldPro, and must be installed before it can be charged. Charge for 24 hrs the first time.
 - 4 Remount the battery compartment cover. Cover locks SIM card in slot.
- Normal charge time is 3 hrs.



Equipment labels

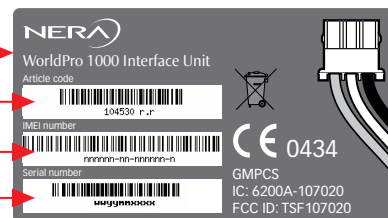
One label is attached to the back of the Antenna Unit, whereas the Interface Unit has a label attached inside the battery compartment.



Article number →

Serial number →

Example:
03 05 11 0001
YEAR MONTH NUMBER



Article number →

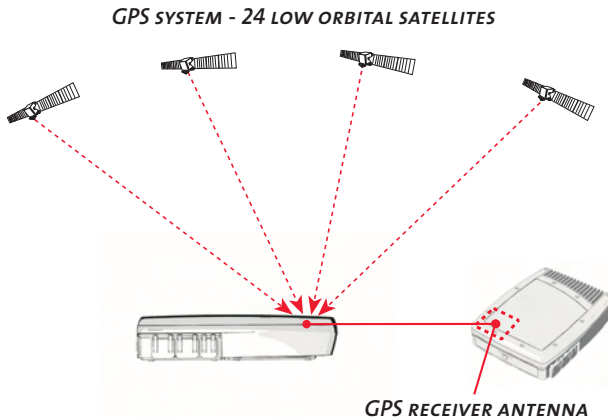
IMEI number →

Serial number →



GPS

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



GPS fix required

The BGAN network requires a valid GPS fix to successfully register your terminal. Nera WorldPro only attempts to obtain a GPS fix the first 20 minutes after power on.

The GPS receiver must see at least three GPS satellites to obtain a 2-dimensional fix (2D fix).

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 terminal 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 obtained 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 yellow, the terminal has a stored GPS fix.

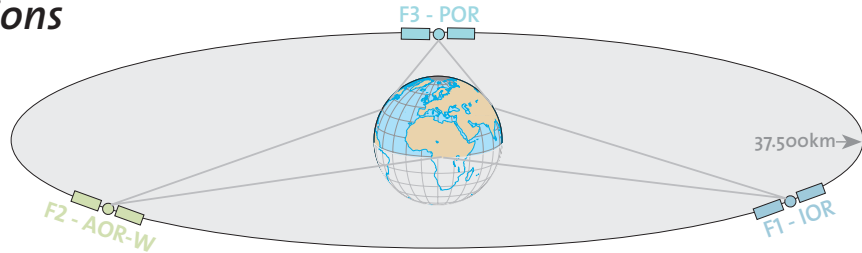
A stored GPS fix can be used when registering onto the network, but only if the terminal has not been moved since it was last used, or is within the same area (less than 300 km).

4 When you have a blinking green **Signal** indicator, you have a new fix. 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 WorldPro to a place where you do not obtain a GPS fix, for example your hotel window.

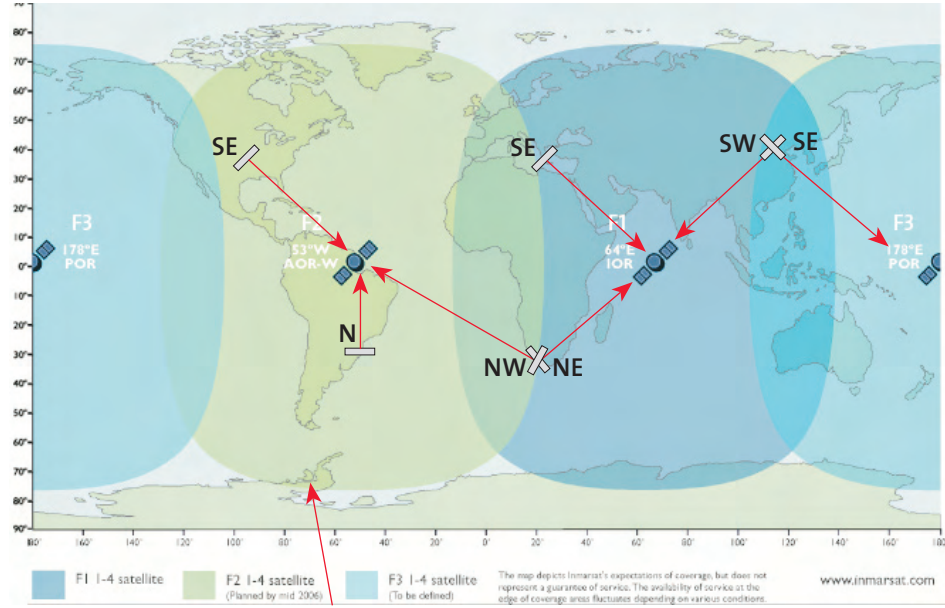
Satellite communications

Three satellites are positioned stationary above equator.
 The satellites provide the coverage shown on the map.
 The Nera WorldPro searches for all satellites as default.



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



Nera WorldPro 1000 w/antenna



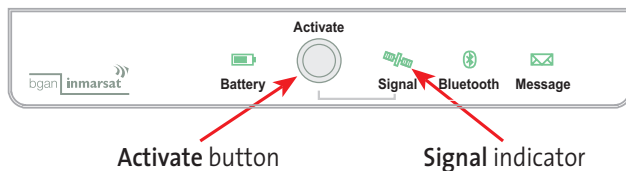
A location 72°S or 72°N should give coverage. Further south or north can not be guaranteed, and reduction in data rate is expected.




First time setting up



- 1 Power on terminal by pressing Activate  for 1.5 seconds:
 - All indicators light **GREEN** for approx. 15 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.*



- 2 Obtaining a new GPS fix (if not using old/stored fix):
 - Place the terminal in a location outdoor or inside a window.
 - 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.
 - Nera WorldPro only attempts to obtain a GPS fix the first 20 minutes after power on. If no fix is obtained, power off and start again from step 1.



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.

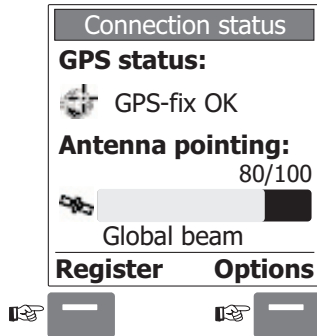
- 4 Logging on:
 - When the **Signal** indicator blinks **GREEN**  and the buzzer pitch is as high as you can get it, press **Activate**  to log automatically onto the Inmarsat BGAN network and exit **Antenna Pointing** mode.

- 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**  for 1.5 sec to power off the terminal, and start again from step 1.



Nera WorldSet signal strength bar

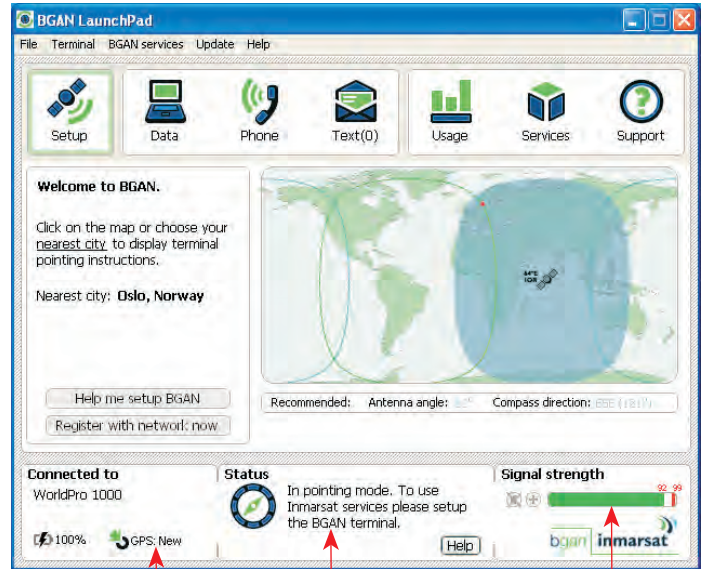


When in pointing mode, this is how Nera WorldSet or BGAN LaunchPad will help you to verify GPS fix and satellite signal quality.

Legend:

- Signal strength more than 50
- GPS fix OK / GPS fix new
- Ready to register with the network

BGAN LaunchPad signal strength bar



GPS fix new

In pointing mode

Signal bar varying depending on satellite signal quality, typically more than 50

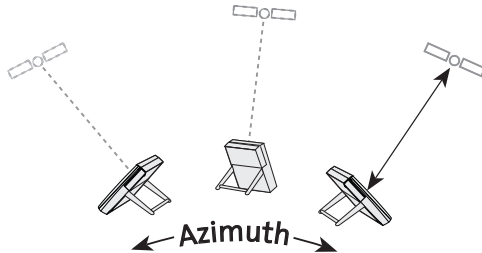


Antenna pointing

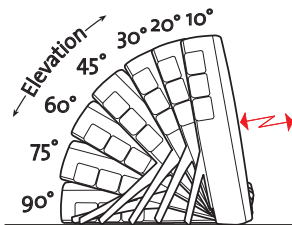
The Inmarsat satellite is positioned stationary above **equator**. Aim the antenna towards the estimated position of the satellite, or make a slow scan across the hemisphere with the vertical angle 45° . The vertical angle ranges stepwise from 10° to 90° .

Free line of sight to the satellite is required.

Observe the satellite **Signal** indicator, see figure. See also **Indicator panel**.



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 registering on to the Inmarsat system by pressing **Activate** momentarily.

Nera WorldPro is now ready for call.

Alternatively, the Nera WorldSet or BGAN LaunchPad can be used as an aid in pointing and registering on to the network, 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 (if moved more than 300 km, or old time stamp)



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

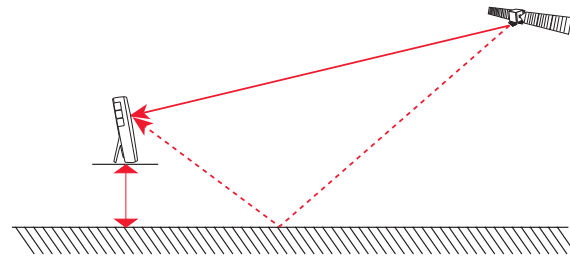
Angles below 10°

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.



MULTIPATH FADING

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.



Register with Network

Pressing **Activate** logs terminal onto the Inmarsat BGAN system and the buzzer is turned off.

The following **Signal** indications may occur:



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**

Message indicator



Green:
- SMS message received
- read SMS or check missed call using BGAN LaunchPad/Nera WorldSet

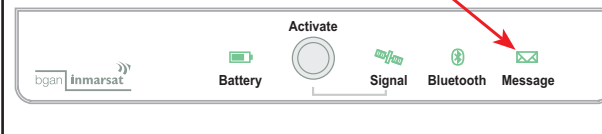


Yellow:
- Enter SIM pin using BGAN LaunchPad Nera WorldSet



Red:
- Alarm occurred
- Use BGAN LaunchPad/Nera WorldSet to read/verify

Message indicator





Emergency call - dial 911

When dialing 911, an emergency call is sent to the Inmarsat BGAN Network.

When the BGAN Network receives the call, it is forwarded to a Distribution Partner who will handle the emergency call.

Please contact your Distribution Partner to check that the service is available.

Note!

When dialing 911, Antenna Pointing will be ignored. The emergency call will be sent even if the user has not pressed Activate to accept antenna pointing, and the antenna is not pointed correctly.

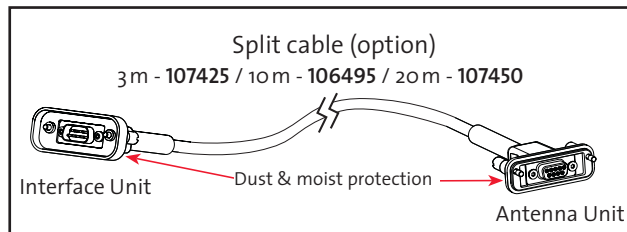
The emergency call will be sent even if the user has not entered the SIM PIN code, or no SIM card is installed the terminal.



Cables and lengths

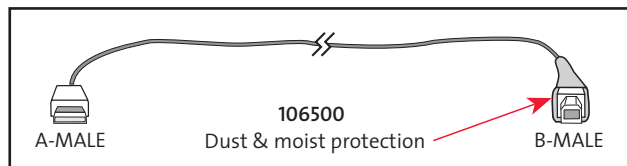
Split cable

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



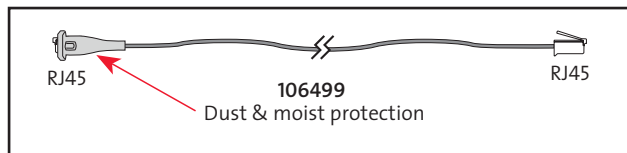
USB cable

Standard 1.8 metre cable.



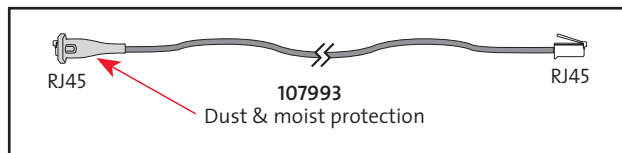
Telephone interface cable

4-wire/2 metres.

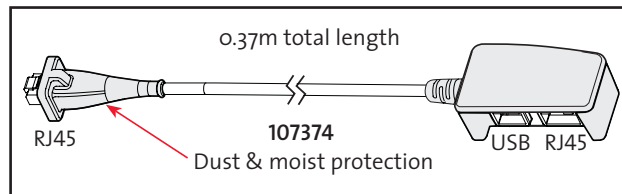


Ethernet cable

8-wire/2 metres.

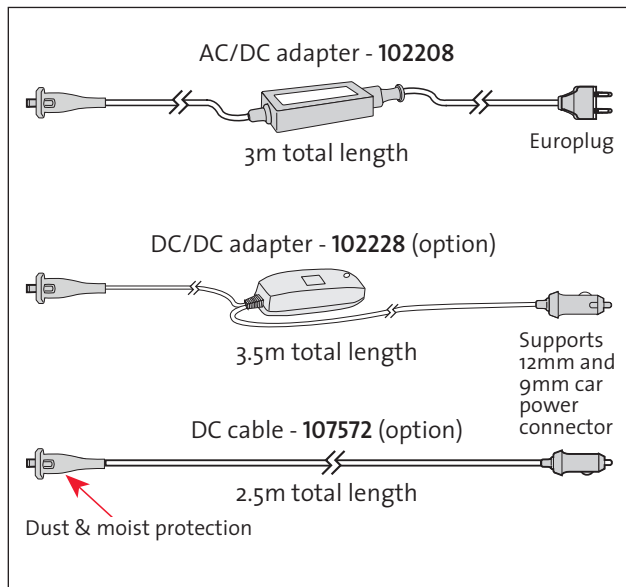


ISDN Splitter





Power adapters



Note!

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

The Nera WorldPro terminal including the Nera Word-Set 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 connecting the PC to Nera WorldPro.

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

The drivers are installed using the Nera USB Wizard. Insert the Nera WorldPro CD and click:

Software Installation > Installing Nera BGAN USB Drivers
See the **Connecting to PC via USB Application Guide**.

Connecting up

Connect the PC to the USB connector on the Nera WorldPro1000.

On Nera WorldPro1010, USB is accessible via the USB/telephone dongle.

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.

