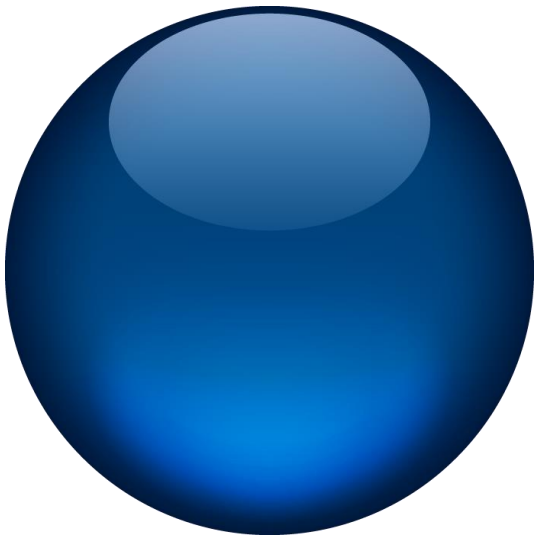

Inertial Products

Network Set-up Guide

iXblue
DEEP INSIGHT. SHARPER SENSES.

Document Revision History

Edition	Date	Comments
A	09/2011	First Edition
B	02/2012	iXBlue graphical chart applied to the document
C	05/2012	New iXBlue colors applied to the document
D	02/2013	Ethernet cable category updated
E	10/2013	GPS replaced by GNSS Appendix for Window 7 is at § IV.2.4 §VII updated with Septentrio use
F	11/2013	Document layout updated
2	02/2014	Reference of web-based interface user guides updated
H	04/2014	Screen captures for ATLANS-C product added
I	06/2014	OCTANS NANO product added
J	03/2015	New style guide applied to the document
K	04/2015	PPP server chapter updated
L	05/2016	PHINS COMPACT C7 product added
M	09/2016	PHINS COMPACT C3 and ROVINS NANO products added
N	01/2017	Chapter 7.2 updated

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Text Usage

bold	Bold text is used for items you must select or click in the software. It is also used for the field names used into the dialog box.
`Courier`	Text in this font denotes text or characters that you should enter from the keyboard, the proper names of disk Drives, paths, directories, programs, functions, filenames and extensions.
italic	Italic text is the result of an action in the procedures.

Icons

The **Note** icon indicates that the following information is of particular interest and should be read with care.

Important

The **Important** mention indicates that the following information should be read to forbid or prevent a product dysfunction or a faulty operation of the equipment.

The **Caution** icon indicates that the following information should be read to forbid or prevent product damage.

The **Warning** icon indicates that possible personal injury or death could result from failure to follow the provided recommendation.

Abbreviations, Acronyms and terminology

Abbreviations, acronyms and terminology are described in the I*nertial Products - Principle & Conventions* document *(Ref.: MU-INS&AHRS-AN-003).*

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1 INTRODUCTION

This document is the Network Set-up Guide for iXBlue inertial products. It describes how to configure the link between a PC and an iXBlue inertial product::

- When the inertial product is directly connected to a PC/laptop
- When then inertial product belongs to an Ethernet network

iXBlue provides Inertial Navigation System (INS) and Attitude and Heading Reference System (AHRS) with an Ethernet port.

Using an Ethernet port, many configurations of integrating inertial products are made possible. This Ethernet link allows passing over the limitations imposed by the serial standards (namely RS232 and RS422), i.e. the transmission distance, bandwidth and low throughput, and allows a smooth connection to the inertial product web MMI.

In case Ethernet is not available on system side, the link between the PC and the inertial system can still be performed in serial using the repeater port, using PPP (Point to Point Protocol). Connection will be slower in this case, but still possible when required.

2 VERSION OF CONCERNED PRODUCTS

The current edition of this document is applicable to the following CINT firmware versions of these inertial products:

Table 1 – List of products and firmware

Product	Firmware version
4th generation AHRS: • OCTANS • OCTANS SUBSEA • OCTANS NANO	higher than CINT3.86 version
3rd generation INS: • PHINS • ROVINS • ROVINS NANO • PHINS 6000 • PHINS COMPACT C7 • PHINS COMPACT C3 • HYDRINS • MARINS • LANDINS • QUADRANS • AIRINS • ATLANS	higher than FrmWCINT_INS_v5.32 version

For software configuration, refer to the following documents, depending of your product:

- For Web interface configuration:
  - ❑ Inertial Products-Web-based interface user guide (ref.: MU-INSIII-AN-021)
  - ❑ INS, Land & Air applications – Web-based interface user guide (ref.: MU-INSIII-AN-022)

- For advanced control command configuration:
  - ❑ AHRS - Advanced Configuration - User Manual *(Ref.: MU-AHRS-AN-002)*
  - ❑ INS - Advanced Configuration - User Manual *(Ref.: MU-INSIII-AN-004)*

This manual applies to several products. Some sections apply only to a restricted number of products. In this document, these products are named “inertial products”.

Contact iXBlue customer support to get the updated firmware version to be downloaded into your system. The contact information is detailed in the *Inertial Products - General Information* document *(Ref.: MU-INS&AHRS-AN-007)*.

3 SPECIFICATIONS FOR COMMUNICATION BETWEEN THE PRODUCT & PC

The inertial product can be connected to a PC for configuration, installation and display purposes through the Web-based User Interface. The I/O signal is available:

- By default and preferably, through the Ethernet connector (see the *User Manual* of your product)
- Or, when the Ethernet connection is not possible, through the repeater link from a serial I/O connector (see the *User Manual* of your product)

Ethernet link

For the Ethernet link (see section 4.1 for more details), the following parameters are default defined:

- IP Address: 192.168.36.1xx, xx being the last two numbers of your inertial product serial number
- Connection through http web server (port 80)
- Repeater flow available in TCP (port 8110)

Serial link

The communication by serial link is slower and more difficult to configure than the Ethernet link (Refer to *section 4.1* to know how to configure it). By default, serial repeater link is configured as follows:

- Protocol used: PHINS Standard for INS product , OCTANS Standard for AHRS product (Refer to *INS Interface Library (Ref.: MU-INSIII-AN-001)* for a description of PHINS Standard data frame output and to *AHRS Interface Library (Ref.:MU-AHRS-AN-003*) for a description of OCTANS Standard data frame output)
- Baudrate : 57.6 kBauds for PHINS Standard, 19.2 kBauds for OCTANS Standard
- Flow Control : Odd, 2 stop bits
- Refresh rate : 5 Hz (200 ms)
- To communicate in TCP/IP with the PC, PPP mode must be activated. In this case, the PHINS Standard protocol is disabled and replaced by PPP protocol.

4 CONNECTING AN INERTIAL PRODUCT DIRECTLY TO A PC/LAPTOP

A PC/Laptop can be connected directly to an inertial product for configuration purposes as well as for data insertion and extraction (data in/out). This connection can be made either by Ethernet or by serial link (Point to Point Protocol).

4.1 Ethernet Link

4.1.1 EQUIPMENT REQUIRED

- 1 x PC or Laptop (with an unused Ethernet port)
- 1 x Cat 3/Cat 5 Cross Ethernet Cable (with new PC Generation, it is possible to use straight cable. The PC then manages the pin inversion)

4.1.2 APPROACH

This is the example of PHINS

By default, the inertial product is already assigned with an IP address. When connecting only one PC to the inertial product, it is only necessary to configure the PC to adapt to the inertial product default IP configuration.

4.1.3 SETTING UP THE PC

Assuming that the inertial product has a serial number of XXXX-12**34**, the last two digits of the serial number is the number **34**.

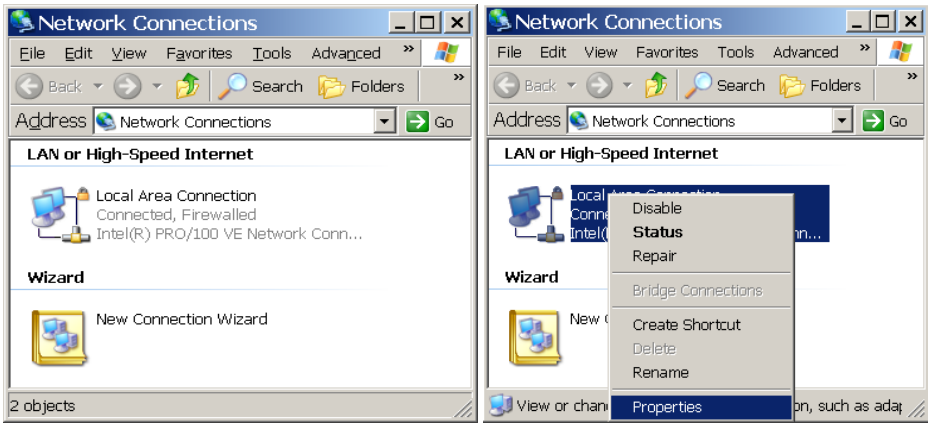
- For all products default configuration except LANDINS and ATLANS:
  By default, in factory, the inertial product IP address is set to 192.168.36.134, and the subnet mask is set to 255.255.0.0.

- For LANDINS:
  By default, in factory, the LANDINS Datalogger IP address is 192.168.36.1**34**, and the subnet mask is 255.255.0.0**,** by default. The IP address 192.168.36.1**35** and 192.168.36.1**36** are also used by the INS and the embedded GNSS.

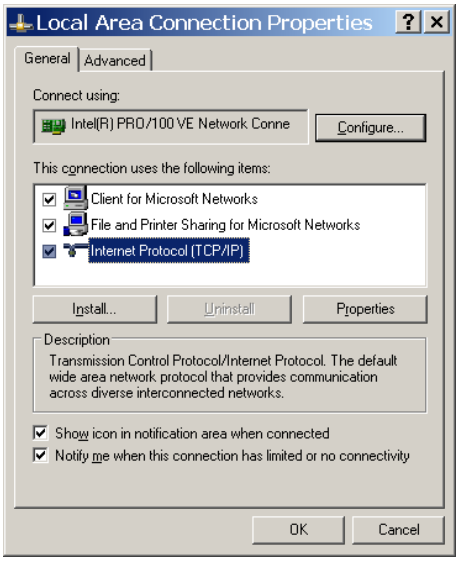
- For ATLANS:
  By default, in factory, the ATLANS IP address is 192.168.36.134, and the subnet mask is 255.255.0.0, by default. The IP address 192.168.36.135 is used by the embedded GNSS.

Before configuring the PC, decide on the PC IP address. This address must be taken from the same subset as the address configured in the inertial product. In this example, we will use IP address 192.168.36.13**3** for the PC.

Step	Action
1.	Access to Network Connections Window (see Appendix A).
2.	Right click on **Local Area Connection** icon and select **Properties**:



The Local Area Connection Properties *window opens:*



Step	Action

3. Double click on **Internet Protocol (TCP/IP)** label text.

   The Internet Protocol (TCP/IP) Properties *window displays:*

4. Select the option **Use the following IP address** and enter `192.168.36.133` for the **IP address** field and `255.255.0.0` for the **Subnet mask**.

5. Leave the **Default gateway** and **DNS server** addresses blank.

6. Click on **OK** button to validate the modifications.

7. End of procedure.

The IP address used here takes into account that the inertial product is using its default configuration with its serial number XXXX-1234. You may change the inertial product IP address and subnet mask. In either case, the subnet mask of both the PC and the inertial product should be the same.

If you need to retrieve the IP address of the inertial product, see section 5.6 of this document.

4.2 Serial Link

Important

This section does not apply to LANDINS because there is no communication possible between LANDINS and a PC or laptop via serial link.

4.2.1 EQUIPMENT REQUIRED

- 1 x PC or Laptop (with an unused Serial port)
- 1 x test Serial Cable (provided)
- 1 x Cat 3/Cat 5 Cross Ethernet Cable (for changing the inertial product IP address) (With new PC Generation, it is possible to use straight cable. The PC then manages the pin inversion)

4.2.2 APPROACH

IP address :192.168.36.202 IP address :192.168.36.201

This is the example of PHINS

The connection between the inertial product and the PC is made through a serial link. The inertial product works as a PPP Server that provides the ability to transport TCP/IP traffic over the serial link.

4.2.3 INERTIAL PRODUCT CONFIGURATION

The inertial product is already assigned with an IP address**. Before connecting the serial link, you need to activate the PPP mode using an Ethernet link** and the Web-based User Interface (see section 7).

When PPP mode is activated, the inertial product will start a PPP server listening on repeater serial port at next reboot. In this configuration, the INS IP address over PPP will be automatically set to 192.168.36.201 and the PC will connect as a PPP client to the product using dialup connection. Thus, to connect to the product Web pages in PPP mode, open http://192.168.36.201 on your browser after that the PC/product connection is established. **Note that in this mode, first page loading can take several minutes.**

4.2.4 SETTING UP THE PC

4.2.4.1 Creating a Direct Connection between your Inertial Product and your PC or Laptop

To create a serial direct connection between your laptop/PC and the inertial product, follow this procedure:

Step	Action
1.	Connect the inertial product to your PC/laptop using the provided test cable.
2.	Access to Network Connections Window (see Appendix A).
3.	On the left panel of the Network Connections window, click on **Create a New connection**. *The* New Connection wizard *opens.*
4.	Read the Welcome page then click **Next**. *The* Connection Type Selection *appears.*
5.	Select **Set up an advanced connection** then click **Next**. *The* Advanced Connection Options *page appears.*
6.	Choose **Connect directly to another computer** then click **Next**. *The* Host or Guest? *page appears.*
7.	Choose **Guest** then click **Next**. *The* Connection Name *page appears.*
8.	In the **Computer name** box, type a name for the connection. For example type in `PHINS`. On the Select a Device page, select a **Communications Port**, and then click **Next.**
9.	• If you want this connection to be made available to all users of this computer, on the Connection Availability page, click **Anyone's use**, and then click **Next**. • If you want to reserve the connection for yourself, select **My use only**, and then click **Next**. *The* Completing the New Connection Wizard *page, appears.*
10.	Click **Finish**.
11.	Once created, right click on the new connection name created and choose **Properties…** *The* Properties *window of the new connection appears.*
12.	• Under **General** tab, click **Configure** button. The Modem Configuration window opens, set the **Maximum speed (bps)** to 57 600 and unselect '**Enable hardware flow control'** option then click **OK**. • Under **Options** tab, unselect '**Prompt for name and password, certificate**, **etc.**' option and click **OK**. • Click **OK** in the Properties window.
13.	End of procedure.

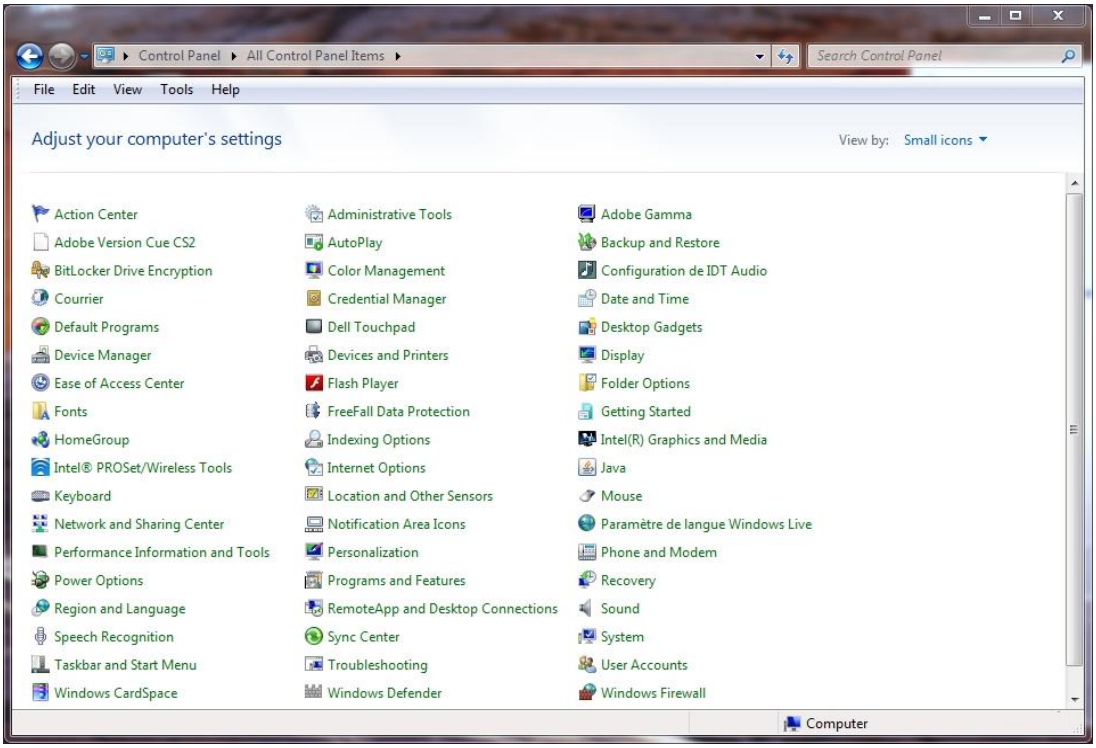
4.2.4.2 Activating the New Connection

Step	Action
1.	Access to Network Connections Window (see Appendix A).
2.	In the Network Connections window, activate the new connection by double clicking on its name.
3.	End of procedure.

4.2.4.3 Creating a serial Direct Connection under Windows 7

Installing a New Modem

Step	Action
4.	Open the Control Panel:



Step	Action

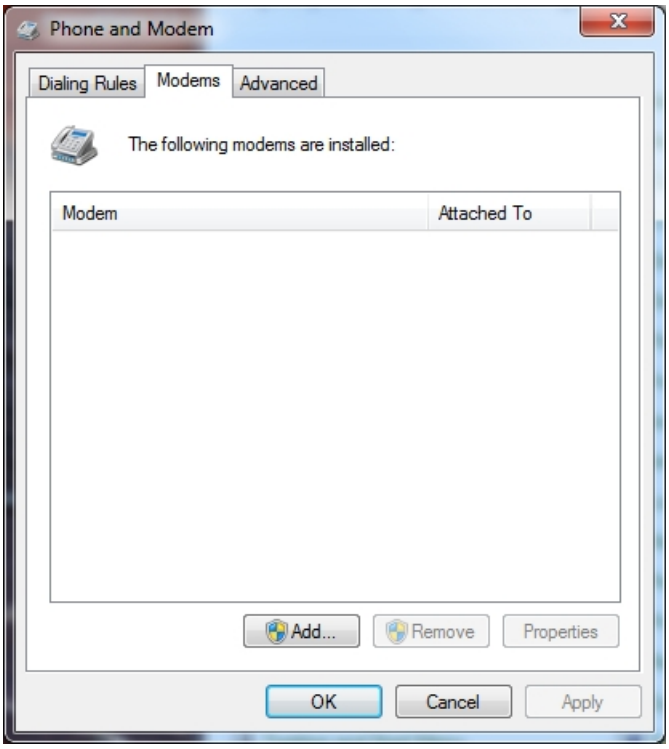
5. Click on **Phone and Modem** icon.

   The Local Information *window opens.*

   You don't need to fill in the form, click **OK**.

   The Phone and Modem *window opens.*

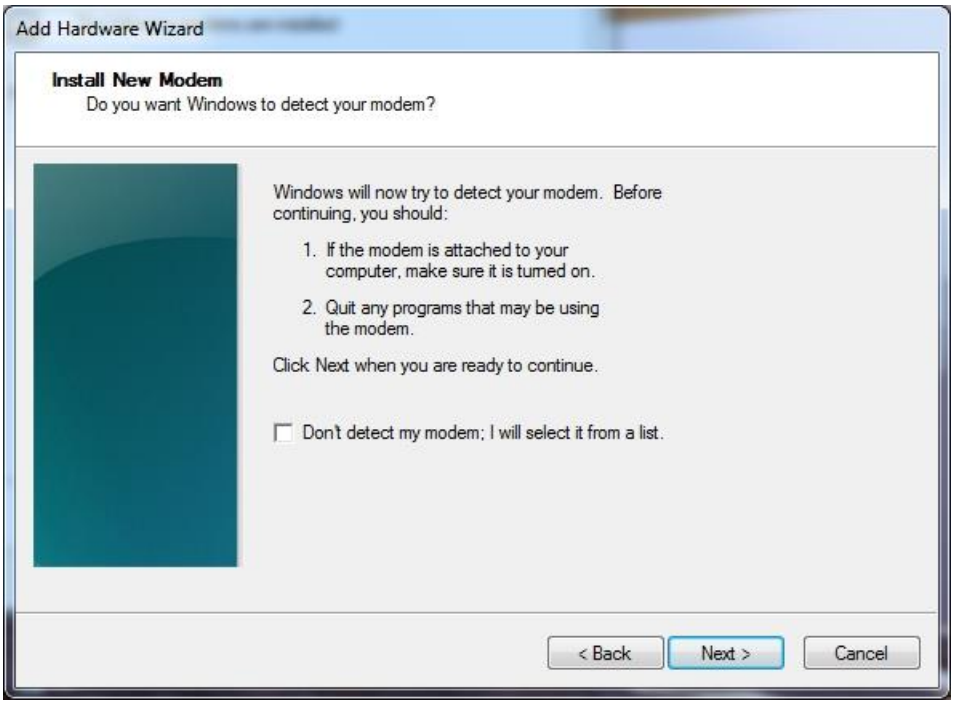
   Choose the **Modems** tab:



Step	Action

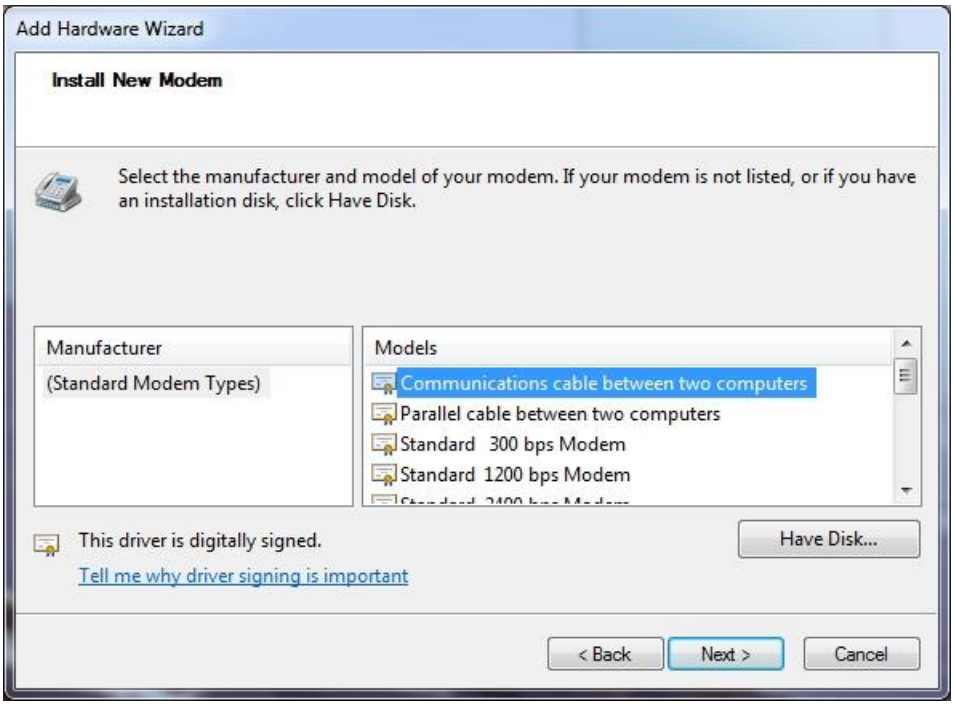
6. Click on **Add...** button.

   The Add Hardware Wizard *is activated, a window opens.*



   Select **Don't detect my modem; I will select it from a list.** option then click **Next**.

7. Under **Models** list, select **Communication cable between two computers** option:

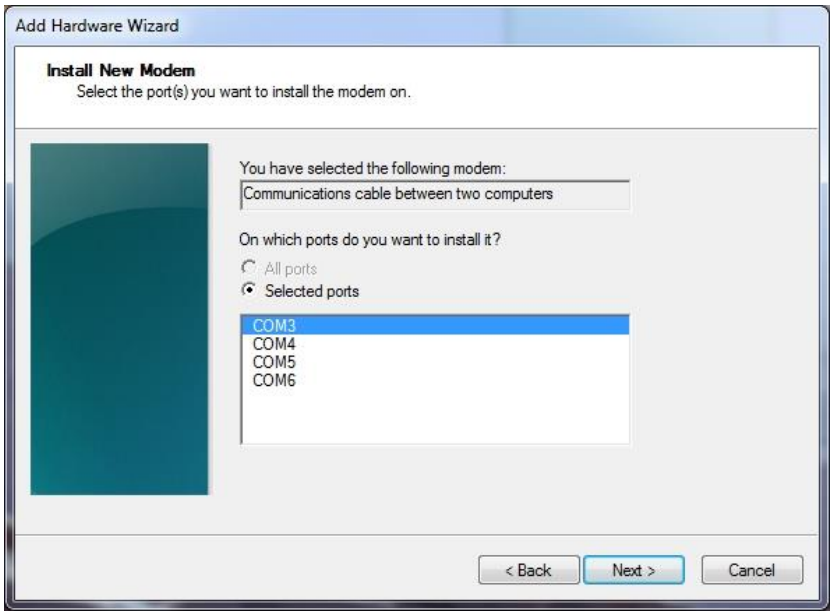


   Then click **Next**.

Step	Action

8. Choose **Selected ports**.

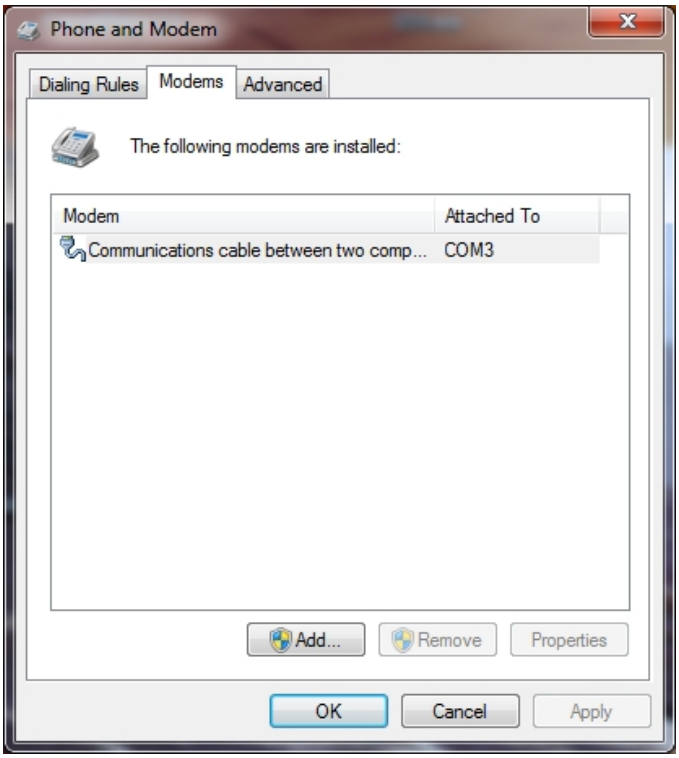
   The available list of ports displays:



   Choose the port which is connected to the Inertial Product then click **Next**.

   The message “Your modem has been set up successfully” displays. Click **Finish**.

9. This new modem appears now in the *Phone and Modem* window:

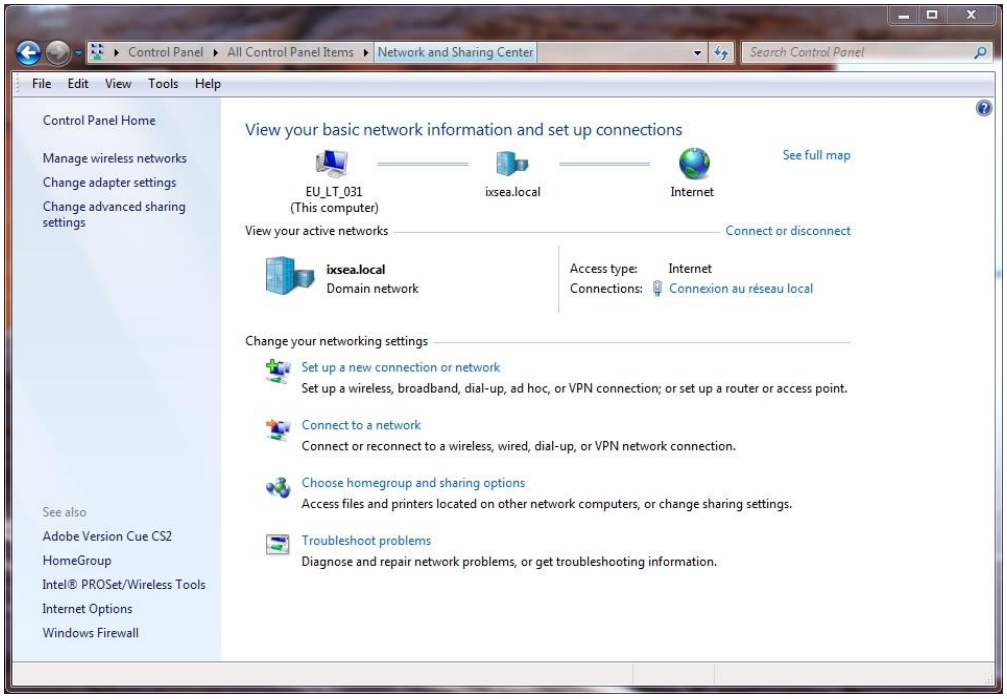


10. Click **OK** in the *Phone and Modem* window.

11. End of procedure.

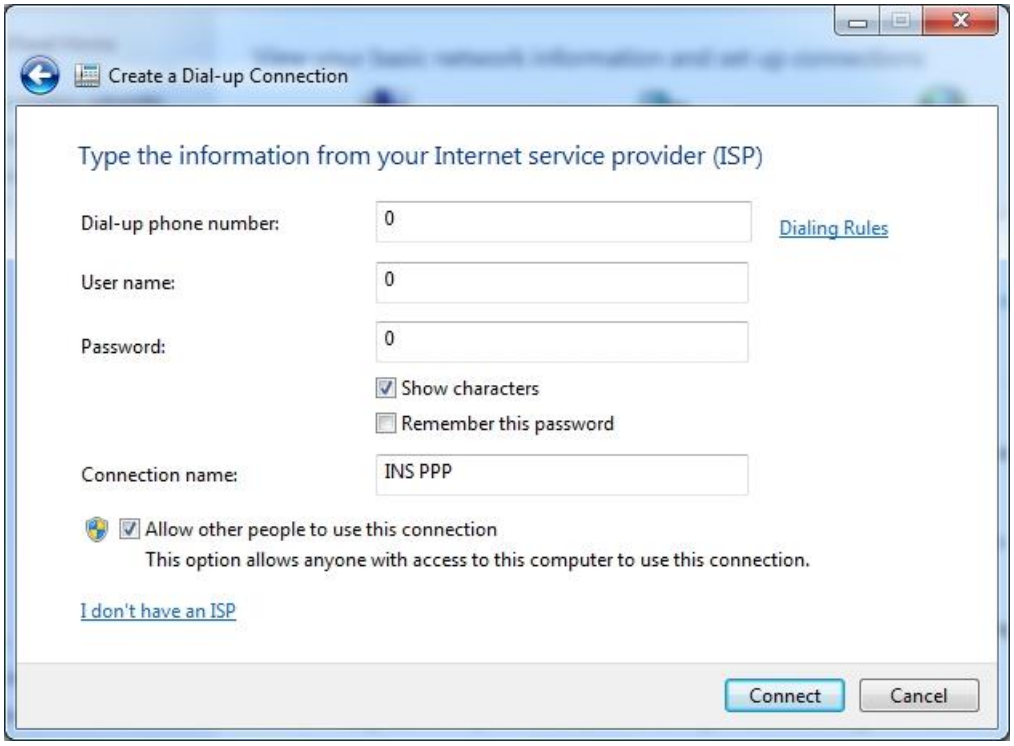
Configuring the Connection

Step	Action
1.	Open the Control Panel then click on **Network and Sharing Centre** icon.



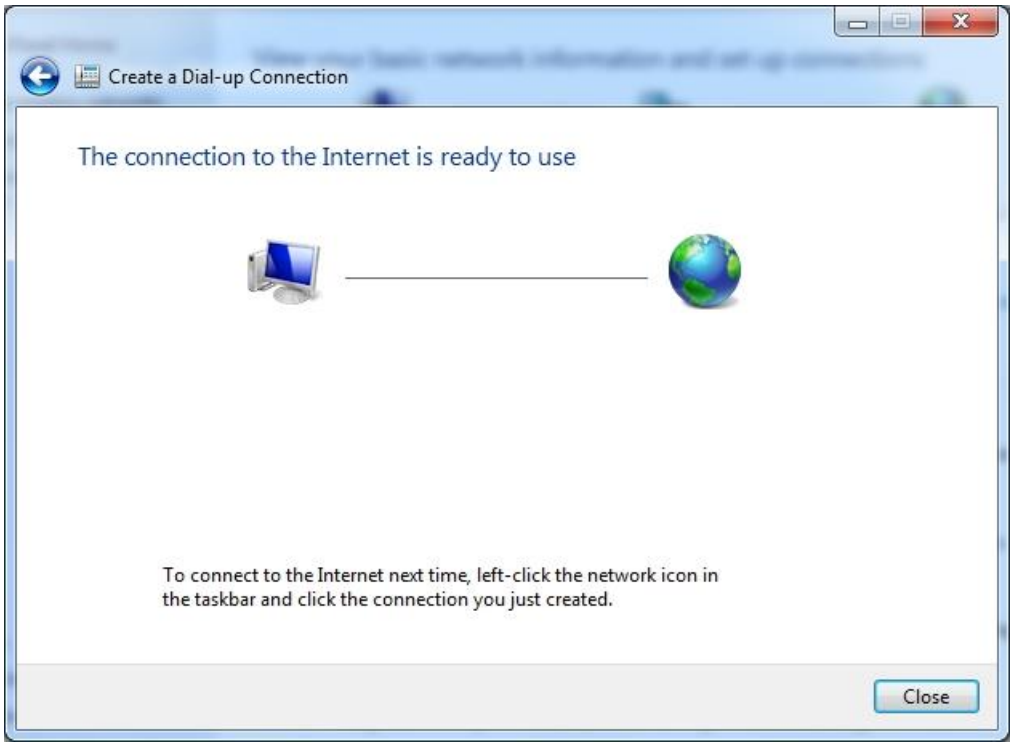
2.	Click on **Set up a new connection or network** text label. *The window* Set up a Connection or Network *opens.* Choose **Set up a dial-up connection** option then click **Next**. *The window* Create a Dial-up Connection *opens.*

3. Except for the **Connection name** field, the values you enter here are not important. Here, for example, we have entered `INS PPP` for the **Connection name**:



Then click **Connect**.

*The connection fail, click on **Set-up connection anyway** and the following window displays:*



Then click **Close**.

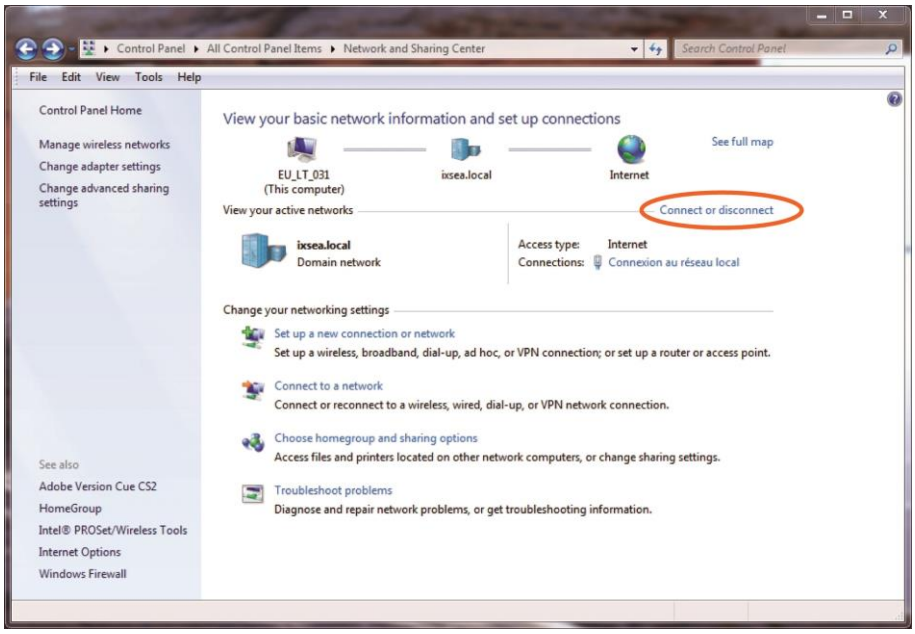
Step	Action

4.	To configure the settings of the serial port:
	• Change the properties of the `rasphone.pbk` file which is under `C:\ProgramData\Microsoft\Network\Connections\Pbk` to enable modifications inside.
	• Using Notepad for example, edit the `rasphone.pbk` file. And change the initial values of some parameters to obtain the following configuration:
	`Type=4`
	`MEDIA=serial`
	`Port=COM3` (if the connection coming from the inertial Product enters from the COM3 of your computer)
	`Device= Communications cable between two computers`
	`ConnectBPS=57600`
	• Save the `rasphone.pbk` file.

Step	Action

5. To establish the connection:

   - Either double click on the `rasphone.pbk` file.
   - Or in the Control Panel/Network and Sharing Centre, click on **Connect or disconnect** text label:



Then double click on **INS PPP.**

The connection establishes.

6. End of procedure.

5 INSERTING AN INERTIAL PRODUCT INTO AN ETHERNET NETWORK

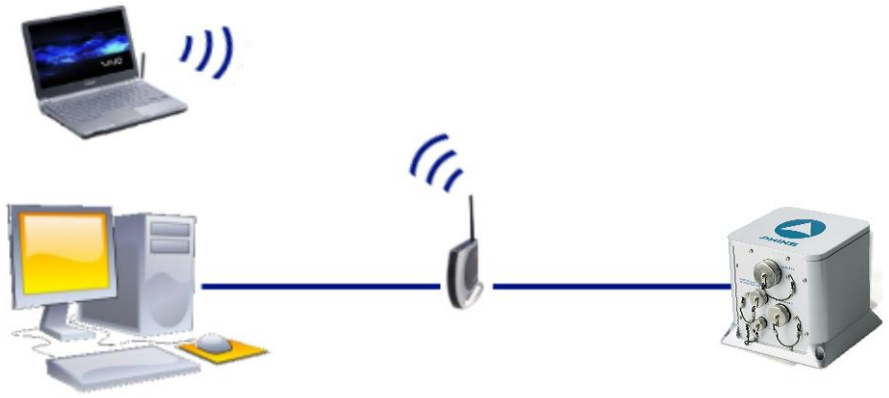
The main advantage of inserting the inertial product into an Ethernet network is the ability to configure it and access to its data from any part of the network.
The advantage not only extends to wired networks, but also to wireless ones given that the correct equipment is used.

5.1 Equipment Required

- 1 x Ethernet Wireless Router with incorporated wired switch (Router should have LAN address configuration functionality)
- 1 x PC/Laptop with a free Ethernet port or a wireless adaptor
- 2 x Cat 3/Cat 5 Straight Ethernet Cable

Only 1 cable is required if the PC/Laptop has a wireless adaptor

5.2 Approach



By default, the inertial product is already assigned with an IP address. Depending on the nature of the network where it is inserted, the inertial product is required to be configured so that it adapts to the Ethernet network. If the Ethernet network has not been setup, the user may take reference from the next section to select IP addresses.

5.3 Choosing an IP Address (If Default Configuration is Not Used)

If you decide to change the default configuration of the inertial product, you will need to provide two (four for LANDINS) IP addresses for both the inertial product and the PC/Laptop. It is important to keep track of the addresses entered on both systems as their addresses are different.

You will need to setup a private network between the PC and the inertial product, thus you will need to select an address for the PC and the inertial product.
In private network addresses, it is usually recommended to use addresses of

- Either Class B (169.254.0.0 to 169.254.255.255) – Subnet Mask: 255.255.0.0
- Or Class C (192.168.0.0 to 192.168.255.255) – Subnet Mask: 255.255.255.0

Important

For Class C, the first (e.g. 192.168.0.0) and last (e.g. 192.168.255.255) addresses are reserved and therefore they cannot be used.

It is recommended to select two addresses from the same range set.
Below are 2 examples:

- Example for LANDINS:
  - Either 169.254.0.1 to 169.254.0.3 for the LANDINS and 169.254.0.4 for the PC (Subnet 255.255.0.0)
  - Or 192.168.1.10 to 192.168.1.12 for the LANDINS and 192,168.1.13 for the PC (Subnet 255.255.255.0)

- Example for the other inertial products (i.e. except LANDINS)
  - Either 169.254.0.1 for the inertial product and 169.254.0.2 for the PC (Subnet 255.255.0.0)
  - Or 192.168.1.10 for the inertial product and 192,168.1.11 for the PC (Subnet 255.255.255.0)

Important

Refer to section 4.1.3 to configure IP address for PC and section 7 to configure the IP address of the inertial product.

5.4 IP Address Options

Important

This paragraph does not apply to LANDINS.

Inserting the inertial product into the network mainly depends on the configuration of the local private network. The system integrator can have:

- Either set DHCP=ON, so that the inertial product will acquire IP address information from the local DHCP Server/Router. No setting of IP address will be required.
- Or set DHCP=OFF, and the user will need to specify an address for the inertial product, which is taken from the same subset of the local private network.

5.5 Inertial Product DHCP Option

Important

This paragraph does not apply to LANDINS.
LANDINS cannot be set into DHCP mode due to the three IP addresses needed.

Most routers sold today do come along with DHCP functionality. This allows the router to automatically assign unused IP addresses to all devices connected to the network.

- If the network where the inertial product is inserted is DHCP enabled, you may use this option for the setup
- If the network is not DHCP enabled, you will need to specify an address for the inertial product, which is taken from the same subset of the local private network.

Refer to section 7 to configure DHCP functionality.

5.6 Retrieving the IP Address of the Inertial Product

Important

This paragraph does not apply to LANDINS.

If you do not know the inertial product IP address or if you want to know which IP address was attributed by the DHCP server, connect the repeater cable to your PC and start a serial terminal (HyperTerminal, BBTALK, etc.) configured at 19200 baud, no parity, 1 stop bit, 8 data bits. Reboot the inertial product once connected. You will get the inertial product boot sequence message that contains its attributed IP address (line beginning with “IFCONF”):

```
Image QNX iXSea v2.10 generee le 28/04/2010 par FAP
Welcome to eOCTANS
DRV : 0 00198C000199
WAIT_EN : 0
IFCONF 1 : 0 192.168.36.199
IF_UP 1 : 0
IDEQNX3 : 0
FIN ---
```

5.7 Testing the Connection

You can check the connection by using the Product IP address and some windows commands.

See Appendix B.

6 SETTING UP THE DATA CONNECTION OF THE INERTIAL PRODUCT

The inertial product features several data outputs/inputs. All these inputs and outputs can be accessed via one single Ethernet cable.

To differentiate between the individual inputs and outputs within the Ethernet connection, the data is transmitted using different port numbers. Each port number used will be represented by one socket port.

There are four transport modes available, namely:

TCP Server	Protocol used: TCP Address specified: N.A. This requires a client to establish the connection to the inertial product. The address for the client to access to the inertial product is the same address used in the repeater port.
TCP Client	Protocol used: TCP Address specified: address of server that receives the data. The inertial product will establish the connection to the server.
UDP	Protocol used: UDP. Address specified: address of terminal that receives the data. The specific terminal will need to listen for the data from the inertial product. Other terminals in the network will not be able to receive this data through normal means.
UDP Broadcast	Protocol used: UDP. Address specified: broadcast address is limited to subnet mask. For example, if the subnet mask is 255.255.0.0 and system IP is 192.168.36.3, the broadcast address will be 192.168.255.255. All connected terminals will be able to receive the same data simultaneously by opening the same port to listen for the data.
UDP Multicast	Protocol used: UDP. Address specified: multicast subscription group that receives the data. Equipment that need to receive the output flow will have to subscribe to the same UDP multicast address and port. Multicast transmission method allows sending the same information to several different targets without broadcasting it to the entire network, thus saving network bandwidth.

For the Ethernet version of the Repeater port, Web-based User Interface uses TCP Client as default transport mode to access the inertial product. This setting cannot be changed. This means there can be only one terminal connected to the inertial product repeater port.

6.1 Port Numbers

In computer applications, port numbers are used to identify how data come from the process that produces the data, to the end process which receives the data. The inertial product uses port numbers to separate data from each port so that data that come from the IP address can be differentiated.

You can select any number above 1024 as port numbers. Port number for repeater port is fixed at 8110. By default, the 8111 to 8120 are used for outputs and inputs of the inertial product, except for LANDINS: in this last case the ports 8110 and 8113 are reserved for internal use.

To prevent conflicts with other systems or applications, it is important that no identical numbers are used and that reserved ports (e.g., 8121) are not used.

6.2 Configuring a Port with the TCP Transport Modes

The following parameters and their values will be needed to configure the port:

- Transport: TCP Server or TCP Client
- Port: any 4-digit number you want that is above 1024 (e.g. 8111)

The port number selected must be the same as the one used on the server or client.
The choice between Server and Client depends on the configuration of the whole system. Whether the inertial product establishes the connection or the server is the one that establishes the connection.

6.3 Configuring a Port with the UDP Transports Modes

Unlike TCP which requires TCP clients to establish a connection/handshake with the server before data is streamed, UDP packets will be streamed onto the network once the inertial product is powered ON. This means that the data transmission is unsecured and the server does not guarantee the data packets are received in order/sequence at the client side. There will be instances where packets are dropped. Such instances mainly depend on the integrity of the network. Fortunately, UDP still ensures that the data received is same as it is transmitted.

However, UDP has its advantages. UDP is faster, throughput is better than TCP due to smaller packet headers used. Selecting **UDP Broadcast** option under Transport field, the inertial product will stream data onto the network. This means everyone connected to that network will be able to receive the data, in other words for the same output port number, more than one computer will be able to receive the same data.

Configuring for a UDP connection is similar to configure a TCP connection. The only difference will be to select **UDP** or **UDP Broadcast** under **Transport** option.

7 CONFIGURING WITH THE WEB-BASED USER INTERFACE

7.1 LANDINS Products

7.1.1 STANDARD CONFIGURATION

Window access

Use **NETWORK** option under **INSTALLATION** menu to access the Network parameters (see Figure 1 and Figure 2).

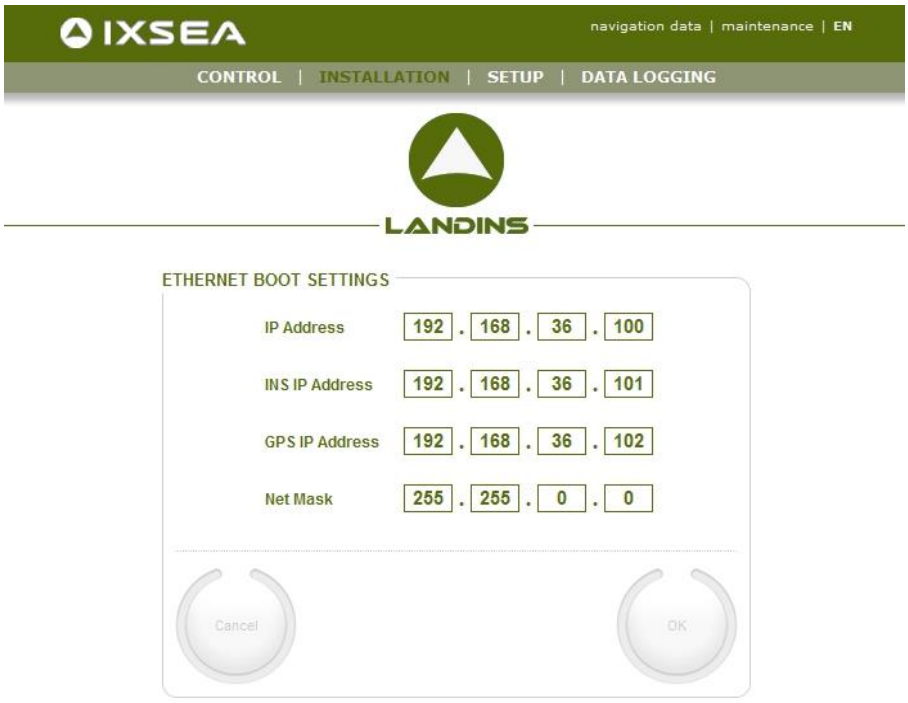


Figure 1 - NETWORK page (internal GNSS case)

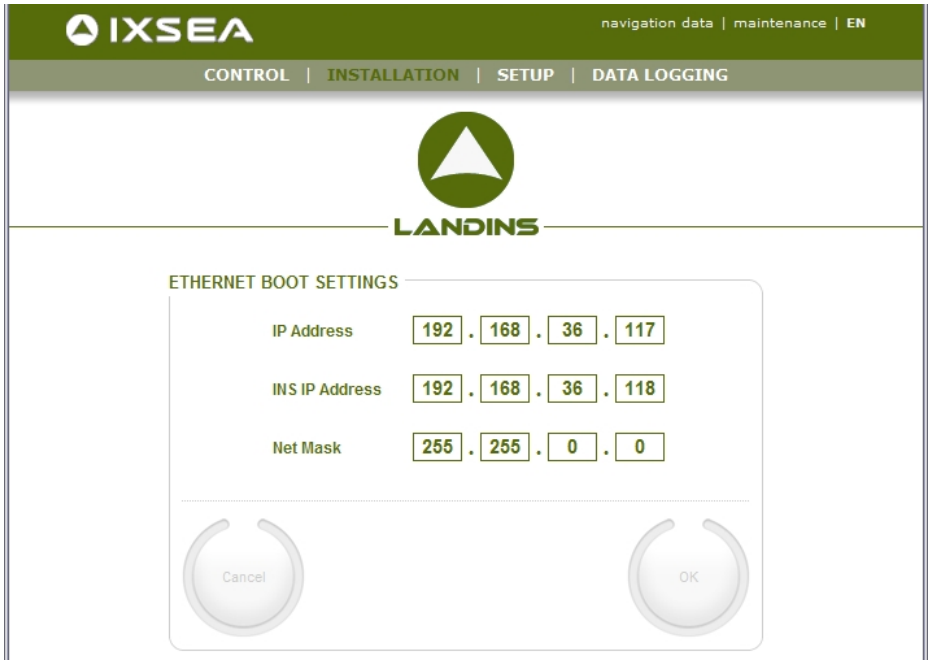


Figure 2 - NETWORK page (external GNSS case)

The parameters are the following:

- **IP address**: this is the IP address of the Web-based User Interface and of the data logger (to download recorded files)
- **INS IP address**: this is the IP address used for the protocols output by Ethernet stream (real time mode)
- **GPS IP address (present only for the internal GNSS case)**: this is the IP address of the internal GNSS. This IP address is used for monitoring and configuration of the embedded GNSS receiver.
- **Net Mask**: this is the common network mask address

The PC IP address must be taken from the same subset as the IP address configured in LANDINS and the subnet mask of both the PC and LANDINS should be the same.

7.1.2 DEFAULT CONFIGURATION

This section gives the default values programmed used to configure a LANDINS product.

These values are given in the *Ethernet Factory Setting list*. This is a document provided with your product.

The LANDINS default configuration is listed below:

- **IP address**: 192.168.36.1xx (xx being the last two numbers of the LANDINS serial number)
- **INS IP address**: 192.168.36.1(xx+1) (xx being the last two numbers of the LANDINS serial number).
- **GNSS IP address (present only for the internal GNSS case)**: 192.168.36.1(xx+2) (xx being the last two numbers of the LANDINS serial number).
- **Net Mask**: 255.255.0.0

7.2 ATLANS Products

7.2.1 PRE-REQUISITE

Window access

Use **NETWORK** option under **INSTALLATION** menu to access the **NETWORK SETTINGS** parameters (see Figure 3).

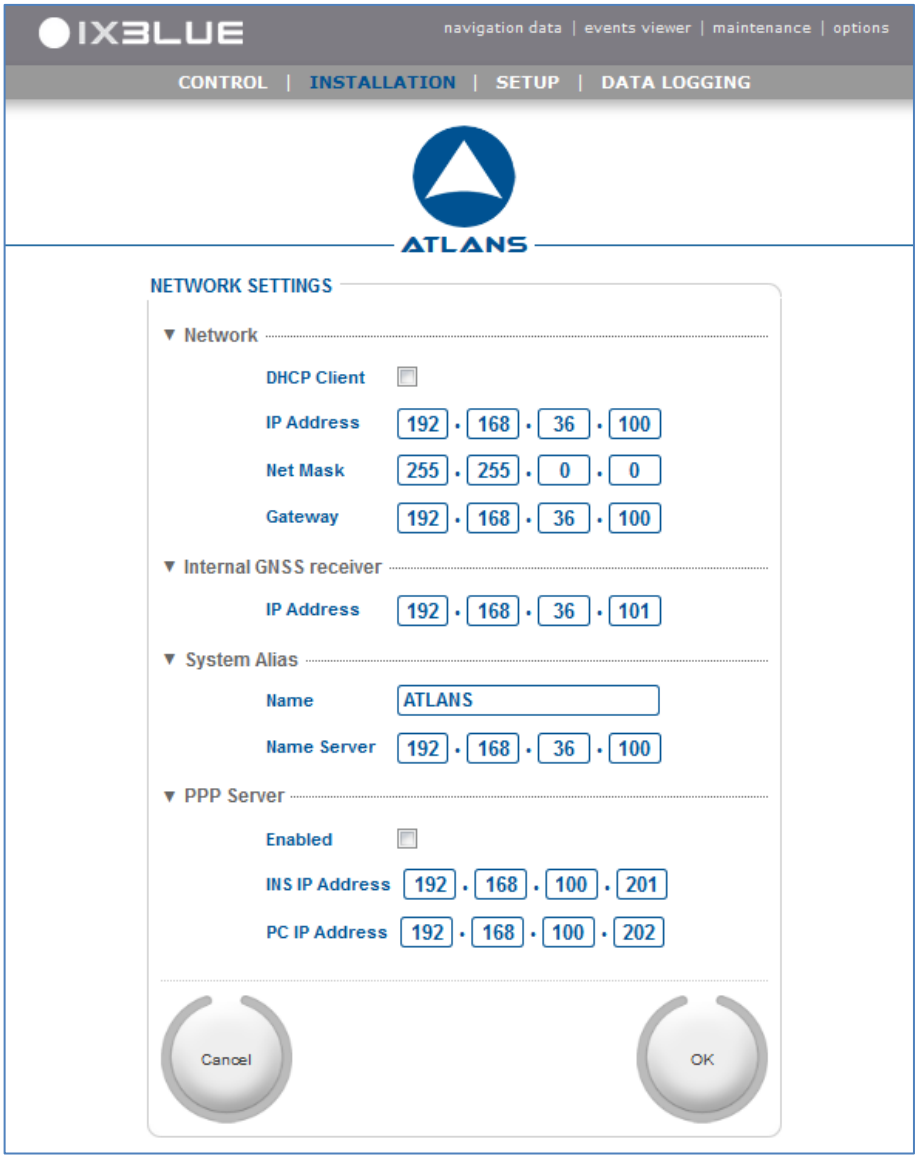


Figure 3 – ATLANS- NETWORK page

The **Internal GNSS receiver** field is not displayed if there is no internal GNSS receiver.

The parameters are the following:

- **IP address**: this is the IP address of the Web-based User Interface and of the data logger (to download recorded files)
- **Net Mask**: this is the common network mask address
- **Internal GNSS receiver IP address (present only for the internal GNSS case)**: this is the IP address of the internal GNSS. This IP address is used for monitoring and configuration of the internal GNSS receiver.
- **INS IP address**: this is the IP address used for the protocols output by Ethernet stream (real time mode)

The PC IP address must be taken from the same subset as the IP address configured in ATLANS and the subnet mask of both the PC and ATLANS should be the same.

7.2.2 DEFAULT CONFIGURATION

This section gives the default values programmed used to configure an ATLANS product. These values are given in the *Ethernet Factory Setting list*. This is a document provided with your product.

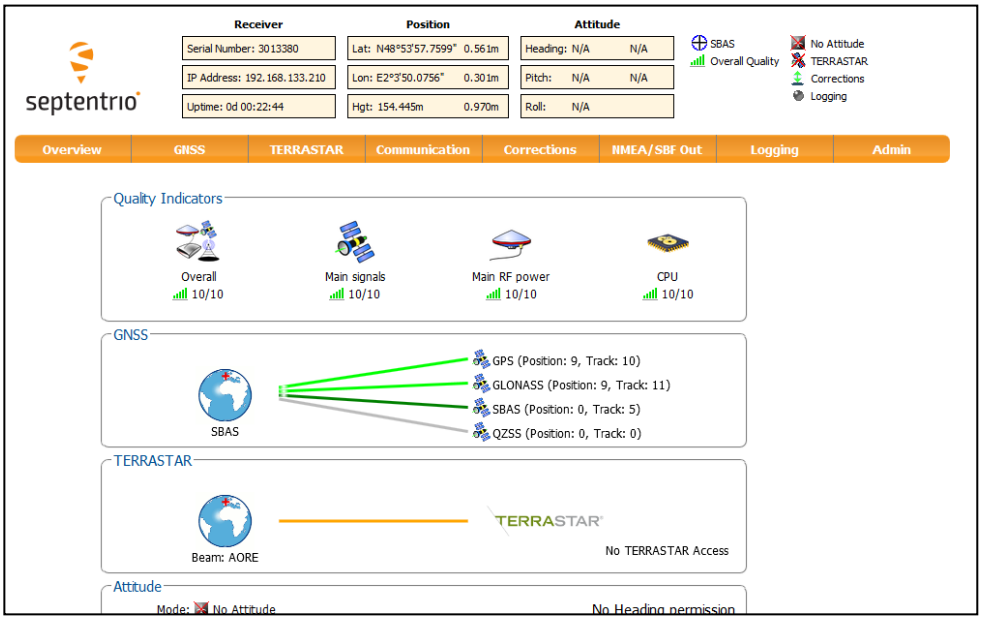
The ATLANS default configuration is listed below:

- **INS IP address**: 192.168.36.1(xx) (xx being the last two numbers of the ATLANS serial number).
- **GNSS IP address (present only for the internal GNSS case)**: 192.168.36.1(xx+1) (xx being the last two numbers of the ATLANS serial number).
- **Net Mask**: 255.255.0.0

7.2.3 CONNECTING INTERNAL GNSS VIA ATLANS WITH ETHERNET

The GNSS inside the ATLANS is directly visible on the same network as the ATLANS INS.

Step	Action
1.	Read the Internal GNSS receiver address configured in the **NETWORK SETTINGS** page (Figure 3).
2.	Enter this address in your browser. *The following window is displayed.*

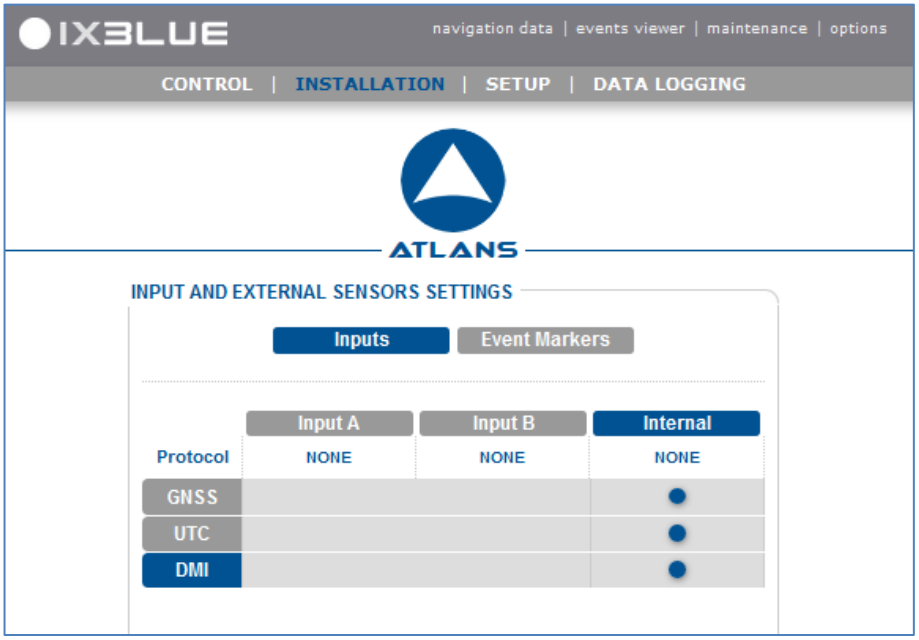


You are now connected to the ATLANS internal GNSS receiver web configuration page.

3.	End of procedure.

7.2.4 CHECKING COMMUNICATION BETWEEN GNSS AND ATLANS

Once the GNSS is configured, check that ATLANS communicates well with the GNSS. For that:

Step	Action
1.	Plug in ATLANS (Ethernet, GNSS antenna and power supply cables).
2.	Launch the Web-based user interface of ATLANS.
3.	Click on **INSTALLATION** menu then select **INPUTS** option.
4.	Check that GNSS, UTC and DMI are effectively configured on the internal port: presence of blue dots in the **Internal** column. 

Step	Action

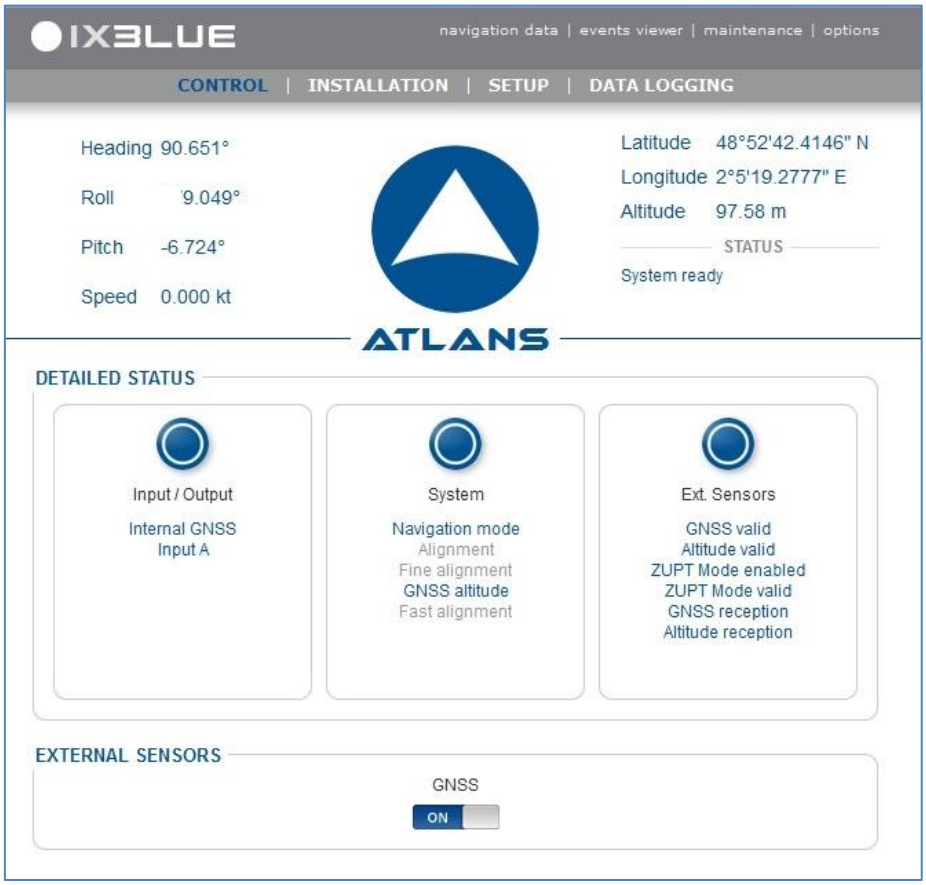
5. Check, after few minutes, that GNSS data is well received by ATLANS.

   In the **Input/output** area (**DETAILED STATUS** left) of the **CONTROL** page must appear:

   - Internal GNSS
   - Pulse PPS activity

   In the **Ext. Sensors** area (**DETAILED STATUS** right) of the **CONTROL** page must at least appear:

   - GNSS Reception (for GNSS)
   - UTC1 synchro



6. End of procedure.

7.2.5 RECEPTION OF DIFFERENTIAL CORRECTIONS ON ATLANS INTERNAL GNSS

The internal GNSS of ATLANS can receive differential corrections (CMR, RTCM) by two different ways:

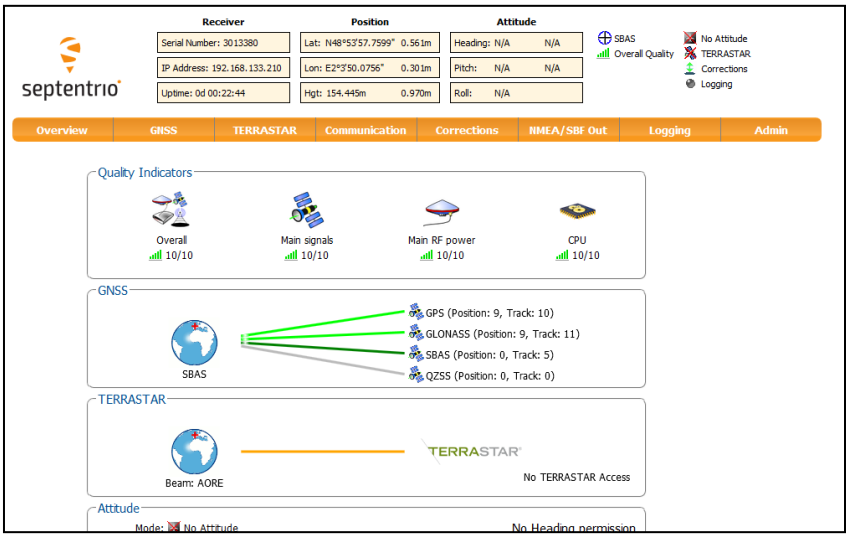
- Using the GNSS serial port of the serial connector (corresponding to GNSS COM1).
- By Ethernet, through ATLANS.

7.2.5.1 Serial Port

Step	Action

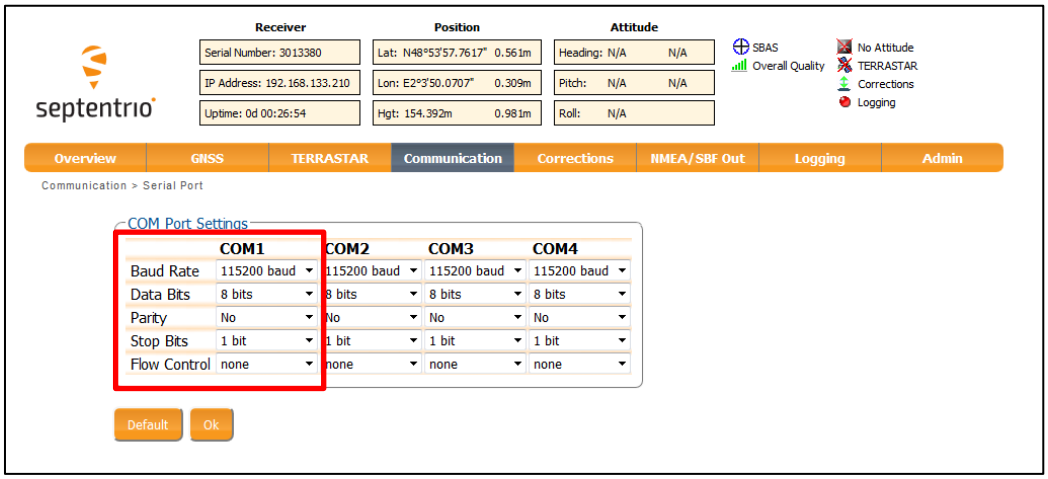
1. Connect to the internal GNSS receiver address via your browser.

   The following window is displayed.



2. Select **Communication – Serial Port** menu.

   The following window is displayed.

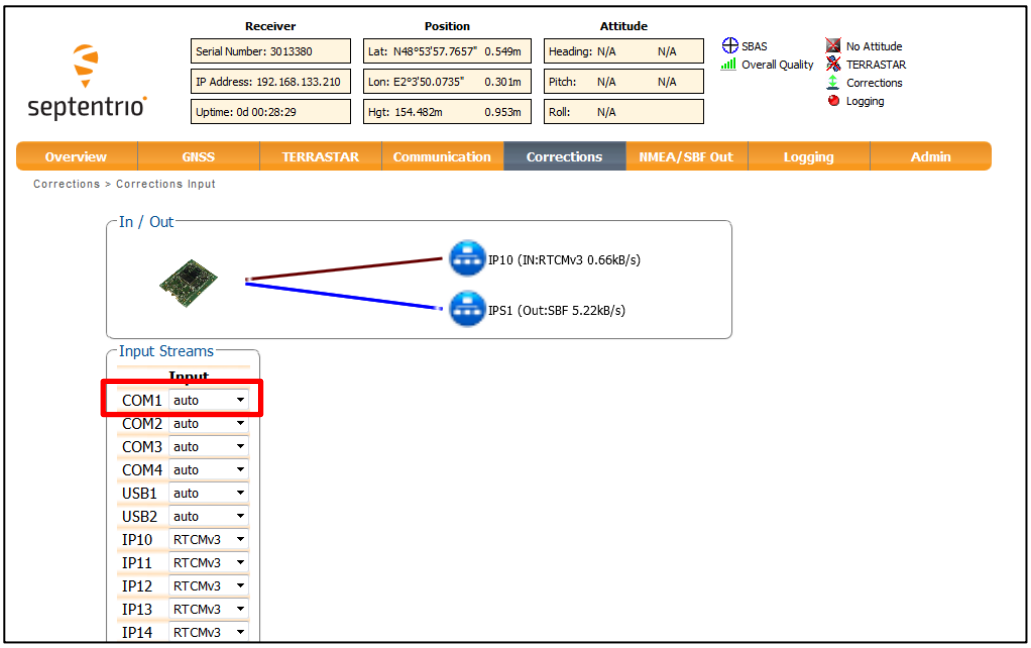


3. Configure the **serial port COM1** with the Baud Rate, Data Bits, Parity and Stop Bits compatible with the equipment sending the differential corrections then click on the **Ok** button.

Step	Action

4. Select **Corrections - Corrections Input** menu.

   The following window is displayed.



5. In the **COM1** pull-down menu, select the relevant differential correction standard (RTCMv3 is the default standard).

6. Click on **OK.**

7. End of procedure.

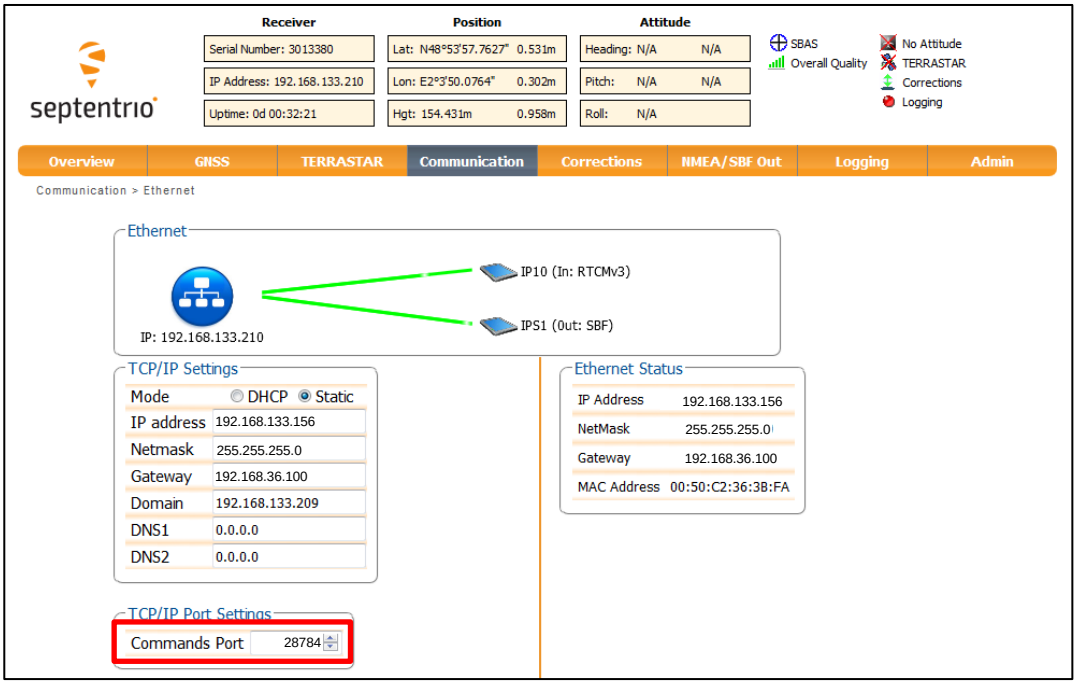
7.2.5.2 Ethernet Port

In this case, assuming you need to connect to a base station that sends differential corrections through a server TCP port, you need to configure input A in client TCP with base IP/port setup.

Step	Action
1.	Select **INPUT** option under **INSTALLATION**. Click on **Input A**. *The following window is displayed.*

2.	In **Physical Link** area, select **Ethernet only.**
3.	In **Ethernet** area, in **Transport Layer**, select **TCP client.**
4.	Enter the Ethernet **IP/Port** data.
5.	Connect to the internal GNSS address via your browser. *The following window is displayed.*

Step	Action

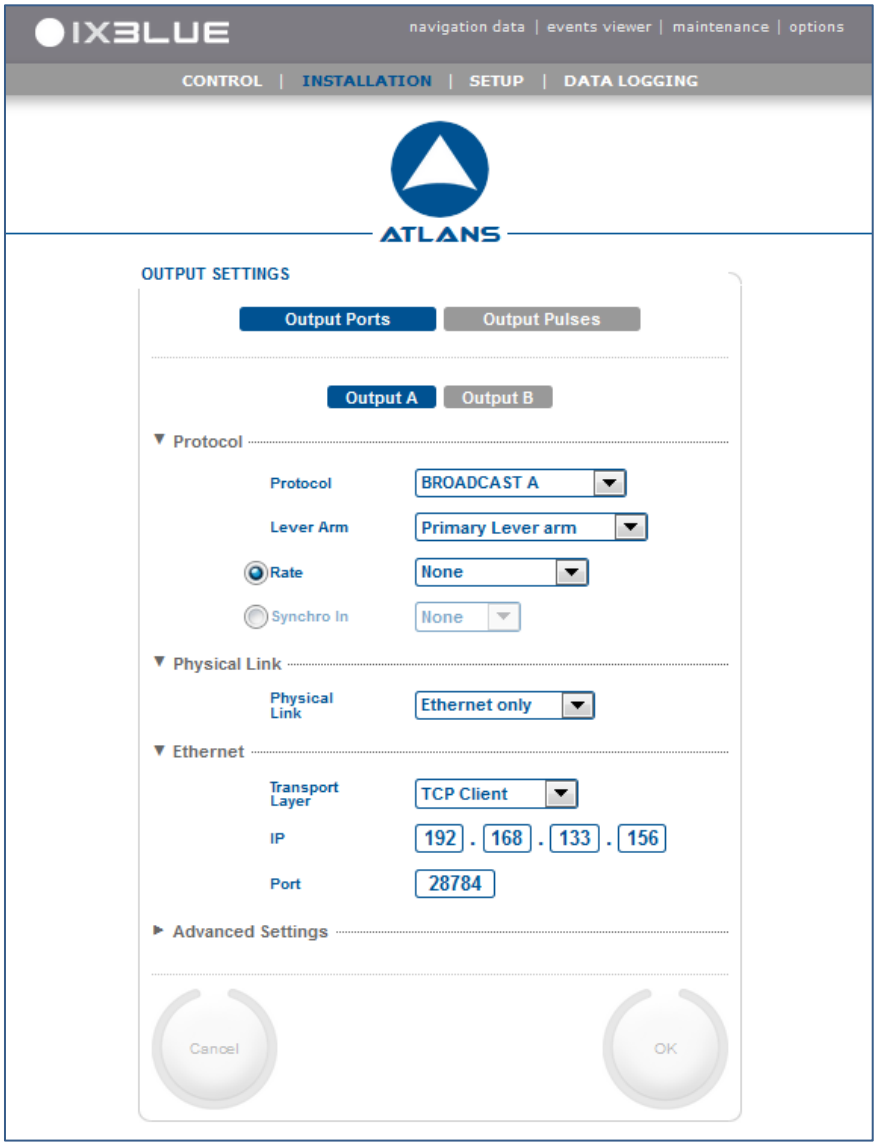


6. In the **TCP/IP Port Settings** area, note the **Commands Port** number.

Step	Action

7. Select **OUTPUTS** option under **INSTALLATION**.

   The following window is displayed.



8. Click on **Output Ports.**
9. In **Protocol** area, select **BROADCAST A**.
10. In **Physical Link** area, select **Ethernet only**.
11. In **Ethernet** area, select **TCP Client.**
12. In **Port** field, enter the port number noted in **step 6**.
13. Click **OK**.
14. End of procedure

7.3 All Other Products

7.3.1 STANDARD CONFIGURATION

Important

This paragraph does not apply to ATLANS and LANDINS.

Window access

Select **NETWORK** option under **INSTALLATION** menu to access the Network parameters (Figure 4).

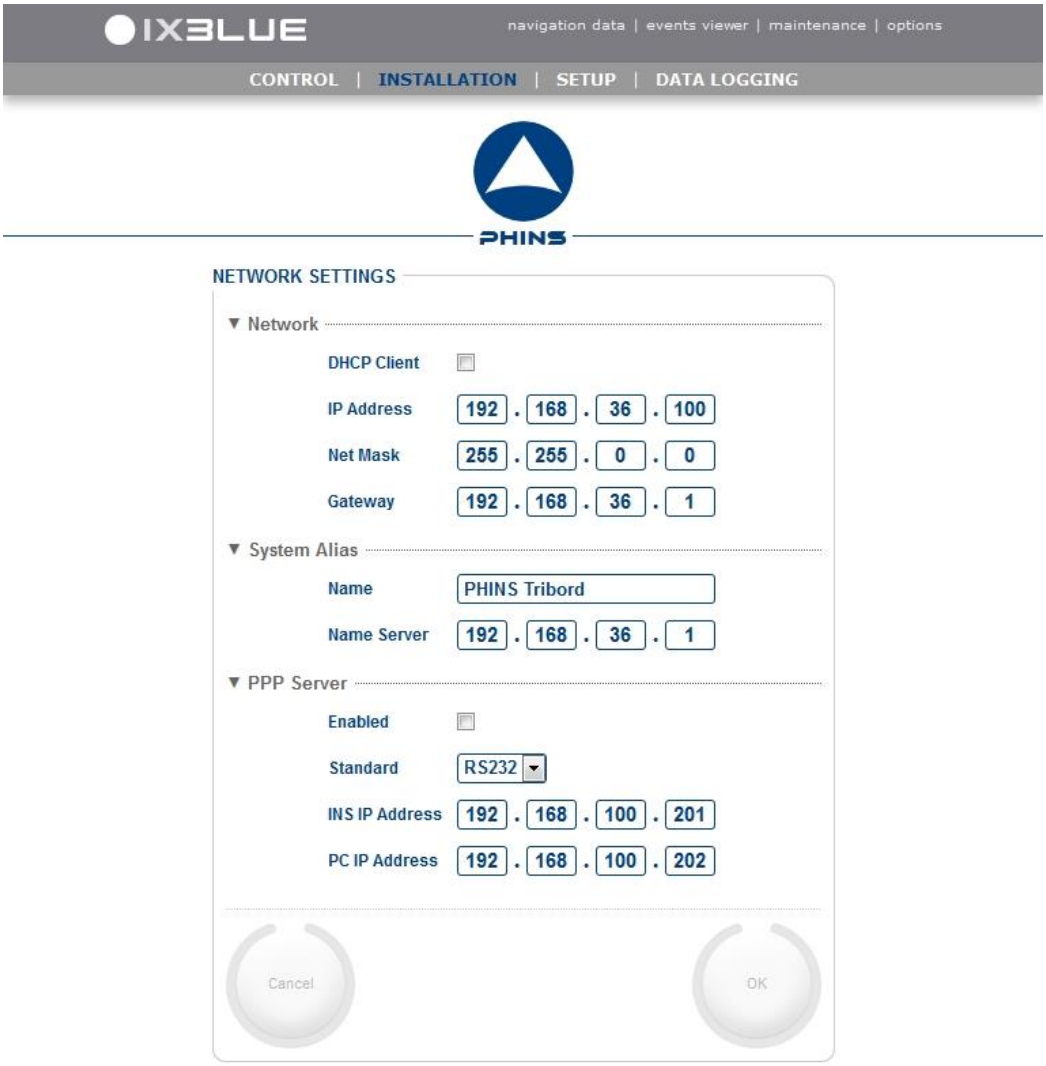


Figure 4 - NETWORK page

- Under **Network** area, the configurable parameters are the following:
  - **DHCP Client:** check box to activate DHCP client.
    When the check box **DHCP Client** is selected: the product starts up in DHCP mode. If it has not found an address or a DHCP server after one minute, it starts up with the IP Address defined in the IP address field.

When the check box **DHCP** is unselected: the product starts up with the IP Address defined in the IP address field.

- **IP Address**: this is the IP address of the Web-based User Interface
- **Net Mask**: this is the common network mask address
- **Gateway:** this is the address to use in order to send data outside the local area network.
- For example, if the local area network is 192.168.36.xx and you want to send data to the PC the IP address of which being 192.168.32.xx, you can indicate that the Gateway is 192.168.36.1. In this case the data, the destination of which is 192.168.32.5, will be sent through the gateway 192.168.36.1.

- Under **System Alias** area:
  - **Name**: you can define an alias (Name) for your product IP address to avoid using IP address to launch the Web-based User Interface for example or to distinguish easily the starboard (right) and port side (left) product if necessary. This **Name** appears in the **events viewer** page.
  - **Name Server**: to use an alias, you have to define the IP address of the Name server (DNS) of the network on which the inertial product is set. Then the product will send an IP packet to this DNS server in order to describe the (alias/ product IP address) mapping. Then, the PCs that want to connect to the product will send a query to the DNS server to get the product IP address. By default the **Name Server** is set to the product IP address.

- Under **PPP Server** area: for using the repeater with PPP server (=Point to Point Protocol)
  - **Enabled** to launch the Web-based User Interface via the serial link.
    When the check box **Enabled** is selected, the product will start a PPP server listening on repeater serial port at next reboot. When this option is disabled (default), the repeater port outputs OCTANS STANDARD or PHINS STANDARD protocol (following the type of product)
  - **Standard**: to choose between an **RS232** or **RS422** serial link (following the product)
  - **INS IP Address**: by default it is `192.168.100.201`
  - **PC IP Address**: by default it is `192.168.100.202`
    The PC IP adress is used in case of the PC is connected to two different inertial units. In this case there must be a different IP on the PC for each PPP interface.
    For example:
    - 192.168.200.1 on the PC PPP link 1 and 192.168.200.2 on the first INS
    - 192.168.200.3 on the PC PPP link 2 and 192.168.200.4 on the second INS connected to the PC

To know how to set up the PPP connection to the product on your PC, refer to section 4.2.4.1.

If you want to keep the inertial product in its default configuration, you will only be required to change the IP address on the PC.

Should the default configuration no longer exists, the user will need to retrieve the IP address set in the inertial product by accessing to the inertial product settings. Please refer to section 5.6 for more details on how this can be done.

The PC IP address must be taken from the same subset as the IP address configured in the product; **the subnet mask of both PC and product should be the same**.

Important

When you change the product IP address, carefully note down the new IP address, otherwise you may not be able to connect to the system through the Web-based User Interface.

To know how to retrieve the product IP address from serial port, refer to section 5.6.

Important

To launch the Web-based User Interface through a direct serial link:

- The PPP mode must have been activated
- A direct connection must have been created (see section 4.2.4.1)

In this configuration, the inertial product works as a PPP server, it must be activated before launching the Web-based User Interface: select **Start** menu > **Connect To** > **PRODUCT** (or the name chosen for the connection created between the workstation and your inertial product).

The Web-based User Interface is then launched from the Web browser hosted on the workstation. Its URL address is **`192.168.36.201.`**

7.3.2 DEFAULT CONFIGURATION OF ALL OTHER PRODUCTS

This section gives the default values programmed used to configure an inertial product (INS or AHRS).

These values are given in the *Ethernet Factory Setting list*. This is a document provided with your product.

Important

This configuration does not apply to ATLANS and LANDINS.

The inertial products default configuration is listed below. The configuration of these parameters can be done through the Web-based User Interface (see section 7):

- **Enabled (PPP server)**: OFF.
- **DHCP Client**: OFF.
- **IP address**:
  - Default address is `192.168.36.1xx` for communication through the Ethernet link (`xx` being the last two number of the INS serial number)
  - Default address is `192.168.36.201` for communication through the serial link
- **Network mask address**: `255.255.0.0`
- **Gateway:** by default, it is the inertial product IP address.

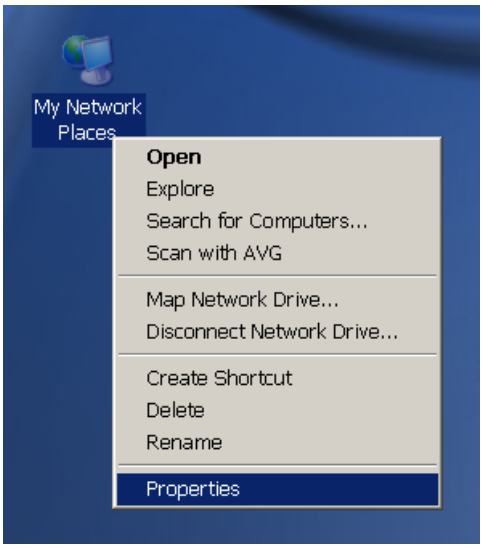
Appendices

A ACCESSING TO THE NETWORK CONTROL PANEL OF YOUR COMPUTER

Step	Action

1. Access to Network Connections Window

   - Either locate the icon “My Network Places” on the desktop screen of the PC, right click on the icon then select **Properties**



   - Or if you cannot locate this icon, you can still proceed by selecting **Start** menu > **Connect** > **Show all connections**.
   - Alternatively, if you are using Classic Start Menu, select **Start** menu > **Settings** > **Control Panel**, then double click on the icon ***Network Connections***.
   - For Windows Vista:
     - Open Network Connections by clicking the **Start** button, and then clicking **Control Panel**. In the search box, type **adapter**, and then, under Network and Sharing Centre, click **View network connections**.
   - For Windows 7:
     - Open Network Connections by clicking the **Start** button, clicking **Control Panel**, clicking **Network and Internet**, clicking **Network and Sharing Centre**, and then clicking **Manage network connections**.

2. End of procedure.

B TESTING THE CONNECTION TO THE INERTIAL PRODUCT

B.1 Checking the Connection with a Ping Command

The ping command is a computer network utility used to test whether a particular host is reachable across an Internet Protocol network and to measure the round-trip time for packets sent from the local host to a destination system, including the local host own interfaces.

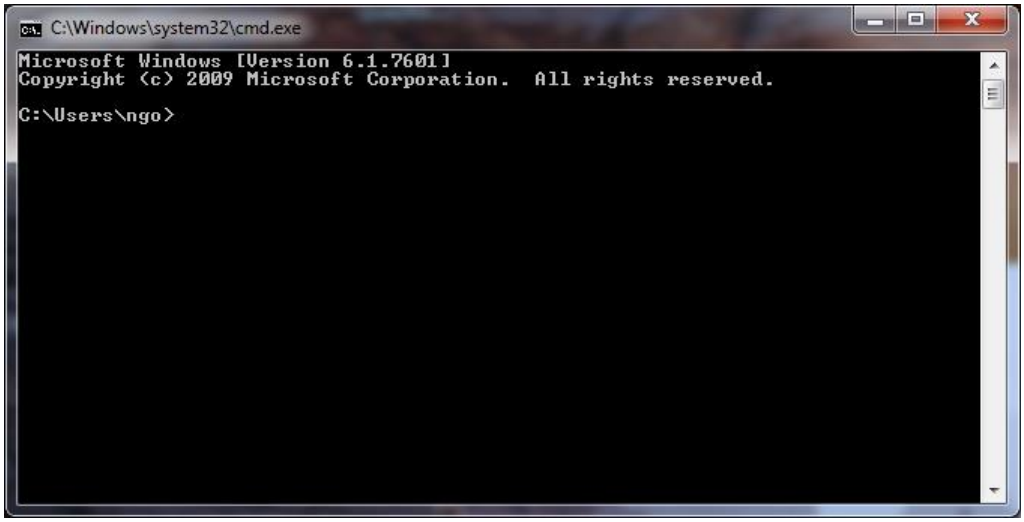
You need to know the IP address of your inertial product to perform the procedure:

- The default IP address is 192.168.36.1xx, xx being the two last digits of the serial number of your unit.
- See section 5.6 to retrieve a lost IP address

Step	Action

1. Open the command window:
   - From Windows 7 or Vista: from **Start** menu, type in `cmd` in the search box then press **[Enter]**.
   - From the other Operating system: from **Start** menu, choose **execute** then type in `cmd` and press **[Enter]**.

The command window opens:



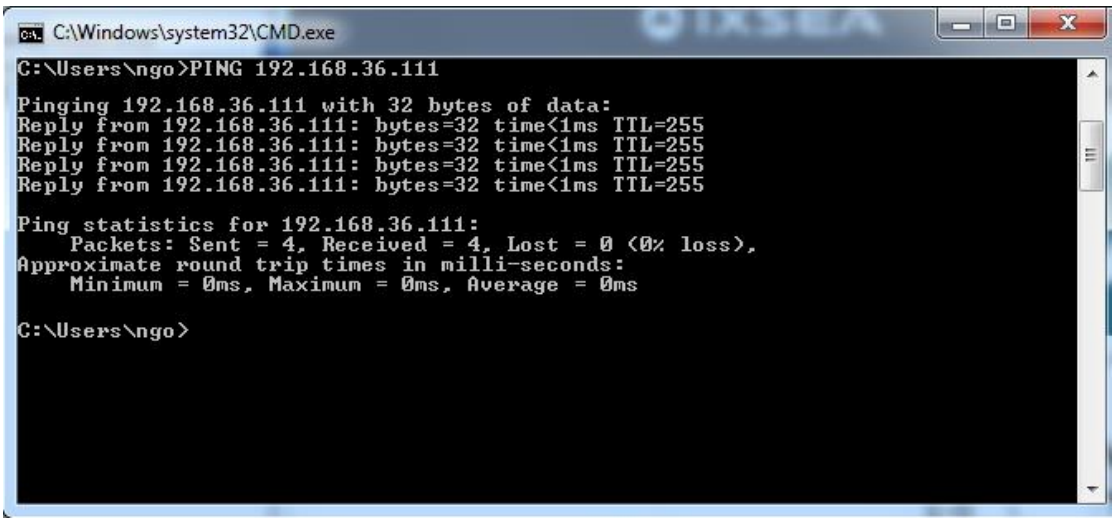
Step	Action

2. In the command window, type in

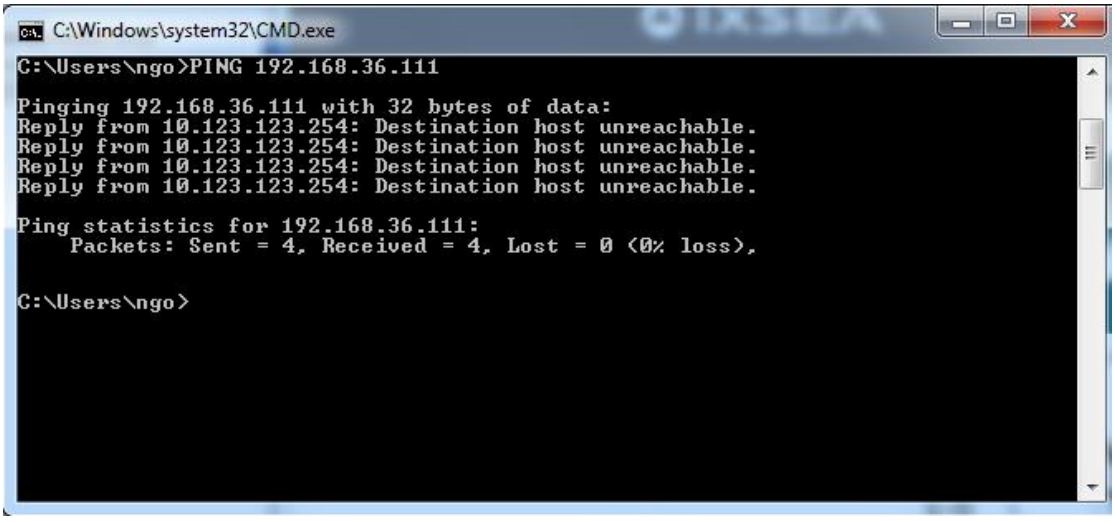
   `PING yyy.yyy.yyy.yyy`

   replacing `yyy.yyy.yyy.yyy` by the IP address of your inertial system unit.

   The successful command reply is looking like the following: here it is the example for the IP address 192.168.36.111



   The unsuccessful command reply is looking like the following: here it is the example for the IP address 192.168.36.111



3. End of procedure.

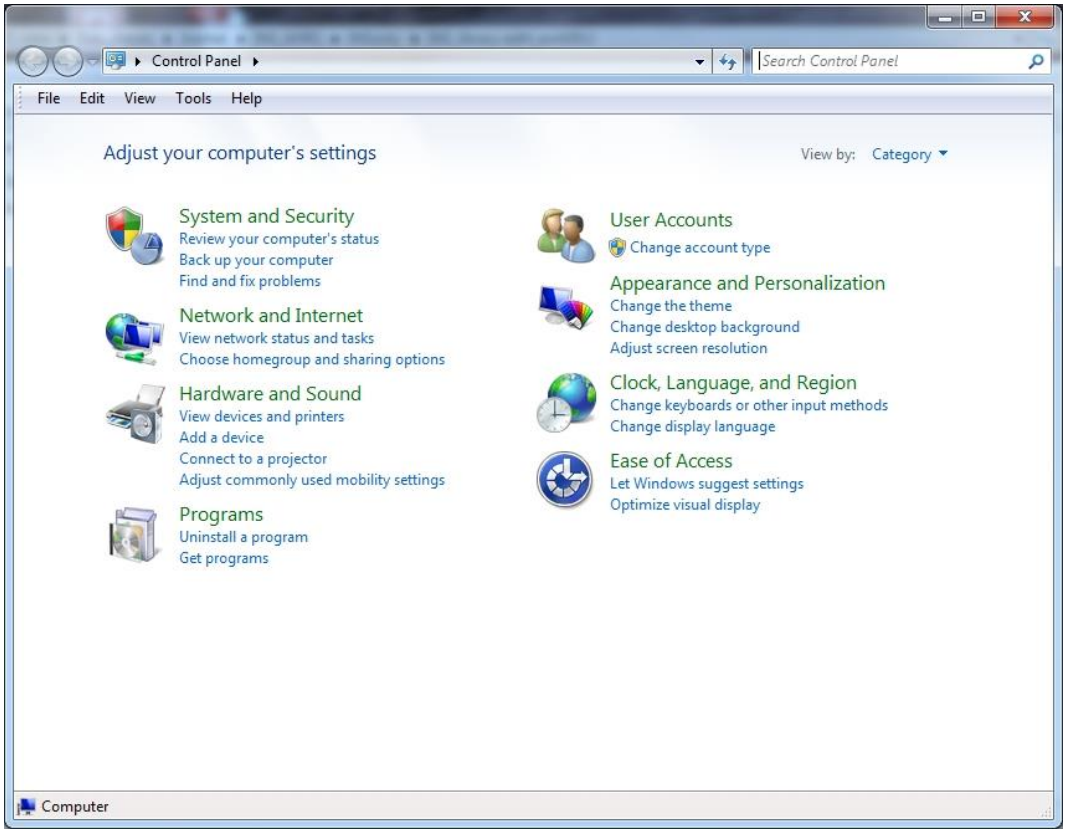
If you could not reach your inertial system using the ping command, you have to check the setting of your computer (see section 4.1.3), the issue may be on your side due to wrong settings of your PC.

B.2 Reading the Data Flow with a Telnet Command

You can check your product data flow using a telnet command.

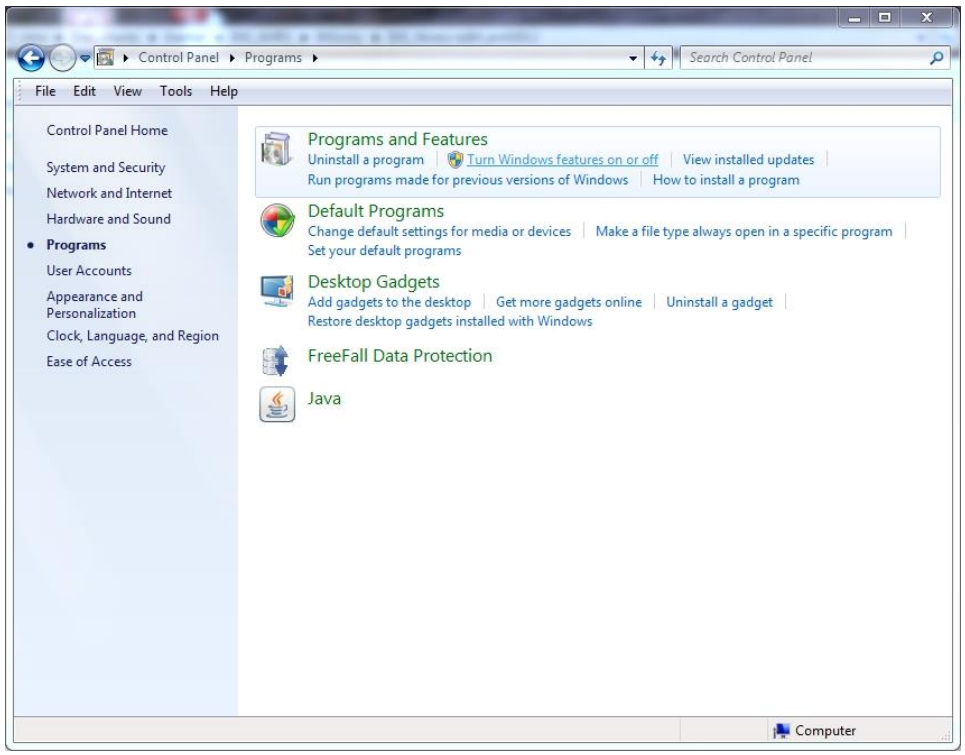
For Windows VISTA and 7 OS only

For a Windows Vista and Windows 7 Operating Systems, you need to activate the telnet command before using it:

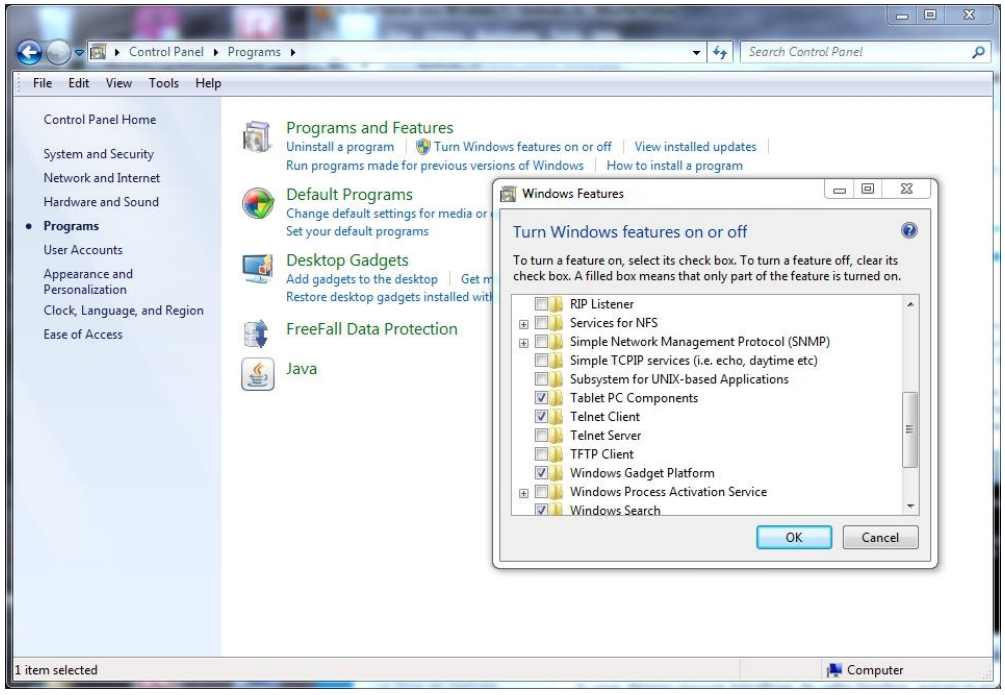
Step	Action
1.	Open your Control Panel (**Start** menu, **Control Panel** option) *The Control Panel opens:* 

Step	Action

2. Click **Programs** then under **Programs and Features** menu, choose **Turn Windows features on or off** option:



3. In the Windows Features window that displays select **Telnet Client** by clicking in the associated tick box then click **OK.**



4. Close the Control Panel.

5. End of procedure.

Launching the telnet command:

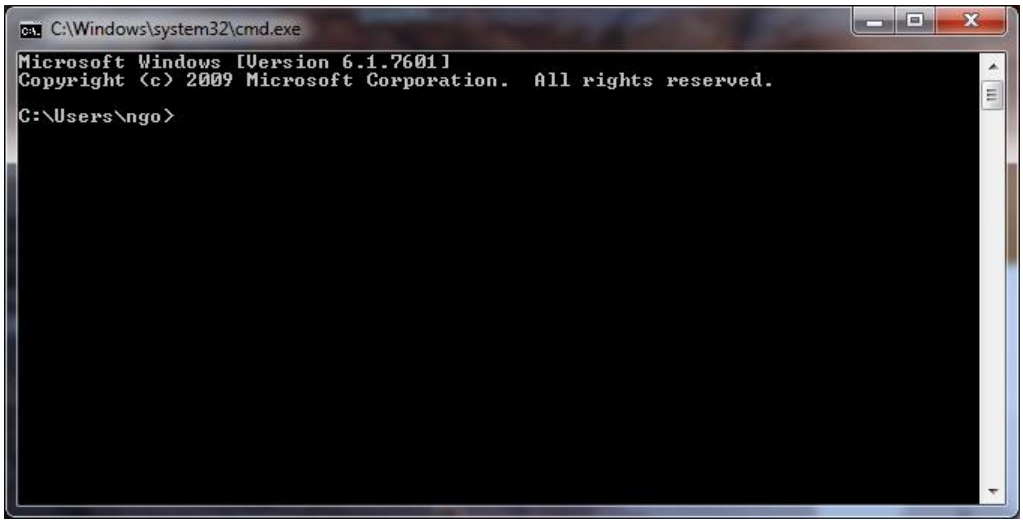
You need to know the IP address of your inertial product to perform the procedure:

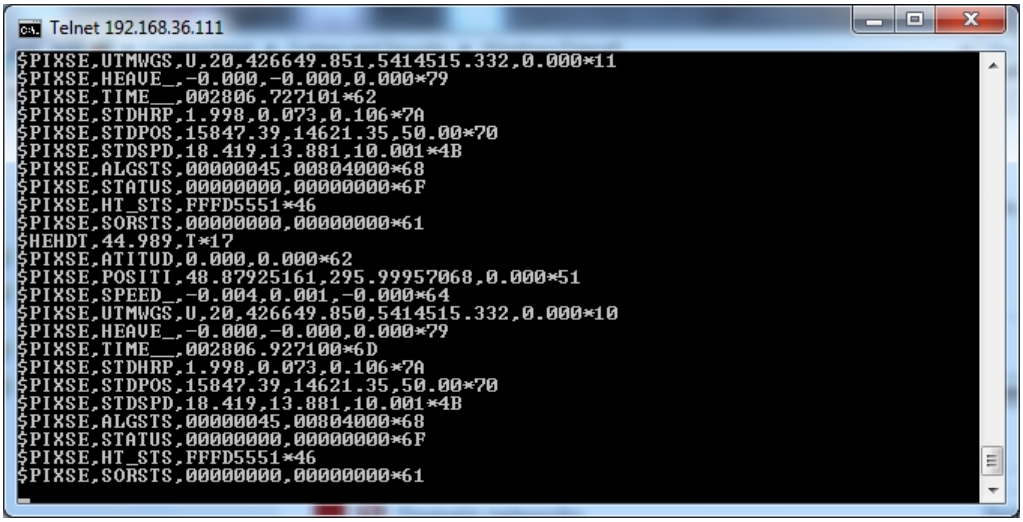
- The default IP address is 192.168.36.1xx, xx being the two last digits of the serial number of your unit.
- See section 5.6 to retrieve a lost the IP address

Step	Action

1. Open the command window:
   - From Windows 7 or Vista: from **Start** menu, type in `cmd` in the search box then press **[Enter]**.
   - From other Operating system: from **Start** menu, choose **execute** then type in `cmd` and press **[Enter]**.

   The command window opens:



Step	Action
2.	In the command window, type in: `TELNET yyy.yyy.yyy.yyy 8110` Replacing `yyy.yyy.yyy.yyy` by the IP address of your inertial system unit. *The successful command reply is looking like the following: here it is the example of an INS with the IP address 192.168.36.111, the data flows under PHINS (or OCTANS for an AHRS product) standard format.* 
3.	End of procedure.