

# InternetBridge-NT

Internet module



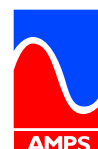
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## REFERENCE GUIDE



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# 1 Document information

## INTERNETBRIDGE-NT - REFERENCE GUIDE

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### DOCUMENT HISTORY

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5	1.2	20.10.2012
6	2.0	25.3.2013
7	2.1	28.8.2013
8	2.1	13.11.2013

## 1.1 Clarification of notation

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### **NOTE:**

This type of paragraph calls readers attention to a notice or related theme.

### **CAUTION!**

This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or unproper function of the equipment if not performed correctly and may not be clear at first sight.

### **WARNING!**

This type of paragraph indicates things, procedures, adjustments etc. which need high level of attention, otherwise can cause personal injury or death.

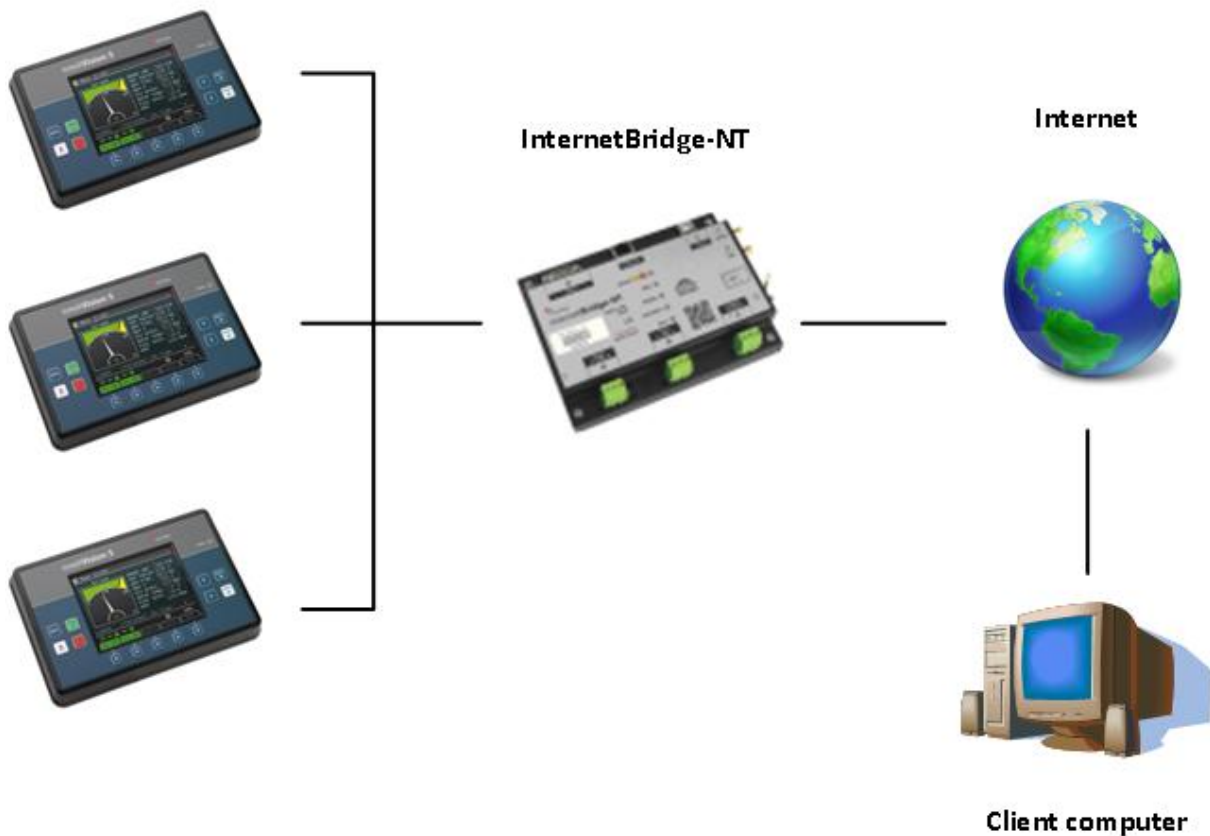
## 2 General guidelines

### 2.1 What is InternetBridge-NT?

InternetBridge-NT is a communication module that allows connection of a single controller as well as whole site to the Internet or Local area network. The connection to the Internet can be via built-in cellular modem supporting 2G and 3G networks or Ethernet cable. The built-in GPS receiver also enables location and tracking of the device via WebSupervisor.

**The module is designed for controllers based on IG-NT and IS-NT platforms.** From firmware version 1.2 also controllers from platforms IL-NT, IC-NT, ID-Lite, ID-DCU, ID-Mobile and IntelliPro will be supported with limited functionality. Please see the "New Features List" for details.

#### Controllers on site



PRINCIPAL SCHEME

#### **NOTE:**

For proper operation it is necessary to update the controller firmware to a version which supports IB-NT. For IG-NT and IS-NT standard branch the first version supporting IB-NT is 2.6.

### 2.2 Features

- [Direct IP connection](#) to ComAp PC programs
- [AirGate@](#) support
- SMTP protocol for sending of [active emails](#) from the controller

- HTTP protocol for [web-based monitoring and adjustment](#)
- [MODBUS/TCP server](#)
- [SNMP agent](#)
- [GPS location and tracking](#)
- Synchronization of controller RTC clock with GPS/NTP Time

## 3 Installation

### 3.1 *What is in the package?*

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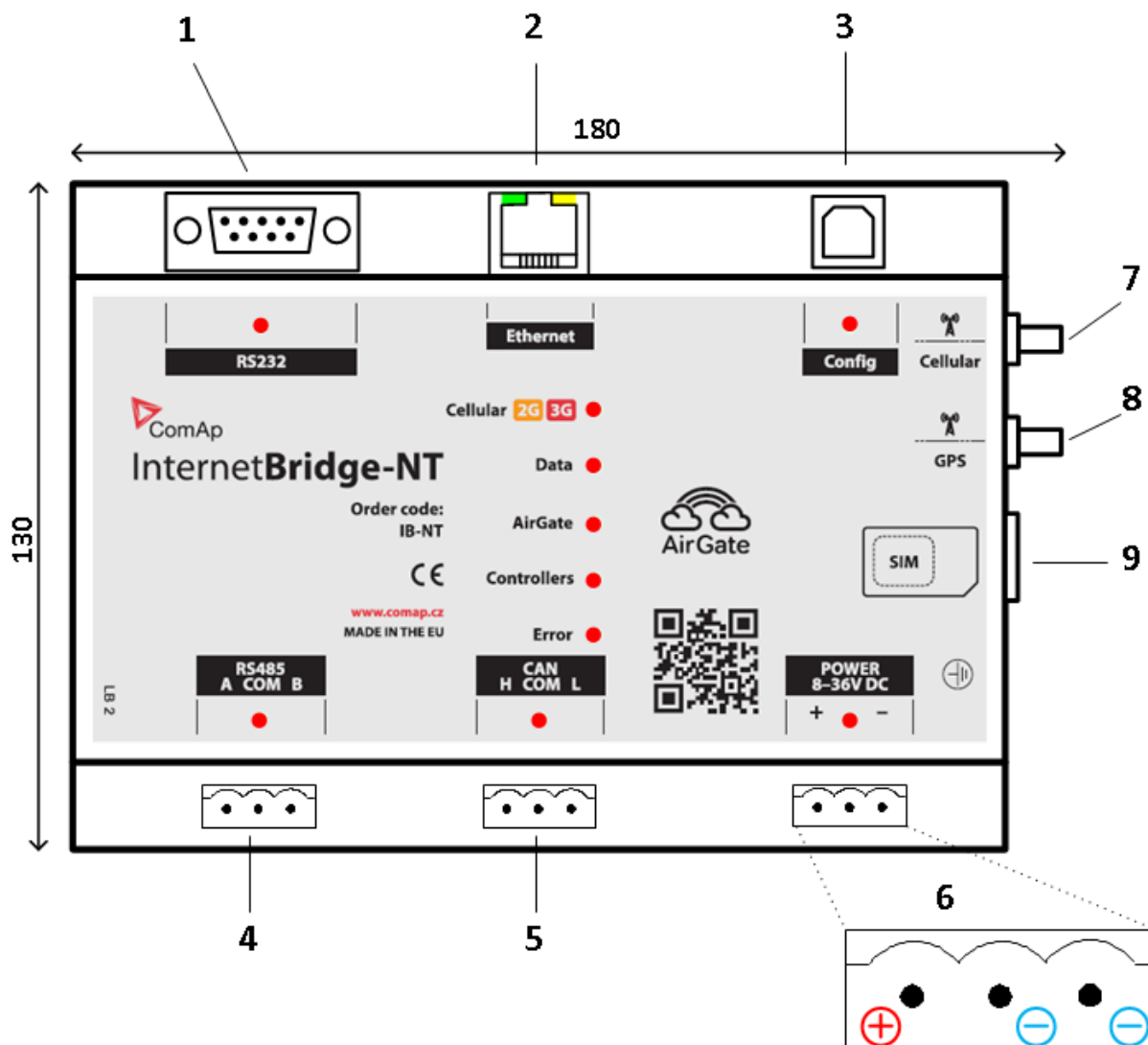
The package contains:

- IB-NT module
- Cellular antenna with magnetic holder
- Terminal blocks

The package **does not contain**:

- Ethernet UTP cable
- USB cable
- SIM card
- GPS antenna

## 3.2 Dimensions and terminals



FRONT VIEW OF THE MODULE

ITEM #	DESCRIPTION
1	RS232 port for connection of a single controller. See details in the chapter <a href="#">Controller connection - RS232</a> .
2	Ethernet port for LAN/WAN connection. See details in the chapter <a href="#">WAN connection - Ethernet</a> .
3	USB port for <a href="#">configuration</a> of the InternetBridge module. <b>CAUTION!</b> This port <b>does not support</b> local monitoring of the controllers.
4	RS485 port for connection of multiple controllers. See details in the chapter <a href="#">Controller connection - RS485</a> .
5	CAN bus port for connection of multiple controllers. See details in the chapter <a href="#">Controller connection - CAN</a>

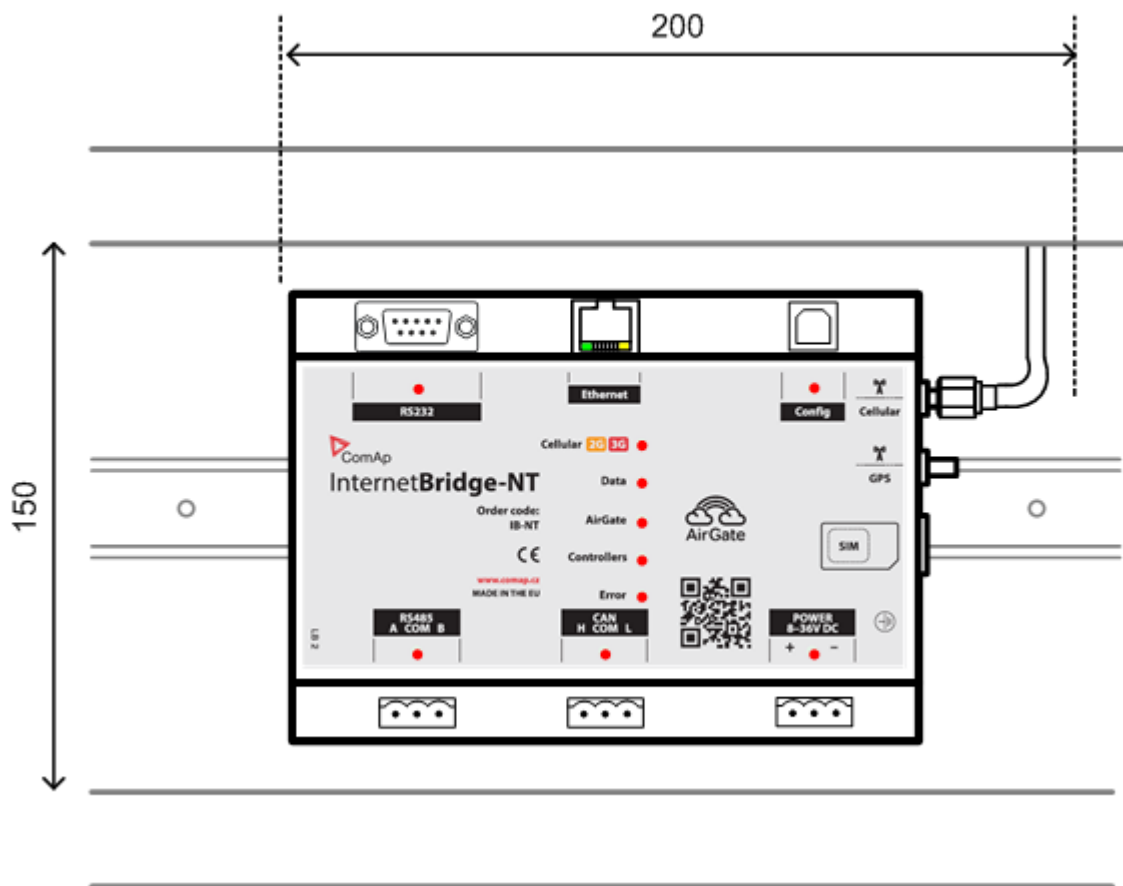
6	<a href="#">Power supply</a>
7	<a href="#">Cellular antenna</a>
8	<a href="#">GPS antenna</a>
9	SIM card holder. See more information in the chapter <a href="#">WAN connection - SIM installation.</a>

### 3.3 Mounting

The device is designed to be mounted into a switchboard on a DIN rail. **The required space is 150x200mm as there are antenna connectors from the right side**

**CAUTION!**

The device body is internally connected to the negative pole of the power supply. Please refer to the chapter [Power supply](#) for proper connection of the power supply and ground.



MOUNTING



### 3.4 Led indicators

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The LED indicators are located on the front panel. Led diodes that are located at the communication ports indicate communication activity at the respective port.

<b>CELLULAR</b>	Yellow: the module is attached into 2G network (GPRS/EDGE)
	Red: the module is attached to 3G network (UMTS)
	Blinking 50/50: the module registered cellular network but not attached to the APN (WAN connection = Cellular).
	Blinking 10/90: the module registered cellular network (WAN connection = Ethernet).
<b>DATA</b>	Blinks once when a data packet is sent to the WAN interface.
<b>AIRGATE</b>	The module is connected to the AirGate®.
<b>CONTROLLERS</b>	At least one controller is connected to the module via configured interface.
<b>ERROR</b>	There is a problem that causes the module is not working properly.
<b>RJ45 GREEN</b>	Led is on if the Ethernet interface is in 100Mbit mode and is off in 10Mbit mode.
<b>RJ45 ORANGE</b>	Blinks when any data are sent or received at the Ethernet port.

### 3.5 GPS Antenna

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Connect an **active** GPS antenna to the SMA female connector labeled "GPS" to enable reception of the signal from GPS satellites. The antenna must be placed to have clear view to the sky.

**NOTE:**

It may take several minutes till the module gets a valid GPS position fix after it was switched on, especially if the position changed significantly while the module was off.

**NOTE:**

The GPS system does not work indoors.

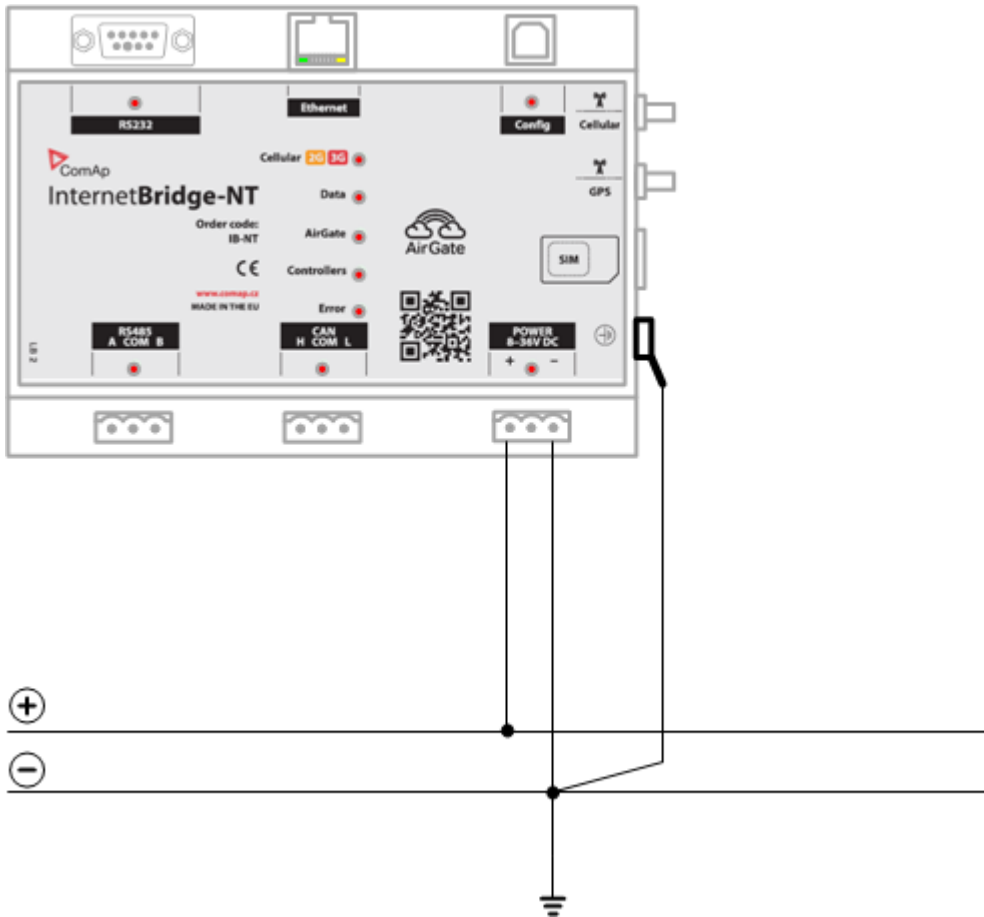
### 3.6 Power supply

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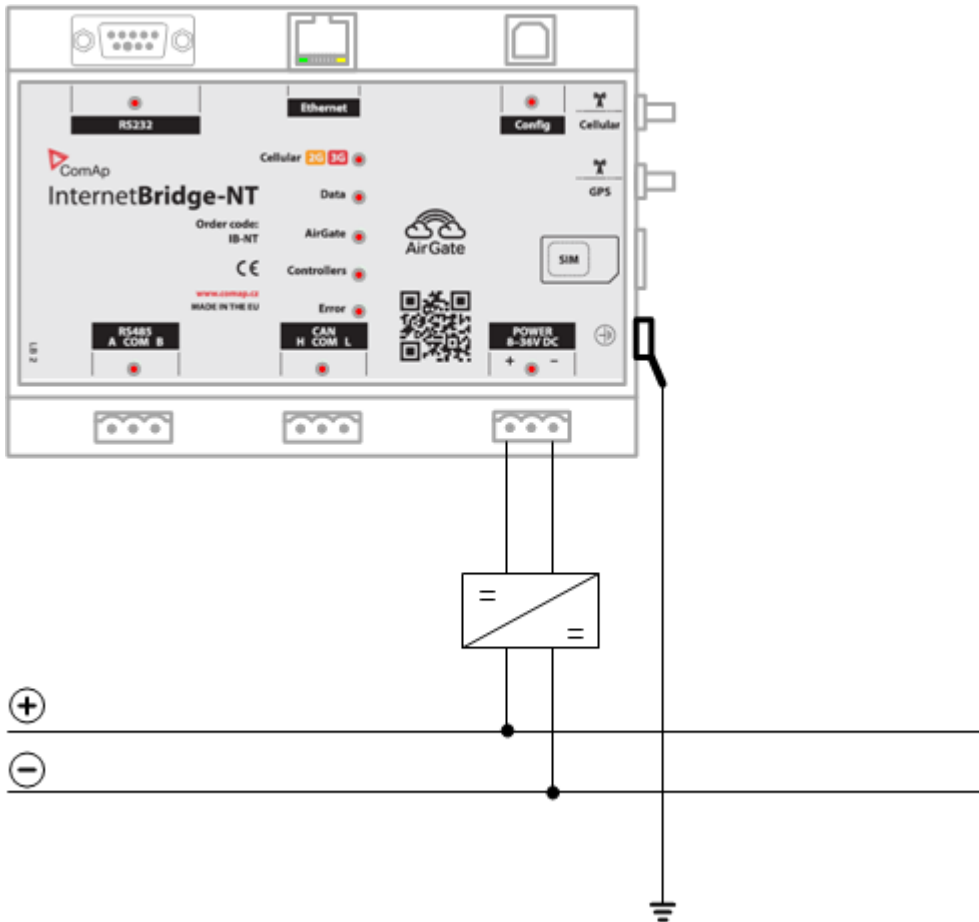
As the device body is internally connected to the negative pole of the power supply following rules should be kept:

- The negative pole of the power supply is connected to the switchboard body.
- The negative terminal of the InternetBridge-NT is connected directly to the same point as the connection above.
- The grounding terminal of the InternetBridge-NT is connected directly to the same point as the connection above.

If this kind of wirig is not possible for any reason a galvanically separated DC/DC convertor must be used in the InternetBridge power supply path.



WIRING OF POWER SUPPLY AND GROUND



WIRING OF POWER SUPPLY WITH DC/DC CONVERTER

## 3.7 WAN connection

The WAN connection provides connection between the InternetBridge-NT and the user terminal (i.e. IntelliMonitor, Web browser etc.). There are two modes of the WAN connection: cellular and Ethernet. WAN connection type is to be adjusted via IB-NT Config in the **SETTINGS->GENERAL** menu.

### **NOTE:**

Both connection modes are not available at the same time.

### **NOTE:**

[SMS sending function](#) is available even if WAN connection is via Ethernet.

### 3.7.1 Cellular mode

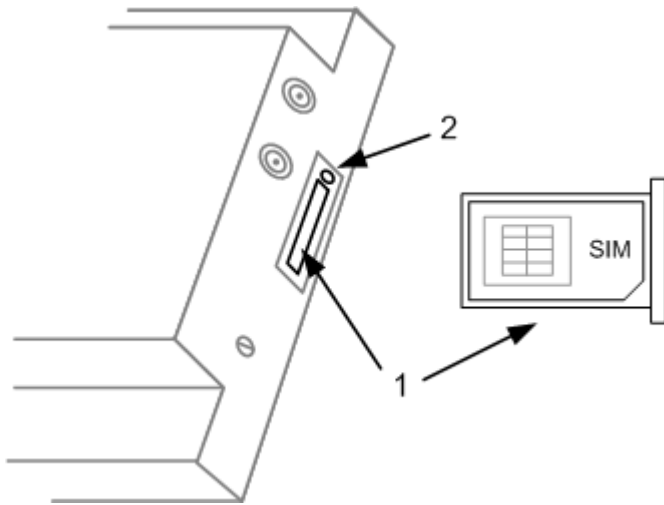
In cellular mode the built-in cellular modem is used to connect the module to the Internet via the cellular network. Data-enabled SIM card must be installed in the module. See the chapter [Cellular connection](#) setup for details about settings related to the cellular mode.

#### 3.7.1.1 SIM installation

Install the SIM card into the holder (1). Push the button (2) with a blunt tool to release the holder, eject the holder by fingers from the holder housing, place the SIM card into the holder as described on the sticker (metal plates upwards) and insert the holder with the SIM card carefully back into the housing.

### **NOTE:**

The SIM card must be unlocked (PIN request after power-up must be disabled). See the chapter [Cellular connection setup](#) for details.



### 3.7.1.2 Antenna

Insert the antenna SMA male connector firmly into the connector labelled "Cellular" and screw the nut by hand to fix the connector parts together. Slightly tighten the nut using a flat wrench if necessary.

**NOTE:**

The antenna cable must not be interrupted by any terminals. If the cable from the supplied antenna is too short buy an antenna with longer cable instead of prolonging it. Prolonged antenna cables may result in problems with signal strength or losing the signal at all.

### 3.7.2 Ethernet mode

In ethernet mode the 10/100M ethernet interface is used to connect the module to a local network and Internet. Built-in cellular modem is not used. See the chapter [Ethernet connection](#) setup for details about settings related to the Ethernet connection mode.

## 3.8 Controller connection

Controller connection type is to be adjusted via IB-NT Config in the [SETTINGS->GENERAL](#) menu.

**NOTE:**

If multiple controllers are connected to the IB-NT each controller must have **different controller address**.

### 3.8.1 RS485

Connect RS485 interface all controllers together by a twisted pair cable as indicated at the picture below. Use straight linear wiring, do not create any nodes. Apply terminating resistors at both ends of the RS485 cable. The InternetBridge-NT module contains integrated terminating resistor as well as balancing resistors, which are activated by jumpers.

**NOTE:**

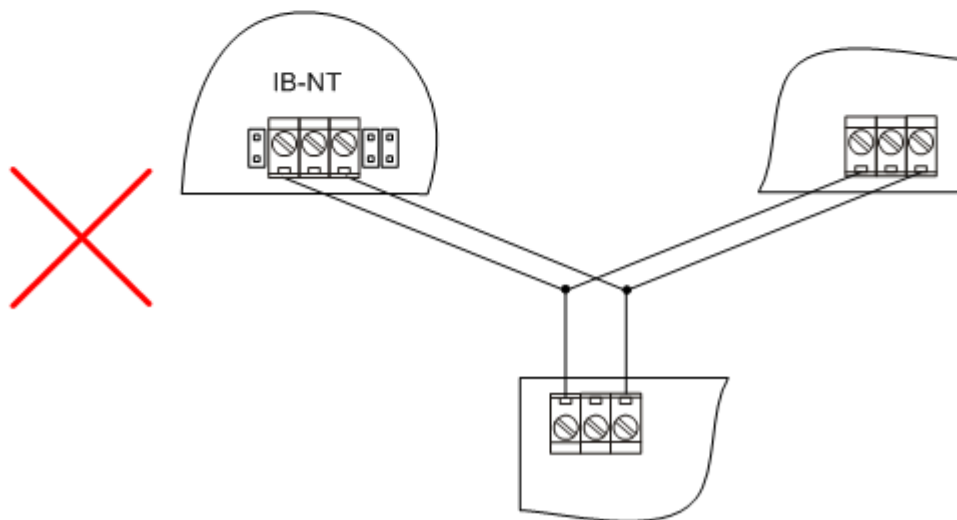
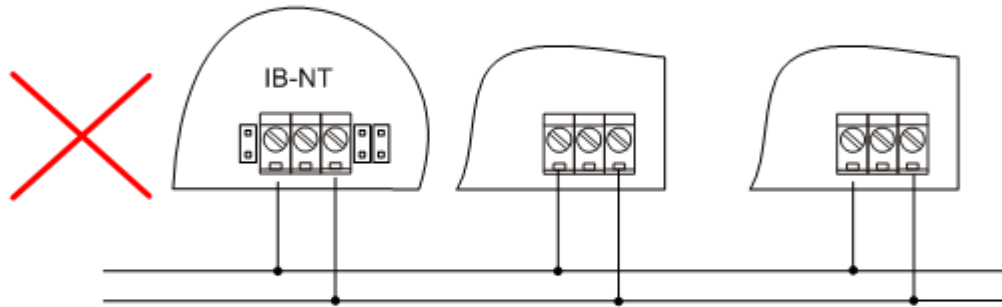
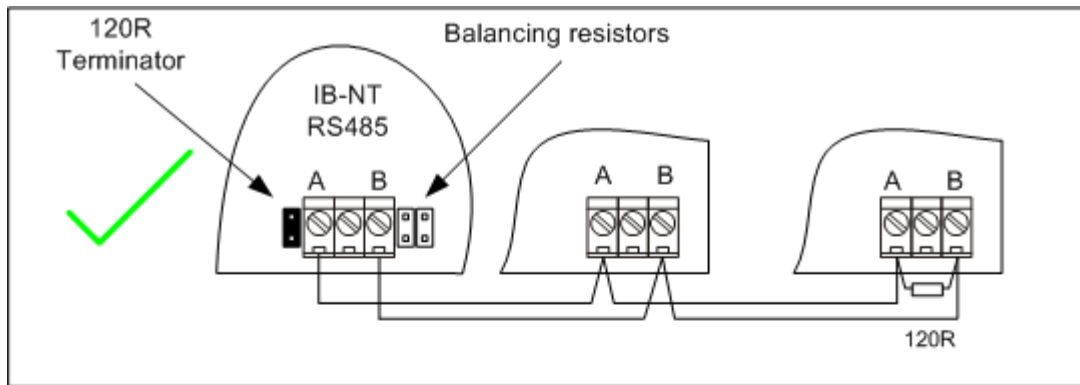
The mode of the respective controller serial port must be switched to DIRECT mode (Comms settings -> RS232(1) mode = DIRECT) and must be redirected to RS485 terminals (Comms settings -> RS485(1) conv. = ENABLED).

**CAUTION!**

The RS485(2) port at IG-NTC and IS-NT-BB is not compatible with InternetBridge-NT. Please use CAN connection instead.

**CAUTION!**

The RS485(2) port at IG-NTC-BB and IS-NTC-BB is compatible with InternetBridge-NT, however the IB-COM module in the controller must be firmware version 1.1 and above. Please refer to the ComAp web site for more information about IB-COM firmware update.



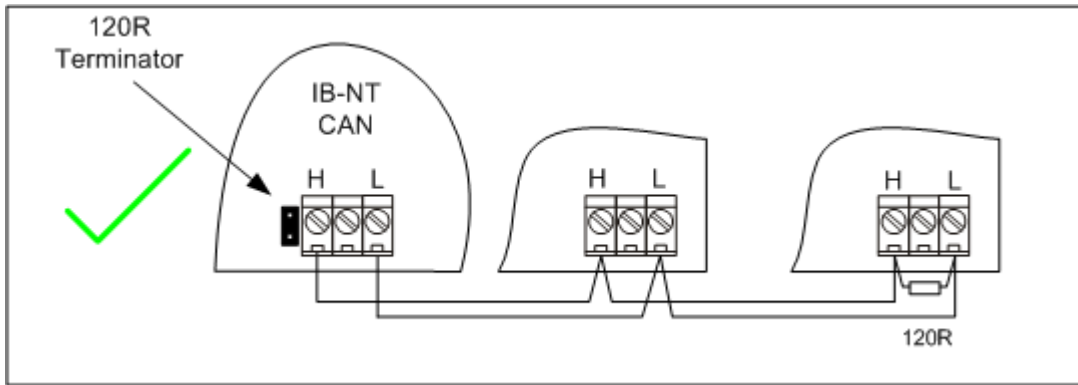
WIRING OF RS485

### 3.8.2 CAN

Connect CAN2 interface of all controllers and InternetBridge-NT by a twisted pair cable as indicated at the picture below. Use straight linear wiring, do not create any nodes. Apply terminating resistors at both ends of the CAN bus. The InternetBridge-NT module contains integrated terminating resistor, which can be activated by jumper.

**NOTE:**

All controllers must be adjusted to the same CAN bus mode, i.e. either 8C or 32C (Comms settings -> CAN bus mode). Use 8C only if the bus length is longer than cca 200m.



WIRING OF CAN

It is possible to connect up to 4 InternetBridge-NT modules onto the CAN bus. Each module must be configured to different address. See details in the chapter [Module setup](#).

### 3.8.3 RS232

One single controller can be connected to the InternetBridge-NT module via RS232 interface. Use 3-wire cross-wired serial cable for this purpose. The respective controller port must be switched to DIRECT mode (Comms settings -> RS232(n) mode = DIRECT).

## 4 Module setup

For setup of the InternetBridge-NT module the PC program **IB-NT Config** is used. The program is installed by the ComAp PC Suite installation package and is located in the program group "ComAp PC Suite", submenu "Tools". Please refer to the ComAp web pages to get the latest version of the package. The file [Installation packages content map](#) will help you find the proper package.

**NOTE:**

IB-NT Config **requires Microsoft .NET 3.5 SP1 framework**. If you do not have already installed the framework in your computer the installer will automatically launch installation from the Microsoft web pages. **Broadband internet connection is recommended** for the installation. The framework and its' service pack can be also installed anytime manually from the Microsoft web.

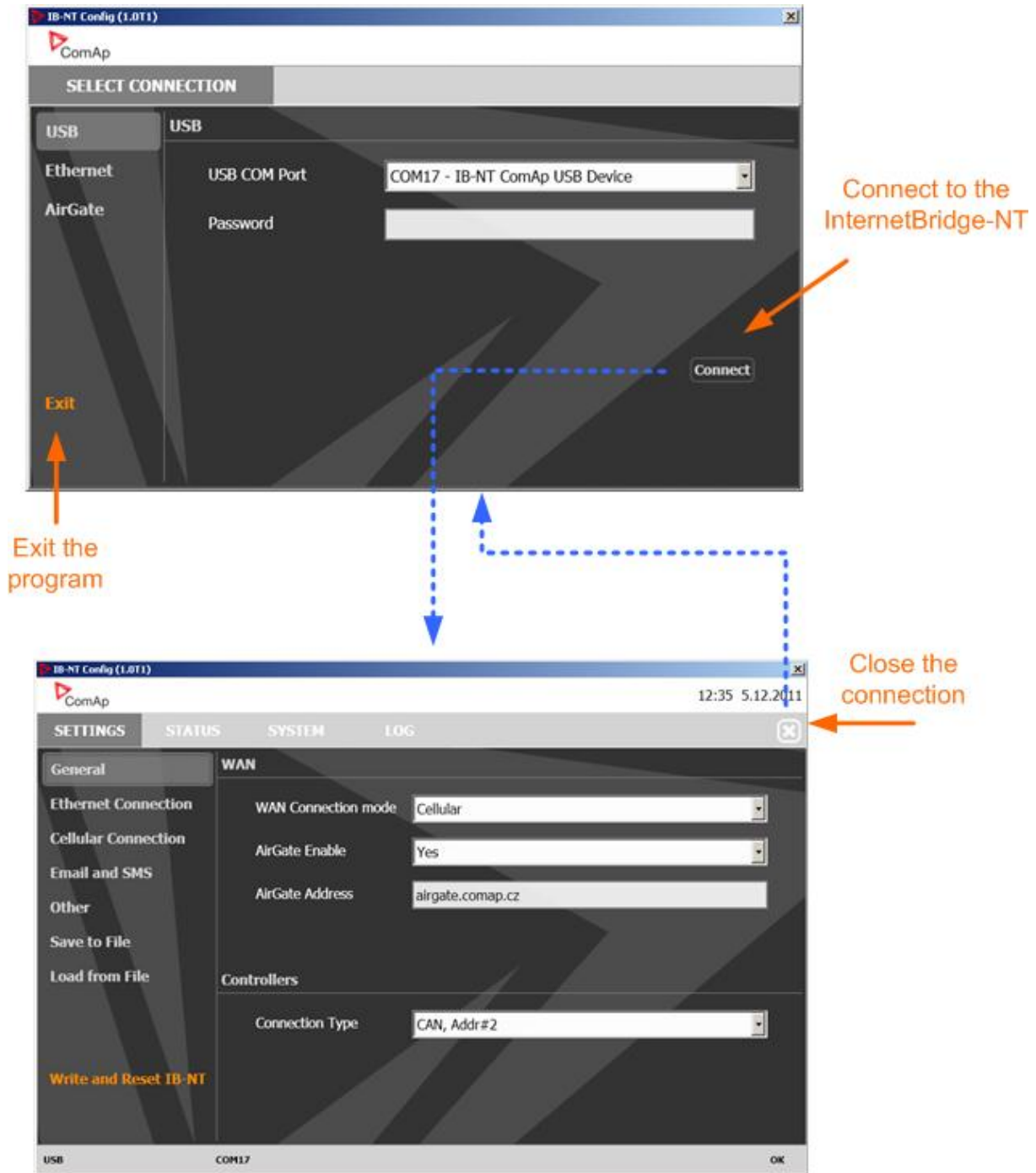
**NOTE:**

IB-NT Config requires **one of following operating systems**: Windows XP SP3, Windows Vista or Windows 7. Windows 8 is not supported at the moment (unless .NET 3.5 is installed manually into Windows 8 system).

The IB-NT Config can be connected using following connection methods:

- **USB** - used for initial setting. The connection uses virtual COM port, so the device must be connected first to your computer and then the virtual COM port is created. After that you can start the IB-NT Config and select the proper COM port. The virtual COM port driver is installed together with the IB-NT Config.
- **Ethernet** - can be used for later changes of the settings remotely by connecting to the static IP address of the module.
- **AirGate** - can be used for later changes of the settings remotely using AirGate connection.





IB-NT CONFIG

**Factory default password** is "0". It is highly recommended to change the password. Go to menu **SYSTEM** -> **PASSWORD** to change the password. Lost password? Write down the module serial number and password decode number that are displayed in the warning message and contact your distributor.

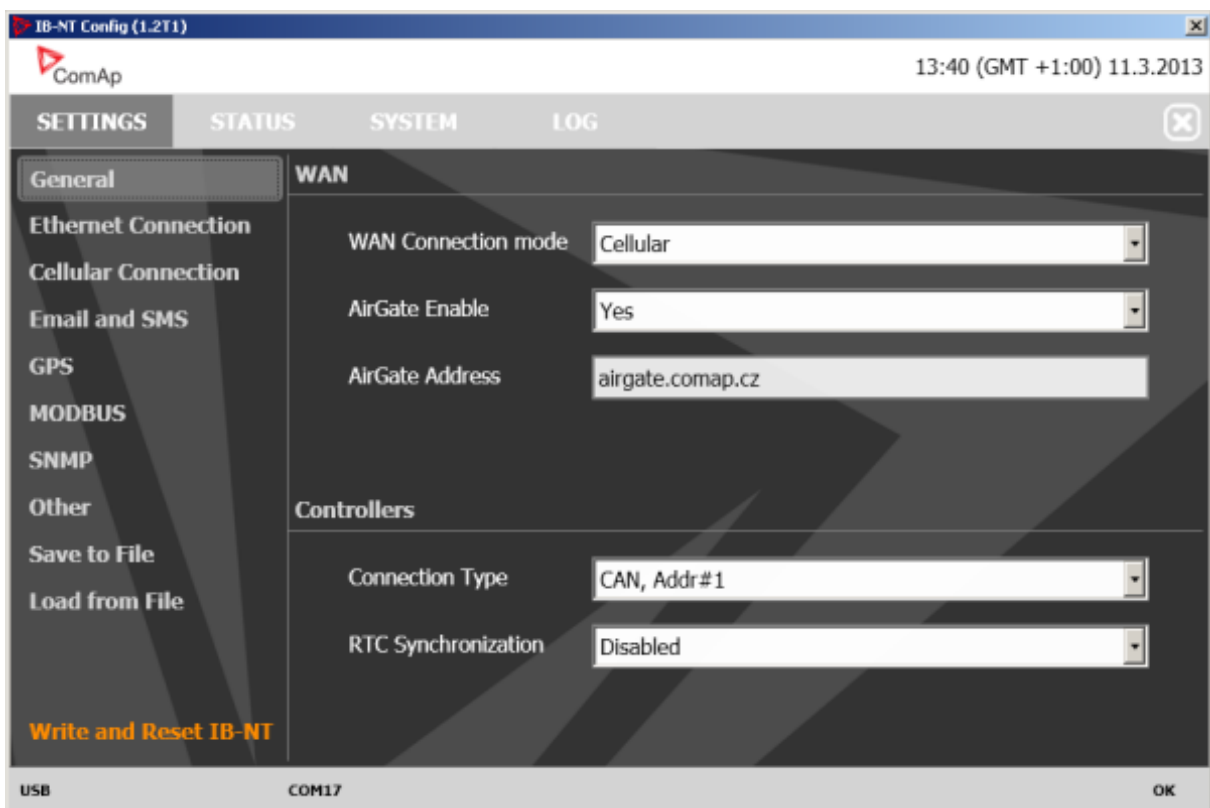


After you made changes in settings of the module the changes **must be confirmed** and the module must be restarted. Use the menu **SETTINGS->WRITE AND RESET**.

## 4.1 Save and load the settings

Using the menu **SETTINGS->SAVE TO FILE** the current settings can be saved into a XML file. This file can be later used to restore settings e.g. after the module is replaced (menu **SETTINGS->LOAD FROM FILE**).

## 4.2 General settings



GENERAL SETTINGS

The menu **SETTINGS -> GENERAL** contains essential settings of the module.

1. **WAN CONNECTON MODE** selects the communication interface which the module uses for accessing the external network (Internet). Select **CELLULAR** if you want to use the built-in cellular modem or select **ETHERNET** if you want to use the ethernet socket.
2. **AIRGATE ENABLE** switches AirGate protocol extension on and off. If AirGate is on then you can use "AirGate" connection type in ComAp PC tools.

**NOTE:**

In firmware versions below 1.2 if AirGate is switched on the direct connection mode can not be used. In 1.2 and above the [direct IP connection](#) mode can be used all the time, even if AirGate is switched on.

3. AIRGATE ADDRESS specifies the AirGate address. Use "airgate.comap.cz".
4. CONTROLLERS CONNECTION TYPE selects the communication interface which is used for connection of the controllers.

**NOTE:**

If CAN bus is used and there are other communication devices/bridges such as other IB-NT, I-LB, IG-IB or InteliVision-8(CAN) the CAN address collision must be avoided, e.g. each device must use different CAN address.

**EXAMPLE:**

If you want to use two IB-NT with SIM card from two different operators at one site and connect them via CAN bus then configure one IB-NT to CAN, ADDR#1 and the other to CAN, ADDR#2.

ASSIGNMENT OF PHYSICAL CAN ADDRESSES

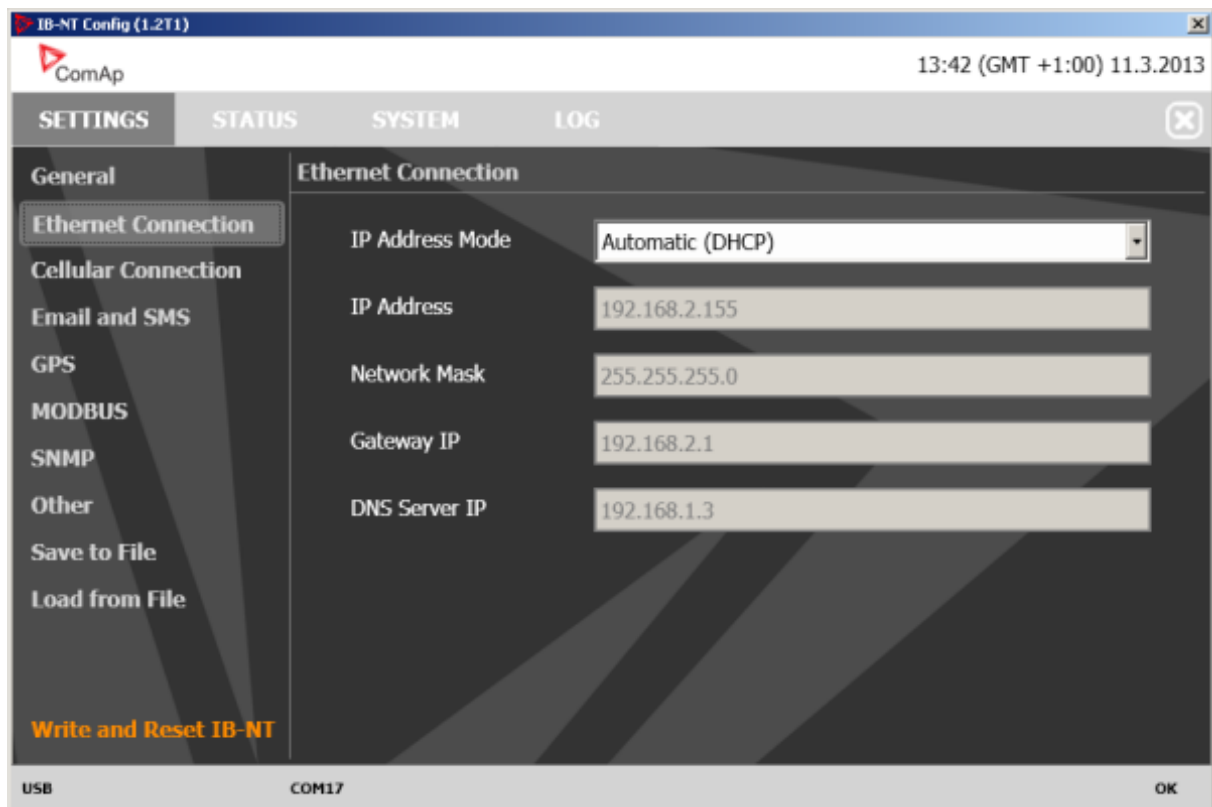
OPTION	PHYSICAL CAN ADDRESS
CAN, Addr#1	124
CAN, Addr#2	123
CAN, Addr#3	125
CAN, Addr#4	122

**NOTE:**

For using address 3 and 4 the setpoints [CANAddrSwitch1](#) resp. [CANAddrSwitch2](#) must be switched to OTHER in all connected controllers.

5. If RTC SYNCHRONIZATION is enabled the IB-NT module will synchronize the RTC clock of the connected controllers with accurate time obtained from either GPS or Internet (NTP servers)

## 4.3 Ethernet connection settings

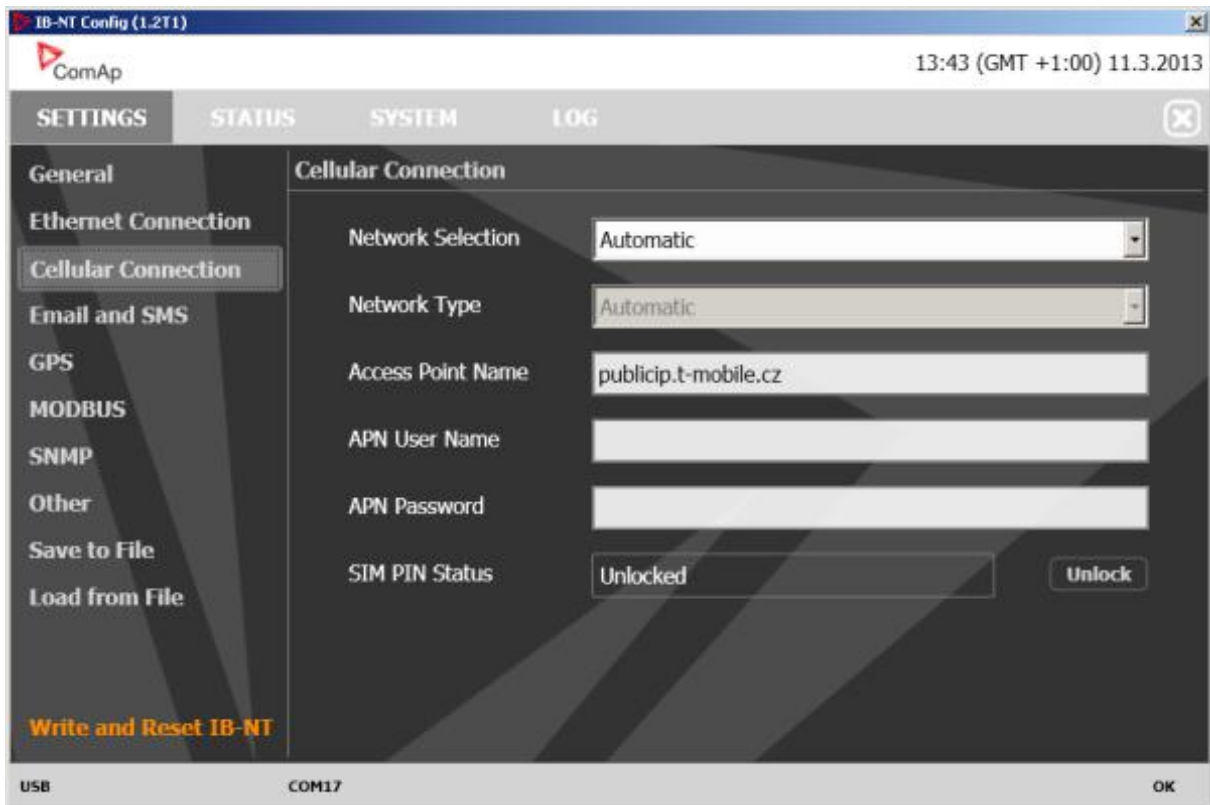


INTERNET PROTOCOL SETTINGS

The menu **SETTINGS** -> **ETHERNET CONNECTION** contains settings related to the **ethernet WAN interface**. Settings in this menu do not take place if the WAN interface is switched to **cellular modem**. For currently used IP address and other IP related settings (independently on type of the WAN interface type) go to the menu **STATUS**.

1. **IP ADDRESS MODE** selects whether you want the module to work with manually adjusted static IP address and other IP-related settings or you want the module to get all settings automatically from a DHCP server. See details about static IP address in the chapter [Setting-up static IP address](#).
2. **IP ADDRESS** adjusts the static IP address of the module in manual mode or displays the IP address assigned by DHCP server in automatic mode.
3. **NETWORK MASK** adjusts the network mask in manual mode or displays the network mask obtained from DHCP server in automatic mode.
4. **GATEWAY IP** adjusts the gateway address in manual mode or displays the gateway address assigned by DHCP server in automatic mode.
5. **DNS SERVER IP** adjusts the DNS server address in manual mode or displays the DNS server address assigned by DHCP server in automatic mode.

## 4.4 Cellular connection settings



CELLULAR SETTINGS

The menu **SETTINGS**->**CELLULAR CONNECTION** contains settings related to the built-in cellular modem.

1. **NETWORK SELECTION** is used to select manually the cellular operator or switch the modem to automatic selection. It is recommended to use automatic mode except e.g. if you want to avoid roaming or if you want to select manually the network type (see setpoint below).
2. **NETWORK TYPE** is used to select manually the network type (2G or 3G) or leave the selection to be done automatically by the module according to signal strength. The 3G network is preferred in automatic mode. If the network type is adjusted manually then also the network itself must be selected manually (setpoint above).

### **CAUTION!**

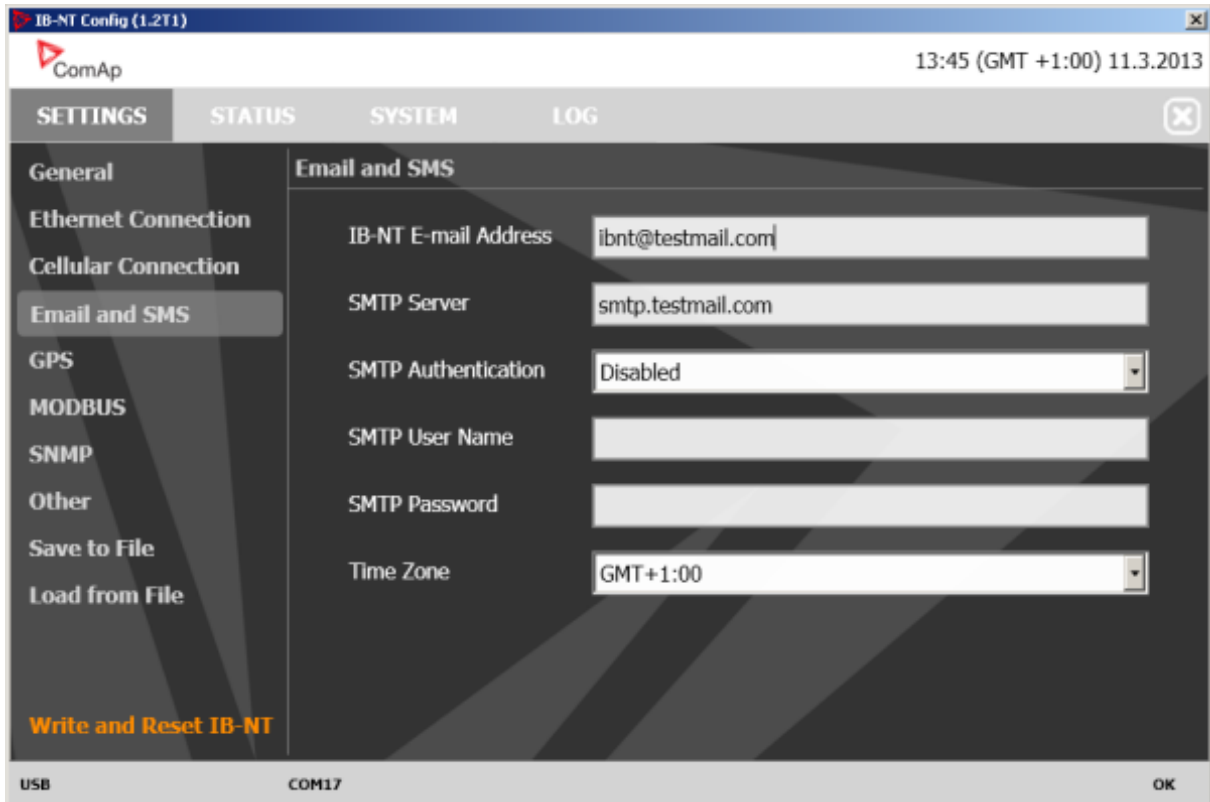
If manual network selection is used it might happen that the InternetBridge-NT will lose the internet connection as a result of change of the coverage of the particular network type (2G or 3G). This might be caused by reconfiguration of the network, network maintenance etc.

3. **ACCESS POINT NAME** is used to enter name of the internet access point. The proper name should be provided by the SIM card operator, however, the name "Internet" works in most cases.
4. In rare cases the cellular provider might require also using **APN USER NAME** and **APN PASSWORD** for the particular APN.
5. **SIM PIN STATUS** shows the current status of the SIM PIN lock. The SIM card must be unlocked (i.e. must not require PIN after switching on) to work properly in IB-NT. If the SIM is locked, press the button **UNLOCK** and enter correct PIN code. This will unlock the card and disable PIN lock for the future.

**NOTE:**

It may take couple of minutes after powering the module up till IB-NT Config shows the current SIM status. Then it may take couple of minutes again after entering correct PIN till the SIM is unlocked.

## 4.5 E-mail and SMS settings



E-MAIL SETTINGS

The menu **SETTINGS**->**E-MAIL AND SMS** contains settings related to sending active e-mails and SMS.

1. **IB-NT E-MAIL ADDRESS** specifies the address which will appear as **sender's** address in active e-mails. This address must be valid, i.e. the domain name must exist and the SMTP server must be able to convert it to IP address. Otherwise most of SMTP servers will refuse sending such e-mail.
2. **SMTP SERVER** specifies the IP address or domain name of the SMTP server, which is used for sending e-mails. TCP port number used for SMTP communication can be specified by adding colon and port number at the end of the SMTP server name or IP address. If the port number is not specified the default number 25 is used.

**EXAMPLE:**

smtp.mydomain.com:9925

**NOTE:**

In most cases Internet providers have their own SMTP servers, that are available for free for their customers and are accessible only if the e-mailing device is connected to the Internet via the respective provider.

3. **SMTP AUTHENTICATION** selects whether the SMTP server requires login or not. If yes the two setpoints below are used to enter username and password.
4. **SMTP USER NAME** for STMP servers which require authentication (e.g. public paid servers).
5. **SMTP PASSWORD** for STMP servers which require authentication (e.g. public paid servers).

**NOTE:**

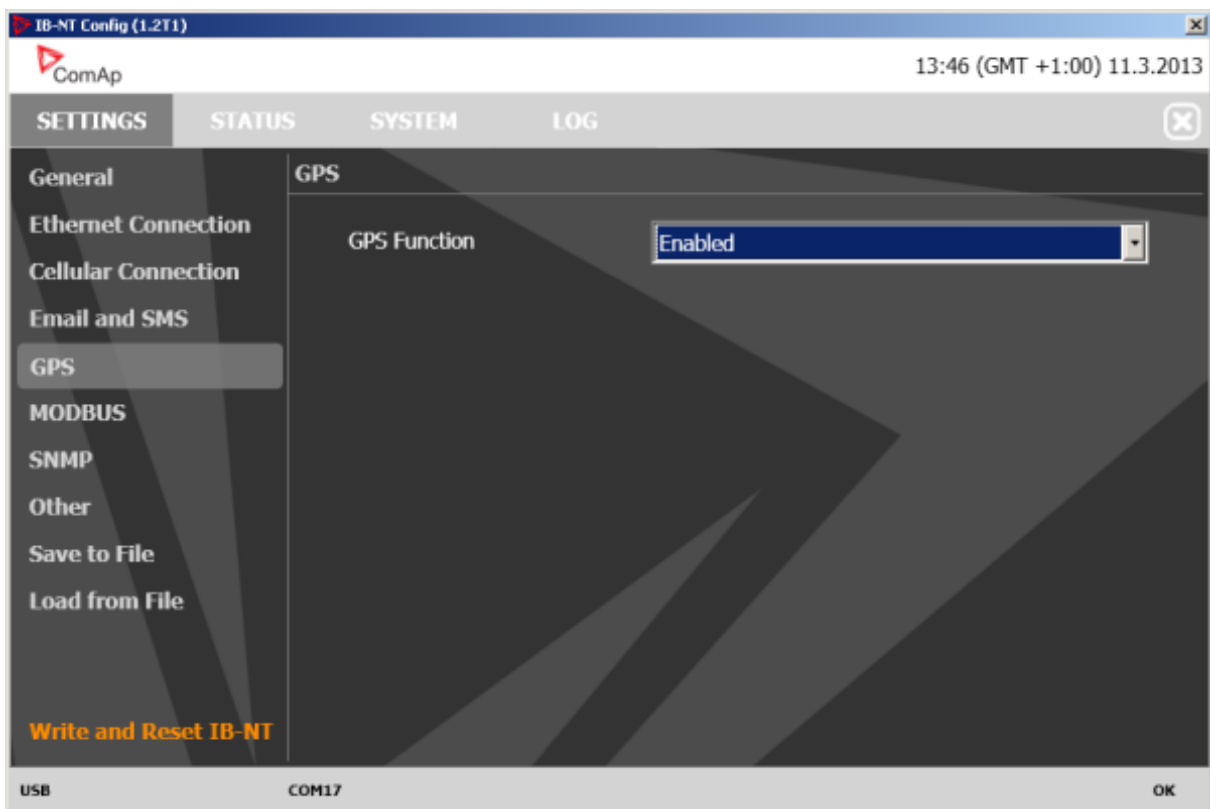
Authentication types PLAIN, CRAM-MD5 are supported. Encrypted connection is not supported.

6. **TIME\_ZONE** is used to adjust time zone where the site (bridge) is located. This is necessary for the recipient's e-mail client to recalculate time and date of sending to the local time of the recipient.

**NOTE:**

The adjusted time zone is be used for conversion of the GMT time obtained from GPS or NTP into local time before the time is [synchronized into the controllers](#).

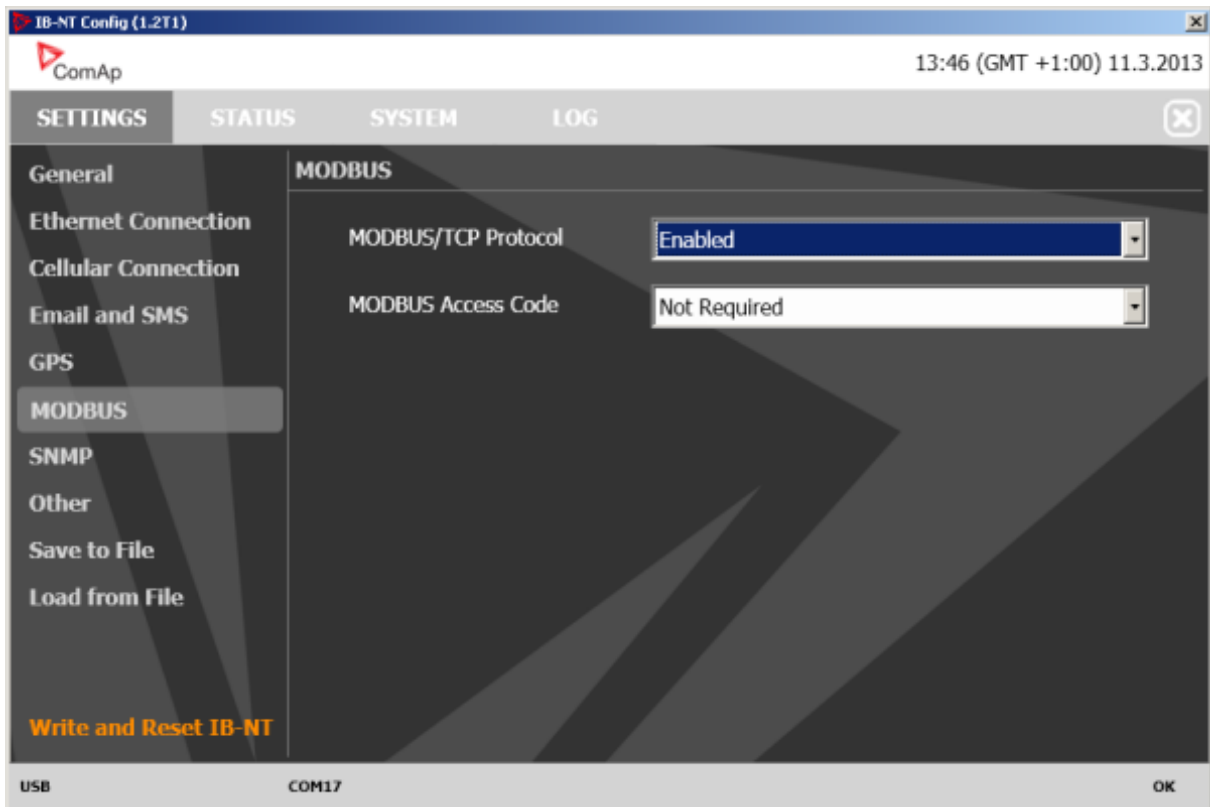
## 4.6 GPS setting



GPS SETTINGS

1. **GPS FUNCTION** item is used to switch on/off the [GPS function](#).

## 4.7 MODBUS settings



### MODBUS SETTINGS

1. **MODBUS/TCP PROTOCOL** enables/disables the [MODBUS/TCP server](#) function.
2. **MODBUS ACCESS CODE** selects if access code is required to initiate the MODBUS/TCP session or not.



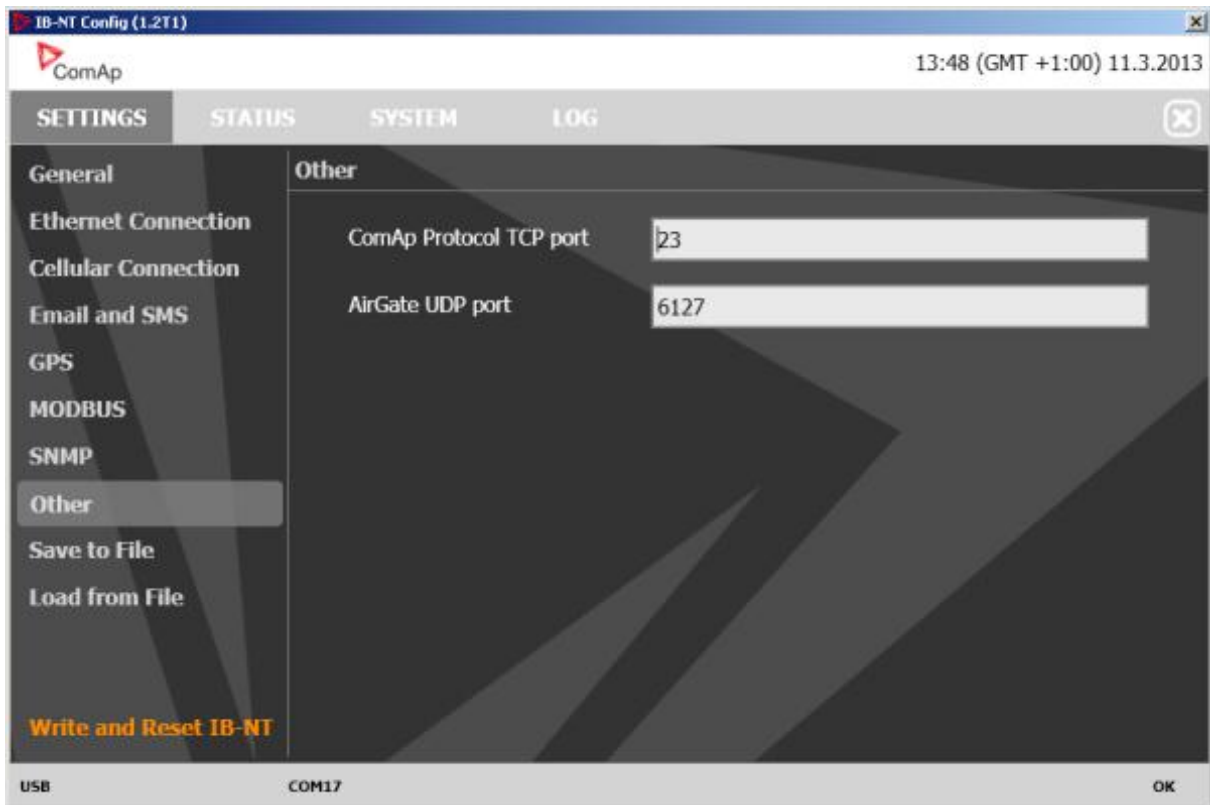
## 4.8 SNMP settings



SNMP SETTINGS

1. **SNMP PROTOCOL** enables/disables the [SNMP Agent](#) function.
2. **SNMP TRAP DEST. ADDRESS** adjusts the IP address to which the module sends SNMP trap if there is a new item in AlarmList in any of attached controllers.
3. **SNMP READ COMMUNITY** adjusts the community string for reading data. The connected SNMP manager must use the same string when it attempts to read any data from the agent.
4. **SNMP WRITE COMMUNITY** adjusts the community string for writing data. The connected SNMP manager must use the same string when it attempts to write any data into the agent.

## 4.9 Other settings



### OTHER SETTINGS

1. **COMAP PROTOCOL TCP PORT** adjusts the port number used for Direct IP or AirGate connection. The default port is 23 and should not be changed unless there is a clear reason for the change. A typical reason might be a need to share of one static public IP address among multiple devices behind a router which performs NAT.

**NOTE:**

This setting applies for both AirGate and direct connection modes.

**NOTE:**

If AirGate is used this setpoint must be adjusted to port 23 or alternative port 21. Any other value will cause the communication will not work.

2. **AIRGATE UDP PORT** adjusts the port number used for registration into AirGate. The default port is 6127 and must not be changed unless you are using a private AirGate which is configured to a different UDP port.

# 5 Functions

## 5.1 Direct IP connection

Direct IP connection is intended to be used if the IB-NT module is **reachable from the client computer by specifying the IP address** at which the module can be contacted.

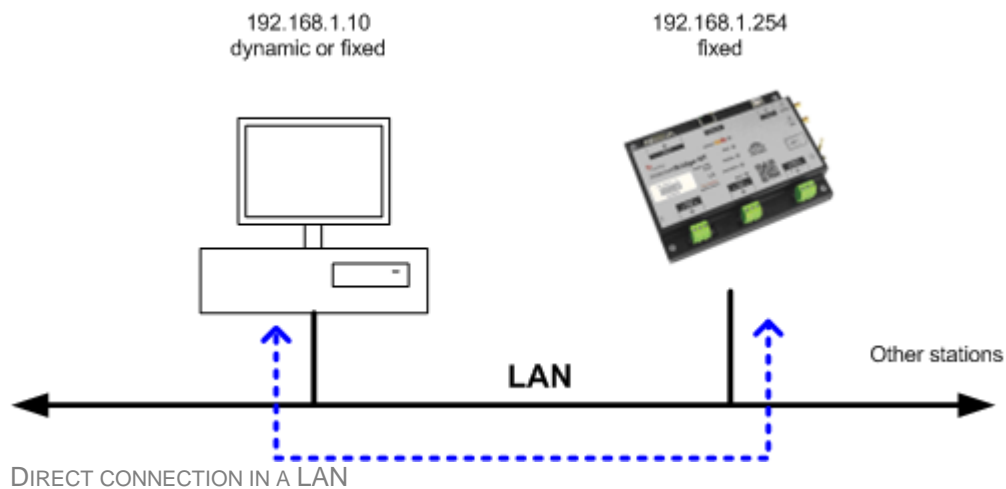
- If direct connection is to be used within a local network the IB-NT must have static IP address in the respective local network.
- If direct connection is to be used from the Internet, the IP address, which is entered into the client computer, must be static and public in scope of the Internet.
  - If IB-NT is connected to Internet via a local ethernet network then in most cases port forwarding must be created from the public IP address of the network gateway to the local IP address of IB-NT at the port specified for ComAp protocol. Different port numbers can be used to create multiple port forwarding rules in the same local network.
  - If IB-NT is connected via cellular network the SIM card with static and public IP address must be purchased.

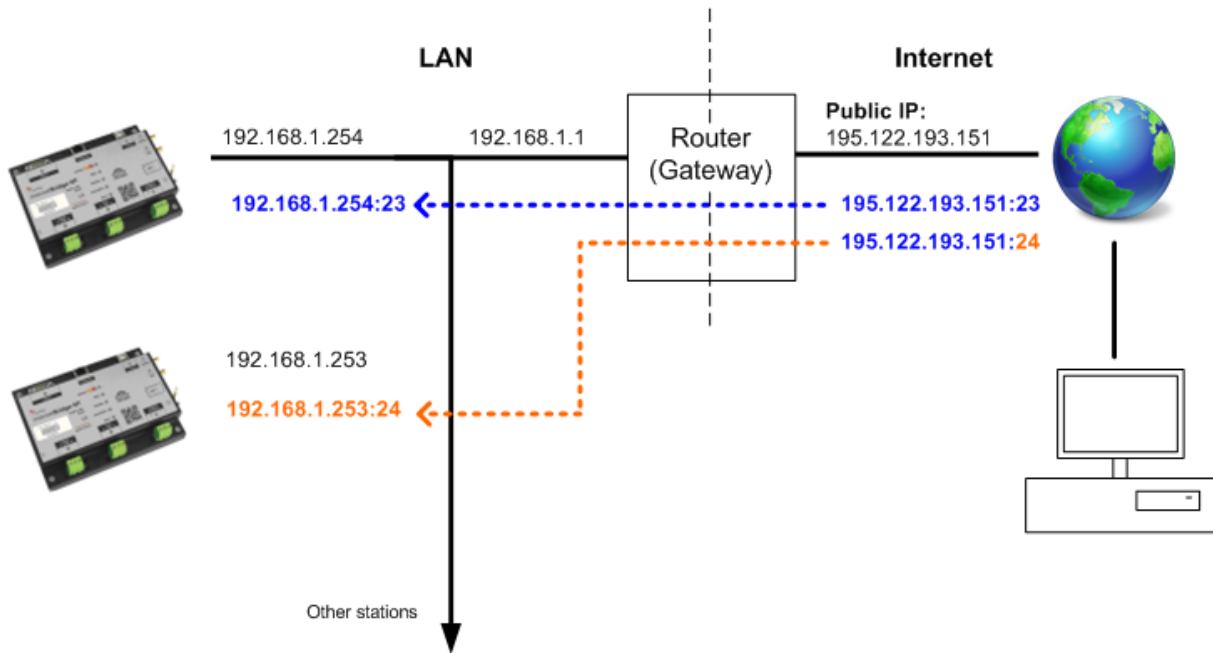
**NOTE:**

If you have **troubles with setting up static and public IP address** for direct connection from Internet use [AirGate connection](#) instead.

**NOTE:**

Max. 3 clients of ComAp type (InteliDDE server, WinScope, WebSupervisor) can be connected simultaneously.





PORT FORWARDING EXAMPLE

## 5.1.1 Setting-up static IP address

This chapter describes how to setup the IB-NT module to a static IP address. Static IP address is required if following functions (connection types) are to be used:

- Web interface
- Direct IP connection
- MODBUS/TCP

There are **two basic ways** to get the static IP address:

First way is to **switch the IB-NT to manual IP address mode** and adjust all [IP settings](#) (IP address, network mask, gateway IP address and DNS server IP address) manually using IB-NT Config. If this method is used several basic rules should be kept to avoid conflicts with the remaining network infrastructure:

- The static IP used in the controller must be selected in accordance with the local network in which IB-NT is connected.
- The static IP used in the controller must be excluded from the pool of addresses which is assigned by DHCP server, which is in charge of the respective local network.
- The local infrastructure must generally allow using devices with manually assigned IP addresses.
- There must not be any other device using the same static IP address. This can be tested from a computer connected to the same network using `ping <required_ip_address>` command issued from the command line. The IP address is not occupied if there is not any response to the ping command.

### **NOTE:**

The list above contains only basic rules. Other specific restrictions/rules may take place depending on the local network security policy, technology used, topology etc.

Next way is to switch the IB-NT to automatic IP address mode and let IB-NT to get IP settings from the DHCP server. Then **configure the DHCP server to assign always the same IP address** (i.e. static IP address) to the particular IB-NT according to it's MAC address. IB-NT MAC address is displayed in IB-NT Config, menu **SYSTEM->DEVICE INFO->ETHERNET MAC ADDRESS**, as well as printed on the ethernet socket.

**CAUTION!**

It is strongly recommended to consult using static IP address with the local network administrator.

## 5.2 AirGate connection

---

AirGate connection is recommended if you want to access the bridge using ComAp protocol (i.e. ComAp tools like IntelliMonitor, GenConfig or WebSupervisor) and the bridge does not have fixed IP address and/or there is no route from the client computer to the bridge.

AirGate is to be activated in the [General Settings](#) menu. When the IB-NT connects to the AirGate first time it is registered into the AirGate database and gets AirGate ID, which remains then the same even if the module is switched off and on again. This **AirGate ID is used for all controllers** connected to the IB-NT, the controllers are distinguished from each other by their controller address.

AirGate ID is displayed in IB-NT Config (**STATUS->WAN CONNECTION->AIRGATE ID**).

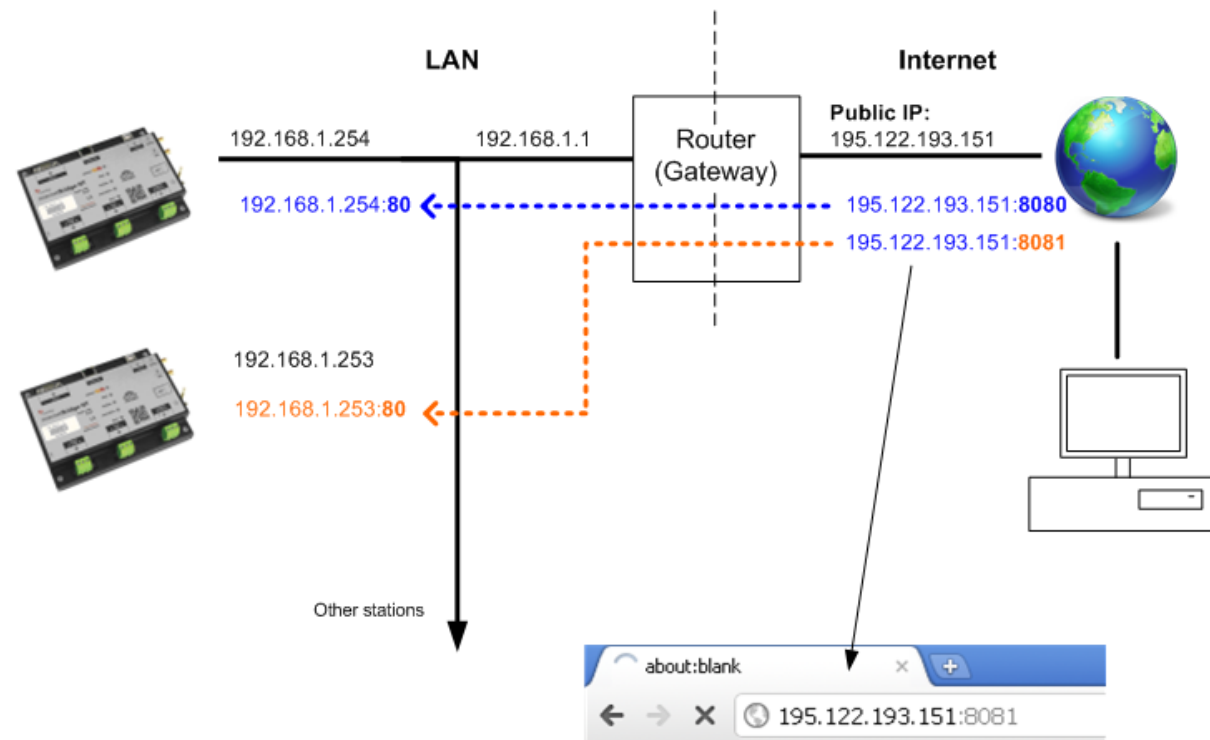
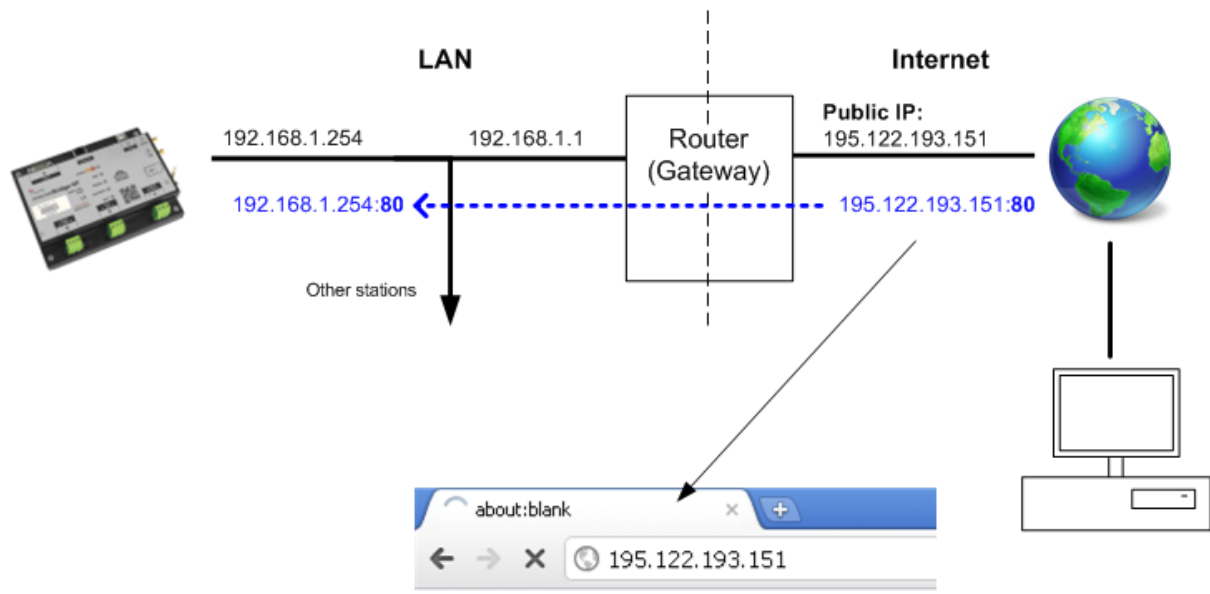
**NOTE:**

Max. 2 clients of ComAp type (IntelliDDE server, WebSupervisor) can be connected simultaneously.

### 5.3 Web interface

The web interface is intended to monitor the site from a web browser. Static IP address is required for this function as you must know the IP address to put it into the browser. Public IP address or port forwarding is required if you want to see the web pages from the Internet.

**NOTE:**  
Max. 2 web clients can be connected simultaneously.

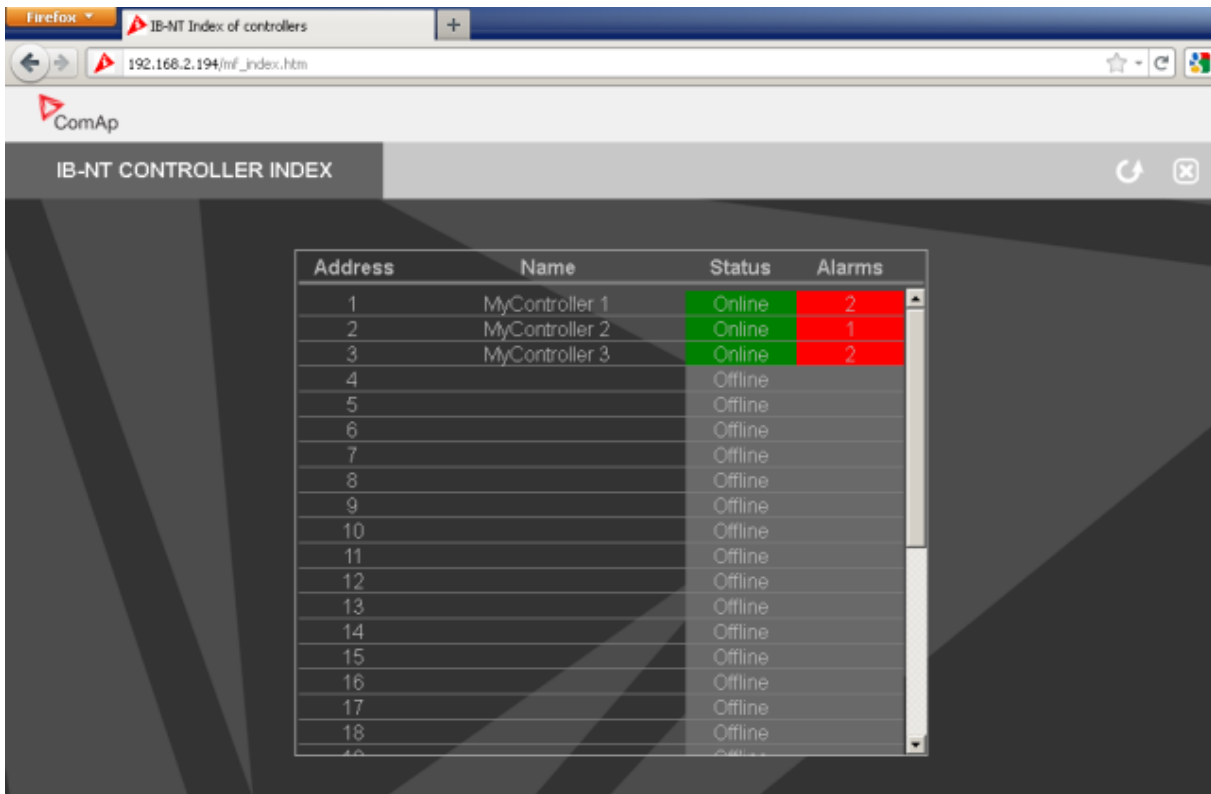


PORT FORWARDING EXAMPLE FOR WEB CONNECTION

The web server is designed for basic monitoring and adjustment of the controller using a web browser. Just put the IB-NT IP address into the browser to display the overview page with the list of connected controllers. Then click to a controller to see its web pages. You will be asked for the **controller access code** prior to entering the controller web.

**NOTE:**

Do not open multiple web connections to the same IB-NT from the same browser window using browser tabs. This may cause that the data in the tabs will be mixed-up.



IB-NT OVERVIEW WEB PAGE

**NOTE:**

The web server is optimized for IE6 or higher and screen resolution 1024x768 pixels.

**NOTE:**

The logo displayed on the top of the web page is customizable. See the chapter [Customizing the logo](#).

**CAUTION!**

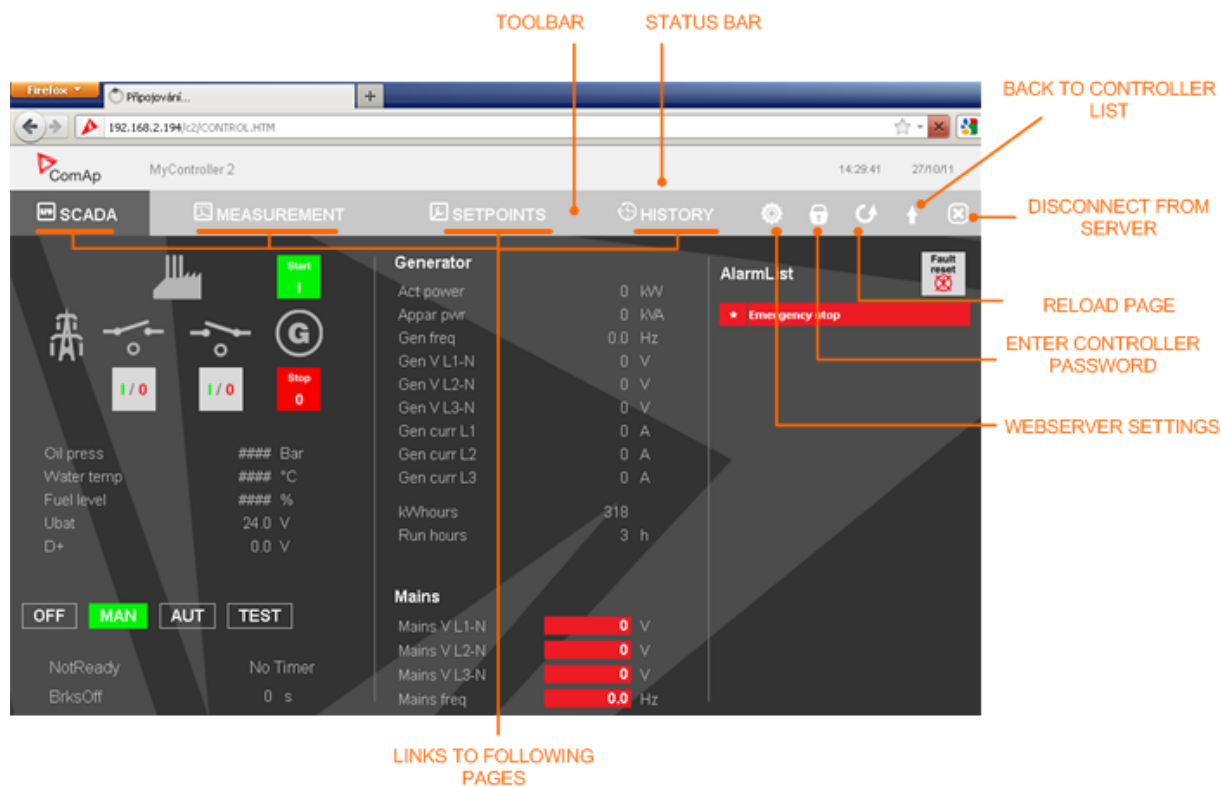
Do not use the browser navigation buttons as "Back", "Forward" or "Reload". Use the links and the reload button located in the toolbar instead.

### 5.3.1.1 Scada

Click to the **SCADA** link in the toolbar to display the scada page. The scada page is also the main page which is displayed by default if you just put the IB-Lite address into the browser.

**NOTE:**

The scada page layout may differ according to the firmware branch, version and application. Certain old firmware versions does not support web access at all.



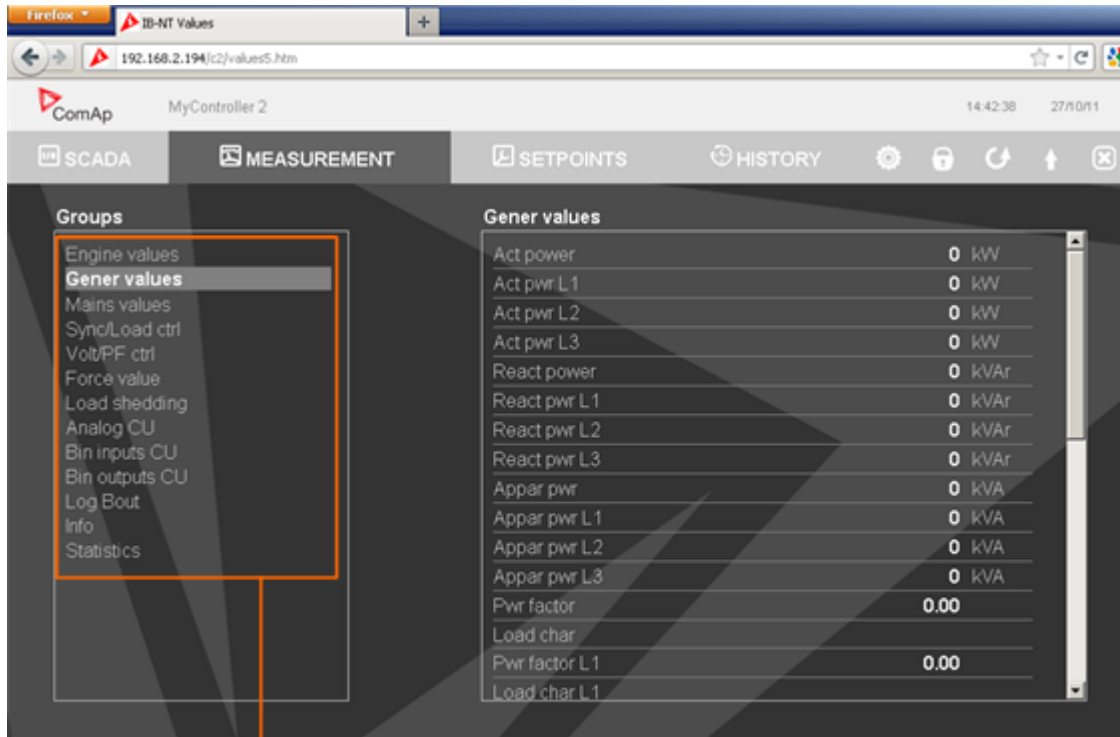


### 5.3.1.2 Measurement

Click to the **MEASUREMENT** link in the toolbar to display the measurement page. Then click to the required group name in the left box to display values of the group in the right box.

**NOTE:**

The measurement page is automatically refreshed every 60 seconds.



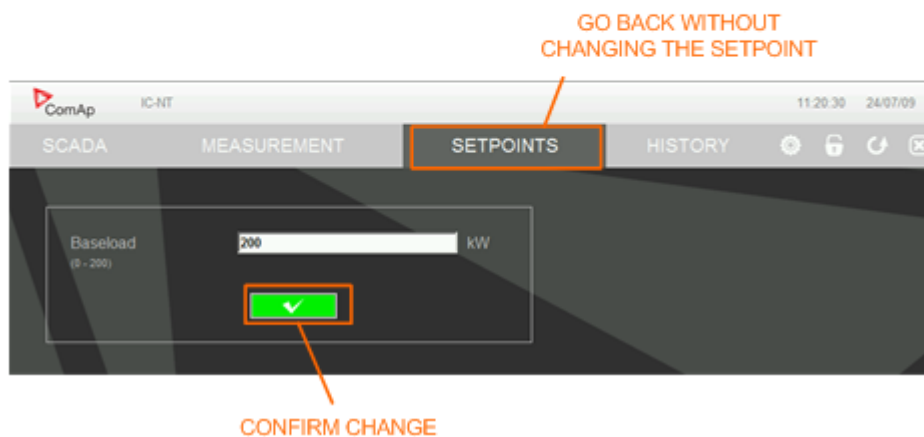
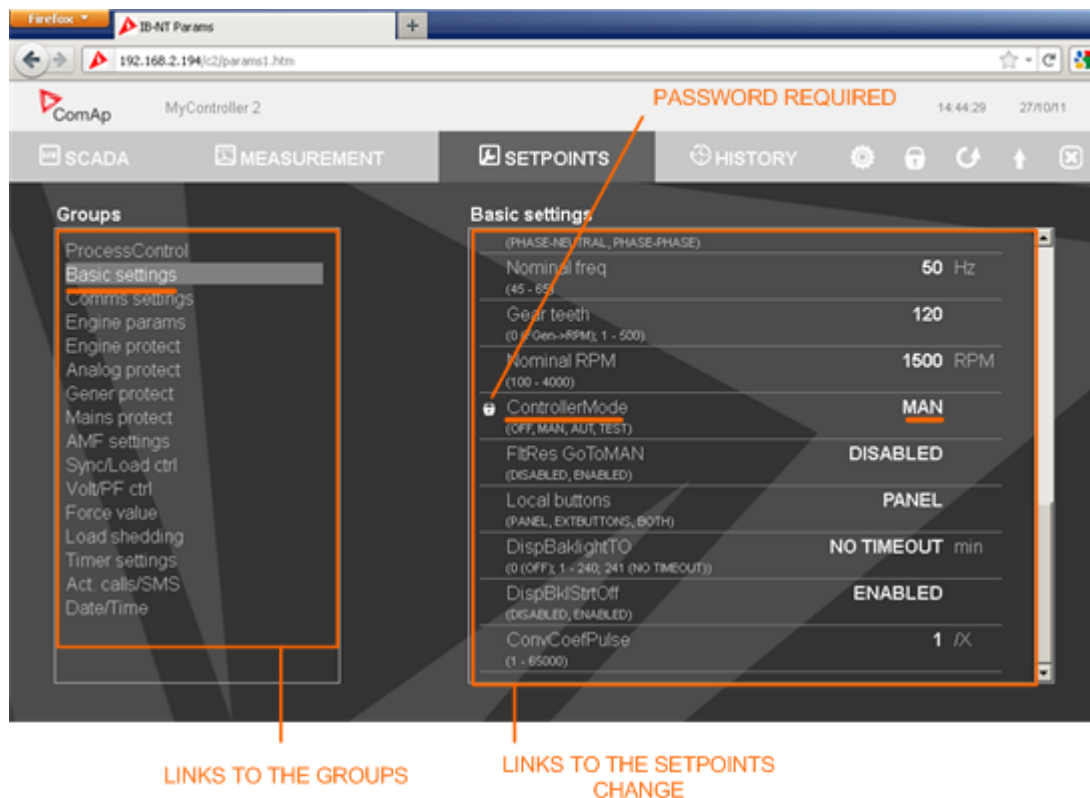
LINKS TO THE GROUPS

### 5.3.1.3 Setpoints

- Click to the **SETPOINTS** link in the toolbar to display the setpoints page.
- Click to the required group name in the left box to display setpoints of the group in the right box.
- Click to the required setpoint name or value to change the value. If the respective setpoint is protected by password, which is indicated by a lock icon by the setpoint name, you have to click on the "Controller password" icon located in the toolbar and then enter valid password.

**NOTE:**

The setpoint page is automatically refreshed every 60 seconds. If an another user changes a setpoint from other terminal, the web page will not show this change immediately as e.g. IntelliMonitor.

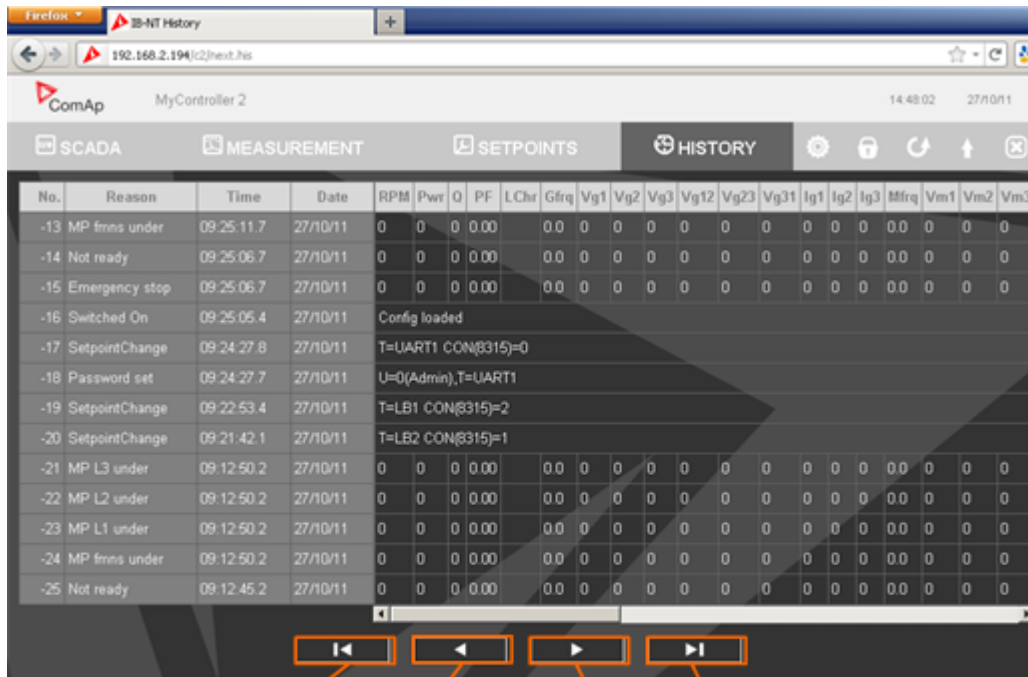


### 5.3.1.4 History

- Click to the **HISTORY** link in the toolbar to display the history page.
- Use the control buttons to move within the history file.

**NOTE:**

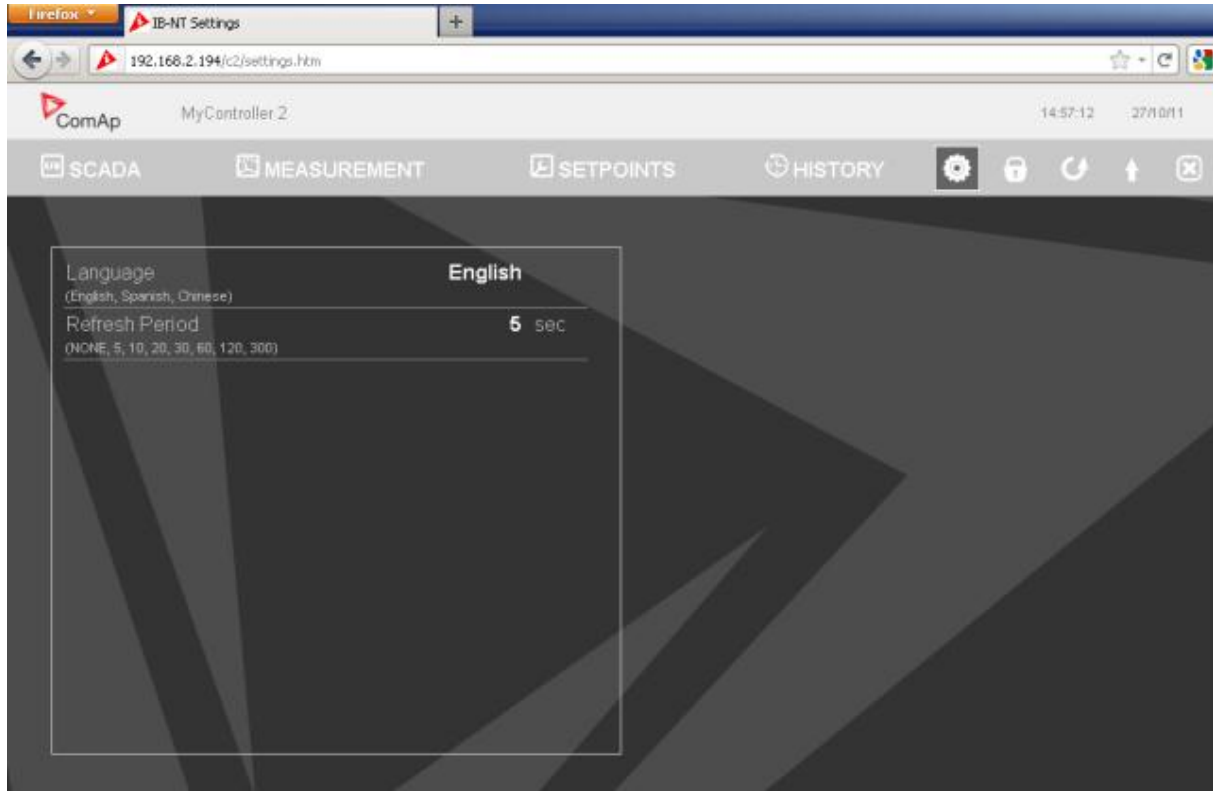
The history page is automatically refreshed every 5 minutes. If a new record appears in the controller, the web page will not show it immediately as e.g. IntelliMonitor.



FIRST PAGE (most recent)    
 PREVIOUS PAGE (more recent)    
 NEXT PAGE (older)    
 LAST PAGE (most old)

### 5.3.1.5 Web server adjustment

- Click to the "Webserver settings" icon in the toolbar to display the settings page.
- Select the controller language the web pages will appear in.
- Select the rate of automatic refresh of the scada page.



These settings will be also applied for the web pages of the other controllers connected to the IB-NT.

## 5.4 Active e-mails and SMS

The module can send active e-mails and sms from the connected controllers if the controller is adjusted to send it. The **controller setpoint group** `ACT.CALLS/SMS` contains all settings related to this function:

1. Selection of events (alarm types) that will issue active e-mail or sms.
2. Selection of message type (e.g. e-mail or sms) for each channel.
3. Entering the destination address (e.g. e-mail address or phone number) for each channel.

There are several settings in the IB-NT itself that are required for proper sending of e-mails. It is, above all, SMTP server address and IB-NT mailbox (sender's e-mail). See the chapter [e-mail and sms](#).

**NOTE:**

For sending e-mails the protocol SMTP/ESMTP is used. TCP port is fixedly set to 25.

**NOTE:**

The function of sending active sms is available regardless of WAN connection type. IT requires only a SIM card with properly adjusted SMS center to be inserted in the module.

### 5.4.1 Languages in SMS and e-mails

The required language, in which the active e-mail or SMS is to be sent, is adjusted in the controller via setpoint [Acall+SMS lang](#).

- Sms in languages with code page from the list below (except Latin 1) are converted to UCS-2 encoding and sent as "short" sms (70 characters).
- Sms in languages using Latin 1 are converted to 7-bit GSM encoding (accents are removed from the characters) and sent as "long" sms (160 characters).
- E-mails are sent in ASCII using "Base64" encoding. The e-mail header contains information about the used code page. "8BITMIME" is no more required.
- Standard SMTP protocol is used if no authentication is required by the mailserver.
- ESMTP protocol is used for servers requiring authentication. "LOGIN" authentication type is supported.
- If code page for the adjusted language is not in the list e-mails and sms are sent in english.

Supported code pages are:

CODE PAGE
Win1250 (LATIN 2)
Win1251 (CYRILLIC)
Win1252 (LATIN 1)
Win1253 (GREEK)
Win1254 (TURKISH)
Win1255 (HEBREW)
Win1256 (ARABIC)
Win1257 (BALTIC)
Win1258 (VIETNAMESE)
Win874 (THAI)

## 5.5 MODBUS/TCP

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MODBUS/TCP protocol is used for integration of the controllers into a building management system or for remote monitoring via 3rd party monitoring tools.

The MODBUS/TCP protocol is to be enabled/disabled in the setup page **OTHER SETTINGS**, setup item **MODBUS/TCP PROTOCOL**. The MODBUS protocol is enabled alternatively with the [SNMP protocol](#), so both protocols can not be active simultaneously.

**NOTE:**

Max. 1 MODBUS/TCP client can be connected.

- Functions 3,6,16 are supported.

**NOTE:**

If the InternetBridge-NT is connected to the controller(s) via RS485/RS232 the number of registers that are read in one query is limited to 62.

- Use the value of controller address setpoint as MODBUS "device address" to specify for which particular controller the MODBUS query is directed.
- The map of registers depends on controller firmware branch, version and configuration. It can be exported into a text file from the appropriate controller archive using GenConfig.
- Some registers have fixed meaning. These registers, as well as much other information regarding MODBUS including examples, are available in the [Communication guide](#) at the ComAp web site.

**NOTE:**

Controller access code may be required to start MODBUS/TCP session. Use function 16, register 46339 and number of registers 8. The access code is a null-terminated string of max. 15 characters. Send the 1st character in the LSB of the 1st register, 2nd character in the MSB of the 1st register, 3rd character in the LSB of the 2nd register etc. **It is possible to disable requiring the access code** using the setup item **MODBUS ACCESS CODE**.

## 5.6 SNMP

---

The controllers connected to the InternetBridge module can be contacted also via SNMP v.1 protocol. The bridge acts as a SNMP agent and provides controller data for the remote SNMP Manager as well as sends TRAPs always when a new alarm appears in the controller alarm list. The SNMP Agent function is to be enabled/disabled in the setup page **OTHER SETTINGS**, setup item **SNMP PROTOCOL**. The SNMP protocol is enabled alternatively with the [MODBUS protocol](#), so both protocols can not be active simultaneously.

- Each controller has it's own MIB table which is to be created from the controller configuration using GenConfig (menu **GENERATE CFG IMAGE** -> **GENERATE SNMP MIB TABLE**).

### **CAUTION!**

As the OID tree contains serial number of the controller it is absolutely necessary that the MIB table is created from the configuration downloaded from the respective controller. If the MIB is created from default archive or archive downloaded from other controller the SNMP agent will not report error.

- If there is a new alarm in any of connected controllers the bridge sends a TRAP to the predefined IP address (**OTHER SETTINGS** -> **SNMP TRAP. DEST. ADDRESS**). The trap has meaning "New alarm appeared" and as the bindings contain the alarmlist of the controller where the alarm appeared as well as the controller name and serial number.
- SNMP read/write community strings are set by default to "public"/"private" and can be changed in the setup page **OTHER SETTINGS**.
- The MIB table is fixed, can not be configured.

## 5.7 GPS

---

Internal GPS receiver can be used for location and tracking of the module.

- The GPS function is to be enabled/disabled in IB-NT-Config, menu **SETTINGS** -> **GPS**.
- The position data are available in IB-NT-Config, menu **STATUS** -> **GPS** as well as in the connected controllers.
- It is also possible to see the current position of the controller in WebSupervisor map view.

**NOTE:**

The controller firmware must support GPS location to see the position in it or in the Websupervisor. This support will be available from version 2.7 of IG-NT and IS-NT standard branch.

## 5.8 Time synchronization

---

Internal clock of the module is regularly synchronized with either GPS time or Internet time (from pool.ntp.gov). This synchronization provides accurate GMT time, which is used for timestamps in the operation log and after shifting according to the adjusted time zone (menu **SETTINGS** -> [E-mail and SMS](#)) also for e-mails to indicate at which time the e-mail was sent.

If synchronization of the controller RTC clock is enabled (menu **SETTINGS** -> **GENERAL** -> **CONTROLLERS**) the module will also readjust regularly the RTC clock of the connected controllers to the accurate time obtained from GPS or Internet and shifted according to the time zone and eventually shifted also to daylight saving time. The time zone is taken as above from the InternetBridge-NT settings, the daylight saving time shift is applied if it is currently active in the controller.

**NOTE:**

The controller firmware must support the RTC clock synchronization. This support will be available from version 2.7 of IG-NT and IS-NT standard branch.



## 6 Firmware update

### 6.1 InternetBridge-NT firmware update

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IB-NT Config is used to update the main firmware in the InternetBridge-NT module.

1. Download the latest InternetBridge-NT firmware file (InternetBridge-NT X.Y.zip) from the ComAp web pages <http://www.comap.cz/products/detail/InternetBridge-NT/downloads/#tabs>.
2. Connect IB-NT Config using any type of connection.
3. Go to menu **SYSTEM->FIRMWARE UPDATE->MAIN FIRMWARE->FIRMWARE**, press the **BROWSE** button and select the InternetBridge-NT firmware file (\*.bin).
4. Press the **UPLOAD** button to program the firmware into the InternetBridge-NT. When the programming is finished successfully InternetBridge-NT will reset and apply the new firmware.

**NOTE:**

If programming is interrupted the previous firmware will remain and it is possible to repeat programming again.

5. After programming is finished connect the IB-NT Config again and check the firmware version.

Current version of the firmware is displayed in the menu **SYSTEM->FIRMWARE INFO->MAIN FIRMWARE**.

#### 6.1.1 Customizing the logo

The company logo displayed at the controller web pages is customizable. The custom logo is to be uploaded from the menu **SYSTEM->FIRMWARE UPDATE->LOGO**. The name of the logo file must be "logo.gif" (i.e. must be in GIF format) and must not exceed size of 100x45 (WxH) pixels. After programming of the logo the module will reset automatically.

**NOTE:**

It might be necessary to reload the web page manually after changing the logo otherwise the browser might continue using previous logo from the browser's cache.

## 6.2 Integrated cellular modem firmware update

This chapter describes the procedure of updating the firmware in the **integrated cellular modem**, not the [main firmware of the InternetBridge-NT](#)

**NOTE:**

It is recommended to update the modem firmware to version 2.003 to increase overall stability and performance as well as to prevent from connectivity dropouts caused by bugs in the firmware 1.002.

**NOTE:**

Fallback to an older firmware version than the actual one is not allowed.

1. Download the latest modem firmware file (ph8\_revXXXXX\_arnXXXXXX.usf) from the ComAp web pages <http://www.comap.cz/products/detail/InternetBridge-NT/downloads/#tabs>.
2. Connect IB-NT Config via USB connection.

**CAUTION!**

Disconnect all cables from the InternetBridge-NT except power source and USB while the modem firmware is being updated!!!

**NOTE:**

Use IB-NT Config version 1.3 or newer.

3. Go to menu **SYSTEM->FIRMWARE UPDATE->CELLULAR MODULE->FIRMWARE**, press the **BROWSE** button and select the modem firmware file (\*.usw).
4. Press the **UPLOAD** to program the firmware into the integrated cellular modem.

**NOTE:**

It may take a couple of minutes until the programming phase begins. Also the programming phase itself takes several minutes.

**CAUTION!**

Avoid any interruption of the programming process. If the programming process is interrupted it can be repeated again, but the programming speed will be significantly lower.

5. After programming is finished wait ca. 2-3 minutes and then check the cellular module firmware version.

Current version of the firmware is displayed in the menu **SYSTEM->FIRMWARE INFO->CELLULAR MODULE**.

# 7 Troubleshooting

SYMPTOM	
<b>Where is the IB-NT Config software? How can I get it?</b>	
CAUSE	SOLUTION
The software is located in the program group "ComAp PC Suite", submenu "Tools". It is installed by the ComAp PC Suite installation package, please refer to the ComAp web pages to get the latest version of the package. The file <a href="#">Installation packages content map</a> will help you find the proper package which contains the latest IB-NT Config version.	Download the installation package and install the software.

SYMPTOM	
<b>I can not connect to the module from IB-NT Config.</b>	
CAUSE	SOLUTION
There is not any COM port labelled "IB-NT ComAp USB Device" in the list.	Switch on the module, connect the USB cable from the module to your computer and wait until the USB device manager installs the drivers. Then restart IB-NT Config.
The USB device manager reports a message that the connected device was not recognized and will not work properly when I connect IB-NT to my computer.	The device driver is missing or not installed properly. Please reinstall the IB-NT Config.
The IB-NT Config displays message "Open COM Error" when I am trying to connect to my IB-NT.	Check if there is not other IB-NT Config running in your computer, which is connected to the same COM port.
	Close the IB-NT Config, detach and attach the USB cable and try to connect again.

SYMPTOM	
<b>The LED "Controllers" does not come up within several seconds after switching the power on.</b>	
CAUSE	SOLUTION
The wiring is not correct or terminating resistors are not properly installed.	Check the wiring according to the chapter <a href="#">Controller connection</a> . Check if there are terminating resistors at both ends, but <b>not anywhere else</b> . Note, that most of ComAp products have internal terminating resistors that are to be activated by jumper. Check if there isn't the jumper accidentally set in some device connected in the middle of the bus.
Selected communication interface does not match the one which is really used.	Use IB-NT Config to check the port selected for controller connection. You will find it in the menu <b>SETTINGS-&gt;GENERAL</b> .

The CAN bus mode is not adjusted in all controllers to the same value.	Check in all controllers connected to the bridge if the setpoint "CAN bus mode" is adjusted in each controller to the same value.
There is a controller address collision.	Adjust the setpoint "Contr. address" in each controller to a different value.

SYMPTOM	
<b>The module is switched to cellular mode but the LED "Cellular" does not come up within couple of minutes after switching the power on.</b>	
CAUSE	SOLUTION
SIM card is not inserted properly.	Check if the SIM card is installed as described in the chapter <a href="#">SIM installation</a> .
SIM card is locked.	Use IB-NT Config to unlock the SIM card with the PIN code as described in the chapter <a href="#">Cellular network setup</a> .
SIM card does not support internet connection.	Ask your SIM card provider for help. If you are in doubts, you can try using the card in an other internet-enabled device such as a smartphone.
Incorrect access point name.	Ask your provider for proper APN name and then use IB-NT Config to change it.
The signal of the selected network operator is too weak or not available at all. Use the IB-NT Config to check the signal strength ( <b>STATUS-&gt;WIRELESS</b> ).	Check if you do not manually selected an operator or network type which is not available at current position. The manual operator selection should be used only to prevent roaming in situations where there is signal from home operator as well as from roaming operators in the same location.
	Try moving the antenna to different position or using antenna with higher gain.

SYMPTOM	
<b>The module is switched to AirGate mode but the LED "AirGate" does not come up within couple of minutes after switching the power on.</b>	
CAUSE	SOLUTION
AirGate address is not adjusted correctly.	Check if the AirGate address is adjusted to "airgate.comap.cz" or "80.95.108.26"
The module does not have access to the Internet.	Check if the module is properly attached to the Ethernet LAN
	Check if the module is attached to the cellular network. LED cellular must be on - either yellow or red. If the LED is not on see the symptom above.
There is a problem with translation of the AirGate domain name to the IP address.	If the Ethernet parameters are assigned manually check if they are adjusted correctly according to what you got from the LAN administrator.

	<p>If the module is switched to get the parameters from a DHCP server check if it has received the parameters correctly. If there is a problem with DHCP server the currently assigned IP address would be "0.0.0.0".</p> <p>If cellular connection is used check if the APN is set correctly as given from your cellular provider.</p>
Outgoing UDP traffic from the module to the AirGate at port 6127 is disabled.	<p>If cellular connection is used ask your provider whether outgoing UDP traffic at port 6127 is enabled. If no, ask for enabling it or ask ComAp technical support for alternative TCP port setting.</p> <p>If ethernet connection is used ask the IT manager for enabling outgoing UDP traffic at port 6127.</p>

SYMPTOM	
<p><b>The module is switched to AirGate, the LED "AirGate" came on, the module displays AirGateID in IB-NT-Config, but it is not possible to connect to the controllers from IntelliMonitor. DDE server reports error "Can't read IB version".</b></p>	
CAUSE	SOLUTION
Outgoing TCP traffic from the module to the AirGate at port 23 is disabled.	<p>If cellular connection is used ask your provider whether outgoing TCP traffic at port 23 is enabled. If no, ask for enabling it or ask ComAp technical support for alternative TCP port setting.</p> <p>If ethernet connection is used ask the IT manager for enabling outgoing TCP traffic at port 23.</p>

SYMPTOM	
<p><b>The module does not connect to AirGate if static IP address is used.</b></p>	
CAUSE	SOLUTION
The IP address, network mask, gateway address and/or DNS address are not adjusted correctly.	See the chapter <a href="#">Setting-up static IP address</a> for information about how to set-up a static IP address.

SYMPTOM	
<p><b>The connection to Internet via cellular network (especially 3G) is unstable and dropouts often occur although the signal strength is sufficient. There are messages "Cellular connection reset 05" in the log.</b></p>	
CAUSE	SOLUTION
The integrated cellular module is running firmware 1.002, which may be unstable at 3G networks.	<a href="#">Update the cellular module firmware</a> to 2.003

SYMPTOM	
<b>Message "Cellular connection reset 02" appears in the log. This message is written if IB-NT does not have access to Internet.</b>	
CAUSE	SOLUTION
If this message appears only rarely it may be caused by automatic deactivation of the packet data connection by the cellular operator. IB-NT detects this situation re-creates the connection again.	This is not a faulty situation.
If this message appears regularly each several minutes it means IB-NT can not access the Internet at all. It may happen e.g. if IB-NT operates in an isolated VPN.	It is not possible to operate IB-NT (version up to 2.1) in cellular WAN connection mode without Internet access. This possibility will be added into one of future versions.

SYMPTOM	
<b>Message "Cellular connection reset 00" appears in the log. This message is written if IB-NT could not initialize the internal cellular modem.</b>	
CAUSE	SOLUTION
Rare occurrence of this message can be a consequence of a previous problem with the internal modem.	IB-NT will automatically reset the modem to recover from this situation.
Repeated occurrence of this message means the internal cellular module is damaged.	Factory repair is needed.

## 8 Technical specifications

### 8.1 Physical dimensions

Width x Height x Depth	180x130x45mm
Weight	450g

### 8.2 Power supply

Power supply range	8-36VDC
Average power consumption	cca 400mA@8V; 120mA@36V
Peak power consumption	cca 1,5A@8V; 0,5A@36V

### 8.3 Operating conditions

Operating temperature	-20 to +60°C (-4 to 140°F)
Storage temperature (without SIM card; ask your operator for SIM card storage/operation conditions)	-40 to +80°C (-40 to 176°F)

### 8.4 WAN interface

Ethernet socket	100Base-TX, automatic negotiation
Cellular modem capabilities	GPRS,EGPRS,UMTS,HSPA
Cellular modem GPRS bands	850,900,1800,1900MHz
Cellular modem UMTS bands	800,850,1700,1900,2100MHz

### 8.5 Electromagnetic compatibility

This device is class A device as defined in the standard EN 55022 (for commercial areas). It complies with following standards:

- EMC emissions: ETSI EN 301489-1
- EMC immunity: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6