

INSYS GPRS 5.1

Ethernet



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1 Preface

This manual allows for the safe and efficient use of the product. The manual is part of the product and must always be stored accessible for installation, commissioning and operating personnel.

1.1 Defects Liability Terms

A usage not according to the intended purpose, an ignorance of this documentation, the use of insufficiently qualified personnel as well as unauthorised modifications exclude the liability of the manufacturer for damages resulting from this. The liability of the manufacturer ceases to exist.

The regulations of our Delivery and Purchasing Conditions are effective. These can be found on our website (www.insys-icom.de/imprint/) under "General Terms and Conditions".

1.2 Marking of Warnings and Notes

1.2.1 Symbols and Key Words

	Danger! Risk of severe or fatal injury One of these symbols in conjunction with the key word Danger indicates an imminent danger. It will cause death or severe injuries if not avoided.
	
	Warning! Personal injury This symbol in conjunction with the key word Warning indicates a possibly hazardous situation. It might cause death or severe injuries if not avoided.
	Caution! Slight injury and / or material damage This symbol in conjunction with the key word Caution indicates a possibly hazardous or harmful situation. It might cause slight or minor injuries or a damage of the product or something in its vicinity if not avoided.
	Note Improvement of the application This symbol in conjunction with the key word Note indicates hints for the user or very useful information. This information helps with installation, set-up and operation of the product to ensure a fault-free operation.

1.3 Symbols and the Formatting in this Manual

This section describes the definition, formatting and symbols used in this manual. The various symbols are meant to help you read and find the information relevant to you. The following text is structured like a typical operating instruction of this manual.

Bold print: This will tell you what the following steps will result in

After that, there will be a detailed explanation why you could perform the following steps to be able to reach the objective indicated first. You can decide whether the section is relevant for you or not.

→ An arrow will indicate prerequisites which must be fulfilled to be able to process the subsequent steps in a meaningful way. You will also learn which software or which equipment you will need.

1. *One individual action step: This tells you what you need to do at this point. The steps are numbered for better orientation.*

✓ A result which you will receive after performing a step will be marked with a check mark. At this point, you can check if the previous steps were successful.

ⓘ Additional information which you should consider are marked with a circled "i". At this point, we will indicate possible error sources and tell you how to avoid them.

➤ *Alternative results and steps are marked with an arrow. This will tell you how to reach the same results performing different steps, or what you could do if you didn't reach the expected results at this point.*

2 Safety

The Safety section provides an overview about the safety instructions, which must be observed for the operation of the product.

The product is constructed according to the currently valid state-of-the-art technology and reliable in operation. It has been checked and left the factory in flawless condition concerning safety. In order to maintain this condition during the service life, the instructions of the valid publications and certificates must be observed and followed.

It is necessary to adhere to the general safety instructions must when operating the product. The descriptions of processes and operation procedures are provided with precise safety instructions in the respective sections in addition to the general safety instructions.

Moreover, the local accident prevention regulations and general safety regulations for the operating conditions of the device are effective.

An optimum protection of the personnel and the environment from hazards as well as a safe and fault-free operation of the product is only possible if all safety instructions are observed.

2.1 Usage According to the Regulations

The product may only be used for the purposes specified in the function overview. In addition, it may be used for the following purposes:

- Usage and mounting in an industrial cabinet.
- Switching and data transmission functions in machines according to the machine directive 2006/42/EC.
- Usage as data transmission device for a PLC.

The product may not be used for the following purposes and used or operated under the following conditions:

- Controlling or switching of machines and systems, which do not comply with the directive 2006/42/EC.
- Usage, controlling, switching and data transmission of machines and systems, which are operated in explosive atmospheres.
- Controlling, switching and data transmission of machines, which may involve risks to life and limb due to their functions or when a breakdown occurs.

2.2 Permissible Technical Limits

The product is only intended for the use within the permissible technical limits specified in the data sheets.

The following permissible limits must be observed:

- The ambient temperature limits must not be fallen below or exceeded.
- The supply voltage range must not be fallen below or exceeded.
- The maximum humidity must not be exceeded and condensate formation must be prevented.
- The maximum switching voltage and the maximum switching current load must not be exceeded.
- The maximum input voltage and the maximum input current must not be exceeded.

2.3 Responsibilities of the Operator

As a matter of principle, the operator must observe the legal regulations, which are valid in his country, concerning operation, functional test, repair and maintenance of electrical devices.

2.4 Qualification of the Personnel

The installation, commissioning and maintenance of the product must only be performed by trained expert personnel, which has been authorised by the plant operator. The expert personnel must have read and understood this documentation and observe the instructions.

Electrical connection and commissioning must only be performed by a person, who is able to work on electrical installations and identify and avoid possible hazards independently, based on professional training, knowledge and experience as well as knowledge of the relevant standards and regulations.

2.5 Instructions for Transport and Storage

The following instructions must be observed:

- Do not expose the product to moisture and other potential hazardous environmental conditions (radiation, gases, etc.) during transport and storage. Pack product accordingly.
- Pack product sufficiently to protect it against shocks during transport and storage, e.g. using air-cushioned packing material.

Check product for possible damages, which might have been caused by improper transport, before installation. Transport damages must be noted down to the shipping documents. All claims or damages must be filed immediately and before installation against the carrier or party responsible for the storage.

2.6 Markings on the Product

The identification plate of the product is either a print or a label on a face of the product. Amongst other things, it contains the following markings, which are explained in detail here.



Observe manual

This symbol indicates that the manual of the product contains essential safety instructions that must be followed implicitly.



Dispose waste electronic equipment environmentally

This symbol indicates that waste electronic equipment must be disposed separately from residual waste via appropriate collecting points. See also Section Disposal in this manual.



CE marking

By applying a CE marking, the manufacturer confirms that the product complies with the European directives that apply product-specific.



Appliance Class II – double insulated

This symbol indicates that the product complies with Appliance Class II

2.7 Environmental Protection

Dispose the product and the packaging according to the relevant environmental protection regulations. The Waste Disposal section in this manual contains notes about disposing the product. Separate the packaging components of cardboard and paper as well as plastic and deliver them to the respective collection systems for recycling.

2.8 Safety Instructions for Electrical Installation

The electrical connection must only be made by authorised expert personnel according to the wiring diagrams.

The notes to the electrical connection in the manual must be observed. Otherwise, the protection category might be affected.

The safe disconnection of circuits, which are hazardous when touched, is only ensured if the connected devices meet the requirements of VDE T.101 (Basic requirements for safe disconnection).

The supply lines are to be routed apart from circuits, which are hazardous when touched, or isolated additionally for a safe disconnection.

2.9 General Safety Instructions

Caution!



Moisture and liquids from the environment may seep into the interior of the product!

Fire hazard and damage of the product.

The product must not be used in wet or damp environments, or in the direct vicinity of water. Install the product at a dry location, protected from water spray. Disconnect the power supply before you perform any work on a device which may have been in contact with moisture.

Caution!



Short circuits and damage due to improper repairs and modifications as well as opening of maintenance areas.

Fire hazard and damage of the product.

It is not permitted to open the product for repair or modification.

Caution!



Overcurrent of the device supply!

Fire hazard and damage of the product due to overcurrent.

The product must be secured with a suitable fuse against currents exceeding 1.6 A.

Caution!



Overvoltage and voltage peaks from the mains supply!

Fire hazard and damage of the product due to overvoltage.

Install suitable overvoltage protection.

Caution!



Damage due to chemicals!

Ketones and chlorinated hydrocarbons dissolve the plastic housing and damage the surface of the device.

Never let the device come into contact with ketones (e.g. acetone) or chlorinated hydrocarbons, such as dichloromethane.

Caution!**Distance from antennas to persons!**

A too low distance from GSM antennas to persons can affect the health.

Please observe to keep a minimum distance of 20 cm between the GSM antenna and persons during operation.

Note**Export restriction for FCC!****Possible offence against approval regulations.**

If the final product is not approved in the U.S. territories, the application manufacturer shall take care that the 850 MHz and 190 MHz frequency bands be deactivated and that band settings be inaccessible to end users. If these demands are not met (e.g. if the AT interface is accessible to end users), it is the responsibility of the application manufacturer to always ensure that the application be not exported to countries within the area of validity of the FCC.

3 Scope of Delivery

The scope of delivery for the INSYS GPRS 5.1 Ethernet includes all accessories listed below. Please check if all accessories are included in the box. If a part is missing or damaged, please contact your distributor.

- INSYS GPRS 5.1 Ethernet
- Cable:
 - 1 Ethernet crossover cable
- 1 Manual

Optional accessories

- CD ROM with user manual
- GSM antenna
 - Outside wall antenna, magnetic base antenna or patch antenna

4 Further Information

4.1 Knowledge Base

Basic information about topics, like mobile radio and network technology that may be helpful when integrating the product of INSYS icom into your application, can be found in our Knowledge Base that will be continuously updated. You can find the Knowledge Base under <http://www.insys-icom.com/knowledge/>

4.2 Training

We also offer a wide range of trainings for a more profound knowledge transfer, either at our premises or at your location. Refer to <http://www.insys-icom.com/training/> for more information about our trainings.

5 Technical Data

5.1 Physical Features

Caution!



**Overvoltage and voltage peaks from the mains supply!
Fire hazard and damage of the product due to overvoltage.**
Install suitable overvoltage protection.

All specified data was measured with nominal input voltage, at full load, and an ambient temperature of 25°C. The limit value tolerances are subject to the usual variations.

Physical Feature	Value
Operating voltage	minimum 10 V DC maximum 60 V DC
Power consumption idle	approx. 1.4 W
Power consumption connection	approx. 3 W
Level inputs	HIGH level = 3-12 V (contact open or voltage strength for external supply) LOW level = 0-1 V
Current consumption of an active input against GND (internal 3.3 V)	Typically 0.5 mA (when enabling the input by connecting to GND)
Switch output, maximum switch voltage	30 V (DC) / 42 V (AC)
Switch output, maximum current load	1 A (DC) / 0.5 A (AC)
Transmitted output: EGSM 850 and 900: Class 4 EGSM 1800 and 1900: Class 1 EGSM 850 and 900: Class E2 GSM 1800 and 1900: Class E2	2 W 1 W 0.5 W 0.5 W
Weight	250 g
Dimensions (Width x Depth x Height)	55 mm x 110 mm x 75 mm
Temperature range	-20° C – 55° C
Maximum permissible humidity	95% non-condensing
IP rating	Housing IP40, Terminals IP20

Table 1: Physical Features

5.2 Technological Features

Technological Feature	Description
GSM frequencies (2G)	850, 900, 1800, 1900 MHz
SIM card reader	Support for 1.8 V and 3.3 V SIM cards
SMS	SMS dispatch; incoming SMS can be received, but cannot be accessed via the web interface.
CSD	up to 14.4 kBit/s
GPRS	GPRS Multislot Class 12, Coding scheme 1 bis 4, PBCCH, Mobile Station Class B
EDGE (EGPRS)	EDGE Multislot Class 10, Modulation and Coding Scheme MCS 1-9

Table 2: Technological Features

6 Display and Control Elements

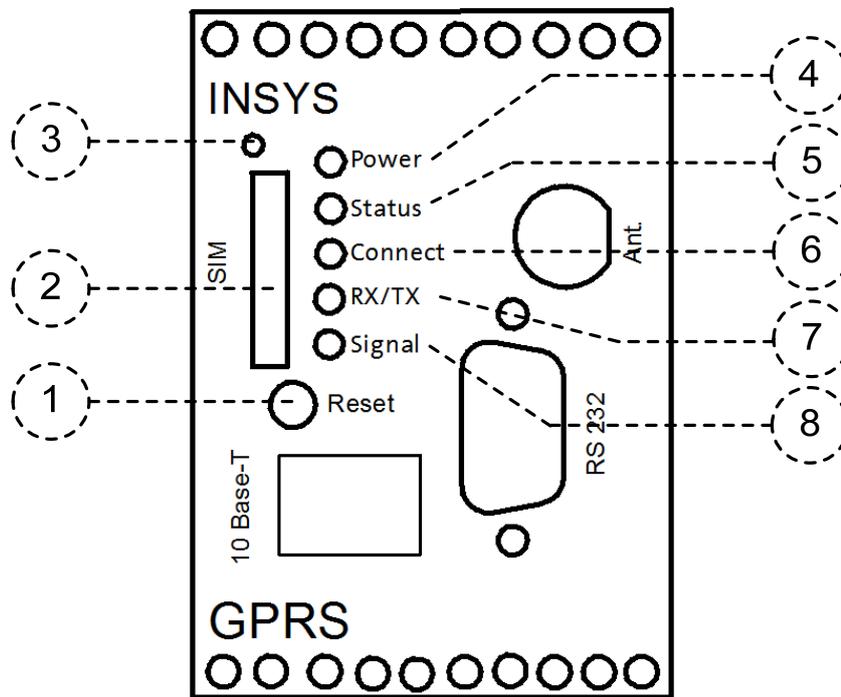


Figure 1: Display and control elements on the front of the device

Position	Description
1	Reset key
2	SIM card holder
3	SIM card eject button
4	Power LED
5	Status LED
6	Connect LED
7	RX/TX LED
8	Signal LED

Table 3: Description of the display and control elements on the front panel of the device

6.1 Meaning of the Displays

LED	Colour	Function	off	flashing	blinking	on
Power	green	Supply	missing			present
Status	yellow	Connection	not registered	registered	initialisation	PPP connection established
Connect	yellow	Network connection	missing			present
RX/TX	green	Data traffic LAN	missing			present
Signal	green	GSM signal	too low		present (see Table 5)	optimum

Table 4: Meaning of the LED displays

Signal LED blinking cycle	Quality	Signal quality
on	25 .. 31	optimum
60 ms	23 .. 24	very good
140 ms	21 .. 22	good
260 ms	19 .. 20	still good
380 ms	17 .. 18	satisfying
500 ms	15 .. 16	sufficient
1000 ms	13 .. 14	barely sufficient
off	0 .. 12	insufficient
off	99	not detectable

Table 5: Blinking code of the signal LED

6.2 Function of the Control Elements

Description	Operation	Meaning
Reset key	Press for at least 1 second.	Resets the hardware and restarts the INSYS GPRS 5.1 Ethernet. (Hard reset)
	Press five times for a short time within 10 seconds.	Deletes all settings of the INSYS GPRS 5.1 Ethernet and resets the device to the factory defaults.
SIM card eject button	Press with a pointed object	Ejects the SIM card holder.

Table 6: Description of the functions and meaning of the control elements

7 Connections

7.1 Front Panel Connections

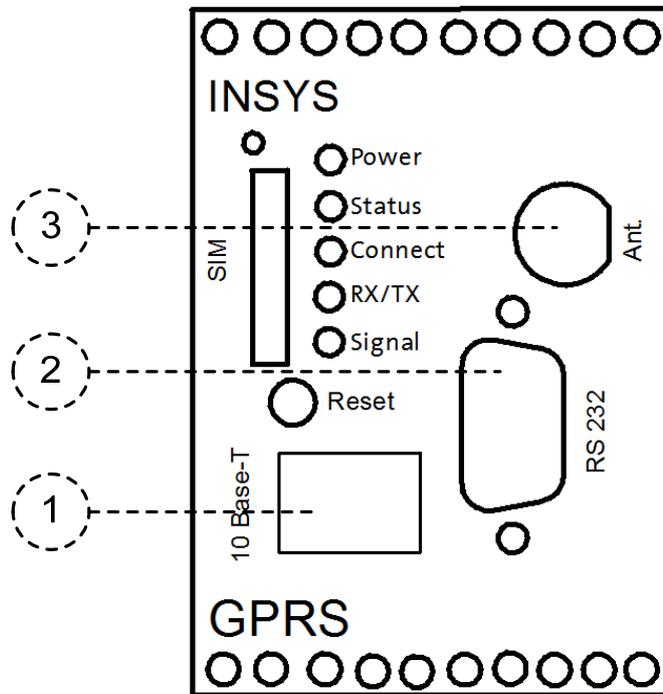


Figure 2: Connections on the front panel of the device

Position	Description
1	Ethernet port (RJ45)
2	Serial interface (without function)
3	GSM antenna connection (FME socket)

Table 7: Description of the connections on the front panel of the device

7.2 Terminal Connections on the Top

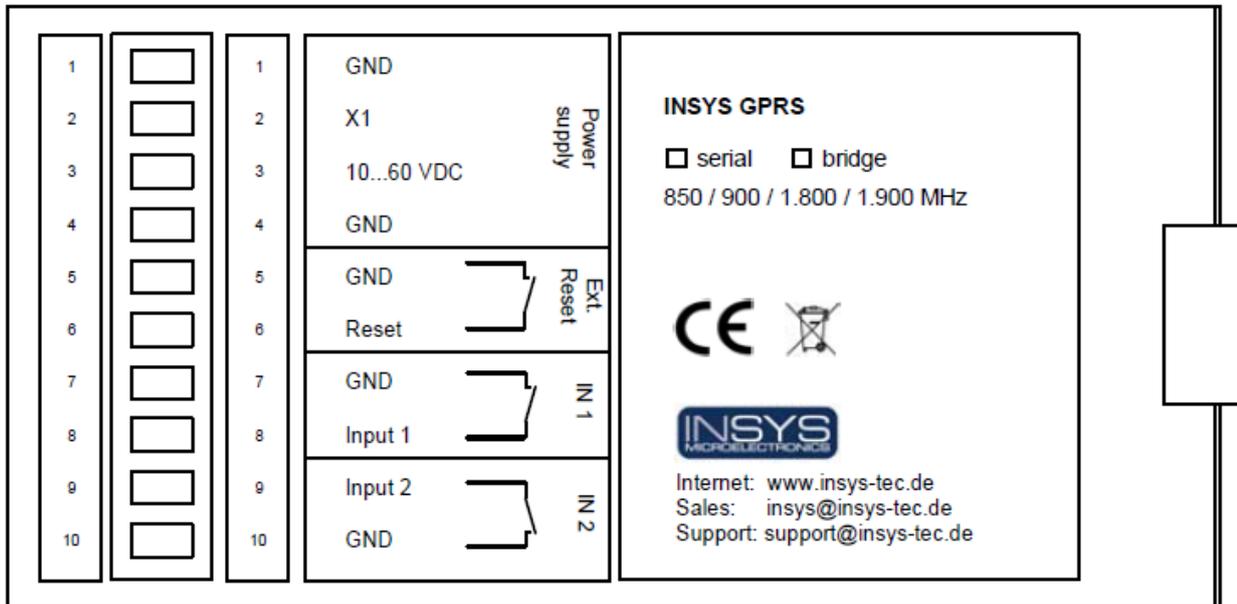


Figure 3: Connections on the top of the device

Terminal	Description	Description
1	GND	Ground
2	X1	reserved
3	10 ... 60 VDC	Power supply 10 V – 60 V DC
4	GND	Ground
5	GND	Ground
6	Reset	Reset input
7	GND	Ground
8	Input 1	Input 1
9	Input 2	Input 2
10	GND	Ground

Table 8: Description of the connections on the top of the device

7.3 Terminal Connections on the Bottom

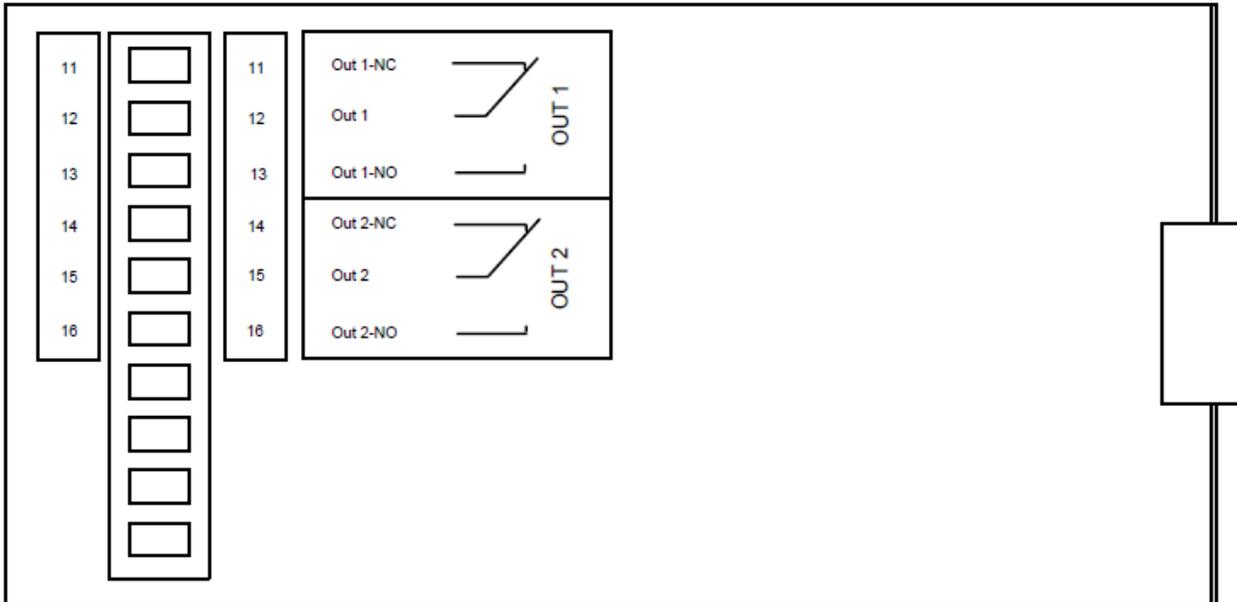


Figure 4: Connections on the bottom of the device

Terminal	Description	Description
11	Out 1-NC	Output 1 normally closed
12	Out 1	Output 1
13	Out 1-NO	Output 1 normally open
14	Out 2-NC	Output 2 normally closed
15	Out 2	Output 2
16	Out 2-NO	Output 2 normally open

Table 9: Description of the connections on the bottom of the device

7.4 LAN Connection

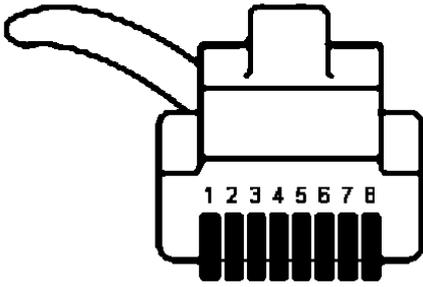


Table 10: RJ45 connector Ethernet cable

Pin	Signal	Description
1	RX+	Receive positive
2	RX-	Receive negative
3	TX+	Transmit positive
4	n/a	Not connected
5	n/a	Not connected
6	TX-	Transmit negative
7	n/a	Not connected
8	n/a	Not connected

Table 11: Description of the pin allocation of the RJ45 connector

8 Function Overview

The INSYS GPRS 5.1 Ethernet provides you with the following functions:

- **Configuration via web interface**

All functions of the INSYS GPRS 5.1 Ethernet can be configured and set via a web interface. The access to the web interface is protected with a user name and password query. The TCP port which is used to access the web interface can be set freely.

- **Static IP address**

A static IP address can be configured for the LAN interface of the INSYS GPRS 5.1 Ethernet.

- **NAT and port forwarding**

The INSYS GPRS 5.1 Ethernet is a router, which can also send data packets via NAT and port forwarding. According to defined rules, the INSYS GPRS 5.1 Ethernet will send incoming IP packets to definable ports and port ranges at IP addresses and ports in the LAN.

- **Establishing a WAN connection via input 1 or automatically**

The INSYS GPRS 5.1 Ethernet establishes a WAN connection either automatically after every restart and every interruption or by closing input 1. In this case, the WAN connection will be disconnected again by opening input 1.

- **Reproduction of the status of the WAN connection via output 1**

If the WAN connection is established input-controlled, the INSYS GPRS 5.1 Ethernet will reproduce the status of the WAN connection on output 1. As soon as the WAN connection is established, output 1 energises and de-energises again, if the WAN connection is disconnected or interrupted.

- **Enabling the LAN interface via input 2 or permanently**

The LAN interface of the INSYS GPRS 5.1 Ethernet is either permanently enabled or will be enabled by closing input 2. In this case, the LAN interface will be disabled again by opening input 2.

- **Reproduction of the status of the LAN interface via output 2**

If the LAN interface is enabled input-controlled, the INSYS GPRS 5.1 Ethernet will reproduce the status of the LAN interface on output 2. As soon as the LAN interface is enabled, output 2 energises and de-energises again, if the LAN interface is disabled.

- **Periodic GPRS connection establishment or restart**

The INSYS GPRS 5.1 Ethernet terminate and re-establish a GPRS connection or execute a restart time-controlled to avoid undefined registration and operation conditions.

- **Dynamic DNS update**

The assigned IP address can be deposited at a dynamic DNS service (e.g. DynDNS) after the set-up of a PPPoE connection to an internet service provider . The INSYS GPRS 5.1 Ethernet can be contacted out of the Internet.

- **Firmware update via web interface**

The firmware of the INSYS GPRS 5.1 Ethernet can be updated via the web interface. An update can be performed locally or remotely.

- **Optional redundancy using another INSYS GPRS 5.1 Ethernet**

You can use a second INSYS GPRS 5.1 Ethernet and an alternative mobile phone provider to increase the availability of the application by appropriately wiring both devices.

9 Mounting

This section describes how to mount the INSYS GPRS 5.1 Ethernet to a DIN rail, connect the power supply and uninstall it again. Observe the instructions in the "Safety" section of this manual, in particular the "Safety Instructions for Electrical Installation" for that purpose unconditionally.

Caution!



Moisture and liquids from the environment may seep into the interior of the INSYS GPRS 5.1 Ethernet!

Fire hazard and damage of the product.

The INSYS GPRS 5.1 Ethernet must not be used in wet or damp environments, or in the direct vicinity of water. Install the INSYS GPRS 5.1 Ethernet at a dry location, protected from water spray. Disconnect the power supply before you perform any work on a INSYS GPRS 5.1 Ethernet which may have been in contact with moisture.

Caution!



The device could be destroyed if the wrong power supply is used!

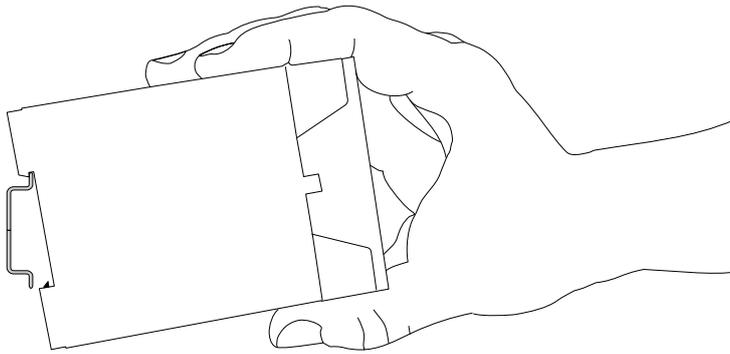
If the INSYS GPRS 5.1 Ethernet is operated with a power supply that supplies a voltage exceeding the permissible operating voltage of the INSYS GPRS 5.1 Ethernet, the device will be destroyed.

Make sure that you use the suitable power supply. Refer to the Technical Data section for the proper voltage range of the INSYS GPRS 5.1 Ethernet.

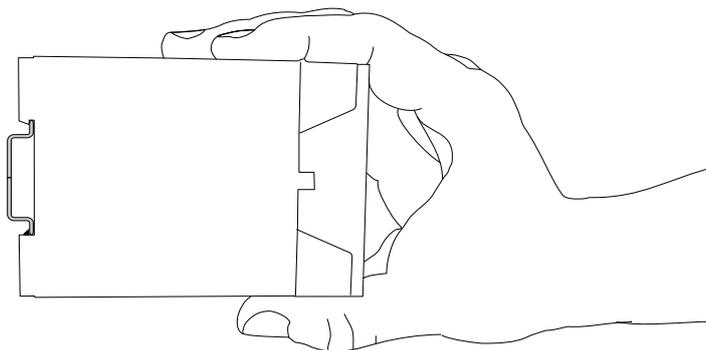
Mounting the device to the DIN rail

How to mount the INSYS GPRS 5.1 Ethernet to a DIN rail:

1. ***Position the device at the DIN rail as seen in the following diagram. There are two snap-in hooks at the upper and lower edge of the DIN rail groove of INSYS GPRS 5.1 Ethernet. Hook the upper one into place behind the upper edge of the DIN rail.***



2. ***Lift the INSYS GPRS 5.1 Ethernet perpendicular to the DIN rail until the two lower, flexible snap-in hooks engage in the DIN rail.***



- ✓ The INSYS GPRS 5.1 Ethernet is now readily mounted.

Connecting the power supply

→ The device has already been mounted to the DIN rail.

→ The power supply is connected and switched off.

1. ***Connect the ground lead of the power supply to the terminal "GND".***
2. ***Connect the plus pole of the power supply to the terminal for the power supply.***

- ✓ The INSYS GPRS 5.1 Ethernet is now connected to the power supply.

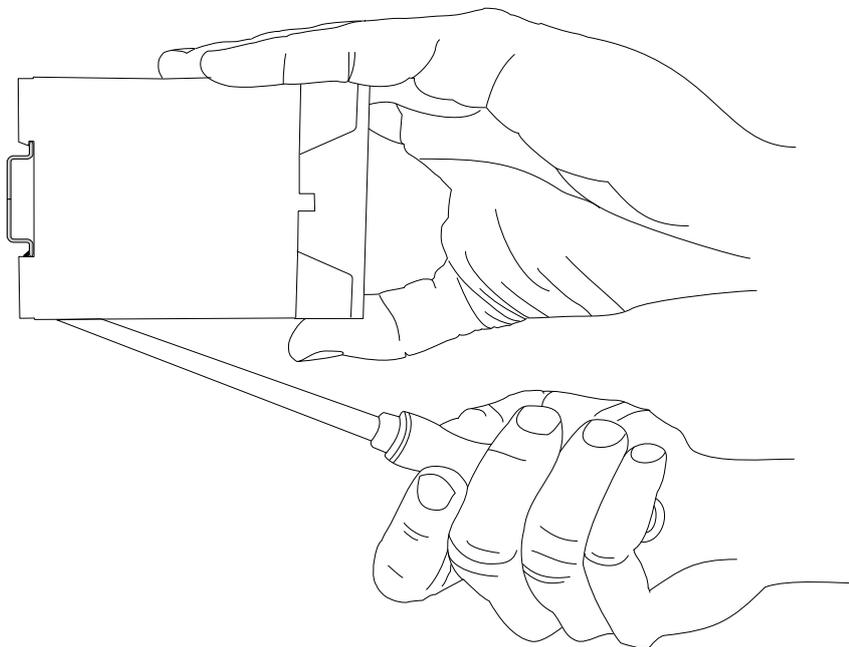
Disconnecting the power supply

- The device is mounted to the DIN rail.
 - The power supply is connected and switched off.
 - 1. Disconnect the ground lead of the power supply from the terminal "GND".**
 - 2. Disconnect the plus pole of the power supply from the terminal for the power supply.**
- ✓ The INSYS GPRS 5.1 Ethernet is disconnected from the power supply.

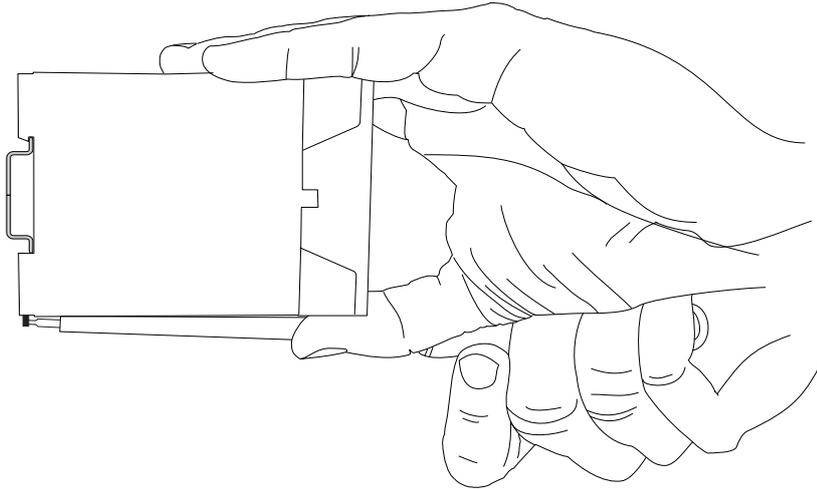
Uninstalling the device from the DIN rail

How to uninstall the INSYS GPRS 5.1 Ethernet from a DIN rail in a switch cabinet:

- You will need a Phillips screwdriver with a 4.5 mm blade.
- The power supply of the switch cabinet is switched off and secured against being switched on accidentally.
- All cables at the INSYS GPRS 5.1 Ethernet are disconnected.
- 1. Insert the Phillips screwdriver into the groove in the bottom of the INSYS GPRS 5.1 Ethernet as shown in the following figure.**



- 2. Turn the Phillips screwdriver into the direction of the INSYS GPRS 5.1 Ethernet as shown in the following figure.**



- ✓ The plastic spring of the snap-in hook is stretched.
- 3. ***While you hold the plastic spring apart with the lower snap-in hooks, pull the INSYS GPRS 5.1 Ethernet away from the DIN rail.***
- 4. ***Un-hook the INSYS GPRS 5.1 Ethernet and take it off perpendicularly to the DIN rail.***
- ✓ The INSYS GPRS 5.1 Ethernet is now removed.

10 Commissioning

This chapter describes how to activate the INSYS GPRS 5.1 Ethernet, i.e. how to connect the INSYS GPRS 5.1 Ethernet to a PC, and how to prepare it for the configuration.

Connecting the INSYS GPRS 5.1 Ethernet to a GSM antenna and a PC

How to connect the INSYS GPRS 5.1 Ethernet to a GSM antenna and, via a network cable, to a PC.

- The power supply of the INSYS GPRS 5.1 Ethernet is disabled.
- You will need a Cat. 5 network patch cable.
- You will need a network card in the PC.
- You will need a suitable GSM antenna (available from INSYS MICROELECTRONICS).

i The regulation of the Federal Communications Commission (FCC) is valid for the USA, according to which the antenna must be installed and operated in a distance of at least 20 cm to persons, not at the same place with other antennas or senders, and must not have an antenna gain of more than 8.4 dBi (GSM 1900) or 2.9.dBi (GSM 850).

- 1. *Locate the RJ-45 socket of the network card at the PC.***
- 2. *Make sure not to use the ISDN socket, but the socket of the network card, which you want to use to configure the INSYS GPRS 5.1 Ethernet.***
- 3. *Plug one end of the network cable into the RJ45 socket of the PC network card, and the other end into the network socket of the INSYS GPRS 5.1 Ethernet.***
- 4. *Connect the GSM antenna to the antenna connection of the INSYS GPRS 5.1 Ethernet.***

Configuring the INSYS GPRS 5.1 Ethernet

- The INSYS GPRS 5.1 Ethernet is connected to the PC.
- The power supply of the INSYS GPRS 5.1 Ethernet is enabled.
- You have the required access rights to change the IP address of the network card to which the INSYS GPRS 5.1 Ethernet is connected.

- 1. *Change the IP address of the network card to which the INSYS GPRS 5.1 Ethernet is connected to an address that starts with 192.168.1.***

i The proceeding for changing the IP address of the network card depends in the operating system and is described in the respective documentation. It is recommended to note down the original settings to be able to undo the settings made here after configuration.

i Do not use the address 192.168.1.1. This is the factory default IP address of

the INSYS GPRS 5.1 Ethernet. For example, use 192.168.1.2 as IP address for the network card in your PC.

2. Open an Internet browser and enter the URL "http://192.168.1.1" into the address bar.

✓ The browser loads the start page of the INSYS GPRS 5.1 Ethernet.

➤ *If you see the message in your browser window that the page with this address cannot be found, follow the following steps: Check, whether your INSYS GPRS 5.1 Ethernet is supplied with power. If yes, most probably a wrong IP address is configured in the INSYS GPRS 5.1 Ethernet. Press the reset key at the INSYS GPRS 5.1 Ethernet five times within 10 seconds and repeat this instruction from step 2.*

✓ A dialogue will prompt you to enter a user name and password for authentication.

3. Enter the user name "insys" and the password "gprs".



User name and password are set as factory defaults. If the registration at the web interface does not work with the data entered, just reset your INSYS GPRS 5.1 Ethernet to the factory defaults. Press the reset key at the INSYS GPRS 5.1 Ethernet five times within 10 seconds and repeat this instruction from step 2.

✓ You should now see the start page of the web interface.

✓ The INSYS GPRS 5.1 Ethernet is installed successfully and ready for configuration.

Entering PIN and GPRS access data

How to enter the PIN and the GPRS access data into the INSYS GPRS 5.1 Ethernet.

→ You have the PIN of the respective SIM card and the associated GPRS access data.

→ You have access to the web interface of the INSYS GPRS 5.1 Ethernet.

1. In the web interface, change to the "GSM/GPRS" page.

2. Enter the PIN of the SIM card into the "PIN" field and repeat the entry in the field below.

3. Enter the access point name of your GPRS provider into the "APN" field.

➤ *Some providers require to enter a user name and a password in addition. These can be entered into the "PPP Username" and "PPP Password" fields.*

4. **Click the Save button to take over your settings.**

- ✓ You have made the required configuration for a first connection test with this.

Inserting the SIM card into the INSYS GPRS 5.1 Ethernet.

How to insert the SIM card into the INSYS GPRS 5.1 Ethernet.

- The power supply of the INSYS GPRS 5.1 Ethernet is disabled.
- You will need an active SIM card of your mobile phone provider that is enabled for GPRS connections.
- You have entered the associated PIN into the INSYS GPRS 5.1 Ethernet.
- ⓘ If no or a wrong PIN is entered into the INSYS GPRS 5.1 Ethernet, the SIM card will be locked by an automated, repeated handover of the wrong PIN!
- You will need a pointed object to operate the SIM card eject button, e.g. a screwdriver with a blade of max. 1.5 mm.

1. **Press the SIM card eject button with the pointed object.**

- ✓ The SIM card holder will be ejected a little bit out of the housing.

2. **Remove the SIM card holder.**

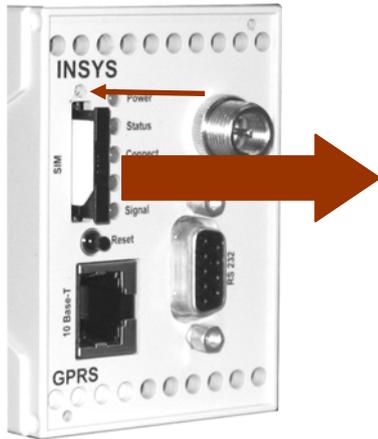
3. **Insert your SIM card into the card holder.**

- ⓘ The SIM card will only fit into the SIM card holder in one position. Make sure that the SIM card does not extend over the card holder.

4. **Insert the SIM card holder together with the SIM card into the INSYS GPRS 5.1 Ethernet again. The contacts of the SIM card must face to the exterior of the housing.**

5. **Using a finger, carefully push the SIM card holder with the inserted SIM card into the housing, until the card holder snaps into place.**

- ⓘ The following figure shows how to insert the SIM card into the SIM card holder for SIM card 1:



6. Enable the power supply of the INSYS GPRS 5.1 Ethernet again.



The INSYS GPRS 5.1 Ethernet is ready for operation with this. As soon as the Status LED is illuminated permanently, the INSYS GPRS 5.1 Ethernet is ready for routing.

11 Operating Principle

This chapter describes how to operate and configure the INSYS GPRS 5.1 Ethernet.

The INSYS GPRS 5.1 Ethernet is configured and operated using a web-based interface. The interface itself is displayed and operated using a web browser such as Mozilla Firefox or Microsoft Internet Explorer.

11.1 Operating the Web Interface

The web interface allows easy configuration of the INSYS GPRS 5.1 Ethernet using a web browser. All functions of the INSYS GPRS 5.1 Ethernet can be configured via the interface. The interface is bilingual (German/English) and can be switched using the "DE" or "EN" language buttons in the upper right corner.

Configuring the INSYS GPRS 5.1 Ethernet with the web interface

How to configure the INSYS GPRS 5.1 Ethernet with the web interface.

- The INSYS GPRS 5.1 Ethernet is connected to a network and switched on.
- A PC that is physically connected to the same network as the INSYS GPRS 5.1 Ethernet.
- The PC is configured in a way that it is also logically connected to the INSYS GPRS 5.1 Ethernet in the same network. The first three octets of the IP address of the PC and the INSYS GPRS 5.1 Ethernet must be identical. For example, the INSYS GPRS 5.1 Ethernet has the IP address 192.168.1.1. and the PC has the IP address 192.168.1.2.
- A new generation web browser such as Mozilla Firefox or Microsoft Internet Explorer is installed on the PC.

1. **Start the web browser.**

2. **Enter the IP address of the INSYS GPRS 5.1 Ethernet in the address line.**

 The factory default IP address of the INSYS GPRS 5.1 Ethernet is **192.168.1.1**.

✓ A dialogue will prompt you to enter the user name and the password for authentication.

3. **Enter the user name and the password and click OK.**

 The default factory setting of the web interface for the **User name** is "in-sys", the **Password** "gprs".

✓ The start page of the web interface is displayed.

4. **Use the menu in the upper bar to select the menu item, in which you want to change settings.**

5. ***Enter the required settings.***

6. ***Click on the Save button on the according configuration page to save the settings.***



After you completed the configuration changes, always click the button Save. Otherwise the settings will be lost as soon as you change to another page or close the browser.

12 Functions

12.1 Status

The status information of the INSYS GPRS 5.1 Ethernet is displayed on the "Status" page of the web interface .

Under "IMEI", the IMEI of the INSYS GPRS 5.1 Ethernet is displayed.

Under "Provider", the provider of the inserted SIM card is displayed.

Under "Signal Quality", the current field strength of the signal is displayed.

Under "BitErrorRate", the current bit error rate is displayed.

Under "Network State", the current state of the registration with the GSM network is displayed:

- 0 – Not registered, no network search
- 1 – Registered with standard provider
- 2 – Not registered, GSM network is searched
- 3 – Registration rejected by provider
- 5 – Registration via roaming partner

Under "GPRS State", the current state of the GPRS connection is displayed:

- GPRS / EDGE not available or device is offline
- GPRS available
- GPRS active
- EDGE available
- EDGE active

Under "WAN IP Address", the IP address is displayed that has been assigned to the INSYS GPRS 5.1 Ethernet on its public side by the PPP server.

Under "Primary DNS Server", the first DNS server provided by the provider is displayed.

Under "Secondary DNS Server", the second DNS server provided by the provider is displayed.

Under "LAN IP Address", the currently configured IP address of the INSYS GPRS 5.1 Ethernet on the locale side is displayed.

Under "LAN Subnet Mask", the currently configured subnet mask of the INSYS GPRS 5.1 Ethernet on the locale side is displayed.

Under "LAN MAC Address", the MAC address of the INSYS GPRS 5.1 Ethernet is displayed.

Under "Firmware-Version", the version number of the firmware along with type and revision of the GSM engine of the INSYS GPRS 5.1 Ethernet is displayed.

Under "Input 1", the current state of input 1 is displayed.

Under "Input 2", the current state of input 2 is displayed.

Under "DynDNS State", the state of the DynDNS registration of the current WAN IP address is displayed.

The status values can be output in text form by entering "http://<IP-Adresse>/status.txt" into the address line of your web browser (e.g. http://192.168.1.1/status.txt).

12.2 GSM/GPRS

The WAN connection establishment, the mobile radio parameters, the periodic log-out/login or the periodic restart and the connection check are configured on the "GSM/GPRS" page.

12.2.1 Establishment of the WAN Connection

The WAN connection can either be established automatically or controlled via input 1. The WAN connection will be re-established following every restart and every interruption for an automatic connection establishment. If the connection establishment is controlled via input 1, the connection will be established, if input 1 is closed, i.e. connected to GND. As soon as the connection is established, output 1 will be enabled. Output 1 remains enabled as long as the connection is established. If input 1 is opened again, the WAN connection will be terminated again.

Configuration with the web interface

In order to **establish the WAN connection automatically**, select under "WAN-LINK" the radio button "always on".

In order to **establish the WAN connection controlled via input 1**, select under "WAN-LINK" the radio button "controlled by Input IN1".

Save your settings by clicking on "Save".



Changed settings become only effective after a restart.

12.2.2 Mobile Radio Parameters

Besides the PIN of the SIM card and the GPRS access data, the selection of the network provider will be specified here. If no network provider is specified here, an automatic network selection will be made, i.e. the INSYS GPRS 5.1 Ethernet tries to register with the own network provider. If this fails, the INSYS GPRS 5.1 Ethernet registers with the strongest available network provider. If an exclusive network provider is specified, the INSYS GPRS 5.1 Ethernet will only try to register with this. If a preferred network provider is specified, an automatic network selection will be made, if the preferred network provider is not available.

The INSYS GPRS 5.1 Ethernet will need the PIN of the inserted SIM card (if the SIM card is protected by a PIN) to register with the mobile network and establish CSD or IP connections.

It is necessary for a CSD connection to enter a phone number (e.g. the Internet provider). For a packet-based connection (GPRS/EDGE), the APN (Access Point Name) of your network provider must be entered. Depending on the network provider, a user name and a password may be necessary for the PPP dial-up. "*99**1#" must be entered as phone number for a packet-based connection.

Note



Loss of function of the SIM card!

An incorrectly entered PIN can cause that the SIM card will be locked after a wrong code has been entered for three times.

Take care, that the passed SIM PIN corresponds with the SIM card or disable the PIN request of the SIM card. A possibly configured PIN has no influence if the PIN request is disabled.

Configuration with the web interface

In order to **select the network selection**, use the radio buttons to choose if the INSYS GPRS 5.1 Ethernet should log into the strongest network, to a preferred provider and its network, or exclusively into the network of a provider determined by you.

Select the radio button "exclusive" that the INSYS GPRS 5.1 Ethernet **registers only with the network of a specific network provider**. Enter the number of the network provider into the entry field in front of the option.

Select the radio button "preferred" that the INSYS GPRS 5.1 Ethernet **preferably registers with the network of a specific network provider**. Enter the number of the network provider into the entry field in front of the option.

- ① If the nnetwork provider field remains empty, your standard network provider will be preferred. You can request the number of the network provider from your network provider.

Enter the **PIN of the SIM card** under "PIN". To confirm the correct entry, enter the PIN once more into the field below.

- ① An entered PIN is also stored if the activation of a SIM card has not been successful. This is possible to allow a configuration without an inserted SIM card. Therefore, a wrong PIN is also stored!

Enter the **APN of your network provider** that is to be used to establish the packet-based connection under "APN".

Enter under "**Dial No.**" for a GSM-CSD connection the phone number of the PPP remote terminal or "*99***1#" for a packet-based connection.

If required, enter **user name and password** for PPP dial-up

Save your settings by clicking on "Save".

- ① Changed settings become only effective after a restart.

12.2.3 Periodic Logout/Login and Periodic Restart

The INSYS GPRS 5.1 Ethernet can logout from the mobile network and login again (after one minute) or perform a restart. Using periodic logout and login or a restart, you will increase the availability of the INSYS GPRS 5.1 Ethernet, which may otherwise be impaired by several circumstances, which require a re-login into the network, e.g. maintenance work at the mobile network. We recommend to use this function.

Configuration with the web interface

In order to configure a **periodic logout and login**, select the radio button "GSM-Logout" and enter the interval for it into the field under "System Interval" in hours. In order to specify the maximum number of failed dial-up attempts, before a restart will be performed, enter this under "Device Reset after".

In order to configure a **periodic restart**, select the radio button "Device Reset" and enter the interval for it into the field under "System Interval" in hours.

- ❗ If a PPP connection is established at the time of logout or restart, this will be interrupted.

Save your settings by clicking on "Save".

- ❗ Changed settings become only effective after a restart.

12.2.4 Internet Connection Check

You can configure the INSYS GPRS 5.1 Ethernet to permanently maintain a WAN connection. This operating mode is interesting for private networks with no minute charges, or for billing models, for which only the transmitted data volume is charged for (e.g. packet-based networks). In this operating mode, the INSYS GPRS 5.1 Ethernet will immediately establish the connection after system start. The INSYS GPRS 5.1 Ethernet can check the connection for its function periodically. The connection check can be performed either via a DNS request or via a Ping. If the connection check fails finally, the connection will be terminated and re-established.

- ❗ The connection check generates data traffic that may cause costs depending on the contract.

Configuration with the web interface

In order to enable the **Internet connection check**, select under "Internet Connect Check" the connection check method under "Type" and enter the connection check interval under "Interval" in minutes.

In order to specify the **maximum number of failed connection checks**, before the connection will be terminated, enter this under "Test cycles".

Enter an **IP address for the connection check** that can be accessed by the router under "Destination IP". An alternative IP address can be specified under "alt. Destination IP".

Save your settings by clicking on "Save".

- ❗ Changed settings become only effective after a restart.

12.3 LAN

The activity of the LAN interface as well as the IP address in the local network (LAN) and the associated subnet mask are configured on the "LAN" page.

12.3.1 LAN Settings

The LAN interface can either be enabled always or controlled via input 2. If the LAN interface is controlled via input 2, the LAN interface will be enabled, if input 2 is closed, i.e. connected to GND. As soon as the LAN connection is established, output 2 will be enabled. Output 2 remains enabled as long as the LAN connection is established. If input 2 is opened again, the LAN interface will be disabled again.

It must be possible to access the INSYS GPRS 5.1 Ethernet in the LAN under a certain IP address. You must assign a static IP address for this. The default settings for IP address and subnet mask are "192.168.1.1" and "255.255.255.0".

Configuration with the web interface

In order to **enable the LAN interface always**, select under "LAN-LINK" the radio button "always on".

In order to **establish the LAN interface controlled via input 2**, select under "LAN-LINK" the radio button "controlled by Input IN2".

In order to configure the **static IP address**, enter under "LAN IP address" the IP address of the INSYS GPRS 5.1 Ethernet in the LAN and under "LAN Subnet mask" the respective netmask.

Save your settings by clicking "OK".



Changed settings become only effective after a restart.

12.4 NAT

The NAT table and the static NAT entries for port forwarding are configured on the "NAT" page.

12.4.1 NAT Settings

When including the Internet as communication network, private and public IP addresses are distinguished. To be able to access the private IP addresses from the Internet, which are mostly used in local networks, the technologies NAT and port forwarding are used. Only the public IP address of the INSYS GPRS 5.1 Ethernet can be reached in the Internet. This IP address can still be used to access the local end terminals in the network of the INSYS GPRS 5.1 Ethernet from the Internet, if NAT and port forwarding are used.

Using Network Address Translation (NAT), the INSYS GPRS 5.1 Ethernet replaces the source address of the packets of an outgoing connection with its own. The INSYS GPRS 5.1 Ethernet stores the actual source address in its NAT table. If it receives a reply packet of the remote terminal of this connection, it replaces the destination address of the packet with the address of the original source.

The INSYS GPRS 5.1 Ethernet provides port forwarding. The INSYS GPRS 5.1 Ethernet routes incoming packets from outside of the network to certain computers within the network. Outgoing packets of these connections from the network are being routed back to their destinations outside of the network. At certain ports, the INSYS GPRS 5.1 Ethernet routes incoming data packets to one port of a certain destination address. You can use static rules to define which packets from outside are routed to which addresses and ports in the network. This means that you can make certain services available to computers in the network, using the Internet.

Configuration with the web interface

In order to specify the **time without data traffic that must expire before a connection entry in the NAT table will be marked as inactive**, enter under "TCP-Timeout" the time in minutes.

- ❗ Inactive entries will be deleted from the NAT table, if there is not sufficient space for new entries. The NAT table can contain a maximum of 1024 entries.

Save your settings by clicking on "Save".

- ❗ Changed settings become only effective after a restart.

In order to create a **new static NAT entry**, enter under "New static NAT-Entry" the port on the WAN side of the INSYS GPRS 5.1 Ethernet, at which IP packets are to be accepted, into the "WAN Port" field, the IP address of the destination computer in the local network into the "LAN IP Address" field and the port of the destination computer in the local network into the "LAN Port" field, and select in the drop-down list field "Protocol" the expected protocol. Click on "Save" then to take over the entry. A maximum of 20 static NAT entries can be entered.

In order to **delete an existing entry**, click under "List of static NAT-Entries" on "Delete" behind the respective entry.

The NAT table can be output in text form by entering "http://<IP-Adresse>/nat.txt" into the address line of your web browser (e.g. http://192.168.1.1/nat.txt).

The complete NAT table can be deleted **permanently** by entering "http://<IP-Adresse>/format_nat" into the address line of your web browser (e.g. http://192.168.1.1/format_nat).

12.5 DynDNS

The parameters for the DynDNS service are configured on the "DynDNS" page.

12.5.1 Dynamic DNS Update

The INSYS GPRS 5.1 Ethernet can forward the IP address, which it was allocated during Internet dial-up, to a DynDNS provider, so it can be reached from the Internet with a domain name. This means that the network behind the INSYS GPRS 5.1 Ethernet can always be reached with the same domain name from the Internet, also for dynamically allocated IP addresses (if the allocated IP address for incoming connections is not protected). The INSYS GPRS 5.1 Ethernet will update the IP address connected to the domain name at the DynDNS provider during each dial-up. For this function, you will need an account with a DynDNS provider.

- ① A public IP address must also be provided from the provider for packet-based mobile connections (GPRS/EDGE). Otherwise, the device cannot be accessed despite this service.

Configuration with the web interface

In order to perform a **dynamic DNS update**, enter the domain name to be updated that is intended and registered for the INSYS GPRS 5.1 Ethernet under "DynDNS Hostname" (maximum 40 characters).

- ① The DynDNS procedure generates data traffic that may cause costs depending on the contract. If you do not need a dynamic DNS update, this field must be left empty whereby this function is disabled.

Enter the **user name for DynDNS authentication** under "DynDNS Username" (maximum 15 characters).

Enter the **password for DynDNS authentication** under "DynDNS Password" (maximum 15 characters). To confirm the correct entry, enter the password once more into the field below.

Select the **DynDNS service** from the drop-down list field under "DynDNS System". If the free service is used, "dyndns" must always be selected here.

Enter the name of the DynDNS server under "DynDNS Server". This is generally "members.dyndns.org" for the provider DynDNS.

- ① Since the update protocol is pretty simple, an own DynDNS service can be installed and the appropriate DynDNS update server can be specified here. This is beneficial if the INSYS GPRS 5.1 Ethernet is part of a VPN.

Save your settings by clicking on "Save".

- ① Changed settings become only effective after a restart.

DynDNS can be reset to default settings **irrevocably** by entering "http://<IP-Adresse>/format_dyndns" into the address line of your web browser (e.g. http://192.168.1.1/format_dyndns).

12.6 Administration

The user name and the password for the access to the web interface are configured on the "Administration" page. Moreover, it is possible to execute a restart and a reset to default settings.

12.6.1 Web Interface Access

Access to the web interface of the INSYS GPRS 5.1 Ethernet is protected by user name and password. The default settings for user name and password are "insys" and "gprs".

Configuration with the web interface

In order to specify the **user name for web interface access**, enter this under "Admin name".

In order to specify the **password for web interface access**, enter this under "Admin password". To confirm the correct entry, enter the password once more into the field below.

- ① User name and password will be reset when resetting to default settings. **Save your settings** by clicking "OK".
- ① Changed settings become only effective after a restart.

12.6.2 Restart and Resetting the Default Settings

You can reset the INSYS GPRS 5.1 Ethernet via the web interface or by pressing the reset key on the front of the device. You can simply restart your device or reset all settings to factory defaults. Using the reset key, you can initiate a hardware reset by pressing it once for at least one second. A restart via the web interface initiates a software reset. A restart will be made in both cases. Pressing the reset key five times within ten seconds resets the INSYS GPRS 5.1 Ethernet to default settings.

- ① When restoring the default settings, the IP address and web interface access data will be reset, a configured PIN will be preserved.

Configuration with the web interface

In order to **make a restart**, click under "Reboot Router" on the "Reboot" button.

In order to **restore the default settings**, click under "Reset to factory defaults" on the "Reset to factory defaults" button.

Save your settings by clicking "OK".

12.7 Firmware update

The firmware of the INSYS GPRS 5.1 Ethernet can be updated on the "FW-Update" page.

12.7.1 Updating the Firmware

You can update the firmware of the INSYS GPRS 5.1 Ethernet. The firmware is a combination of operating system and programs, in which the functions of the {{PRO-DUKTBEZEICHNUNG}} are implemented. To update the firmware, you will need a file with a new firmware (for example upgrade.bin), which you can obtain from your sales partner or from INSYS icom. A restart will be performed after updating the firmware (duration approx. 30 seconds).

- ① Depending on the firmware, it may be necessary to configure the INSYS GPRS 5.1 Ethernet again following the update.

Configuration with the web interface

In order to **update the firmware**, click under "File (.BIN) to upload" on the "Browse..." button and select the firmware file (.bin). Click the "Press" button to start the update.

13 Maintenance, Repair and Troubleshooting

13.1 Maintenance

The product is maintenance-free and does not require special regular maintenance.

13.2 Troubleshooting

If a failure occurs during the operation of the product, you will find troubleshooting tips in the FAQ section of this manual or in the "Knowledge Base" on our web site (<http://www.insys-icom.de/knowledge/>). If you need further support, please contact the INSYS icom Support. You can contact our support department via e-mail under support@insys-tec.de and via phone under +49 941 58692-0.

13.3 Repair

Send defect devices with detailed failure description to the source of supply of your device. If you have purchased the device directly from INSYS icom, send the device to: INSYS MICROELECTRONICS GmbH, Waffnergasse 8, 93047 Regensburg.

Caution!



Short circuits and damage due to improper repairs and modifications as well as opening of products.

Fire hazard and damage of the product.

It is not permitted to open the product for repair or modification.

14 Waste Disposal

14.1 Repurchasing of Legacy Systems

According to the new WEEE guidelines, the repurchasing and recycling of legacy systems for our clients is regulated as follows:

Please send those legacy systems to the following address, carriage prepaid:

Frankenberg-Metalle
Gaertnersleite 8
D-96450 Coburg
Germany

This regulation applies to all devices which were delivered after August 13, 2005.

15 Declaration of Conformity

This device complies with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility 2004/108/EC and the Council Directive relating to Low Voltage 2006/95/EC as well as the Council Directive R&TTE 1999/5/EC.

We will gladly send you a copy of the declaration of conformity on request.

16 Export Regulation

US American export regulations apply to the chip sets used by INSYS Microelectronics GmbH for analogue modems and cellular radio adapters according to ECCN classification 5A991.

At the time of publication of this document, it is thus not allowed to export these communication devices to any of the following countries: Cuba, Libya, North Korea, Iran, and Syria.

The latest list of countries can be found in the section “Country Group E” of the document <http://origin.www.gpo.gov/bis/ear/pdf/740spir.pdf>. Address the US federal authorities for an exception from this export regulation.

We explicitly point out that the US export regulations take effect in Germany as well. US authorities may among others prohibit American companies to trade with foreign offenders of the ECCN rules.

17 GPRS Dial-Up Parameters

Here is an overview of network providers for German speaking countries (D, A, CH). Access data of further European network providers is available under <http://www.insys-tec.de/en/content/knowledge-base/mobile/apn/>

Network provider	APN	User name	Password
mdex	mdex.ic.t-mobile	refer to contract data	refer to contract data
T-Mobile (D)	internet.t-mobile	(not required)	(not required)
Vodafone (D)	web.vodafone.de	(not required)	(not required)
E-Plus (D)	internet.eplus.de	eplus	gprs
O2 (D)	internet	(not required)	(not required)
T-Mobile (A)	gprsinternet	GPRS	(not required)
Swisscom (CH)	gprs.swisscom.ch	gprs	gprs



Access data listed here is subject to the autonomy of the respective network provider and can change without notifying us. You can take your access data from your contract documents or request from your network provider.

Selecting wrong access data may cause significantly higher cost for data transmission!

18 FAQ – Frequently Asked Questions

You can find a selection of frequently asked questions in conjunction with the commissioning and operation of the INSYS GPRS 5.1 Ethernet and possible solutions here.

Problem	Possible cause	Remedy
The INSYS GPRS 5.1 Ethernet does not log in.	The location of the GSM antenna is improper.	Check signal quality of the network. Change the antenna location in case of a low field strength (below 12).
	The PIN is not correct.	Enter the correct PIN using the web interface.
	The SIM card is blocked because the PIN has been entered incorrectly for several times.	The PUK must be entered to release the card again.
	The SIM card is not activated.	Contact the service center of your provider.
	The power supply is not sufficient.	Check the power supply against the specifications in the Technical Data section.
	A wrong or no APN has been specified.	Enter the correct APN using the web interface.
	PPP user name and/or PPP password are missing or have been entered wrong.	Enter the correct PPP parameter using the web interface.
The INSYS GPRS 5.1 Ethernet blocks incoming IP connections.	The GSM provider does not permit incoming IP connections.	Ask the GSM provider whether incoming IP connections are permitted. If yes, request the respective APN.
Existing GPRS connections gets interrupted.	Some providers interrupt connections that do not transmit data for a longer period.	These interruptions can be avoided by using the Internet connection check function (GSM/GPRS page of the web interface).
	A CSD data call coming in during an active GPRS connection interrupts the data stream.	The transmission will be continued after the call ends. It may happen for longer interruptions that the connection must be established again.

19 International Safety Instructions

The following safety instruction of Cinterion is valid for the used GPRS engine TC63i or EDGE engine MC75i. Following US FCC specifications, each device must have a sticker with a note referring to the “FCC ID” attached.

19.1 Safety Precautions

The following safety precautions must be observed during all phases of the operation, usage, service or repair of any cellular terminal or mobile incorporating TC63i/MC75i. Manufacturers of the cellular terminal are advised to convey the following safety information to users and operating personnel and to incorporate these guidelines into all manuals supplied with the product. Failure to comply with these precautions violates safety standards of design, manufacture and intended use of the product. Cinterion assumes no liability for customer’s failure to comply with these precautions.

When in a hospital or other health care facility, observe the restrictions on the use of mobiles. Switch the cellular terminal or mobile off, if instructed to do so by the guidelines posted in sensitive areas. Medical equipment may be sensitive to RF energy.

The operation of cardiac pacemakers, other implanted medical equipment and hearing aids can be affected by interference from cellular terminals or mobiles placed close to the device. If in doubt about potential danger, contact the physician or the manufacturer of the device to verify that the equipment is properly shielded. Pacemaker patients are advised to keep their hand-held mobile away from the pacemaker, while it is on.

Switch off the cellular terminal or mobile before boarding an aircraft. Make sure it cannot be switched on inadvertently. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communications systems. Failure to observe these instructions may lead to the suspension or denial of cellular services to the offender, legal action, or both.

Do not operate the cellular terminal or mobile in the presence of flammable gases or fumes. Switch off the cellular terminal when you are near petrol stations, fuel depots, chemical plants or where blasting operations are in progress. Operation of any electrical equipment in potentially explosive atmospheres can constitute a safety hazard.

Your cellular terminal or mobile receives and transmits radio frequency energy while switched on. Remember that interference can occur if it is used close to TV sets, radios, computers or inadequately shielded equipment. Follow any special regulations and always switch off the cellular terminal or mobile wherever forbidden, or when you suspect that it may cause interference or danger.

Road safety comes first! Do not use a hand-held cellular terminal or mobile when driving a vehicle, unless it is securely mounted in a holder for speakerphone operation. Before making a call with a hand-held terminal or mobile, park the vehicle.

Speakerphones must be installed by qualified personnel. Faulty installation or operation can constitute a safety hazard.

IMPORTANT!

Cellular terminals or mobiles operate using radio signals and cellular networks. Because of this, connection cannot be guaranteed at all times under all conditions. Therefore, you should never rely solely upon any wireless device for essential communications, for example emergency calls.

Remember, in order to make or receive calls, the cellular terminal or mobile must be switched on and in a service area with adequate cellular signal strength.

Some networks do not allow for emergency calls if certain network services or phone features are in use (e.g. lock functions, fixed dialing etc.). You may need to deactivate those features before you can make an emergency call. Some networks require that a valid SIM card be properly inserted in the cellular terminal or mobile.

20 Glossary

The most important terms and abbreviations used in the manual are shortly described below.

- APN:** The Access Point Name is the name of the processor offering internet access to the mobile subscribers of GPRS
- AT Command:** Command to devices such as modems for setting this equipment
- Broadcast:** Data packet to be sent to all users of a network
- Caller ID:** The calling line passed by the caller which can be identified by the called telephone
- Client:** Device inquiring services from another device (server)
- CLIP:** The Calling Line Identification Presentation is a performance characteristic for connected calls in the analogue and ISDN telephone network as well as for the mobile telephone system. The Caller ID of the calling person is transmitted to the receiver.
- CHAP:** The Challenge Handshake Authentication Protocol is often used for PPP connections.
- DHCP:** The Dynamic Host Configuration Protocol: DHCP servers can dynamically pass an IP address or other parameters to DHCP clients on their request.
- Dial-In:** The device can be called by a switched dial-up circuit and it is able to establish a LAN connection.
- Dial-Out:** The device can dial out by a switched dial-up circuit and establish an internet connection for example.
- EDI:** Electronic Data Interchange. Data can remotely be transmitted from one computer to another. The transmission is often effected via modem and PPP protocol.
- DNS:** Domain Name System is a service being used for transcribing domain names into IP addresses .
- Domain Name:** The domain is the name of an internet page (for example: insys-icom). It consists of the name and an extension (Top Level Domain such as .com), for example insys-icom.com.
- Firewall:** Network rules in particular locking data packets to certain senders or destinations.
- Gateway:** This is a machine working like a router. Contrary to the router a gateway is able to route data packets of different hardware networks, too.
- GPRS:** The General Packet Radio Service is a further development of the GSM mobile network in order to obtain higher transmission rates.
- GSM:** The Global System for Mobile communications is a mobile network for language and data transmission.

- ICMP:** The Internet Control Message Protocol is a protocol which is often used for the control of a network. The program “ping” for example uses ICMP.
- IP-Address:** The Internet Protocol Address is the IP address of a device inside a network at which it can be reached. It consists of four bytes and is packed decimal (for example 192.168.1.1).
- ISP:** The Internet Service Provider can be dialled up via a switched dial-up circuit (e.g. by an analogue modem or ISDN-TA). Then the ISP provides an internet access via this switched line.
- LAN:** The Local Area Network is a network of computers which are located relatively close together.
- MAC Address:** The Media Access Control Address. A MAC is part of an Ethernet interface. Each Ethernet interface has a unique number throughout the world called the MAC Address.
- MSN:** Multiple Subscribers Number. Any devices being busy at a SO bus require a terminal identification in the form of the terminal number.
- Net Mask:** It defines a logical grouping of IP addresses in network address and device addresses.
- Network Address:** It consists of the overlapping of the IP address and of the net mask. It always ends with “0”. The net mask (e.g. 255.255.255.0) is binary overlaid on the IP address (e.g. 192.168.1.1), the remaining “visible” part of this overlapping (masquerade) is the network address (here: 192.168.1.0).
- Network Rules:** They decide how the different data packets are handled inside a network device. Thus data packets can for example be locked for or by certain network users or they can even be redirected.
- PAP:** The Password Authentication Protocol is often applied to PPP connections.
- Port:** (1) Socket on the switch to which Ethernet devices are connected
(2) Component of a socket for data connections
- Port forwarding:** Network rules which redirect data packets from certain senders to certain receivers of a network.
- PPP:** The Point to Point Protocol is a protocol connecting two machines via a serial line in a way that they are able to exchange TCP/IP packets.
- Router:** This is a machine which renders possible inside a network that the arriving data of a protocol are forwarded on to the provided destination net or subnet.
- SCN:** The Service Center Number is the call number of the processor which accepts memos (->SMS) via the GSM net and forwards them on to the receivers.
- Server:** A device which places services to the disposal of other devices (Clients), e.g. Web server.
- SMS:** Short Message Service: Memos can be sent via the mobile network GSM.

- Socket:** Data connections coming about by ->TCP or ->UDP work with sockets for addressing. A socket consists of an IP address and of a port (cp. Address: Street Name and Street Number)
- Switch:** A device which can connect several machines to the Ethernet. Contrary to a hub the switch is „intelligent“, i.e. it can memorize the MAC addresses which are connected to a port and it directs the data traffic in a more efficient way to the individual ports.
- TCP:** The Transmission Control Protocol is a transport protocol which enables the data exchange between network devices. It works „connection-oriented“, which means that the data transmission is secured.
- UDP:** The User Datagram Protocol is a transport protocol which enables the data exchange between network devices. It operates „connectionless“, i.e. the data transmission is unsecured.
- URL:** The “Uniform Resource Locator” refers to the address at which a service can be found in the web browser. In this manual the IP address of the device is mostly loaded as URL.
- VPN:** Virtual Private Network: Logical connections (so-called tunnels) are set over existing unsecured networks. The end points of these connections („tunnel ends“) and the devices behind can be considered as own logical network. A very high degree of security of interception and manipulation can be achieved by encrypting the data transmission via the tunnels and by mutually authenticating the users of this logical network.
- WAN:** The Wide Area Network is a network of terminals being a long way away from each other.

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