

TAINY *ModemServer Manager*

User Manual



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Dr. Neuhaus Telekommunikation GmbH

Papenreye 65, D-22453 Hamburg

Tel.: +49 (40) 55304-0

Fax.: +49 (40) 55304-180

Internet: <http://www.neuhaus.de>

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Important information

Please observe the following notes, particularly when using networks subject to charges:

When (re-)establishing a connection, obtaining a connection and attempting to make a connection (e.g. server switched off, wrong destination address, etc.), data packets are exchanged. Whether the attempted connections are successful or unsuccessful is irrelevant. TAINY Connect Clients are usually configured in such a way that they conduct this connection handling automatically.

- The number of TAINY Connect Clients that can be logged in to the TAINY ModemServer is limited to the number of gate licenses available.
If more connections (also known as gates) have been imported or inserted than there are gates, the TAINY Connect Clients – regardless of their configuration – try in vain to establish or re-establish a connection to the TAINY ModemServer.
- The connection name and password on the TAINY ModemServer and the respective TAINY Connect Client must correspond. Otherwise logging in to the TAINY ModemServer is not possible.
- If a gate on the TAINY ModemServer is disconnected, the connection to the respective TAINY Connect Client is interrupted. The TAINY Connect Client in question cannot be reached again until it has logged in again, i.e. it has re-established the connection to the TAINY ModemServer.
- If a gate is deleted, the respective TAINY Connect Client – depending on its configuration – repeatedly attempts to redial.
- TAINY Connect Clients can also log in to the TAINY ModemServer when the relevant gate is inactive. However, they cannot establish a connection to other TAINY Connect Clients and cannot be reached by them. In this case, obtaining a connection and logging in again are performed exactly as with an active gate.
- If a TAINY Connect Client logs in to its respective gate in leased line mode even though no leased line connection has yet been set up, the gate is set to "inactive" status.
- If a leased line is configured and if a corresponding gate or both are deactivated, the gate in question is closed, i.e. the connection to the respective TAINY Connect Client is interrupted. The device in question must log in again.
- If a leased line is closed, both connections between the TAINY ModemServer and the TAINY Connect Clients are interrupted. The corresponding TAINY Connect Clients must log back in to the TAINY ModemServer.
- If a leased line is deleted, only the link between two gates is deleted in effect. The individual gates on the TAINY ModemServer remain in place, however, and are set to "inactive" status when the TAINY Connect Clients log in again.

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1 The TAINY Connect System

TAINY Connect facilitates data connections via GPRS, Internet and Intranet by dial-up or leased line

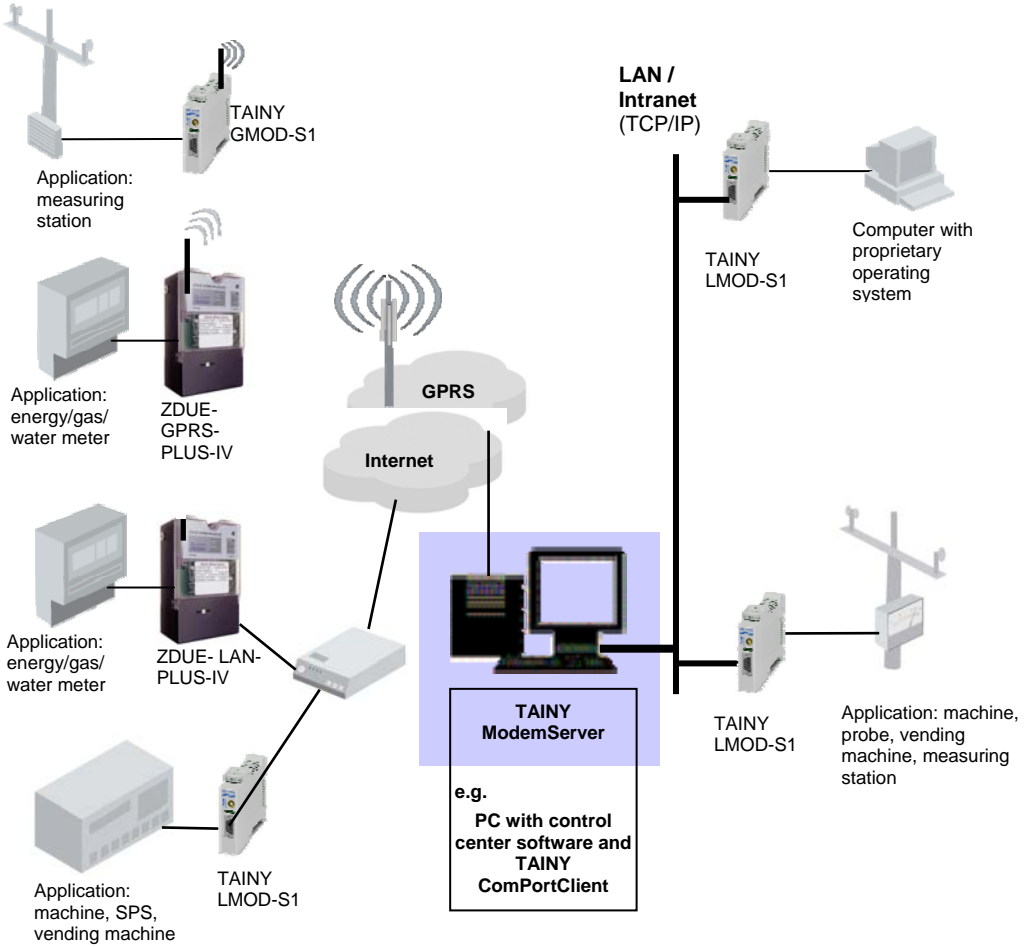
TAINY Connect from Dr. Neuhaus Telekommunikation is a transmission system for wireless and wired M2M (machine to machine) communications based on IP networks. The TAINY Connect is practically a "switchboard" for data communications via TCP/IP networks, and can be used by applications which themselves are not TCP/IP-capable. Possible transmission networks are all TCP/IP networks, such as the GPRS (**G**eneral **P**acket **R**adio **S**ervice) of a GSM network (**G**lobal **S**ystem for **M**obile **C**ommunication = mobile radio network), the Internet and corporate Intranets.

The heart of the TAINY Connect System is the "switchboard", the TAINY ModemServer – software run on a Windows PC or Windows server. Depending on the license purchased, the TAINY ModemServer (TMS) can provide up to 250 connections or gates. These are assigned to TAINY Connect Clients so that they can communicate with each other. TAINY Connect Clients are data communications devices with an implemented TSC protocol, IP-Telemetry protocol according to DIN 43863-4 and TCP/IP protocol. TAINY Connect Clients are used for applications such as telemetric, telecontrol or remote configuration systems, as well as control stations which themselves are not TCP/IP-capable. With the TAINY Connect Clients these applications can exchange data bidirectionally with each other via the TAINY ModemServer via TCP/IP networks, via dial-up lines or leased lines.

The TSC protocol The TSC protocol is a protocol developed by Dr. Neuhaus for the exchange of user data as well as check and control information between the TAINY ModemServer and the TAINY Connect Clients via TCP/IP-based networks – both wired (Internet, Intranet (LAN)) and wireless (GPRS).

DIN 43863-4 was developed from the TSC protocol as an independent standard.

Overview of connection routes:



1.1 The functional principle of the TAINY ModemServer

The TAINY ModemServer works practically like a telephone switchboard designed for continuous operation and permanent accessibility: it routes or switches connections between the TAINY Connect Clients.

TAINY Connect Clients are

- GPRS or fixed network modems on a hardware or software basis with an implemented TSC protocol. They are connected just like conventional modems to machines, vending machines, control units and other applications, or installed on a PC. This enables the applications to establish dial-up lines via TCP/IP networks (e.g. GPRS, Internet) either in the telephone network as in the past or to communicate via leased lines. The remote unit can be another GPRS or fixed network modem with TSC protocol or IP-Telemetry protocol according to DIN 43863-4 or a control center PC with an installed TAINY ComPortClient (software modem). In this case, TAINY ModemServer, TAINY ComPortClient and control center software are run on the same computer.

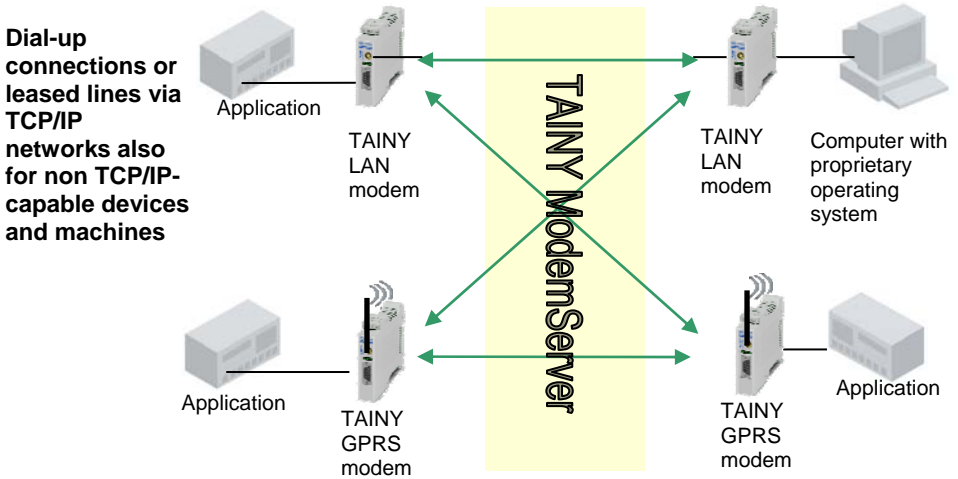
The TAINY ModemServer provides a maximum of 250 gates. Each TAINY Connect Client is assigned to one of these gates, together with a virtual call number at which the respective TAINY Connect Client can be reached. The TAINY ModemServer monitors and controls these gates and hence the links to the TAINY Connect Clients. This allows the TAINY Connect Clients to initiate calls to other TAINY Connect Clients, to receive calls from them and to close connections.

The machines, vending machines, control units, etc. – in short, the applications – can use AT commands like when using a conventional modem. With the ATD command, for example, they can effect the establishment of a connection to the remote unit, another TAINY Connect Client. If they transmit a call number together with the ATD command, a dial-up connection like in a telephone network can be switched to the TAINY Connect Client to which this call number is assigned. Alternatively to the dial-up lines, leased lines can be switched via the TAINY ModemServer.

1.2 Overview of benefits and possibilities

The TAINY Connect System establishes leased lines and dial-up connections via TCP/IP-based networks. Devices and machines with any kind of data communication interface can then exchange

data with each other and/or control centers:



Scalability

The system is scalable, i.e. it can be used as a switching center for 5 devices, or for 250, depending on the license purchased.

Status control

The connection statuses and the statuses of the connected devices can be monitored at any time in the central switchboard, the TAINY ModemServer.

Dial-up lines via TCP/IP data links using the TSC protocol/ DIN 43863-4

The TCP/IP transmission protocol is not designed for modem dial-up connections. This is only made possible by the TAINY Connect transmission system: in the TAINY Connect devices the TSC protocol/IP-Telemetry protocol according to DIN 43863-4 is placed transparently over the TCP/IP transmission protocol. This protocol, developed by Dr. Neuhaus and easy to implement, serve to exchange user data, as well as monitoring and control information via TCP/IP-based networks. This means that all the TAINY Connect Clients in the system can be dialed up just like telephones in a telephone network.

You can connect all applications to each other as required using the TAINY Connect System for the – encrypted or unencrypted – exchange of data.

1.3 TAINY ModemServer Manager

The *TAINY ModemServer Manager* software is run in connection with the TAINY ModemServer on the same computer on which the TAINY ModemServer Kernel is run. *TAINY ModemServer Manager* serves to configure the connections (gates) of the TAINY ModemServer, to administer lines and to view operating and line statuses.

In particular, *TAINY ModemServer Manager* serves to perform the following tasks:

- Setup and configuration of connections (gates). Each TAINY Connect Client intending to communicate with another TAINY Connect Client must be assigned a gate of the TAINY ModemServer.
- Setup and configuration of leased lines between TAINY Connect Clients
- Viewing of statuses of leased lines and dial-up connections between TAINY Connect Clients
- Viewing of the table of alarm messages in which the protocol recordings of the TAINY ModemServer are captured. This is where, for example, all communication events and processes occurring during the establishment, maintenance and disconnection of lines are recorded.
- Insertion of Gate Licenses (also possible with *TAINY ModemServer Admin*)

Installation and installation location

TAINY ModemServer Manager is installed and run

- **on the same computer on which the kernel of the TAINY ModemServer runs.**
- For information on installation and deinstallation, please consult the Administrator Manual of the TAINY ModemServer.

You will find further information on the TAINY ModemServer, its network integration and background information in the User Manual for the *TAINY ModemServer*.

2 Running TAINY ModemServer Manager; operation

2.1 Prerequisites

- The *TAINY ModemServer Kernel* and *TAINY ModemServer Admin* must be installed - see the Administrator Manual for the TAINY ModemServer .
- With *TAINY ModemServer Admin* a Manager Account has been created. You can now use the username and password determined in this account.

2.2 Start and login

TAINY ModemServer Manager Starting

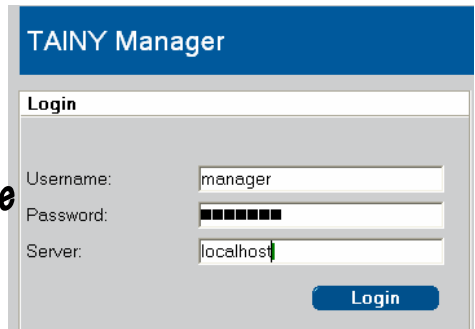
Click **Start, Programs, Neuhaus, TAINY ModemServer Manager, TAINY ModemServer Manager**

(in accordance with the standard installation presettings for the Start menu entry)

When the program starts you are asked to log in and authenticate yourself:



Example



Login with authentication

You have received the following login data from your TAINY ModemServer Administrator for this purpose:

<i>Username:</i>	(max. 32 characters)
<i>Password:</i>	(max. 32 characters)



Make a note of the username and the password as you must enter them in the future when logging in.

Enter the following in the *Server* box:

- Server.* • As *TAINY ModemServer Manager* is being run on the same computer as the Kernel of the TAINY ModemServer, the address of the server is:

localhost

Then click **Login**.

2.3 Privilege restrictions of TAINY ModemServer Manager

Privileges

The display and configuration options available to you with *TAINY ModemServer Manager* depend on which privileges you have. Privileges have been assigned to you by your administrator. They are captured in your Manager Account which the Administrator has created for you, i.e. for your username/password combination, in the database of the TAINY ModemServer using the *TAINY ModemCenter Admin* administration software.

2.4 The user interface

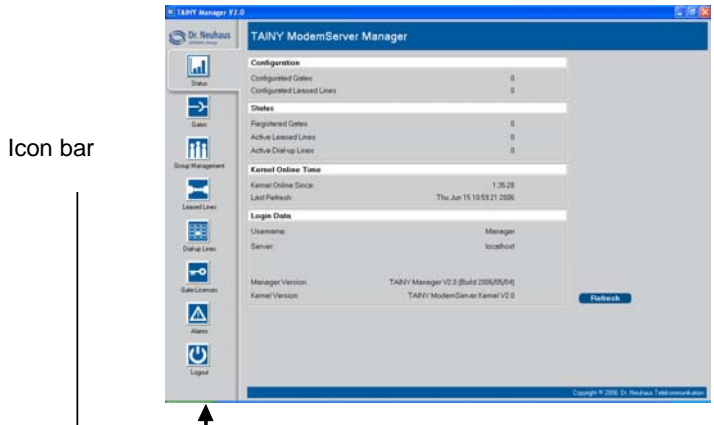
After the start and successful login the program offers administration and control functions on several tabs.

Operation

- The program is operated in the same way as other Windows programs; you click icons or buttons, and activate checkboxes or radio buttons, etc.
- In tabular displays you change the column width by dragging the column line in the column header.

Tip: When you close the window using the *Logout* icon, the column width currently set is retained.

Icons to call up administration and control functions Using the icon bar on the left you can change to the required tab with the corresponding administration or control functions:



Status

Displays the current status of your TAINY ModemServer: information on, for example

- the number of configured gates and configured leased lines
- the status of gates, dial-up lines and leased lines
- the Kernel online time

→ see *Status*, page 17



Gates

Displays the table of gates:

- Setup, configuration and deletion of TAINY ModemServer gates
- Changing the configuration of existing gates

→ see *Gates*, page 18



Group
Management

Displays the existing gate groups:

- Determination and deletion of gate groups

→ see *Group Management*, page 26



Leased Lines

Displays the table of leased lines:

- Creation, configuration and deletion of leased lines between 2 TAINY Connect Clients
- Changing of the configuration of existing leased lines, including the possibility to disconnect

→ see *Leased lines*, page 29.



Dial-up Lines

Displays the table of currently active dial-up lines:

- Possibility to disconnect dial-up lines

→ see *Dial-up lines*, page 34.



Gate Licenses

Shows which Gate Licenses have been purchased and inserted.

- Possibility to insert additional Gate License Keys.

(*TAINY ModemServer Admin* can otherwise be used to display purchased licenses and to insert License Keys.)

→ see *Gate Licenses*, page 36.



Alarms

Shows the table of recorded alarm messages.

These are reports, recorded temporarily during the running time of the TAINY Manager, of special events that have occurred during communication with TAINY Connect Clients, e.g. establishment of a connection, failure of a connection, etc.

→ see *Alarm*, page 38.



Logout

Logout closes the current window, and the login window appears.

2.5 Ending the TAINY ModemServer Manager program

Ending TAINY ModemServer Manager

Click the *Close* icon in the top right corner of the program window.



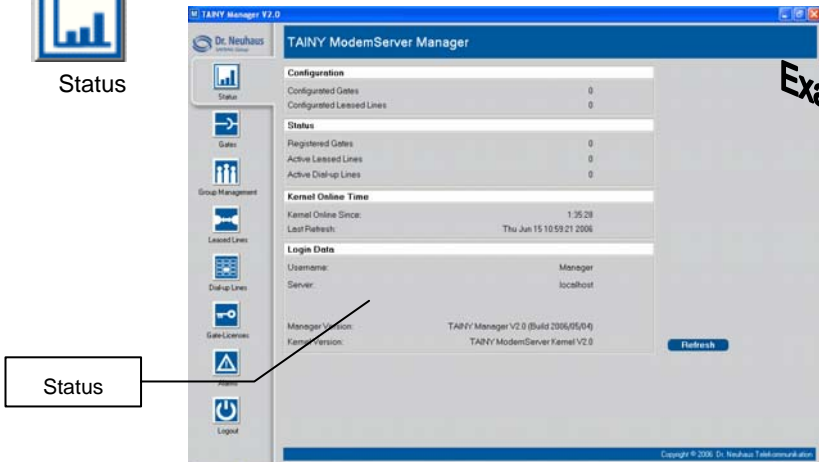
3 Configuration and control of the TAINY ModemServer

3.1 Status



Status

Click the **Status** icon to display the *Status* tab:



The *Status* tab provides information on the general status of the TAINY ModemServer.

Refresh display

By clicking the **Refresh** button you can bring the displayed data up to date.

The following data are displayed:

Display only:

Status:

Displays the current status of your TAINY ModemServer: displays information on, for example

- the configuration:
 - the number of configured gates and configured leased lines
- the status of gates, dial-up lines and leased lines
- Kernel online time

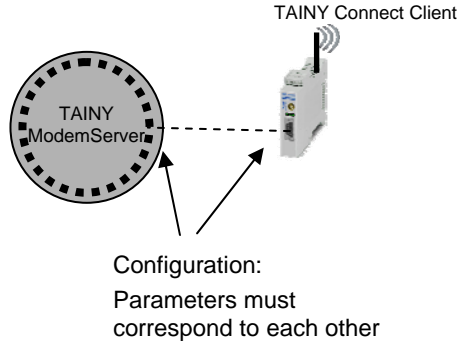
Login data:

Displays e.g. the username with which you have logged in to the TAINY ModemServer as *TAINY ModemServer Manager*.

Also displays the software versions of TAINY ModemServer Manager and TAINY ModemServer Kernel.

3.2 Gates

For each TAINY Connect Client (e.g. TAINY GMOD-Sx, TAINY LMOD-Sx, ZDUE-GPRS-PLUS-IV, ZDUE-LAN-PLUS-IV or TAINY ComPortClient) a connection must be created and configured on the TAINY ModemServer. These connections are also known as gates. The configuration of a gate must correspond to the configuration of the TAINY Connect Client that uses this gate, i.e. to which it is "connected".



With TAINY ComPortClient (CPC) as TAINY Connect Client:

If a computer with an installed TAINY ComPortClient (CPC) is acting as a TAINY Connect Client, a gate must be created and configured for each virtual COM port of the TAINY ComPortClient (CPC) on the TAINY ModemServer. Only then can applications communicate via different virtual COM ports of the CPC independently of one another. This means that they can then make contact with other TAINY Connect Clients via the TAINY ModemServer independently of each other - see also the TAINY ComPortClient (CPC) manual.

To display, create, configure or delete TAINY ModemServer gates, proceed as follows:



Gates

Click the **Gates** icon to display the *Gates* tab:

The screenshot shows the 'TAINY ModemServer Manager' window. On the left is a sidebar with icons for Status, Gates, Group Management, Leased Lines, Dialup Lines, Gate Licenses, Alarms, and Logout. The main area is titled 'TAINY ModemServer Manager' and contains an 'Edit/Setupmask' form for a gate named 'CPC_COMM' and a 'Gates' table. The table has columns: Gate, Gate Name, Password, Groups, Watchdog, Call Number, Mode, Memo, IP-Address, Online, and Active. Below the table is a 'Display Filter' section with radio buttons for 'CPC Gates', 'DNT Gates', 'UNI Gates', 'All Gates', 'online', 'offline', 'active', 'inactive', 'online/offline', and 'active/inactive'. A 'Group Filter' dropdown is set to 'No Group Filter'. A callout box labeled 'Gate table' points to the table, and an 'Example' label points to the filter section.

Gate	Gate Name	Password	Groups	Watchdog	Call Number	Mode	Memo	IP-Address	Online	Active
●	CPC_COMM	qpc10	1	0:03:00	123	LL	qpc#1	192.168.1.2	●	●
●	CPC_COMM	qpc10	1	0:03:00	124	LL	qpc#2	192.168.1.2	●	●
●	CPC_COMM	qpc10	1	0:03:00	55	CS	qpc#1	192.168.1.2	●	●
●	CPC_COMM	qpc10	1	0:03:00	66	LL	qpc#1	192.168.1.2	●	●
●	CPC_COMM	qpc10	1	0:03:00	88	CS	qpc#1	192.168.1.2	●	●
●	GNOC_1	pw100	1	0:03:00	456	CS	TAINYGNOC_1		●	●
●	GNOC_3	pw102	2	0:03:00	458	LL	TAINYGNOC_3		●	●
●	device_1	pwd1	1	0:03:00	3334	CS	device #1		●	●
●	device_2	pwd2	1	0:03:00	3333	CS	device #2		●	●
●	device_3	pwd3	1	0:03:00	3336	CS	device #3		●	●

You will find an explanation of the parameters starting on page 21.

Privileges:

The display and configuration options available to you with *TAINY ModemServer Manager* depend on which privileges (including privileges relating to gate groups) you have. Privileges have been assigned to you by your administrator. They are captured in your Manager Account that the administrator created for you using the administration software *TAINY ModemServer Admin*, i.e. for your username/password combination, in the database of the TAINY ModemServer.

This also has consequences for the *Display / Group Filter* on the *Gates* tab.

Set display filter

If only a certain number of gates is to be displayed, set the appropriate display filter. To do so, activate the appropriate radio buttons or set the group filter using the selection list. Filters can also be combined.

The 'Display Filter' section shows a 'Show All' checkbox which is checked. Below it are radio buttons for 'CPC Gates', 'DNT Gates', 'UNI Gates', and 'All Gates'. There are also radio buttons for 'online', 'offline', 'active', 'inactive', 'online/offline', and 'active/inactive'. A 'Group Filter' dropdown menu is set to 'No Group Filter'.

3.2.1 Creating / configuring / disconnecting / deleting a gate

New / change

1. Create new gate:

If necessary, click the **New**  icon to empty the input mask.

Then continue under 2.

Change the configuration of a gate:

In the Gate table, select the entry of the gate whose properties are to be changed.

Then continue under 2.



A gate can only be changed if it is not currently part of an active line. If necessary, click **Disconnect** first, to disconnect this line.

2. Make the required entries in the input fields of the Edit/Input mask above the Gate table – see below: *Gate parameters to be determined*, page 21.

3. Finally, click the **Accept** button.

Effect:

The (changed) definition of the gate is included and displayed in the Gate table. In addition, the parameters are transmitted to the TAINY ModemServer and put into effect.



Group:

Newly created gates are automatically assigned to a default group "***". See *Group Management*, page 26.

Disconnect

Disconnect gate:

Disconnect means that the line between the TAINY ModemServer and the connected TAINY Connect Client is disconnected. For example, an active dial-up line could be interrupted. After the line has been disconnected, the TAINY ModemServer concerned must log in to the TSC again.

1. In the gate table, select the entry of the gate to be disconnected.

2. Then click the **Disconnect** button.

Delete

Delete gate:





A gate can only be deleted if it is not currently part of an active line. If necessary, click **Disconnect** first, to disconnect this line.

1. In the gate table, select the entry of the gate that is to be deleted.
-
2. Then click the **Delete** button.
-

3.2.2 Gate parameters to be determined

Gate

Indicates what kind of TAINY Connect Client is using this gate. The TAINY ModemServer supports only hardware and software modems from Dr. Neuhaus (DNT).

DNT  (blue)	Hardware from Dr. Neuhaus such as TAINY Connect Modems, e.g. ZDUE-GPRS-PLUS-IV, TAINY GMOD-Sx, TAINY LMOD-Sx or TAINY ComPortClient.
CPC  (yellow)	TAINY ComPortClients (software modem from Dr. Neuhaus) for control center PCs

active / inactive

If a gate is inactive the TAINY Connect Client that uses this gate can be logged in to the TAINY ModemServer, but it cannot make contact to other TAINY Connect Clients.

A gate can only be inactive if there is currently no active line between 2 TAINY Connect Clients established via this gate.

- To disconnect an active line, click the **Disconnect** button.



Regardless of whether they are dial-up or leased lines, lines can only be established between active gates.

Gate name Name to be determined freely. (Please refer to the section on page 41)



If this gate is used by the ComPortClient Client (CPC) as a TAINY Connect Client, then the COM port which the CPC emulates on its host computer must be given with an underscore after the name.

Example:

If the TAINY ComPortClient provides an application on its host computer with the COM port **COM4**, then the gate name which the TAINY ComPortClient uses on the TAINY ModemServer could be, for example: *Hamburg_COM4* or *2214_COM4* or *dnt-cpc_COM4* etc.

If the computer is linked to the TAINY ModemServer via several COM ports of a CPC, the gates can then have the same root name; they are then differentiated only by the COM port suffix.



The name determined here must also be configured on the TAINY Connect Client that receives access to the TAINY ModemServer via this gate. (On some TAINY Connect Clients the term "device name" or "user name" is sometimes used for "gate name".)

Password Password to determined freely. (Please refer to the section on page 41). This password must be given by the TAINY Connect Client that is to contact the TAINY ModemServer via this gate.




The password determined here must also be configured on the TAINY Connect Client that receives access to the TAINY ModemServer via this gate.


Watchdog Time interval in minutes after which the TAINY ModemServer expects a Watchdog packet from the TAINY Connect Client that uses this gate. (Value between 0 and 60 minutes possible)

While TAINY Connect Client is authenticating itself it is notified of the value determined here so that the TAINY Connect Client adjusts to it and acts accordingly.

With a Watchdog packet, this TAINY Connect Client signals its reachability. Watchdog packets serve to identify failures in the transmission network.

-  The transmission of each Watchdog packet via the GPRS network creates costs. When determining the Watchdog time interval, you should choose a sensible compromise between costs and the possibility of quickly identifying network failures.
-

Call number Call number to be determined freely. (Please refer to the section on page 41). The TAINY Connect Client that uses this gate can be reached by other TAINY Connect Clients under this call number.


-  You must also determine a call number if you want to connect the TAINY Connect Client of this gate via leased line to another TAINY Connect Client.

Mode Circuit-Switched mode (CS) OR Leased Line mode (LL):
Determines whether the TAINY Connect Client "connected" to or logged in at this gate

- is to be connected to another TAINY Connect Client via leased line

OR

- is to be able to establish a connection to another TAINY Connect Client or be reachable by dial-up line.

-  For a leased line between 2 TAINY Connect Clients the following prerequisites must be fulfilled:
 - The TAINY Connect Clients concerned must be configured for leased lines.
 - The leased line must be defined on the *Leased Lines* tab.

Description Any descriptive text about this gate (please refer to the section , page 41). The field can also be left empty.



3.2.3 Other parameters displayed (in the gate table)

Display only
IP address If the TAINY Connect Client assigned to this gate is connected to the TAINY ModemServer is operable (= online), the current IP address of the TAINY Connect Client is displayed in this field.

Display only:
Groups Indicates how many groups the gate is assigned to.



Display only:

Online

-  Red: Offline, i.e. no connection between this gate and the TAINY Connect Client assigned to it.
 -  Green: Online, i.e. the TAINY Connect Client assigned to this gate is connected and operable, which means it can make contact to another TAINY Connect Client.
-

Display only:

Active

-  Red: The TAINY Connect Client assigned to this gate is not currently connected to another TAINY Connect Client.
 -  Green: The TAINY Connect Client assigned to this gate is currently connected to another TAINY Connect Client.
-

3.2.4 Exporting configuration data to a file

You can export the gate data to a file in csv format. (This is pure text with values separated by commas or semi-colons.) This csv file can then be

- edited using e.g. MS-Excel
- saved as a backup copy and, if required, imported back into the TAINY ModemServer.

Export

To export the gate data to a file, proceed as follows:

1. Click **Export**.
-
2. Using the dialog box displayed, determine the folder and file in which the data are to be saved.
-

3.2.5 Importing a configuration file

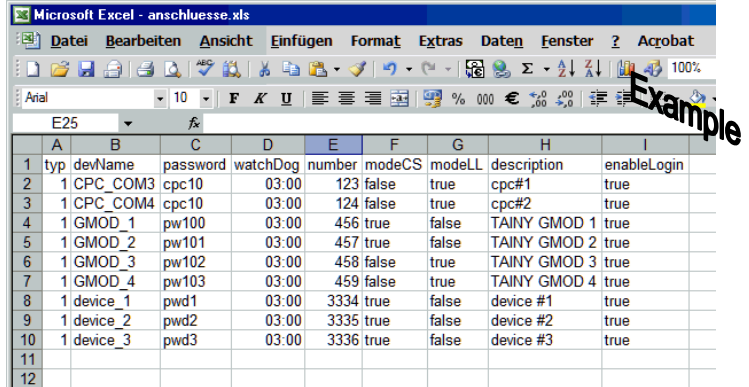
Create file

You can also capture the gate data in an Excel table and subsequently import it into the TAINY ModemServer. Save the Excel table containing the gate data in csv format. (This is pure text with values separated by commas or semi-colons.) Make sure you use the correct column headers in English:

German description	English
Gate →	type (= 1)
Anschlussname→	devName
Passwort→	password
Watchdog →	watchDog
Rufnummer →	number

Modus: LL oder CS →	modeLL modeCS	false OR true false OR true
Notiz →	description	
aktiviert / deaktiviert →	enableLogin (true ER false) aktiviert = true deaktiviert = false	

Refer here to the following illustration:



	A	B	C	D	E	F	G	H	I
1	typ	devName	password	watchDog	number	modeCS	modeLL	description	enableLogin
2	1	CPC_COM3	cpc10	03:00	123	false	true	cpc#1	true
3	1	CPC_COM4	cpc10	03:00	124	false	true	cpc#2	true
4	1	GMOD_1	pw100	03:00	456	true	false	TAINY GMOD 1	true
5	1	GMOD_2	pw101	03:00	457	true	false	TAINY GMOD 2	true
6	1	GMOD_3	pw102	03:00	458	false	true	TAINY GMOD 3	true
7	1	GMOD_4	pw103	03:00	459	false	true	TAINY GMOD 4	true
8	1	device_1	pwd1	03:00	3334	true	false	device #1	true
9	1	device_2	pwd2	03:00	3335	true	false	device #2	true
10	1	device_3	pwd3	03:00	3336	true	false	device #3	true
11									
12									

Import file

To import a csv file for the configuration of gates into the TAINY ModemServer, proceed as follows:

1. Click **Import**.
2. Using the *Open* dialog box that is then displayed, select the file, then click **Open**.

Effect:

The file is imported and the parameters are transferred to the TAINY ModemServer and put into effect. The gate table includes the new or changed gate definitions.



If the gate table already contains gate definitions, these are overwritten only if data records in the imported configuration file contain identical gate names (devName).

3.3 Group Management

Several gates or their TAINY Connect Clients can be put together to form a group. For example, you could assign the meter data retrieval modems in a certain area to a particular group, the corresponding TAINY Connect Clients of another area to another group, etc.

Even if no group has been defined by the user, the default group "*" (asterisk) exists. All newly created gates or their TAINY CONNECT Clients are assigned to this group at first. Group allocations can be changed.

Default group: *



With the administration function *Group Privileges* the *TAINY ModemServer Admin* software can determine which privileges you have with the *TAINY ModemServer Manager* with regard to the different groups.

Privileges:

To view the current group of privileges, to define, delete or assign groups, etc., proceed as follows.



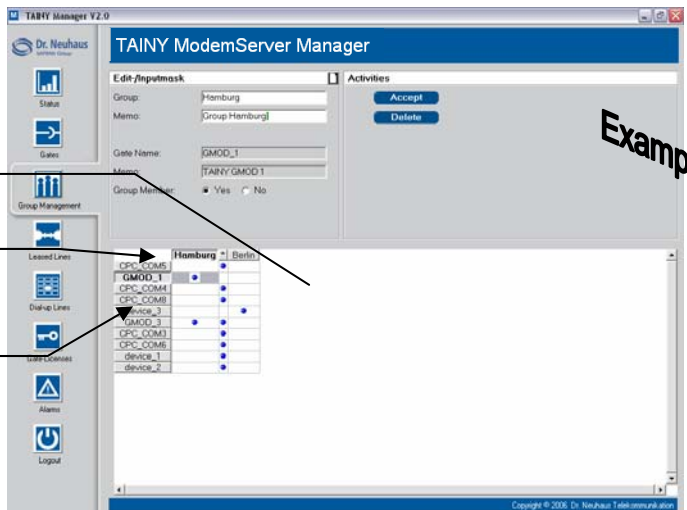
Group Management

1. Click the **Group Privileges** icon to display the *Group Privileges* tab:

GROUP MATRIX

Manager Accounts

TMS Gates




The existing groups are listed in the column header of the group matrix, and the gates in the line header. A blue circle placed at the intersection of column and line means that the gate concerned belongs to the corresponding group.

The default group * always exists. It cannot be deleted. Each newly created gate is automatically included in this default group at first.

3.3.1 Defining / deleting a group

Create new group

1. If necessary, click the **New**  icon to empty the Edit/Input mask.

2. Make the required entries in the input fields above the group matrix:



The screenshot shows a dialog box titled "Editier-/Eingabemaske". It has two input fields: "Gruppe:" and "Notiz:". The "Gruppe:" field is currently empty, and the "Notiz:" field is also empty.

Enter the required group name in the *Group* field, and optionally an explanation in the *Memo* field. (Please refer to the section on page 41).

3. Click **Accept**.

Delete group



- A group can only be deleted if it is empty, i.e. if no gates are assigned to this group.
 - The default group * cannot be deleted.
1. In the group matrix, mark (= click) any table cell in the column (= group) concerned.
Consequence:
The group name concerned is displayed above the group matrix, plus the memo written.

 2. Click **Delete**.

3.3.2 Assigning a gate to a group / revoking assignment

Determine / revoke1. assignment At the intersection of column (= group) and line (= gate), mark (= click) the table cell.

Consequence:

The relevant gate name is displayed above the group matrix, plus the memo that has been written for this gate on the *Gates* tab.

Edit-/Inputmask

Group: Hamburg

Memo: Group Hamburg

Gate Name: GMOD_1

Memo: TAINY GMOD 1

Group Member: Yes No

Activities

Accept

Delete

Example

	Hamburg *	Berlin
CPC_COM5	<input checked="" type="checkbox"/>	
GMOD_1	<input checked="" type="checkbox"/>	
CPC_COM4		<input checked="" type="checkbox"/>
CPC_COM8		<input checked="" type="checkbox"/>
device_3		<input checked="" type="checkbox"/>
GMOD_3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CPC_COM3		<input checked="" type="checkbox"/>
CPC_COM6		<input checked="" type="checkbox"/>
device_1		<input checked="" type="checkbox"/>
device_2		<input checked="" type="checkbox"/>

2. Determine group assignment:

Activate the **Yes** radio button behind *Group Member*.

OR

Revoke group assignment:

Activate the **No** radio button behind *Group Member*.

3. Click the **Accept** button.

3.4 Leased lines

Two TAINY Connect Clients can be firmly linked to each other by leased line.

Prerequisite:

- For each of the TAINY Connect Clients a gate is set up, via which they receive access to the TAINY ModemServer. The gate concerned is configured for leased line - see *Creating / configuring / disconnecting / deleting a gate*, page 20.
- The TAINY Connect Clients concerned are configured for leased line.

To set up a leased line, the gate names of the gates via which the TAINY Connect Clients are "connected" are assigned to each other.

To view, set up, configure, disconnect or delete leased lines, proceed as follows:



Leased Lines

Click the **Leased Lines** icon to display the *Leased Lines* window:

Leased line table

LL	Leased Line Identifier	Gate Name (A)	Gate Name (B)	Memo	Active
11	Leased Line Hamburg-Berlin	CPC_COMM	CPC_COMM	TOR74	■
12	Leased Line Hamburg-Stockholm	CPC_COMM	device_3	Gas works	■

Privileges:

The display and configuration options available to you with *TAINY* ModemServer Manager depend on which privileges (including privileges with regard to gate groups and leased lines) you have. Privileges have been assigned to you by your administrator. They are captured in your Manager Account that the administrator

created for you using the administration software *TAINY ModemServer Admin*, i.e. for your username/password combination, in the TAINY ModemServer.

3.4.1 Creating / configuring / deleting a leased line

New / change

1. Create new leased line:

If necessary, click the **New**  icon to empty the input mask.

Then continue under 2.

Change the configuration of a leased line:

In the leased line table, select the entry of the leased line whose properties are to be changed.

Then continue under 2.



You can only edit a leased line if it is not currently part of an active line. If necessary, click **Disconnect** first, to disconnect this line.

2. Enter the required details in the input fields above the leased line table – see below: *Leased line parameters to be determined*, page 31.

3. Finally, click the **Accept** button.

Effect:

The (changed) definition of the leased line is included and displayed in the leased line table. In addition, the parameters are transmitted to the TAINY ModemServer and put into effect.

As soon as the devices then log in to the TAINY ModemServer they are connected to each other.

If the devices configured for Leased Line mode (LL) already logged to the TAINY ModemServer before the leased line was configured, the gates are in inactive status. The line to the devices is then disconnected and the devices must log in again.



In order for a leased line to function, the gates concerned AND the TAINY Connect Clients "connected" to them must first be configured for leased line operation.

Delete

Delete gate:

1. In the leased line table, select the entry to be deleted.



You can only delete a leased line if it is not currently part of an active line. If necessary, click **Disconnect** first, to disconnect this line.

2. Then click the **Delete** button.
-

3.4.2 Disconnecting a leased line

1. In the leased line table, select the entry concerned.
 2. Click the **Disconnect** button.
-

3.4.3 Leased line parameters to be determined

Leased line name Name to be determined freely. (Please refer to the section on page 41)

Gate name (A) Each leased line links one gate to another gate. Using the selection table, specify the name of the first gate you want to connect.



The TAINY Connect Client that uses this gate must be configured for leased line and for this gate name. (On some TAINY Connect Clients the term "device name" or "user name" is sometimes used for "gate name".)

Gate name (B) Using the selection table, specify the name of the second gate you want to connect.



The TAINY Connect Client that uses this gate must be configured for leased line and for this gate name. (On some TAINY Connect Clients the term "device name" or "user name" is sometimes used for "gate name".)

Description Any descriptive text about this leased line. The field can also be left empty. (Please refer to the section on page 41)

3.4.4 Other parameters displayed in the leased line table

Display only:

- Red: The leased line concerned is not active.
- Green: The leased line concerned is active; the TAINY Connect Clients assigned to the two gates are linked to each other.

Active

If a TAINY Connect Client configured for leased line cannot be connected when logging in to the TAINY ModemServer because no leased line has yet been set up for it, the indicator automatically turns red (= inactive leased line). The indicator does not automatically turn green (= active leased line) until the leased line has been set up and the connection to the other logged in TAINY Connect Client has been established.

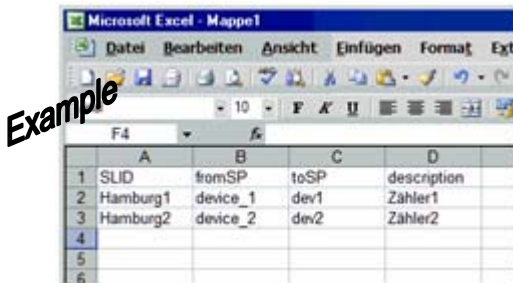
3.4.5 Importing a configuration file

Create file

You can also capture the leased line data in an Excel table and subsequently import it into the TAINY ModemServer. Save the Excel table containing the gate data in csv format. (This is pure text with values separated by commas or semi-colons.) Make sure you use the correct column headers:

Standleitungsname →	SLID
Anschlussname 1 →	fromSP
Anschlussname 2 →	toSP
Notiz →	description

Refer here to the following illustration:



Import file

To import a csv file for the configuration of leased lines into the TAINY ModemServer, proceed as follows:

1. Click **Import**.

2. Using the *Open* dialog box that is then displayed, select the file, then click **Open**.

Effect:

The file is imported and the parameters are transferred to the TAINY ModemServer and put into effect. The leased line table includes the new or changed leased line definitions.



A leased line can only be formed between two existing gates configured for leased line. Therefore, when importing leased line data, make sure that the appropriate gates are in place and that the gate names correspond.



If the leased line table already contains leased line definitions, these are overwritten only if data records in the imported configuration file contain identical leased line names (SLID).

3.4.6 Exporting leased line data to a file

You can export the leased line data to a file in csv format. (This is pure text with values separated by commas or semi-colons.) This csv file can then be

- edited using e.g. MS-Excel
- saved as a backup copy and, if required, imported back into the TAINY ModemServer.

Export

To export the leased data to a file, proceed as follows:

1. Click **Export**.

 2. Using the dialog box displayed, determine the folder and file in which the data are to be saved.
-

3.5 Dial-up lines

As soon as a dial-up line is established between 2 TAINY ModemServer gates or between the TAINY Connect Clients "connected" or logged in to them, the status of this line is displayed in the *Dial-up Lines* table.

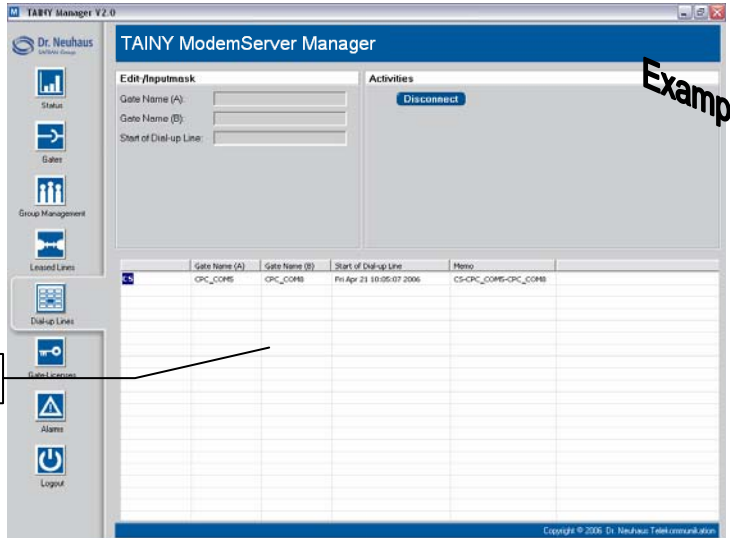
The entry is deleted automatically as soon as the line is disconnected.

Display all active dial-up lines

To display the status of existing dial-up lines, proceed as follows:



Click the **Dial-up Lines** icon to display the *Dial-up Lines* window:



Dial-up Lines table

Privileges: 

The display and configuration options available to you with *TAINY ModemServer Manager* depend on which privileges (including privileges with regard to gate groups) you have. Privileges have been assigned to you by your administrator. They are captured in your Manager Account that the administrator created for you using the administration software *TAINY ModemServer Admin*, i.e. for your username/password combination, in the TAINY ModemServer.

Disconnect a dial-up line

A dial-up line is normally disconnected by one of the TAINY Connect Clients involved.

If you want to disconnect a dial-up line using *TAINY ModemServer Manager*, proceed as follows:

1. In the *Dial-up Lines* window, select the entry concerned.

2. Click **Disconnect**.

Effect:

The line to the terminal devices is disconnected and the entry is deleted from the Dial-up Lines window. The terminal devices must log back in to the TAINY ModemServer to be able to establish lines with other TAINY Connect Clients.

3.5.1 Parameters displayed in the dial-up line table

Display only: Name of the gate from which a dial-up line has been initiated.

Gate name (A)

Display only: Name of the gate to which a dial-up line has been established.

Gate name (B)

Display only: Time at which the line was established.

Start of connection

Display only: Internal, automatically generated name for this dial-up line.

Description

3.6 Gate Licenses

The Gate license provides the right to have as many TAINY Connect Clients simultaneously logged in to the TAINY ModemServer as stipulated in the license in question. Although any number of the available gates can be configured, i.e. TAINY Connect Clients assigned, using *TAINY ModemServer Manager*, dial-up lines and/or leased lines can only be established between the TAINY Connect Clients which are logged in to the TAINY ModemServer.

Not until the connection between the TAINY ModemServer and a TAINY Connect Client is closed or interrupted, e.g. by one or several devices logging out, can a different TAINY Connect Client log in to the TAINY ModemServer.

For the TAINY ModemServer, Gate License Keys are issued for the following types of TAINY Connect Clients in different batches:

DNT	Hardware from Dr. Neuhaus such as TAINY Connect Modems, e.g. ZDUE-GPRS-PLUS-IV, ZDUE-LAN-PLUS-IV, TAINY GMOD-Sx, TAINY LMOD-Sx, as well as the software modem TAINY ComPortClient
CPC	TAINY ComPortClients (software modem from Dr. Neuhaus) for control center PCs

3.6.1 Displaying Gate Licenses, inserting / deleting Gate License Key



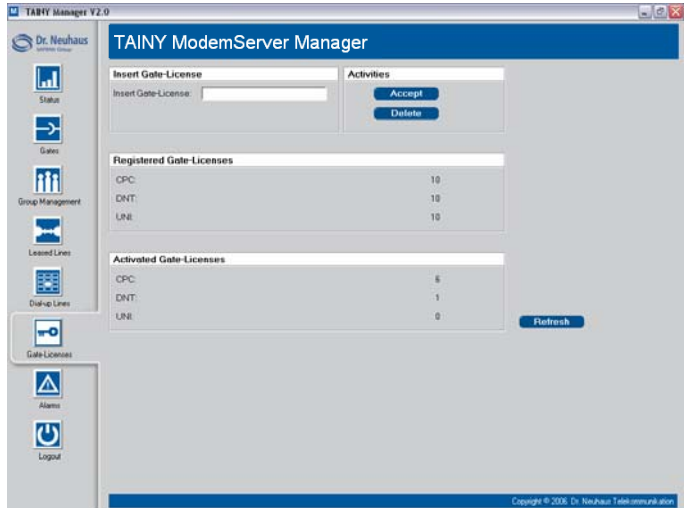
Gate Licenses

To view the current gate license status or to insert a License Key, proceed as follows:

1. Click the **Gate Licenses** icon to display the *Gate Licenses* tab.

The *Gate Licenses* tab shows how many gate licenses have been purchased and registered for

- DNT (Hardware und CPC von Dr. Neuhaus)
- CPC (TAINY ComPortClients) – **does not apply to the TAINY ModemServer!**
- UNI (devices of other manufacturers who have implemented the TSC protocol or IP-Telemetry protocol according to DIN 43863-4) – **does not apply to the TAINY ModemServer!**



Inserting Gate License Key

Proceed as follows:

1. Enter the Gate License Key in the **Insert Gate License** box.
2. Click **Accept**.

Deleting Gate Licenses

Gate Licenses can be deleted from the database of the TAINY ModemServer.

Proceed as follows:

1. Enter the Gate License Key in the **Insert Gate License** box.
2. Click **Delete**.

3.7 Alarms

All events occurring during the establishment, maintenance and disconnection of lines are recorded as alarm messages in a table by the TAINY ModemServer. This list also records any changes made to the configuration.

The list can contain a maximum of 1,000 messages. Once this number of entries is reached, the oldest entry is deleted to allow a new entry to be written.

The *Alarms* window shows the table of alarm messages.

To display the recorded alarm messages, proceed as follows:



Alarms

Click the **Alarms** icon to display the *Alarms* window:

The screenshot shows the TAINY ModemServer Manager interface. The left sidebar contains various icons, with the 'Alarms' icon (a triangle with an exclamation mark) highlighted by a box labeled 'Alarm'. The main window displays a table of alarm messages. The table has columns for ID, Alarm Time, Gate-Group Name, Leased Line/Deal-up Identifier, Alarm Description, and Alarm Type. A specific entry is selected, and its details are shown in the 'Display' pane above the table. The 'Display' pane shows: ID: 1512, Alarm Time: Fri Apr 21 11:26:35 2006, Gate-Group Name: Leased Line Hamburg-Southampton, Leased Line/Deal-up Identifier: leased line (0), Alarm Description: leased line-Alarm, and Alarm Type: Leased Line-Alarm. The 'Activities' pane shows 'Delete Table' and 'Export' buttons. A 'Beispiel' watermark is visible on the right side of the screenshot.

ID	Alarm Time	Gate-Group N...	Leased Line/Deal-up Identifier	Alarm Description	Alarm Type
1489	Fri Apr 21 11:19:00 2006	GPC_CORP0	...	gate offline	Gate-Alarm
1490	Fri Apr 21 11:19:00 2006	GPC_CORP0	...	update gate	Gate-Alarm
1491	Fri Apr 21 11:19:00 2006	GPC_CORP0	...	gate activated	Gate-Alarm
1492	Fri Apr 21 11:19:00 2006	GPC_CORP0	...	gate online	Gate-Alarm
1493	Fri Apr 21 11:19:45 2006	...	Leased Line Hamburg-Berlin	leased line disconnect	Leased Line-Alarm
1494	Fri Apr 21 11:19:45 2006	GPC_CORP0	...	gate offline	Gate-Alarm
1495	Fri Apr 21 11:19:46 2006	GPC_CORP0	...	update gate	Gate-Alarm
1496	Fri Apr 21 11:19:46 2006	GPC_CORP0	...	gate activated	Gate-Alarm
1497	Fri Apr 21 11:19:46 2006	GPC_CORP0	...	update gate	Gate-Alarm
1498	Fri Apr 21 11:19:46 2006	GPC_CORP0	...	gate activated	Gate-Alarm
1499	Fri Apr 21 11:20:00 2006	GPC_CORP4	...	gate offline	Gate-Alarm
1500	Fri Apr 21 11:20:05 2006	GPC_CORP4	...	gate online	Gate-Alarm
1501	Fri Apr 21 11:20:05 2006	...	Leased Line Hamburg-Berlin	leased line connect	Leased Line-Alarm
1502	Fri Apr 21 11:20:05 2006	...	CSORP_CORP0-CSORP	deal-up line (0) connect	Deal-up Line-Alarm
1503	Fri Apr 21 11:24:12 2006	GPC_CORP7	...	gate offline	Gate-Alarm
1504	Fri Apr 21 11:24:13 2006	GPC_CORP7	...	gate online	Gate-Alarm
1505	Fri Apr 21 11:24:14 2006	GPC_CORP7	...	gate offline	Gate-Alarm
1506	Fri Apr 21 11:24:14 2006	GPC_CORP7	...	gate online	Gate-Alarm
1507	Fri Apr 21 11:24:16 2006	GPC_CORP0	...	gate offline	Gate-Alarm
1508	Fri Apr 21 11:24:19 2006	GPC_CORP0	...	gate online	Gate-Alarm
1509	Fri Apr 21 11:24:51 2006	+	+	add gate to group	Group-Alarm
1510	Fri Apr 21 11:24:51 2006	GPC_CORP4	...	add gate to group	Gate-Alarm
1511	Fri Apr 21 11:24:51 2006	GPC_CORP4	...	insert gate	Gate-Alarm
1512	Fri Apr 21 11:26:35 2006	...	Leased Line Hamburg-Southampton	leased line (0)	Leased Line-Alarm
1513	Fri Apr 21 11:26:35 2006	GPC_CORP0	...	gate offline	Gate-Alarm
1514	Fri Apr 21 11:26:35 2006	GPC_CORP0	...	gate online	Gate-Alarm

(You can alter the width of a column by dragging a column line in the column header.)

View particular alarm message

Select the entry in the alarm table (= click the entry).
 Consequence:
 The entry is displayed in the mask above the table.

Delete all alarm messages

Click **Delete Table**.

Effect: All entries in the table are deleted.

3.7.1 Parameters displayed in the alarm table

Display only:

id	Serial number of the alarm message
Alarm Time	Date and time of alarm issue
Gate/Group Name	Indicates the gate at whose line the cause of the alarm message occurred. Or the group to which the alarm message refers is given.
Leased Line/Dial-up Name	Indicates the leased line or dial-up line on which the cause of the alarm occurred.
Alarm Description	Brief description of the alarm
Alarm Type	Indicates the alarm category. In the TAINY ModemServer Manager there are the following alarm types: dial-up line alarm, leased line alarm, gate alarm, group alarm

3.7.2 Exporting alarm messages to a file

You can export the alarm table to a file in csv format. (This is pure text with values separated by commas or semi-colons.)

Export

To export the leased data to a file, proceed as follows:

1. Click **Export**.
-
2. Using the dialog box displayed, determine the folder and file in which the data are to be saved.
-

3.8 Logout

Logout disconnects the current line to the TAINY ModemServer, and the login window appears.

3.8.1 Performing logout



Click the **Logout** icon.

Effect:

The login window appears.

Logout

4 Notes on certain parameter values

Permissible parameter values and lengths in the TAINY ModemServer for Gate Name, Password, Call Number, Description and Leased Line Name are given in the following.

Gate name

Max. 32 characters

Permissible: All displayable ASCII characters (20-7E hex) except "/" (slash)

!"#\$%&'()*+,:;<=>@[]^_{ }~ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz0123456789



- The gate name must correspond to the name configured in the relevant TAINY Connect Client. (On some TAINY Connect Clients the term "device name" or "user name" is sometimes used for "gate name".)
- With some Clients, fewer than 30 characters are available.

Password

Max. 32 characters

Permissible: All displayable ASCII characters (20-7E hex) except "/" (slash)

!"#\$%&'()*+,:;<=>@[]^_{ }~ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz0123456789



- The password must correspond to the password configured in the TAINY Connect Client.
- With some Clients, fewer than 30 characters are available.

Call number

Max. 32 characters

Permissible: Numerals only; 0, ..., 9

Description

Max. 128 characters

Permissible: All displayable ASCII characters (20-7E hex) except "/" (slash, asterisk)

!"#\$%&'()*+,:;<=>@[]^_{ }~ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxy0123456789

Group name

Max. 32 characters

Permissible: All displayable ASCII characters (20-7E hex) except "/" (slash, asterisk)

!"#\$%&'()+,.;<=>@[\\^_{}~ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy0123456789

Leased line name

Max. 32 characters

Permissible: All displayable ASCII characters (20-7E hex) except "/" (slash)

!"#\$%&'()*+,.;<=>@[\\^_{}~ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy0123456789

5 Annex: Glossary

Client / Server In a client/server environment a server is a program or computer which receives and answers queries from the client program or client computer.

In data communication the term client is also used to denote the computer which establishes a connection to a server (or host), the client is the calling computer and the server (or host) is the called computer.

COM Port, virtual COM Port The term "COM Port" (Communication Port) refers to a serial interface (V.24, RS-232) on a Windows PC. Application programs use COM Ports for data transmission to various devices, e.g. modems, PCs, terminals, etc. A COM Port can be a physical COM Port or a software interface in the PC (virtual COM Port). For application programs, virtual COM Ports behave like physical COM Ports, however the data can be rerouted to other interfaces.

Data packet, Datagram In the transfer protocol →TCP/IP data are sent in the form of data packets known as IP datagrams. An IP datagram is structured as follows:

IP header	TCP, UDP, ESP, etc. header	Data (payload)
-----------	----------------------------	----------------

The IP header contains:

- the IP address of the sender (source IP address)
- the IP address of the recipient (destination IP address)
- the protocol number of the protocol of the next highest protocol layer (according to the OSI layer model)
- the IP header checksum to check the integrity of the header upon reception.

The TCP/UDP header contains the following information:

- the port of the sender (source port)
- the port of the recipient (destination port)
- a checksum for the TCP header and some information from the IP header (e.g. source and destination IP address)

DynamicDNS providers

offer the option to be accessible via a fixed Internet address

Also *Dynamic DNS providers*. Each computer that is connected to the Internet has an IP address (IP = Internet Protocol). An IP address consists of 4 numbers, separated by full stops, which can each have up to three digits. If the computer is online via a telephone line by modem, ISDN, GPRS or ADSL, it is dynamically assigned an IP address by the Internet service provider, i.e. the address changes from one session to another. Even if the computer is online for 24 hours without interruptions (e.g. with a flat rate) the IP address is changed from time to time.

If a local computer is to be accessible via the Internet it must have an address which is known to the remote communication partner. Only in this way can the communication partner establish a connection to the local computer. However, if the address of the local computer continually changes this is not possible, unless the operator of the local computer has an account with a DynamicDNS provider (DNS = Domain Name Server).

The operator can then determine a hostname with the provider at which the computer is to be reached in the future, e.g. `www.xyz.abc.de`. In addition, the DynamicDNS provider supplies a small program which has to be installed and run on the computer in question. In each Internet session of the local computer this tool informs the DynamicDNS provider of the computer's current IP address. The provider's Domain Name Server registers the current Hostname / IP address assignment and informs other Domain Name Servers on the Internet accordingly.

If a remote computer now wants to establish a connection to the local computer which is registered with the DynamicDNS provider, the remote computer uses the local computer's hostname as the address. This establishes a connection to the responsible DNS (Domain Name Server), where a scan is made for the IP address which is currently assigned to this hostname. The IP address is transmitted back to the remote computer which now uses it as the destination address. This now leads to exactly the desired local computer.

In principle, all Internet addresses are based on this system: first, a connection is established to the DNS in order to ascertain the IP address assigned to this hostname. Once this has taken place, the connection to the desired remote site, which can be any Internet presence, is established with this "referenced" IP address.

You will find DynamicDNS providers on the Internet at the following address: <http://netzadmin.org/ddns-provider.php>

Gate (=connection) active / inactive	An inserted and configured gate can be inactive. An assigned TAINY Connect Client can then log in to the TAINY ModemServer, but cannot establish or receive a connection – dial-up line or leased line.
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Gateway	<p>This term is often used to mean the same as Router. It is a device which connects physically separated networks via a telecommunications line. This change in meaning is due not least to the fact that Microsoft systems request the IP address for the default router as the gateway address.</p> <p>In actual fact, a gateway is a device (usually a fully-fledged computer) which can connect networks with completely different address types, incompatible protocols, etc.</p>
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GPRS	<p>GPRS (General Packet Radio Service) is an additional service of GSM network operators (GSM = Global System for Mobile Communications) specially for data transmissions. Compared with other services of mobile radio networks such as telephone and SMS (Short Message Service) GPRS offers the following advantages:</p> <ul style="list-style-type: none">• Permanent availability of the GPRS network for immediate transmissions: Since data are not transmitted over the GPRS network as a data stream but in packets with packet-switching technology there is a permanent virtual connection between the communicating computers. In contrast to, for example, telephony <u>no</u> fixed transmission channel is switched which is exclusively available to the communicating subscribers for the duration of the connection. Instead the available network resources are used jointly with others in a time-slot process. The individually addressed data packets are passed to the network and find their way through the network infrastructure to the recipient. The consequence of this: The communicating computers are permanently online, almost as if they were connected via a dedicated leased line. If a volume rate is charged, only the volume of the data has to be paid for.• Network capability: GPRS also establishes connections via the Internet to any other computer with an Internet connection. And if this computer is also installed in a company-internal Intranet then a connection to this network is also possible.• Fast transmission: With downloads up to 4 x 9600 bps are achieved and with uploads up to 1 x 9600 bps (GPRS Class 10).
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IP address

Each host or router on the Internet / Intranet has a unique IP address (IP = Internet Protocol). The IP address is 32 bits (= 4 bytes) long and is written as 4 numbers (each in the region from 0 to 255) separated by full stops.

An IP address consists of 2 parts: the network address and the host address.



All hosts in a network have the same network address, but different host addresses. Depending on the size of the network concerned - a distinction is made between Class A, B and C networks - the two parts of the address can differ in length:

	1st byte	2nd byte	3rd byte	4th byte
Class A	Network address	Host address		
Class B	Network address		Host address	
Class C	Network address			Host addr.

Whether an IP address denotes a device in a Class A, B or C network can be identified by the first byte in the IP address. The following are fixed values:

	Value of 1st byte	No. of bytes for the network addr.	No. of bytes for the host address
Class A	1-126	1	3
Class B	128 – 191	2	2
Class C	192 – 223	3	1

In terms of figures, there can only be a maximum of 126 Class A networks in the world, with each of these networks encompassing a maximum of 256 x 256 x 256 hosts (3 bytes address space). Class B networks can occur 64 x 256 times and can each contain up to 65,536 hosts (2 bytes address space: 256 x 256). Class C networks can occur 32 x 256 x 256 times and can each contain up to 256 hosts (1 byte address space).

Subnet mask

Normally, a corporate network with access to the Internet is officially assigned only one single IP address, e.g. 134.76.0.0. In this address example it can be seen from the 1st byte that this corporate network is a Class B network, i.e. the last 2 bytes can be

used freely for host addresses. In terms of figures, this results in address space for 65,536 possible hosts (256 x 256).

Such a huge network makes little sense. It becomes necessary to form subnets. The *subnet mask* serves this purpose. Like an IP address, this a field 4 bytes long. The value 255 is assigned to each of the bytes representing the network address. This serves mainly to "borrow" a part from the host address area in order to use it to address subnets. In a Class B network, for example, (2 bytes for the network address, 2 bytes for the host address) the 3rd byte, which is normally reserved for the host address, can now be used for subnet addresses by applying the subnet mask 255.255.255.0. In terms of figures, this means that 256 subnets can be created, each with 256 hosts.

online / offline A TAINY Connect Client "connected" or logged in to an active gate is online when it transmits Watchdog data packets to the TAINY ModemServer and thus signals that it is accessible. Otherwise it is offline.

Port number The port number field is a 2-byte field in UDP and TCP headers. Assigning port numbers serves to identify the different data streams handled simultaneously by UDP/TCP. The entire data exchange between the UDP/TCP and the application processes takes place via these port numbers. The assignment of port numbers to application processes takes place dynamically and randomly. Fixed port numbers are assigned to certain frequently used application processes. These are known as assigned numbers.

Protocol, transmission protocol Devices which communicate with one another must use the same rules for this communication. They must "speak the same language". Such rules and standards are collectively referred to as a protocol or transmission protocol. Frequently used protocols are, for example, IP, TCP, PPP, HTTP or SMTP. TCP/IP is the generic term for all protocols based on IP.

Router A device that forwards data packets across networks to their destination. It connects at least 2 networks, normally a LAN and a WAN (Wide Area Network), e.g. the local network to the Internet, but also LANs or WANs.

Routers communicate with each other e.g. via the ICMP protocol in order to ascertain the best route between remote hosts. Using the resulting routing tables the data packets to be forwarded are taken to their destination by the fastest route.

Leased Line mode (LL mode) in the TAINY ModemServer In LL mode (LL – Leased Line) a different TAINY ModemServer is firmly assigned to the gate in question. This means that the two TAINY Connect Clients connected to these gates in LL mode are connected to each other as via a leased line. The initiation of a call by a TAINY Connect Client or the application run on it is then redundant, as is the specification of a destination call number.

Configuration is performed using the *TAINY ModemServer Manager*.

Switch A device, connected to the network cards of computers, to connect the computers to each other as a network. The switch reads the addresses of the data packets to be transmitted and then routes the data packets only to the desired destination address or destination computer. A switch therefore functions differently to a *hub* which was formerly used to link several computers. A hub simply forwards the data packets to be transmitted to all the computers in the network.

TCP/IP (Transmission Control Protocol/ Internet Protocol) Network protocols which are used for the connection of two computers in the Internet. (→ Data Packet, Datagram)

IP is the basic protocol.

UDP is based on IP and sends individual packets. These may arrive at the recipient in a different order to that in which they were sent, or they can even be lost.

TCP serves to protect the connection and, for example, ensures that the data packets are forwarded in the correct order to the application.

UDP and TCP, in addition to the IP addresses, include port numbers between 1 and 65535, by means of which the different services are distinguished.

UDP and TCP form the basis for a number of other protocols, e.g. HTTP (Hyper Text Transfer Protocol), HTTPS (Secure Hyper Text Transfer Protocol), SMTP (Simple Mail Transfer Protocol), POP3 (Post Office Protocol, Version 3), DNS (Domain Name Service).

ICMP is based on IP and contains control messages.

SMTP is an e-mail protocol based on TCP.

IKE is an IPsec protocol based on UDP.

ESP is an IPsec protocol based on IP.

On a Windows PC the WINSOCK.DLL (or WSOCK32.DLL) takes over the handling of both these protocols.

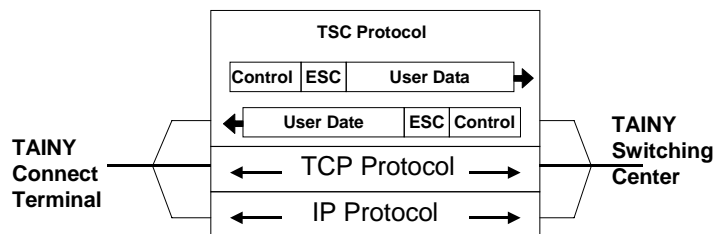
TSC Protocol

The TSC protocol is a standard determined by Dr. Neuhaus for the exchange of user data as well as check and control information between the TAINY ModemServer and the TAINY Connect Clients via TCP/IP-based networks – both wired (Internet, Intranet (LAN)) and wireless (GPRS) networks.

Communication between the TAINY Connect Clients and the TAINY ModemServer takes place via the TSC protocol. Placed over the TCP/IP protocol, the TSC protocol bidirectionally transmits the user data as well as control and status information, the beginning of which is indicated by Escape characters. All user data are transmitted in encrypted form to avoid the transmission of the data in clear text.

The endpoints of the TSC protocol are the TAINY Connect Client on the one side, and the relevant gate of the TAINY ModemServer on the other. Here the data received by the TAINY Connect Client are unpacked from the TSC protocol, then repacked into the TSC protocol for transmission to the destination Client.

DIN 43863-4 was developed from the TSC protocol as an independent standard.



Elements of the TSC Protocol

Login process

The TSC protocol contains the procedures for the login of the TAINY Connect Clients to the TAINY ModemServer. These include the checking of the gate name and password, the handing over of the Session Key for the encryption of the user

data, and the exchange of the preset Watchdog time intervals.

Exchange of Watchdog packets

Watchdog packets are transferred via the TSC protocol in configurable time intervals. In this way, the link to the connected TAINY Connect Client is monitored.

Line active / inactive

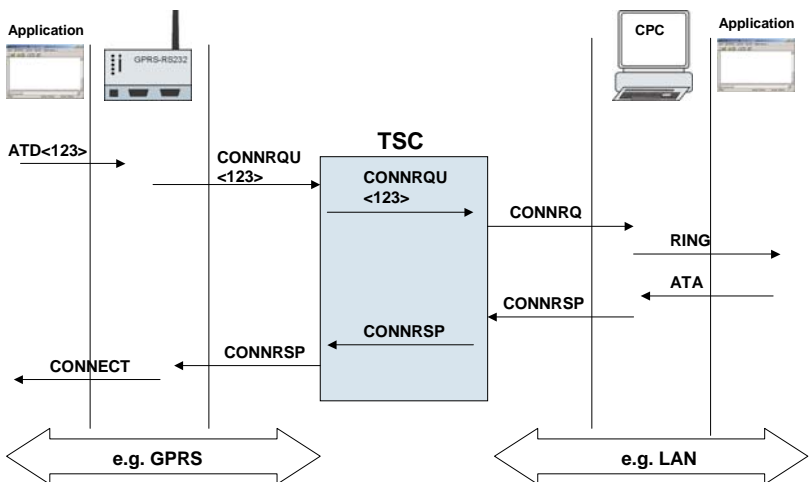
A line to a TAINY Connect Client is active as soon as a dial-up line has been initiated or a leased line established. For a dial-up line the "active" status is reached when the TAINY Connect Client has successfully logged in to the TAINY ModemServer with its gate name and password and has requested a dial-up line to another TAINY Connect Client. A dial-up line is no longer active as soon as the line has been disconnected.

A leased line is active as soon as it is set up on the TAINY ModemServer – provided that the relevant TAINY Connect Clients are online. A leased line is no longer active as soon as the line is disconnected – on the TAINY ModemServer, or by one of the TAINY Connect Clients no longer being online.

Circuit-Switched mode (CS mode) in the TAINY ModemServer

In CS mode (CS – Circuit Switched) the gate in question waits to be requested by the TAINY Connect Client connected here to establish a connection to another connected TAINY Connect Client.

To do this, the calling TAINY Connect Client sends the command to establish a connection, including the call number of the destination gate or destination Client. The TAINY ModemServer analyses this command and forwards it the gate with this call number. From here, the call signal is forwarded to the TAINY Connect Client connected here which, like a conventional modem, emits a RING to the application that is run on it.



The application accepts the call (e.g. with the ATA command) and the called TAINY Connect Client signals the acceptance of the call to the TAINY ModemServer. The TAINY ModemServer signals the call acceptance to the calling TAINY Connect Client. The connection between the two TAINY Connect Clients and the applications run on them is then established.

The line is disconnected correspondingly.

