

GEMOS4 Installation Manual



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1. Introduction

The advanced physical security information system GEMOS enables the central management of all danger alert system components on one computer, the displaying of messages and the setting of processing defaults.

GEMOS is a security and management system adapting the message reception and control of danger alert control units and other security-relevant systems. For the most common types, interface programmes are available, further systems are continuously adapted. In the basic configuration, the system is based on a PC with a Linux or Windows operating system or on a network of PCs for multiple workstation applications.

Integration of external links and the common script languages (PHP, Perl, CGI,...) is fully supported thereby providing interactivity with other applications.

The core of the GEMOS system is a central message processing core, the Pro02 server. This server processes all messages of connected clients and manages correct communication between the devices of the system (server, clients, external systems, users) on the basis of the TCP/IP protocol.

The Pro02 server is provided with an integrated web server. It provides the user interface (alarm and master data processing), enables system configuration and provides server access for maintenance purposes. Additionally, it provides the usual basic functionality of a web server (including CGI).

1.1 System components

The GEMOS system usually consists of the server for the GEMOS software (Pro02 server, database, extensions), one or more workstation PCs for operators and the interface computers (GEMOS controller) enabling connection of different detection systems via TCP/IP or GEMOS system bus. Due to the system bus, the GEMOS system is open to extensions thereby offering every option for further requirements in the future.

The controllers are based on a standardized and extendable microprocessor-controlled hardware and a modular software design. If necessary, the interfaces of any systems can be installed within a short period of time. The wiring of the hardware is done by means of TCP/IP or a GEMOS system bus.

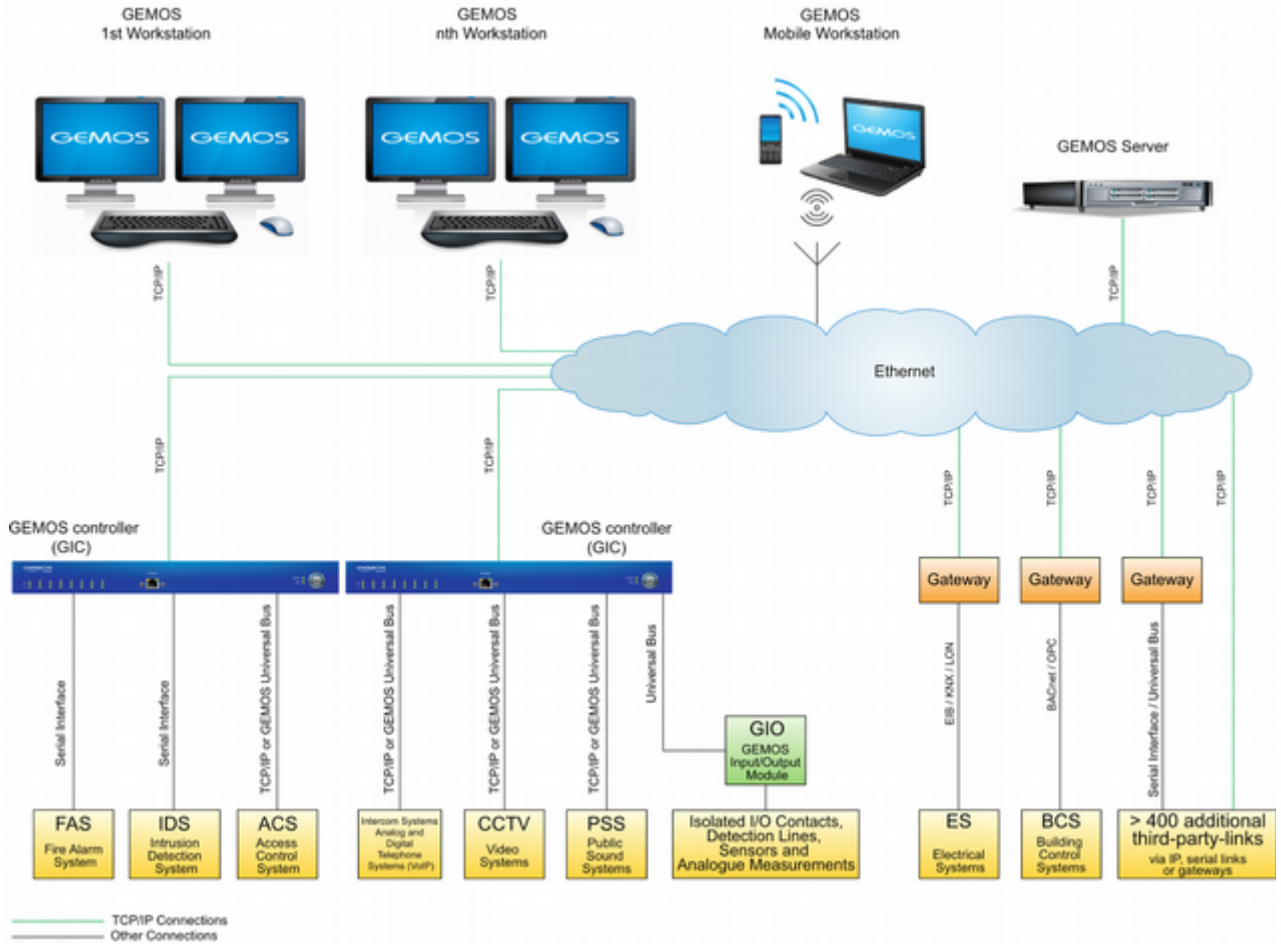


Figure 1.1: Block diagram of the GEMOS system components

1.2 General information

In this manual, important points are marked using the following symbols.



These points should be noted in particular when an action has failed to yield the desired result.



This symbol marks detailed information and advice regarding the quicker or simpler execution of a task.

All programmes of the GEMOS system are programmes with a graphic user interface. A browser (Internet Explorer or Mozilla) is used for operation. For the purpose of this manual, knowledge regarding the operation of those programmes is presumed.



The user manual and the operator manual shall be studied as the manual for installers does not explain basic knowledge regarding operation and master data. Buttons with the same meaning are not described or explained again in the individual masks.

2. System requirements

On request, ela-soft supplies a complete GEMOS system from a single source. If self-installation is chosen, the following should be noted:



For all working steps described in this manual, administrator rights are strictly required unless explicitly stated otherwise!

When using own hardware, its compatibility with GEMOS needs to be coordinated beforehand with our sales representatives. When planning the components, the following minimum requirements should be observed:

	GEMOS server	GEMOS operator panel	Interface computer
Hardware	2GB RAM, 10GB free disk space A CPU with at least two cores is recommended.	Sound card for the sounding of alarms. Dual-screen system recommended.	The requirements for system performance and equipment depend on the interface. Please refer to the relevant interface documentation.
Software	Database server Firebird from version 2.5 (32 or 64Bit according to the operating system). Reliably functioning name resolution (DNS) for all computers involved in the GEMOS system.		
Additional software Windows	Windows Server 2008 or later.	Windows XP or later, Windows 7 recommended. Internet Explorer version 9 or later (IE8 only with restrictions!)	
Additional software Linux	Kernel V2.6 or later. libc from V2.5, libdl, libpthread, libstdc++, libm, libgcc, libjpeg62, libosmesa6 Where a 64-bit kernel is used, the stated libraries as well as the Firebird client library (libfbclient) must be installed in a 32-bit version!	any Linux version. Browser Firefox version 3.6 or later	see „GEMOS Server“. GEMOS4



The system requirements are based on the Technical Documentation "Installationshinweise GEMOS4, 2012" (Installation information GEMOS4, 2012).

2.1 Installing an empty system

The following steps shall be carried out for installing an empty system:

1. Ensure that a sufficiently up-to-date Firebird version (2.5 or later) is installed.
2. Copy the directory structure onto the local hard disc.
3. Rename the subdirectories sample_config and sample_webroot "config" and "webroot"
4. Obtain a license file and store it in config.
5. Start the Pro02srv.
6. Call up the service page (<http://localhost:12080/!pro02srv/>)
7. Install all modules.
8. Grant the administrator the necessary user rights and then, as a precaution, quit and restart the pro02srv.

2.2 Installing a new system with demo data

Where demo data is available, installation is executed as described above while additionally copying the directory "sample_data" to "data".

2.3 Installation over an existing GEMOS3 system

The following steps should be taken for installation over an existing GEMOS3 system:

1. Ensure that a sufficiently up-to-date Firebird version (2.5 or later) is installed.
2. Copy the directory structure over the installed GEMOS.
3. Edit the file pro02srv.cfg in the config directory and ensure that the "modules" line includes the two modules "gmsui" and "stammdb".
4. Start the Pro02srv.
5. Call up the service page (<http://localhost/!pro02srv/>)
6. Install all modules and then, as a precaution, quit and restart again the pro02srv.
7. Currently, maps with buttons have to be called up once in the map editor and stored again before they will function correctly on the operating screen.
8. Currently, all user group access rights are lost during installation and need to be reassigned. While allowed to edit master data, the MASTER will initially not be permitted to open any operator panels or edit alarms.

2.4 Known problems

When updating certain Beta versions to the current level, a fault message can occur in the imagecache database when installing the "Visualization" module. In this case, please proceed as follows:

1. Quit pro02srv.
2. Delete the entry for "imagecache.fdb" in the pro02srv.cfg (database section).
3. Delete the file "data/imagecache.fdb" from the hard disk.
4. Restart the pro02srv and re-install the "Visualization" module.

2.5 Compatibility information

Below, various browsers are listed with respect to their compatibility:

- Web browser
- Internet Explorer 10 and later
- Internet Explorer 9
- Internet Explorer 8 and earlier
- Firefox version 24
- Firefox versions 10 to 23
- Google Chrome
- Other browsers

2.5.1 Web browser

The officially approved version is indicated below.

Later versions than those indicated should principally function. It is, however, not foreseeable if and when browser providers will introduce any changes that will render them incompatible. The current GEMOS4 version will be adapted to such changes as soon as possible, if necessary, but this does not apply to earlier GEMOS versions.

2.5.2 Internet Explorer 11 and later

Internet Explorer version 11 and later versions are fully supported.

2.5.3 Other browsers

Other browsers should principally function provided they are compatible with HTML5, CSS3 and Javascript. Application is at one's own risk.

3. Master data

Double left-click on the file pro02srv.exe in the GEMOS installation directory (usually c:\programme\GEMOS\). The Pro02 server can also be started automatically as a service. In this case, only the login at the system is required.

The home page is called up by entering the address in the browser window. Usually, the format http://<servername>/ is used. If the web server is not running on Port 80 as set by default, the port number also needs to be entered here of course.

The start page which then appears requests user login (login name, password and selection of start menu). For security reasons, each user must log in at GEMOS. This situation always occurs after each start of programme or change of operators.



Figure 3.1: Login at a Pro02 server

- Login name:** Enter name for login at the system. Observe upper/lower case spelling as well as any additional or missing spaces. Incorrect entry defeats the login attempt.
- Password:** Enter password for login at the system. The password may consist of numbers, letters and special characters. For security reasons, the characters entered as password appear on screen only as asterisks. After entering the password, this entry must be confirmed by clicking the Login button. Incorrect entries result in a new request to enter the data.
- Start with:** Selection via the menu of the chosen login option, in this case e.g.: Service

Upon entering the required information, click Login to be directed to a special GEMOS service page. The service page then needs to be activated using an authorized user name and password. If the caps lock key is activated, a corresponding warning will be indicated on the login window (see figure)



Figure 3.2: GEMOS user login – Service

The server configuration comprises the three parameter groups of basic configuration, extended configuration and tools and is listed as follows:



Figure 3.3: Basic configuration

3.1 Basic configuration

The basic configuration is accessed upon activation of the server configuration or in the master data via: Basic setup > Modules > Configuration Pro02 server > Basic configuration

In the basic configuration of the Pro02 server, the following parameters can be entered or viewed in the respective text box.

Network	Hostname, Webserver port, HTTPS port, Pro02 port
Database (Administration access)	Type, User, Password (point representation)
User interface	Set of characters, Time zone, Language
Maintenance access	Login name, Password

Figure 3.4: Configuration Pro02 server

! *The parameters of the basic configuration are preset and should normally not be altered.*

3.2 License

License is accessed upon activation of the server configuration via: [Basic configuration](#) > [License data](#). Various information regarding the licensing of the GEMOS system is displayed:

Release key:	Entering the respective license key for installation
License file:	License file can be added from a separate directory, e.g. upon changes to the license contents.
General license data	Information on the general license data, e.g. number of operator

panels

Module licenses

Information on the modules including designation, number of licenses and state indication

Interface licenses

Information on interface licensing including designation, number of licenses and state indication

License data

License key:

License file:

General license	Interfaces	Modules
Serial no: 300635	dev_anonymous: not installed	custom (DEMO function modul): ✓
Customer: ela-soft Training (NOT FOR SALE)	dev_avigilon: not installed	flk: not installed
System ID: BF645C1163A8A	dev_avigilon6: not installed	fw_gacd: not installed
Operator stations: 2 licensed	dev_detect3004: not installed	fw_tm2_ap: not installed
Data stations: 2 licensed	dev_detect3500: not installed	fw_tm2_bl: not installed
Database access: ✓	dev_eib_mgw: not installed	gdarcs (GDARCS - GEMOS Distribution and Remote Control Service): ✓
Alarm stack: ✓	dev_enet: not installed	gemacd: not installed
Message processing: ✓	dev_enetbma: not installed	gemos4: not installed
	dev_enetema: not installed	gpt: not installed
	dev_gacd: not installed	gzrouter: not installed
	dev_galaxy: not installed	kalender: not installed
	dev_hostcontrol: not installed	logd (Log Daemon): ✓
	dev_igisloop_100_10: not installed	pDLLs5100 (Perf 5.10 so-dll): ✓
	dev_ipsvm: not installed	switchreg: not installed
	dev_mbrzif: not installed	sym_bma (Sym-Fire): ✓
	dev_mbsecure: not installed	sym_bma_at: not installed
	dev_milestonec10: not installed	sym_custom (Symbol-Bibliothek Custom): ✓
	dev_milarte: not installed	sym_default (Symbol-Bibliothek Default): ✓
	dev_modbus: not installed	sym_ema (Sym-Intrusion): ✓
	dev_modbusio: not installed	sym_ema_at: not installed
	dev_pseudo: not installed	sym_komm (Sym-Comm): ✓
	dev_rkarte: not installed	sym_video (Sym-Video): ✓
	dev_schrackisp: not installed	sym_zks (Sym-Access): ✓
	dev_si_geoccc: not installed	tester2: not installed
	dev_snmp: not installed	
	dev_test: not installed	
	dev_videoclient: not installed	
	dev_vms2: not installed	
	dev_weather: not installed	
	g3backup (GEMOS Backup und Restore): 1 licensed	
	i2 (I2 Import Client): 1 licensed	

Figure 3.5: Licenses

A new license may be found and added by means of the buttons Browse and Add license.

3.3 Modules

Modules are accessed in the service configuration via: Basic setup > Modules. Under the heading Modules, the following types of modules are listed: core modules, default modules, interfaces, function modules, symbols and any other active modules.

Modules








Errors+Warnings | Core modules | Standard modules | Interface modules | Project modules | Function modules | Symbols | All active modules

Id	Designation	Version	Comments	Actions
stammbd	Core database backend	V4.5.9b build16 (6.7.2018)		🔄
dotnet451	dotnet451	V4.5.1		🔄 🗑️
gmsul	GEMOS4 GUI Toolkit	V4.5.9b build13 (6.7.2018)		🔄
logd	Log Daemon	V1.05.01		🔄 🗑️
pro02srv	Pro02 server	V4.5.9b build13 (6.7.2018)		🔄
vcrcdist2010	vcrcdist2010	V10.0.40219		🔄 🗑️
vcrcdist2013	vcrcdist2013	V12.0.30501		🔄 🗑️

Upload new module (.gmm)

Figure 3.6: Overview of modules

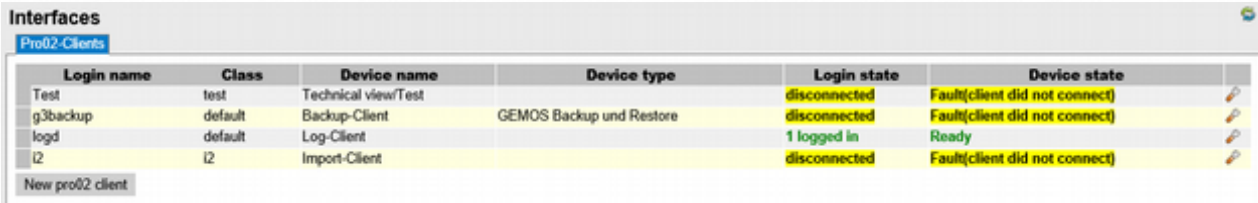
Modules are edited by means of the various activities listed in the upper right mask:

-  Information from the master data database
-  Deactivate a module
-  Install a module
-  Set up a configuration file
-  Configure a module
-  Activate a module
-  Delete a module

3.4 Interfaces

The interfaces are accessed upon activation of the server configuration via: [Basic configuration](#), [Interfaces](#). The module [Interfaces](#) lists the following information:

login name, class, device name, device type, login state, device state. These services can be quit, started, uninstalled, configured. Log display is possible. Pro02 clients are listed with their individual states.



Login name	Class	Device name	Device type	Login state	Device state
Test	test	Technical view/Test		disconnected	Fault(client did not connect)
g3backup	default	Backup-Client	GEMOS Backup und Restore	disconnected	Fault(client did not connect)
logd	default	Log-Client		1 logged in	Ready
I2	I2	Import-Client		disconnected	Fault(client did not connect)

Figure 3.7: Interfaces


A Pro02 client is installed via [New Pro02 client](#). After clicking, a login or device name and a password must be entered or altered in the respective text boxes. A Pro02 class shall be selected from the selection menu of Pro02 classes. By activating the box "Lock", the access of a Pro02 client to the Pro02 server can be locked.

The button [Interfaces](#) is used for configuring the various interfaces in the basic setup of GEMOS4. These buttons are accessed via: [Master data](#) > [Basic setup](#) > [Interfaces](#).

In order to set up a new Pro02 client, click [Pro02 client](#). Then enter the login name, password, Pro02 class and select locked or released.

The input can be influenced by means of the following buttons:

-  store
-  delete
-  cancel



Pro02-Clients: New pro02 client

Login name:

Password:

Class: (please select)

Disabled:

Figure 3.8: new Pro02 client

3.5 Files, Downloads

Files/Downloads are accessed upon activation of the server configuration via: [Information and Logs](#) >

[Files/Downloads](#). Therein, the following documentations/downloads are listed:

Documents, files for installation on web clients, files for installation on interface computers.



Figure 3.9: List of system documentations

3.6 Ports

Ports are accessed upon activation of the server configuration via: [Extended configuration](#) > [Ports](#)

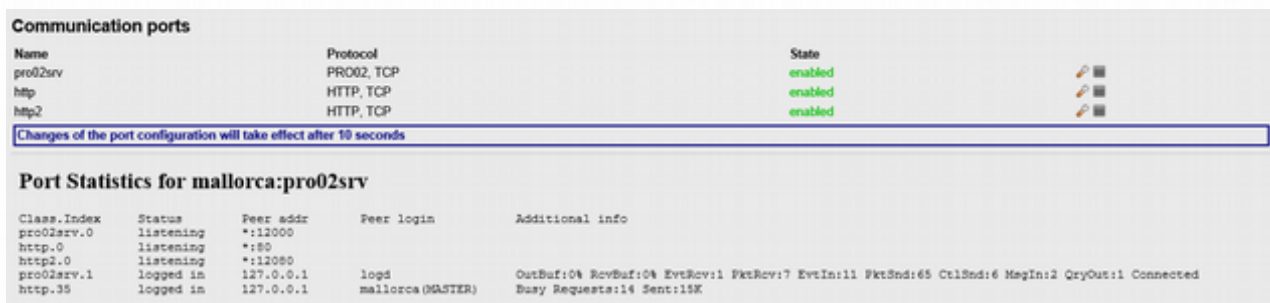


Figure 3.10: Ports

3.7 Printer and e-mail

3.7.1 Printing GEMOS4

Printer and e-mail is accessed upon activation of the server configuration via: [Basic configuration](#) > [Printer and e-mail](#)

Printing floor plans or linked files (e.g. fire detector positioning plans) within an action plan requires the following preparations:

1. The floor plan(s) to be printed must be linked to the triggered detector and also be marked as floor plans to be printed ([Master data](#) > [Hierarchy](#) > [Local hierarchy](#) > Selection of respective floor plan > Check box "at alarm reception")
2. In the single action, add an element "Logging" and select the form "Plan" from the form selection menu. (shown here as an example in Figure 3.11: the form printflk for the printing of fire detector positioning plans)

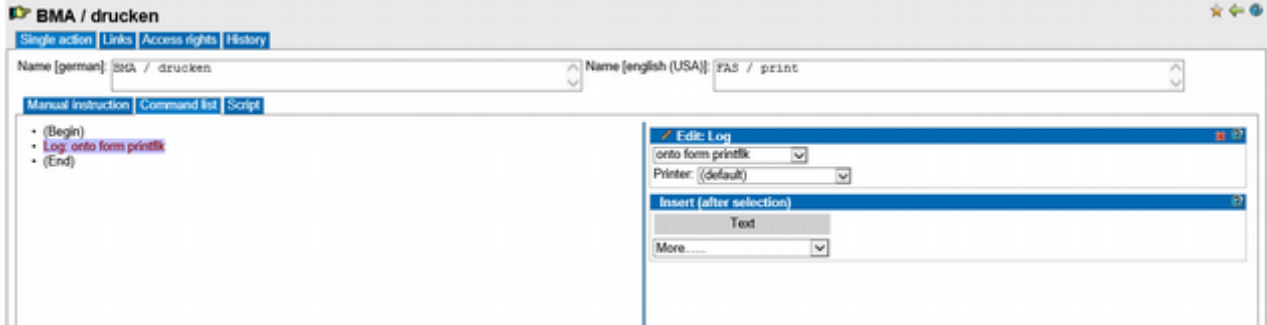


Figure 3.11: Example of printing fire detector positioning plans

The printer and e-mail menu lists the queues indicating the associated parameters. Queues can be set up and configured via [Add queue](#). Templates may be used for setting up queues. For the printing of documents, the use of the template “Page printer (IPP)” is recommended. Then, only the printer’s IP address has to be indicated in the configuration and the Pro02 server will automatically offer the printer URI for selection in a pull-down menu (see Figure 3.12).

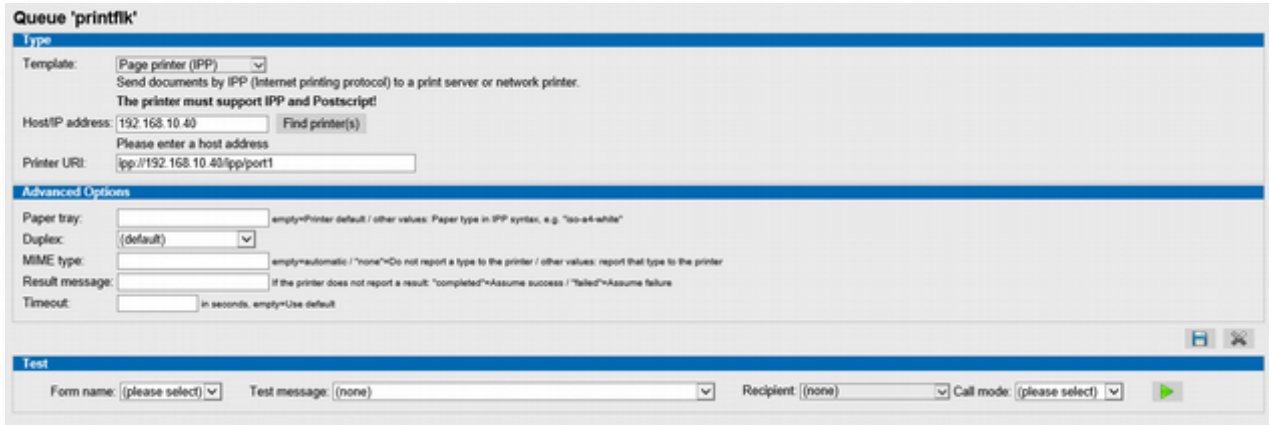


Figure 3.12: new queue

3.7.2 E-mailing GEMOS4

First, an e-mailing queue must be set up. In order to enable all functions described here, the queue **shall** be designated “email”.

Figure 3.13: Queue "email"

The information given here represents the minimum data required to enable mailing. In cases of doubt, the conditions to be fulfilled regarding the used mail server have to be inquired.

After storing the data, function testing can be conducted by means of the test button . For the purpose of testing, a recipient must be entered. In later use, GEMOS can transmit the recipient.

Subsequently, one may either use the supplied forms or design own forms.

A basic structure is as follows:

```
<!--#
    $SpoolOutFormat="txt";
    $MailSubject=("Gemos system message");
-->
```

Hello, dear GEMOS user!

Please check the following message:

```
Message time:          <!--#FormatTime(TimeToLocal($MsgTime))-->
Detector name:         <!--#$MsgDesc?($MsgDesc;" (";$MsgPro02Id;"):$MsgPro02Id-->
Detector position:     <!--#obj=new("sdb_catalogobj",$msgpro02id);obj.cataloglocation; -->
System identification: <!--#obj.catalogaks;-->
Message:               <!--#$MsgName-->
Message text:          <!--#$MsgText?$MsgText:"-"-->
```

The file must be stored in the "config" folder and have the file extension *.gmf.

The example generates a mail including the triggering detector and its associated data in text form.

A full description of the possible variables is to be found in the section "Print forms" of the Pro02 server documentation.

Each form can be used for both printing and mailing. Where a PDF is to be generated showing the triggering detector and the respective floor plan, the already mentioned form "Plan" can directly be used.

At the floor plan itself, "Printing in alarm case" is to be selected. This also applies to mailing.

In case of alarm: Center data point Don't hide other data points print immediately v

Figure 3.14: Printing in alarm case

This provides the basic conditions for mailing and now, a single action for initiating the sending must be established.

The type of this single action is a command list, the required command being "Call/Message".

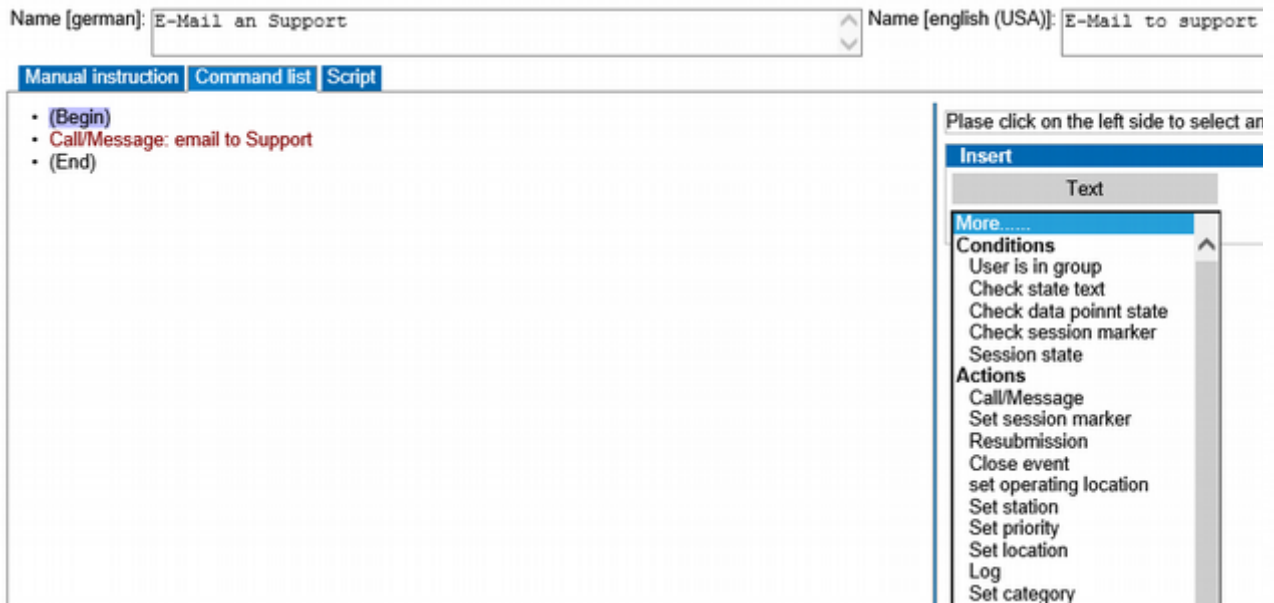


Figure 3.15: Select single action command

After selecting the command, the associated data such as person and contact type must be entered.

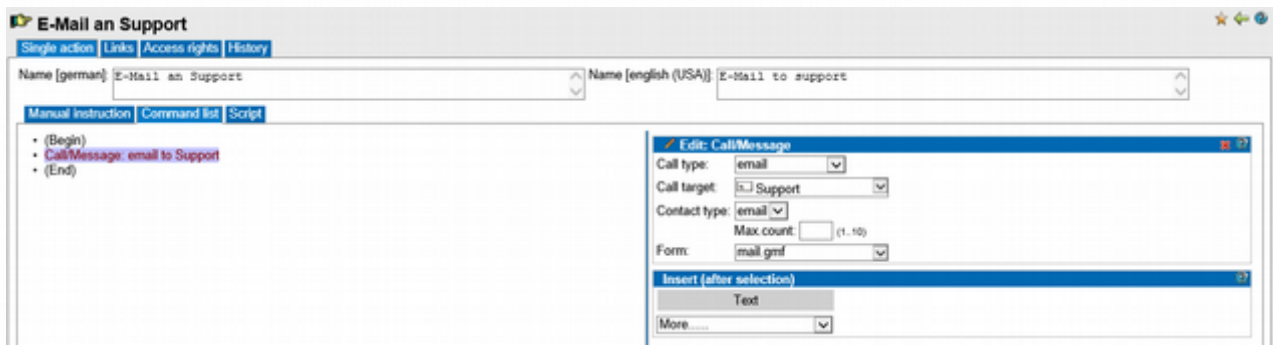


Figure 3.16: Contact data input

Now, the previously created form can be selected in the selection box "Form" to determine the design of your mail.

Where a form is not indicated, the recipient, subject and message text are directly transferred in the single action.

Edit: Call/Message

Call type: email

Call target: Support

Contact type: email

Max.count: (1..10)

Form: (none)

Subject: GEMOS Message

Message: Hello GEMOS user,
Temperature in the server room is high!

Insert (after selection)

Text

More.....

Figure 3.17: Settings for direct data transfer within the single action

Furthermore, GEMOS is able to use the contacts transmitted at the data point. In this case, select “triggering data point” and the desired contact.

Edit: Call/Message

Call type: email

Call target: originating data point

Link type: Contact in case of fault

Contact type: email

Max.count: (1..10)

Form: mail.gmf

Insert (after selection)

Text

More.....

Figure 3.18: Link data point to contact

3.8 Pro02 classes

Pro02 classes are accessed upon activation of the server configuration via: [Extended configuration](#) > [Pro02 classes](#)

Configuration	PRO02 Teilnehmerklassen			
Basic configuration	Klasse	Verwendet von	Verbindungen	
Basic configuration	default	g3backup, logd	1	[Bearbeiten]
License data	defaultRedundantly		0	[Bearbeiten]
Modules	KoppelZuRS		0	[Bearbeiten]
Interfaces	KoppelZuHS		0	[Bearbeiten]
Printers and eMail	videoclient		0	[Bearbeiten]
Advanced configuration	vms2		0	[Bearbeiten]
Communication ports	all		0	[Bearbeiten]
Pro02 Classes	i2	i2	0	[Bearbeiten]
Database connections	[Neue Klasse]			
User management				
GFMOS system configuration				
Information and logs				
System overview				
Configuration check				
Logs and statistics				
Files and Downloads				
Expert tools				
Database maintenance				
SQL-Interpreter				
GMH-Interpreter				
Session data				
Clear data cache				
Clear image cache				

Figure 3.19: Overview of Pro02 classes

The different classes and the number of links are listed. The button [Edit](#) is used to allocate the parameters to the respective class.

A new Pro02 class is set up and configured by using [New class](#) and entering the corresponding parameters.

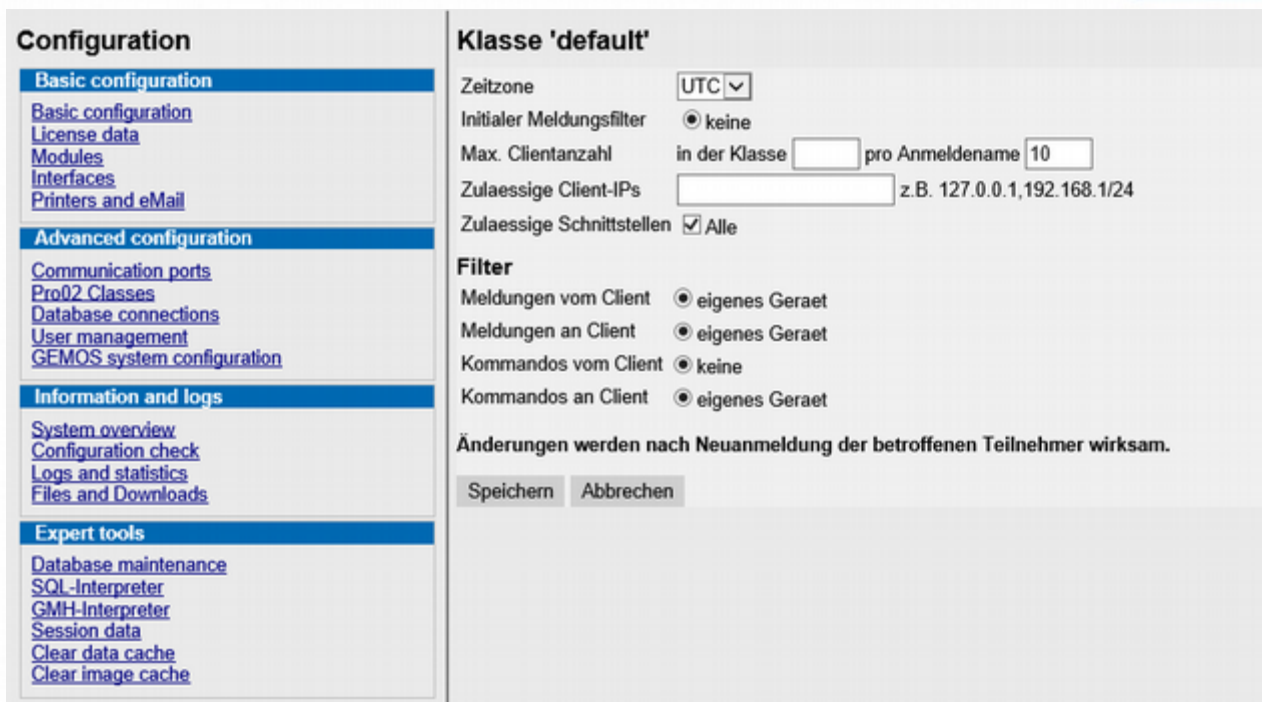


Figure 3.20: Editing of already existing Pro02 classes

3.9 Database connections

Databases is accessed upon activation of the server configuration via: Extended configuration > Database connections.

The database is preconfigured. For database alterations or extensions, a name must be entered in the box "Alias". This is followed by the assignment of the server type derived from a selection list, of the DSN/file name, of the user and the associated password and of the parameters. Successful access is indicated by "OK".

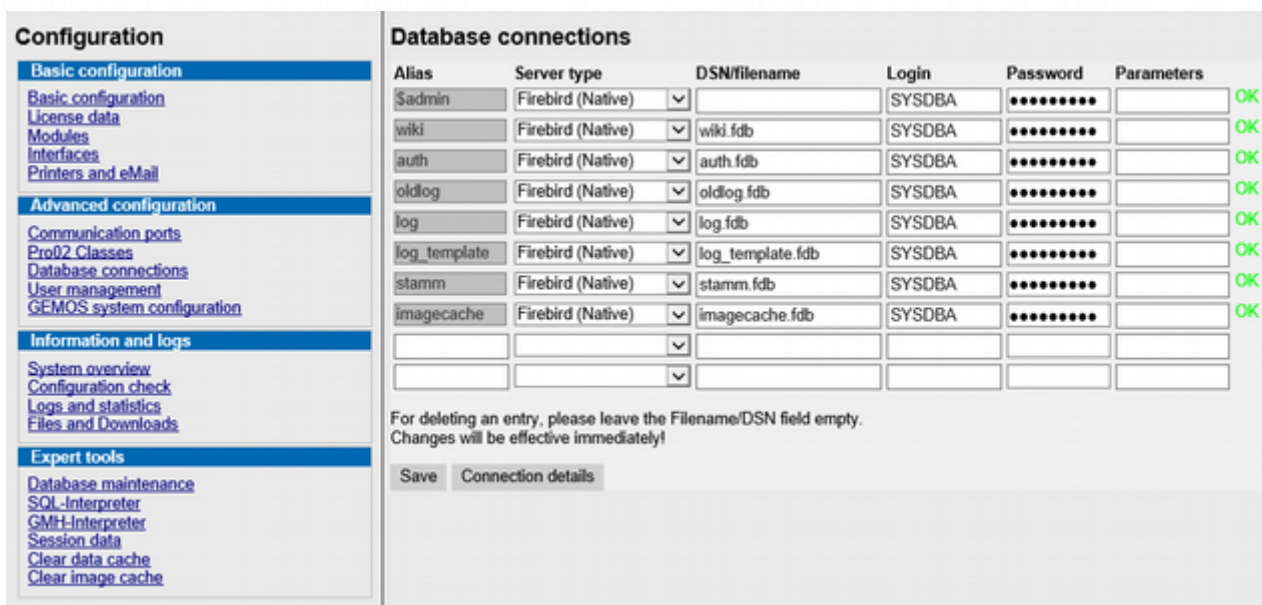


Figure 3.21: Overview of databases

3.10 User administration

User administration is accessed via: [Master data](#) > [User administration](#) or upon activation of the server configuration via: [Extended configuration](#) > [User administration](#).

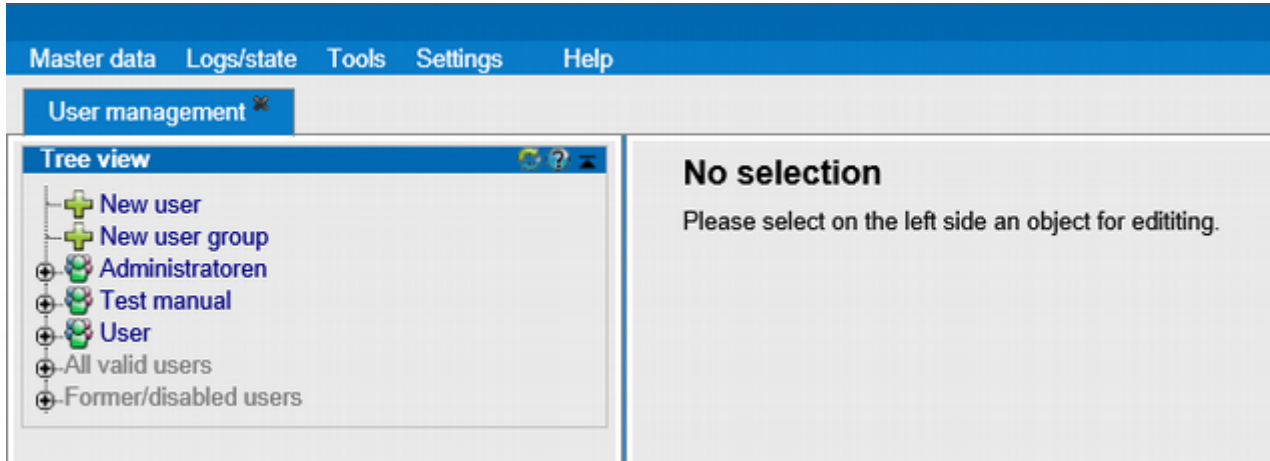


Figure 3.22: User administration



The basic setup of users and groups as well as the setting up of new groups may also be conducted in the configuration of the Pro02 server.

3.10.1 User

In order to gain access to the system, a user must log in using a personal name. Particularly within the security zone, it is important to always be able to trace who conducted which actions in the system at what time.

The second purpose of user master data besides access control is to enable allocation of hierarchical access rights to the different system parts. It would not be very reasonable if the persons entrusted with message processing were also granted the rights to read or even modify master data.

Access rights can be used to influence the procedure of message processing. Depending on the allocated processing rights, messages can be concluded either each time or only when the actions taken have been successful or when additionally the detecting system has resumed its clear state. Thereby, security breaches due to incorrect message processing, whether accidental or deliberate, can easily be reduced.



Without login, the GEMOS system cannot be operated. Message processing will nevertheless continue.

Editing of users is accessed via: [Master data](#) > [User administration](#) > All valid users or administrators/users.

Adding a user

Under “New user”, the name of the new user can be entered.

Figure 3.23: User data assignment

After entering the login name, the following settings are also required:

Full name	Entry of full name (visible in the tree structure)
Password	Entry of password for logging in at the system
Please repeat	Repeating of password for security purposes
User blocked from/since	User time limit adjustable (optional)
Password expires by	Password time limit adjustable and under "Users may not change their passwords themselves" it is stated whether a user may change his/her password (optional)
Dialogue language	Language setting selectable, e.g. German or English
User is a member of the groups	Specify group allocation by means of buttons

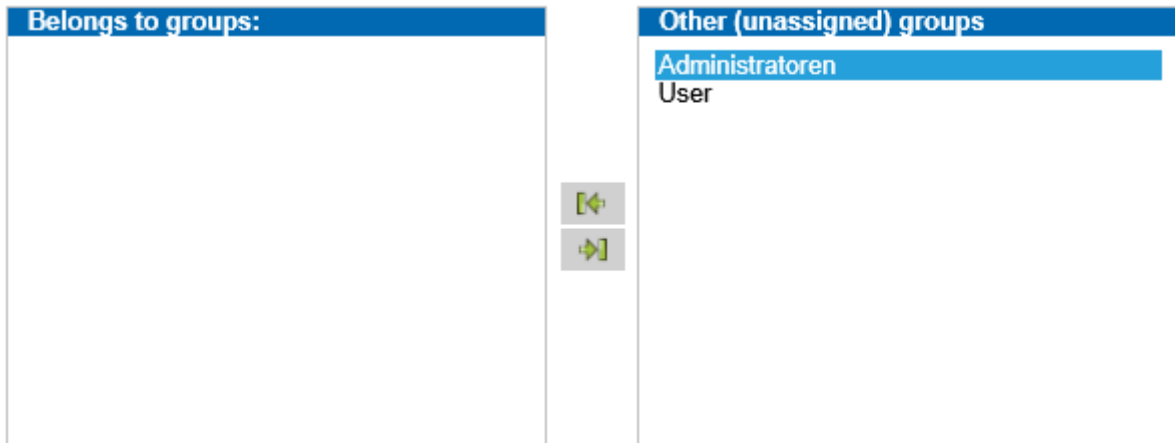


Figure 3.24: Allocate groups

3.10.2 User groups

Users are grouped and allocated to particular rights (read, write or configure). User groups can be set up freely.

The editing of user groups is accessed via: Master data > User administration. The respective user group is selected for further editing.

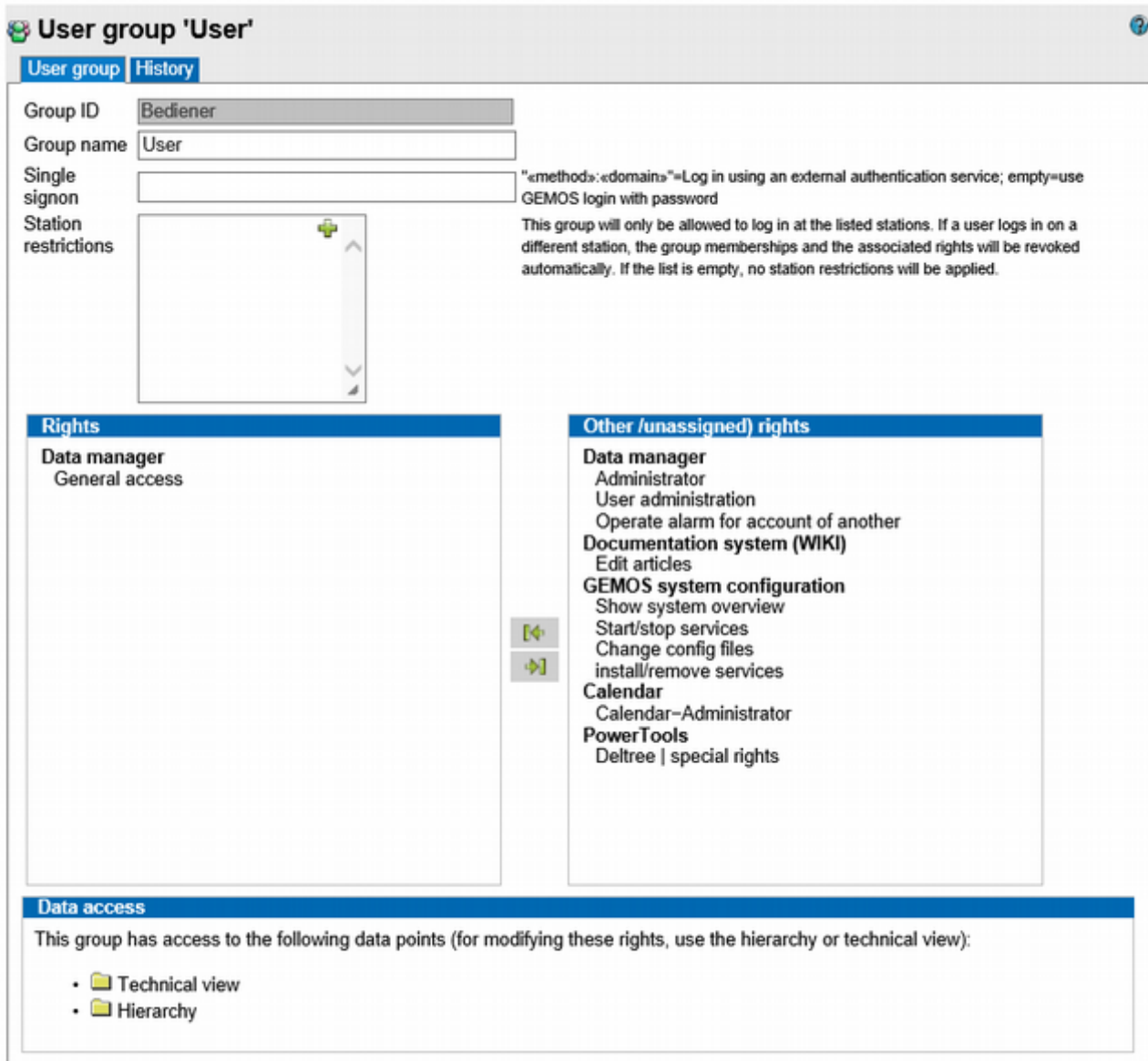


Figure 3.25: Editing group rights

Set up new user group

Click button New user group and then Allocate rights (input mask appears immediately upon clicking the button)

The following input options are available:

Group name

Enter user group name, can be freely altered

Single signon

«type»:«domain»=Sign-on via external authentication service, empty=GEMOS login with password

Work stations


Login is admitted at listed work stations only Login at the wrong work


station results in automatic withdrawal of the group allocation and the associated rights. In case of an empty list, login is admitted at any work station.

User group rights

Allocation/Withdrawal of rights is conducted by using the corresponding buttons; all allocated rights are listed

Other (unallocated) rights

List of rights which may also be added (click respective button )

Finally, store the allocation of rights by clicking 

3.10.3 Allocation of rights

Each group as well as each single folder and data set can be provided with various single rights and/or combinations of rights This is done directly at the object (e.g. in the technical view or the hierarchy). There, the desired object is selected and then the associated rights are configured under Access rights. These rights are passed on “down the tree” accordingly.

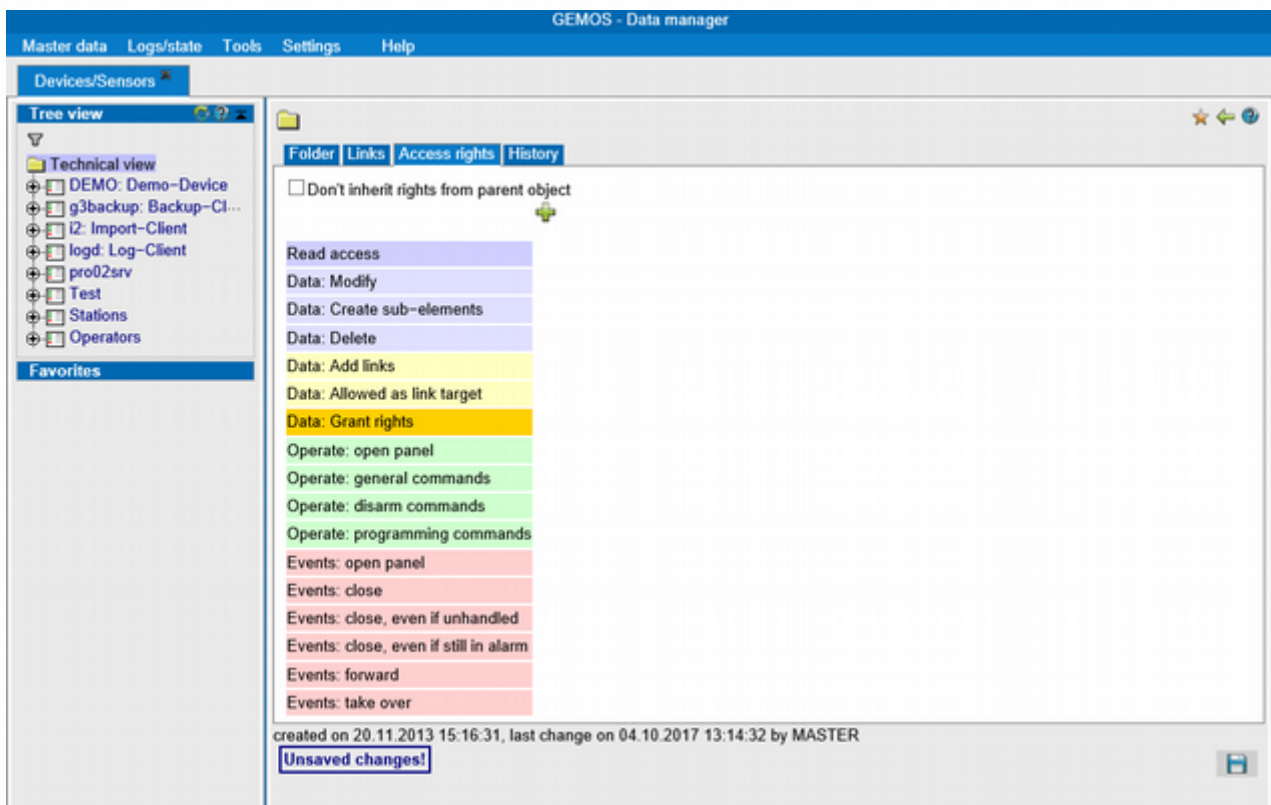



Figure 3.26: Example of editing access rights

Initially, the user groups to which rights are to be allocated must be added manually .

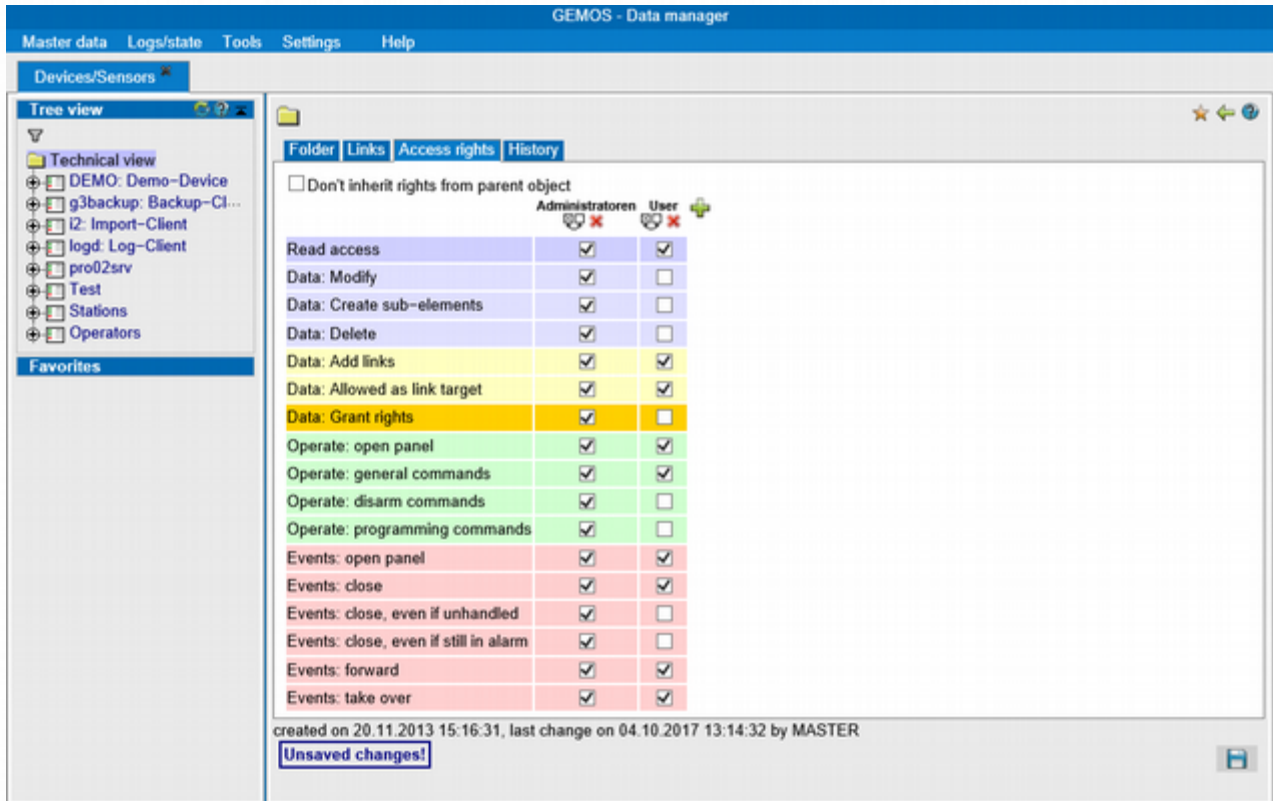



Figure 3.27: Example of editing access rights with user groups

Analogous to this example, the access rights can be organized in the various input masks within master data editing. Finally, store the allocation of rights by clicking 



If certain modules cannot be displayed or edited, the allocation of rights must be checked.

3.11 Interface commissioning

By means of system configuration and the GDARCS (GEMOS Distribution and Remote Control Service), GEMOS drivers are unpacked directly from GEMOS onto an existing interface and then installed and configured.

Step 1:

Install the GEMOS module to GEMOS under Master data→Basic setup→Install modules.

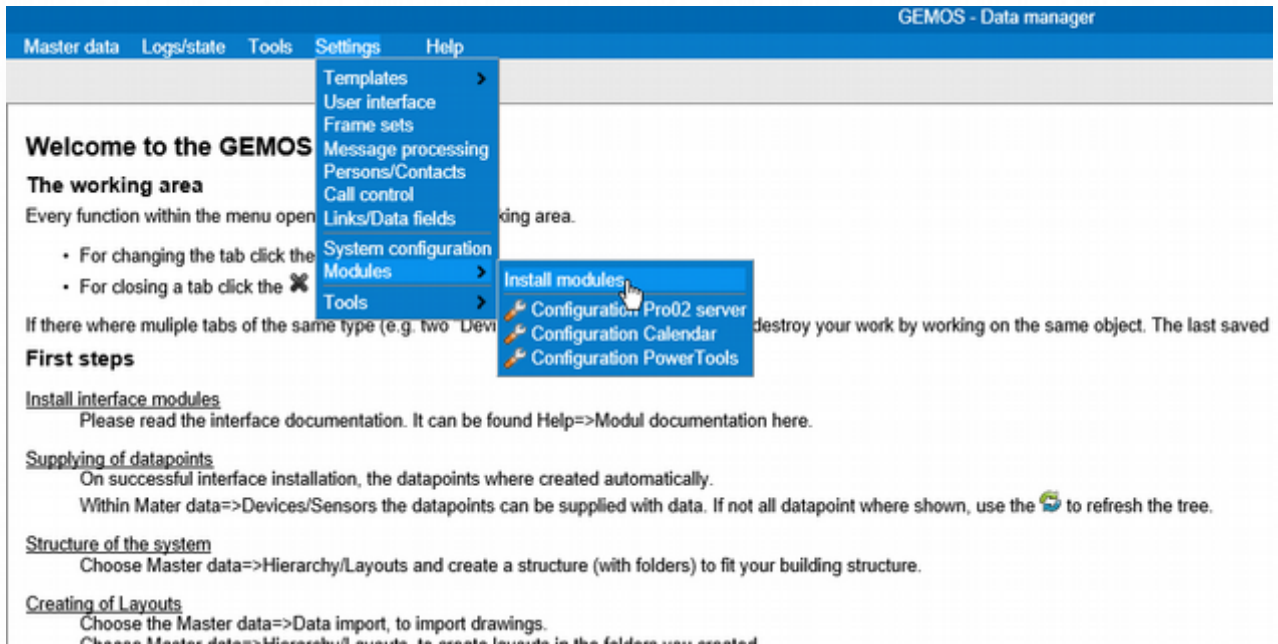


Figure 3.28: Open the tab "Install modules"

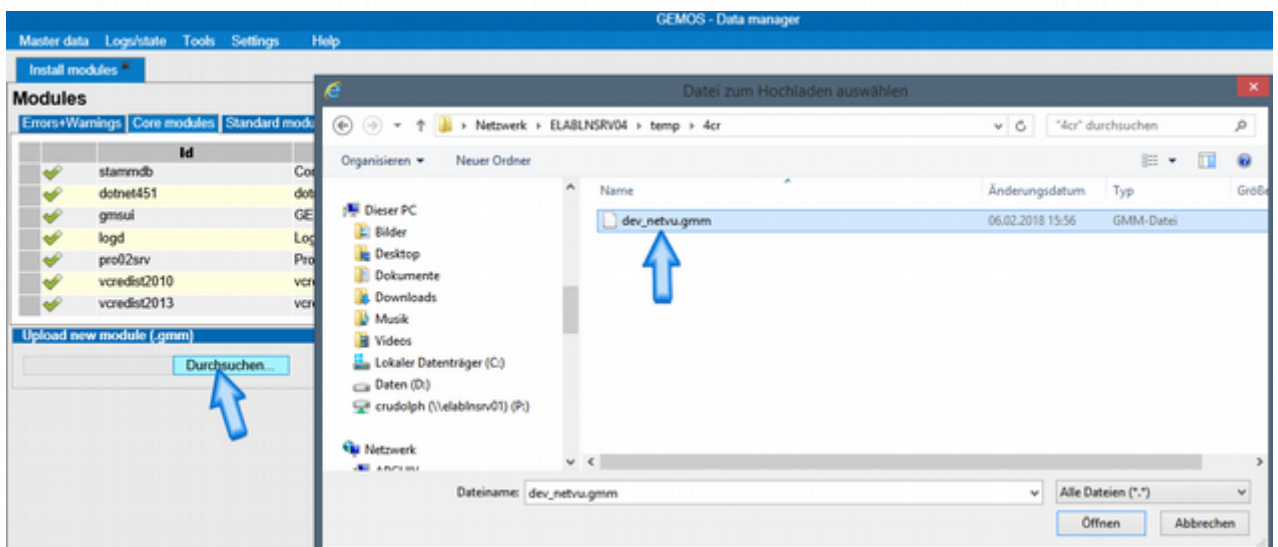


Figure 3.29: Select the interface to be installed

Step 2:

When using an interface controller supplied by ela-soft GmbH, this step may be omitted.

Otherwise, the GDARCSsetup.exe has to be installed on the interface controller from GEMOS directory→Tools. For this purpose, it shall be noted that the installation directory is not equal to the GEMOS directory. The GDARCS should be installed as usual under “C:\Program Files (x86)\ela-soft GmbH\gdarcs”. By default, the GEMOS directory is to be found under “C:\GEMOS\”.

Step 3:

In order to install a driver on the interface controller, proceed as follows:

Master data → Basic setup → System configuration

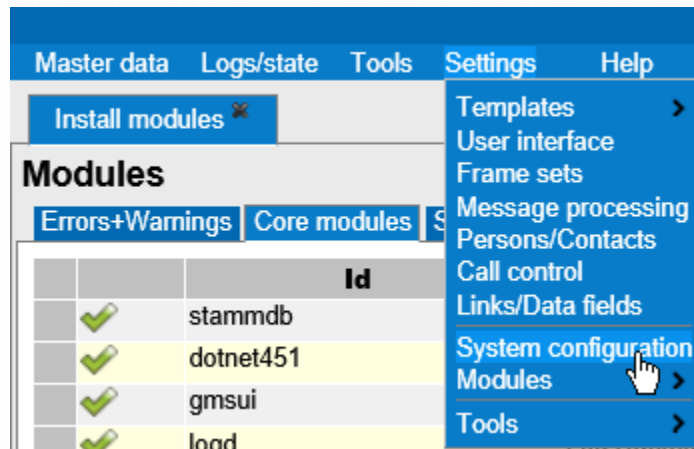


Figure 3.30: Open system configuration

The now opened system configuration shows any network devices that have been found replying to certain ports.

- Green table header GEMOS server
- Dark grey table header Hardware unknown
- Light grey table header Hardware already addressed from GEMOS

If the hardware is not listed, it may be added as server, interface computer, controller for access control or work station by using the button **New host** .

Clicking the button leads directly to the configuration on the controller.

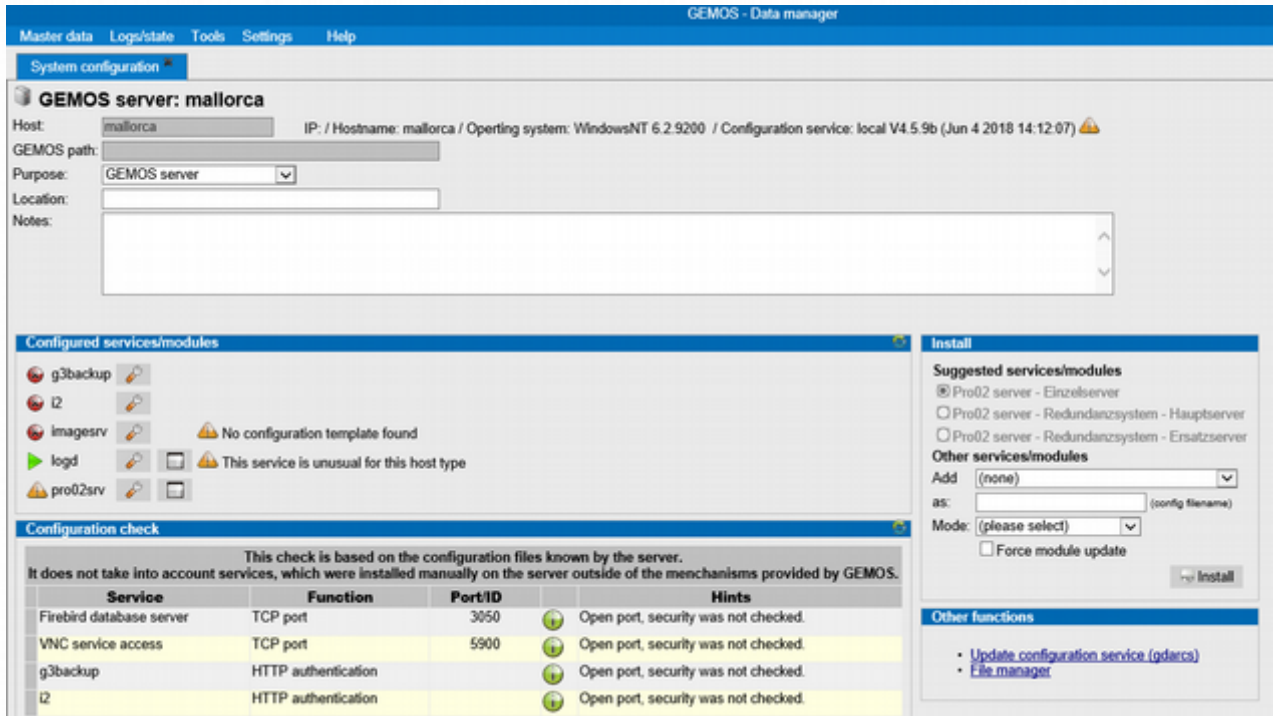
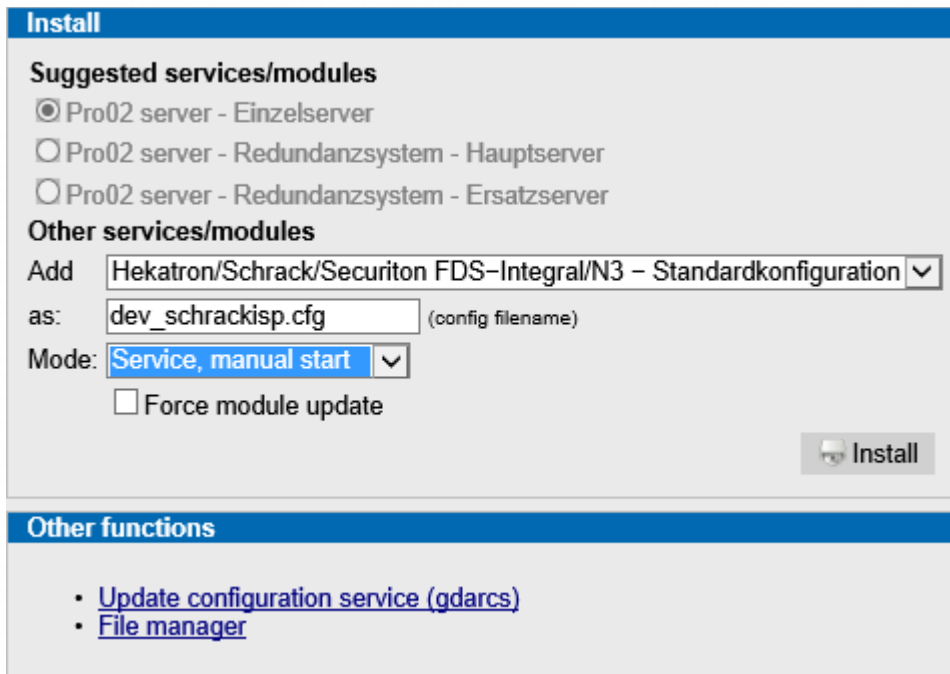


Figure 3.31: System configuration

On the left side, any already installed GEMOS interfaces are listed. Under "Install", further services/modules can be installed.



Step 4:

Following installation, the interface configuration can be adapted.

For this purpose, proceed as follows:

Click the button:



Carry out all settings there as described in the interface documentation.

Once stored, the new configuration can be uploaded. This is followed by an automatic interface restart.

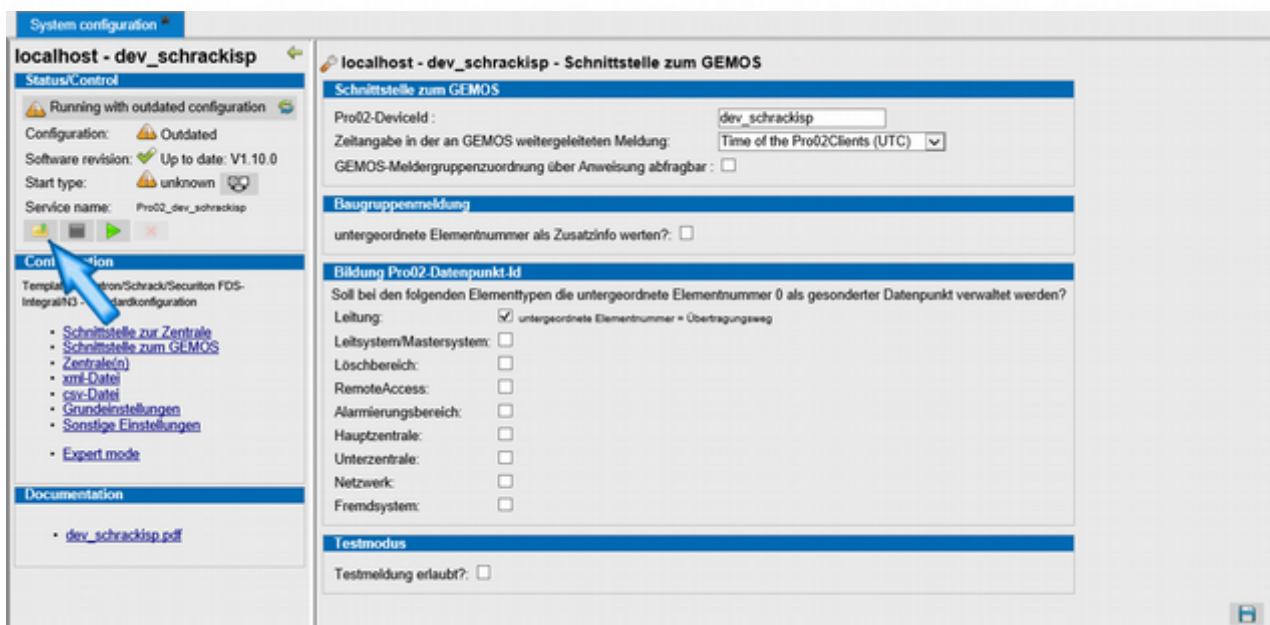


Figure 3.32: Configuration upload

Addendum:

On this surface, the interface can be restarted, its starting type can be changed or the entire configuration can be deleted with or without the interface.

3.12 System overview

System overview is accessed upon activation of the server configuration via: [Information and Logs > System overview](#). This overview provides a structured view of the GEMOS configuration information, the different modules, the external components used, the general license data, the module licenses and the interface licenses.

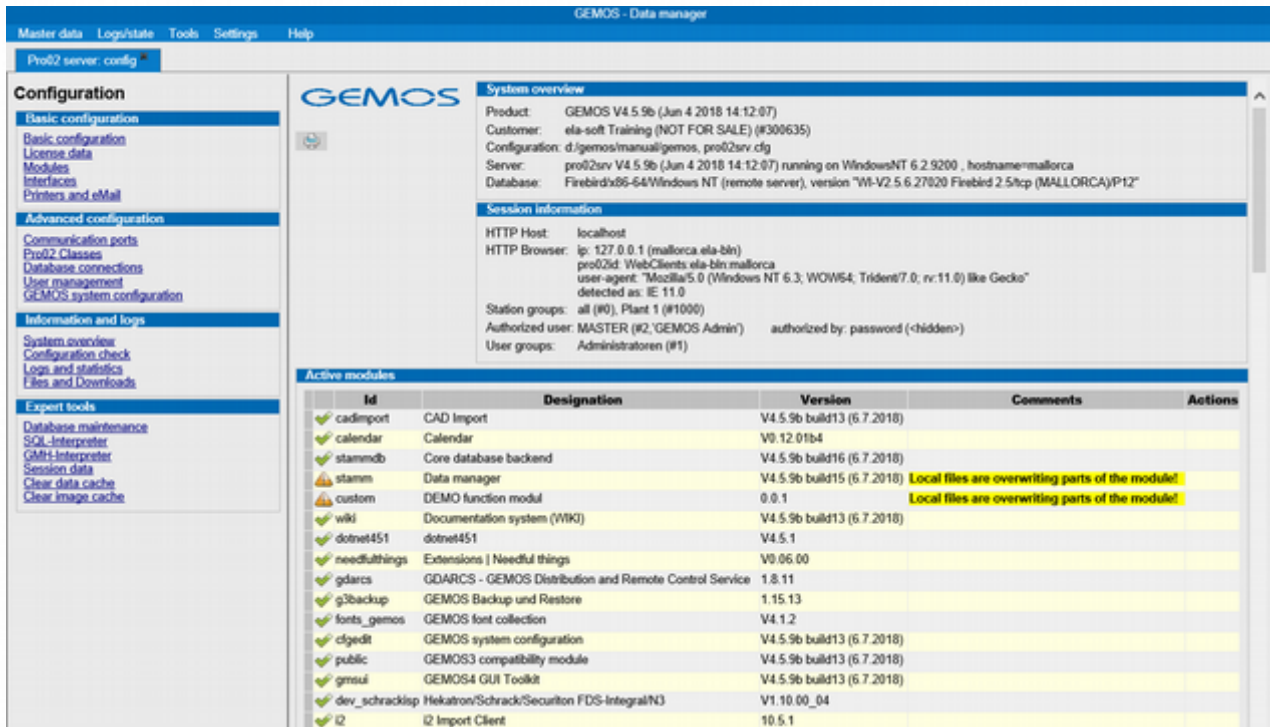


Figure 3.33: Part of the system overview

3.13 Logs and Statistics

Logs and statistics are accessed upon activation of the server configuration via: [Information and Logs > Logs and Statistics](#)

In the extended configuration of the Pro02 server, the various logs and statistics are shown. A log can be selected from the list and filters can be used to influence the result. If a file name is entered in the box "File", the log will be stored. Log intervals and memory limitations can be entered. The button [Start log](#) is used to start the process.

The screenshot shows the 'GEMOS - Data manager' interface. The top navigation bar includes 'Master data', 'Logs/state', 'Tools', 'Settings', and 'Help'. The left sidebar is titled 'Pro02 server: config' and contains a 'Configuration' section with sub-items like 'Basic configuration', 'Advanced configuration', 'Information and logs', and 'Expert tools'. The main content area is titled 'Service index for mallorca:pro02srv' and displays the following information:

pro02srv V4.5.9b (Jun 4 2018 14:12:07) running on mallorca in d:/gemos/manual/gemos with [pro02srv.cfg](#)
 system: WindowsNT 6.2.9200 , pro02lib: 2.8.11b (Jun 4 2018 14:11:20) gds32.dll: WI-V2.5.6.27020, zlib1.dll: 1.2.3
 License: #300635 (ela-soft Training (NOT FOR SALE))

Active logs:

Log	Filter	Pri	Interval	Limit	File/Client	
security	*	L		1000	pro02srv_security.log	[View] [Clear] [Reset alert]
system	*	I	1d0s	1000	pro02srv.log	[View] [Clear] [Reset alert]

Start new log:

cache
 database
 database (auth:readonly)
 database (log)
 database (log:readonly)
 database (stamm)
 database (stamm:readonly)
 http
 message
 mplan

Regex Filter:
 Priority Filter: (I) Info
 File: (empty: log to screen)
 Limit: 1000 (Kbytes)
 Interval: 0h (0: no statistics)

View statistics:

Thread Refresh= sek

Commands:

Please select

Figure 3.34: Logs and Statistics

The button View is used to show the log.

3.14 Database maintenance (manual)

Database maintenance is accessed upon activation of the server configuration via: [Expert tools](#) > [Database maintenance\(manual\)](#). The result of database maintenance of the various database parts is listed in the following mask.

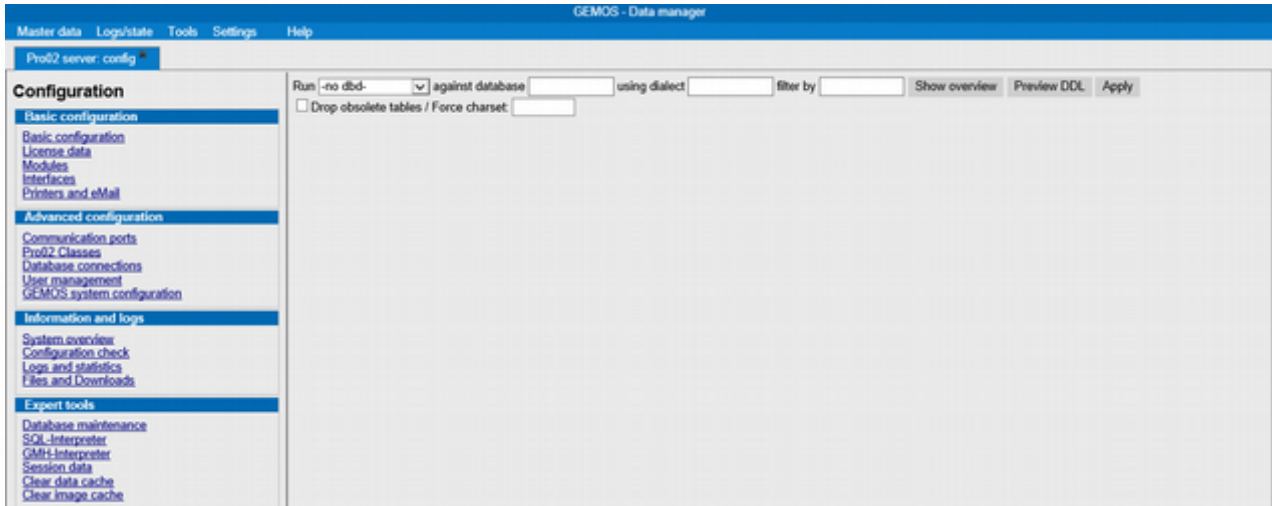


Figure 3.35: Database statistics

3.15 SQL interpreter

SQL interpreter is accessed upon activation of the server configuration via: [Expert tools](#) > [SQL interpreter](#)

Before an SQL statement can be sent, the corresponding database must be found on the selection list. Then, an SQL statement can be entered in the respective box and sent by clicking the button [Go!](#).

The SQL interpreter can be used to send SQL commands to all databases known to the Pro02 server.

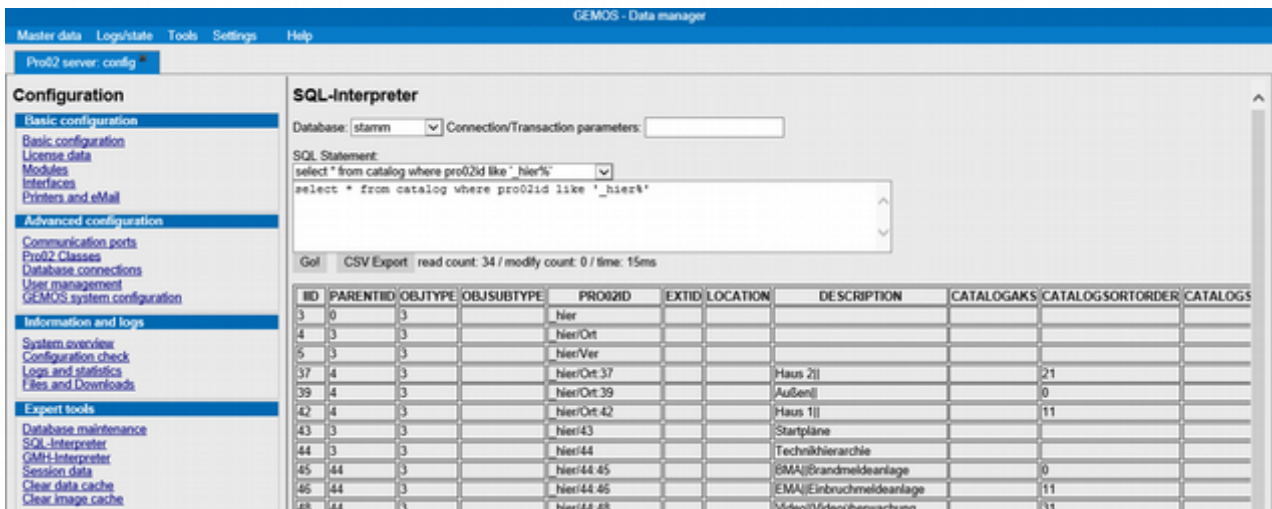


Figure 3.36: SQL interpreter

In this example, the table “catalog” in the master database “master” is queried. Any entries for which the box “PRO02ID” contains the text “dev_sysco/A” are listed.

3.16 GMH interpreter

GMH interpreter is accessed upon activation of the server configuration via: [Expert tools](#) > [GMH interpreter](#)
A GMH statement can be entered in the respective box and sent by clicking the button [Go!](#).

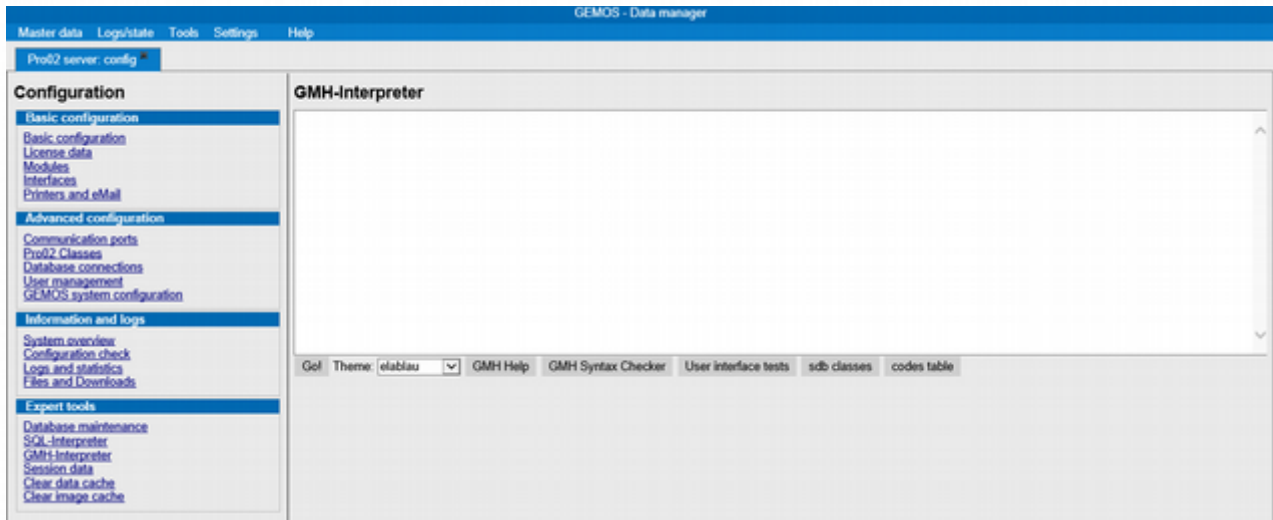


Figure 3.37: GMH interpreter

3.17 Clear master data cache

One click on the button [Clear master data cache](#) will delete the data cache from the Pro02 server without any further feedback.

3.18 Clear image cache

One click on the button [Clear image cache](#) will delete the image cache from the Pro02 server without any further feedback.

4. Installation of a Pro02 server

The setting up of a Pro02 server describes the following steps:

- Manual installation and start of the server
- Directory structure
- Calling up the user interface
- Service access
- Print forms
- Data import
- Encoding of data transfer
- Integrated web server
- Server configuration file (Pro02-srv.cfg)
- Link descriptors



The Pro02 server setup is based on the Technical Documentation „Pro02-Server, Version 3.5, 2011“.

4.1 Manual installation and start of the server

The manual installation and start of the server is described as follows:

- Start the server as an application programme
- Actions required after the initial start
- Installation as service or daemon
- Service control
- Uninstallation as service or daemon
- Version query
- Running a GMH script

4.1.1 Start the server as an application

During the setup stage, the server can be started simply as an application programme. During operation in practice, however, installation as a service or daemon is recommended (see below). The following start options are available as command line parameters.

Entry	Default	Explanations
Config=""configname""	pro02srv	Name of configuration file (excluding the extension .cfg)

Additionally, all options of the [config] section of the cfg file can be indicated in the command line. The command line entry will then temporarily overwrite the cfg.file setting.

4.1.2 Actions required after the initial start

Call up the server configuration page (URL „http://«servername»/!pro02srv“), select the menu item “Modules” and click the button “Add all”.

4.1.3 Installation as service or daemon

Installation as a service is executed by calling up the Pro02 server with the parameter "install". If the service has already been installed, another call-up by means of "install" will change its start parameters. The default installation under Windows is executed by means of the following call-up:

```
pro02srv install depend=FirebirdServerDefaultInstance [«options»]
```

Under Linux, the following call-up shall be used for the default installation:

```
pro02srv install [«options»]
```

Additionally, any start options described under "Start as application" can be used.

4.1.3.1 Installation options under Windows

Entry	Default	Explanations
machine="computername"	See text	Name of the computer whereon to install the service. Without this parameter, the installation is carried out locally.
manually	-	The service is installed with the starting mode ""Manually"". Without this parameter, the start mode is set to ""Automatically"".
interactive	-	The service is installed with the option ""Allow interaction with desktop"".
group="groupname"	-	Name of the service group to which the server is intended to belong. Services of the same group are always started together.
depend="name"[,...]	-	Name of a service or service group whereon the server depends. It is also possible to indicate multiple dependencies separated by commas.
user="account" pass="password"	See text	User name and password for the account under which the service is intended to run. Without this parameter, the start is conducted in the system account.

Additionally, any start options described under "Start as application" other than RunScript can be used.

4.1.4 Service control

A Pro02 server installed as service or daemon is optionally controllable by means of either operating system functions or the following call-ups:

pro02srv start [config=«name»]	Starts the service/daemon
pro02srv stop [config=«name»]	Stops the service/daemon
pro02srv restart [config=«name»]	Restarts the service/daemon
pro02srv status [config=«name»]	Checks whether the service/daemon is running. The return value is 0 if the service is running and 1 if it is not.

4.1.5 Uninstallation as service or daemon

The service is uninstalled by means of the call-up:

```
pro02srv uninstall [config=«name»]
```

4.1.6 Version query

With the following call-up, the version status of the Pro02 server can be requested without starting the server. The version number output is given on stdout and can be redirected into a file, if necessary:

```
pro02srv version [>«filename»].
```

4.1.7 Run a GMH script (setup support)

The Pro02 server can be ordered to run a GMH script and then to immediately terminate it again. This is carried out by means of the following call-up:

```
pro02srv runscript=«script name».
```

The script name is expected relative to the resource directory. In case an error has occurred (\$ERROR variable set through the script), a file named "«scriptname».err" containing the script output is set up in the log directory. Additionally, the content of the \$ERROR variable is written into the system log as an error message.

The following default scripts can reasonably be used:

```
pro02srv/module_addall.gmh      Installs all available modules (as with the button "Add all").
```

4.2 Directory structure for a GEMOS installation

The column "Access (Z)" indicates the required access rights. R = Read only, W = Write; the column "Backup (B)" indicates whether this directory contains project data and requires regular backup. Any directories designated with "-" can be restored from the installation CD at any time or they contain only temporary files.

Path	Description	Z	B
«basicpath»/ «servicename».exe	Old binaries	R	-
«basicpath»/bin/ «servicename».exe	Binaries, for a better overview, current binaries (pro02lib V2.2.6 and later) can alternatively be placed in a subdirectory named "bin".	R	-
«basicpath»/config/ «servicename».cfg license.gml «formname».gml	Configuration files for this server: - service configuration - license - print form	W	Yes
«basicpath»/config/«hostname»/ «servicename».cfg	Configuration files for another host	W	Yes

Path	Description	Z	B
«basicpath»/import/ *.gif, *.jpg, *.pdf, ...	Images and documents to be imported; images and documents in this directory are available for import but will not be utilized directly by GEMOS.	W	Yes
«basicpath»/data/ master.fdb auth.fdb log.fdb «modulename».fdb	Databases: - master data - authentication database - protocol database - databases for extension modules	W	Yes
«basicpath»/data/images/	Already imported images and documents	W	Yes
«basicpath»/data/buttons/ *.jpg, *.gif, *.png	Background images for buttons	R	Yes
«basicpath»/data/fonts/ *.woff, *.otf, *.ttf	Additional fonts	R	Yes
«basicpath»/data/«modulename»/	Module-specific files, Other files with a database-like function	W	Yes
«basicpath»/webroot/ *.html, *.gmh, etc.	Project-specific web files The file “index.gmh” or “index.html” in this directory forms the start page of the GEMOS installation. Other files can be added, if necessary, and will be provided by GEMOS as for a normal web server.	W	Yes
«basicpath»/resources/ *.gmm timezones.cfg names_«language».cfg	Resources - module library - time zone data - Pro02 message names	R	-
«basicpath»/resources/ «modulename»/	Resources Patches for a module in clear text	R	-
«basicpath»/temp/	Temporary files	W	-
«basicpath»/logs/«servicename»/	Log files	W	-

4.3 Calling up the user interface

The Pro02 server is operated via a web interface. This is called up in the web browser via the following URL (for operating information, refer to the manual for operators):

`http://«servername»/!gmsui/login.gmh [?«parameter»=«value»[&...]]`

Frequently required parameters:

Parameter	Default value	Description
start=«id»	selected automatically	ID of the menu entry to be called up after successful login. The parameter value is the Id from a "start.«id»" entry in the [menu] section of a module.cfg
keeplogin	-	If the user has already been logged in, do not enforce a new login but jump directly to the target given by "start".
autologinUser=«userid»	Adjustable in the master data configuration specifically for each workstation	User name for delayed automatic login.

Other parameters:

Parameter	Default value	Description
autologinDelay=«value»	10	Waiting time, in seconds, for delayed automatic login.
user=«userid» pass=«password»	-	User name and password for immediate automatic login. Attention: There is no opportunity for the user to log in under another name!
noss1	-	Do not attempt to enforce an SSL connection.
keepssl	-	Maintain the SSL connection after login.

In case of malfunctions, it may be necessary to call up the configuration interface directly while bypassing the normal user login. This is done via the following URL: `http://«servername»/!pro02srv/`

The "/" (Slash) at the end of the URL is obligatory! A special service application is requested, the login with normal user data is not functioning. The service login in the delivery state is as follows: User name=MASTER, Password=1234.

4.4 Service access

Monitoring of the Pro02 server is conducted by means of a web interface. This is called up in the web browser via the following URL:

`http://«servername»/!service/`

The "/" (Slash) at the end of the URL is obligatory! A special service application is requested, the login with normal user data is not functioning. The service login in the delivery state is as follows:

User name: **service**

Password:

1234

After successful login, an overview of the active protocols appears. Additionally, the overview page can be used to start, stop and view protocols and to request state and statistics information from there. For any time indications in protocols, UTC is used.

4.4.1 Form “start new log”

Name	Function
Filter	<p>Filter for protocol output.</p> <p>The filter expression is a regular expression. The operators "*" and "+" in the regular expression function via default non-greedy, the operator "." will also find line breaks, the operators "^" and "\$" respond to the beginning or end of a string and not to line breaks. The filter expression ".*" lets any data pass.</p>
File	<p>Name of the log file.</p> <p>Where a name is not indicated, logging is carried out on screen. It is possible to have a mix of different logs written into the same file, provided they all originate from the same application (e.g. the Pro02 server). For screen output, such mixing is not possible.</p>
Limit	<p>Size limit for the log, in kByte.</p> <p>When the limit is reached, on-screen logging is stopped. When logging into a file, the old log is renamed "filename.old" and the new log file opened.</p> <p>In specific cases (with an extremely high throughput of log data), a log file may also turn out somewhat bigger than indicated here, since the size limit is only checked during idle times.</p>
Interval	<p>Indicates the interval within which, in addition to current events, statistics information is written into the log. The time indication may be followed by the characters s (seconds), m (minutes), h (hours) and d (days). In the absence of any code letter, the time indication will be interpreted as seconds.</p>

4.4.2 Available logs and statistics

Name	Log	Statistics
System	Special events, e.g. starting and stopping of server or database error	General server statistics: Memory, cache filling level, etc.
Message	Processed messages in clear text	-
Security	Security-related messages, e.g. login attempts with incorrect password	-
Spool	Processing of print and e-mail tasks.	-
Mplan	Action plan processing	-
Port	Login and logout of Pro02 clients	Overview of currently logged-in clients
«class»(«address», «login»)	Data transfer of a particular Pro02 client	-
Thread	Starting and stopping of threads	Overview of active threads
HTTP	HTTP requests	Overview of the existing HTTP connections
Session	Logins/logouts of web clients	Overview of active HTTP sessions
Script	-	Statistics of running a script (number of call-ups and run time per script).
Database	-	Overview of open database connections
Database(«alias»)	Database accesses	-

4.4.3 Service URLs

Besides the manual call-up via the index page ("http://«server»/!service/"), all service functions can be addressed directly via URLs. The general structure of the service command URLs is as follows:

http://«server»/!service/«command» [?«parameter»=«value» [&«parameter»=«value»] [& ...]]

The following parameters are applicable to all service commands (unless stated otherwise):

refresh=«n»	Refreshes the display every n seconds
head=«text»	Defines title and window title

4.4.3.1 Index page („/!service/“)

Shows the service index

4.4.3.2 Start log („/!service/startlog“)

Starts a log according to the parameters:

log=«name»	Log name
file=«name»	File name (empty=on-screen logging)
limit=«n»	Size limit in kByte
interval=«n»	Statistics output interval
filter=«text»	Filter
showpolls=y	Activates logging of background activities (polling).

4.4.3.3 Stop log („/!service/stoplog“)

Stops any loggings into a particular file.

file=«name»	Name of log file
-------------	------------------

4.4.3.4 Pause log („/!service/pauselog“)

Interrupts logging into a particular file. The logging task is maintained and can be resumed at a later time.

file=«name»	Name of log file
-------------	------------------

4.4.3.5 Resume log („/!service/resumelog“)

Resumes logging after interruption by pauselog.

file=«name»	Name of log file
-------------	------------------

4.4.3.6 View log („/!service/viewlog“)

Shows the content of a particular log file.

file=«name»	Name of log file (Default: system log of the server)
-------------	--

4.4.3.7 View configuration file („!`service/viewconfig`“)

Shows the content of a particular configuration file.

`file=«name»` Name of configuration file (Default: active configuration of the server)

4.4.3.8 View statistics („!`service/viewstat`“)

Shows the statistics.

`log=«name»` Name of the statistics. For possible names, see logs command

`refresh=«n»` Refresh interval, in seconds

4.4.3.9 Start maintenance mode („!`service/StartMaintenance`“)

Activates the maintenance mode. In the maintenance mode, message processing is interrupted and any database connections are closed in order to allow undisturbed backup/restore processes. For security reasons, call-up is only possible via localhost (127.0.0.1)!

The reply is sent only when all databases are closed or an error has occurred. The HTTP state code is 200 for success and 4xx for errors.

4.4.3.10 End maintenance mode („!`service/EndMaintenance`“)

Ends the maintenance mode. Any data cached on the server is discarded and access to databases is permitted again.

4.4.3.11 Flush cache („!`service/FlushCache`“)

Discards any data cached on the server.

4.4.4 Pro02 fault codes (CE-Codes)

Group 10: general faults

- CE10 General fault/no further details
- CE11 Packet of unknown type received
- CE12 Syntax error
- CE13 Timeout for CP/CN

Group 20: Login/authorization error

- CE20 General login error/no further details
- CE21 Login error: Invalid device name/password
- CE22 Login error: Protocol version not supported
- CE23 Login error: Too many devices for this login name
- CE24 Login error: Too many devices for this class
- CE25 Data transfer prior to login completion
- CE26 Access to detectors/devices without authorisation.
- CE27 Login error: Unlicensed interface type
- CE28 Login error: Inadmissible device address
- CE29 Login error: Invalid device configuration
- CE2A Login error: Device is blocked
- CE2B Login error: The licenses for this interface type are depleted
- CE2C Login error: Invalid signature
- CE2D The server temporarily does not accept any connections (maintenance/initialization)

Group 30: Data error

- CE30 General data error/no further details
- CE31 Invalid date/time indication
- CE32 Invalid message number
- CE33 Invalid device/detector identification
- CE34 Invalid state vector

4.5 Print forms

Configuration of the print queue text or HTML files.

Add a queue via Master data → Basic setup → Modules → Pro02 server configuration → Printer and e-mail, name it and then edit it via the wrench symbol.

Under Template in the drop-down menu, select the page printer (IPP). This template sends the documents to a network printer or a print server via IPP (internet printing protocol).

Host/IP address: Indicate the IP address of the printer to be used or search for it across the network. In the next step, the printer port is selected.

The printer URL consists of the IP address of the printer and the printer port.

IP:10.0.0.12

Port: (ipp/port1)

e.g.: `ipp://10.0.0.12/ipp/port1/`

4.5.1 Mailing forms

The setup of the mailing forms is the same as for the print forms

Add and name a queue and select the template e-mailing.

Configuration of the queue is conducted via the wrench symbol.

1. E-mail configuration:
 - Sender, recipient and subject
2. Mail server configuration - the following data must be indicated:
 - Default domain
 - SMTP server
 - Port

4.6 Data import

The data import includes graphics, documents and lists of data points.

4.6.1 Graphics, documents

Graphics and documents to be imported into GEMOS must be stored in the import folder or a subfolder thereof. After having been stored or refreshed there, files will not be immediately and automatically transferred to GEMOS, instead it is required to select the respective folder under master data and click the button "Refresh".

The thought behind this mechanism is as follows: Data refresh in "import" will often be carried out gradually and by means of externally supplied (unchecked) files. If these data would become effective immediately, security personnel might be accidentally or deliberately misled due to inconsistent and/or incorrect plans. The manual initialization of the import process enables security management to check the changes first in order to then release them purposefully at a chosen later point.

Subfolders under Import may be set up via the master data interface, if desired. Any subfolders having been set up manually in the file system must subsequently also be entered in the master data, otherwise they will not be recognized.

Language-dependent graphics can be realized by placing a language indicator in parentheses after the file name. Thus, „test (de).gif“ and „test (en).gif“ designate the same graphic, once with a German and once with an English annotation. When the graphic is placed in a floor plan later, GEMOS will automatically set up the correct version according to the preferred language of the operator.

Currently supported graphics formats are: gif, jpg, png, svg and dwg.

Supported document formats are "txt" and "pdf" (only in combination with the corresponding plug-in).

4.6.2 Lists of data points

Lists of data points are imported by using the function "CAD import" accessible via the master data interface for import folders.

The lists can optionally be provided in the form of block elements in Autocad drawings (.dwg) or as csv files. Import is possible for Pro02 Id, designation, detector type, detector symbol and detector point positioning.

4.7 Encoding of data transfer

The following information is available for the encoding of data transfer

- Installation of OpenSSL library
- Integrated HTTPS support
- HTTPS support by means of a preceding “squid” proxy
- SSL certificates

4.7.1 Installation of OpenSSL

For implementing the SSL functionality, GEMOS utilises the library “Open SSL”. For legal reasons, this may not be directly included in the delivery. For Windows, a current setup programme is available under

<http://www.slproweb.com/products/Win32OpenSSL.html>.

Under Linux, most distributions include an OpenSSL packet which can be installed simply by using the tools of the operating system (yast, synaptic, apt, etc.).



OpenSSL utilises encoding technology which is subject to patent rights and may even be illegal in some states. The OpenSSL library is used at one's own risk, ela-soft may not be held responsible for any rights infringements. If required, a parameter (see Annex, SSL protocol filter) can be used to enforce a particular, locally permitted encoding method (for further information, refer to <http://www.openssl.org/>).

4.7.2 Integrated HTTPS support

The integrated HTTPS support is primarily intended for securing the password dialogue and the connection of a distinct maintenance or master data maintenance access. This procedure is not recommended for securing a larger number of operator panels or the regular user interface as it causes an extremely high Pro02 server load.

For activation, an entry to the pro02srv.cfg is required as follows:

```
[port.https]
Protocol=http
Link=ssl|tcp:*.443
ssl.Certfile=pro02srv.pem
```



Where a path is not indicated, the certificate file is expected in the config directory. The certificate is loaded once at the first opening of an SSL connection. Subsequent alteration of the certificate requires a restart of the pro02srv. The internal SSL implementation is currently based on OpenSSL version 0.9.8. This version must be installed prior to the start of the Pro02 server.

4.7.3 HTTPS support by means of a preceding “squid” proxy

This solution is recommended when HTTPS is intended to be used at a larger scale. It enables a significantly better load distribution due to the CPU-intensive encoding being outsourced to an independent process. This process may even run on a separate server, if required. The proxy also performs the caching of frequently requested data thereby reducing the server load.

1. Installation of SQUID
2. SQUID must be compiled with the SSL option. Unfortunately, this is not the case with many distributions under Linux where the squid has to be compiled manually. Under Debian/Ubuntu the procedure is e.g.:


```
sudo apt-get install automake
apt-get source squid
cd «directory set up in previous step»
/bootstrap.sh
/configure --enable-ssl
make
sudo make install
```

 Here, the new squid is stored in the following directories:

Binary:	/usr/local/squid/sbin/squid
Configuration:	/usr/local/squid/etc/squid.conf
Cache:	/usr/local/squid/var: (Attention: Access rights might be set incorrectly!)
3. Configure SQUID. Example of the configuration file squid.conf:


```
visible_hostname «fqdn»
http_port 80 accel defaultsite=«fqdn»
https_port 443 accel defaultsite=«fqdn» cert=«path to pem file»
cache_peer localhost parent 12080 0 no-query originserver name=pro02srv
acl gemos_site dstdomain «fqdn»
acl other_sites dstdomain *
http_access allow gemos_site
cache_peer_access pro02srv allow gemos_site
cache_peer_access pro02srv deny other_sites
```
4. Required adjustments in the pro02srv.cfg:

Change the port number from 80 to 12080 in the [port.http] section.
Delete or comment out any [port.http] section present (“disabled” will not suffice!).
No port of the numbers 80 or 443 shall remain active.
5. Start pro02srv and squid.

4.7.4 SSL certificates

The bureaucratic procedure for acquiring a valid server certificate is relatively complicated and cannot be reasonably described here. If required, please contact an adequate certification body and refer to the numerous websites with FAQs on this subject.

Unless the server is used publicly on the internet, however, a so-called “self-signed certificate” will usually suffice. The client (e.g. the web browser) will then ask the operator at initial access whether this is a trusted certificate. When the operator confirms this, no further questions will be asked. Generating such certificates is relatively simple when using the tools supplied with OpenSSL, namely with the following command sequence on the command line:

```
openssl genrsa >pro02srv.pem
openssl req -new -x509 -key pro02srv.pem -days 5000 >>pro02srv.pem
```

For this purpose, "pro02srv.pem" must be replaced by the name of the certificate file to be generated. The value following "days" is the certificate's duration of validity expressed in days.

Upon the second command, OpenSSL will interactively query a number of data such as the installation location and the name of the operator (organization). This may simply be entered in clear text, preferably without using any umlauts or other national special characters. The input box “Common Name” is a special case. Contrary to request, not one's own name shall be entered here but the server FQDN as entered later in the web browser.

4.8 Integrated web server

The Pro02 server is provided with an integrated web server. It provides the user interface (alarm processing, master data), enables system configuration and provides maintenance access to the server. Furthermore, it provides the common basic functionality of a web server including CGI thereby enabling the realization of project-specific extensions or small internal websites without requiring an additional web server.

4.8.1 Server side includes (GMH files)

The Pro02 web server can generate dynamic contents. Such files have the extension “.GMH”, and are by structure HTML files with embedded function calls. Blocks of function calls begin with “<!--#” and end with “-->”.

Upper/lower case writing is irrelevant in GMH scripts. A script language documentation is available on request.

Example:

```
<html><body>
The logged-in user is: <!--# SessionParam("*User") -->
</body></html>
```

4.8.2 CGI scripting

CGI scripting is disabled by making an entry for the respective extension in the HTTP section of the server configuration file, e.g.:

```
[http]
Map.perl=url:".pl",
priority:130,
type:cgi,
cgiexe:"c:/bin/perl.exe"
```

For details, refer to the configuration file description.

The script receives the following environment variables:

CONTENT_LENGTH (only for POST):	Length of data transmitted via STDIN
CONTENT_TYPE (only for POST):	Type of data transmitted via STDIN
DOCUMENT_ROOT	Root of document directory on the server
GATEWAY_INTERFACE	Contains the value "CGI/1.1"
HTTP_ACCEPT	Value provided by the browser in the "Accept" header
HTTP_ACCEPT_ENCODING	Value provided by the browser in the "Accept-Encoding" header
HTTP_ACCEPT_LANGUAGE	Value provided by the browser in the "Accept-Language" header
HTTP_CONNECTION	Value provided by the browser in the "Connection" header
HTTP_COOKIE	Value provided by the browser in the "Cookie" header
HTTP_HOST	Value provided by the browser in the "Host" header
HTTP_REFERER	Value provided by the browser in the "Referer" header
HTTP_USER_AGENT	Value provided by the browser in the "User-Agent" header
QUERY_STRING	Part of the URL following any "?" (otherwise blank)
REMOTE_ADDR	IP address of the client
REMOTE_HOST	DNS name of the client
REMOTE_USER	User logged in at the client
REQUEST_METHOD	Request method (GET or POST)
REQUEST_URI	Complete URL transmitted by the browser
SCRIPT_FILENAME	Complete path name of the script on the server
SCRIPT_NAME	Name of script without path
SERVER_NAME	Host name of the server
SERVER_ADDR	IP address of the server
SERVER_PORT	Port number of the server
SERVER_PROTOCOL	Includes the value "HTTP/1.1" or "HTTP/1.0" as indicated by the browser
SERVER_SOFTWARE	Includes name and version number of server software
SERVER_PATH	Path of Pro02 server main directory
SESSION_S_xxxx	Transmits the values of system session variables (see GMH description)

SESSION_G_XXXX

Preset (unequal empty string) if the logged-in user is a member of group XXXX.

4.9 Server configuration file

The configuration file is by default named PRO02SRV.CFG and can be found in the "config" directory. If necessary, the name of the configuration file can be changed by means of a command line parameter, for further details, refer to the section "Installation" of this document.



Normally, the configuration file should not be manually edited. All important settings can also be made via the configuration interface.

The configuration file consists of several sections. Each section begins with "[«section name»]" and includes entries in the form of "«name» = «value»". Comment lines begin with ";".

Please note that changes to the configuration during operation do not always become immediately effective.

Section, entry	Becomes effective
[HTTP], URL and extension allocations	within 10 s
[HTTP], session parameters	at the start of a new session
[HTTP], other entries	upon server restart
[CONFIG]	within 10 s
[PRO02USER]	at the next build-up of a PRO02 connection
[PRO02CLASS.xxx]	at the next build-up of a PRO02 connection
[PORT.xxx]	within 10 s
[DATABASE]	within 10 s
[ICONS], [DATATYPES]	within 10 s

4.9.1 Section "[config]"

In the "[config]" section, both the general and the server-specific settings are explained.

4.9.1.1 General settings (this part also applies to Pro02 clients!)

Entry	Default	Explanations
ConfigId=«id»	none	Includes a unique designation/version assigned to this configuration by the configuration interface.
ConfigUrl=«url»	!/«service»/config.gmh	URL of HTTP configuration interface.
ConfigPort=«port»	80	Port of the HTTP configuration interface. This entry is provided merely for information purposes regarding maintenance tools and is not analysed by the server or client itself.
ServiceUrl=«url»	!/service/	URL of the HTTP maintenance interface.
ServicePort=«port»	80	Port of the HTTP maintenance interface. This entry is provided merely for information purposes regarding maintenance tools and is not analysed by the server or client itself.
Pro02InfoPort=«port»	1200	UDP port which can be used to query information on running Pro02 services.
ServiceName=«name»	pro02_pro02srv	Service name for a server installed as a service
Depend=«service»[,...]	-	Service dependencies (analysed only in case of service installation!)
User=«name»	-	Name of the user account under which the service or daemon is running. For Windows, the name must have been already set prior to the service installation as it will be copied to the registry during installation. Under Linux, the Pro02 server switches automatically to the indicated user account immediately after start.
Preopen=«list»	-	List of ports being preopened when starting the programme in list mode. This option makes particular sense under LINUX where it is used to open reserved ports <1024 with root rights before the user identification (see user option) is changed. The parameter is a list in the format of «protocol»[:«ipaddr»:«port»[,...]] Protocol may be "TCP" or "UDP". Indication of the IP address is optional and only required for servers with several IP addresses where the Pro02 server is to be exclusively tied to a particular address.
Processor=«n»[,...]	1	Selects the processor(s) within a multi-processor system whereon the Pro02 server is intended to run. A comma-separated list of processor numbers can be indicated. 0 represents the presetting of the system, * for all processors. This parameter is available under

Entry	Default	Explanations
		Windows only. Under Linux, please use the "taskset" utility.
BufferFlushInterval =«n»	10	Interval, in seconds, for storing the message buffer on the hard disk
BufferMemory=«n»	1000	Maximum size of the message buffer within the memory (number of messages)
BufferDisk=«n»	100	Maximum size of the message buffer on the hard disk (kilobyte)
BufferTime=«n»	120	Size of the message buffer expressed in minutes
BufferPath=«path»	«exepath»/ state/«cfgname»	Absolute message buffer path
DBThreads=«n»	4	Number of database threads. For large systems, this entry has to be adjusted. For this purpose, please consult the ela-soft support.
Charset	iso-8859-15	Specifies the system character set. This set of characters is used for database connections as well as the Pro02 ports. It is also used as the default value for the HTTP character set. Currently possible values are "iso-8859-1", "iso-8859-15" and "utf-8" (please observe the exact spelling with correct hyphens in order to avoid problems regarding database access!).
FBEEmbeddedServer	0	If this option is set to 1, the embedded version of the Firebird database will be used.

4.9.1.2 Server-specific settings

Entry	Default	Explanations
LicenseFile=«path»	config/license.gm	Path to license file
SequenceDomain	0	Defines the range of numbers for data set IDs in the master data and protocolling. When intending to enable later mixing of data from different servers (e.g. in redundancy mode), the range of numbers must be set differently on each server. For number ranges of default size (see below), the permissible value range for the SequenceDomain is 0-20.
SequenceDomainSize	100000000	Defines the size of a number range. This value must be set prior to database setup and shall under no circumstances be subsequently altered. Unless there are imperative reasons for alteration, it is recommended to maintain the default value (100 million data sets per number range).

Entry	Default	Explanations
LogHoldTime1	7	Hold time for the primary message log expressed in days
LogHoldTime2	400	Hold time for the secondary log (oldlog) expressed in days
CacheDiscardDelay	1440 (=1 day)	Delay for discarding message cache entries expressed in minutes
CacheWriteDelay	10	Delay for writing detector states back into the database expressed in seconds
CachePrefetchChunk	500	Maximum number of data sets preloaded into the detector cache
CacheLinkMode	1	Search strategy for links: 0=recursive/deep search: Initially, the first link branch is followed into the depth, then the next, etc. This is the default strategy for earlier GEMOS3 installations. 1=iterative/shallow search: The sequence of processing is as follows: any direct links to the object, any links via one intermediate station, any links via two intermediate stations, etc. This strategy is recommended for new installations.
CachePreload	0	1=preload complete detector data into the cache at start
ServerSyncPort	12002	UDP port for communication between (redundant) Pro02 servers.

4.10 Section “[queues]”

The section “[queues]” describes the configuration of load distribution and redundancy. Each entry in this section describes a message processing path. Multiple processing paths are used to optimize load performance (e.g. separate paths for load-intensive and time-critical subsystems) and to configure different redundancy performances for different subsystems.

The general format of the entry is as follows:

«queueName» = «parameter»:«value»[,...]

The «queueName» must be alphanumeric and unique throughout the system. It is used for identification purposes in Logs and Statistics without having any further significance. The potential «parameters» are described below. If containing special characters, the «value» has to be enclosed in quotation marks (“”).

4.10.1.1 Parameter for allocating the processing path

source:"«regexp»" Defines the subsystems (Pro02 login name) for which the processing path is responsible. In case of several hits for one login name in different queue entries, the first one applies. Default value: any subsystem.

Pro02id:"«regexp»" As source but with filtering according to the Pro02 Id. Default value: any Pro02 Id.

msgtype: [c][m] Defines the message types for which the processing path is responsible. c=commands (MC), m=messages (ME/MS/MR). Default value: Commands and messages



Allocating the messages of one subsystem to different processing paths by means of source or msgtype shall be avoided. This can cause several undesired effects:

1. Messages can supersede one another and then be no longer processed in their chronological order resulting in the incorrect processing of interdependencies.
2. Parallel processing of messages by one detector can result in an inconsistent detector state.
3. After connection faults, the subsystem will no longer request again all unprocessed messages, but only those following the last processed message.

These restrictions do not apply to commands. In particular, different processing paths can be used for messages and commands which makes sense for systems involving time-critical operating processes.

4.10.1.2 Parameters for controlling message processing

Currently none.

4.10.1.3 Parameters for controlling redundancy performance

hosts: «hostname»[/«hostname»/...]

Specifies the servers in a redundant system that are alternatively responsible for the processing path. The indication is arranged in order of preference. Host names shall be indicated without any domain.

delay: «n»

Defines the delay time, in seconds, during which a momentarily not responsible server waits for the responsible server to process a message before succeeding to the task. The default value is 10 s.

4.10.2 Section "[http]"

The section "[http]" gives settings and URL allocations for the integrated web server.

4.10.2.1 General HTTP settings

These settings can also be made in the configuration file of Pro02 clients.

Entry	Default	Explanations
LogFormat ="«string»"	See text	Specifies the format for entries in the HTTP log. Besides defined text elements, variable elements with wildcards in the form of '{«variable name»[:«width»]}' may be added. The following variables are defined: std All default indications

Entry	Default	Explanations
		<p>ip IP address of the client</p> <p>port Port class via which the request has been received</p> <p>Session Session name (or IP address in case no session is activated)</p> <p>method Request method (GET/POST/etc.)</p> <p>host Host to which the request was addressed</p> <p>Urlpath URL without parameter</p> <p>url URL with parameter</p> <p>ptime Time required for processing</p> <p>rtime Time required for sending the reply</p> <p>time Total required time</p> <p>status HTTP state code</p> <p>sent Amount of transmitted data</p> <p>received Amount of received data</p> <p>compr Compression factor for transmission</p> <p>req-«name» Field of HTTP request header, e.g. reqreferer, req-user-agent</p> <p>reply-«name» Field of HTTP reply header</p> <p>reply-\$abspath Absolute path of the object found on the local disk</p> <p>reply-\$docroot Determined document root</p> <p>var-«name» Value of a parameter or a script variable</p>
Proxy="«host»:«port»"	-	Defines a default proxy for outbound HTTP requests.

4.10.2.2 Server-specific HTTP settings

Entry	Default	Explanations
Threads=«n»	4	Number of worker threads for script processing
SessionTimeout=«n»	600	Time, in seconds, whereupon an inactive session is disconnected.
MultipleSessionsPerIP=«n»	1	<p>If this value is >0, several simultaneous sessions of one client address are permitted.</p> <p>The setting 0 closes previous sessions as soon as a client opens a new session.</p>
MultipleIPsPerSession=«n»	0	<p>If this value is >0, sessions are not tied to the client address. This is required where access is to be gained via the internet (dial-up access, proxy farms).</p>

Entry	Default	Explanations
		The setting 0 terminates a session as soon as access from different IP addresses occurs. For safety-critical applications, the value chosen for this option should definitely be 0 in order to prevent misuse involving tracked session Ids.
DefaultTimezone=«name»	mez	Indicates the timezone applied on the user interface.
DefaultLanguage=«abbreviation»	de	Indicates the dialogue language applied on the user interface.
MaxRedirects	10	Maximum number of internal redirects by "root" and "rewriteurl" mappings.
ServerAddr		Value for the CGI variable "ServerAddr".
ServerPort		Value for the CGI variable "ServerPort".
ServerName		Value for the CGI variable "ServerName"
ServerAdmin		Value for the CGI variable "ServerAdmin".
LogErrors	0	Controls the logging of errors. Bit0: Logs file access errors in the system log.
ScriptDebug	0	Controls the amount of debug outputs (bitmask): Bit0-2 debug level: 0=no Debugging 1=provide debug options in menu 2,3=additional outputs during processing Bit4 (0x10) activate debug outputs onto the browser panel Bit5 (0x20) debug outputs during delayed uploading of CSS/JS files Bit6 (0x40) deactivating event catcher in layouts (maps) and reactivating the browser-integrated context menu Bit9 (0x200) display CGI and GMH fault messages not only in the system log, but also in the browser Bit12 (0x1000) debug outputs onto the browser panel during detector refresh; visible watchdog timer The setting of bits other than those indicated above may activate debug outputs at a scale which will render the user interface unusable.

4.10.2.3 Configuration of the automatic refresh of detector symbols

Entry	Default	Explanations
RefreshTriggerMode	1	Controls how the refresh is triggered: Bit0: Incoming messages trigger an immediate refresh Bit1: The actual states of the detectors are periodically compared to the indicated state
RefreshTransmitMode	pushlet	Controls which method is used to transmit refreshes to the browser: pushlet Continuous transmission via an infinite HTTP request in a hidden frame xhr-stream Continuous background transmission via XMLHttpRequest Not applicable to Internet Explorer! xhr-poll Transmission of individual refreshes via XMLHttpRequest. After each completed refresh, a new XMLHttpRequest is triggered ("long polling")
RefreshRepeat	2	Number of repeats for detector refresh
RefreshInterval	500	Minimum interval, in ms, between two refreshes of the same detector
ReloadInterval	2000	Minimum interval, in ms, between two reloads of the same frame
RefreshWatchdog	10	Watchdog trigger interval expressed in seconds.

4.10.2.4 URL allocations

From version V1.1 onwards, the Pro02 server is provided with an extended mechanism for interpreting URLs, checking access rights to URLs and allocating URLs to directories on the server disk. For this purpose, entries in the following form are used:

Map.«id»=«searchterm»:«value», «parameter»:«value»[,...]

«id» is an identification of the allocation entry. The identification must be unique but has no further function. In order to avoid conflict, it is recommended to observe the syntax "module.subid", that is for example "Map.Master.1=....".

Map entries are processed in (descending) order of their priority. Entries of the same priority level are processed according to their sequence in the configuration file.

Search term

The search term indicates the conditions of validity for the entry. Where several conditions are indicated, they are linked with AND. Two similar conditions (e.g. two URLs) are not permitted. A "url" search term must

always be present, otherwise the mapping entry is discarded for being invalid.

Syntax	Explanations
url: /«urlpattern»[/]	Checks for compliance of the search term (regular expression) with the URL without considering the host name. If «urlpattern» ends with a slash, "(.*)" is implicitly added.
url: //«hostpattern»/«urlpattern»[/]	Checks for compliance of the search term (regular expression) with the URL under consideration of the host name. If «urlpattern» ends with a slash, "(.*)" is implicitly added.
url: .«ext»	Checks the URL for a particular file extension
client: "«address»[/«mask»] [...]"	Checks for a particular client address. Where several client addresses are indicated, they are linked with OR. For format details, see [port] section, entry "RestrictAddr". When the request is received via proxy, comparison is not conducted for the address of the proxy but for the address transmitted by the proxy in the "X-Forwarded-For" header. If, for example, a host name is indicated instead of an IP address, the comparison to "client:" will fail and HTTP-X-Forwarded-For will have to be used instead!
http «headername»: "«pattern»"	Checks for compliance of the HTTP header with a regular expression.
Port "«pattern»"	Checks whether the request has arrived via a particular port. The name of the port section (excluding the prefix "port.") is compared to a regular expression.

Data source

Where a data source is indicated in a map entry, the search is ended and the respective data is supplied to the browser.

Syntax	Explanations
path: «path»	Allocates a file path to the search term. Partial expressions in parentheses found in the url pattern may be referenced in the path by means of the wildcards \$1,\$2,etc. If the path does not contain any wildcards, the variable part of the URL is added to the path (see example). Examples: Map.pics=url:/pictures/(.*),path:"c:/pictures/\$1" supplies URLs beginning with "/pictures/" with files from the directory "C:/pictures/". Map.pics=url:/pictures/,path: "c:/pictures/" corresponds to the previous example (simplified form)
root: «path»	Sets a new "Document Root". and repeats the search with the local configuration file named "http.cfg" found in this directory which is able to further refine URL resolution by means of its [HTTP] and [HTTPUSER] sections. For path indications including several wildcards, all of those but the last are analysed for the search for "http.cfg". The last wildcard is

Syntax	Explanations
	replaced by the file name "http.cfg". Examples: Map.servers=url://test_(.*)/(.*),root:"c:\htdocs\%1\%2". Implements virtual servers. For URLs in the form of "http://test_XXX/...", the directory "C:\htdocs\XXX" is searched for a local configuration file. If it does not contain any further mappings, the files called up under the URL are also searched for in the directory.
rewriteurl: "«url»"	Changes the URL to the indicated value and repeats the search. As for "path" (see above), wildcards may be used.
redirect: "«url»"	Redirects the browser to the indicated URL. As for "path" (see above), wildcards may be used. If "reply" is not additionally indicated, redirect is performed using the HTTP state code 303.
forward: "«url»"	Forwards the request internally within the server to the indicated URL (proxy function).
reply: «code»	Sends the reply with a particular HTTP state code. Reply can stand alone or be combined with the reply options indicated above.

Access rights

Access rights are only checked until a data source is found. Where several map entries indicating access rights are found, the first entry found applies.

Syntax	Explanations
access:«group»[/«group»/...]	Grants users belonging to the indicated groups (exclusive) access to the search term. For «group», the following indications are possible: «httpuser-group» Group from the [httpuser] section. «auth-groupname» Group from the authentication database. From the group name indicated there, only alphanumerical signs are taken. «auth-groupid» Group on the authentication database indicating the numerical group Id. «module».«function» Users who, according to the authentication database, have the indicated right to a module function. user All logged-in users everyone Everyone Example: /pictures/ = access:service/picturemodule.101
access: nobody	Completely prevents access to URLs complying with the search term. The server delivers fault code 404 (not found) instead of 403 (forbidden) in order to avoid leaving hints for attackers.
realm: «name»	Defines a name for the authentication realm displayed in the login window of the browser.

Syntax	Explanations
	Where an access list (access) but no realm is given, merely the characteristics of the session are checked, and in case of insufficient rights, access will be denied without a login window being displayed.

Options

Syntax	Default	Explanations														
priority: «n»	1	<p>Defines the priority of the search term. Higher values mean that the search term will be searched first. For priority, the following conventions apply:</p> <table> <tr> <td>300</td> <td>Rewrite URL and redirect entries.</td> </tr> <tr> <td>200</td> <td>Allocation of content type</td> </tr> <tr> <td>110</td> <td>Special settings for particular paths in modules</td> </tr> <tr> <td>101</td> <td>Special rights for access to GEMOS modules</td> </tr> <tr> <td>100</td> <td>Default settings for GEMOS modules</td> </tr> <tr> <td>1..99</td> <td>User-defined entries</td> </tr> <tr> <td>0</td> <td>Default path</td> </tr> </table>	300	Rewrite URL and redirect entries.	200	Allocation of content type	110	Special settings for particular paths in modules	101	Special rights for access to GEMOS modules	100	Default settings for GEMOS modules	1..99	User-defined entries	0	Default path
300	Rewrite URL and redirect entries.															
200	Allocation of content type															
110	Special settings for particular paths in modules															
101	Special rights for access to GEMOS modules															
100	Default settings for GEMOS modules															
1..99	User-defined entries															
0	Default path															
type: gmh	-	Orders the server to interpret any URLs complying with the search pattern as GMH scripts														
type: cgi	-	<p>Orders the server to interpret any URLs complying with the search pattern as CGI scripts. The path of the script is defined by the commands "file:" or "root:" and the path of the interpreter by the command "cgiexe:" (see there for further details).</p> <p>Examples:</p> <pre>Map.pl=url:.pl, type:cgi, cgiexe:"c:\perl\perl.exe", path:"c:\cgi-bin\\${1}" defines Perl CGIs and always searches scripts in c:\cgi-bin\ Map.php=url:.php, type:cgi, cgiexe:"c:\php\php.exe" defines PHP-CGIs and allows script in each directory Map.cgiexe=url:.cgi,type:cgi,cgiexe:"c:\cgi-bin\testcgi.exe" transmits all URLs ending with .cgi to testcgi.exe</pre>														
type: «type»/ «subtype»	-	<p>Allocates the content type «type» to each URL complying with the search pattern.</p> <p>Example: Map..log=url:.log,type:text/plain</p>														
expiration: «n»	-	Specifies a life span for the data (expiration header). Expressed in seconds. With n=0, data caching will be completely prevented.														
encoding: "«list»"	chunked, http11	<p>Controls reply options. The parameter value is a comma-separated list where a prefixed "!" disables the associated option.</p> <p>gzip permits/forbids gzip compression. chunked permits/forbids chunked encoding. http11 permits/forbids HTTP1.1.</p> <p>Example:</p>														

Syntax	Default	Explanations
		encoding: "gzip,!chunked" permits gzip, forbids chunked.
index: "«list»"	index.gmh, index.htm, index.html	List of the file names being tried if the URL represents a directory. Besides the file names, the following special commands can also be used: * Displays a directory listing in default format *scriptpath Requests a GMH script to display the directory listing. The script path is relative to the basic directory of the installation. The directory path is transmitted to the script in the variable "\$dirpath".
cgiexe: «path»	-	Specifies the path of the CGI interpreter. As for "path" (see above), wildcards may be used.
cgienv:" «name»= «value»[,...]"	-	Sets environment variables for the CGI call. Values indicated here will overwrite the default values. As for "path" (see above), wildcards may be used.
cgitimeout: «n»	600	Timeout for CGI script processing expressed in seconds (0=unlimited). This timeout also applies to "forward".
cgilimit: «n»	1024	Limit for the amount of data provided by a CGI script, in kByte (0=unlimited). This limit also applies to "forward".
cgistreaming: «n»	0	If n=1, the streaming for CGI scripts is activated. In this mode any data provided by the script are immediately forwarded to the browser. This flag also applies to "forward".
cgierrormode: «n»	3	Defines how the Pro02 server detects a fault in the execution of a CGI script. n=0: no fault detection, n=1: for outputs on stderr, n=2: for an exit code unequal 0, n=3: both.
proxy: "«host»: «port»"	-	Specifies, in combination with "forward", a proxy via which the request is forwarded.
rewriteheader : «header»:«value»	-	Replaces the content of a field in the request header.
replyheader : «header»:«value»	-	Sets the content of a field in the reply header.

4.10.3 Section "[httpuser]"

Includes the passwords and access rights for HTTP authentication. The rights set here are valid irrespective of the authentication database (auth.gdb).

Entry	Default	Explanations
-------	---------	--------------

«name»:«password» = «group»[,...]	-	Defines name, password and group allocation of a user. The group name "service" is subject to special treatment and grants access to the maintenance interface. Examples: service:1234=service, admin
«name»,«key»= «group»[,...]	-	As above, but with the use of an encrypted password. The encrypted password can be generated in GMH as follows: replacestr(encryptpassword(user,pass),"=", "")

4.10.4 Section "[auth]"

Controls options of the authentication database (auth.gdb).

Entry	Default	Explanations
pwexpiration1 = «days»	-	Defines the expiration date of the password for newly created user accounts expressed in days. If this parameter is empty, validity is not limited. In any case, this is merely a preset value that can be manually overwritten when creating the user account.
pwexpiration2 = «days»	-	Defines the expiration date of the new password if the user himself has changed his password. If this parameter is empty, validity is not limited.
expirationwarning = «days»	7	If the validity of the password or user account expires sooner than the duration indicated here, a warning will be displayed during login.
pwmin = «length»	6	Minimum length of password. This restriction applies only if the user himself changes his password. Where it is changed by the administrator, he/she can also assign shorter passwords.
pwspecial = «length»	1	Minimum required number of special characters to be included in the password. This restriction applies only if the user changes his password himself. Where it is changed by the administrator, he/she can also assign simpler passwords.

4.10.5 Section "[pro02user]"

Includes the passwords and access rights of Pro02 devices.

Entry	Default	Explanations
«name»:«password» = «class» [,«option»,...]	-	Defines name, password and group allocation of a user. By placing "*" before the class name, a user can be temporarily blocked. In this case, existing connections are

		<p>disconnected within 10 s and reconnection is prevented. Login names containing a colon shall be enclosed in quotation marks (see example).</p> <p>Examples:</p> <p>Test:1234=TestClass</p> <p>BMA:111=*Default</p> <p>"Bla:1":aa=Default</p>
--	--	---

The following options are available:

device=«devicename» Default device for devices not transmitting any deviceId with the messages/commands.

4.10.6 Section "[pro02class.«class»]"

Includes all settings for a particular class of PRO02 device. Pro02 device classes combine devices of equal characteristics and rights.

Entry	Default	Explanations
RestrictAddr =«address» [/«mask»] [...]	empty	Restricts access to certain IP addresses. Where this entry is missing, access is possible from any IP address. For details regarding the format, see [port] section.
RestrictPort =«portname» [...]	empty	Restricts access to certain interfaces (see [port] section). Where this entry is missing, access is permitted via any port.
Flags=«hexnumber»	0	<p>Controls various special functions. Multiple options can be combined by setting multiple bits.</p> <p>0001 Uplink to GEMOS or a second Pro02 server.</p> <p>Commands that cannot be locally processed are forwarded to this device.</p> <p>0002 Special case TVP: Integrate events in state info.</p> <p>0004 5 min login delay.</p>
Timezone=«name»	UTC	Indicates the time zone used for Pro02 messages from/to the client. The time zones are defined in the file Timezones.cfg in the Resources directory. UTC is highly recommended since local time zones will inevitably lead to interpretation problems when switching to daylight saving time or returning to standard time.
FilterDefault=«filterstring»	empty	Defines the message filter that is active immediately after login. The filter can be changed by means of the MF command at any time during the existing Pro02 connection. After disconnection and a new login, however, the filter defined in the configuration is reactivated. For filter string syntax, refer to the Pro02 Protocol description, MF command.
AllowMsgIn=«filterstring»	(\$U[:/.]*)	Defines which messages the Pro02 device may feed into the system. For filter string syntax, refer to the Pro02 Protocol description, MF command. Additionally, "\$U" can be used for referencing the login name of the device.

Entry	Default	Explanations
AllowCmdIn= «filterstring»	empty	Defines which commands the Pro02 device may feed into the system. The default value deviates from the performance of the server versions up to and including 0.7 where each client was permitted to send commands without any restrictions.
AllowMsgOut= «filterstring»	(\$U[:/].*)	Defines which detector states and messages the Pro02 device may request from the system. The default value deviates from the performance of the server versions up to and including 0.8 where each client was permitted to receive messages without any restrictions.
AllowCmdOut= «filterstring»	(\$U[:/].*)	Defines which commands the Pro02 device receives from the system.
MaxUserLogins	1	Maximum permissible number of devices logged in under the same user name.
MaxClassLogins	no limit	Maximum permissible number of devices logged in under one class.

4.10.7 Section "[port.«portname»]"

Configures a protocol interface. There may be several port sections available in order to generate several interfaces. As its only purpose is the identification in Logs and Statistics, the port name can be assigned freely.

Configuration changes become effective within 10 seconds. For this purpose, all connections of the respective PORT section are temporarily disconnected, even those unaffected by the change! Here, only protocol-independent parameters are listed, for further protocol-specific parameters, see Annex "Link descriptors".

Entry	Default	Explanations
Disabled	-	If set (unequal to empty string), the port is disabled.
Protocol	Pro02	Protocol stack used. Currently reasonable are: http Web server pro02 Pro02 interface pro02 bsp Pro02 interface with transport lock
Link	-	Low level interface used, e.g.: TCP:*:12000 server interface on port 12000 TCP:host:1234 Active build-up of connection to host, Port 1234 For further options, see Annex "Link descriptors".
Link«n»	-	There may be several link entries which will then be tried cyclically during retries. The entries must be consecutively numbered (Link1, Link2, Link3, etc.). Links consisting of several protocol layers must have an identical layer structure since the protocol stack is not refreshed during retries. The parameters of the individual layers, however, may vary between links.
MaxConnects	100	Maximum total number of connections.

Entry	Default	Explanations
		If this parameter is 0, the number of connections is not limited. This setting, however, is explicitly NOT recommended as the server is bound to become unstable at a certain point.
MaxConnects PerAddr	0	Maximum number of connections per counter station address. If this parameter is 0, the number of connections is not limited.
RestrictAddr= «address» [/«mask»] [...]	empty	Restricts access to certain IP addresses. Where this entry is missing, access is possible from any IP address. Multiple dependencies can be indicated separated by commas. Examples: 10.0.0.13 permits access from address 10.0.0.13 192.168.1/24 permits access from addresses 192.168.1.0 to 192.168.1.255 The address of the local station within a network is transmitted once as 127.0.0.1 and another time as "real" IP address depending on the respective configuration of the operating system. To be on the safe side, both versions should always be indicated in RestrictAddr.
RetryCount	-	Number of retries during connection build-up. No indication=unlimited
RetryDelay	10	Interval between retries expressed in seconds.
ConnectTimeout	10	Timeout during connection build-up expressed in seconds. 0=unlimited.
InactivityTimeout	0	Timeout for disconnection in case of inactivity expressed in seconds (0=no disconnection).
LoginTimeout	10	Maximum time elapsing between connection build-up and completed login of the counter station expressed in seconds (0=unlimited). In the HTTP protocol, "login" means the first received complete header.
MessageRoute= «routeid»	See text	Controls the distribution of Pro02 messages. Ports having identical routeids are considered as separate message paths. Between them, no messages are forwarded. Additionally, messages that have already been received via one path are not requested again via the other path after disconnection (joint "last message" management). In case there is no MessageRoute entry, the login name of the counter station is used as Id (compatible with the performance of earlier versions). If MessageRoute=none, the port does not participate in the message distribution at all. This also implicitly applies if Protocol=http.

4.10.8 Section "[spool.«queuename»]"

Configures a spooler queue.

Entry	Default	Explanations
Disabled	-	If set (unequal to empty string), the queue is disabled. In the disabled mode, orders are accepted but not carried out.

Entry	Default	Explanations															
PageWidth	-	Page width in pixels (for map scaling)															
PageHeight	-	Page height in pixels (for map scaling)															
OutputCharset	See text	Output character set for SpoolForm(). Default setting is the system character set.															
DefaultExt	.htm	Output format and default extension for spool files															
SpoolDir	«temppat»/ «queuename»	Spooldirectory															
Mode	0 0 1 2 3 4 5	<p>Operating mode:</p> <p>0 Daemon: It is assumed that an external daemon takes the commands from the spool directory and deletes them after successful processing.</p> <p>1 Command: For command processing, the programme indicated by means of Cmdline is started. The return value indicates whether the process has been successful: 0=yes, >0=no.</p> <p>2 Pipe: As above, but the data is transmitted to the programme via Pipe.</p> <p>3 Port: The data is sent to the port indicated by a link.</p> <p>4 Script: For command processing, the script indicated by SpoolScript is called up. The file name is transmitted to the script in \$SPOOLFILE, the return value is expected in \$ERROR (empty=OK, not empty=fault message).</p> <p>5 Delete: Commands are acknowledged without further processing and then deleted.</p>															
TempDir	«temppath»	Path for temporary spool files.															
TempExt	.tmp	Extension for temporary spool files.															
Cmdline	-	Command line for mode=1 and 2. The command line may contain "\$file" at the point where the file name is to be inserted. If "\$file" is not indicated and mode=1, the file name will be suffixed to the command line. \$(variablename) can be used to copy any variables from the form into the command line.															
RunOptions	-	<p>Comma-separated list of start options in the format "name=value" for mode=1 and 2:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Default</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>UsePipes</td> <td>1</td> <td>Open Pipes to programme</td> </tr> <tr> <td>InheritEnv</td> <td>1</td> <td>Inherit environment</td> </tr> <tr> <td>WorkDir</td> <td>BasePath</td> <td>Work directory</td> </tr> <tr> <td>ShowWindow</td> <td>0</td> <td>Window style (only for Windows):</td> </tr> </tbody> </table>	Option	Default	Description	UsePipes	1	Open Pipes to programme	InheritEnv	1	Inherit environment	WorkDir	BasePath	Work directory	ShowWindow	0	Window style (only for Windows):
Option	Default	Description															
UsePipes	1	Open Pipes to programme															
InheritEnv	1	Inherit environment															
WorkDir	BasePath	Work directory															
ShowWindow	0	Window style (only for Windows):															

Entry	Default	Explanations
		0=hidden, 1=normal, 2=minimized, 3=maximized
RunEnv	-	Comma-separated list of environmental parameters in the form of "name=value" for mode=1 and 2.
Script	«queuename».gmi	GMH script for mode=4. Where a path is not indicated, the script is searched in the config directory.
Link	-	Link descriptor for mode=3, e.g.: link=file:lpt1
RetryCount	0	Number of retries in case of fault
RetryDelay	10	Retry interval expressed in seconds
Timeout	600	Timeout expressed in seconds
ConcurrentJobs	1	Maximum number of simultaneously active jobs
MaxJobs	1000	Maximum number of jobs in the queue The attempt to add further jobs results in a fault message.
CheckInterval	0	Interval, in seconds, within which the search for new (externally generated) jobs in the spool directory is conducted (0=no search)
InitialCheck	1	Initial check for old jobs in the spool directory (1=yes, 0=no)
SpoolFiles	.*	Search pattern (Regexp) in combination with CheckInterval

4.10.8.1 Configuration example for a spool queue for mailing (Linux)

In the pro02srv.cfg, an entry must be made in the following format:

```
[spool.mail]
mode=2
cmdline=/usr/lib/sendmail -i -t -B 8BITMIME
```

The associated print form shall be as follows:

```
To: email@domain
From: email@domain
Subject: Subject
Content type: text/html; charset="iso-8859-1"
Content transfer encoding: 8bit
Body
```

Naturally, the e-mail addresses, the subject and the body need to be adapted to the respective conditions. Of course, all variables described under "print forms" may also be used for this purpose. The empty line between the final header line and the body is obligatory. More header fields (Reply-To, CC, etc.) may be added as required.



The use of umlauts in header fields is not easily possible as they have to be quoted in a particular way. If required, please consult ela-soft.

4.11 Section "[database]"

Configures the database connections. For each database connection, there is an entry in the format «alias» = «servertype»,«dsn»,«user»,«pass» [,«param»=value][...].

The fixed fields have the following function:

Entry	Default	Explanations
alias		Unique name for the database connection
Server type		Type of database server. The following server types are currently defined: IBNATIVE Interbase (V5 and later) / Firebird directly via API, ODBC-IB Interbase via ODBC, ODBC-PVSW Pervasive SQL (V7 and later) via ODBC, ODBC-MSSQL Microsoft SQL Server via ODBC
dsn		Path to database. For ODBC connections, «dsn» is the data source name. For IBNATIVE, «dsn» is the file name of the database. Where «dsn» only contains a file name, the Pro02 server automatically prefixes it with the host name of the local server and the data path. Where «dsn» only contains a path, this must be given in the form of hostname: [drive:]path/file. The indication of the host name is obligatory. While omitting the host name seems to function at first, it will lead to problems since the Interbase API is not thread-safe in this operating mode. «dsn» may be empty, in which case the entry describes an administrative connection to the database server.
user, pass		Login data for the database server, if required

The following optional parameters may principally be used for all server types:

Entry	Default	Explanations
MaxConnections= «n»	unlimited	Maximum number of simultaneous connections
Retries=«n»	2	Number of retries in case of access errors
RetryInterval=«n»	1000	Retry interval expressed in milliseconds.
Disconnect=«n»	3600	Login data for the database server, if required disconnect timeout expressed in seconds.
FetchQueue=«n»	1000	Maximum number of entries in the fetch queue before the database thread expects the fetching of data.

The following parameters are generally applicable but, according to circumstance, are perhaps not implemented for all server types:

Entry	Default	Explanations
Charset=«name»	See text	Character set used for the database connection. The default value is the system character set (see [config] section), deviations should be

		reserved for special cases (e.g. conversion of databases from external character sets).
Readonly	0	If unequal 0, read only is permitted

Special parameters for the server type "IBNATIVE":

Entry	Default	Explanations
Isolation	0	<p>Mode for isolating concurring transactions:</p> <p>0 Concurrency</p> <p> While a transaction is still open, it will not recognize changes made by means of external Pro02 servers - Technical Documentation Transactions. Principally, read-only access provides the version valid at the start of transaction.</p> <p>1 Read Committed, Rec Version</p> <p> Changes to external transactions become visible immediately after the commit. Prior to the commit, read-only access provides the latest valid version.</p> <p>2 Read Committed, No Rec Version</p> <p> Changes to external transactions become visible immediately after the commit. Where a data set has been changed but not yet committed, it remains inaccessible until then (awaiting commit Caution: Risk of deadlock!</p> <p>3 Consistency</p> <p> Simultaneous transactions on one table are preemptively prevented a second transaction has to wait until the end of the first transaction Caution: Risk of deadlock!</p>

4.11.1 Section "[icons]"

Defines icons for the data set types of master data. For each icon, one line is provided in the following format:

«typecode» = «url»

4.11.2 Section "[datatypes]"

Defines the names for the data set types of master data. For each data type and each language, one line is provided in the following format:

«typecode»_«language key» = «text»

4.12 Link descriptors

Link descriptors represent a universal mechanism for protocol stack configuration.

The general structure is as follows:

Link descriptor: «layer» [| ...]
 Layer: «protocol» [: «targetaddress»] [, «parameterlist»]
 or
 «instance» [: «targetaddress»], protocol:«protocol» [, «parameterlist»]

List of parameters: «parametername» [: «value»] [, ...]

Value: «number» or «designator» or "«string»"

The link descriptor consists of a list of protocol layers, separated by “|”, where the high-level protocol is indicated first, followed by optional filters and completed by the port. Where one protocol is intended for multiple use within a link descriptor, each instance must be individually named (for syntax, see above).

Protocol parameters may optionally be transmitted directly in the link descriptor or in the port section of the configuration file. Where the indication in the configuration file is chosen, the syntax of the entries therein is „«protocol». «parametername» = «value»“ or „«instance» . «parametername» = «value»“. While string values shall not be enclosed in quotation marks in the configuration file, they must be enclosed in quotation marks in the link description if they contain any special characters!

Upper/lower case spelling is of no significance in protocol and parameter names.

4.12.1 Protocol “HTTP” (highlevel)

Parameter name	Default	Explanations
ForceVersion	-	Enforces a particular protocol version. Possible values: HTTP/1.0, HTTP/1.1

4.12.2 Protocol “HTTP” (high-level)

Parameter name	Default	Explanations
User	See text	Login name used. The default value is the name of the configuration file used excluding the extension „.cfg“.
Pass	-	Login password used
Originate	See text	Direction of connection build-up: 0= passive (counter station is first to log in), 1= active (we are fist to log in first). The default value is "passive" for the Pro02 server and "active" for clients.
PollInterval	60	Interval for CP/CN handshake expressed in seconds, 0=no polling
PollTimeout	10	Timeout for reply (CN) to CP expressed in seconds, 0=no timeout
PollChunksize	100	Maximum number of messages sent until a CP/CN handshake is enforced in order to check whether the recipient is still able to follow. 0=none, enforce CP/CN.
BlockSize	1024	Maximum packet size (including LF at the end of packet)
InvalidId	0	Controls the response to invalid characters in Pro02 Ids: 0=reject, 1=accept (not recommended!), 2=replace by underscore, 3=omit invalid characters

4.12.3 Protocol “BSP” (filter)

Parameter name	Default	Explanations
FILTER_LOGNAME	-	
LOGNAME	-	
WINDOW_SIZE	256	
TIMEOUT	5	
MODE	passive	

4.12.4 Protocol “SSL” (filter)

Parameter name	Default	Explanations
Method	SSLv23	Protocol version. Possible values are: SSLv23 SSL Version3 including fallback to Version2 SSLv2 SSL Version2 SSLv3 SSL Version3 TLSv1 TLS Version1 DTLSv1 DTLS Version1 Optionally, the suffixes "_server" or "_client" can be added to all protocol names.
Certfile	-	Name of certificate file. Where a path is not indicated, the config path is automatically added; where an extension is not indicated, ".PEM" is automatically added. Permissible formats are PEM and ASN1. A certificate is obligatory for server ports and optional for client ports.
Keyfile	-	Name of key file. Where a key file is not indicated, it is assumed that the private key is included in the certificate.
CAfile	-	Name of CA file for certificate checking. For the file name, the same rules apply as for Certfile.
CPath	See text	Path with CA files. The default value is the config directory.
Cipher	-	List of acceptable encoding methods. The names of the supported encoding methods can be determined by using the OpenSSL utility tool "openssl". If an indication is not made, a suitable encoding method is agreed with the counter party.
Verify	0	In case of values greater than 0, connections to partners holding a non-verifiable certificate are rejected.



The SSL filter is based on the OpenSSL library (<http://www.openssl.org>). Windows requires the files "libeay32.dll" and "libssl32.dll" while Linux requires the files "libcrypto.dll" (not to be confused with libcrypt.dll!) and "libssl.dll".

4.12.5 Protocol “TCP” (Port)

The format of the target address is “«targethost»:«port»”. The target host can be both a numerical IP address or a DNS name. Also, the port can be indicated numerically or symbolically. Where “*” is indicated as the target host, connection build-up from the counter station is expected (list port). Indication of a target address or target port is obligatory.

Parameter name	Default	Explanations
LocalPort	0	Local port number (0=automatic allocation)
LocalAddr	*	Local address (0=automatic allocation) Using this parameter is reasonable only for computers having several IP addresses where it enables the tying to a particular local IP address.
RcvBuf	16384	Receiving buffer size of the TCP stack (in case of preopen sockets, this option is ignored)
SndBuf	16384	Sending buffer size of the TCP stack (in case of preopen sockets, this option is ignored)
BlockSize	SndBuf-512	Block size for sending files. Under Windows, this value must be smaller than SndBuf, otherwise significant performance losses occur.

4.12.6 Protocol “UDP” (port)

Indication of a target address is optional.

Where a target address in the format of “«targethost»:«port»” is indicated, dedicated communication with this device is build up. The data packets sent should not contain a target indication (the actual response in case of contradictory indications of the target address in the config file and in the sent packets depends on the operating system!).

Where a target address in the format of “*:«port»” is indicated, the IP address of the intended target is to be indicated in each packet to be sent. The target port number is derived from the config file. Where the config file does not indicate any target at all, each packet sent must comprise a complete target indication including the IP address and port.

Parameter name	Default	Explanations
LocalPort	0	Local port number (0=automatic allocation)
LocalAddr	*	Local address (0=automatic allocation) Using this parameter is reasonable only for computers having several IP addresses where it enables specification of the address intended for the connection.
RcvBuf	65536	Receiving buffer size
SndBuf	65536	Sending buffer size
BlockSize	1400	Maximum packet size for sending

4.12.7 Protocol “SER” (serial interface, port)

The target address is the interface name (for Windows COM1/COM2/..., for Linux ttyS0/ttyS1/...) and it is obligatory. Please note that, depending on the respective operating system and hardware environment, not all settings for baudrate, parity, etc. are possible.

Parameter name	Default	Explanations
Baud	19200	Baudrate
Bits	8	Data bits (5-8)
StopBits	2	Stopbits (1-2)
Parity	«n»	Parity: N=None,O=Odd,E=Even,S=Space,M=Mark
Flow	N	Flow control: N=None, H=Hardware[RTS/CTS], S=Software[XON/XOFF]
NoControl	0	If this parameter is >0, the interface parameters (baudrate, etc.) are not set and the default settings of the operating system are used instead.
RcvBuf	8192	Receiving buffer size
SndBuf	8192	Sending buffer size
Mode	0	Operating mode: 0=RS232, 1=RS422, 2=RS485 2wire, 3=RS485 4wire

4.12.8 Protocol "COMSRV" (COM server, port)

Accesses the COM server (IP-RS232-Gateways).

The target address is the IP address or the DNS name of the COM server.

Parameter name	Default	Explanations
Type	WT	Type of COM server: WT W&T COM server XPORT Lantronix XPort
Port	1	Port number for multi-port servers (must always be 1 for single-port servers)
Baud	19200	Baudrate
Bits	8	Data bits (5-8) The XPORT COM server supports merely 7 or 8 data bits.
StopBits	2	Stopbits (1-2)
Parity	N	Parity: N=None, O=Odd, E=Even, S=Space, M=Mark The XPORT COM server supports merely None, Odd and Even Parity.
Flow	N	Flow control: N=None, H=Hardware(RTS/CTS), S=Software(XON/XOFF)
NoControl	-	Where this parameter is indicated, the interface parameters are not changed and the default settings of the device are used instead.
Reset	-	Where this parameter is indicated, the COM server is reset prior to connection build-up. This disconnects particularly any already existing other TCP connections to the server. The XPORT COM server requires Firmware version 1.8 or later for correct functioning of the reset option!

Special parameters for COM servers of the type "Xport":

Parameter name	Default	Explanations
Interface	RS232	Interface type (RS232, RS485, RS422)
TCPPort	10001	TCP-Port, via which communication takes place.
PackMode	-	Controls the compilation of received data bytes into larger TCP packets; for further details, see the manufacturer's documentation on XPort.
EOS1	-	First end-of-sequence character (used in combination with PackMode).
EOS2	-	Second end-of-sequence character (used in combination with PackMode).

- ➔ *Depending on the COM server type, changing the interface parameters may take an extended duration so that the first connection build-up might fail due to timeout. The problem is solved during the next connection build-up as only actually changed data are written then.*
- ➔ *In case of multi-port COM servers, simultaneous changes to the configuration of several ports may cause that only parts of the ports are configured correctly. The problem is solved during the next connection build-up as the configuration of each individual port is re-checked and corrected, if necessary.*

4.12.9 Protocol “FILE” (File/Device/Pipe, Port)

Addresses any interfaces which can be opened as files by the operating system. Windows implementation uses “Overlapped IO” in order to enable deadlock-free access to devices while Linux implementation opens the interface in non-blocking mode and operates it via polling. The target address is the file name.

Parameter name	Default	Explanations
OpenMode	1	Access mode 0=access to existing file/device, Readonly 1=access to existing file/device, Readwrite 2=attaching to a file, Writeonly 3=overwriting of a file, Writeonly
ReadBlk	8192	Receiving block size
WriteBlk	8192	Sending block size
Poll	100	Polling interval expressed in ms

5. GEMOS bus variants and hardware

5.1 GZRouter



For further information, see document "GEMOS-Bus-GZRouter.pdf".

- Installation and start see Pro02 server "Installation and Start of the Pro02 server".
- Directory structure see Pro02 server "Directory structure".
- Access to programme functions see Pro02 server "Access to programme functions".
The GZRouter is merely provided with the maintenance interface(<http://<<servername>>:<<serviceport>>!service/>).
- Configuration interface Configuration of the GZRouter is conducted via the configuration interface (service configuration) of GEMOS4. Normally, the correct port for the GateZif (GEMOS Bus) must be indicated only for interface configuration. All other parameters are reasonably preset for default installation.
- Maintenance interface see Pro02 server "Maintenance interface operation"
- Fields in the form "Start new log" see Pro02 server fields in the form "'Start new log':"

5.1.1 Logs and statistics

Name	Log	Statistics
System	Special events, e.g. starting and quitting of the server or database error	See Port
Port	Login and logout of Pro02 clients	Overview of the currently logged-in clients
Thread	-	Overview of the active threads
vMessage	Processed messages in clear text	-
name(address,login) ¹	Data traffic of a bus or to the Pro02 server	-
http	HTTP requests (access to the maintenance interface)	http server statistics
Control station	-	Overview of the current state of GEMOS cards
Actual state	State and action outputs of the control station module	-

¹ for data traffic to the bus:

- name: Port name
- address: IP of the COM server or device name for the serial interface
- login: Login name in form of Busnumber:GatezifSerNum

5.2 GEMOS interface controller

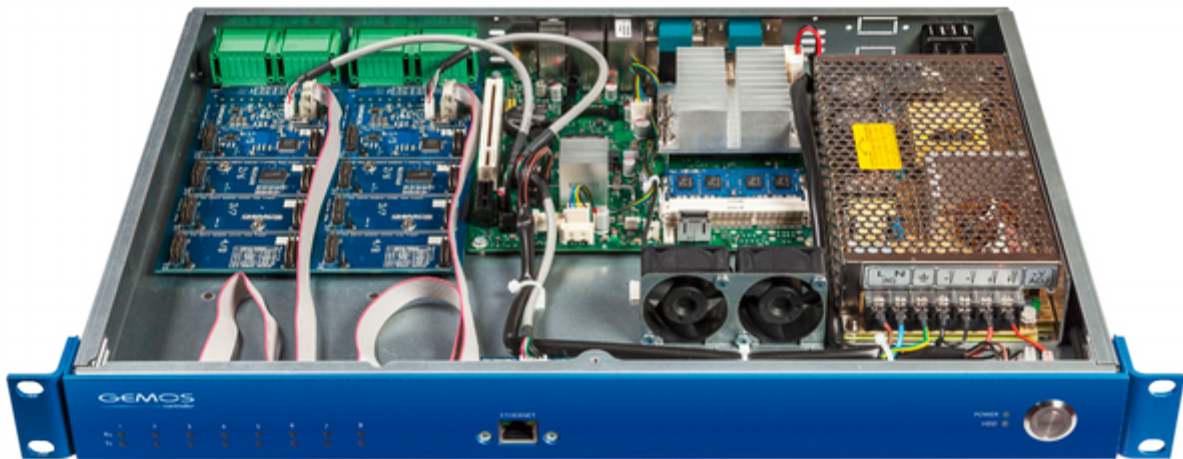


Figure 5.1: GEMOS interface controller (GIC)

The GEMOS interface controller (GIC) is used as an interface server for the advanced physical security information system GEMOS. The use of different application-specific drivers enables communication between external systems and GEMOS.



Communication to the GEMOS server runs via TCP/IP. The two teamable Ethernet connections on the backpanel allow a redundant system structure.

5.2.1 Hardware GIC

- LED display for states of the receiving and sending lines of the serial interfaces
- Simple configuration of the interfaces by means of pluggable modules (RS-232 or RS-485/422)
- Up to 8 electrically isolated interface connections
- 19 inch rackmount casing with 1 HE (438 × 44 × 320 mm) or applicable as a desktop device (removable mounting brackets)
- Incl. operating system, firmware on integrated SSD
- 2x Ethernet 10/100Base-T with RJ45, teamable or individually configurable, as well as 1x Ethernet 10/100Base-T as service port or as connection for IP-based subsystems

Accessories:

- Integrated power supply unit
- Redundant voltage supply
- Micromodule for GEMOS universal bus

5.2.2 Software features

GEMOS interface controllers are by default supplied with Windows 7 Professional. Here, only essential functions are installed and prepared insofar as to enable quick on-site installation of the interfaces.



Remote support is enabled, a VNC client (TightVNC) is installed. The access information is to be found in the accompanying documentation.

5.2.3 Interface commissioning

For the commissioning of an interface, the following procedure must be observed

1. The module must be installed on the GEMOS server under: GEMOS Master data > Basic setup > Modules > Install modules.
2. Click Search..., select the module and install it.
3. Unpack files of the module ("dev_nameofinterface.exe" from "bin", "dev_nameofinterface.cfg" from "config") and, if applicable, copy any other installed files (e.g. Pdll files) onto the GIC.
4. Now, install the interface as a service on the GIC. For this purpose, open the command window in the GEMOS directory and enter the following parameters:
`dev_nameofinterface.exe -install config=dev_nameofinterface`

5.2.3.1 Interface configuration

In order to enable communication between the interface and the Pro02 server, the IP address of the GEMOS server shall be entered. This is done in the section [port.pro02srv]. This is also where the name can be specified which is to be used for interface login at GEMOS. This may be helpful where more than two interfaces of the same type have to be used. The "pro02.pass" (password for login at the pro02srv) must be identical with the entry in the pro02srv.cfg.

Any further settings are to be found in the accompanying interface documentation.

Example interface configuration

Parameter name	Default	Explanations
[config]		
ServiceLogin	service:1234	Http user for login at service page
ServiceUrl	!/service/	URL extension following service port Service page access: http://<ipadr-gic>:<port>!/service/
serviceport	12085	Service port for service page of interface
[port.pro02srv]		
Link	TCP:IP-GEMOS:12000	IP address or host name for Pro02 server
Protocol	Pro02	Protocol
pro02.user	dev_nameofinterface	User name under which the interface logs in at the Pro02 server
pro02.pass		Password under which the interface logs in at the Pro02 server

5.2.3.2 Troubleshooting

Potential errors:

- the interface is unable to connect to its subsystem
- the interface is not running properly or
- the interface is unable to log in at the Pro02 server

If the interface is unable to connect to its subsystem, the subsystem, the connecting cable and the config file should be checked. Advice may be found on the service page of the interface. This is accessed via <http://<ipadr-gic>:<port>/!service/>. Here, the log protocol should be checked (Section "Port", "System", "COM" or "Name of subsystem")

If the interface is unable to connect to the Pro02 server, the service pages both of the interface and of the Pro02 server shall be checked (log protocol).

Fault codes are to be found in the accompanying pro02srv.pdf.

5.3 GEMOS access controller

5.3.1 Hardware GEMOS access controller

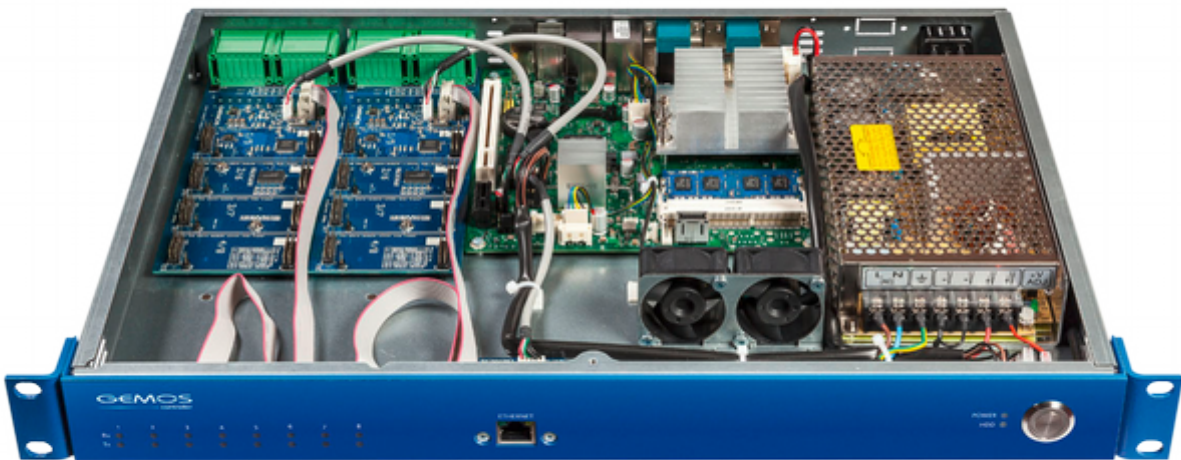


Figure 5.2: GEMOS access controller (GAC)

The GEMOS access controller (GAC) is the central intelligence for the connected doors and GEMOS hardware, such as GAM and GIO.

The GAC stores all rights, protocol and configuration data and manages, in cooperation with the installed Linux system, the GEMOS universal buses provided by means of pluggable and replaceable RS485 micromodules.

Hardware features:

- Displays for communication of the buses on the frontpanel
- Linux operating system with 2GB RAM
- Two redundant Ethernet connections

- Ethernet service port on the frontpanel
- Backpanel connections for screen, keyboard and mouse for service purposes
- USB 2.0 connections for extension purposes on the backpanel
- Mounting slot for power supply unit
- All bus connections as pluggable screw terminals on the backpanel
- Redundant system structure possible

5.3.2 Software features GAC

The GAC is supplied with a preinstalled Linux system (CentOS). It is provided with 2 service pages for normal operation. However, further settings not available there can only be made by means of the command line.

Service page in general (delivery state): 192.168.0.1:8080

Service page gacd (delivery state): 192.168.0.1:12090!/service/

The gacd is the GEMOS service running directly on the GAC which is responsible for communication on the bus. The service can be started and stopped by means of both the command line and the general service page.

5.3.3 GAC connection and configuration

The directory structure of the GAC can be read and adjusted via SFTP. As a suitable programme for SFTP data exchange (Port 22), we recommend WinSCP which is to be found in the Tools folder on your GEMOS server. For command line access via SSH (Port 22), the programme PuTTY is used.

5.3.3.1 Connection to the Pro02 server

Build up a connection to the GAC via WinSCP. Navigate into the folder /var/opt/gemos/config and open the gacd.cfg.

Example configuration gacd

Parameter name	Default	Explanations
[config]		
ServiceLogin	service:1234	Http user for login at service page
ServiceUrl	!/service/	URL extension following service port Service page access: http://<ipadr-gic>:<port>!service/
serviceport	12090	Service port for service page of interface
[port.pro02srv]		
Link	TCP:IP-GEMOS:12000	IP address or host name to Pro02 server
Protocol	Pro02	Protocol
[system]		
gacid	1	Numbering of the GACs connected to GEMOS
systemid		License number of the GEMOS system (e.g. 300100)

Parameter name	Default	Explanations
[port.access]		
Protocol	access	

In order to enable communication of the Pro02 server to the GAC, the service gemac.gmm must be installed as interface.

GEMOS master data > Basic setup > Modules > Install modules.

Subsequently, the login name and the password of the GAC just commissioned shall be added to the pro02srv.cfg in the GEMOS folder.

5.3.4 Hardware mini GEMOS access controller

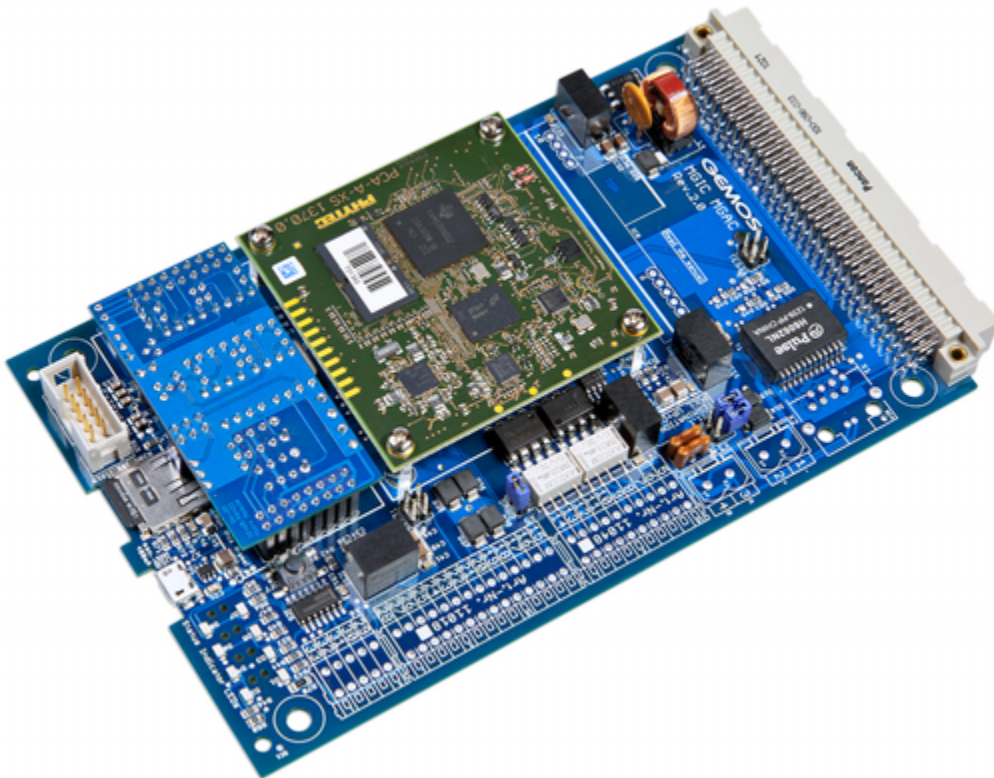


Figure 5.3: Mini GEMOS access controller (MGAC)

The GEMOS mini access controller (GAC) is the central intelligence for the connected doors and GEMOS hardware, such as GAM and GIO.

The MGAC stores the configuration data and manages the GEMOS universal bus by means of the installed Linux system. In addition, it is provided with its own inputs and outputs for connecting individual doors to the GEMOS system via the network.

Hardware features:

- displays for communication of the bus on the board
- microSD card slot for loading and storing of configurations and user data
- up to 16 devices addressable via the GEMOS universal bus
- 3 digital inputs, 1 sabotage input, 2 bipolar optocoupling inputs, 2 relay outputs (up to 500mA)
- can be integrated into the GEMOS module carrier (GMC-10, Rack) as VG variant
- as WG variant for integration into the casing or onto the top-hat rail
- PoE-ready on request
- Ethernet connection for connection to the GEMOS system
- serial access via 4-pins connector on the circuit board
- redundant system structure possible

5.3.5 Software features MGAC

The MGAC is supplied with a preinstalled Linux system. It is provided with 2 service pages for normal operation. Further settings not available there can, however, be made by means of the command line.

Service page in general (delivery state): 192.168.0.1:8080

Service page gacd (delivery state): 192.168.0.1:12090!/service/

The gacd is the GEMOS service running directly on the MGAC which is responsible for communication on the bus. The service can be started and stopped by means of both the command line and the general service page.

5.3.6 MGAC connection and configuration

The configuration of the MGAC is identical to the setup procedure of the GAC (see 5.3.3)

The following cfg entry enables the inputs and outputs on the board:

Parameter name	Default	Explanations
[port.mgacio]		
protocol=mgacio		Enables the use of the MGAC inputs and outputs in GEMOS

5.4 GEMOS input output module

5.4.1 Hardware GEMOS input output module

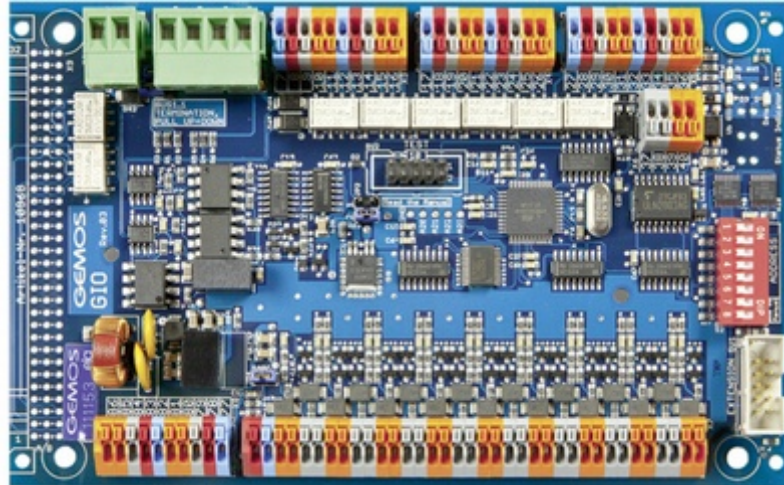


Figure 5.4: GEMOS input output module WG

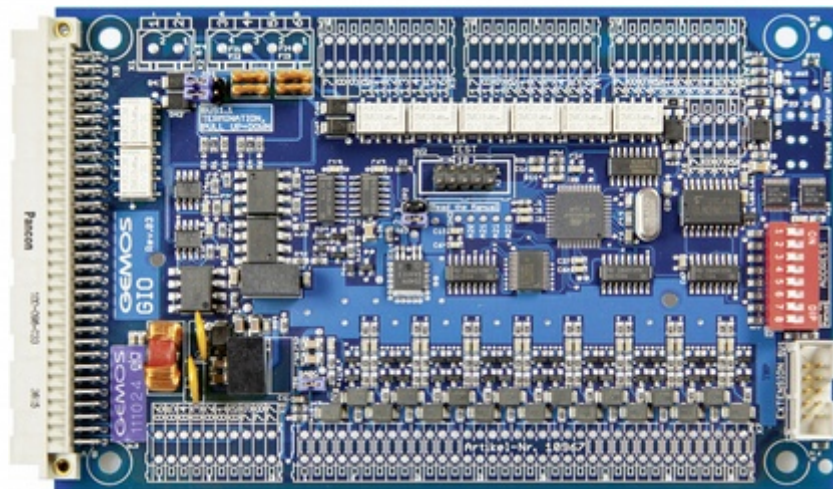


Figure 5.5: GEMOS input output module VG

The GEMOS input output module (GIO) enables to simply and comfortably connect sensors from the periphery and the direct switching of digital outputs.

- 1 sabotage line
- 2 bipolar optocoupler 5-30 V DC (AC also configurable)
- 8 relay (inverter) 500 mA
- 16 universal inputs, software programmable as digital, differential or multi-state line, software configuration provides the options of voltage or resistance measurement for detecting lines
- 2 connections GEMOS universal bus

5.4.2 DIP switch and jumper

Addressing at the GEMOS universal bus is performed via the DIP switch, see Chapter 5.4.3.

Only the switches 1-4 at the DIP switch are used, the switches 5-8 must be switched OFF. Care shall be taken not to assign any address twice. This allows 16 devices on one GEMOS universal bus.



In order to adopt the addressing, the GIO's power supply shall be disconnected and then reconnected again.

Jumper:

JP1: Bus termination (termination with a resistance of 120Ω)

JP2: Baud rate setting: Default 2 plugged (19200)

SABO: Sabotage contact is either used or bypassed by means of a jumper.

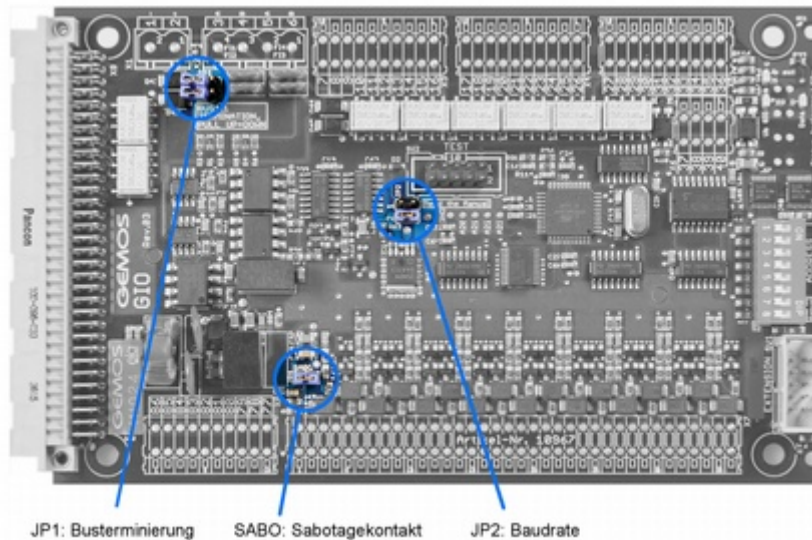


Figure 5.6: GAM jumper

5.4.3 DIP switch

The DIP switches are used for setting the bus addresses at the hardware. A value is allocated to each of the switches 1-4, if the witch is ON, it will assume this value, if it is OFF, no value is allocated, i.e. zero. By adding those values, the bus address is obtained.

Overview of assignment of DIP switches					
Switch number	1	2	3	4	5-8
Value	1	2	4	8	-
Address 0	OFF	OFF	OFF	OFF	OFF
Address 1	ON	OFF	OFF	OFF	OFF
Address 2	OFF	ON	OFF	OFF	OFF
Address 3	ON	ON	OFF	OFF	OFF
Address 4	OFF	OFF	ON	OFF	OFF
Address 5	ON	OFF	ON	OFF	OFF
Address 6	OFF	ON	ON	OFF	OFF
Address 7	ON	ON	ON	OFF	OFF
Address 8	OFF	OFF	OFF	ON	OFF
Address 9	ON	OFF	OFF	ON	OFF
Address 10	OFF	ON	OFF	ON	OFF
Address 11	ON	ON	OFF	ON	OFF
Address 12	OFF	OFF	ON	ON	OFF

Address 13	ON	OFF	ON	ON	OFF
Address 14	OFF	ON	ON	ON	OFF
Address 15	ON	ON	ON	ON	OFF

6. Templates and tools

6.1 Templates

In the basic setup of GEMOS4, the button Templates is used to realize the following groups of data: a theme editor, various search templates and visualization.

The button Templates is accessed via: Master data > Basic setup > Templates.

6.1.1 Theme editor

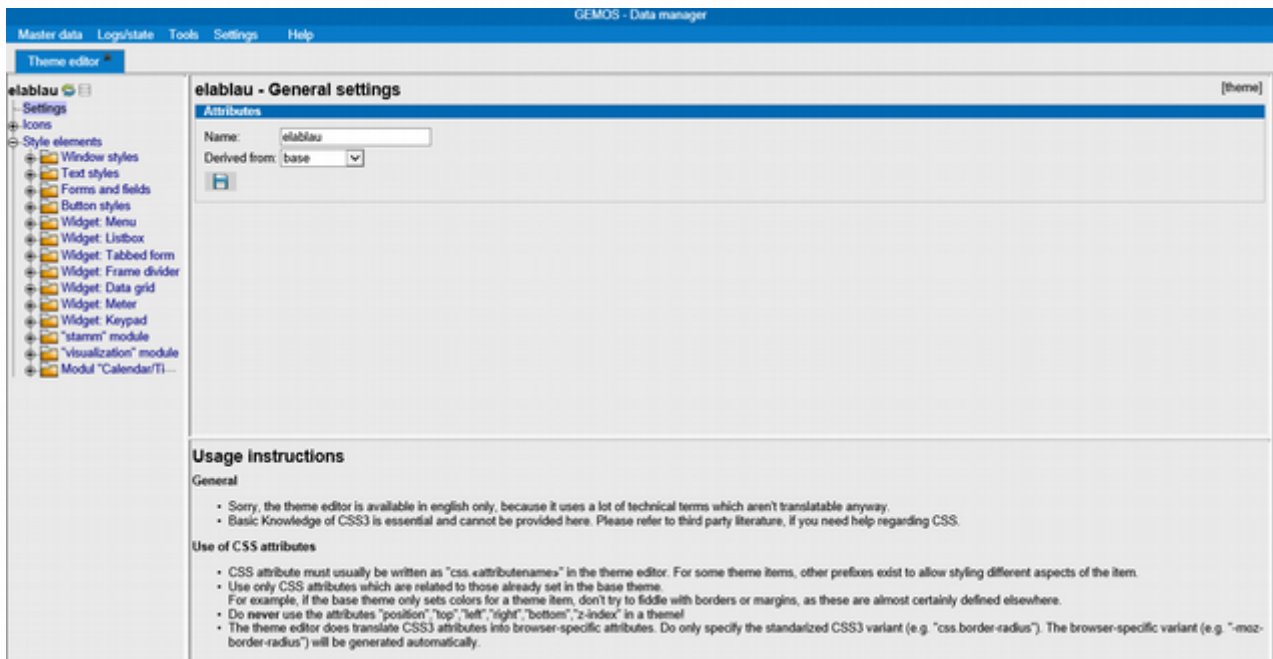


Figure 6.1: Theme editor

The button Theme editor is accessed via: Master data > Basic setup > Templates > Theme editor.

In the Theme editor, almost all elements located on the web interface can be edited. Basic knowledge regarding CSS3 is essential and not described herein.

Normally, CSS attributes must be entered in the form of "css.<attributename>" in the editor. Some items may have an additional prefix which, however, will then be described in the overview.

1. Icons

Under Icons, all symbols being part of the GEMOS standard delivery range are compiled. In order to change a symbol, an image file in .png format including the symbol size must be stored in GEMOS under "data > themes > "Name of theme" > "Name of symbol category" > "Symbol size" > .

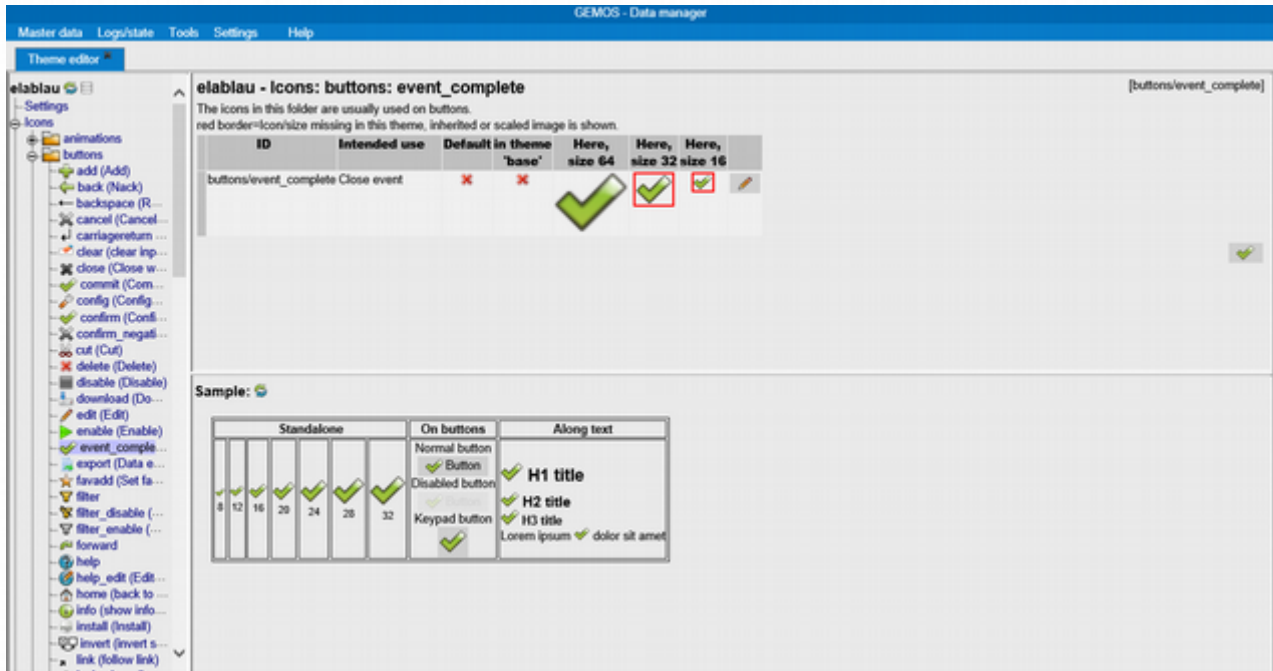


Figure 6.2: Theme editor buttons

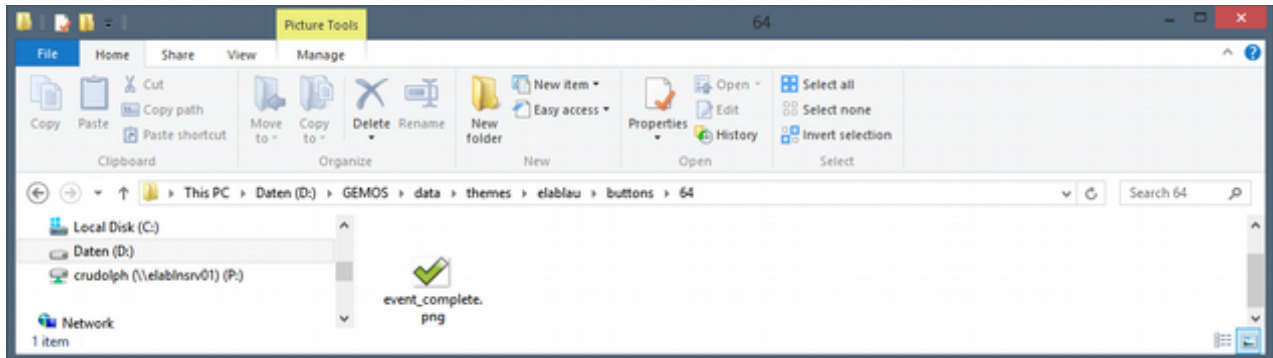


Figure 6.3: Memory location buttons

2. Style elements

a) Window styles

Window styles affects everything within browser windows, frames and Windows-like pop-ups.

This is not to be used for changing text styles, for that purpose, use the menu "Text styles" instead.

b) Text styles

Standard text styles for e.g. headings, text in the maintenance window.

c) Form and fields

Here, attributes for list boxes, check boxes or keyboard buttons can be changed.

d) Button styles

Here, button styles can be created and/or edited. The buttons provided here can then be used for further applications in dynamic navigation.

e) Widget: Menu

Outer box is used to change the master data menu.

Menu items is used to change their contents.

f) Widget: Listbox

Changes the attributes of the contents of list, combo and text boxes.
Attention, changes are made at one's own risk.

g) Widget: Tabbed form

Here, name tags or, as they are also called, tabs can be changed.

h) Widget: Frame divider

Attributes for the slide bar used for moving frames.

i) Widget: Meter

Under Meter, templates for SVG image files are provided showing measurement values on scales. This is not to be used for setting minimum and/or maximum values, for that purpose, the data point itself shall be used instead.

j) "master" module

Attention, changes are made at one's own risk.

k) Visualization module

Navigation bar

- Attributes for dynamic navigation.
 - buttonInactive → Button currently being inactive or not representing a frame.
 - buttonActive → Button currently showing its linked floor plan/folder on a frame.
 - buttonDisabled → Button which is linked to a floor plan while the user does not have any operating rights to view it.
 - iconSize → Symbol size stored under Icons > custom and linked to a folder.
- Dynamic navigations may be created horizontally or vertically.

Alarm stack

Under Alarm stack, all attributes for the alarm stack can be changed.

- Title bar → Button Alarm stack
- Thead → Table header
- Tbody → Table body

Layout view

Attributes for alarm stack filter, button mouse-over effects

Layout editor

Attributes for the tool creating box in the layout editor

Panels

Attributes for any operating panels in GEMOS

6.1.2 Search templates

The button Search templates is accessed via: Master data > Basic setup > Templates > Templates: Search

The search templates are divided into the following three groups: Search templates for detector names, search templates for logs and search templates for call history.

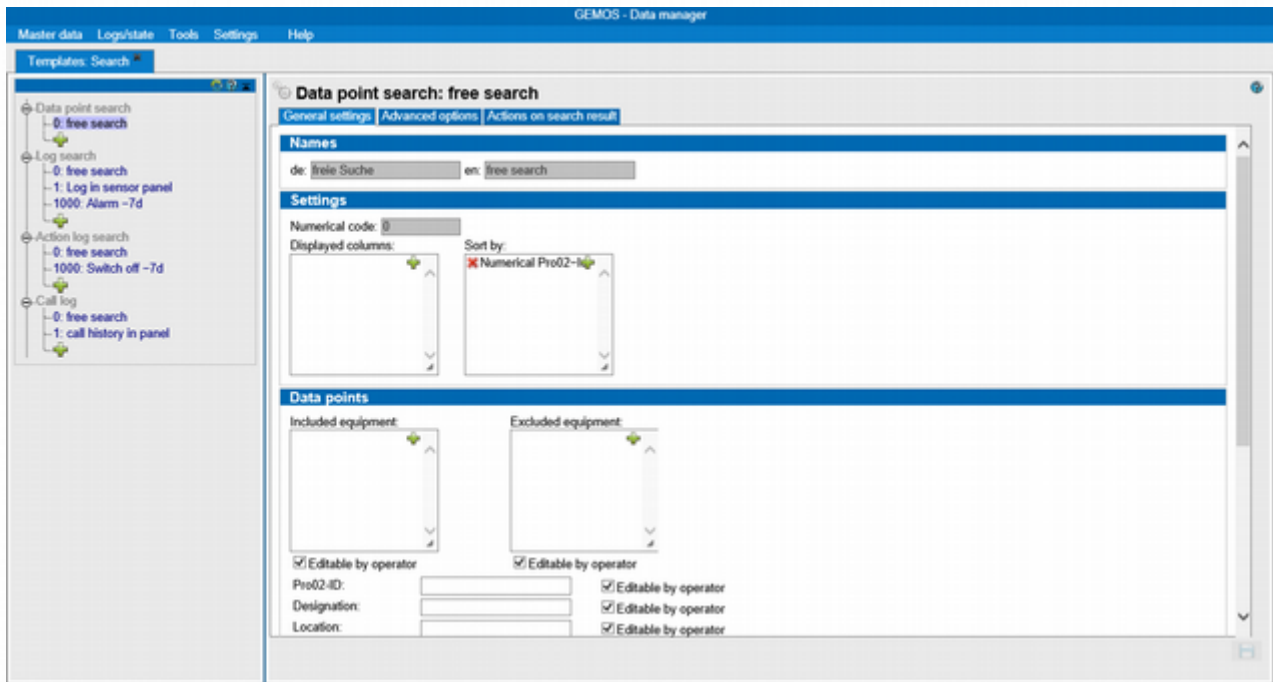


Figure 6.4: Search templates – Detectors

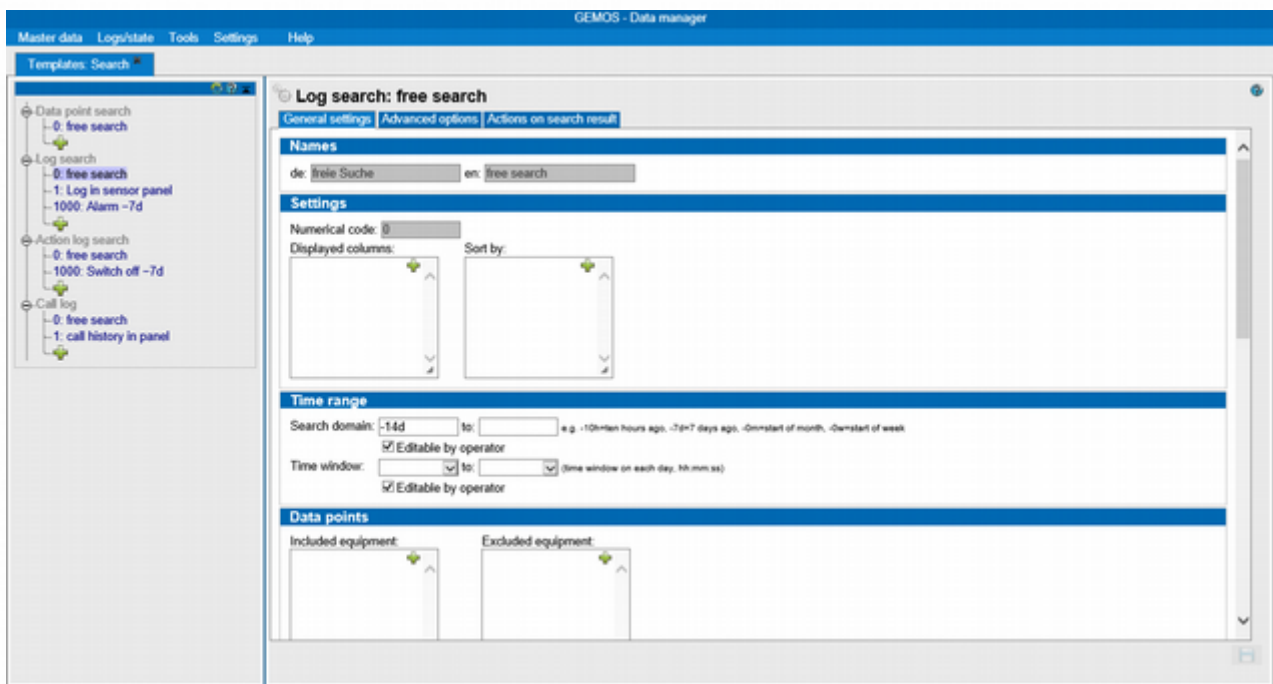


Figure 6.5: Search templates – Logs

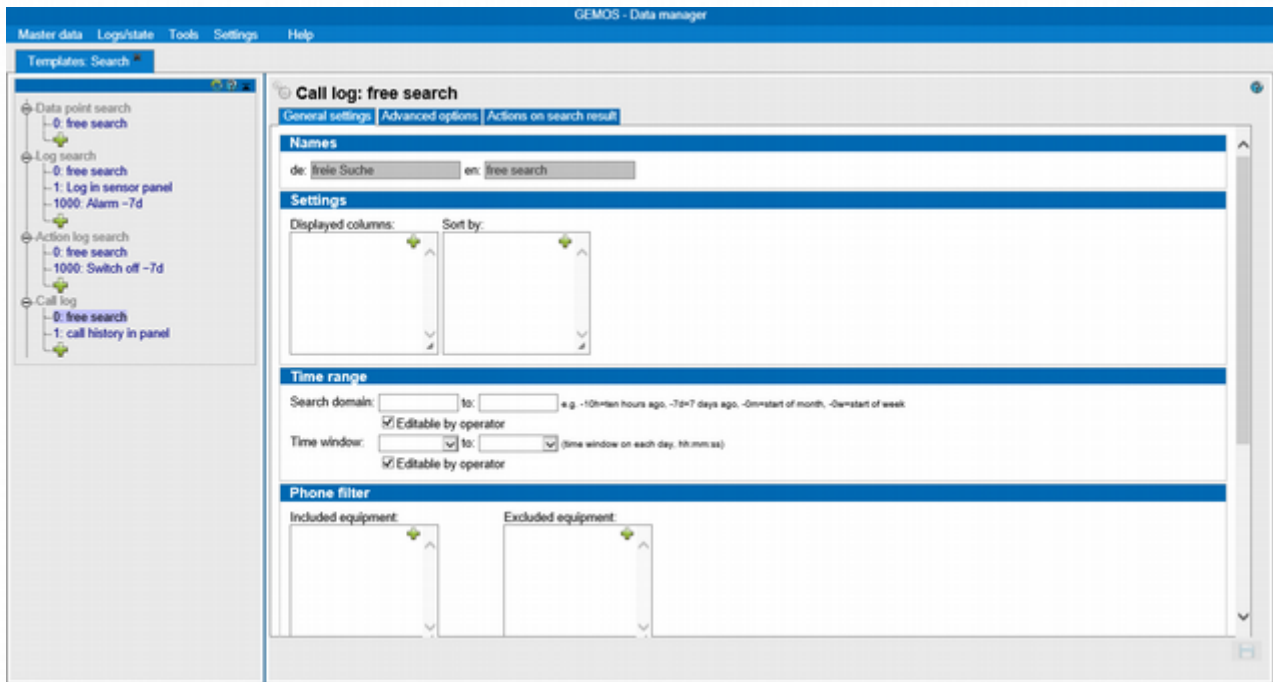


Figure 6.6: Search templates – Call history

6.1.3 Visualization

The button Visualization is accessed via: Master data > Basic setup > Templates > Templates: Visualization

Visualizations are divided into the following four groups: Color templates, Text styles/boxes, Measurement value display (RRD) and Dynamic button/hatching styles.

6.1.3.1 Color templates

The color designation may be chosen freely while the color code has to be entered without any leading '#' (e.g. 000000 for black).

Predefined colors cannot be changed, merely their designation can be adapted.

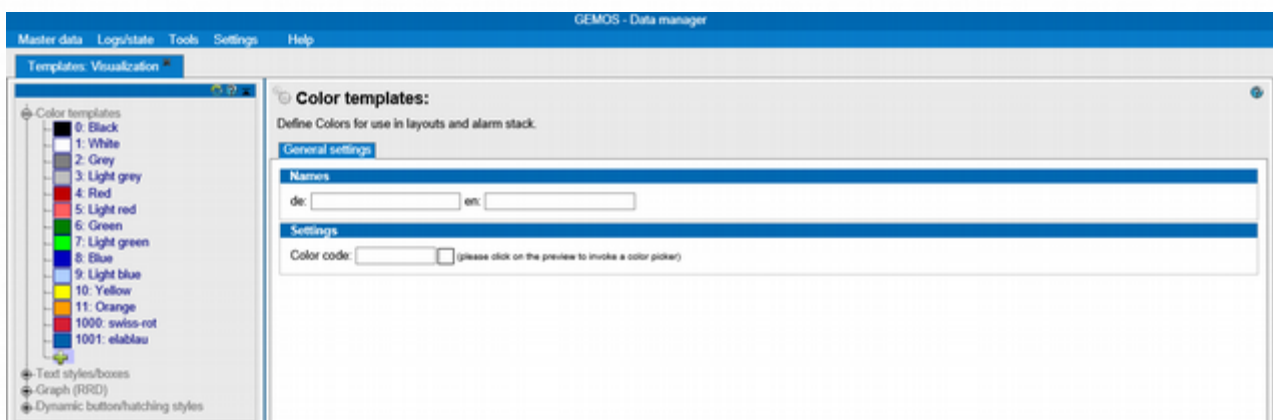


Figure 6.7: Visualization – Color templates

6.1.3.2 Text styles/boxes

The most commonly used parameters can be selected in the window elements *Font*, *Frame*, *Background* and *Other styles*.

Under settings, there is an additional option for creating own CSS styles. For this purpose, the following form must be observed:

|Property1:Value(s);Property2:Value(s);

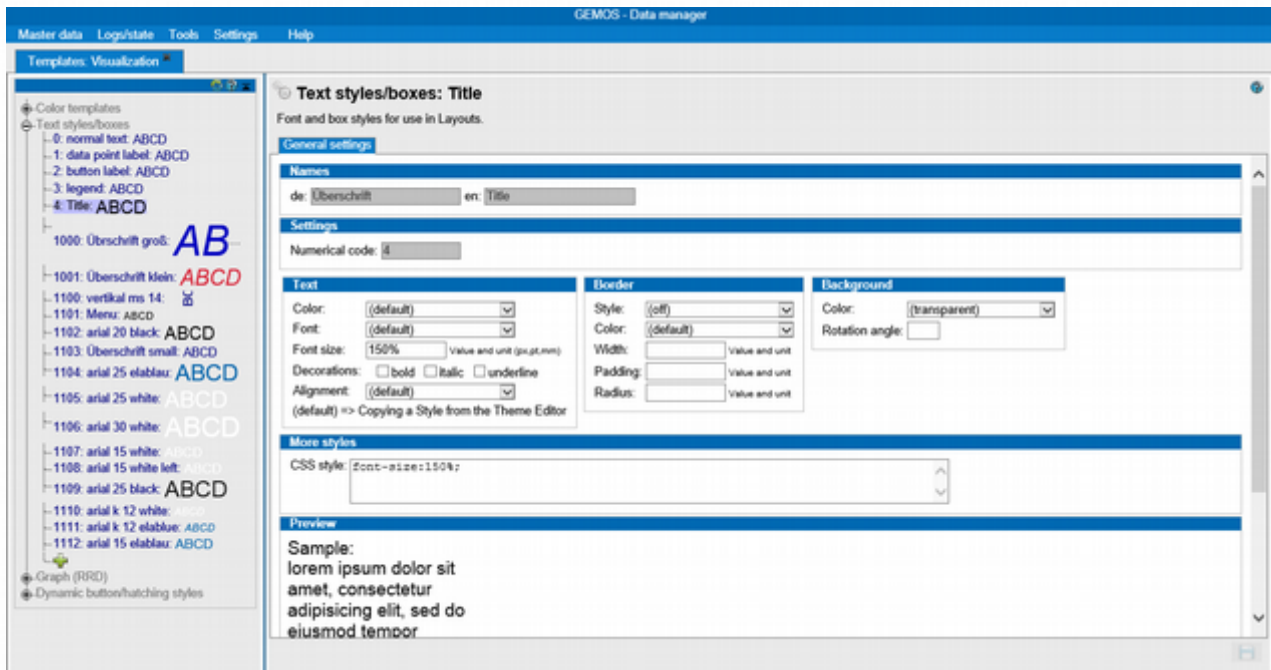


Figure 6.8: Visualization – Text styles/boxes

6.1.3.3 Measurement value display (RRD)

Here, templates for the visualization of recorded measurement values are configured.

- Configuration of the recording itself is done at the respective data point.
- Incorporation of a concrete visualization into the user interface is carried out in the layout editor.
- Due to technical reasons, changes to settings will not become visible on the user interface until a new measurement value has appeared and the refresh interval has elapsed.

General settings

Shown time span

Defines the time span covered by the graphic.

This is indicated as a numerical value followed by the unit ("m" for minutes, "h" for hours, "d" for days, "w" for weeks, "y" for years). More than one unit may be used, e.g. "1h30m".

Time resolution

If a time is given here, several recorded measurement values are chronologically compiled in order to create a bar diagram with a relatively coarse time resolution. This can significantly improve clarity in case of highly fluctuating measurement values. The format for indicating the time is the same as for "Shown time span" (see above).

Refresh interval

Defines the time intervals (in seconds) for the automatic graphics refresh. When displaying many graphics simultaneously at various workstations, the chosen time span should not be too short in order to limit the server load. The minimum permissible value is 60 seconds.

Connect points

Where this option is chosen, the recorded measurement points are interconnected to obtain softer contours. Thus, however, a higher resolution than actually present is simulated and should therefore be used with caution.

Graphic elements

Here, it is configured which elements are included in the graphic and its key.

Type

Type of representation

The type "Comment" does not plot a graph but merely shows the text entered under "Key" in the key.

Color

Color of representation

Stacked

Where this option is chosen, the measurement value is not plotted in relation to the zero line but stacked onto the previous element.

Formula/value

"ds*" plots the same graph for several selectable data sources. Further options are given below.

Key

Text for the key. The following wildcards can be used:

"{name}" =Name of data source

Formulas (RPN expressions)

RPN expressions consist of a comma-separated list of operands and operators that is processed from left to right.

- Operands place a value on top of the "stack".
- Operators calculate one or more value(s) of the stack and then replace it/them with the result.
- At the end, the top value of the stack is plotted.

Operands

ds*	Places a measurement value from a data source on the stack. Where several data sources are available, the graph is plotted for all data sources.
«name»	Places a measurement value from a particular designated data source on the stack. «name» means any alphanumerical designator and is later replaced in the layout editor by a concrete data source.
«name».MIN	Uses the minimum value within the time resolution (instead of the mean value)
«name».MAX	Uses the maximum value within the time resolution (instead of the mean value)
«name».LAST	Uses the last value within the time resolution (instead of the mean value)
«number»	Places a constant value on the stack

Commonly used operators

+	Sums up the two top values on the stack
-	Subtracts the top value from the second top value of the stack
*	Multiplies the two top values on the stack
/	Divides the second top value of the stack by the top value
LOG	Replaces the top value on the stack by its natural logarithm

For other operators, see rrdtool documentation under: http://oss.oetiker.ch/rrdtool/doc/rrdgraph_rpn.en.html

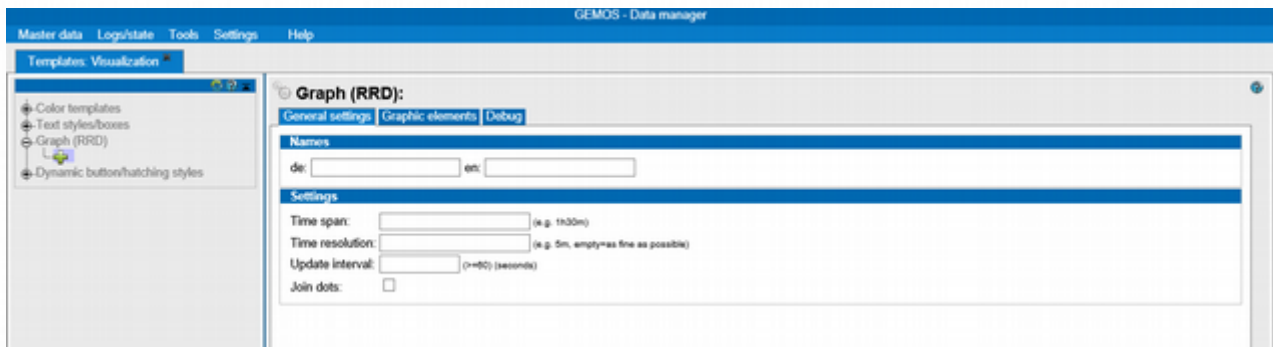


Figure 6.9: Visualization – Measurement value display (RRD)

6.1.3.4 Dynamic button/hatching styles

General settings

Designations

Input of language-specific designators.

State table

For buttons, specific states with separate settings can be assigned and deviating common settings allocated to the remaining states.

Where more than two specific states are required, the settings must be stored after the first two states by means of . When calling up the button/hatching style again, two new lines are provided in the state table.

State

Selection of the respective state

Hatching/shading

Assigning a hatching style deviating from the original

Button style

Selection of the desired button style

Button command

Shading of a command to be executed when being clicked.

Annotation

If a different annotation is required, it is specified here.

Button script

Tab "Representation/Actions"

Here, different elements can be entered which are activated when clicking the button. (Programming skills required).

Tab "Script"

Here, the script view of the settings made under Representation/Actions is found.

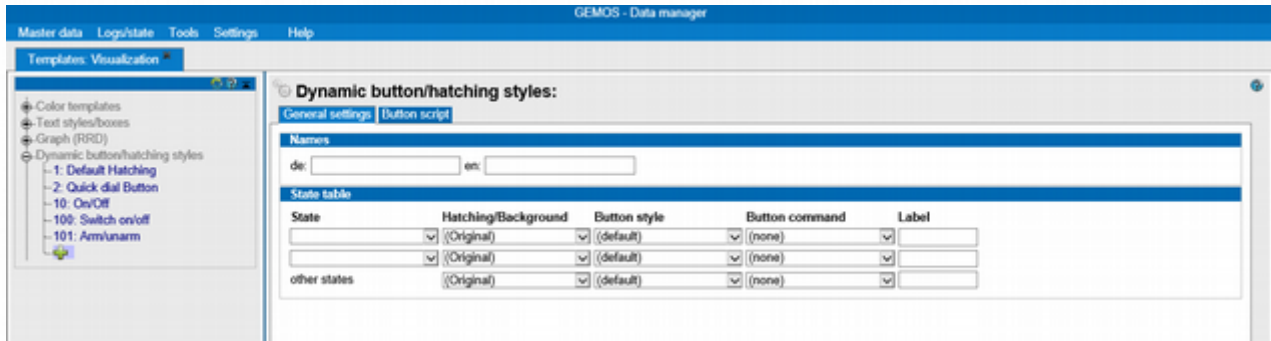


Figure 6.10: Visualization – Button/hatching styles

6.1.4 CAD import

6.1.4.1 Requirements (graphics import from an AutoCAD drawing)

The drawing must include all information which is later to be displayed or shaded in GEMOS (floor plans and detectors).

The drawing including all information will hereafter be referred to as source file. This source file is to be used for import into GEMOS as well as for any other files to be set up (e.g. floor plan, room zones, etc.). Care shall be taken that the symbols (blocks with attribute information) are positioned exactly where they are to be displayed in GEMOS. The positioning shall be unambiguous without any overlapping of symbols. This can be checked by viewing all layers.

The following layer structure is recommended:

- Layers for the floor plan (only simplified floor plan elements)
- Layers for large-scale objects (e.g. facade elements, detailed window elements)
- Layers for room designations (e.g. room number)
- Layers for hatchings (create hatchings as solid)
- Layers for the individual trades (e.g. one each for EMA, BMA, Video, Zuko, etc.)
- Layers for zones to be represented (e.g. Zuko access zones)
- Layers per trade for detector outlines drawn outside the floor plan
- etc.

The shape structure is predefined as follows:

- Elements should not consist of individual lines, e.g. a circle must be drawn as a circle and shall not consist of individual lines or polylines.
- Blocks should not be forced open unless layers are not separable otherwise (e.g. for window elements including details such as profiles).



Each layer not to be represented in GEMOS must allow deactivation in the CAD plan. The more detailed the layer structure, the clearer is the representation of the floor plan in GEMOS. Dwg drawings should be adjusted in order to remove from it any unused layers and blocks (reduce disk space).

In order to ensure an optimum loading time of the floor plan drawing in GEMOS, the CAD drawing must be edited according to our specifications.

6.1.4.2 dwg graphics import

Where each information (floor plan, trades, room zones, etc.) has been created in a separate file, the source file can be compiled from those individual files by means of references. Prior to import, those references should be incorporated in GEMOS.



Direct use of dwg files in GEMOS is available from GEMOS Version 3.5 onwards.

6.1.4.3 svg graphics import

Where each information (floor plan, trades, room zones, etc.) has been created in a separate file, the source file can be compiled from those individual files by means of references. For this purpose, care shall be taken that the insertion points are not selected on screen. The insertion point refers to the coordinate system with the values 0,0,0.

In the source file as well as in any files derived thereof, a frame (marking of the drawing extract, separate layer) enclosing the elements to be represented must be provided. This is required for identical view sizes of the gif files and svg files, respectively. This frame should be set on a separate layer.



There shall not be any other element outside this frame!

The frame can be represented as a rectangle or by means of points (point on upper left side, lower right side). This is required for creating the files while ensuring that they, when being imported as layers (see GEMOS manual for operators – Map editor/SVG editor), fit exactly on top of one another. Within the GEMOS hierarchy tree, each individual layer can then be represented as a level.

6.1.4.4 Working with references

Where the files to be created for the individual trades are provided with reference files (e.g. floor plan provided for reference purposes) the following shall be noted:

The insertion point of the floor plan drawing shall always be indicated by using the coordinates 0,0,0. It shall **not** be determined on screen if the CAD import is generated by means of svg and csv files.

When adding files containing detector information intended for import into GEMOS, the file concerned must be incorporated and then be dissolved. This particularly applies in case of a CAD import generated by means of dwg files.

For inserting block files, proceed as described in the paragraphs above.

6.1.4.5 Brief overview

Entering the attribute values as specified enables automatic positioning of detectors in GEMOS. It also enables parts list preparation (see separate AutoCAD manual).

Detector and floor plan import is detailed in the GEMOS “Manual for operators”.

All symbols (detectors) to be represented in GEMOS shall also be shown in the CAD drawing (with their correct position). A symbol shall be provided for each data point. Compilation is not possible.

Symbols (detectors) not to be represented in GEMOS must be designated accordingly. This shall be defined in an attribute. This means, for example, not making any entry in the attribute or entering a certain identifier in a further attribute (NAME = 1/7 and TYPE = GEMOS NO).

The use of an additional tool (Express Tools in AutoCAD or Excellink) enables editing of attribute values (e.g. PRO02ID, NAME, etc.) also by means of an Excel table which can then be re-imported into the AutoCAD file. This procedure facilitates entering attribute information from the detectors. Thereby, corrections or amendments can be made quickly and easily. It is not required to edit each detector individually in AutoCAD.

For representing zones in GEMOS with their associated depending state colors, a block shall be created for each zone including a closed polyline, a symbol, the attribute NAME (no duplicate allocations) and COLOR (entry in RGB Code).

6.1.4.6 Note

Regarding the preparation of CAD plans, ela-soft should be consulted in order to discuss the further procedure on the basis of a test plan.

The same detector shall not appear on more than one CAD plan (e.g. 1x in the plan for the outdoor area and 1x in the indoor plan). If this is not feasible due to revision-related reasons, the detector shall be placed on a separate layer in a plan in order to enable correct CAD import.

6.1.4.7 Preparation

Graphics import

Generally, merely the floor plan is required for the plan editor (e.g. undimensioned, without detectors). In the source drawing, this should merely be a very simplified single-layer representation provided the drawing contains further details (e.g. window structures). It must be possible to hide any layers that are not to be displayed.

AutoCAD files can be edited in the format *.dwg or *.dxf. The following steps are required in AutoCAD:

- Adjust the drawing by means of the command “Adjust” (unused elements are deleted from the drawing).
- Hide unused layers (reduce elements down to those of the floor plan, e.g. remove dimensions, axes, etc.).

The dwg files are imported directly into GEMOS. Fulfilling all prerequisites for CAD import directly enables further processing in GEMOS (see Manual for Operators GEMOS from Version 3.5).

6.1.4.8 Brief instructions for CAD import

For dwg files containing reference files, the references should be incorporated and forced open. Layers must be separated in order to allow correct display in GEMOS. Detector symbols must be created according to the specifications for CAD import.

1. csv and svg files must be stored in the import folder of GEMOS.
2. Enable detector import in the import folder
3. Select the dwg files to be imported in order to carry out detector import
4. Set layer selection for GEMOS
5. Set detector selection for GEMOS
6. Select folder for dwg import from hierarchy
7. Carry out dwg import



See: *GEMOS Manual for operators, “Import”*.

6.2 Tools

Implementation of additional tools is accessed via: Master data > Basic setup > Tools. Here, depending on the modules installed, options are provided for e.g. creating GEMOS backups and restore, operating the ImportClient, setting up a Video Management System, the basics of video streaming, the setting up of a web printer and the clearing of the change history as well as various special functions such as localization, different user interface tests, an overview of the master data classes and an overview of the codes classes.

6.2.1 Backup-Restore

This programme is used for creating GEMOS backups and restoring them. Backups can be created during operation without having to quit GEMOS.



Configuration of Backup-Restore is based on the Technical Documentation “ela-soft / GEMOS3 Backup-Restore, 2012”.

6.2.1.1 Configuration

For further information, see also /!settings/ (service interface):

Parameter	Explanation/notes
Backup root	Path to GEMOS (normally the current GEMOS directory) OBSOLETE, always the current directory
Pro02Srv cfg	The cfg file of the Pro02srv. The backup programme itself attempts to determine the current cfg file. Should this attempt fail, the file may be selected manually.
Delete previous backups...	Once a backup has been successfully created, previous backups of the same type (e.g. "config" or "data" or "all") are deleted.
but keep «n» additional	In addition to the current backup, «n» backups (of the same type) may be kept.
but ignore manual backups...	Manually created backups are not automatically deleted.
no action while...	In HA systems, backups are only carried out while the system is in the "default" state. This shall prevent backups of a faulted system from being created, let alone distributed.

Connections to the Pro02server

All backup clients have one Pro02 connection each to the main server.

CFG file

transfer:

Parameter	Default value	Explanation/notes
port	12012	TCP port for connections for distributing backups in redundant systems. This must be identical throughout the system.
maxbandwidth	50	Maximum bandwidth, in Mbit/s, used for distributing backups. Guideline for networks: 100 Mbit- 501 Gbit- 200 ATTENTION! This applies to the main server!

port.haListen:

Port class via which the backup programme determines whether the redundant system operates without any restrictions.

Parameter	Value	Explanation/notes
link	UDP	
LocalPort	HA-Port	The UDP port used in the HA system.
Protocol	ipc	Do not change!

maintenance:

Parameter	Value	Explanation/notes
mport	12080	Maintenance Port. REQUIRED ONLY IF PRO02 SERVER DOES NOT RUN ON PORT 80.

distribute:

In this section, files or directories can be indicated to be additionally included in the backup when carrying out “data” (or “all”) as the backup type. This provides the option to transmit additional data points to the spare servers during backup distributions in redundant systems.

Parameter	Value	Explanation/notes
«directory»	1 (or 0)	Example:Specialdata=1 orSpecialdata/file.xyz=1
«file»	1 (or 0)	

preget:

Prior to backup, the backup client can collect files from other computers. This is mainly intended for configuration data, not for large amounts of data points. This applies only if a suitable driver or Pro02 server is running on the computers from which the files are to be collected.

Parameter	Value	Explanation/notes
«ld»	«parameterlist»	«ld» = unambiguous number between 1 and 99

Example of a parameter list:

```
[preget]1=url:/get_busconf/busconf.dat,host:gmssrv02,port:12089,to:busconf/data/srv02_busconf.dat
```

Explanation:

url: URL under which the driver or Pro02 server distributes the desired file,

host:Host name from which the file is to be collected,

port: Port of the distributing programme,

to: target directory wherein the file is to be stored locally; if the “to” is not indicated, the result is discarded,

timeout: time, in seconds, after which the preget is cancelled in case no data arrives. The default value is 5 (seconds).

Configuration of the file distributor:

Distribution can be performed by a Pro02 server or a Perl driver (Perl driver Basics V9.10.00 or later). Configuration is the same in both cases. In the [http] section of the distributing driver or Pro02 server, a mapping for distribution must be entered. Example:

```
[http]Map.em_busconf=url:"/get_busconf/(.*)",root:"busconf/data/$1",access:everyone
```

The exact parameters are detailed in the Pro02 server documentation.



When using the Pro02 server for distribution, access to “cfg” may be denied in the default configuration (access:nobody). Where this is to be maintained, another programme must perform the distribution, e.g. g3backup.

Backup by means of preget (beta):



The use of this option is not supported and can only be tested at one's own risk.

The backup client can carry out a backup via the URL `/backup/direct?name=«NAME»&jobs=«JOBLIST»`. «NAME» means the name of the resulting Zip file. «JOBLIST» contains the backup elements. Currently, however, only "config" and/or "logs" is/are approved. When such a backup is carried out by means of a preget, it can be collected with the next preget command as the backup client awaits the end of execution. Example:

preget:

g3backup-cfg server

1=url:/backup/direct?

name=srv02_cfgs&jobs=config,host:gmssrv02,port:12089,timeout:602=url:/get_backup/srv02_cfgs.zip,host:gmssrv02,port:12089,to:config/srv02_cfgs.zip

http:

G3backup-cfg remote computer

Map.backup_zip=url:"/get_backup/(.*)",root:"backup/\$1",access:everyone

run:

Parameter	Value	Explanation/notes
pre	Programme[,Parameter_1[,Parameter_n]]	Programme to be started prior to a backup. This applies only to backups started by a Pro02 command. Example:post=c:\perl\bin\perl5.8.3.exe,c:/a.pl Additionally, the time stamp and the backup type are automatically transmitted as the final parameters! In a batch file, these are e.g. %1 and %2 provided the absence of any other parameters. The use of commas or semicolons within the parameters is not permitted.
waitpre	Time in seconds	Maximum period of waiting for the "pre" programme. Afterwards, the programme is terminated.
post	Programme[,Parameter_1[,Parameter_n]]	Programme to be started upon a successful backup. This applies only to backups started by a Pro02 command. Example:post=c:\perl\bin\perl5.8.3.exe,c:/a.pl Additionally, the time stamp and the backup type are automatically transmitted as the final parameters! In a batch file, these are e.g. %1 and %2 provided the absence of any other parameters. The use of commas or semicolons within the parameters is not permitted.
wait	Time in seconds	Maximum period of waiting for the "post" programme. Afterwards, the programme is terminated.

run.restore:

Parameter	Value	Explanation/notes
post	Programme[,Parameter_r_1[,Parameter_n]]	<p>Programme to be started upon a successful restore. This applies only to restores started by a Pro02 command. Example: post=c:\perl\bin\perl5.8.3.exe,c:/a.pl</p> <p>Additionally, the time stamp and the backup type are automatically transmitted as the final parameters! In a batch file, these are e.g. %1 and %2 provided the absence of any other parameters.</p> <p>The use of commas or semicolons within the parameters is not permitted.</p>
wait	Time in seconds	Maximum period of waiting for the “post” programme. Afterwards, the programme is terminated.

rest:Do not change!

Parameter	Value	Explanation/notes
Directory	WAHR	<p>Directories to be stored under “rest”. Anything not stored under “configs/”, “data/”, “logs/”, “doc/” or “import/”:</p> <p>Example: [rest]busconf=1i2imp=1pDLLs583=1resources=1webroot=1webroot/trash=0</p>

6.2.1.2 Messages and commands in Pro02 format

Native detectors of the client

Detector	State	Commands	Description
_State	Operation, Fault	None	State detector communication

Detector of client

Detector	State	Commands	Description
Backup	Operation, Fault On, Off	60011bff“param“	Message: last backup has been successful or has failed, Backup (not) in progress, Command: Start backup
Backup:Preget	Operation, Fault On, Off		Fault means that preget or elements thereof could not be executed.
Transfer	Operation, Fault On, Off	60011bff“param“	Transferring a backup from the main server to the subdirectory “backup/”.

Restore	Operation, Fault, Service request On, Off	60011bff"param"	Restore a local backup from "backup" to the "restore" directory
---------	--	-----------------	---

Messages

Status code (Hex)	Description
201	Off
202	On
301	Ready
302	Fault
303	Service request

Commands

Command code (hex)	Description
60011bff"OPTIONEN"	<p>Start Backup, Transfer or Restore,</p> <p>OPTIONS Backup (comma-separated list): configconfig/* also contains subdirectories of busconf/datadata/*,loglogs/*,restall remaining files belonging to GEMOS from the programme directory and the directories defined under [rest],docdoc/*,importimport/*orall above mentioned distribute=valuesets distribute FlagValue=0 to be ignored by RS serversValue=1 Restore on RS, unpack only, call up gbakValue=2 Restore on RS without Pro02server StopValue=128 create self-extracting Exe</p> <p>OPTIONS Transfer and Restore</p> <p>Time stamp (file name without extension) of the backup on the sourcecomputerhost=Hostname</p> <p>Sourcecomputerdistribute=Value</p> <p>Example: MCrs_g3backup/Restore=60011bff"20070625213600;distribute=2"</p> <p>Note: Whatever is indicated in the state value extension at backup completion can be completely assumed.</p>

6.2.1.3 Backup

Allgemein

The directory to be saved shall be defined via the "Settings" page of the web interface. The programme will automatically search this directory for the current pro02srv.cfg. This is used to determine the databases to be saved. If necessary, the valid CFG can be selected manually. Upon a new successful backup, the programme can automatically delete earlier backups of the same type.

Manual backups can be exempted from this automatism. Another advantage of this is that automatically created backups cannot be overwritten by manual backups.

In their info field, backup zips created by this programme contain useful backup information in CFG format. Among other information, the first section [info] contains the license information and perhaps a comment of

a manual backup. The info field of the zip file is also indicated as Tooltip in the file explorer.

Backup by means of Pro02 client

```
McG3backup/Backup=60011bff"config,data,logs,rest,doc,import,distribute=0"
MCg3backup/Backup=60011bff"all,distribute=0"
```

Message:

MEg3backup/Backup=202 Backup in progress,

MEg3backup/Backup=201"timestamp;type;hostname,distribute=0" Backup completed.

MEg3backup/Backup=301 Upon successful backup, otherwise

MEg3backup/Backup=302. Detailed information in the error and system log.

Internal backup timer

See web interface: "Schedule". 3 timers in total are provided that can be used to carry out the backups. Selectable options are the contents (config,data,logs,rest,doc,import) as well as the days of the week (Mon-Sun) and the time. In addition, a programme can be indicated which is to be started after a successful backup (e.g. for tape backups).

Manual backup clients

See web interface: "Backup". Manual backups should be provided with a brief and concise comment regarding the reasons in order to provide transparency for a later date or for others.

Command line backup

Complete:g3backup immediately

Partial:g3backup immediately=config,data,logs,rest

6.2.1.4 Restore

Restore via Pro02

This type of restore is used when automatically distributing backups to spare servers. When a backup has been collected from the main server via "Transfer", a restore can be initiated by means of an action plan:

IF "Transfer" Off AND Ready, THEN Restore.

Restore via Pro02 is carried out only if none of the HA agents reports any restrictions (ports default, system active or passive).

The further procedure depends on the restore call.

Restore, unpack only:

The parameter required here is distribute=1. In addition, whatever the g3backup reports at the end can be assumed:

```
-> Mcrs_g3backup/Restore=60011bff"20070831152909;distribute=1"
```

Parameter type and host are ignored during restore.

Restore without stopping the Pro02 server via the maintenance mode:

Where the g3backup itself is to copy the files into the Pro02 server directory, distribute=2 must be set. For copying the databases, the Pro02 server is temporarily switched to the maintenance mode. In addition, the programme indicated in the Cfg under [run.restore] is started.

```
-> Mcrs_g3backup/Restore=60011bff"20070831152909;distribute=2"
```



If this type of restore does not permit g3backup to copy files to the target, the detector Restore will finally switch to maintenance mode (0x303). Nevertheless, all files that can be copied will be copied!

Restore via web interface

See web interface: "Restore". A restore will always be stored in the directory "restore" under the programme directory.

Restore self-extracting archive

Besides the zip, each backup also generates an "exe" file. This must be executed for unpacking. If only individual files are required from such an "exe", it may also be started using a standard unzipping programme (e.g. Winzip). Any occurring fault messages shall be ignored, the archive will eventually be opened without any fault.

6.2.1.5 Transfer

Backup programmes on spare servers are able to collect backups from the backup client of the main server.

Requirements

Upon successful backup, the detector reports "Backup" as the state value extension of the "Off" state (201) details on the backup:

```
ME g3backup/Backup=201"20070411105351;type=5;host=jamaica;distributed=1"
```

This state value extension is assumed entirely and used for commands for Transfer and Restore.

Transfer via Pro02 is carried out only if none of the HA agents reports any restrictions (ports default, system active or passive) and the state value extension includes distributed=1 or 2.

6.2.1.6 Backups, Transfer and Restore – Actions (Examples)

Button for maps

```
MpText("Backup + Distribution","");
```

```
generatecommand("hs_g3backup/Backup",0x60011bff,"data,distributed=2");
```



The section [distributed] in the cfg can be used to define any other files which might be intended for distribution in addition to "data".

Transfer initiation

Action plan: Main server,

Detector: hs_g3backup/Backup

Transfer is carried out by the programme only if the parameter distributed is set to 1 or 2.

```

    $MsgCode==0x201
    && SensorStateValue($MsgPro02Id,0x300)==0x301
    // && SensorStateValue("Test/PM:98",0x200)==0x202
    ?(
        generatecommand("rs_g3backup/Transfer",0x60011bff,$MsgText);
    );

```

Restore initiation

Action plan: Main server,
 Detector: rs_g3backup/Transfer
 Restore is carried out by the programme only if the parameter distribute is set to 1 or 2.

```

    $MsgCode==0x201
    && $MsgText
    && SensorStateValue($MsgPro02Id,0x300)==0x301
  ?(
    generatecommand("rs_g3backup/Restore",0x60011bff,$MsgText);
  );
  
```

6.2.1.7 Upload/Download

This function is intended for the restoration of changed backups.

6.2.1.8 Maintenance of Pro02 database

Where GEMOS is operated with a Firebird database, long-term operation can result in unnecessary database expansion due to data that had been deleted from the database without re-release of their memory space. By storing the database in this state and then restoring it, the blocked memory space is released.

During GEMOS maintenance, such a procedure should be carried out from time to time in order to avoid unnecessary database expansion.

Using g3backup, this process can be carried out relatively simply without having to disturb the running operation or stop the Pro02 server. Since several minutes may elapse between the backup start and complete restore, the actual exchange of databases has been separated from the backup and restore processes in order to enable harmless cancellation of the process if necessary (messages / alarms received in the meantime).

6.2.2 ImportClient



The setup of an ImportClient i2 is based on the Technical Documentation "ela-soft / ImportClient i2, Version 3.5, 2010".

Excel or OpenOffice Calc (.ods, .sxc) files.

The import client should be installed and operated in the work directory of the Pro02 server.

To be imported: Pro02Id, Designation, Location, ExtId, State, Detector type and Symbol. The first column shall be titled "Pro02id" while the sequence of the remaining columns is irrelevant. Import and export of the field "ExtId" for external Ids is enabled only from Version V9.02.00 onwards!

Import of the field "ExtId" can be filtered by entering a regular expression in the CFG, section "import". Thus, only those Ids will reach GEMOS to which the filter applies. To be exported:

Pro02Id designation Location designation ExtId Empty space Detector type Symbol library State (in GEMOS). The fields Detector type and Symbol library are left blank if they are recognized in GEMOS as default by definition in the module.cfg of the respective device. The states exported from GEMOS, if present, are the states from 0x101 to 0x9999.

6.2.2.1 Operating principle

General

The i2 carries out the import from CSV files. Additionally, the i2 is also able to process XLS(X) files provided these include a GEMOS import worksheet and the arrangement of columns corresponds to that of the CSV specification. The i2 transforms this worksheet into a CVS file which it then uses for the import. A programme which is able to read XLS(X) is not required.

CSV

CSV means Comma-Separated Value. This is a text file containing values in “columns” which are separated from one another by a field separator. Since such separators may also occur in texts, corresponding fields are (optionally) enclosed in quotation marks. i2 uses the tabulator as a field separator but semicolons or commas can also be used. CSV files for i2 have an “.i2” extension. This extension can be linked to the programme “Excel” so the i2 files can be opened per double-click in Excel.

Since the import is intended for initial data supply (not master data maintenance), i2 is restricted to the following data:

- Column 1 Pro02 Id (complete, including device)
- Column 2 Description
- Column 3 Location
- Column 4 ExtId
- Column 5 State (should normally be left blank)
- Column 6 Detector type according to module.cfg
- Column 7 Symbol (library)

Indication of the Pro02 Id is obligatory :-), all other indications are optional.

Example:

Pro02Id	“Description”	“Location”	ExtId	Detector type
MLK1/M:1:1	“MK Door1”	“House1 GF”	4711	Line
MLK1/M:1:2	“MK Door2”	“House1 GF”		Line

Area import:

The Pro02 Ids of areas begin with “_area”. By default, i2 sets up everything under such an Id as type “area”. Where folders are to be used in the structure, an additional column designated “OBJTYPE” must be created in the i2 file. However, only area-related entries should be made here! The column recognises the designations “folder” and “area” as values. “area” is optional and is set regardless for any Id beginning with “_area” and for which “folder” has not been indicated:

PRO02ID;	DESIGNATION;	OBJTYPE
_area/meins;	Meins;	Folder
_area/meins:2;	Foo;	Folder
_area/meins:2:2;	Reply 42;	

XLS, XLSX, ODS, SCX

Worksheets which are derived from spreadsheets and intended for data import shall include the information necessary for import in the designated columns and lines (see CSV). The worksheet containing the data for import shall be designated GEMOS import.

Directory menu

Within its programme directory, the import client provides access to the subdirectories i2imp/ and i2exp/. Under these folders, there installation-specific folders may exist.

An absolute path to an import directory may also be indicated via the CFG. In this case, the import client automatically uses the subfolder i2imp as the import folder and compulsorily the subfolder i2exp as the export folder. If these folders are not present, they will be set up. For the export folder, an absolute indication is not possible. In case of an absolute indication of the path to an import directory, the indication for the export folder is ignored.

Example:

misc

imp_csv=D:/Temp

The import client uses the folders D:/Temp/i2imp and D:/Temp/i2exp. Normally, this option should not be used under any circumstances as such a context is hard to recognise for third parties and also since external folders are not covered by the backup.

File functions

By clicking on a file, it will be tested prior to a potential import. The file is tested for the following:

- is it possible to open the file,
- is there a worksheet "GEMOS import" (only applies to XLS, ODS, SXC),
- is the syntax of the Pro02 Ids correct,
- are duplicate Pro02 Ids present.

Any errors detected during testing are indicated separately (tab Duplicate and tab Syntax error).

Under Detector report, the result of the import client's interpretation of the chosen file can be viewed. The import client imports the entries into GEMOS as listed here. When detecting any errors requiring correction during testing, retesting can be carried out at any time via the button Test.



The button Import is enabled only if there is a connection to the Pro02 server. If the button is disabled, the connection to the Pro02 server shall be checked.

6.2.2.2 Export

When connecting i2 to the Pro02 server, the client queries the Pro02 server regarding any devices it recognises. These will be listed under Export. Where a device is provided with subdevices (example enet: 1/), those are listed under their main device and have to be exported individually.

Export can be performed in the format CSV (i2 and csv) as well as the format XLS. The XLS format is written regardless of Office components and can also be selected with an import client running under Linux. Export to the OpenOffice format is currently not possible. This, however, does not present a problem since the XLS files of OpenOffice are easily readable.



Devices set up by an import using the import client are not listed until the import client has been restarted, as the i2 queries the devices recognised by the Pro02 server only at the start of the client.

6.2.2.3 Requirements

The i2 shall be introduced to the Pro02 server. The Pro02 class allocated to the client must be authorized to send messages on behalf of other devices. For this purpose, a class i2 is set up and the Pro02 user entry is created when installing the i2.

6.2.2.4 Configuration example

CFG file

config: (See general CFG description.)

port.pro02srv: (See general CFG description.)

Parameter	Value	Description/notes
[Pro02.User]	i2	The Pro02 class in the Pro02 server shall be authorized for sending on behalf of other users!
Pro02.Password		Login password
Protocol	Pro02	Fixed
Link	TCP:localhost:12000	Connection to Pro02 server
Protocol	http	Fixed
MaxConnects	5	Maximum number of concurrent connections
Link	TCP:*:PORT	List port for web interface, PORT is replaced by the port number, Example: TCP:*:12200
SessionTimeout	600	Idle timeout for a session, upon which a new login is required
InactivityTimeout	600	Idle timeout for logs, upon which the connection to the browser is disconnected

import:

Parameter	Value	Description/notes
filter_extid	Regular expression	Values shall correspond to the RE, otherwise they are not imported. If this entry is missing, anything will be accepted.

misc:

Parameter	Value	Description/notes
delay	0 to 2000	Delay, in milliseconds, between the transmission of individual Pro02 messages during import.
imp_csv	i2imp/	Directory for import files. Example: imp_csv =i2imp/
exp_csv	i2exp/	Directory for the export of devices. Example: exp_csv =i2exp/
ole	1	Allows the access to Excel files via OLE during import on a Win32 computer with Office.

Parameter	Value	Description/notes
queuestop	40	When the Pro02 server reports a queue filling level equal to or exceeding the parameter, the i2 delays the transmission of any further data until the value reaches queuerun. For Pro02 server versions earlier than ..13beta, as of 04/07/2003, this mechanism does not work. With those versions, not more than 4000 detectors at a time should be imported here.
queuerun	20	Queue filling level at which the import is resumed after interruption.

database:

Internally managed.

6.2.3 Video Management System



For further information, see document dev_vms2.pdf

6.2.4 Webprinter

6.2.4.1 Overview

The printing of websites using a Pro02 server running as a service requires some basic settings that are not achievable by “normal” means:

- the rights of the browser object called up by the web printer shall allow to call up the pages to be printed,
- the system account under which the Pro02 server runs must recognise the printers to be used.

These settings can be made by the programme webprinter_set.exe.

Additionally, “Data exchange between service and desktop” should be enabled for the service of the Pro02 server. Thereby, the web printer becomes visible on the desktop when printing or attempting to print.



The setup of a web printer is based on the Technical Documentation “ela-soft / Einstellungen für Webprinter, 2007”.

Application

Whether the rights are set that are required to enable the web printer to print floor plans under the system account is shown in the lower right window under “Rights”. These rights are set by the first transmission from printers to the system account.

The printers of the current user are listed on the left side of the programme interface. The default printer is shown by color shading. The printers to be added to the system account are individually selectable. The default printer cannot be unselected. It can, however, be changed at any time by clicking the right mouse-button.



Further information on web printers is detailed in the „Technical Documentation “ela-soft / Einstellungen für Webprinter, 2007” (ela-soft/settings for web printers, 2007).

Also, when the programme is started, those printers are preselected that are already present in the system account. This is supposed to prevent them from being accidentally deleted.

When running the context menu on one of the printers, the name of the printer or the names of all printers can be copied to the clipboard so they can be further used in GEMOS.

6.2.4.2 Potential errors

Even with the “correct” settings of the operating system, the print-out may be incomplete.

Potential errors are:

- incorrect SVG editor,
- missing rights for reading detectors,
- the plan to be printed has the wrong size or, at worst, no size at all in the database.

6.2.5 Clear change history

Change logs (history) are cleared via: [Master data](#) > [Basic setup](#) > [Tools](#) > [Clear change history](#)

GEMOS facilitates extensive change control as almost all changes to the system are logged. The date and the type of change (from...to...) as well as the editor are stored and allocated to a version number.

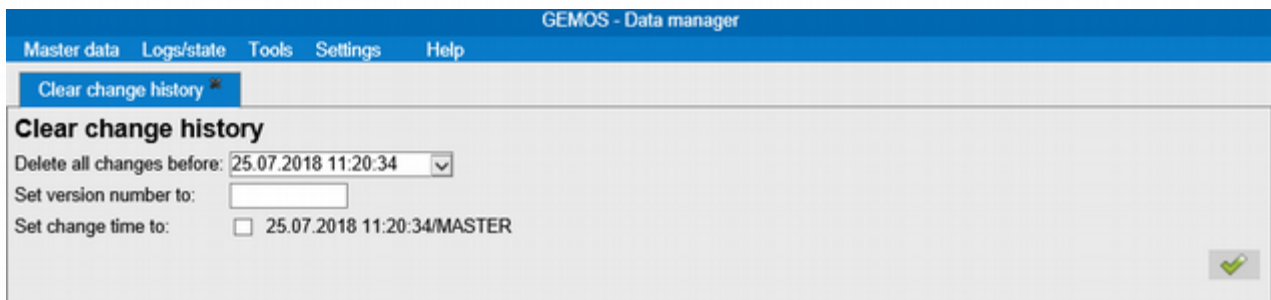


Figure 6.11: Clear change history

After clearing the change logs, the current state of the master data can be started with a new and freely selectable version number by entering the new version number in the selection box beside the text “Set version number to”. The last change can be tagged with a time stamp and a user name.

6.2.6 Special functions

The button [Special functions](#) is accessed via: [Master data](#) > [Basic setup](#) > [Tools](#) > [Special functions](#). Under Special functions, localization, user interface tests, overview of master data classes and overview of codes classes are compiled.



Depending on the respective version, the functions described below are accessible via the gmh interpreter.

6.2.6.1 Localization

The button [Localization](#) is accessed via: [Master data](#) > [Basic setup](#) > [Tools](#) > [Localization](#).

Localization means different documents switching from one language to another.

6.2.6.2 User Interface Test



Figure 6.12: User Interface Test

6.2.6.3 Overview of master data classes

The button [Overview of master data classes](#) is accessed via: [Master data](#) > [Basic setup](#) > [Modules](#) > [Configuration pro02_server](#) > [Expert tools](#) > [GMH interpreter](#) >

Objtype	GMH class name	Label	Info	Database tables																																																															
0	sdb_catalogobj		Module(s): stamddb Baseclass: -	<p>Associations with SQL table catalog Association ID: catalog Relation type: 1:1</p> <table border="1"> <thead> <tr> <th>GMH attribute</th> <th>SQL field</th> <th>SQL type</th> </tr> </thead> <tbody> <tr><td>iid</td><td>IID</td><td>INTEGER</td></tr> <tr><td>pro02id</td><td>PRO02ID</td><td>VARCHAR(80)</td></tr> <tr><td>catalogParent</td><td>PARENTIID</td><td>INTEGER</td></tr> <tr><td>catalogType</td><td>OBJTYPE</td><td>INTEGER</td></tr> <tr><td>catalogType</td><td>OBJTYPE</td><td>INTEGER</td></tr> <tr><td>catalogSubtype</td><td>OBJSUBTYPE</td><td>VARCHAR(20)</td></tr> <tr><td>catalogDescription</td><td>DESCRIPTION</td><td>VARCHAR(240)</td></tr> <tr><td>catalogLocation</td><td>LOCATION</td><td>VARCHAR(40)</td></tr> <tr><td>catalogAKS</td><td>CATALOGAKS</td><td>VARCHAR(80)</td></tr> <tr><td>catalogExtid</td><td>EXTID</td><td>VARCHAR(256)</td></tr> <tr><td>catalogSymbol</td><td>CATALOGSYMBOL</td><td>VARCHAR(40)</td></tr> <tr><td>catalogSortOrder</td><td>CATALOGSORTORDER</td><td>INTEGER</td></tr> <tr><td>catalogConfig</td><td>CATALOGCONFIG</td><td>VARCHAR(1024)</td></tr> <tr><td>catalogTechComment</td><td>CATALOGTECHCOMMENT</td><td>VARCHAR(240)</td></tr> <tr><td>catalogGeoLocation</td><td>CATALOGGEOLOCATION</td><td>VARCHAR(40)</td></tr> <tr><td>catalogCreateTime</td><td>CATALOGCREATETIME</td><td>TIMESTAMP</td></tr> <tr><td>catalogChangeTime</td><td>CATALOGCHANGETIME</td><td>TIMESTAMP</td></tr> <tr><td>catalogChangeUser</td><td>CATALOGCHANGEUSER</td><td>VARCHAR(40)</td></tr> <tr><td>-</td><td>CATALOGVERSION</td><td>INTEGER</td></tr> <tr><td>-</td><td>CATALOGCLASS</td><td>CHAR(1)</td></tr> </tbody> </table> <p>Associations with SQL table catalognames Association ID: catalognames</p>	GMH attribute	SQL field	SQL type	iid	IID	INTEGER	pro02id	PRO02ID	VARCHAR(80)	catalogParent	PARENTIID	INTEGER	catalogType	OBJTYPE	INTEGER	catalogType	OBJTYPE	INTEGER	catalogSubtype	OBJSUBTYPE	VARCHAR(20)	catalogDescription	DESCRIPTION	VARCHAR(240)	catalogLocation	LOCATION	VARCHAR(40)	catalogAKS	CATALOGAKS	VARCHAR(80)	catalogExtid	EXTID	VARCHAR(256)	catalogSymbol	CATALOGSYMBOL	VARCHAR(40)	catalogSortOrder	CATALOGSORTORDER	INTEGER	catalogConfig	CATALOGCONFIG	VARCHAR(1024)	catalogTechComment	CATALOGTECHCOMMENT	VARCHAR(240)	catalogGeoLocation	CATALOGGEOLOCATION	VARCHAR(40)	catalogCreateTime	CATALOGCREATETIME	TIMESTAMP	catalogChangeTime	CATALOGCHANGETIME	TIMESTAMP	catalogChangeUser	CATALOGCHANGEUSER	VARCHAR(40)	-	CATALOGVERSION	INTEGER	-	CATALOGCLASS	CHAR(1)
GMH attribute	SQL field	SQL type																																																																	
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-	CATALOGVERSION	INTEGER																																																																	
-	CATALOGCLASS	CHAR(1)																																																																	

Figure 6.13: Overview of master data classes

6.2.6.4 Overview of codes classes

The button Overview of codes classes is accessed via: Master data > Basic setup > Modules > Configuration pro02_server > Expert tools > GMH interpreter >

Used code types in this system

Codetype	Modules	Attribute	Type	Label
0	stammbd, stamm, visualization	Bedienoberfläche		
		*THM	combobox	Design (Theme) Die Gestaltung der Themes erfolgt im Theme-Editor (Menü Grundeinrichtung, Vorlagen).
		*TCH	special	Touchscreen
		*LOU	text	Automatische Anmeldung
		*LOPM	integer	Passwortlänge minimale Länge eines vom Bediener selbst gewählten Passwortes.
		*LOPS	integer	Sonderzeichen im Passwort minimale Anzahl der Zeichen, die nicht Ziffern oder Buchstaben sind.
		*LOPE	integer	Passwort-Gültigkeit in Tagen
		*LOPW	integer	Vorwarnzeit in Tagen, für Passwort- oder Account-Ablauf
		*LOT	INTEGER	Automatische Anmeldung nach (sek)
		*LOS	combobox	Nach Anmeldung
		*LOX	combobox	Nach Abmeldung
		*CMM	catalogmask	Befehlsprotokollierung
		*stamm_CRS	checkbox	Eingabe anbieten
		*stamm_CRF	checkbox	Eingabe erzwingen
		*vis_CLC	special	[Layout] Kamera-Klick
		*vis_CLM	special	[Layout] Monitor-Klick
		*vis_FRA	combobox	[Layout] Start-Frameset
		*vis_LGS	text	[Layout] Text für Legende Platzhalter im Text: %c%C=Erstellungsdatum/zeit, %m%M=Änderungsdatum/zeit, %U=geändert durch (Benutzer), %V=Version, %N=Lageplanname

Figure 6.14: Overview of codes classes

6.3 Alarm printing

For alarm-controlled printing of HTML or SVG floor plans from GEMOS (via action plans), the programme “webprinter.exe” is required. It can only be used for Windows platforms and is based on an MS Internet Explorer (IE) Version 6.0 SP1 or later. Prerequisite is an IE installed on the server with all required settings and plug-ins (SVG viewer etc.). Care shall be taken that the user logged in at the server has the correct rights for using the IE and the printers.

6.3.1 Function

For alarm-controlled printing, GEMOS requires the following component:

- Single action “Alarm printing” (or other individually chosen name)

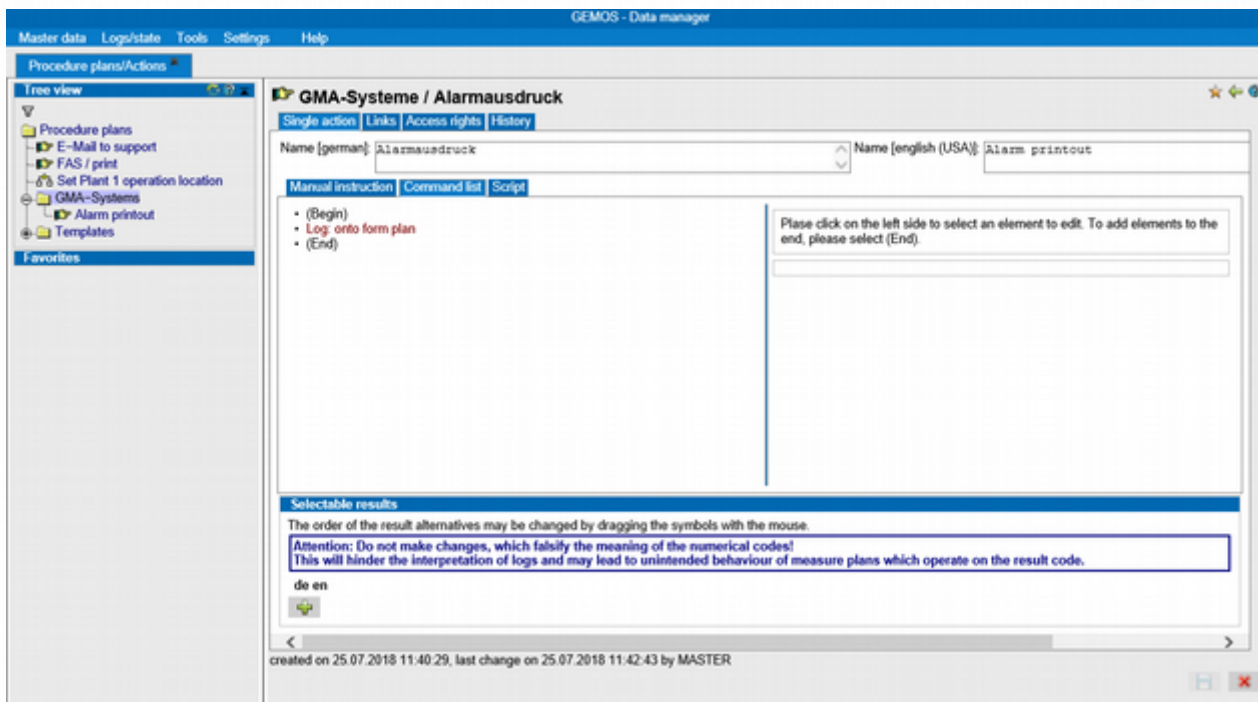


Figure 6.15: Web printer setup

The displayed forms correspond to the allocated names of the form files “plan_<name>.cfg” in the config directory of the Pro02 server.

Requirements for alarm printing:

- Action plan comprising one or more single actions for automatic printing in an alarm case
- The floor plans to be printed have to be ticked off as “Printing in an alarm case”.
- The correct entries in the “pro02srv.cfg” are required.
- The form file(s) “plan_<name>.cfg” with correct entries are required.

The print-outs and their formats as well as certain configuration settings are defined in the *.gmf files of the folder “data” in the main directory of GEMOS (see separate documentation).

During action plan processing, the web printer is used for printing via entries in the file “pro02srv.cfg” . The pages are edited by GEMOS and transmitted to the web printer for printing. For this purpose, this web printer uses the IE while ensuring that user input is not required. Any printer installed on the server can be used as the printer.

6.3.2 Configuration master data printing

The button [Configuration master data printing](#) is accessed via: [Master data](#) > [Basic setup](#) > [Configuration master data printing](#)

The mask “Modules” shows all modules stored on the system. Information is divided according to module, version/state, service, type and languages.

6.3.2.1 Configuration file

For basic configuration, the file “pro02srv.cfg” is used. Here, the web printer is used as the programme to be started for the [spool.XXX] entries (for general spooler configuration, see “pro02srv.pdf”). The web printer provides the following options which can be indicated in the line CMDLINE of the “pro02srv.cfg”:

Parameter	Description
\$file	Wildcard for the name of the file to be printed. Always to be indicated. When printing automatically via GEMOS forms, this name is generated automatically and the entry shall not be altered.
/s<time>	<time>: Time, in seconds, the programme waits before starting to print. An indication specifying an estimated maximum printing duration is required. This is necessary since the plug-ins (e.g. SVG) used in the IE do not provide any information as to when the rendering of the pages is completed.
/c<time>	<time>: Time, in seconds, the programme waits after the start of printing until it closes. This is required as the basic IE does not provide any information as to when the printing of the pages is completed.
/p"<printer>"	<printer>: Indication of the printer to be used. The name corresponds to that found under "Settings->Printer" or in the Windows registry, respectively. It must be exactly correct. As the name may contain spaces, it has to be entirely enclosed by """". Alternatively, the GMH variable \$(printer) may be used instead of <printer>. In this case, an allocation of the type: printer = <printer> is required in the associated GMF file. (see below) For using the default printer installed on the server, the entry may be left blank.
/o<format>	<format>: Paper orientation. Permissible options are 'Landscape'/'Horizontal format' or 'Portrait'/'Vertical format'. Alternatively, the GMH variable '\$(layout)' can be used instead of <format>. In this case, an allocation of the type: layout = <format> is required in the associated GMF file.

Example entry web printer call-up:

```

spool.plan
Mode=1
Cmdline=webprinter.exe $file /s7 /c10 /p"$$(printer)" /o"$$(layout)"
PageWidth=800
PageHeight=1132

```

6.3.2.2 Form file(s)

In the form file(s) "<name>.gmf", the specific print settings for individual forms as well as certain printers and layouts are managed.

Parameter	Description
<!-- #printer="<printername>" ; \$spoolqueue="<spoolname>";\$layout=<format>	Indication of the printer to be used and the section of ""pro02srv.cfg"" <printername>: Printer name from the Windows registry for the desired printer installed. Default: Default printer of the server<spoolname>: Name of the section of ""pro02srv.cfg"", wherein the handover of the printer to the web printer is to be performed. Default: plan<format>: Paper orientation. Permissible options are 'Landscape'/'Horizontal format' or 'Portrait'/'Vertical format'.

Example configuration for a "plan_pdf.gmf" generating a print-out on an installed PDF writer of FinePrint:

```

<html><head>
<link rel="stylesheet" type="text/css" href="<!--#urlprefix-->/style.css">

```

```

</head>
<body>
Message number: <!--#MsgNo--> time: <!--#FormatTime(TimeToLocal($MsgTime))--><br>
DetectorId: <!--#MsgPro02Id--> Message: <!--#MsgName--><br>
Detector name: <!--#MsgDesc--><br>
<!--#printer="FinePrint pdfFactory";$spoolqueue="plan";-->
<!--#PrintLplan()-->
</body></html>

```



The remaining settings are described in the document "pro02srv.pdf".

As the printer name in the gmf file, the unambiguous printer name from the registry shall be used which is not always identical to the indication in "Settings/Printer". The name can be checked or read from the registry as follows:

Pro02srv running as service

```

HKEY_USERS\DEFAULT\Software\Microsoft\Windows
NT\CurrentVersion\Devices

```

Pro02srv running as programme

```

HKEY_CURRENT_USER\Software\Microsoft\Windows
NT\CurrentVersion\Devices

```


6.3.3 Installation

The web printer is installed during GEMOS installation. Where it is to be subsequently installed, the file “webprinter.exe” shall be copied into the GEMOS main directory. The Internet Explorer and the printers used on the server must be set up under the user account used for the Pro02 server.



The programme “webprinter.exe” must be located in the root directory of the Pro02 server (same level as “pro02srv.exe”). The web printer must be started under an account which allows to change the registry. This is used if the web printer is started from a Pro02 server installed as a service. No restrictions known.

7. Glossary

A

Action plan	Action plans are the combination of actions assigned to a message. They control the behaviour of GEMOS upon an incoming message.
Activity log	Activity logs are used for recording user activities.
Alarm sound	The alarm sound allows to further distinguish alarms on the alarm stack.
Alarm stack	The alarm stack is a list of messages which have just arrived or are still being processed.
Area	Areas represent a combination of several detectors within a GEMOS system. These are comparable to the detecting lines used in alarm technology.

B

Building management	Building management considers the entirety of technical, commercial and infrastructural services in relation to a building's utilization phase and is therefore a part of facility management.
Button	Within the maps, buttons may be arranged for triggering certain actions. These buttons are freely programmable.

C

CAD	"Computer Aided Design"
CGI	"Common Gateway Interface" – A CGI enables a WWW browser to run programs via a WWW server.
Clients	Service requesting device (GEMOS interface software)

D

Decision tree	Action plans can be generated by using macros.
---------------	--

E

Expert mode	In the expert mode, GEMOS can generate various single actions/action plans by means of script.
-------------	--

F

Facility Management	Facility management consists of the consideration, analysis and optimization of all cost-relevant processes that are associated with a building but not part of a company's core business. This means considering a building with respect to its entire life cycle. From the conception, planning and construction to the use, recycling or demolition of the building. All relevant data are stored within a joint database.
Fire detector	Fire detectors as "on-site guards" are responsible for detecting and reporting a fire at its earliest possible stage. The most commonly used detector types are ionization smoke detectors, optical smoke detectors, flame detectors, heat detectors and transmitted light smoke detectors.
Frame	Screen area

G

GAC	The GEMOS access controller is used as central intelligence for the access control system GEMOS access and any connected GEMOS access modules (GAM).
Gateway	Gateway designates a point of connection or transition between two fundamentally different networks functioning with different protocols, different addressing etc. Usually, a gateway is a computer acting as an interpreter between the different network worlds.
GEMOS – system bus	The GEMOS system consists of the actual workstation PC including the GEMOS operating software, the interface modules (interfaces) and the GEMOS system bus. Any systems of the security, building and communication technologies can intercommunicate via the GEMOS system bus as well as visualize and edit their messages on the workstation PC. The bus enables distribution of system intelligence over long distances.
GIC	The GEMOS interface controller (GIC) is used as an interface server for the advanced physical security information system GEMOS. Various application-specific drivers enable communication between external systems and GEMOS.
gif	The Graphics Interchange Format was introduced many years ago by the online provider CompuServe. It stands out due to its high compression. Therefore, it became a rapid success in the online environment where data transmission costs time and money. The now widely spread standard gif-format is the so-called “89 format”. A disadvantage of the gif format is the fact that only a maximum number of 256 colors per file can be stored.
GLT	Building control system
H	
HDD	“High Density Device” – hard disk recorder
Hold-up detector	See intrusion detector
I/J	
Intrusion detector	Intrusion detectors, like hold-up devices and fire detectors, belong to the group of hazard detectors. Their purpose is to reliably report hazards to persons and objects. They use information from automatic recordings or human input to generate hazard messages, give alerts and detect faults.
jpeg	<p>Abbreviation for Joint Photographic Expert Group, i.e. not the designation of the graphics format but of the corporation having developed it. The jpeg method is an algorithm for compressing data flows based on the DCT (discrete cosine transform) algorithm in combination with Huffman coding. The graphics file format of the same name is simply an application of this algorithm to pixel graphics. Meanwhile, the jpeg algorithm is also used for videos thus having established the popular video format MPEG.</p> <p>Like the gif format, the jpeg graphics format also compresses very well, its advantage is its capability to store up to 16,7 million colors per image. Unlike the GIF format, it therefore does not operate with palettes of certain colors but with the entire colour range. The disadvantage of jpeg is that it compresses with losses. The quality of the graphics decreases as the compression factor increases.</p> <p>Compression losses in jpeg graphics particularly occur at sharp colour transitions within an image, i.e. at corners and edges of depicted objects</p>

(“fraying of edges”). For images of few colours but sharp contours, such as simple drawings, sharp lettering etc., the jpeg format is therefore not suitable. The format’s strength, however, lies in the storage of photographs and other graphics containing very fine colour gradients. Even with low compression, the files are significantly smaller than, for example, with bitmap graphics. Even screen filling photographs can be brought to file sizes assumed to be acceptable in a web environment while maintaining an adequate quality.

M

Map editor	The map editor is used for designing the map graphics. Functional elements within a graphic are detector symbols, windows, buttons, texts and graphics.
Maps	Maps are the central part of the GEMOS user interface. They schematically illustrate the monitored object and the detecting technology used in the operating programme thereby giving the operator a quick overview of the entire system in the normal state and a detailed view of the affected points in the alarm state.
Message categories	Message categories are used to organize the alarm stack and to control message distribution to the individual workstations.
Message cause	The cause of a triggered message is indicated at the message conclusion for a later targeted analysis of stored logs after certain events.
Message priority	Messages are listed on the alarm stack in order of their priority.
Message processing core	The central message processing core processes all messages of connected clients and manages the correct communication between the devices of the system on the basis of the TCP/IP protocol.
Message protocol	In message protocols, messages are listed or printed. Restrictive selection criteria may be used for this purpose.
Messages	Messages are state changes transmitted to GEMOS by the connected detecting technology. Apart from alarms, these can also be fault and state messages.
MGAC	The mini GEMOS access controller is used for the access control system GEMOS access as the central bus intelligence for communication between the individual bus devices.
MLK (Meldelinienkarte)	“Detecting line card” – Hardware component in GEMOS
P	
Perl	“Practical Extraction and Report Language” – Programming language for CGI scripts
PHP	“Professional Home Page – Hypertext Preprocessor” – PHP is a server-based script language based on HTML and therefore an extension for internet servers allowing a relatively effortless creation of dynamic websites for multimedia or e-commerce applications in a web environment.
Pixel	“pixel element” – image point
Polling mode	Cyclic polling of devices or detectors, respectively, by the central unit.
Pro02	The Pro02 server processes all messages of connected clients and

	manages the correct communication between the devices of the system on the basis of the TCP/IP protocol.
Pseudo data point	A pseudo data point is a data point without any relations to an external system. It is only managed internally by GEMOS.
R	
RGB	“Red/Green/Blue” – Color scheme
RLK	Relay card – Hardware component in GEMOS
S	
Single action	Single actions are those actions that are to be taken in response to message input in the GEMOS system. They will later be combined to action plans and then allocated to an event.
SQL	“Structured Query Language” – Data query language
T	
TCP/IP	“Transmission Control Protocol/ Internet Protocol” is a protocol for internet data transmission. It is used to transform files into packets. These are consecutively numbered and reassembled on the recipient’s side. As faults may occur on the data path, a checksum is included and rechecked on the recipient’s side. Packets containing incorrect checksums are requested again.
Tree structure	see hierarchy window
U	
URL	“Uniform Resource Locator” – internet branch address
User interface	The user interface is the central part of the GEMOS system. It is required for processing incoming messages.
V	
Video router	A video router can be used to switch each camera onto each monitor.
W	
WAN	“Wide Area Network” – A network of wide, sometimes international reach often comprising the connection of distant local networks by means of telephone lines.
X/Y/Z	
ZIF	Central unit interface – Hardware component in GEMOS

8. Revision

Revision	Date	Editor	Explanation
0.5	12.11.12	JP	Creation
0.6	19.12.12	JP	Amendment, correction
0.7	21/10/2014	CR	Adaptation of CD
0.8	08/01/2015	CR	Adaptation of printing forms, mailing forms, system requirements
0.9	09/10/2015	CR	Adaptation of mailing, GEMOS universal bus, GIC, GAC, MGAC
1.0	08/01/2016	CR	Several adaptations
1.1	25/04/2017	CR	Adaptations to GEMOS version 4.5

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