



b.a.b-technologie gmbh

# **DATALOGGER**

## documentation

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# 1 INTRODUCTION

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Product:	Datalogger
Application:	Gateway – Data logging
Type:	REG (DIN Rail mounted)

**DATALOGGER** is a device for DIN rail mounting with an electric power consumption of less than 5W. Actually **DATALOGGER** serves as a gateway between Ethernet LAN and KNX Twisted Pair.

All required software and hardware settings are already stored in the Datalogger. No additional software is needed for operation.

**DATALOGGER** has its own user interface as a LCD display allowing to configure the device without a PC. It has also a configuration web interface reachable from any updated browser. As **DATALOGGER** device is connected to LAN it may be operated from anywhere.

Moreover **DATALOGGER** provides several services which can be configured individually. Those allow you to adapt the device regarding your data logging needs.

In addition **DATALOGGER** can be a full substitution of an IP-Router. KNXnet/IP tunneling and routing can be activated.

## 1.1 FUNCTION SURVEY

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You do not require any special software to configure the Datalogger. For basic requirements you can simply use the LCD display and navigation buttons integrated to the device. Thus, a PC is not necessary.

For depth requirements the web interface allows you to sharpen your configuration and access to specific functions. Any up-to-date standard-internet browser allows you to connect to your Datalogger's web interface.

Following services and configuration are available from the LCD display:

- Network configuration
- General information and configuration (Name, location, Device info., Date and time, language ...)
- KNX configuration
- Export database in XLS, CSV, XML or SQL format to a USB stick or via email
- Reset configuration to factory default
- Update **DATALOGGER** to a new version

Following services and configuration are available from the web interface:

- Network configuration
- General information and configuration (Name, location, Device info., Date and time, language ...)
- Email configuration
- Database configuration
- KNX configuration
- Enable or disable services (Tunneling, Routing)
- Automatically send the database in XLS, CSV, XML or SQL format (daily, weekly or monthly)
- Download the database in XLS, CSV, XML or SQL format

## 1.2 GENERAL INFORMATION ABOUT THE PRESENT MANUAL

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Please note that all information and images published in this manual are without liability. The software described in this manual is developed persistently for the purpose of our customers, so the content in the manual may differ from the actual status.



## 2 INITIAL OPERATION AND INSTALLATION

For initial operation of the device actually valid security information has to be paid attention to.

### 2.1 SAFETY INSTRUCTIONS

Working on low-voltage systems and on the EIB is only allowed to trained and qualified personnel. Installation and connection of the bus mains, the 12 – 30 Volt DC mains as well as the integrated units, have to be performed in accordance with current DIN VDE guidelines as well as the EIB-manual.

This component is intended to be installed for application in distribution boards resp. control panels and can be used for installation in

- Indoor applications,
- Dry rooms,
- Low-voltage distributors,
- Mini-boxes

Doing so, you have to respect the environment-requirements, compliant with the protection class and permitted operating temperature of the EIB-unit.

**The line with integrated choke cannot be used as the operating voltage of 12-30 V DC.**

Safety and regulatory compliance standards:

- DIN EN 55024 Einrichtungen der Informationstechnik (equipments of information technology)
- DIN EN 60950 Sicherheit von Einrichtungen der Informationstechnik. (safety of information technology)
- DIN EN 50090-2-2 Elektrische Systemtechnik für Heim und Gebäude (electrical systems for home and buildings)

CE- qualification according to:

- EMV- Richtlinie (Wohn- und Zweckbau) (EMV-guideline, residential- and functional building)
- EN 50081-1
- EN 50082-2
- EN 50090-2-2

**! Note - Functional security!**

**In case of special requirements regarding risks to life or property (functional safety), appropriate additional measures have to be taken. These measures must have the necessary independence from the operation of the DATALOGGER and always have to be available.**

**Measures to reduce risk you can take from the Tables "Functional safety" of the "Building Control Handbook, Fundamentals" from ZVEH / ZVEI.**

## 2.2 DEVICE OVERVIEW

The image below shows Datalogger.

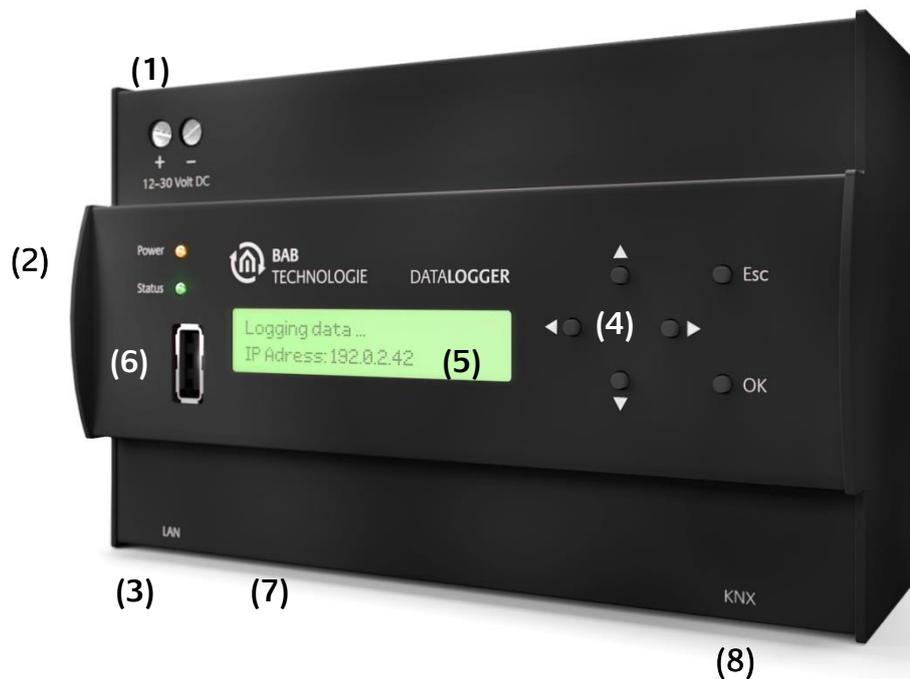


Figure 1: Device Overview

- (1) Power supply 12 - 30 Volt DC
- (2) Signal LEDs
- (3) RJ45-socket for Ethernet LAN
- (4) Navigation buttons
- (5) LCD display
- (6) Front USB socket
- (7) Bottom USB socket
- (8) Connector KNX/EIB

### POWER SUPPLY CONNECTOR

The power supply connector takes place in the top left corner. Please be careful of voltage and polarity.

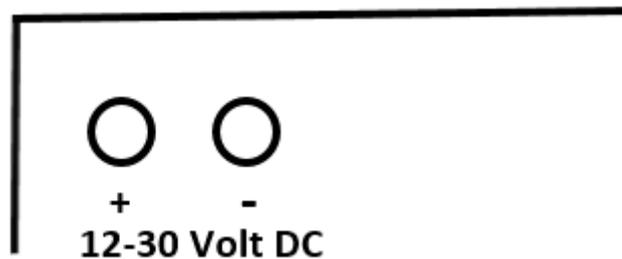


Figure 2: Power supply connector

## BUS 2 (TWISTED PAIR) CONNECTOR

The BUS 2 connector takes place in the right corner on the bottom side. It is used for KNX Twisted Pair. Please be careful of the polarity.

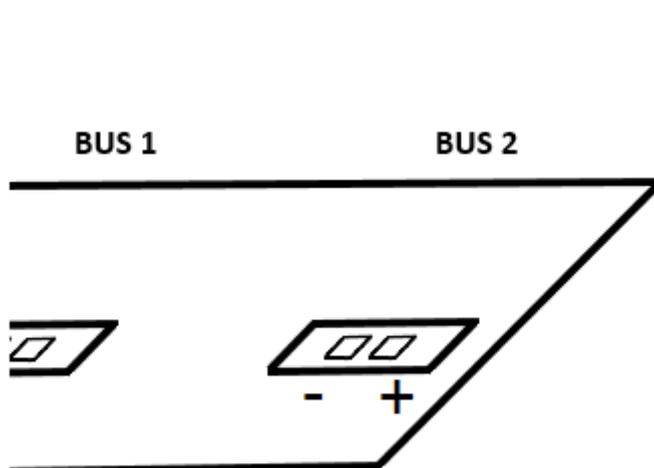


Figure 3: BUS 2 connector

## NAVIGATION BUTTONS

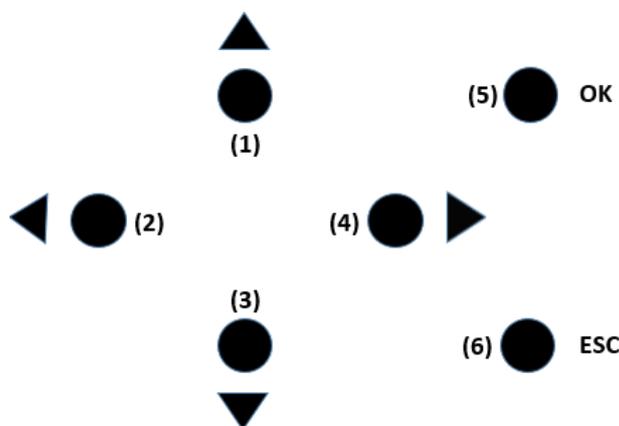


Figure 4: Navigation buttons

- (1) Up button (navigate to upper menu, decrease numbers, precedent letter of alphabet)
- (2) Left button (go left for configuration of KNX and IP addresses, hosts, names ...)
- (3) Down button (navigate to lower menu, increase numbers, next letter of alphabet)
- (4) Right button (go right for configuration of KNX and IP addresses, hosts, names ...)
- (5) OK button (navigate to next menu, confirm a configuration, get out of a pure informative field such as "Device info" or "Free memory")
- (6) ESC button (navigate to precedent menu, erase a character of the string you are configuring such as "Name" string or "Host" string, stop error/warning/info messages when they occur)

A long press on Up or Down button allows you to scroll faster.

## SIGNAL LEADS

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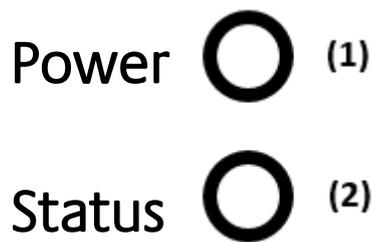


Figure 5: Signal LEDs

- (1) Power LED
- (2) Status LED

### POWER LED

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- The Power LED turns green when the device is totally started and usable.
- The Power LED turns red and back to green each time a telegram is received and logged.
- During update process the power LED may blink red.

### STATUS LED

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- The Status LED turns green when the device is totally started and usable.
- The Status LED blinks red in case of error, warning or info messages.
- The Status LED blinks yellow during database's export process.
- During update process the Status LED may blink red or yellow.

## USB SOCKETS

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Two USB sockets on the front and the bottom side are available on the Datalogger. Both of them allow you to plug a USB flash drive in order to export the database or update the Datalogger.



## 2.3 INSTALLATION

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When mounting the device and during the initial operation please take care and note the following information to prevent any risk.

### **Attention!**

Device may be destroyed in case of wrong use. Operations under voltage may cause residual voltage. Before connecting the device please disconnect the installation environment from voltage.

Please pay attention, that DATALOGGER is protected against polarity reversal, but not against surge voltage. In case excessive voltage will be connected, DATALOGGER can be destroyed.

## GENERAL

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### **Environment**

Voltage:	12 - 30 Volt DC
Power consumption:	<= 5 W
Climate persistent:	acc to EN 50090-2-2
Ambient temperature:	0 - 45°C
Rel. humidity (not condensing):	5% - 80%

### **Plugging the device**

Snap the device onto the top-hat rail acc to 60715

### **Power supply**

Please care for sufficient performance when selecting the power supply. DATALOGGER needs 300mA at 12 Volt DC during the boot phase!

Connect the power supply according to the marking with the spring clips

For power supply, the non-choked output of an EIB-power supply can be used, if available. (Please consider of adequate power reserves).

To supply the DATALOGGER Power Over Ethernet (POE) can be used. Plug in the network cable (LAN) into the RJ 45- connector.

### **Ethernet**

For programming the DATALOGGER it is necessary to access via LAN. This can be done both using an existing LAN network or via direct connection. Plug in the network cable (LAN) into the RJ 45- connector.

### **Prerequisites of the Client PC**

If you need to configure DATALOGGER with the web interface, a PC with network adapter and an up-to-date browser is necessary.

### **ETS**

DATALOGGER does not require ETS application. BCU does not require programming. However for the best use of Datalogger, KNX group address information are necessary. To import them into DATALOGGER the ETS version 4 is needed.

The device warms up during operation. Take care about the maximum ambient temperature and for sufficient thermal discharge. If a SMTP server is configured (see "E-Mail: SMTP Server"), an email will be send to you if the maximum temperature (90°C) is reached. Otherwise an error message will be displayed on the LCD display. You can check the temperature on the LCD menu (see "General") or in the web interface (see "Info").



## ADDITIONAL FOR KNX

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To establish optimum operating conditions and performance the **DATALOGER** should be connected to the KNX bus system (BUS 2). It is of prior importance that the device is supplied with bus voltage; real devices on the bus system are not needed.

### Plugging the device

- Connect the bus wire with the connector on the BUS 2 connector
- Switch on the bus voltage

## OPERATIONAL READINESS

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When all connections are made correctly the device may be supplied with power. Please wait until the device has booted completely before checking the correct installation. The boot phase takes about 3 minutes. Have a look at signal LEDs. Both of them should be green. In addition the menu should appear on the LCD screen and you should be able to navigate to the menu thanks to the navigation buttons.

## 2.4 INITIAL OPERATION

---

When the device is booted up proper it can be put into operation. For this, it may happen that some basic settings have to be adjusted. These settings have to be made via the LCD screen or the web interface.

## LCD CONFIGURATION

### DATE AND TIME

---

**DATALOGER** needs date and time to be set in order to initialize the database. If at first boot time it is not able to connect to a NTP server in order to get the right date and time, it will display the warning message "Please configure date and time".

To configure date and time use the navigation buttons and go to "Configuration" > "General" > "Date and time" > "Set DateTime". You have there three submenus "Date", "Time" and "Save". Go to "Date", configure the right date. When it is done, press "OK" button. You should see a "OK" field on the display, press "OK" button again to confirm your configuration. You should be back to the three submenus "Date", "Time" and "Save".

To configure time, go to "Time", configure the right time. When it is done, press "OK" button. You should see a "OK" field on the display, press "OK" button again to confirm your configuration. . You should be back to the three submenus "Date", "Time" and "Save".

To save your configuration, go to "Save" and press "OK" button. To check that date and time has been correctly set, go to "Configuration" > "General" > "Date and time" > "Get DateTime"

Date and time will be then internally saved. You should not have to configure them again.

### NETWORK

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In order to configure the network, go thanks to the navigation buttons to "Configuration" > "Network". There, for a fast configuration of the network, you can use DHCP. Go to "DHCP" > "Enable". You can then find out the IP address assigned to your device in "Configuration" > "Network" > "IP Address".

You can also manually configure the network. In "Configuration" > "Network", set up the IP-Address / Netmask / Default Gateway / DNS Server(s) / NTP server(s). You can configure up to three DNS and NTP servers.



For IP-Address / Netmask / Default Gateway go to the corresponding menu, configure it and go to “OK”. For example to configure the IP-Address go to “Configuration” > “Network” > “IP Address”. Configure the right IP-Address and press the “ok” button. You should see now “OK” on the LCD display, press again the “OK” button to confirm.

For DNS Server(s) go to “Configuration” > “Network” > “DNS”. You have there access to the list of configured DNS server(s). If you press the “OK” button you are able to edit the current configured DNS server (“Edit”), to add a new DNS server (“Add IP”) or to remove the current DNS server (“Remove”). Go for example to “Edit“, configure a DNS server address and confirm with “OK”.

For NTP Server(s) go to “Configuration” > “Network” > “NTP”. You have here access to the list of configured NTP server(s). If you press the “OK” button you are able to edit the current configured NTP server (“Edit”), to add a new NTP server address (“Add IP”), to add a new NTP server hostname (“Add Host”) or to remove the current NTP server (“Remove”). Go for example to “Edit“, configure a NTP server and confirm with “OK”.

As soon as you have configured all your Network settings, go to “Save”. The network settings are now updated.

## GENERAL

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In order to configure the name of your Datalogger, go to “Configuration” > “General” > “Name”. You see now the default name of your device and you can edit it. If you press “OK” button again you can change the case (lowercase, number, special character) and save. As soon as you save the name setting is updated. This name will be the name of the KNXnet/IP server visible on ETS and your hostname. Therefore you will be able to access to the web interface with the hostname “[Name].local” or the IP address you have configured.

For example the default name is “datalogger”. You should be able to access to the web interface when you type “datalogger.local” in your browser. In addition “datalogger” should be one of the visible KNXnet/IP servers in ETS.

**Only lowercase, numbers and minus ('-') are allowed for the Datalogger's name.**

You have access to many information in this “General” menu. “Device info”, “Date and time”, “Free memory” (this is the rest of memory available in the device for the database), “Temperature” (internal temperature, should never be over 90°C).

To configure the timezone of your device go to “Configuration” > “General” > “Location”. Choose the right location and save.

You are also able to change the language of your Datalogger. English, German and French are available. Go to “Configuration” > “General” > “Language” and choose the language.

“Debug Level” is available in case of problem for debugging purpose.

## KNX

---

In order to configure the KNX individual address of your Datalogger, go to “Configuration” > “KNX” > “Phy Addr”. You see now the default KNX address of your device. Set the KNX address according to your KNX topology and save. As soon as you save the KNX individual address setting is updated. This address will be the KNX individual address of the KNXnet/IP server.



## WEB INTERFACE

### ACCESS TO THE WEB INTERFACE

---

The **DATALOGGER** is delivered with factory-made settings. In order to access to the web interface, type the default IP address or the default hostname in your browser:

- Default IP address => **192.168.1.225**
- Default hostname => **datalogger.local**

### LOG IN TO THE WEB INTERFACE

---

Connect to Datalogger's configuration page is protected by username and password. In delivery status the following access data is valid:

Area:	Username	Password:
Configuration:	admin	admin

**Enter now the default username "admin" and password "admin". After logging in, you reach the menu page.**

At any moment you can go back at the beginning of the web interface, clicking on the "BAB TECHNOLOGIE" logo.



Figure 6: BAB TECHNOLOGIE Logo

### USER ADMINISTRATION

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In the Web interface, go to "Configuration" -> "User Administration" you can modify the admin user or configure new ones.

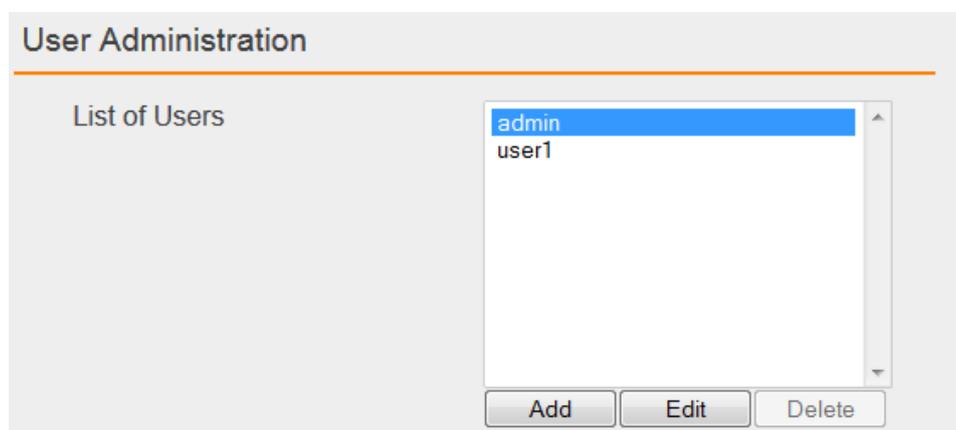


Figure 7: User Administration

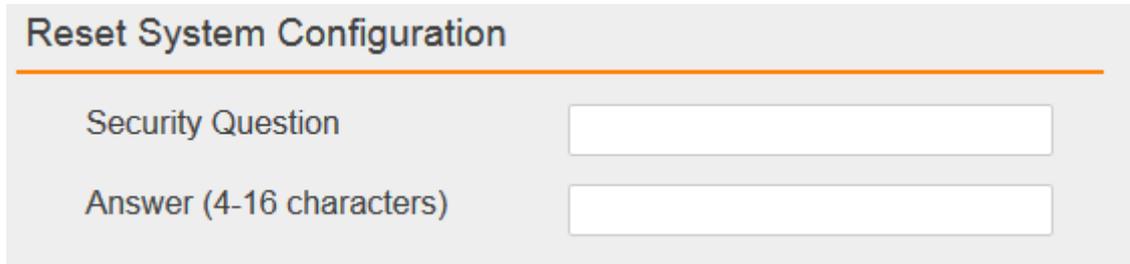
Click on "Add" to add a new user. A new window appears where you have to enter the user name and the password twice.

To just modify the admin user, click on “admin”, then click on “Edit”. A new window appears where you can modify the admin user name and enter the new password twice.

## RESET CONFIGURATION SETTINGS

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In the web interface go to “Configuration” -> “User Administration” to configure your security question.



The screenshot shows a web interface titled "Reset System Configuration". Below the title, there are two input fields. The first field is labeled "Security Question" and the second field is labeled "Answer (4-16 characters)".

Figure 8: Reset Configuration

If you realize your configuration is totally wrong and for example you are not able to access to the web interface anymore, you can reset the configuration to factory.

In the LCD menu, navigate to “Reset Config”. The security question you have been configuring appears on the LCD display. Push “OK” button to answer. Write your answer. If you push “OK” again you can write numbers or special characters. Press “OK” again to confirm your answer. If your answer is right, the configuration will be reset to factory otherwise an error message will be displayed.

## BACKUP / RESTORE CONFIGURATION

---

At any moment you can create a backup of your configuration and restore it in case of problem or after an update for example.

In the web interface go to “Configuration” -> “Backup / Restore”. Click on “Create a Backup” and save the file in a safe place. To restore it, click on “Browse”, search for your backup file and click on “Restore”.



The screenshot shows two sections: 'Backup Settings' and 'Restore Settings'.  
**Backup Settings:** Includes a 'Modules' field with 'Configuration' selected (checked checkbox), a 'Comment' text area, and a 'Create a Backup' button.  
**Restore Settings:** Includes a 'Select Backup' field with a 'Browse...' button and 'No file selected.' text, a 'Modules' field with 'Configuration' selected (unchecked checkbox), a 'Backup creation date' text field, a 'Comment' text area, and a 'Restore' button.

Figure 9: Backup / Restore

## DATE AND TIME

**DATALOGGER** needs date and time to be set in order to initialize the database. If at first boot time it is not able to connect to a NTP server in order to get the right date and time, it will display the error message "Please configure date and time".

To configure date and time, in the web interface go to "Configuration" -> "General". Click on the datetime button in the "Systemtime" field. A window will open and ask for "synchronize with pc time", click on "OK". Date and time will be then internally saved. You should not have to configure them again.

The screenshot shows the 'General' configuration page with the following fields:  
**Device Name:** datalogger  
**Location:** Europe/Berlin (dropdown menu)  
**Display-Language:** English (dropdown menu)  
**Systemtime:** 2013-11-12 19:13 (button)

Figure 10: Date and Time

## NETWORK

In the Web interface, go to “Configuration” -> “Network”. You can set the IP address, the netmask, the gateway, and up to three DNS and NTP servers.

The screenshot shows the 'Network' configuration page. It is divided into three sections: 'Network', 'DNS Server', and 'NTP Server'.  
- In the 'Network' section, there is a checkbox for 'DHCP' which is unchecked. Below it are input fields for 'IP-Address' (192.168.1.225), 'Netmask' (255.255.255.0), and 'Gateway' (192.168.1.254).  
- In the 'DNS Server' section, there are three input fields for 'DNS Server #1' (192.168.1.1), 'DNS Server #2', and 'DNS Server #3'.  
- In the 'NTP Server' section, there are three input fields for 'NTP Server #1' (0.de.pool.ntp.org), 'NTP Server #2', and 'NTP Server #3'.

Figure 11: Network Configuration

## CHECK IP ADDRESS

The screenshot shows the 'Check IP address' page. It features a text input field labeled 'IP address / Hostname:' containing 'google.com'. To the right of the input field, the text 'Found' is displayed next to a small green square. Below the input field is a button labeled 'Ping'.

Figure 12: Check IP address

You are also able to check whether an IP address or hostname is available by pinging it. Type the IP address or the hostname you want to check in the “IP address / Hostname” field and press on the “Ping” button. If it is found and available, “Found” will be written and the little square will turn green. Otherwise, “Not found” will be written and the little square will turn red.

## GENERAL



In the Web interface, go to “Configuration” -> “General”. You can set the “Device Name”, the “Location” and the “Display-Language” of your Datalogger.

Device Name	<input type="text" value="datalogger"/>
Location	<input type="text" value="Europe/Berlin"/>
Display-Language	<input type="text" value="English"/>
Systemtime	<input type="text" value="2013-11-12 19:13"/>

Figure 13: General configuration

## KNX

In the Web interface, go to “Configuration” -> “KNX”.

### KNX DATE / TIME

In order to synchronize Datalogger’s time to a KNX Date / Time device, enter both KNX group addresses in the “KNX Date / Time” settings.

Groupaddress Date	<input type="text" value="2/2/91"/>
Groupaddress Time	<input type="text" value="2/2/92"/>

Figure 14: KNX Date / Time

### PHYSICAL AND KNXNET/IP TUNNELING ADDRESS

Physical Address	<input type="text" value="4.7.0"/>
KNXnet/IP Tunneling Address	<input type="text"/>
Groupaddress format	<input type="text" value="3 Level (xx/y/zzz)"/>

Figure 15: KNX

As soon as you save the configuration. This physical address will be the KNX individual address of the KNXnet/IP server. And each Tunneling address you configured will be assigned to a Tunneling connection.

## ETS 4 PROJECT UPLOAD

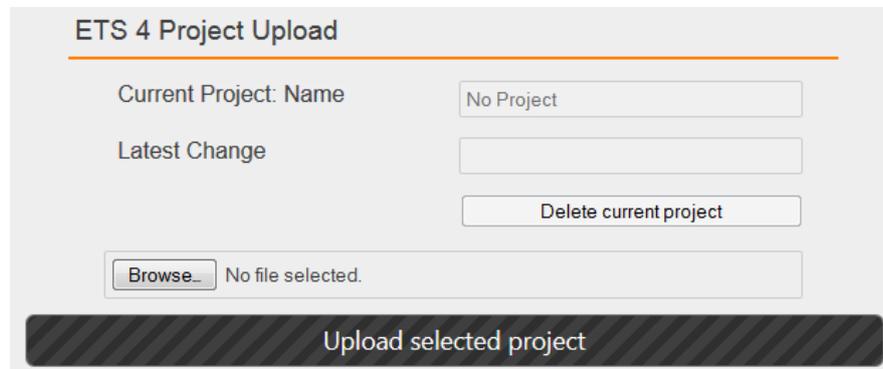


Figure 16: Upload ETS 4 Project File

It is possible from ETS 4 to export an archive with the extension “.knxproj” which contains many information about your KNX installation. For example in ETS 4 you are able to configure the Data Type. A KNX switch device could be a Data Type “on/off” for instance. This information will be in the archive “.knxproj”. To export this archive, in ETS4 go to “Projects”, select your project, click on export.

You can from the web interface, import the archive so that all those useful information are available directly from the database.

Click on “Browse” and search for the archive you have exported from ETS 4. Finally click on “Upload selected project”.

Uploading an ETS 4 project allows you to get your KNX topology information in your database. Thus, you can know exactly the DatapointType of your data. In addition in “dw\_knx\_groupaddress” and “dw\_knx\_grouprange” tables (see “Database overview”), you would get your KNX topology hierarchy.

## CHECK KNX PHYSICAL ADDRESS

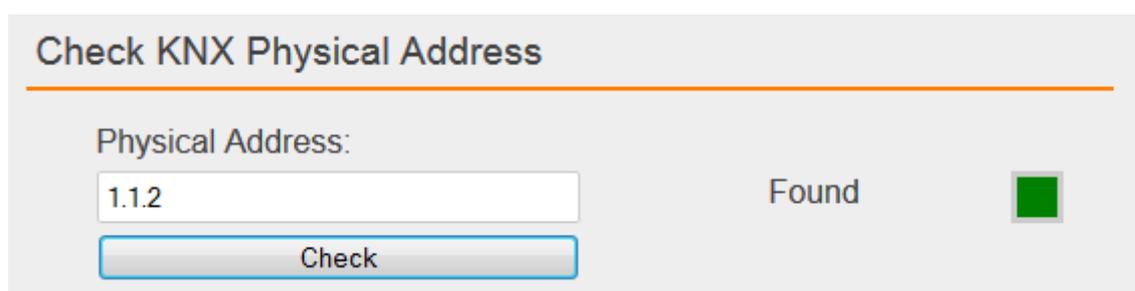


Figure 17: Check Physical Address

You are also able to check whether a KNX Physical Address is available, exactly as you do in ETS4. Type the KNX Physical Address you want to check in the “Physical Address” field and press on the “Check” button. If a KNX device with this Physical Address is found and available, “Found” will be written and the little square will turn green. Otherwise, “Not found” will be written and the little square will turn red.

## SERVICES

In the Web interface, go to “Configuration” -> “Services”. Tunneling and Routing are KNXnet/IP services. They can be enable or disable.



In addition services provide “Device control” with “Restart” and “Reboot” buttons. “Restart” only restarts the necessary softwares such as the webserver whereas “Reboot” executes a total reboot of the device.

Finally, in the logs area you can read any error, warning or info received from the device. One hundred logs are internally saved with a timestamp so that you know exactly when a log occurred and you are able to follow the evolution in case of problem. You can clear these logs with the button “Clear”.

**Services**

KNXnet/IP Tunneling

KNXnet/IP Routing

**Device control**

Restart Software

Reboot Device

**Logs display**

2 - error: KNX bus: EIB bus could be disconnected. - 2014-06-16 10:44:25

Clear logs

Figure 18: Services

## E-MAIL

In the Web interface, go to “Configuration” -> “E-Mail”.

### E-Mail: SMTP Server

To be able to send e-mail, a SMTP server needs to be configured.

### E-Mail: SMTP Server

SMTP Server	<input type="text" value="mail.gmx.net"/>
SMTP Port	<input type="text" value="25"/>
TLS	<input type="text" value="REQUIRED"/>
From Name	<input type="text" value="MyName"/>
From Address	<input type="text" value="example@gmx.de"/>
Use Authentication	<input checked="" type="checkbox"/>
Username	<input type="text" value="example@gmx.de"/>
Password	<input type="password" value="....."/>
Repeat Password	<input type="password" value="....."/>
Realm	<input type="text"/>
Max. Attachment Size	<input type="text" value="500KB"/>
Test recipient	<input type="text" value="example@gmail.com"/>
Send test Email	<input type="button" value="Send test Email"/>

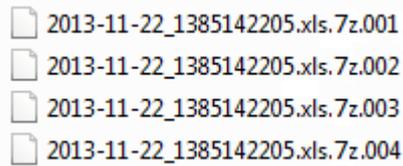
Figure 19: SMTP Server

Before even saving your SMTP configuration, you can enter a test recipient and click on “Send test Email”. If you receive the test email to that recipient, it means your SMTP server is well configured. Otherwise check your SMTP configuration and/or your network configuration.

A maximum attachment size needs to be set. If this one is reached while an email has to be sent, this attachment is splitted in several peaces. Each peace size is equal or less than the maximum attachment size. Each peace of attachment is sent in a different email. In the email subject, an indication is added to know how many peaces needs to be sent. For example:

- My Subject - Part 1 of 4
- My Subject - Part 2 of 4
- My Subject - Part 3 of 4
- My Subject - Part 4 of 4

In order to re-create the attachment and access to the data, you have first to extract each attachment of each email to the same directory. Each attachment has the extension “.7z.00x” where ‘x’ is the number of the peace.



Then, you need the software “7zip”. It can be downloaded from that link: <http://www.7zip.org/download.html>. Open it and add every peace of attachment:

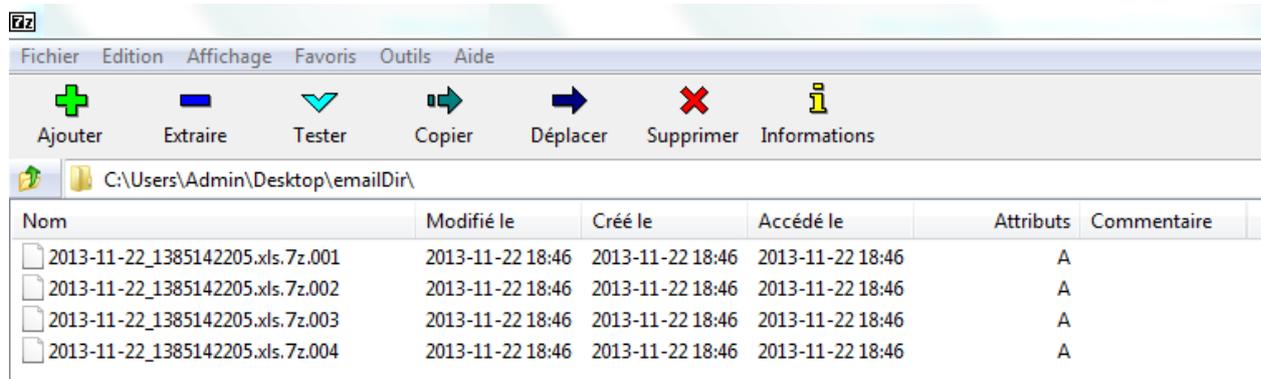


Figure 20: 7zip

Finally, select all peaces of attachment in 7zip and click on “Extract”. Your original attachment will be regenerated.

## E-Mail Export via Display

To export the database and send it via e-mail from the LCD display, you need to configure an email export.

### E-Mail Export via Display

Subject	<input type="text" value="KNX Data"/>
Body	<input type="text" value="Data from LCD display"/>
Recipients	<input type="text" value="example@email.com"/> <input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
Format	<input type="text" value="Excel (.xls)"/>
Compression	<input type="text" value="ZIP"/>
ZIP-Password	<input type="password" value="....."/>
Repeat Password	<input type="password" value="....."/>

Figure 21: E-Mail Export

## ALARMS

In the Web interface, go to “Configuration” -> “Alarms”.

### ALARMS GROUP ADDRESSES

#### Alarms Configuration

This field contains the list of alarms you have configured, up to 50 alarms.

### Alarms group addresses

Alarms configuration:	<input type="text" value="14/2/5 - Limit = 30 - (&gt;=)"/> <input type="text" value="14/2/5 - Limit = -1 - (&lt;=)"/> <input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
-----------------------	--

Figure 22: Alarms list

Click on “Add” to add a new alarm, on “Edit” to edit an existing alarm and on “Delete” to delete an alarm. An alarm is specified by a KNX group address, a limit value and a comparator “<=” or “>=”. For example click on “Add” in order to add a new alarm.

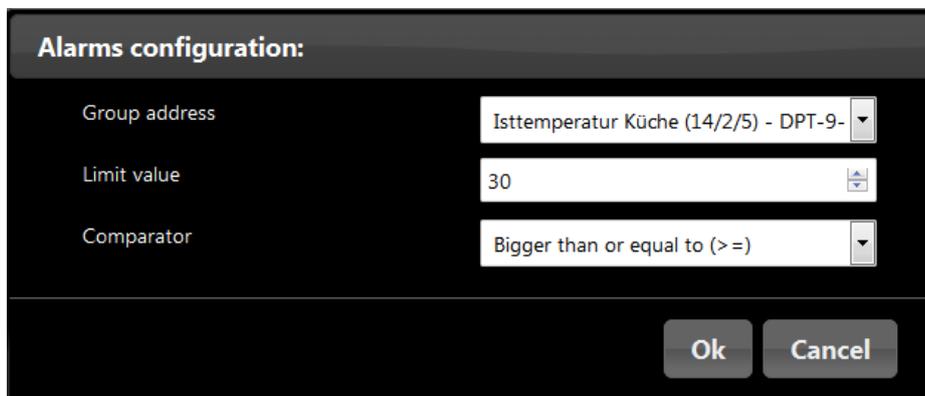


Figure 23: Alarm configuration

In the "Group address" field, you can choose a group address in the list. This list contains every group addresses in your ETS4 project having its datatype configured.

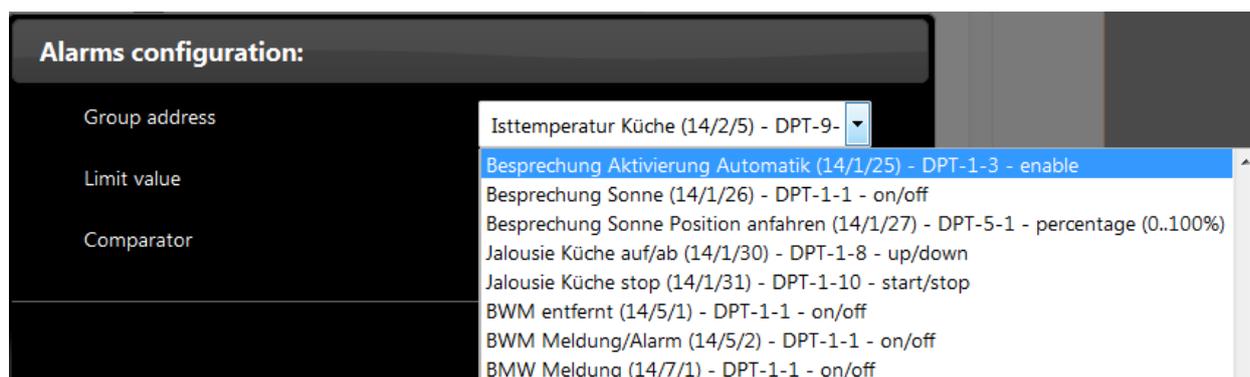


Figure 24: Group addresses list

#### Attention:

**You must import an ETS4 project containing the group addresses used as alarms. In addition the datatype of each group address needs to be configured. Indeed without the datatype there is no way to interpret the raw data contained in the KNX telegram as a real value. Thus, no way to compare it with the limit value. In this example the group address “14/2/5” has the datatype “temperature (°C)”. Therefore if the temperature received via this group address is bigger than or equal to 30°C, an alarm will occur.**

After configuring this new alarm, click on “Ok”. From now every time a KNX telegram will be received with the group address “14/2/5”, if the value contained in this telegram is bigger than the limit value or equal to the limit value, an alarm will occur.

Another alarm is added. If the temperature received via the group address “14/2/5” is less than or equal to -1°C, an alarm will occur.

#### Alarm States

The “State of group address alarm” field displays the current state of configured alarms. A state contains one text field containing information about the alarm:

- Name given to the group address in the ETS4 project + group address
- The current value

- The limit value
- The datatype
- The unit

It contains also a list of date/value. Those are datetimes when an alarm occurred and with which value the limit has been reached. Finally an “Empty dates” button will simply clear the list of date/value.

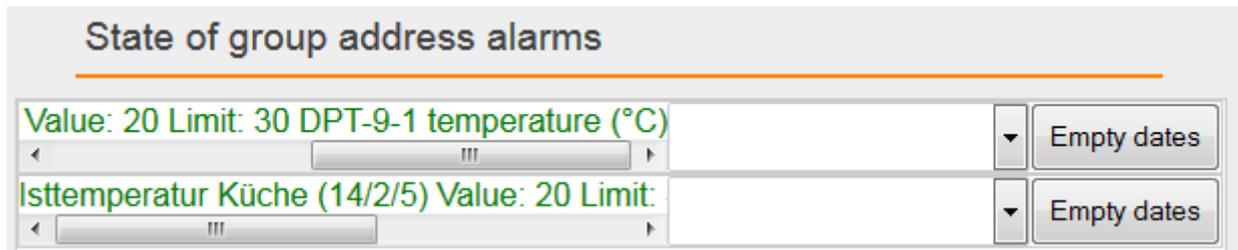


Figure 25: Alarm States Green

Every time a telegram is received with a group address configured as alarm, the alarm state is updated. If limit values are respected the text color stays or turns green. Otherwise if the limit values are reached the text color stays or turns red.

### Alarm notification

If an alarm occurs, it will be notified by different processes. For example a temperature of 32.5°C is received via the group address “14/2/5”. The limit value 30°C is reached, an alarm occurs.

First of all the “Alarm States” field is updated. The first alarm turns red and a Date/Value entry is added to the list.

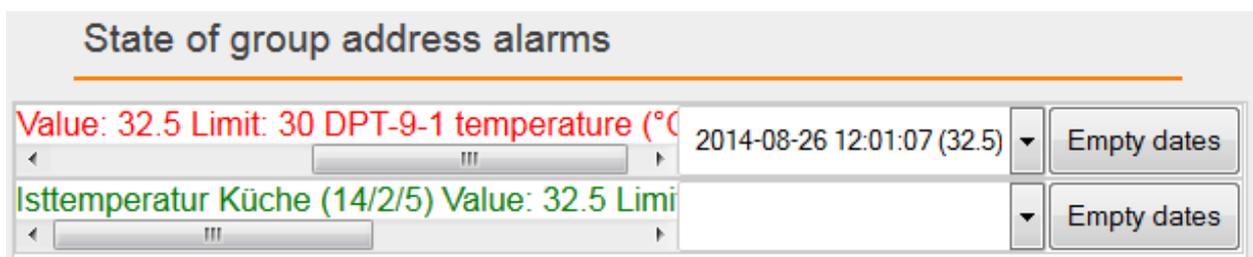


Figure 26: Alarm State Red

Then, a warning message is displayed on the LCD screen. This message specifies every information about the alarm and the current value. Finally if your SMTP server is configured, you receive an email. This email contains every information about the alarm and the current value. Another email will be sent if the value returns back to normal.

## ALARMS PHYSICAL ADDRESS

### Alarms Configuration

This field contains the list of alarms you have configured, up to 50 alarms.

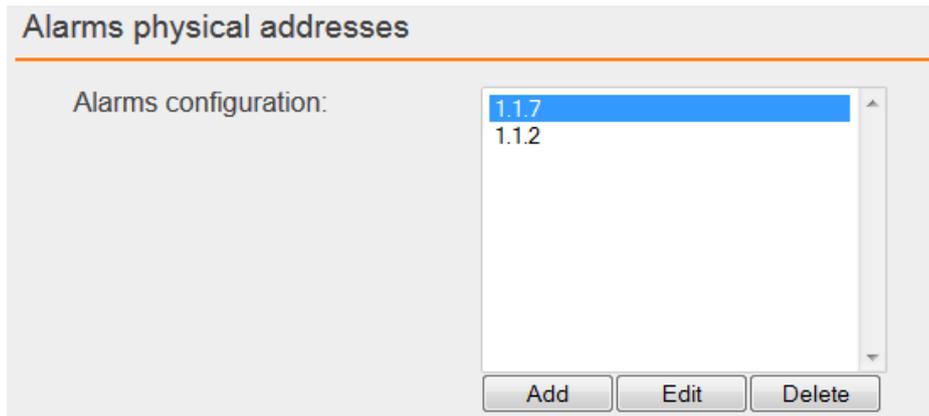


Figure 27: Alarms list

Click on “Add” to add a new alarm, on “Edit” to edit an existing alarm and on “Delete” to delete an alarm. An alarm is specified by a KNX Physical Address and a period for which this physical address will be checked. For example click on “Add” in order to add a new alarm.

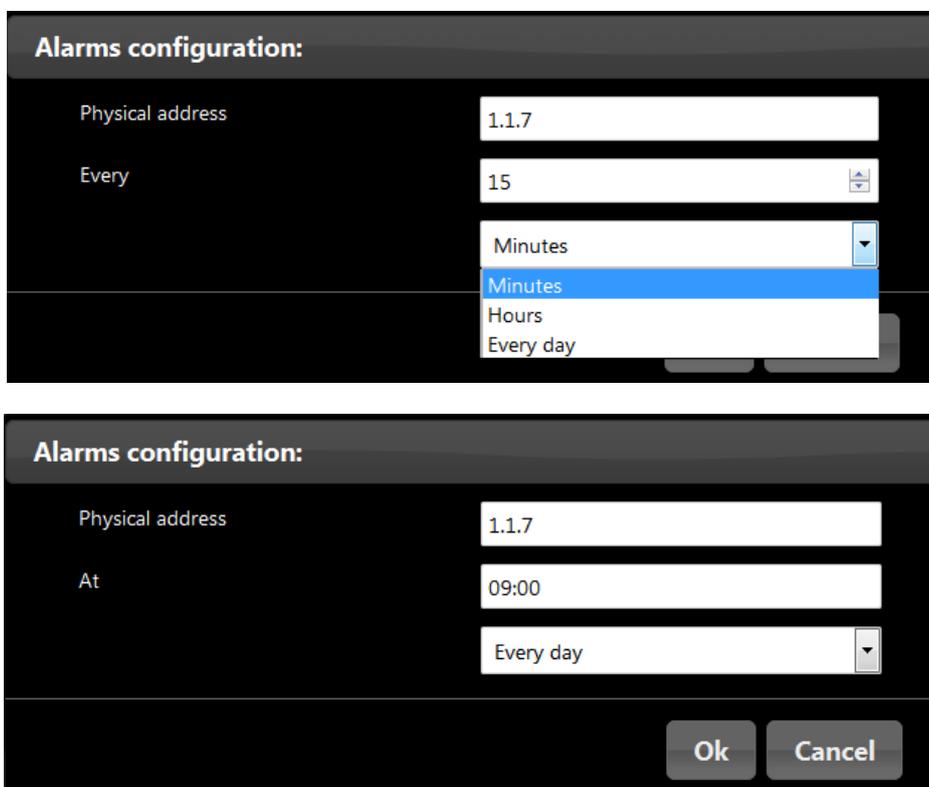


Figure 28: Alarm configuration

In the "Physical address" field, you can enter the KNX physical address you want to link an alarm to. Then, you have to configure the check period:

- Every x minutes, where x is the period in minute (from 15 to 59 minutes)
- Every x hours, where x is the period in hour (from 1 to 23 hours)
- Every day at x, where x is the time at which the physical address will be checked every day.

After configuring this new alarm, click on “Ok”. For this example we check the address 1.1.7 every day at 12:17. Another alarm is added. Physical address 1.1.2 every five hours.

## Alarm States

The “State of physical address alarm” field displays the current state of configured alarms. A state contains one text field containing information about the alarm:

- The KNX physical address

It contains also a list of date. Those are datetimes when an alarm occurred. Finally an “Empty dates” button will simply clear the list of dates.

State of physical address alarms			
1.1.7		▼	Empty dates
1.1.2		▼	Empty dates

Figure 29: Alarm States Green

Each time these physical addresses are checked, the alarm state is updated. These physical addresses are checked according to the period you have chosen but also when you check directly the physical address (see "Check KNX Physical Address"). If the physical address is found and available the text color stays or turns green. Otherwise the text color stays or turns red.

### Alarm notification

If an alarm occurs, it will be notified by different processes. First of all the “Alarm States” field is updated. The first alarm turns red and a Date entry is added to the list.

State of physical address alarms			
1.1.7	2014-08-26 12:17:06	▼	Empty dates
1.1.2		▼	Empty dates

Figure 30: Alarm State Red

Then, a warning message is displayed on the LCD screen. This message specifies every information about the alarm. Finally if your SMTP server is configured, you receive an email. This email contains every information about the alarm. Another email will be sent if the physical address is available again during the next test.

#### **Attention:**

**Every KNX physical addresses linked to alarms are checked one first time, as soon as you save the configuration. Therefore, be aware that you will trigger alarms if these physical addresses are not available when you configure these alarms.**

## ALARMS IP ADDRESS

### Alarms Configuration

This field contains the list of alarms you have configured, up to 50 alarms.

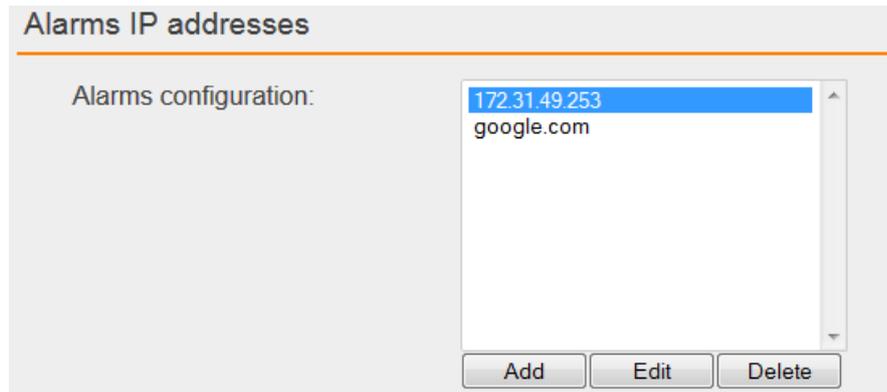


Figure 31: Alarms list

Click on “Add” to add a new alarm, on “Edit” to edit an existing alarm and on “Delete” to delete an alarm. An alarm is specified by an IP Address or hostname, and a period for which this IP Address or hostname will be checked. For example click on “Add” in order to add a new alarm.

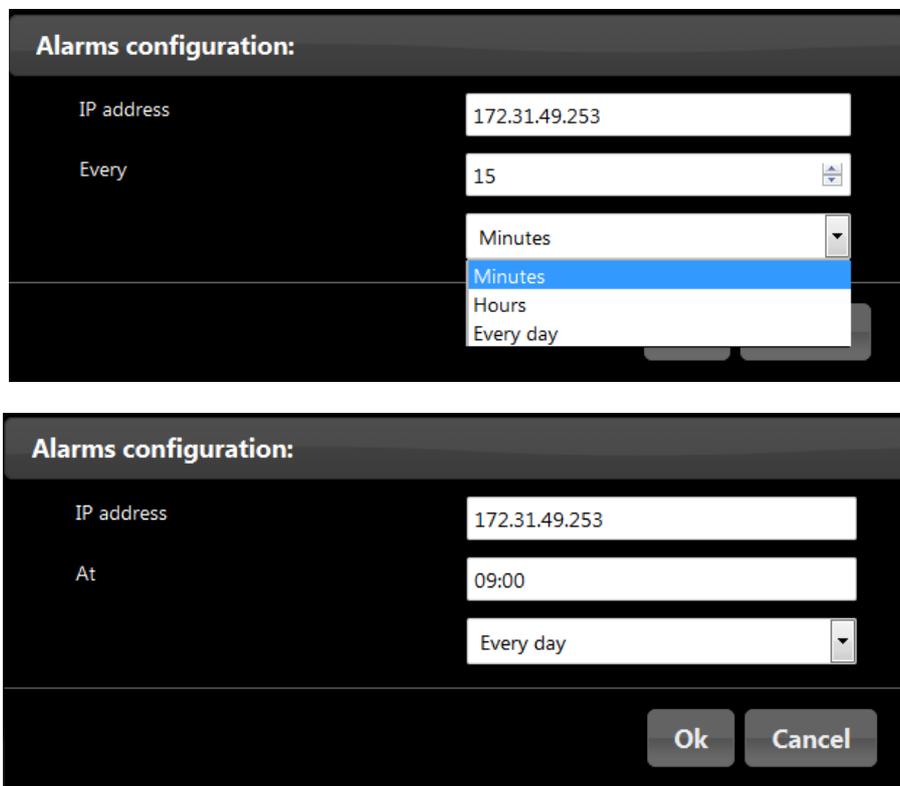


Figure 32: Alarm configuration

In the "IP address" field, you can enter the IP Address or hostname you want to link an alarm to. Then, you have to configure the check period:

- Every x minutes, where x is the period in minute (from 15 to 59 minutes)
- Every x hours, where x is the period in hour (from 1 to 23 hours)
- Every day at x, where x is the time at which the physical address will be checked every day.

After configuring this new alarm, click on “Ok”. For this example we check the address 172.31.49.253 every day at 13:02. Another alarm is added. Hostname "google.com" every hour.

### Alarm States

The “State of IP address alarms” field displays the current state of configured alarms. A state contains one text field containing information about the alarm:

- The IP address or hostname

It contains also a list of dates. Those are datetimes when an alarm occurred. Finally an “Empty dates” button will simply clear the list of dates.

State of IP address alarms			
172.31.49.253		▼	Empty dates
google.com		▼	Empty dates

Figure 33: Alarm States Green

Each time these IP addresses are checked, the alarm state is updated. These IP addresses are checked according to the period you have chosen but also when you check directly the IP address (see "Check IP address"). If the IP address is found and available the text color stays or turns green. Otherwise the text color stays or turns red.

### Alarm notification

If an alarm occurs, it will be notified by different processes. First of all the “Alarm States” field is updated. The first alarm turns red and a Date entry is added to the list.

State of IP address alarms			
172.31.49.253	2014-08-26 13:02:07	▼	Empty dates
google.com		▼	Empty dates

Figure 34: Alarm State Red

Then, a warning message is displayed on the LCD screen. This message specifies every information about the alarm. Finally if your SMTP server is configured, you receive an email. This email contains every information about the alarm. Another email will be sent if the IP address is available again during the next test.

#### Attention:

**Every IP addresses or hostnames linked to alarms are checked one first time, as soon as you save the configuration. Therefore, be aware that you will trigger alarms if these IP addresses are not available when you configure these alarms.**

### INFO

In the web interface go to the main menu “Info”. You can there check many information such as “Version”, “Serial Number”, “Temperature (System)” ...

## 3 DATABASE

### 3.1 INTRODUCTION



**DATALOGGER** logs data into a MySQL database. This database takes place in a 7 GB internal USB flash drive. It is able to log data up to ten telegrams per second. That represents about 1000 hours of data logging at full speed (36 million telegrams). The user is also able to log data into his own database.

## 3.2 DATABASE OVERVIEW

---

The database contains three tables:

- dw\_knx\_groupaddress
- dw\_knx\_grouprange
- eib\_tele\_<year>\_<month>

### DW\_KNX\_GROUPADDRESS

---

This table contains all information about group addresses on your KNX installation. These information come from the archive you have uploaded. This is field details:

- id
- parent\_id
- title
- address\_id
- address
- datatype
- unit

#### 3.2.1.1 ID

---

This field represents the number of your group address.

#### 3.2.1.2 PARENT\_ID

---

This field represents the number of the group range that your group address is part.

#### 3.2.1.3 TITLE

---

This field is the name of your group address.

#### 3.2.1.4 ADDRESS\_ID

---

This field is the address id of your group address. It is a part of KNX specification.

Level 3:

Id = main x 2048 + middle x 256 + address

Level 2:

Id = main x 2048 + address

Free:

Id = address

Example:

1/1/2 => 1 x 2048 + 1 x 256 + 2 = 2306

#### 3.2.1.5 ADDRESS

---

This field is the address of your group address.



### 3.2.1.6 DATATYPE

---

This field is the datatype of your group address.

For example:  $\text{DPT} - \underline{1} - \underline{1}$   
(1) (2) (3)

- (1) Means Datapoint Type
- (2) KNX type
- (3) KNX sub-type

### 3.2.1.7 UNIT

---

This field is the unit of values coming from your group address.

This is an example:

id	parent_id	title	address_id	address	datatype	unit
GA-1	GR-2	Switch1	2305	1/1/1	"DPT-1-0"	"on/off"

## DW\_KNX\_GROUPRANGE

---

This table contains all information about the topology of your KNX installation. These information come from the archive you have uploaded. This is field details:

- id
- parent\_id
- title
- range\_end
- range\_start

### 3.2.1.8 ID

---

This field is the number of the current group range.

### 3.2.1.9 PARENT\_ID

---

This field is the number of the parent group range.

### 3.2.1.10 TITLE

---

This field is the name of your group.

### 3.2.1.11 RANGE\_END

---

This field is the end number of the group range.

### 3.2.1.12 RANGE\_START

---

This field is the start number of the group range.

This is an example:

id	parent_id	title	range_end	Range_start
GR-1	NULL	Main	8191	6144
GR-2	GR-1	Middle	6399	6144



## EIB\_TELE\_<YEAR>\_<MONTH>

---

These tables contain all telegrams coming from KNX installation. As well from KNX Twisted pair as from KNXnet/IP. A new table is created every month, “eib\_tele\_2013\_10” for instance. This is field details:

- id
- service
- channel
- ip\_address
- port
- source\_id
- source
- destination\_id
- destination
- apdu
- apci
- raw\_data
- value
- unit
- priority
- last\_time

### 3.2.1.13 ID

---

The field “id” represents the number of the telegram.

### 3.2.1.14 SERVICE

---

A telegram may come from twisted pair, KNXnet/IP Routing or KNXnet/IP Tunneling. Thus, this field can take three values:

- TWISTED\_PAIR
- ROUTING
- TUNNELING

### 3.2.1.15 CHANNEL

---

This field represents the number of the Tunneling connection that a telegram comes from. **DATALOGGER** supports up to ten connections. This field is NULL if the telegram comes from Twisted Pair or Routing.

### 3.2.1.16 IP\_ADDRESS AND PORT

---

If a telegram comes from KNXnet/IP, these fields are the IP address and the port of the device that the telegram comes from. If a telegram comes from Twisted Pair, these fields are NULL.

### 3.2.1.17 SOURCE\_ID AND SOURCE

---

These fields are the KNX individual address where the telegram comes from. KNX individual address id does not exist in KNX specification. It is built as KNX group address id is built.

Id = zone x 2048 + line x 256 + device

Example:

4.7.13 => 4 x 2048 + 7 x 256 + 13 = 9997

### 3.2.1.18 DESTINATION\_ID AND DESTINATION

---



These fields are the destined KNX individual address or the KNX group address of the telegram.

### 3.2.1.19 APDU

---

APDU represent the whole Application layer of a KNX telegram.

### 3.2.1.20 APCI

---

APCI represent the type of telegram:

- GV\_READ
- GV\_WRITE
- GV\_RESPONSE

### 3.2.1.21 RAW\_DATA

---

This field is the pure data of the telegram.

### 3.2.1.22 VALUE

---

Thanks to the archive you have uploaded, the datatype of each telegram is known. Therefore it is possible to translate the raw\_data into a real value. If the datatype is unknown, the value is NULL.

### 3.2.1.23 UNIT

---

Thanks to the archive you have uploaded, the datatype of each telegram is known. Therefore it is possible to know the unit of the value. If the datatype is unknown, the value is "NULL" or "\N".

### 3.2.1.24 PRIORITY

---

This is the priority of the telegram:

- low
- normal
- urgent

### 3.2.1.25 LAST\_TIME

---

This is the date and time when the telegram has been logged.

This is an example:

id	service	channel	ip_address	port
523	TWISTED_PAIR	\N	\N	\N

source_id	source	destination_id	destination	apdu	apci
4609	2.2.1	6146	3/0/2	0 81	GV_WRITE

raw_data	value	unit	priority	last_time
1	1	"on/off"	low	2013-10-12 17:21:54

## 3.3 CONFIGURATION

---

## INTERNAL DATABASE

Database configuration is set in the web interface. The default internal database is pre-configured (only the port can be changed). Nevertheless you can configure additional settings. Go to “Internal Database”.

### 3.3.1.1 FILTER

Telegrams are logged twice, when they are received and when they are sent to the right service (Routing, Tunneling, Twisted Pair). For example a telegram is received from KNX Twisted Pair. This telegram is logged with “service” field set to “TWISTED\_PAIR”. The same telegram is then send (routed) via Routing. Therefore another telegram is logged with “service” field set to “ROUTING”. When a telegram sent by **DATALOGER** is logged, the field “ip\_address” is the IP address of the Datalogger.

As telegrams are logged twice, this takes more memory and might become annoying if you do not need those information. Therefore you can check the box “Exclude Sent Telegrams” and only received telegrams will be logged.

It is also possible to add filters in order to log into the database only telegrams you need. You can add inclusion or exclusion filters which allows you to log only telegrams regarding the KNX group addresses you have configured. You can include or exclude special KNX group addresses or choose a range of KNX group addresses. Click on “Add” to configure a new filter.

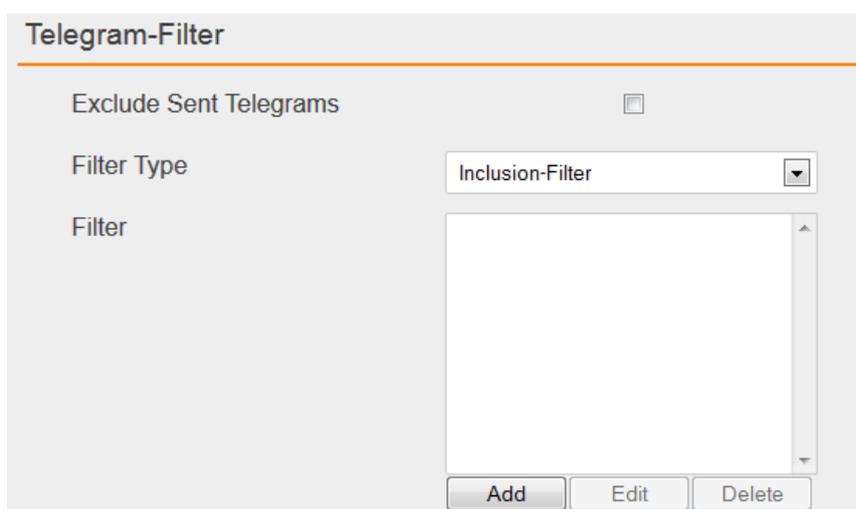


Figure 35: Filter

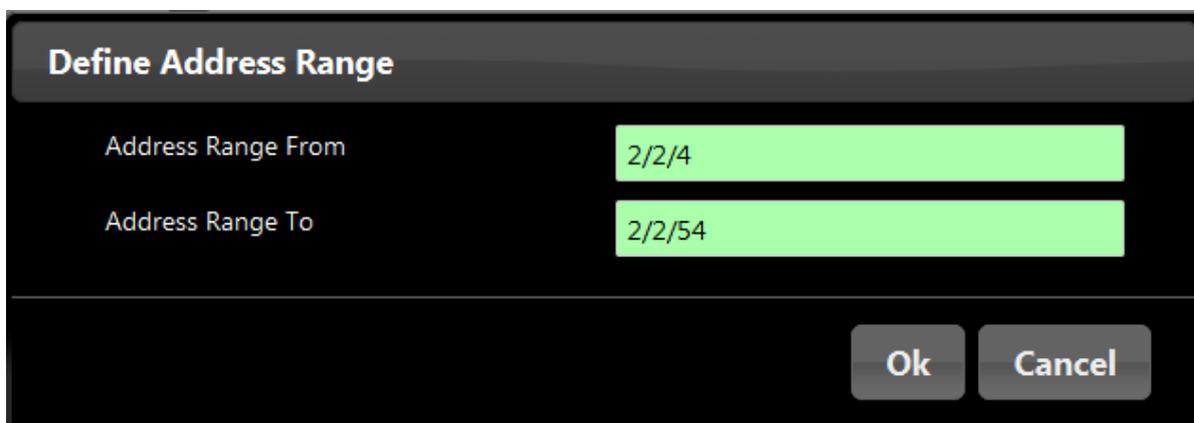


Figure 36: Address Range

### 3.3.1.2 DATABASE EXTERNAL ACCESS

In order to access to the internal database, your PC needs to have a permission. It is possible to add access permissions from the web interface. For each new permission, you click on “Add” and you configure the user, the host and a password. For example:

User: user  
Host: 192.168.1.56  
Password: dataLogger

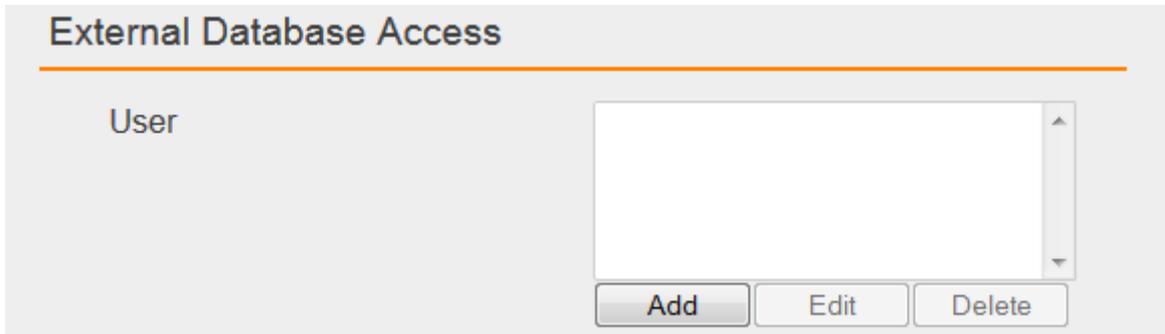


Figure 37: External Database Access

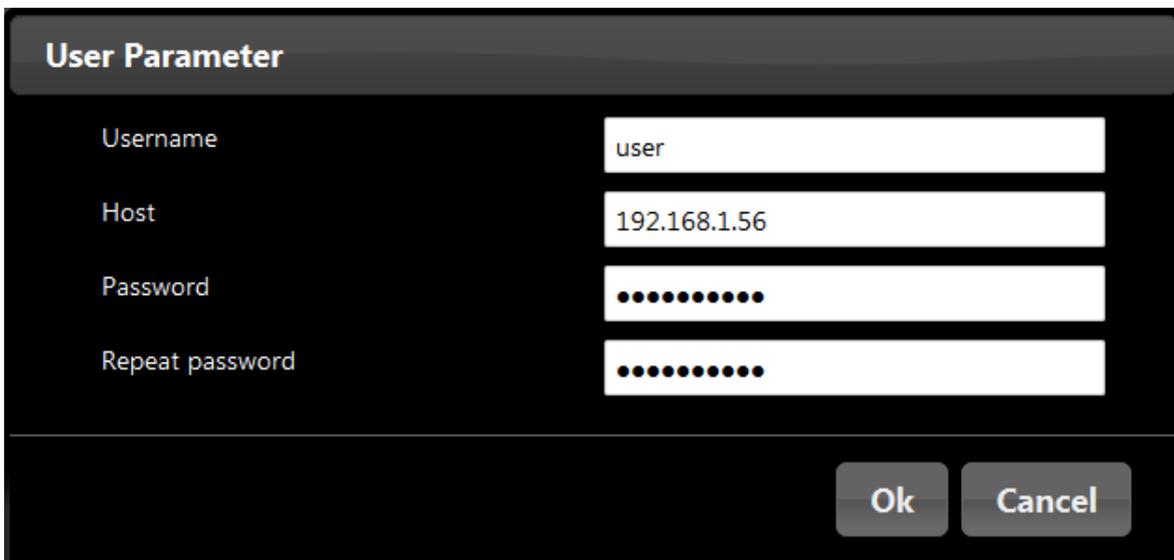
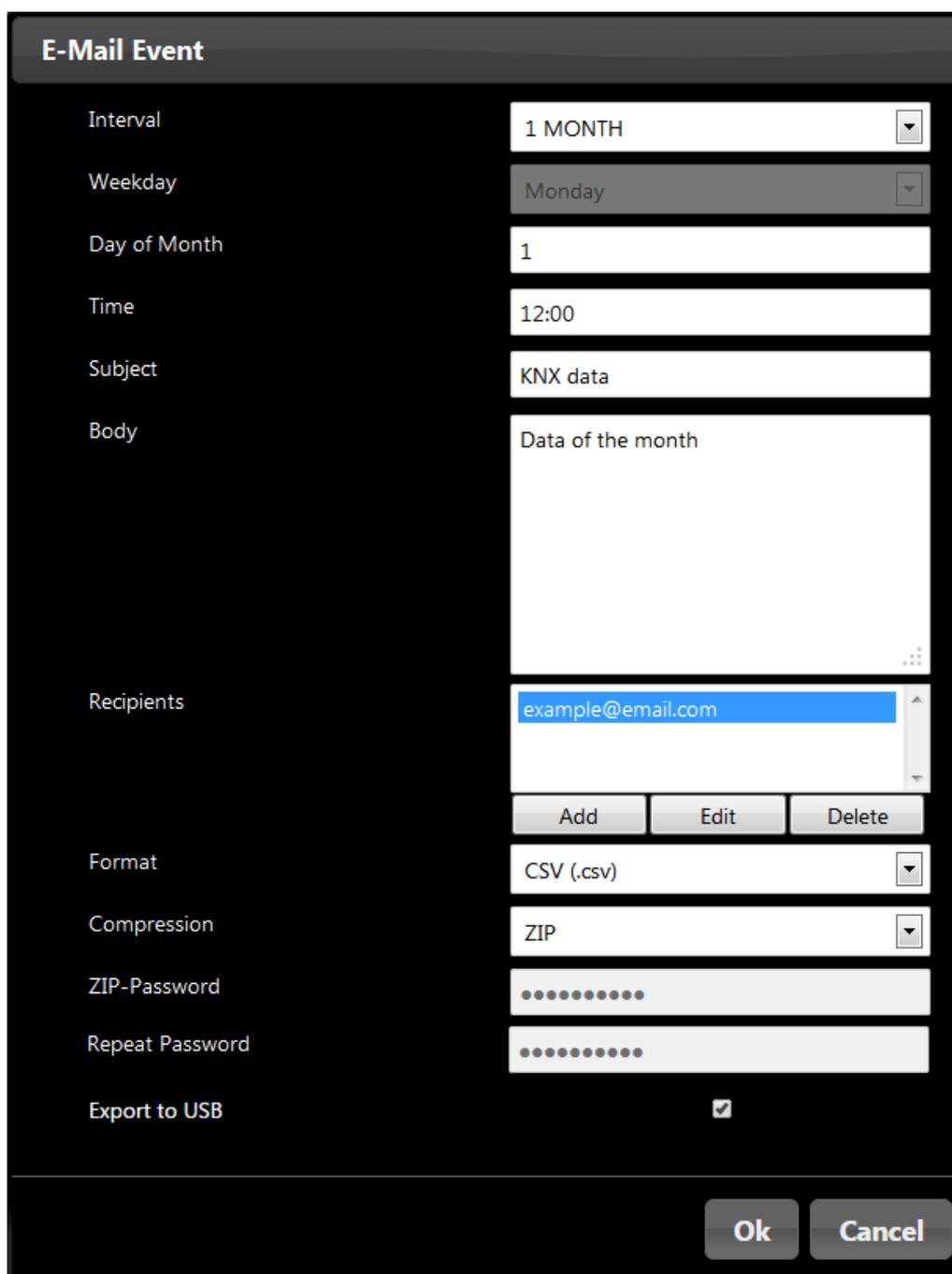


Figure 38: User Parameter

### 3.3.1.3 E-MAIL EXPORT

It is possible to program a daily / weekly / monthly exportation of the database and send it via e-mail regarding your configuration.



**E-Mail Event**

Interval: 1 MONTH

Weekday: Monday

Day of Month: 1

Time: 12:00

Subject: KNX data

Body: Data of the month

Recipients: example@email.com

Format: CSV (.csv)

Compression: ZIP

ZIP-Password: .....

Repeat Password: .....

Export to USB:

Buttons: Add, Edit, Delete, Ok, Cancel

**Figure 39: E-Mail Event**

If "Export to USB" is checked, the export will be copied on the USB flash memory plugged in one of the two USB ports of Datalogger, instead of being sent by email. However if there is no USB flash memory available, the export will be sent by email.

### 3.3.1.4 BACKUP AND RESTORE SQL BACKUP

A backup of the last month or the entire database can be exported. From the LCD menu, from download or automatically from the E-Mail Export. It creates a ".bak" file which is actually a crypted SQL file.

This ".bak" file can be re-imported. Click on "Browse" and choose the ".bak" file you want to import. Finally click on "Upload and restore SQL Backup".

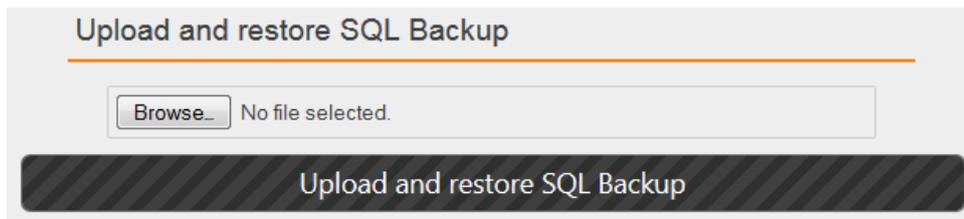


Figure 40: Upload and restore SQL Backup

**Attention:**

If you import a "database" backup, the entire database will be replaced, therefore some data might be lost.

If you import a "last month" backup, the last month will be replaced, therefore some data might be lost.

### 3.3.1.5 CHECK MYSQL DIRECTORY

It might happen that files from the MySQL file system get corrupted. To fix this issue, these files are checked and repaired automatically. You can choose how often this is done, every day, week or month.

A log file is generated with details regarding the Check and Repair process. You can read this log file directly from the web interface by refreshing it.

Moreover, if the connection with MySQL server is lost an email is sent and the Check and Repair process is launched. After the process is over, another email is sent saying whether MySQL could reconnect and the log file is attached to the email providing more details.

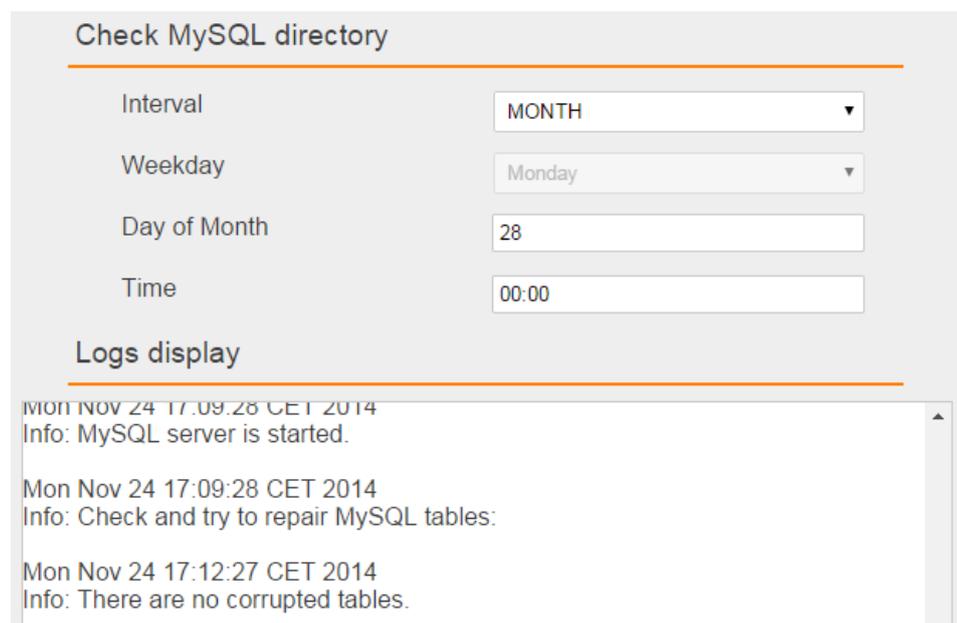


Figure 41: Check MySQL directory

## EXTERNAL DATABASE

Memory to log data is limited so that a message will be displayed on the LCD display or send via e-mail (if SMTP server is configured) if the memory is full. You are then able to delete some data from the web interface in main "Datalogger" menu.

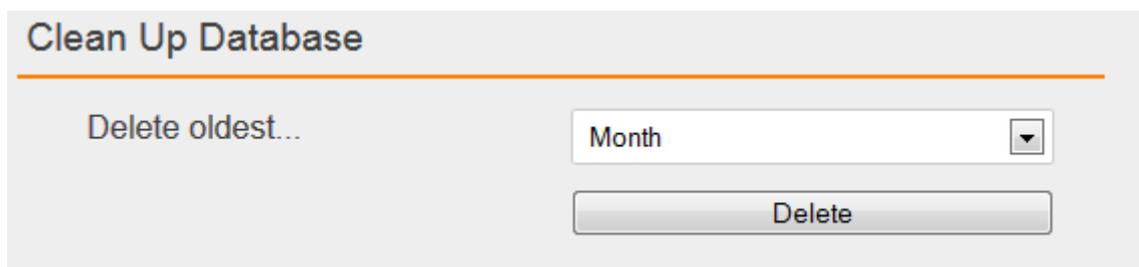


Figure 42: Clean Up Database

If you do not, the oldest data would be automatically deleted. To prevent data loss, you can configure an external database on your own server. Data are then logged in both database at the same time.

## WINDOWS SERVER

The process to install and configure MySQL might change, please refer to MySQL website in case of problem. <http://www.mysql.com>

First of all, you have to download the MySQL Installer in order to get a MySQL Server and create your External Database for DataLogger. You can download the MySQL Installer on that page:

<http://dev.mysql.com/downloads/installer/>

As soon as the MySQL file is downloaded, execute it. When the “welcome” page is opened, click on “Install MySQL Products”. Accept the license terms and click on “Next”, then click on “Execute” to start the check operation. When it is done, click on “Next”. In this page “Choosing a Setup type” choose “Custom” and click on “Next”. On the new page uncheck “Applications” and “Documentation”. “MySQL Server [version]” needs to be checked. Click now on the “+” close to “Applications” to open applications submenus. There check “MySQL for Excel [version]”. Click then on “Next”, “Next”, “Execute”. MySQL products are installing.

“MySQL Server [version]” is necessary to create the external database for **DATALOGER** and “MySQL for Excel [version]” is necessary to import DataLogger’s data directly into Excel (see “Import database from Excel”).

As soon as MySQL products are installed, click on “Next” and “Next” again. Now you should be on “MySQL Server Configuration” page. In “Root Account Password” enter your root password. In “MySQL User Accounts” click on “Add User”. Enter your “username” and your “password” and click on “OK”. Then click on “Next” until “Finish”. MySQL products are now installed and your MySQL Server is configured.

Click now on Windows “Start” button and type “cmd” in the search bar, then press “Enter”. A terminal should appear. You have to connect to MySQL with the user you have been creating. For this type:

```
C:\>"Program Files\MySQL\MySQL Server [vers]\bin\mysql.exe" -u[username] -p
```

Type your MySQL version instead of **[vers]** and your username instead of **[username]**.

The path of “mysql.exe” might be different!

MySQL should ask for your password, type it and you should be in the MySQL console (“mysql >”).

Create a database where **DATALOGER** will log data. Replace **[database name]** with the name of your choice.

```
mysql> CREATE DATABASE [database name] CHARACTER SET 'utf8';
```

You need then to give permissions to the **DATALOGER** for the database **[database name]** you have created. Replace **[database name]** with the name of the database you have created, **[DataLogger]**



**IP]** with the IP address of the DATALOGGER and **[password for Datalogger]** with the password of your choice.

```
mysql> GRANT ALL PRIVILEGES ON [database name].* TO 'root'@[Datalogger IP]'  
-> IDENTIFIED BY '[password for Datalogger]';
```

```
mysql> FLUSH PRIVILEGES;
```

Finally type this command to get out of MySQL console :

```
mysql> exit
```

## LINUX SERVER

---

The process to install and configure MySQL might change, please refer to MySQL website in case of problem. <http://www.mysql.com>

For Debian based system, in order to install MySQL, type this command in a terminal and press Enter:

```
apt-get install mysql-server mysql-client mysql-common
```

During installation, a password will be asked for MySQL root account.

When MySQL is installed, connect to your root account, type this command in a terminal:

```
mysql -uroot -p
```

MySQL should ask for your password, type it and you should be in the MySQL console ("mysql >"). Type this command to create a new user. Replace **[username]** with the username of your choice and **[user password]** with the password of your choice.

```
mysql> CREATE USER '[username]'@'localhost' IDENTIFIED BY '[user password]';
```

Create a database where DATALOGGER will log data. Replace **[database name]** with the name of your choice.

```
mysql> CREATE DATABASE [database name] CHARACTER SET 'utf8';
```

Then give all privileges to your user:

```
mysql> GRANT ALL PRIVILEGES ON *.* TO '[username]'@'localhost' WITH GRANT  
OPTION;
```

You need then to give permissions to the DATALOGGER for the database **[database name]** you have created. Replace **[database name]** with the name of the database you have created, **[Datalogger IP]** with the IP address of the DATALOGGER and **[password for Datalogger]** with the password of your choice.

```
mysql> GRANT ALL PRIVILEGES ON [database name].* TO 'root'@[Datalogger IP]'  
-> IDENTIFIED BY '[password for Datalogger]';
```

```
mysql> FLUSH PRIVILEGES;
```

```
mysql> exit
```

In addition, you have to change your MySQL configuration file in order to authorize distant clients to connect to your MySQL server.

Edit `"/etc/mysql/my.cnf"` with this command in your terminal:



```
nano /etc/mysql/my.cnf
```

Then modify “bind-address = 127.0.0.1” with “#bind-address = 127.0.0.1”. To save and quit, do a “Ctrl + o”, press “Enter” and do a “Ctrl + x”.

Restart the MySQL server, type this command in your terminal:

```
service mysql restart
```

## CONFIGURE DATALOGGER FOR YOUR SERVER

Go to “Configuration” -> “External Database” menu.

External Database Server	
Active	<input checked="" type="checkbox"/>
Hostname / IP Address	<input type="text" value="[your server IP address]"/>
Port (default 3306)	<input type="text" value="3306"/>
Login Data	
Username	<input type="text" value="root"/>
Password	<input type="text" value="[password for Datalogger]"/>
Repeat Password	<input type="text" value="[password for Datalogger]"/>
Database Name	<input type="text" value="[database name]"/>

Figure 43: External database Server

First of all, do not forget to check the “Active” box. Then enter the IP address or hostname of your MySQL server. The port should be the default port unless you changed it. In “Username” and “Password”, enter the [username] and [password] you have been configuring. Eventually, in “Database Name”, enter your [database name].

If **DATALOGGER** cannot connect to your database, error messages explaining the reason will be displayed on the LCD display. After few tries, **DATALOGGER** will stop trying to connect to the database. To try again, go back to the web interface, check your configuration and your MySQL server and save the configuration again.

## 3.4 DATABASE EXPORT

There are five methods to access to your data. E-mail events (already seen in “E-Mail Export”), export into a USB flash drive plugged in your Datalogger, send it via e-mail, download it from the web interface or import it from Excel.

## EXPORT DATABASE INTO A USB FLASH DRIVE

You can from the LCD screen export your data into a USB flash drive. Your data is available with a CSV, XLS, XML or SQL format file. In order to export your database, plug a USB drive in one of the USB ports and go to “Export” > “USB” > “XLS” (“CSV”, “XML”, or “SQL”). You are there able to export “Group Range”, Group Address (both are only available if a ETS4 project has been imported), “Current Day”, “Current Week”, “Current Month”, “From > To” (there you have to configure From-date and To-date). Wait for the end of the transfer and plug out the USB drive. Your data is now available on your USB flash drive.

## SEND DATABASE VIA E-MAIL

If SMTP server is configured and email export from LCD, You can send your database via e-mail from the LCD screen.

Your data is available with a CSV, XLS, XML or SQL format file. In order to export your database go to “Export” > “Email” > “XLS” (“CSV”, “XML”, or “SQL”). Choose the e-mail recipient. You are then able to export “Group Range”, Group Address (both are only available if a ETS4 project has been imported), “Current Day”, “Current Week”, “Current Month”, “From > To” (there you have to configure From-date and To-date).

**Note:** Be sure that you have filled in a guilty DNS / Gateway / IP Address.

## DOWNLOAD FROM WEB INTERFACE

In the main menu “DATALOGGER”, in the web interface, configure your export and click on “Start Export”.

Database Export	
Export	Telegrams
Range	Current Month
Columns	All
Export Addresses	All
Format	CSV (.csv)
Compression	None
<b>Start Export</b>	

Figure 44: Database Export

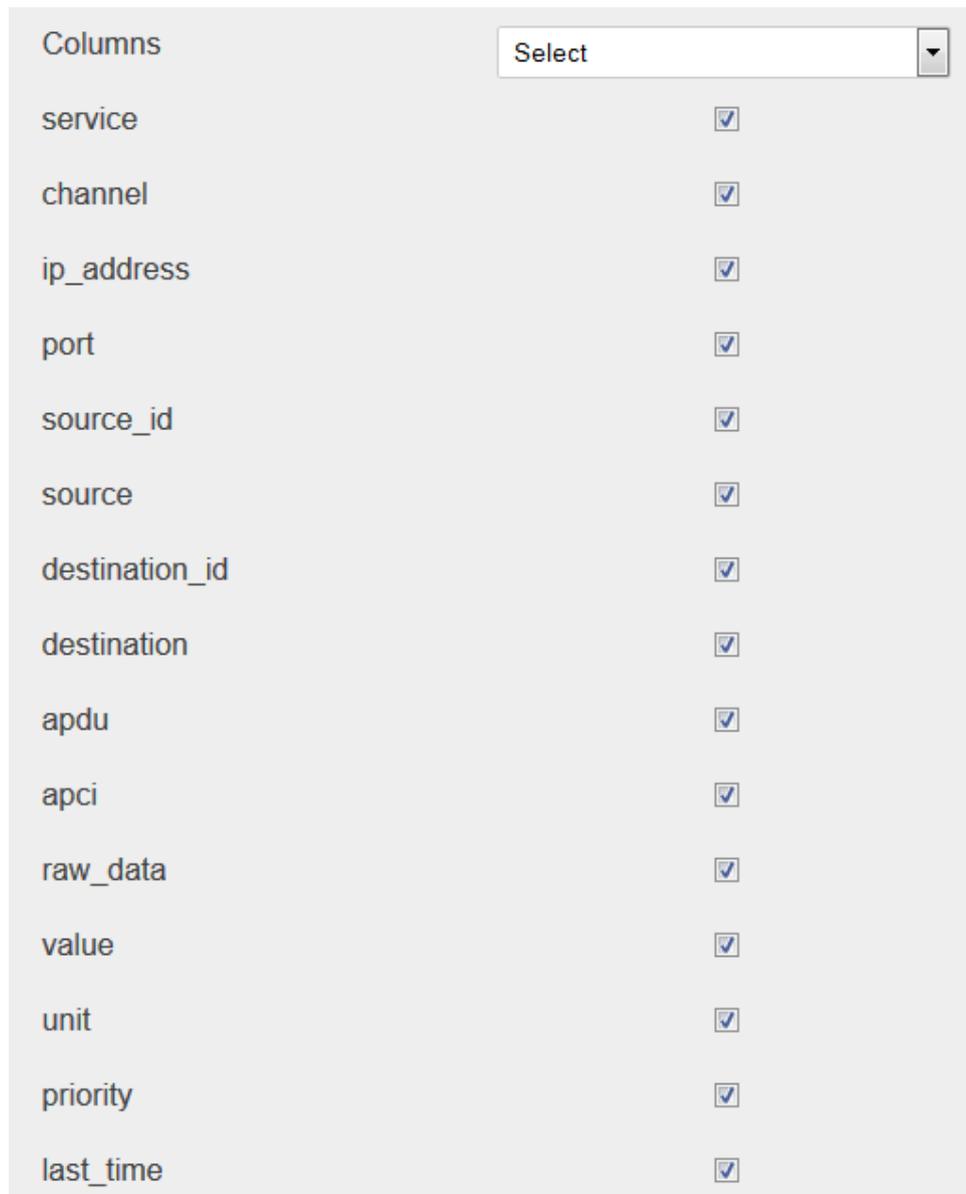
In “Export” field, you can choose to export:

- Telegrams (KNX telegrams logged in “eib\_tele\_year\_month” tables)
- Address Database (KNX group addresses information saved in “dw\_knx\_groupaddress” table)
- Topology Database (KNX group ranges information saved in “dw\_knx\_grouprange” table)

In “Range” field, you can choose to export:

- Recent Day
- Recent Week
- Recent Month
- User defined range (in this case you have to set “From...” and “To...” fields)

In “Columns” field, you can choose which columns of the database you want to export (see “eib\_tele\_<year>\_<month>”):



Columns	Select
service	<input checked="" type="checkbox"/>
channel	<input checked="" type="checkbox"/>
ip_address	<input checked="" type="checkbox"/>
port	<input checked="" type="checkbox"/>
source_id	<input checked="" type="checkbox"/>
source	<input checked="" type="checkbox"/>
destination_id	<input checked="" type="checkbox"/>
destination	<input checked="" type="checkbox"/>
apdu	<input checked="" type="checkbox"/>
apci	<input checked="" type="checkbox"/>
raw_data	<input checked="" type="checkbox"/>
value	<input checked="" type="checkbox"/>
unit	<input checked="" type="checkbox"/>
priority	<input checked="" type="checkbox"/>
last_time	<input checked="" type="checkbox"/>

**Figure 45: Columns**

In “Export Addresses” field, you can choose to export:

- All (export all KNX group addresses)
- List (export a list of group addresses)
- Range (export a range of group addresses. Example: export from 1/1/1 to 1/1/56)

In “Format” field, you can choose to export:

- CSV (.csv file)
- Excel (.xls file)
- XML (.xml file)
- Database backup (.sql file): Backup of the entire database in a SQL format.
- Last Month backup (.sql file): Backup of the last month in a SQL format.
- Database backup (.bak file): Backup of the entire database. This file can be re-imported.
- Last Month backup (.bak file): Backup of the last month. This file can be re-imported.

In “Compression” field, you can choose between:

- None (no compression)
- ZIP (compress with zip)

You can see the export process thanks to the progress bar:

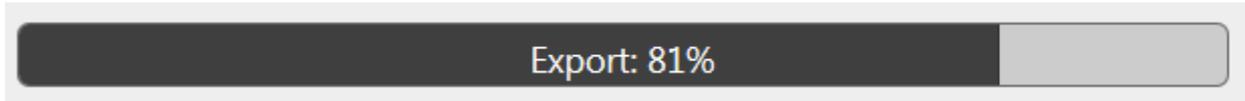


Figure 46: Progress bar

## IMPORT DATABASE FROM EXCEL

MySQL for Excel has already been installed (see “Windows server”). This plugin allows you to import the database in Excel. When the plugin is well installed, you get this “MySQL for Excel” in “Data” bar:

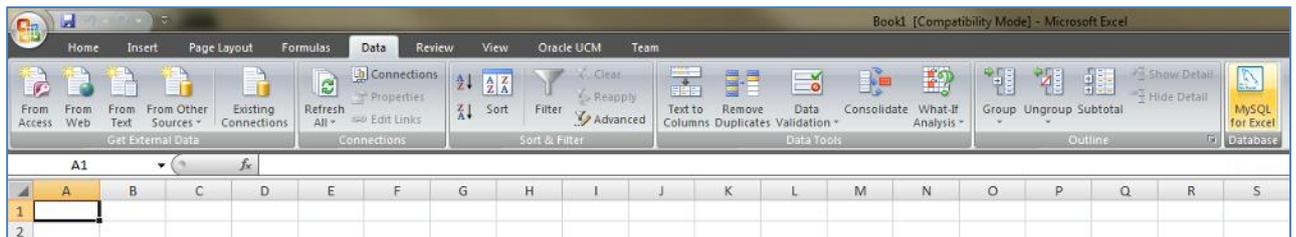


Figure 47: MySQL for Excel bar

In order to access to the database, your PC needs to have a permission. It is possible to add access permissions from the web interface. We take the example see before (see “Database External access”).

User: user  
Host: 192.168.1.56  
Password: dataLogger

When permission has been set, click on “MySQL for Excel” in “Data” Excel bar. You should see this window on the right side.

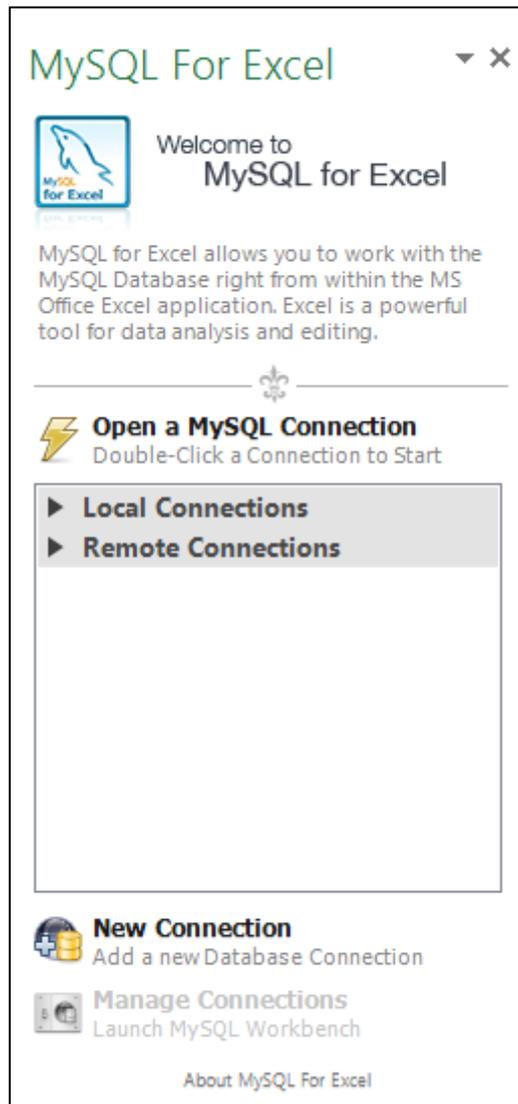


Figure 48: MySQL for Excel

Click on “New Connection” to add a new database connection with the Datalogger. Configure this new connection regarding your network settings (see “Network” – IP address) and your internal database settings (see “Internal Database” and “Database External access”).

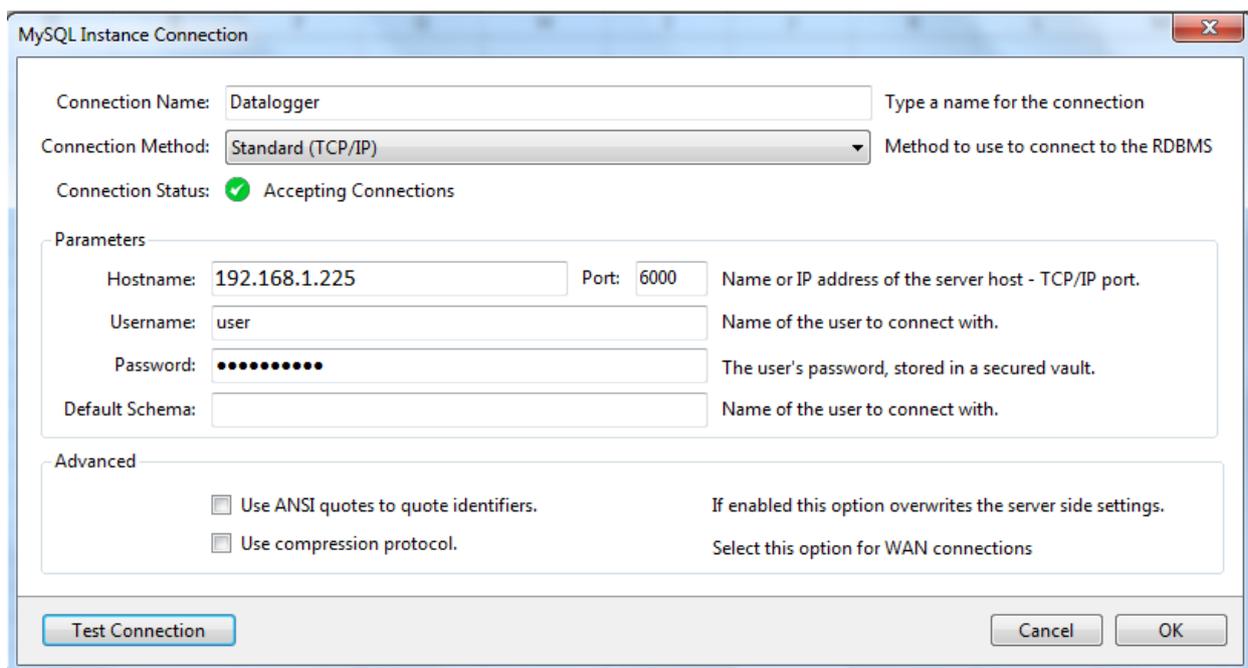


Figure 49: Add database connection

Click then on “Test Connection”, a “Connection Success” window should appear. Click then on “OK”.

Double click on your new connection (here named “Datalogger”). A database called “datalogger” should be there. Double click on it, you should see all tables available on the database. Click on one table you want to import in Excel and click on “Import MySQL Data”. Another window should appear.

### Attention!

Note that all columns are not available because Excel cannot deal with all MySQL data types. Moreover, it seems that it is not possible to prevent Excel for reformatting KNX group addresses into dates.

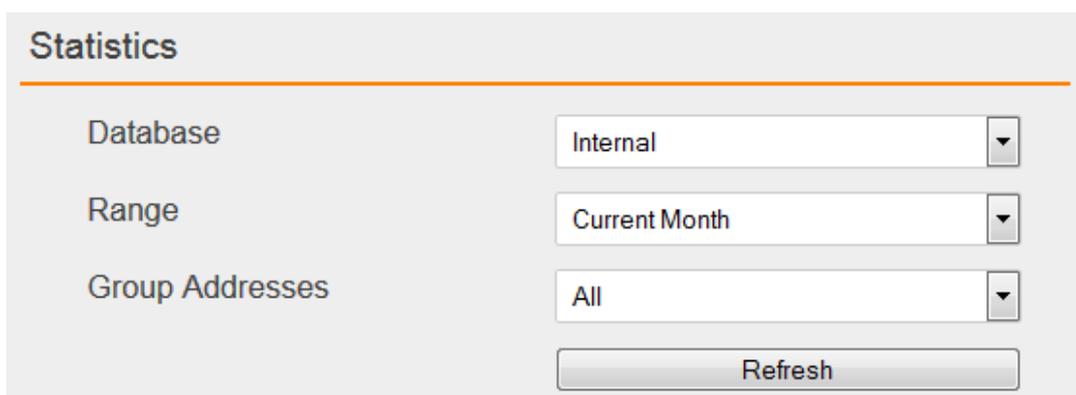
You see below an example of how look a database import in Excel.

id	service	channel	ip_address	port	source_id	source	destination_id	destination	apdu	api	raw_data	value	unit	priority	last_time
1	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:25
2	ROUTING		172.31.49.105	3671	2306	1.1.2	2307	01/01/2003		GV_WRITE		1	"start/stop"	low	16/12/2013 16:25
3	ROUTING		172.31.49.105	3671	2306	1.1.2	2306	01/01/2002		GV_WRITE		0	"up/down"	low	16/12/2013 16:25
4	ROUTING		172.31.49.105	3671	2306	1.1.2	2305	01/01/2001		GV_WRITE		0	"on/off"	low	16/12/2013 16:26
5	ROUTING		172.31.49.105	3671	2306	1.1.2	2306	01/01/2002		GV_WRITE		0	"up/down"	low	16/12/2013 16:26
6	ROUTING		172.31.49.105	3671	2306	1.1.2	2305	01/01/2001		GV_WRITE		0	"on/off"	low	16/12/2013 16:26
7	ROUTING		172.31.49.105	3671	2306	1.1.2	2306	01/01/2002		GV_WRITE		0	"up/down"	low	16/12/2013 16:26
8	ROUTING		172.31.49.105	3671	2306	1.1.2	2305	01/01/2001		GV_WRITE		0	"up/down"	low	16/12/2013 16:26
9	ROUTING		172.31.49.105	3671	2306	1.1.2	2306	01/01/2002		GV_WRITE		0	"up/down"	low	16/12/2013 16:26
10	ROUTING		172.31.49.105	3671	2306	1.1.2	2305	01/01/2001		GV_WRITE		1	"on/off"	low	16/12/2013 16:26
11	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:26
12	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:26
13	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:26
14	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:26
15	ROUTING		172.31.49.160	3671	31263	15.2.31	29194	14/2/10		GV_WRITE				low	16/12/2013 16:26
16	ROUTING		172.31.49.160	3671	31232	15.2.0	29192	14/2/8		GV_WRITE				low	16/12/2013 16:26
17	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:26
18	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
19	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
20	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
21	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
22	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
23	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
24	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
25	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27
26	ROUTING		172.31.49.160	3671	31232	15.2.0	29200	14/2/16		GV_WRITE				low	16/12/2013 16:27

Figure 50: Import database in Excel

## 4 STATISTICS

In the Web Interface go to “DATALOGGER” -> “Statistics”. You are able to generate statistics from data stored in the database. Configure statistics you want to generate and click on “Refresh”.



**Statistics**

Database: Internal

Range: Current Month

Group Addresses: All

Refresh

Figure 51: Statistics

In “Database” field, you can choose to generate statistics with the “internal” database or with your own “external” database. “Own chart” is only available with the “internal” database (see “Own chart”).

In “Range” field, you can choose to export:

- Recent Day
- Recent Week
- Recent Month
- User defined range (in this case you have to set “From...” and “To...” fields)

In “Group Addresses” field, you can choose to generate statistics with:

- All (all KNX group addresses)
- List (list of group addresses)
- Range (range of group addresses. Example: export from 1/1/1 to 1/1/56)

After clicking on “Refresh”, three field appear: “General”, “Period” and “Chart”.

## 4.1 GENERAL



General	
Statistics generated	2014-06-27 17:54:19
First Telegram	2014-05-01 14:53:31
Last Telegram	2014-06-27 14:57:45
Total Count	723511

Figure 52: General

It contains general information about the entire database. When those statistics have been generated, the datetime of the first telegram ever, the datetime of the last telegram and how many telegrams contains the whole database.

## 4.2 PERIOD

Period	
First Telegram	2014-06-01 00:00:21
Last Telegram	2014-06-11 11:44:57
Total Count	181403

Figure 53: Period

It contains general information about the period you have chosen (day, week, month, from/to) and the group addresses (all, list or range) you have configured. The datetime of the first telegram in the period and matching with the group addresses configuration, the datetime of the last telegram in the period and matching with the group addresses configuration, and how many telegrams contains the database telegram in the period and matching with the group addresses configuration.

## 4.3 CHARTS

In order to picture those statistics, you are able to generate different types of charts:

- Top x of group addresses where “x” is configurable from 1 to 30 (x group addresses having the most telegrams in the period)
- Top x of physical addresses where “x” is configurable from 1 to 30 (x physical addresses having the most telegrams in the period)
- Telegram Rate: How many telegrams per hour, minute or second you got in the period. Minute and second are only available if the period does not exceed one day.
- Own chart: You can generate your own chart with a list of group addresses from 1 to 4.

Chart	
Generate	All
Top	10
Telegram per	Hour
Chart title	
Group addresses list	
	<input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
	<input type="button" value="Generate"/>

Figure 54: Charts

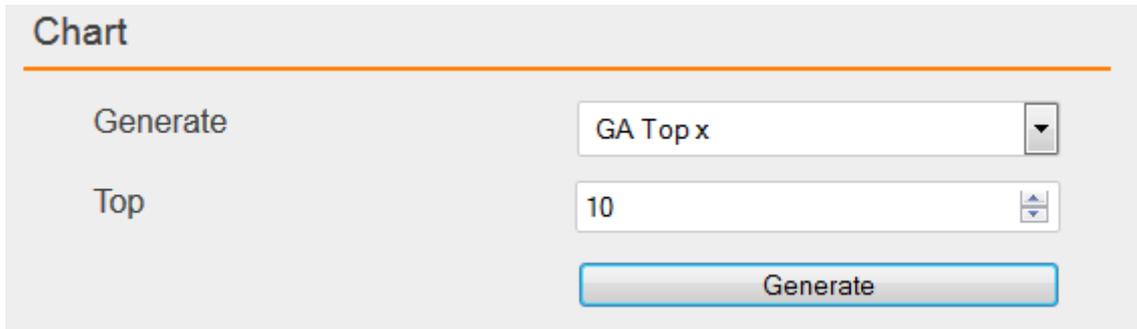
In “Generate” field, you can choose to which type of chart you want to generate, or all of them.  
In “Top” field, you can configure “x” for Top x (group addresses and physical addresses).  
In “Telegram per” field, you can configure hour, minute or second for the telegram rate.

In “Chart title” field, you can choose the title of your own chart.  
In “Group address list”, you can add new group addresses for your own chart.

Finally click on “Generate” in order to generate charts.

## TOP X: GROUP ADDRESSES

In the “Generate” select menu, select “GA Top x”.



The screenshot shows a configuration panel titled "Chart". It contains a "Generate" button, a dropdown menu currently showing "GA Top x", a "Top" field with the value "10", and a "Generate" button at the bottom.

Figure 55: GA Top x

In the “Top” field, choose for example 10. Therefore a Group Addresses Top 10 will be generated. Click on “Generate”.

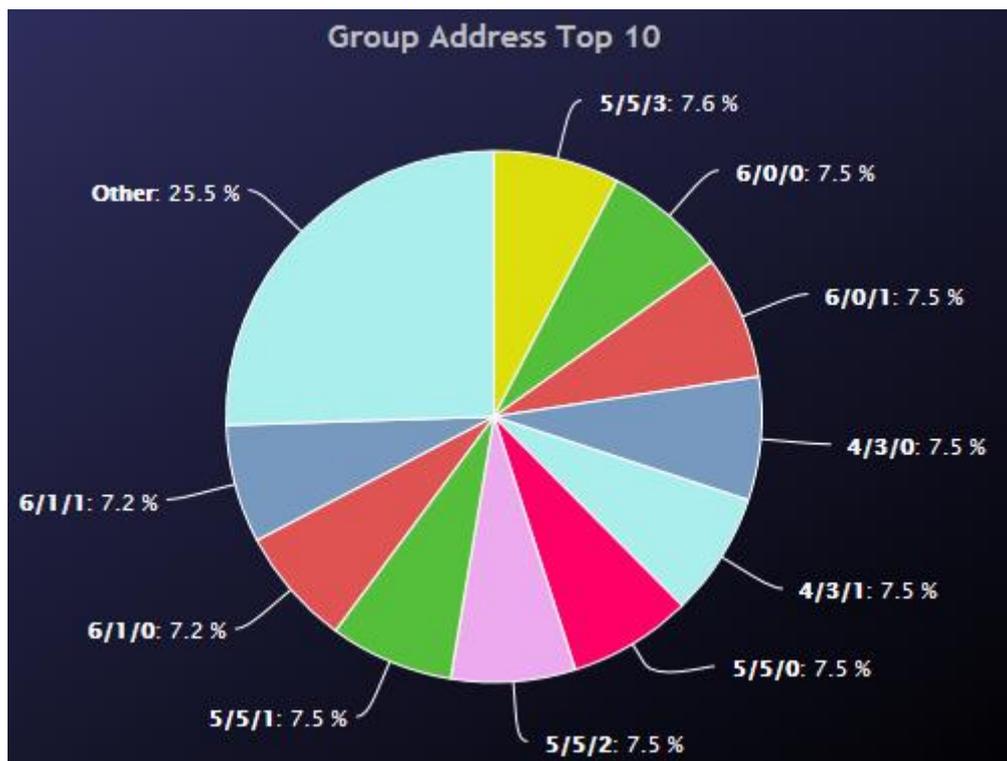


Figure 56: Top 10 GA

A pie chart is generated with the 10 group addresses having the most telegrams in the period. If those group addresses belong to your ETS4 project, you can get more information about them. You just have to click on a group address part of the pie chart. For example the green part with group address “6/0/0”.

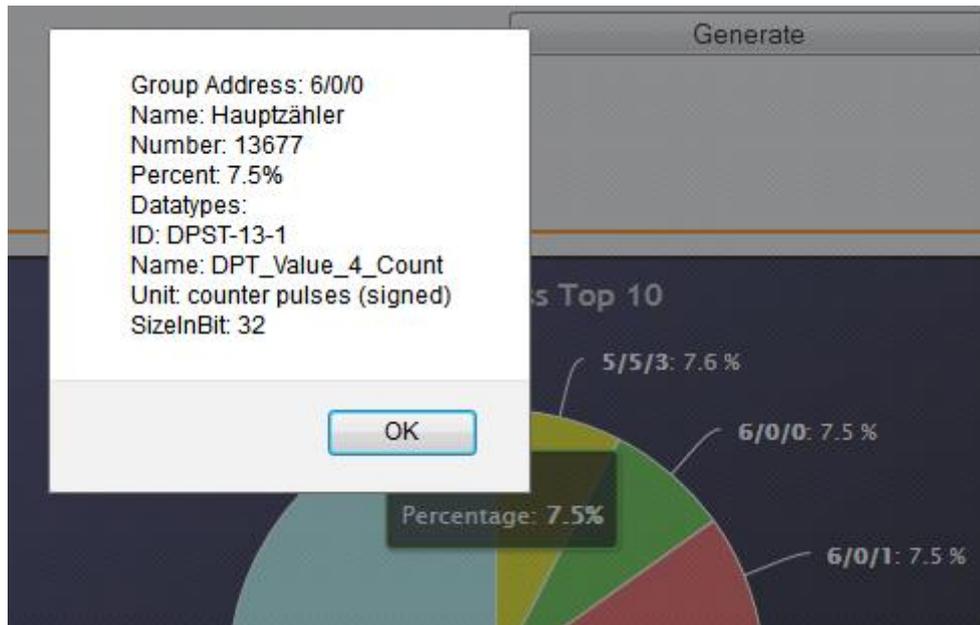


Figure 57: Top 10 GA Info

## TOP X: PHYSICAL ADDRESSES

In the “Generate” select menu, select “PA Top x”.

Chart

Generate PA Top x

Top 10

Generate

Figure 58: PA Top x

In the “Top” field, choose for example 10. Therefore a Physical Addresses Top 10 will be generated. Click on “Generate”.

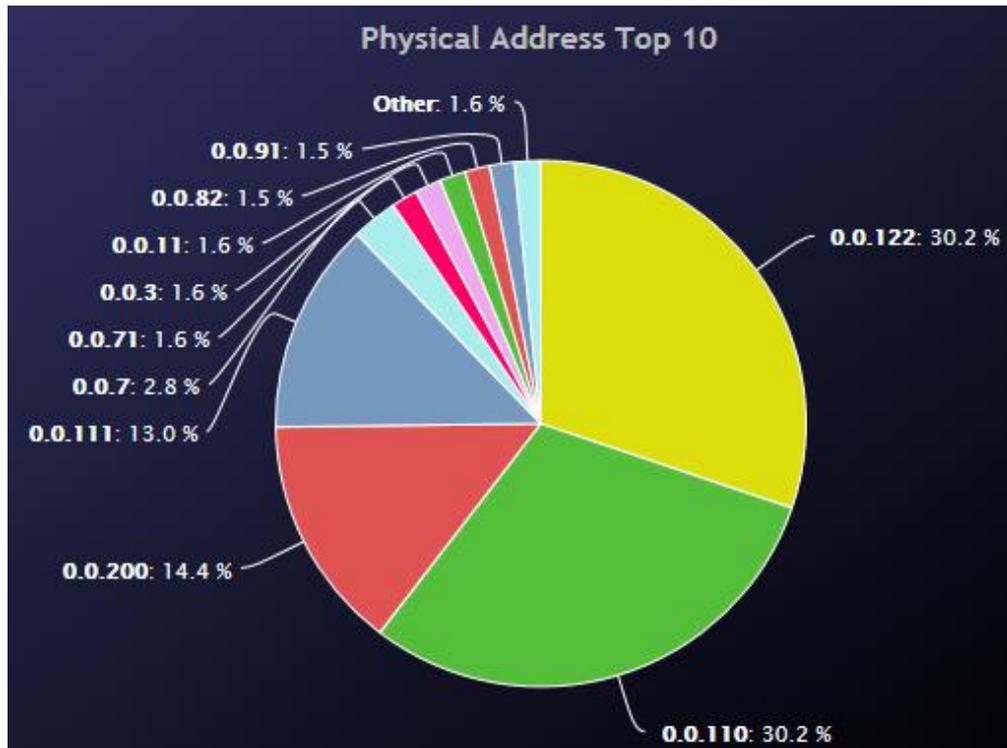


Figure 59: Top 10 PA

A pie chart is generated with the 10 physical addresses having the most telegrams in the period. If those physical addresses belong to your ETS4 project, you can get more information about them. You just have to click on a physical address part of the pie chart. For example the yellow part with physical address “0.0.122”.

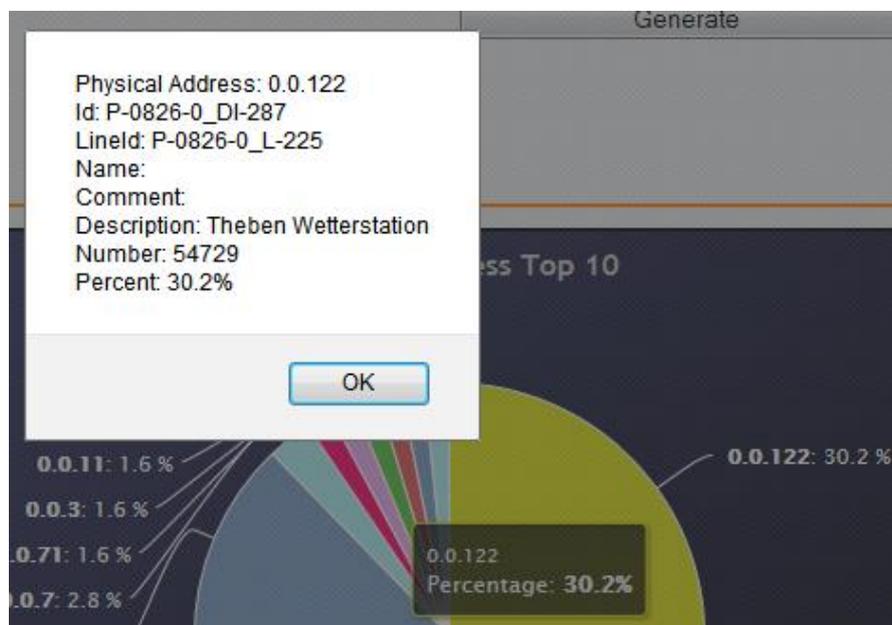


Figure 60: Top 10 GA Info

## TELEGRAM RATE

In the “Generate” select menu, select “PA Top x”.

**Chart**

Generate

Telegram per

Figure 61: Telegram Rate

Telegram rate displays how many telegrams per hour, minute or second you got in the period. Minute and second are only available if the period does not exceed one day. Click on “Generate”.

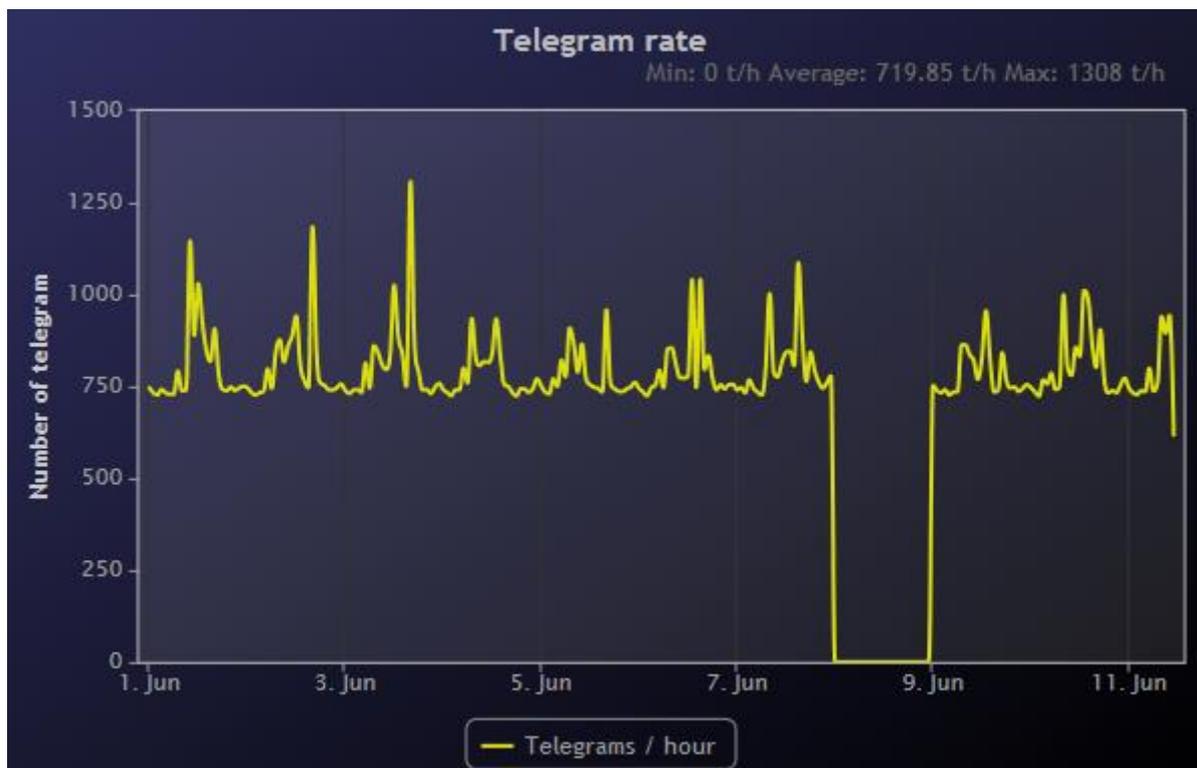


Figure 62: Telegram Rate per hour

Below the title you can read the minimum, average and maximum telegram rate. Notice that if you select a sub period of time, you are able to zoom in that period. Furthermore, you can hide or display the curve by clicking on its legend.

## OWN CHART

Own chart is only available if you use the “internal” database. In the “Generate” select menu, select “Own chart”.



Figure 63: Own chart

In the “Chart title” field, you can choose the title of your chart. For example “Temperature” if you want to generate a chart about temperature.

In the “Group addresses list” field, you add group addresses, up to 4. Values of each group address in the period will create a new curve in your chart. Click on “Add” to add a new group address.

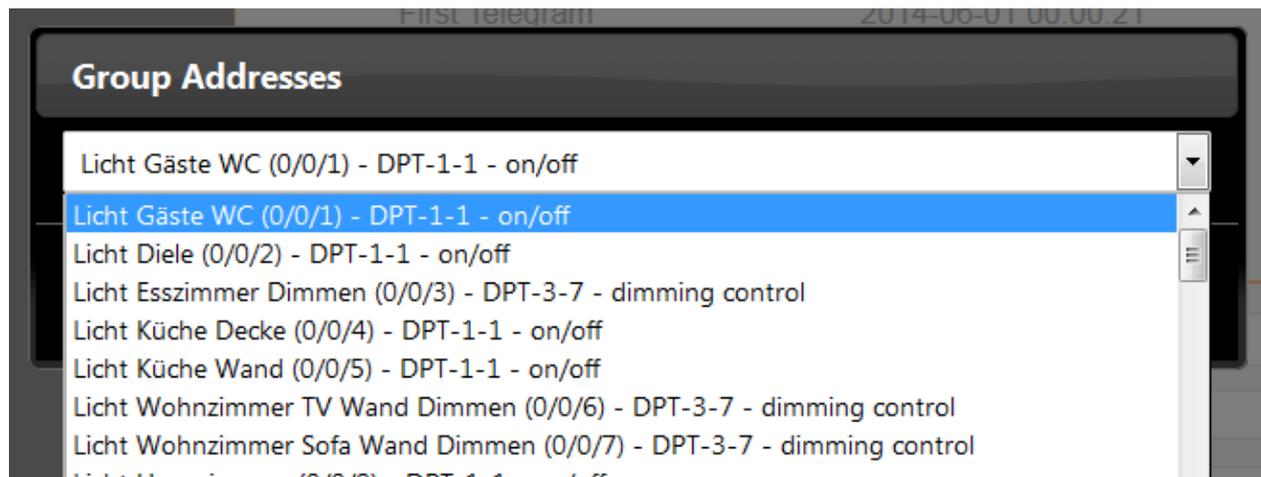


Figure 64: Add group address

In the new window opened, you can choose which group address you want to add. In this list of group addresses, only appear group addresses from your ETS4 project with a configured datatype. Indeed to create a new curve, real values are needed. Only group addresses with a defined datatype might have real interpreted values in the database. Pick one group address and click on “OK”. Every group addresses you pick should have the same datatype. Indeed a lux value for light should not appear in a temperature chart for instance. Click on “Generate”.

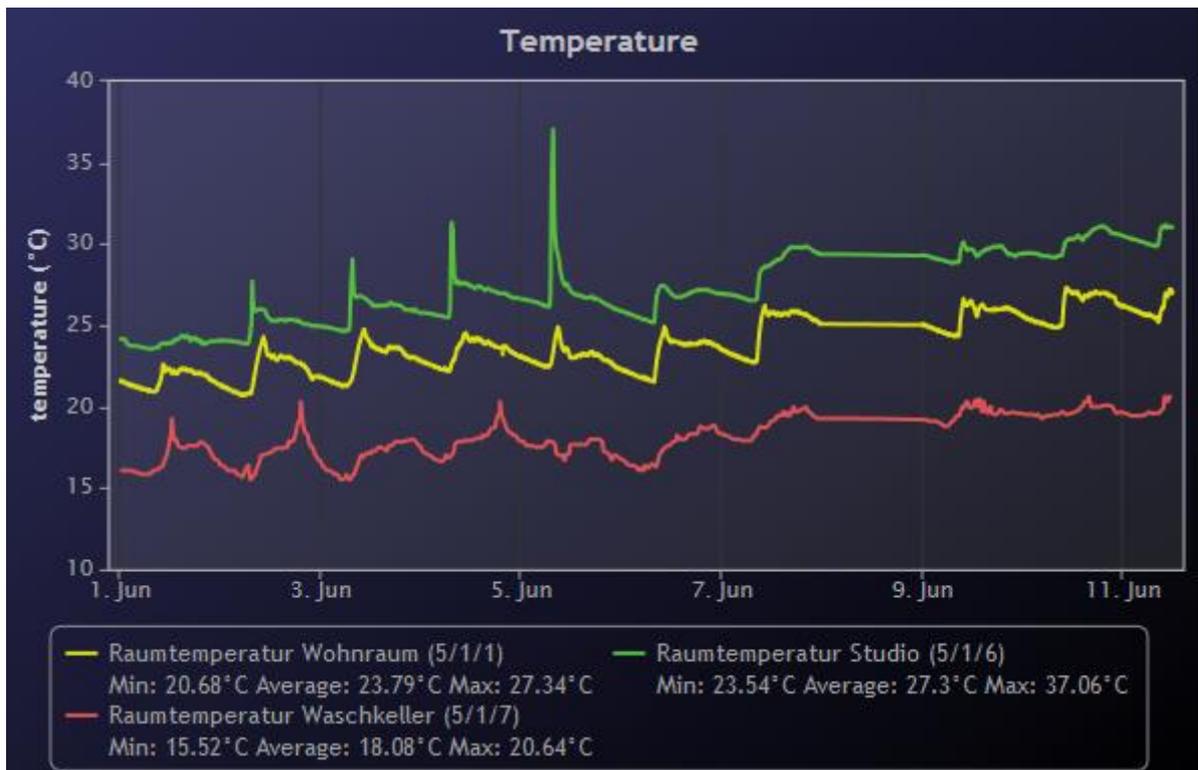


Figure 65: Temperature chart

You can see three curves according to the three group addresses we have added. You are now able to compare those three curves. You may compare for example inside and outside temperature, temperature in four different rooms etc ...

For each curve, the minimum, average and maximum values are displayed. Notice that if you select a sub period of time, you are able to zoom in that period. Furthermore, you can hide or display a curve by clicking on its legend.

## 5 UPDATE

The software update is for free but can be executed within one hardware variant.

If the software update of a newer hardware should be used the hardware has to be updated too. This is not a simple update but an upgrade; this will be charged and the device has to be sent in to b.a.b-technologie gmbh.

Before updating, do not forget to create a backup of your configuration so that you will just need to restore it with the new version of DATALOGGER (see "Backup / restore configuration").

As soon as a new version is available from our website, you can update your device in order to get the new available functions.

**The update file downloaded is a ZIP file, please unzip it first on you local system (on the Desktop for example). The unzipped file has the extension ".bin".**

### 5.1 USB

Copy the update archive (.bin) on a USB stick (be sure the usb stick has been properly umounted before plugging it out), and plug it on the Datalogger. In the LCD menu go to "Update" and press twice "OK" to confirm. The version of the update must be equal or newer as the current installed version.

A complete update takes about 45 min, an error message will be displayed in case of problem.

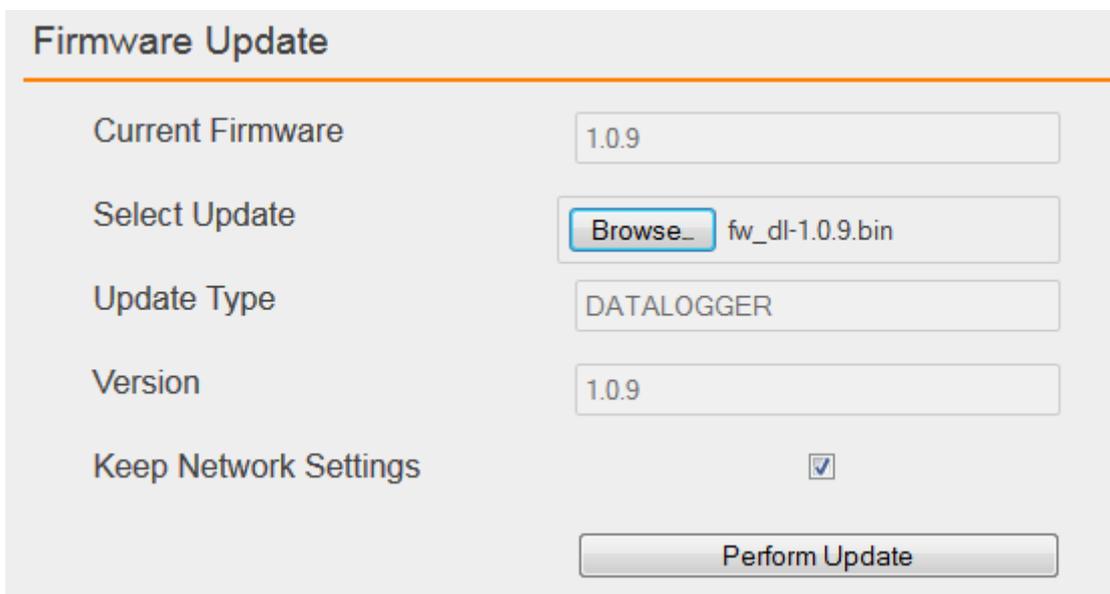
## 5.2 WEB INTERFACE

In the Web Interface go to "Configuration" -> "System".

Click on "Browse" and choose the update file. The version of the update must be equal or newer as the current installed version. "Current firmware" displays the current installed version and "Version" the version of the update.

If you want to keep your current network settings after the update, you can check the "Keep Network Settings" field.

Finally click on "Perform Update". A complete update takes about 45 min, an error message will be displayed in case of problem.



The screenshot shows a web interface titled "Firmware Update". It contains several input fields and a checkbox. The "Current Firmware" field is set to "1.0.9". The "Select Update" field has a "Browse..." button and the filename "fw\_dl-1.0.9.bin". The "Update Type" field is set to "DATALOGGER". The "Version" field is set to "1.0.9". The "Keep Network Settings" checkbox is checked. At the bottom, there is a "Perform Update" button.

Current Firmware	1.0.9
Select Update	<input type="button" value="Browse..."/> fw_dl-1.0.9.bin
Update Type	DATALOGGER
Version	1.0.9
Keep Network Settings	<input checked="" type="checkbox"/>
<input type="button" value="Perform Update"/>	

Figure 66: Update