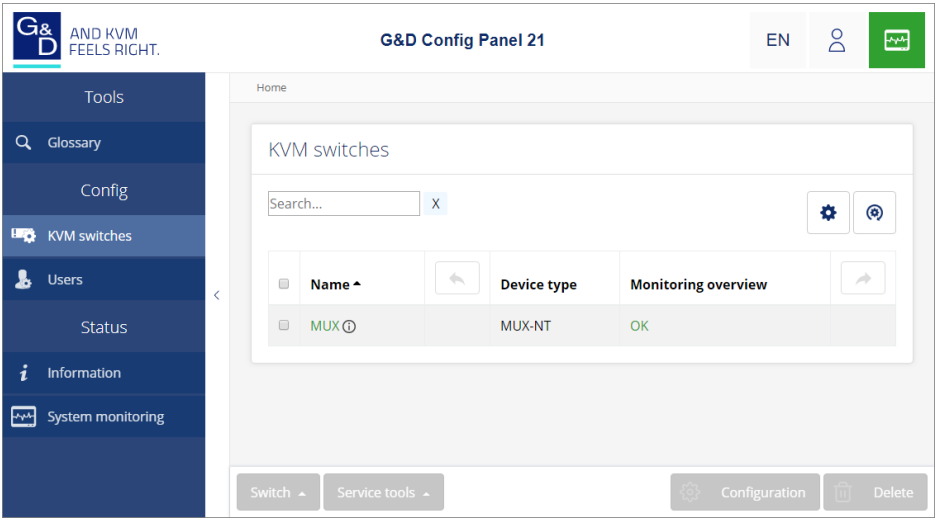
G&D MUX-NT series

EN Web Application»Config Panel«
Configuring the KVM switch



A9200153-1.31

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Version 1.31 – 22/02/2024
Config Panel 21 version: 1.5.008

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Table of contents

Chapter 1: Basic functions

Introduction **1**

System requirements **2**
Supported operating systems 2
Recommended resolutions 2

Initial configuration of the network settings **3**

Getting started **4**
Starting the web application 4
Operating the web application 5
User interface 5
Frequently used buttons 7
Configuring table columns 7
Language settings 9
Selecting the language of the web application 9
Selecting the system language 9
Showing the version number of the web application 10
Closing the web application 10

Channel switching via EasyControl **11**
Starting the switching tool »EasyControl« 11
Switching the active KVM channel 12
Permanent switching of devices connected to USB 3.0 interfaces 12
Changing the colour scheme of the switching tool 13
Renaming KVM channels 13
Closing the »EasyControl« switching tool 13

Basic configuration of the web application **14**
Network settings 14
Configuring the network interfaces 14
Configuring global network settings 16
Increasing the reliability of network connections by link aggregation 17
Reading out the status of the network interfaces 19
Creating and administrating netfilter rules 20
Creating new netfilter rules 20
Editing existing netfilter rules 22
Deleting existing netfilter rules 23
Changing the order or priority of existing netfilter rules 24

Creating an SSL certificate 24
Special features for complex KVM systems 25
Creating a Certificate Authority 25
Creating any certificate 27
Creating and signing an X509 certificate 28
Creating a PEM file 28
Selecting an SSL certificate 29
Firmware update 31
Firmware update of a single device 31
Restoring the system defaults 32
Restarting the device 32

Network functions of the devices 33
NTP server 33
Time sync with an NTP server 33
Manual setting of time and date 34
Logging syslog messages 35
Local logging of syslog messages 35
Sending syslog messages to a server 36
Viewing and saving local syslog messages 37
User authentication with directory services 37
Setting up two-factor authentication on the device 40

Monitoring functions 42
Viewing all monitoring values 42
Enabling/disabling monitoring values 43
Advanced features for managing critical devices 44
Displaying the list of critical monitoring values 44
Confirm the alarm of a critical device 44

Monitoring devices via SNMP 45
Practical use of the SNMP protocol 45
Configuring an SNMP agent 45
Adding and Configuring SNMP traps 48

Users and groups 50
Efficient rights administration 50
The effective right 50
Efficient user group administration 51
Administrating user accounts 52
Creating a new user account 52
Activating two-factor authentication 53
Renaming a user account 56
Changing the password of a user account 56
Changing the user account rights 57
Changing a user account's group membership 58
Enabling or disabling a user account 59
Deleting a user account 59

Administrating user groups 60
Creating a new user group 60
Renaming a user group 61
Changing the user group rights 61
Administrating user group members 62
(De)activating a user group 62
Deleting a user group 62
System rights 63
Rights for unrestricted access to the system (Superuser) 63
Changing the login right to the web application 63
Rights to access the EasyControl tool 64
Rights to change your own password 64
Authorization to confirm a monitoring alarm 64

Advanced functions of the KVM system 65
Identifying a device by activating the Identification LED 65
Saving the configurations 65
Saving the configurations with auto backup function 66
Restoring the configurations 68
Activating premium functions 69

Chapter 2: KVM switches

Basic configuration of KVM switches 70
Changing the name of a KVM switch 70
Changing the comment of a KVM switch 70
Deleting a KVM switch from the KVM system 71

Configuration settings of KVM switches 72
Device configuration 72
Changing the hotkey 72
Changing a select key set 73
Enabling/disabling switching 74
Delaying switching 75
Changing the scancode sets of a PS/2 keyboard 76
Reinitialising USB input devices 77
Enabling/disabling AuxSnoopEnable 78
Channel configuration 79
Changing the channel name 79
Changing the comment of a channel 79
Enabling/disabling a channel 80
Enabling/disabling the keyboard signal 81
Support for multimedia and other special keys 82

Video channel configuration 83
Changing the name of a video channel 83
Changing the comment of a video channel 83
Enabling/disabling DisplayPort-Power 84
Adjustment of the Equalizer value 85
Reading the EDID profile of a monitor 86
Defining the EDID profile of a channel 88

Advanced features for KVM switches 89
Switching between channels 89
Configuring monitoring values 90
Selecting the values to be monitored 90
Viewing the status information of a KVM switch 91

1 Basic functions

Introduction

The *ConfigPanel* web application provides a graphical user interface to configure the KVM system. The application can be operated from any supported web browser (see page 2).

ADVICE: The web application can be used in the entire network independently from the locations of the devices and consoles connected to the KVM system.

Thanks to its enhanced functions, the graphical user interface provides the following features for easy operation:

- Clearly arranged user interface
- Monitoring of various system features
- Advanced network functions (netfilter, syslog, …)
- Backup and restore function

System requirements

IMPORTANT: Before the web application can be started via the web browser of a computer, the device from which the web application is loaded must first be connected to the local network (see installation instructions).

If not already done, adjust the network settings described on page 3.

The web application *ConfigPanel* has been successfully tested with these web browsers:

- Apple Safari 16
- Google Chrome 116
- Microsoft Edge 114
- Mozilla Firefox 117

Supported operating systems

- Microsoft Windows
- macOS
- Linux
- Android
- iOS

Recommended resolutions

- A minimum resolution of 1280 × 800 pixels is recommended.
- The web application is optimized to display the content in landscape mode.
- Portrait mode is supported. In this mode, not all contents may be visible.

Initial configuration of the network settings

NOTE: In the defaults, the following settings are pre-selected:

- IP address of *network interface A*: **192.168.0.1**
- IP address of *network interface B*: address obtained using **DHCP**
- global network settings: settings obtained using **DHCP**

To access the web application, the network settings of the device on which the web application is operated need to be configured.

How to configure the network settings before integrating the device into the local network:

1. Use a category 5 (or better) twisted pair cable to connect the network interface of any computer to the device's *Network A* interface.
2. Ensure that the IP address of the computer's network interface is part of the subnet to which the device's IP address belongs to.

   NOTE: Use the IP address *192.168.0.100,* for example.
3. Switch on the device.
4. Start the computer's web browser and enter **192.168.0.1** in the address bar.
5. Configure the network interface(s) and the global network settings as described in the paragraph *Network settings* on page 14 f.

   IMPORTANT: It is not possible to operate both network interfaces within one subnet!
6. Remove the twisted pair cable connection between computer and device.
7. Implement the device in the local network.

Getting started

This chapter introduces you to the basic operation of the web application.

NOTE: For a detailed explanation of the functions and configuration settings, refer to the following chapters of this manual.

Starting the web application

NOTE: Information on the system requirements of the web application can be found on page 2.

How to start the web application

1. Enter the following URL in the address line:

   https://[IP address of the device]

2. Enter the following data in the login mask:

Username:	Enter a username.
Password:	Enter a password for your user account.
One-time password:	Enter a one-time password from two-factor authentication.

NOTE: The one-time password is only requested if two-factor authentication has been configured (see page 40 f.) and activated (see page 53 ff.).

IMPORTANT: Change the administrator account's default password.

To do this, log into the web application with the administrator account and then change the password (see page 56).

The *default* access data to the administrator account are:

- **Username:** **Admin**
- **Password:** see *login* information on the label on the bottom of the device

NOTE: The default *admin* password for devices manufactured before **<obsolet>** is **4658**.

3. Click on **Login**.

Click on the **Config Panel 21** icon.

NOTE: As an alternative to the **Config Panel 21** you can open the **EasyControl** (see page 11) tool after login.

Operating the web application

User interface

The user interface of the web application consists of several areas:

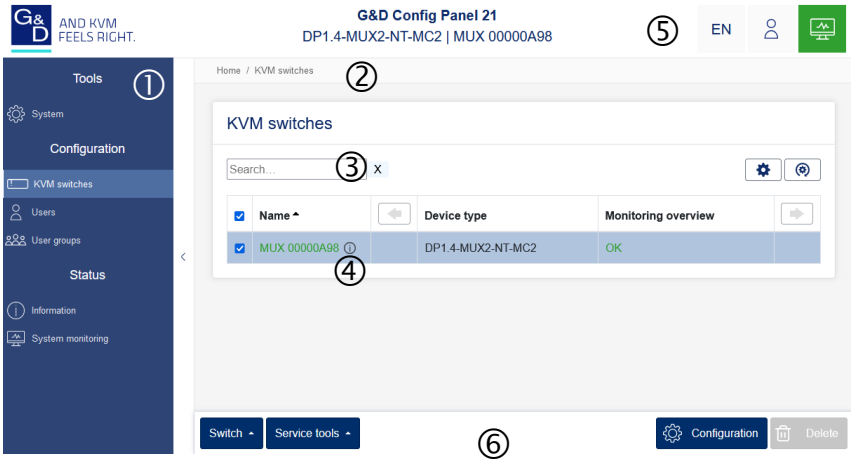


Figure 1: User interface of the web application

The different areas of the user interface serve different tasks. The following table lists the purpose of each area:

Menu ①:	In the menu the different functions of the web application are summarised in various topics.
Breadcrumb navigation ②:	The breadcrumb navigation shows you the path to the currently opened dialog. To quickly return to a higher-level dialog, you can click on it in the breadcrumb navigation.
Filter function ③:	You can use the filter function to narrow down the items displayed in the main view. In the text box, enter part of the name of the element you want to find. Only elements that contain this text in one of the *displayed* columns are displayed in the main view. The names are not case-sensitive during filtering. To delete the filter, click on the **[X]** icon.
Main view ④:	After selecting a topic in the menu, the contents of this topic are displayed here.

Shortcuts ⑤:	**Language selection:** The language identifier (for example **EN** for *English*) shows the currently active language in the web application. To switch the language, click the language identifier. This opens a submenu that shows the supported languages and the corresponding identifiers. Switch the language by clicking on the desired language. **User:** A click on the user icon opens a submenu: ▪ The name of the active user is displayed in the submenu. ▪ Click on *User* to access the user settings of the active user. ▪ Click on *Logout* to exit the active session. **Monitoring status:** This icon shows you at a glance whether all monitoring values are within the normal range (green icon) or if at least one monitoring value is outside the normal range (yellow or red icon). The *Monitoring status* icon always takes the colour of the *most critical* monitoring value If the icon is displayed in yellow or red, you can access the *Active alarms* dialog by clicking on the icon.
Buttons ⑥:	Depending on the dialog shown, different buttons are displayed in this area.

Frequently used buttons

The user interface uses various buttons to perform operations. The following table informs you about the names and functions of the buttons used in many dialog masks:

Configuration:	Show configuration settings of the selected element (device, user, ...)
Service tools:	If you select a device in the main view, you can use the service tools to perform certain tasks (for example, update, backup, show syslog).
Save:	Saving of the entered data. The opened dialog is still displayed.
Cancel:	The data you have entered will be discarded and the dialog will be closed.
Close:	The entered data is cached and the dialog is closed. Only after clicking on **Save** or **Cancel** the data is permanently stored or discarded.

Configuring table columns

You can adapt the table columns to be displayed under **KVM switches** and **Users** to your requirements.

By default, the columns *Name*, *Device type*, *Comment* and *Monitoring overview* are shown under **KVM switches**:

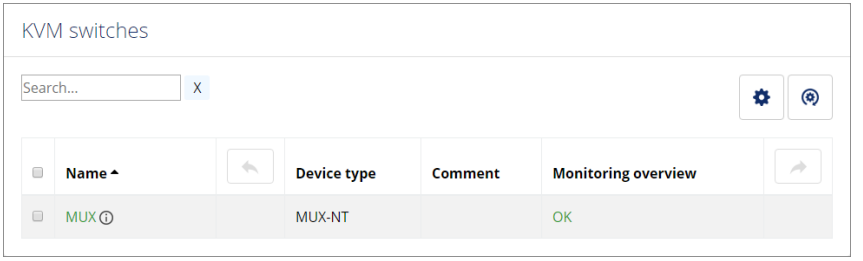


Figure 2: Table columns (selection) of a KVM switch

How to change the columns to be displayed:

> **NOTE:** The **Name** column is *always* shown as the first column of the table.

1. Click on the gears icon ( ) above the table.



Figure 3: Table configuration

2. To add a column, select it from the **Columns** drop-down box and click on **Add column**.
3. To delete a column, click on the red button ( ) below the column header.
4. Click on the green **check mark** ( ) to save your settings or klick on the red **Discard** button ( ).

How to change the column order:

> **NOTE:** The **Name** column is *always* shown as the first column of the table.

1. Click on the gears icon above the table.
2. To move a column to the left, click on the **arrow left** icon ( ) of this column.
3. To move a column to the right, click on the **arrow right** icon ( ) of this column.
4. Click on the green **check mark** ( ) to save your settings or click on the red **Discard** button ( ).

How to reset the table configuration to the default settings

1. Click on the **Table configuration reset** icon ( ) above the table.
2. Confirm the security prompt by clicking on **Yes**.

Language settings

Selecting the language of the web application

How to change the language of the web application:



1. Click the language identifier of the current language in the upper right corner.
2. Switch the language to be used by clicking on the desired language.

NOTE: The selected language is saved in the user settings of the active user. The next time this user logs on, the previously selected language setting is applied.

Selecting the system language

The specified system language is assigned to all user accounts by default. **How to set the system language:**

1. Click **System** on the menu.
2. Click **System language**.
3. Select the desired language.
4. Click **Save**.

Showing the version number of the web application

How to show the version number of the web application:

1. In the menu, click on **Information**.
2. The **General** tab provides you with information about the *ConfigPanel* version.

Closing the web application

Use the *Close* button to end the active session of the web application.

IMPORTANT: To protect the web application against unauthorised access, always use the *Logout* function after finishing your work with the web application.

How to close the web application:



1. Click on the **user icon** at the top right.
2. Click on **Logout** to exit the active session.

Channel switching via EasyControl

You can use the integrated switching tool **EasyControl** to visualise the connected channel and to allow fast switching (also via touch screen device).

All users with the **Config Panel Login** right (see page 63) can use the switching tool.

Starting the switching tool »EasyControl«

How to start the switching tool:

1. Enter the following URL in the address line:

   https://[IP address of the device]

2. Enter the following data in the login mask:

Username:	Enter a username.
Password:	Enter a password for your user account.
One-time password:	Enter a one-time password from two-factor authentication.

> **NOTE:** The one-time password is only requested if two-factor authentication has been configured (s. Seite 40 f.) and activated (s. Seite 53 ff.).

> **IMPORTANT:** Change the administrator account's default password.
>
> To do this, log into the web application with the administrator account and then change the password (see page 56).
>
> The *default* access data to the administrator account are:
>
> - **Username:** **Admin**
> - **Password:** see *login* information on the label on the bottom of the device

> **NOTE:** The default *admin* password for devices manufactured before January 2021 is **4658**.

3. Click on **Login**.
4. Click on the **EasyControl** icon.

Switching the active KVM channel

The user interface consists of three buttons for switching between the three channels of the KVM switch.

When using the default colour scheme, a green frame indicates the currently active channel.

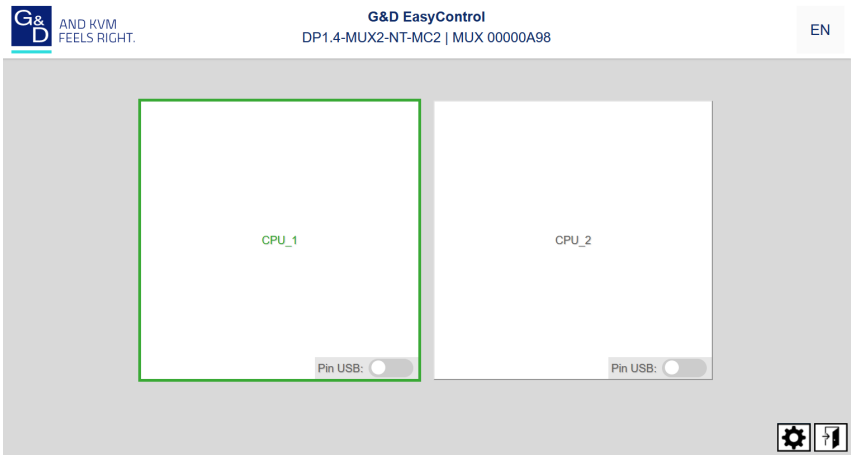


Figure 4: User interface of the »EasyControl« switching tool

How to switch to another KVM channel:

- Click on the button of the channel you want to switch off.

Permanent switching of devices connected to USB 3.0 interfaces

You can use the USB hold function to permanently switch the devices connected to the »USB 3.0 Devices« interface to a particular channel. The permanent switching of these devices still remains even when switching the KVM channel at a later point.

How to switch the devices connected to the USB 3.0 interfaces permanently to a specific channel:

- Move the slider **Pin USB** of the channel whose USB 3.0 interfaces should remain permanently connected to the *right*.

How to cancel permanent switching of devices connected to USB 3.0 interfaces:

- Move the slider **Pin USB** of the channel whose USB 3.0 interfaces are permanently connected to the *left*.

Changing the colour scheme of the switching tool

NOTE: The selected colour scheme is saved in the user settings of the active user. The next time the switching tool is used, the previously selected colour scheme is applied.

How to change the colour scheme of the switching tool:

1. Click on the gears icon at the bottom right.
2. Click on the button of the colour scheme you want to use (**Skin 1**, **Skin 2** or **Skin 3**).
3. Each colour scheme is available in a variant for light and dark working environments. Select the desired variant:

Bright:	Apply variant for bright working environments
Dark:	Apply variant for dark working environments

4. Click the gears icon again to close the settings.

Renaming KVM channels

IMPORTANT: Only users with **Superuser** rights can edit the names of the individual KVM channels in the switching tool.

How to rename the KVM channels:

1. Click on the gears icon () at the bottom right.
2. Edit the names in the fields **Channel x**.
3. Click on **Save**.
4. Click the gears icon again to close the settings.

Closing the »EasyControl« switching tool

How to close the switching tool:

1. Click on the **Exit** icon () at the bottom right.

Basic configuration of the web application

Network settings

The device provides two network interfaces (*Network A* and *Network B*). The network interfaces lets you integrate a device into up to two separate networks.

IMPORTANT: Note the separate instructions about the *Initial configuration of the network settings* on page 3.

Configuring the network interfaces

To connect the device to a local network, you need to configure the settings of the network.

NOTE: These are the default settings:

- IP address of the *network interface A*: **192.168.0.1**
- IP address of *network interface B*: Obtain address via **DHCP**
- Global network settings: Obtain settings via **DHCP**

How to configure the settings of a network interface:

IMPORTANT: It is not possible to use both network interfaces within the same subnet.

NOTE: The *Link Local* address space 169.254.0.0/16 is reserved for internal communication between devices in accordance with RFC 3330. It is not possible to assign an IP address of this address space.

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Interfaces**.

5. Enter the following values under **Interface A** or **Interface B**:

Operating mode:	Select the operational mode of **Interface A** or **Interface B**: ▪ **Off:** Disable network interface. ▪ **Static:** A static IP address is assigned. ▪ **DHCP:** Obtain IP address from a DHCP server The drop-down list shows the text **Link aggregation active** if the interface has been added to a network interface group. In this case, configure the network interfaces under »Link aggregation«.
IP address:	Enter the IP address of the interface (only when operating mode *Static* is selected).
Netmask:	Enter the netmask of the network (only when operating mode *Static* is selected).

6. Click on **Save**.

Configuring global network settings

Even in complex networks global network settings ensure that the web application is available from all subnetworks.

How to configure global network settings:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Now go to **Global network settings**.
5. Enter the following values:

Operating mode:	Enter the desired operating mode: ▪ **Static:** Use of static settings. ▪ **DHCP:** Obtain settings from a DHCP server.
Hostname:	Enter the hostname of the device. **IMPORTANT:** If the DHCP server itself does not assign a hostname when DHCP is enabled, the hostname entered here is used. Otherwise the hostname obtained from the DHCP server is used.
In the *DHCP* operating mode the following settings are obtained automatically. Making entries is not possible.	
Domain:	Enter the domain to which the device should belong.
Gateway:	Enter the IP address of the gateway.
DNS server 1:	Enter the IP address of the DNS server.
DNS server 2:	*Optionally*, enter the IP address of another DNS server.

6. Click on **Save**.

Increasing the reliability of network connections by link aggregation

By default, you can use both network interfaces at the same time to acees the web application from two different network segments, for example

To increase reliability, the entwork interfaces can be grouped via *link aggregation*. Within a group, only one interface is active at a time. Another interface only becomes active if the active interface fails.

Two different modes are available for monitoring the interfaces:

- **MII mode:** The carrier status of the network interface is monitored via the *media independent interface* überwacht. In this mode, only the functionality of the network is tested.
- **ARP mode:** Using the *address resolution protocol*, requests are sent to an ARP target on the network. The response from the ARP target confirms both the functionality of the network interface and a proper network connection to the ARP target.

If the ARP target is connected to the network but temporarily offline, the requests cannot be answered. For this reason, you should determine several ARP targets in order to obtain a response from at least one target even if an ARP target fails.

NOTE: It is not possible to combine **MII** and **ARP mode**.

How to configure the settings of grouped network interfaces:

NOTE: The *Link Local* address space 169.254.0.0/16 is reserved for internal communication between devices in accordance with RFC 3330. It is not possible to assign an IP address of this address space.

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Link aggregation**.

5. Enter the following values under **Network**:

Name:	Enter the name of the network interface group.
Operating mode:	Select the operating mode for grouped network interfaces: ▪ **Off:** Disable link aggregation. *Go to »Interfaces« to configure the network interfaces.* ▪ **Static:** A static IP address is assigned. ▪ **DHCP:** Obtain IP address from a DHCP server.
IP address:	Enter the IP address of the interface (only when operating mode *Static* is selected).
Netmask:	Enter the netmask of the network (only when operating mode *Static* is selected).

6. Enter the following values under **Parameter**:

Primary Follower:	Select whether data traffic should preferably be transmitted via the interface *Network A* (**Interface A**) or the interface *Network B* (**Interface B**). As soon as the selected interface is available, this interface is used for data traffic. If you select the option **None**, the data traffic is sent via any interface. A switch-over occurs only if the active interface fails.
Link monitoring:	Select whether you want to use the **MII** or the **ARP** mode (see explanation above) to monitor the interface.
MII down delay:	Waiting period in milliseconds before a failed network interface is disabled. The entered value must be a multiple of 100 ms (the MII link monitoring frequency).
MII up delay:	Waiting period in milliseconds before a reset network interface is activated. The entered value must be a multiple of 100 ms (the MII link monitoring frequency).
ARP interval:	Enter the interval (100 to 10,000 milliseconds) after which the system checks for incoming ARP packets of the network interfaces.

ARP validate:	The validation ensures that the ARP packet for a particular network interface has been generated by one of the specified ARP targets. Select whether or which of the incoming ARP packets should be validated: ▪ **None:** ARP packets are not validated (default). ▪ **Active:** Only the ARP packets of the active network interface are validated. ▪ **Backup:** Only the ARP packets of the inactive network interface are validated ▪ **All:** The ARP packets of all network interfaces of the group are validated.
ARP target:	The table contains a list of all configured ARP targets. Use the buttons **New**, **Edit** and **Delete** to manage the ARP targets.

7. Click on **Save**.

Reading out the status of the network interfaces

The current status of both network interfaces can be read out in the web application.

How to detect the status of the network interfaces:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Information**.
4. Go to the paragraph **Link status**.
5. The paragraphs **Interface A** and **Interface B** include the following values:

Link detected:	Connection to the network established (**yes**) or interrupted (**no**).
Auto-negotiation:	Both the transmission speed and the duplex method have been configured automatically (**yes**) or manually by the administrator (**no**).
Speed:	Transmission speed
Duplex:	Duplex mode (**full** or **half**)

6. Click on **Save**.

Creating and administrating netfilter rules

By default, all network computers have access to the web application *ConfigPanel* (open system access).

NOTE: The open system access allows unrestricted connections via ports 80/TCP (HTTP), 443/TCP (HTTPS) and 161/UDP (SNMP).

Once a netfilter rule has been created, open system access is disabled and all incoming data packets are compared with the netfilter rules. The list of netfilter rules is processed in the stored order. As soon as a rule applies, the corresponding action is executed and the following rules are ignored.

Creating new netfilter rules

How to create a new netfilter rule:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Netfilter**.
5. Enter the following values:

Interface:	In the pull-down menu, select on which network interfaces the data packets are to be intercepted and manipulated: ▪ **All** ▪ **Interface A** ▪ **Interface B** ▪ **Link-Aggregation group**
Option:	In the pull-down menu, select how to interpret the sender information of the rule: ▪ **Normal:** The rule applies to data packets whose sender information corresponds to the IP address or MAC address specified in the rule. ▪ **Inverted:** The rule applies to data packets whose sender information does *not* correspond to the IP address or MAC address specified in the rule.

IP address/ Netmask:	Enter the IP address of the data packets or - by using the **Netmask** field - the address space of the IP addresses. **Examples:** ▪ **192.168.150.187:** for IP address 192.168.150.187 ▪ **192.168.150.0/24:** IP addresses of section 192.168.150.x ▪ **192.168.0.0/16:** IP addresses of section 192.168.x.x ▪ **192.0.0.0/8:** IP addresses of section 192.x.x.x ▪ **0.0.0.0/0:** all IP addresses **NOTE:** The *IP address* and/or a *MAC address* can be specified within a rule.
MAC address:	Enter the MAC address to be considered in this filter rule. **NOTE:** The *IP address* and/or a *MAC address* can be specified within a rule.
Filter rule:	▪ **Drop:** Data packets whose sender information matches the IP address or MAC address are not processed. ▪ **Accept:** Data packets whose sender information matches the IP address or MAC address are processed.
Service:	Select a specific service for which this rule is used exclusively, or choose (**All**).

6. Click on **Add** to save the values in a new filter rule.

   The new filter rule is added to the end of the list of existing filter rules.

7. Click on **Save**.

NOTE: The new nefilter rule is not applied to active connections. Restart the device if you want to disconnect the active connections and then apply all the rules..

Editing existing netfilter rules

How to edit an existing netfilter rule:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Netfilter**.
5. In the list of existing netfilter rules, select the rule you want to change.
6. The current rule settings are displayed in the upper part of the dialog. Check and change the following settings.

Interface:	In the pull-down menu, select on which network interfaces the data packets are to be intercepted and manipulated: ▪ **All** ▪ **Interface A** ▪ **Interface B** ▪ **Link-Aggregation group**
Option:	In the pull-down menu, select how to interpret the sender information of the rule: ▪ **Normal:** The rule applies to data packets whose sender information corresponds to the IP address or MAC address specified in the rule. ▪ **Inverted:** The rule applies to data packets whose sender information does *not* correspond to the IP address or MAC address specified in the rule.
IP address/ Netmask::	Enter the IP address of the data packets or - by using the **Netmask** field - the address space of the IP addresses. **Examples:** ▪ **192.168.150.187:** for IP address 192.168.150.187 ▪ **192.168.150.0/24:** IP addresses of section 192.168.150.x ▪ **192.168.0.0/16:** IP addresses of section 192.168.x.x ▪ **192.0.0.0/8:** IP addresses of section 192.x.x.x ▪ **0.0.0.0/0:** all IP addresses **NOTE:** The *IP address* and/or a *MAC address* can be specified within a rule.
MAC address:	Enter the MAC address to be considered in this filter rule. **NOTE:** The *IP address* and/or a *MAC address* can be specified within a rule.

Filter rule:	▪ **Drop:** Data packets whose sender information matches the IP address or MAC address are not processed. ▪ **Accept:** Data packets whose sender information matches the IP address or MAC address are processed.
Service:	Select a specific service for which this rule is used exclusively, or choose (**All**).

7. Click on **Apply** to save your settings.
8. Click on **Save**.

NOTE: The new nefilter rule is not applied to active connections. Restart the device if you want to disconnect the active connections and then apply all the rules..

Deleting existing netfilter rules

How to delete existing netfilter rules:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Netfilter**.
5. In the list of existing netfilter rules, select the rule you want to delete.
6. Click on **Delete**.
7. Confirm the confirmation prompt by clicking on **Yes** or cancel the process by clicking on **No**.
8. Click on **Save**.

Changing the order or priority of existing netfilter rules

The list of netfilter rules is processed in the stored order. As soon as a rule applies, the corresponding action is executed and the following rules are ignored.

IMPORTANT: Pay attention to the order or priority of the individual rules, especially when adding new rules.

How to change the order or priority of existing netfilter rules:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Netfilter**.
5. In the list of existing netfilter rules, select the rule whose order/priority you want to change.
6. Click the button **Arrow up** to increase the priority or the button **Arrow down** to decrease the priority.
7. Click on **Save**.

Creating an SSL certificate

Use the free implementation of the SSL/TLS protocol *OpenSSL* to create an SSL certificate.

IMPORTANT: For security reasons, network certificates for the web application (see page 24 ff.) and, if used, additional user certificates for the KVM connection are **not** included in a backup and may have to be stored again after a restore.

The following websites provide detailed information about operating OpenSSL:

- OpenSSL project: **https://www.openssl.org/**
- Win32 OpenSSL: **http://www.slproweb.com/products/Win32OpenSSL.html**

IMPORTANT: Creating an SSL certificate requires the software OpenSSL. If necessary, follow the instructions on the websites mentioned above to install the software.

The instructions on the following pages explain how to create an SSL certificate.

Special features for complex KVM systems

If different G&D devices are to communicate with each other within a KVM system, the identical *Certificate Authority* (see page 25) must be used when creating certificates for these devices.

Alternatively, the identical PEM file (see page 28) can also be used for all devices. Inthis case, all characteristics of the certificates are identical.

Creating a Certificate Authority

A *Certificate Authority* enables the owner to create digital certificates (e. g. for a matrix switch.

How to create a key for the Certificate Authority:

> **IMPORTANT:** The following steps describe how to create keys that are not coded. If necessary, read the OpenSSL manual to learn how to create a coded key.

1. Enter the following command into the command prompt and press **Enter**:

```
openssl genrsa -out ca.key 4096
```

2. OpenSSL creates the key and stores it in a file named *ca.key*.

How to create the Certificate Authority:

1. Enter the following command into the command prompt and press **Enter**:

```
openssl req -new -x509 -days 3650 -key ca.key -out ca.crt
```

2. Now, OpenSSL queries the data to be integrated into the certificate.

   The following table shows the different fields and an exemplary entry:

Field	Example
Country Name (2 letter code)	DE
State or Province Name	NRW
Locality Name (e.g., city)	Siegen
Organization Name (e.g., company)	Guntermann & Drunck GmbH
Organizational Unit Name (e.g., section)	
Common Name (e.g., YOUR name)	Guntermann & Drunck GmbH
Email Address	

IMPORTANT: The device's IP address must not be entered under *Common Name*.

   Enter the data you want to state, and confirm each entry by pressing **Enter**.

3. OpenSSL creates the key and stores it in a file named *ca.crt*.

IMPORTANT: Distribute the certificate *ca.crt* to the web browsers using the web application. The certificate checks the validity and the trust of the certificate stored in the device.

Creating any certificate

How to create a key for the certificate to be created:

> **IMPORTANT:** The following steps describe how to create keys that are not coded. If necessary, read the OpenSSL manual to learn how to create a coded key.

1. Enter the following command into the command prompt and press **Enter**:

```
openssl genrsa -out server.key 4096
```

2. OpenSSL creates the key and stores it in a file named *server.key*.

How to create the certificate request:

1. Enter the following command into the command prompt and press **Enter**:

```
openssl req -new -key server.key -out server.csr
```

2. Now, OpenSSL queries the data to be integrated into the certificate.

   The following table shows the different fields and an exemplary entry:

Field	Example
Country Name (2 letter code)	DE
State or Province Name	NRW
Locality Name (e.g., city)	Siegen
Organization Name (e.g., company)	Guntermann & Drunck GmbH
Organizational Unit Name (e.g., section)	
Common Name (e.g., YOUR name)	192.168.0.10
Email Address	

> **IMPORTANT:** Enter the IP address of the device on which the certificate is to be installed into the row *Common Name*.

   Enter the data you want to state, and confirm each entry by pressing **Enter**.

3. If desired, the *Challenge Password* can be defined. This password is needed if you have lost the secret key and the certificate needs to be recalled.

4. Now, the certificate is created and stored in a file named *server.csr*.

Creating and signing an X509 certificate

1. Enter the following command into the command prompt and press **Enter**:

```
openssl x509 -req -days 3650 -in server.csr -CA ca.crt -CAkey ca.key -set_serial 01 -out server.crt
```

2. OpenSSL creates the certificate and stores it in a file named *server.crt*.

Creating a PEM file

NOTE: The *.pem* file contains the following three components:

- server certificate
- private server key
- certificate of the certification authority

If these three components are available separately, enter them successively to the *Clear text* entry before updating the certificate stored in the device.

1. Enter the following command(s) into the prompt and press **Enter**:

   a. Linux

```
cat server.crt > gdcd.pem
cat server.key >> gdcd.pem
cat ca.crt >> gdcd.pem
```

   b. Windows

```
copy server.crt + server.key + ca.crt gdcd.pem
```

2. The *gdcd.pem* file is created while copying. It contains the created certificate and its key as well as the *Certificate Authority*.

Selecting an SSL certificate

By default, each G&D device with integrated web application stores at least one SSL certificate. The certificate has two functions:

- The connection between web browser and web application can be established via an SSL-secured connection. In this case, the SSL certificate allows the user to authenticate the opposite side.

  If the device's IP address does not match the IP address stored in the certificate, the web browser sends a warning message.

  ADVICE: You can import a user certificate so that the device's IP address matches the IP address stored in the certificate.

- The communication between G&D devices within a system is secured via the devices' certificates.

  IMPORTANT: Communication between devices is possible only if all devices within a KVM system use certificates of the same *Certificate Authority* (see page 25).

How to select the SSL certificate you want to use:

IMPORTANT: After activating *another* certificate, close the currently active »Config Panel« sessions and start new sessions.

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Certificate**.

5. Select the certificate you want to use:

G&D certificate #1:	This certificate is enabled for *new* devices. **NOTE:** Make sure that you use the same certificate for all devices within the KVM system.
G&D certificate #2:	This certificate is supported by some older G&D devices with integrated web application.
User certificate:	Select this option if you want to use a certificate purchased from a certificate authority or if you want to use a user certificate. Now you can import and upload the certificate: 1. Click on **Import certificate from file** and use the file dialog to select the .pem file you want to import. You can also copy the plain text of the server certificate, the server's private key and the certificate of the certificate authority to the text box. 2. Click on **Upload and activate** to store and activate the imported certificate for the device.

6. Click on **Save**.

IMPORTANT: For security reasons, network certificates for the web application (see page 24 ff.) and, if used, additional user certificates for the KVM connection are **not** included in a backup and may have to be stored again after a restore.

Firmware update

The firmware of each device of the KVM system can be updated via the web application.

Firmware update of a single device

IMPORTANT: This function only updates the firmware of the device on which the web application was started.

How to execute a firmware update of a single device:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to update.
3. Open the menu **Service tools** and select the entry **Firmware update**.
4. Click on **Supply firmware image files**.

   NOTE: If the firmware file is already available in the internal storage, you can skip this step.

   Select the firmware file on your local disk and click on **Open**.

   NOTE: Multiple selection of firmware files is possible by simultaneously pressing the **Shift** or **Ctrl** key and the left mouse button.

   The firmware file is transferred to the internal storage and can then be selected for the update.
5. Select the firmware files to be used from the internal storage and click on **Continue**.
6. Select the **Intended version** of the devices if you selected more than one firmware files for one device.
7. Move the **Update** slider to the right (green) in the rows of all devices to be updated.
8. Click on **Start update**.

IMPORTANT: Do **not** close the browser session while the device is being updated! Do **not** turn off the product or disconnect it from the power supply during the update.

Restoring the system defaults

With this function, the system defaults of the device on which the web application is operated can be restored.

How to restore the system defaults:

1. In the menu, click on **System**.
2. Click on **System defaults**.
3. Select the scope of the recovery:

Reset all settings:	Reset all settings of the device.
Reset only local network settings:	Reset only local network settings.
Reset only KVM application settings:	Reset all settings except the local network settings.

4. Click on **Set system defaults**.

Restarting the device

This function restarts the device. Before restarting, you will be prompted for confirmation to prevent an accidental restart.

How to restart the device using the web application:

1. In the menu, click on **KVM switches**.
2. Click on the desired device.
3. Open the menu **Service tools** and select the entry **Restart**.
4. Confirm the confirmation prompt with **Restart**.

Network functions of the devices

The devices within the KVM system provide *separate* network functions.

The following functions can be configured for :

- Authentication against directory services (LDAP, Active Directory, RADIUS, TACACS+)
- Time synchronisation via NTP server
- Forwarding of log messages to syslog servers

NTP server

The date and time of a device can be set either automatically by time synchronization with an NTP server (*Network Time Protocol*) or manually.

Time sync with an NTP server

How to change the NTP time sync settings:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **NTP server** and enter the following values:

NTP time sync:	By selecting the corresponding entry in the pull-down menu, you can enable or disable the the time synchronization: ▪ **Disabled** (*default*) ▪ **Enabled**
NTP server 1:	Enter the IP address of a time server.
NTP server 2:	O*ptionally* enter the IP address of a second time server.
Time zone:	Use the pull-down menu to select the time zone of your location.

5. Click on **Save**.

Manual setting of time and date

How to manually set the time and date of the device:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **NTP server**.

> **IMPORTANT:** If necessary, disable the **NTP time sync** option. Otherwise, you might not be able to set time and date manually.

5. Go to the entry **Time** under **Time/date** to enter the current time (*hh:mm:ss*).
6. Go to the entry **Date** under **Time/date** to enter the current time (*DD.MM.YYYY)*.

> **ADVICE:** Click on **Accept local date** to copy the current system date of the computer on which the web application was opened to the *Time* and *Date* fields.

7. Click on **Save**.

Logging syslog messages

The syslog protocol is used to transmit log messages in networks. The log messages are transmitted to a syslog server that logs the log messages of many devices in the computer network.

Among other things, eight different severity codes have been defined to classify the log messages:

- **0:** Emergency
- **1:** Alert
- **2:** Critical
- **3:** Error
- **4:** Warning
- **5:** Note
- **6:** Info
- **7:** Debug

The web application enables you to configure whether the syslog messages are to be locally logged or sent to up to two syslog servers.

Local logging of syslog messages

How to locally log syslog messages:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Syslog** enter the following data under **Syslog local**:

Syslog local:	By selecting the corresponding entry in the pull-down menu, you can enable or disable the local logging of syslog messages: ▪ **Disabled** ▪ **Enabled** (*default*)
Log level:	In this pull-down menu, select the severity from which a log message is to be logged. The selected severity and all lower severity levels are logged. If you select the severity *2 - Critical*, messages for this code as well as for the severity levels *1 - Alert* and *0 - Emergency* are logged.

5. Click on **Save**.

Sending syslog messages to a server

How to send syslog messages to a server:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Syslog** and enter the following values under **Syslog server 1** or **Syslog server 2**:

Syslog server:	By selecting the corresponding entry in the pull-down menu, you can enable or disable the sending of syslog messages to a server: ▪ **Disabled** (*default*) ▪ **Enabled**
Log level:	In this pull-down menu, select the severity level from which a log message is to be logged. The selected severity level and all lower severity levels are logged. If you select the severity *2 - Critical*, messages for this code as well as for the severity levels *1 - Alert* and *0 - Emergency* are logged.
IP address/ DNS name:	Enter the IP address or name of the server to which the syslog messages are to be sent.
Port:	Enter the port - usually 514 - on which the syslog server accepts incoming messages.
Protocol:	Select the protocol - usually UDP - on which the syslog server accepts incoming messages: ▪ **TCP** ▪ **UDP**

5. Click on **Save**.

Viewing and saving local syslog messages

If the function to log the local syslog messages is activated, these syslog messages can be viewed and, if necessary, stored in the information dailog.

How to view and store local syslog messages:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure.
3. Open the menu **Service tools** and select the entry **Syslog**.
4. Click on **Retrieve syslog**.

   The local syslog messages are now retrieved and displayed in the text field.

   ADVICE: Click on **Save syslog** to save the messages in a text file.

5. Click on the red **[X]** to close the window.

User authentication with directory services

In internal corporate networks, user accounts are often managed centrally by a directory service. The device can access such a directory service and authenticate users against the directory service.

NOTE: If the directory service fails to authenticate the user account *Admin* , the user account is authenticated against the database of the device.

The directory service is used exclusively to authenticate a user. Rights are granted by the database of the KVM system. The following paragraphs describe the different scenarios:

- **The user account exists in the directory service and in the KVM system**
  The user can log on with the password stored in the directory service. After a successful login, the rights of the account with the same name are assigned to the user in the KVM system.

  NOTE: The password with which the user has successfully logged on is transferred to the database of the KVM system.

- **The user account exists in the directory service, but not in the KVM system**
  A user who has been successfully authenticated against the directory service but does not have an account of the same name in the KVM system's database will be granted the rights of a *RemoteAuth* user.
  If required, change the rights of this particular user account to set the rights for users without a user account.

  ADVICE: Deactivate the *RemoteAuth* user to prevent users without user accounts to log on to the KVM system.

- **The user account exists in the KVM system, but not in the directory service**
  If the directory service is available, it reports that the user account does not exist. Access to the KVM system is denied to the user.
  If the server is not available but the fallback mechanism is activated, the user can log on with the password stored in the KVM system.

  IMPORTANT: In order to prevent the logon of a user locked or deactivated in the directory service when the connection to the directory service fails, please observe the following security rules:
  - If a user account is deactivated or deleted in the directory service, this action must also be carried out in the user database of the KVM system!
  - Activate the fallback mechanism only in exceptional cases.

  IMPORTANT: When using two-factor authentication
  (see *Setting up two-factor authentication on the device* on page 40),
  the fallback mechanism **cannot** be used.

How to configure the authentication of user accounts:

NOTE: If no directory service is used, the user accounts are managed by the device.

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **Authentication**.

5. Enter the following values under **Authentication service**:

Authentication server: Select the **Local** option if the user administration is to be carried out by the KVM system.

If you want to use a certain external directory service, select the corresponding entry from the pull-down menu:

- **LDAP**
- **Active Directory**
- **Radius**
- **TACACS+**

After selecting a external directory service, enter the settings of the directory service server in the corresponding dialog box.

NOTE: User names can be subject to a naming convention when using external directory services (see *Creating a new user account* on page 52).

Fallback: Activate this option if you want to use the local user administration of the KVM system if the directory service is temporarily unavailable.

IMPORTANT: In order to prevent the logon of a user locked or deactivated in the directory service when the connection to the directory service fails, please observe the following security rules:

- If a user account is deactivated or deleted in the directory service, this action must also be carried out in the user database of the KVM system!
- Activate the fallback mechanism only in exceptional cases.

IMPORTANT: When using two-factor authentication, the fallback mechanism **cannot** be used
(see *Setting up two-factor authentication on the device* on page 40).

6. Click on **Save**.

Setting up two-factor authentication on the device

Standard user authentication involves querying a password. To provide a greater level of security, two-factor authentication (2FA) can be used to query a second factor based on a device in the user's possession. 2FA makes use of a time-based one-time password (TOTP). Authenticator apps or hardware tokens can be used.

To enable use of 2FA, support for it must first be activated on the relevant device.

IMPORTANT: If you no longer have access to your possession-based factor or if it is broken, you will lose access to the system. Take precautions by, for example, keeping the emergency codes in a safe place if you are using the internal OTP server and configuring settings that will minimise the risk of losing access (see *Activating two-factor authentication* on page 53).

How to activate 2FA on the device:

1. In the menu, click on **KVM switches**.
2. Double-click the device that is to be configured.
3. Click on the tab **Network**.
4. Select the section **2-factor authentication (2FA)**.

5. In the sector 2-factor authentication, enter the following data:

2FA support:	▪ **Disabled** (*default*) ▪ **Enabled**
OTP server:	Select the option **Internal** (*default*), if you will be using an authentication server that is provided in the device. If you want to use a specific external directory service, select the corresponding entry from the pull-down menu: ▪ **LDAP** ▪ **Active Directory** ▪ **Radius** ▪ **TACACS+** Once you have selected a directory service, enter the settings for the directory service server in the dialogue screen that opens.
	NOTE: Note that usernames may be subject to a naming convention if a directory service is used (see *Creating a new user account* on page 52).
Login only for users with configured 2FA:	If the internal OTP server is used, you can specify whether login for users without activated 2FA will permitted (*default*) or prevented. This option can be used to set up a transition period for setting up the OTPs, for example. ▪ **No** (*default*) ▪ **Yes**
	IMPORTANT: If an external directory service is used, the second factor will be required for **every** user profile on login.

6. Click on **Save**.

IMPORTANT: Use time sync with an NTP server (see page 33). Alternatively, you can set the time and date manually (see page 34).

Information on activating two-factor authentication is provided on page 53.

Monitoring functions

Viewing all monitoring values

You can see the list of all monitoring values under **KVM switches**.

How to show a list of all monitoring values:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to check and then click on **Configuration**.
3. Click on the tab **Monitoring**.

   The displayed table contains a list of all available monitoring values.
4. Click on **Close**.

Enabling/disabling monitoring values

You can switch each monitoring value on and off *separately* or you can switch all monitoring values on or off *together*.

Deactivated monitoring values are *not* displayed in the web application.

IMPORTANT: The web application does *not* give any warnings about deactivated monitoring values.

How to enable/disable an *individual* monitoring value:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Monitoring**.
4. Turn the slider in the column **Enabled** of the desired monitoring value to the right (enabled) or to the left (disabled).
5. Click on **Save**.

How to enable/disable *all* monitoring values:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Monitoring**.
4. Mark or unmark the **Enabled** checkbox in the column header to switch all values on or off.
5. Click on **Save**.

Advanced features for managing critical devices

The **Monitoring status** icon (see *User interface* on page 5) shows you at a glance whether all monitoring values are within the normal range (green icon) or if at least one monitoring value is outside the normal range (yellow or red icon).

The *Monitoring status* icon always takes the colour of the *most critical* monitoring value

Displaying the list of critical monitoring values

If the **Monitoring status** icon is displayed in yellow or red, you can access the **Active alarms** dialog by clicking on the icon.

The *Active alarms* dialog shows any critical values.

Confirm the alarm of a critical device

Many alarm messages require immediate action by the administrator. Other alarms (for example, the failure of the redundant power supply), on the other hand, indicate possibly uncritical circumstances.

In such a case, you can confirm the alarm message of a value. The value is thus downgraded from **Alarm** (red) to **Warning** (yellow).

How to acknowledge the monitoring message of a device:

1. Click on the red **Monitoring status** icon at the top right.
2. Select the alarm you want to acknowledge.
3. Click on **Confirm**.

Monitoring devices via SNMP

The *Simple Network Management Protocol* (SNMP) is used to monitor and control computers and network devices.

Practical use of the SNMP protocol

A *Network Management System* (NMS) is used to monitor and control computers and network devices. The system queries and collects data from the *agents* of the monitored devices.

IMPORTANT: Chinese and Cyrillic characters are not supported by many network management systems.

Therefore, make sure that the passwords you use do not contain such characters!

NOTE: An *agent* is a program that runs on the monitored device and determines its status. The determined data is transmitted to the *Network Management System* via SNMP.

If an *agent* detects a serious event on the device, it can automatically send a *trap* packet to the *Network Management System*. This ensures that the administrator is informed about the event at short notice.

Configuring an SNMP agent

How to configure an SNMP agent:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure and then click on **Configuration**.
3. Click on the tab **Network**.
4. Go to the paragraph **SNMP agent**.

5. Enter the following values under *Global*:

Status:	Select the particular entry to either switch the SNMP agent off (**Disabled**) or on (**Enabled**).
Protocol:	Select the protocol (**TCP** or **UDP**) – usually UDP – to be used to transmit the SNMP packets.
Port:	Define the port – usually 161 – on which the *incoming* SNMP packets are to be accepted.
SysContact:	Enter the admin's contact data (e.g. direct dial or e-mail address).
SysName:	Enter the device name.
SysLocation:	Enter the location of the device.

6. If you want to process packets of protocol version **SNMPv2c,** enter the data listed on the following page in the section with the same name.

Access:	Activate read access (**View**), write access (**Full**) or deny access (**No**) via the *SNMPv2c* protocol.
Source:	Enter the IP address or the address space of the addresses of incoming SNMP packets. **Examples:** ▪ **192.168.150.187:** Only IP address 192.168.150.187 ▪ **192.168.150.0/24:** IP addresses of space 192.168.150.x ▪ **192.168.0.0/16:** IP addresses of space 192.168.x.x ▪ **192.0.0.0/8:** IP addresses of space 192.x.x.x
Read-only community:	Enter the name of the *Community* which has also been selected in the *Network Management System*.

IMPORTANT: The password (*Community*) of the packages of protocol version *SNMPv2c* is transmitted unencrypted and can therefore be easily tapped.

If necessary, use the protocol version *SNMPv3* (see below) and a high *security level* to ensure secure data transmission.

7. If you want to process packets of protocol version **SNMPv3c,** enter the data in the section with the same name:

Access:	Activate read access (**View**) or deny access (**No**) via the *SNMPv3c* protocol.
User:	Enter the username for the communication with the *Network Management System*.
Authentication protocol:	Select the authentication protocol (**MD5** or **SHA**) which has been activated in the *Network Management System*.
Authentication passphrase:	Enter the authentication passphrase for the communication with the *Network Management System*.
Security level:	Select one of the following options: ▪ **NoAuthNoPriv:** user authentication and *Privacy* protocol deactivated ▪ **AuthNoPriv:** user authentication activated, *Privacy* protocol deactivated ▪ **AuthPriv:** user authentication and *Privacy* protocol activated
Privacy protocol:	Select the privacy protocol (**DES** or **AES**) which has been activated in the *Network Management System*.
Privacy passphrase:	Enter the privacy passphrase for secure communication with the *Network Management System*.
Engine ID method:	Select how the **SnmpEngineID** should be assigned: ▪ **Random:** The *SnmpEngineID* is re-assigned with every restart of the device. ▪ **Fix:** The *SnmpEngineID* is the same as the MAC address of the device's network interface. ▪ **User:** The string entered under *Engine ID* is used as *SnmpEngineID*.
Engine ID:	When using the *Engine ID method* **User**, enter the string that is used as *Engine ID*.

8. Click on **Save**.

Adding and Configuring SNMP traps

How to add a new trap or edit an existing trap:

1. In the menu, click on **KVM switches**.
2. Click on the tab **Network**.
3. Go to the paragraph **SNMP trap**.
4. Click on **Add** or on **Edit**.
5. Enter the followng values under **Global**:

Server:	Enter the IP address of the *Network Management Server*.
Protocol:	Select the protocol (**TCP** or **UDP**) – usually UDP – to be used to transmit the SNMP packets.
Port:	Enter the port – usually 162 – on which *outgoing* SNMP packets are transmitted.
Retries:	Enter the number of retries to send an *SNMP Inform*.
	NOTE: Inputs are only possible if the *Inform* option is selected in the *Notification type* field.
Timeout:	Enter the timeout (in seconds) after which an *SNMP Inform* will be resent if no confirmation is received.
	NOTE: Inputs are only possible if the *Inform* option is selected in the field *Notification type*.
Log level:	Select the severity of an event from which an SNMP trap is to be sent. The selected severity and all lower severity levels are logged.
	NOTE: If you select the severity *2 - Critical*, SNMP traps will be sent for events of this severity level as well as for events of the severity levels *1 - Alert* and *0 - Emergency*.
Version:	Select if the traps are to be created and sent according to the *SNMPv2c* (**v2c**) or *SNMPv3* (**v3**) protocol.
Notification type:	Select if events are sent as *Trap* or *Inform* packet.
	NOTE: Inform packets require a confirmation of the Network Management System. If this confirmation is not available, transmission is repeated.

6. If you selected protocol version **SNMPv2c** in the last step, enter the name of the *Community*, which was also selected in the *Network Management System*.

> **IMPORTANT:** The password (*Community*) of the packages of protocol version *SNMPv2c* is transmitted unencrypted and can therefore be easily tapped.
>
> If necessary, use the protocol version *SNMPv3* (see below) and a high *security level* to ensure secure data transmission.

7. If you selected protocol version **SNMPv3** in step 5, enter the following data in the section with the same name:

Username:	Enter the username for the communication with the *Network Management System*.
Authentication protocol:	Select the authentication protocol (**MD5** or **SHA**) which has been activated in the *Network Management System*.
Authentication passphrase:	Enter the authentication passphrase for secure communication with the *Network Management System*.
Security level:	Select one of the following options: ▪ **NoAuthNoPriv:** user authentication and *Privacy* protocol deactivated ▪ **AuthNoPriv:** user authentication activated, *Privacy* protocol deactivated ▪ **AuthPriv:** user authentication and *Privacy* protocol activated
Privacy protocol:	Select the privacy protocol (**DES** or **AES**) which has been activated in the *Network Management System*.
Privacy passphrase:	Enter the privacy passphrase for secure communication with the *Network Management System*.
Engine ID:	Enter the *Engine ID* of the trap receiver.

8. Click on **Save**.

How to delete an existing trap:

1. In the menu, click on **KVM switches**.
2. Click on the tab **Network**.
3. Go to the paragraph **SNMP trap**.
4. In the row of the receiver you want to delete, click on **Delete**.
5. Click on **Save**.

Users and groups

Efficient rights administration

The web application administrates up to 256 user accounts as well as the same amount of user groups. Any user within the system can be a member of up to 20 groups.

User accounts and user groups can be provided with different rights to operate the system.

ADVICE: Rights administration can be carried out almost completely through user groups. Therefore, user groups and the assigned rights have to be planned and implemented beforehand.

This way, user rights can be changed quickly and efficiently.

The effective right

The effective right determines the right for a particular operation.

IMPORTANT: The effective right is the maximum right, which consists of the user account's individual right and the rights of the assigned group(s).

EXAMPLE: The user *JDoe* is member of the groups *Office* and *TargetConfig*.

The following table shows the user account rights, the rights of the assigned groups and the resulting effective right:

Right	User *JDoe*	Group *Office*	Group *TargetConfig*	Effective right
Config Panel Login	No	No	**Yes**	**Yes**
Change own password	No	**Yes**	No	**Yes**

The settings of the *Config Panel Login* and *Change own password* rights result from the rights assigned to the user groups.

The dialogue windows of the web application additionally display the effective right for every setting.

ADVICE: Click on the **i** button to get a list of the groups and rights assigned to the user account.

Efficient user group administration

User groups let you create a shared right profile for multiple users with identical rights. Furthermore, any user accounts included in the member list can be grouped and therefore no longer have to be individually configured. This facilitates the rights administration within the system.

If the rights administration takes place within user groups, the user profile only stores general data and user-related settings.

When initiating the system, it is recommended to create different groups for users with different rights (e. g. »*Office*« and »*IT*«) and assign the respective user accounts to these groups.

EXAMPLE: Create more groups if you want to divide the user rights even further. If, for example, you want to provide some users of the »*Office*« group with the *Confirm monitoring alert* right, you can create a user group for these users:

- Create a user group (e. g., »*Office_monitoring*«) with identical settings for the »*Office*« group. The *Confirm monitoring alert* right is set to *Yes*. Assign the respective user accounts to this group.
- Create a user group (e. g., »*Monitoring*«) and set only the *Confirm monitoring alert* right to *Yes*. In addition to the »*Office*« group, also assign the respective user accounts to this group.

In both cases, the user is provided with the *Yes* effective right for *Confirm monitoring alert*.

ADVICE: The user profile lets you provide extended rights to a group member.

Administrating user accounts

User accounts let you define individual rights for every user. The personal profile also provides the possibility to define several user-related settings.

IMPORTANT: The administrator and any user assigned with the *Superuser* right are permitted to create and delete user accounts and edit rights and user-related settings.

Creating a new user account

The web application manages up to 256 user accounts. Each user account has individual login data, rights and user-specific settings for the KVM system.

How to create a new user account:

1. In the menu, click on **User**.
2. Click on **Add user**.
3. Enter the following values in the dialog box:

Name:	Enter a user name.
	NOTE: User names can be subject to a naming convention when using external directory services (see *User authentication with directory services* on page 37 ff.).
Password:	Enter the user account password.
Confirm password:	Repeat the password.
Clear text:	If necessary, mark this entry to view and check both passwords.
Full name:	If desired, enter the user's full name.
Comment:	If desired, enter a comment regarding the user account.
Enabled:	Mark this checkbox to activate the user account.
	NOTE: If the user account is deactivated, the user is not able to access the KVM system.

4. Click on **Save**.

IMPORTANT: After the user account has been created, it does not have any rights within the KVM system.

5. If two-factor authentication is activated on the device (see page 40), the settings for the user account must be made in the next step (see page 53).

Activating two-factor authentication

NOTE: To use two-factor authentication, it first needs to be set up on the device (see page 40).

If the internal OTP server is used for 2FA, it can be activated for almost any user profile (exception: user *RemoteAuth*). To generate the security key for activation, various controlling parameters are used in addition to the key itself, which can be generated automatically. The key and the controlling parameters can be modified by the user. This is necessary for setting up hardware tokens. If authenticator apps are used, the parameters do not generally need to be modified.

IMPORTANT: If an external directory service is used
(see *Setting up two-factor authentication on the device* on page 40 ff.),
2FA is activated automatically for each user profile in the database. This means that login from the device is only possible if the external OTP server has identical user profiles and the second factor is validated successfully.

IMPORTANT: To activate or deactivate 2FA for a user profile, the user needs superuser rights (see page 63), or the user must be logged in with the corresponding user profile (see page 63) and have the right *Change own password* (see page 64).

IMPORTANT: Use time sync with an NTP server (see page 33). Alternatively, you can set the time and date manually (see page 34).

NOTE: 2FA can be activated for almost all user profiles. The only exception the user *RemoteAuth*.

How to activate 2FA in the user account:

1. In the menu, click on **User**.
2. Click on the user account that is to be configured and then click on **Configuration**.
3. Click on **Edit** in the line **2-factor authentication**.
4. Select **Enabled** in the section **2FA for this user**.
5. Enter the following data in the menu:

Encryption key:	When the parameter **2FA for this user** is changed from **Disabled** to **Enabled**, a encryption key is generated and displayed automatically. **IMPORTANT: Base32 format** must be used for the entry. Click on **Generate** to obtain a new encryption key.
Hash algorithm:	▪ **SHA1** ▪ **SHA256** (*default*) ▪ **SHA512**
Validity period (secs):	Enter how long the one-time password should remain valid. The value entered must be between **10** and **200** seconds (*default*: 30 seconds). **ADVICE:** It is a good idea to avoid selecting a validity period that is too short, as access problems could otherwise occur if the time is not synchronised correctly.
Length of OTP:	▪ **6 digits** (*default*) ▪ **8 digits**
OTP window width:	The window width specifies how many previous one-time passwords are valid in addition to the current one. It is **not** possible to allow future one-time passwords. The value entered must be between **1** and **20** (*default*: 1). **ADVICE:** To avoid access problems from occurring as the result of the time not being synchronised correctly, it can be a good idea to permit several previous one-time passwords.
Show QR code & copy security key:	Clicking the button validates the entries that have been made. A security key is generated and a QR code is displayed that contains the generated security key and that can be used to scan in with an authenticator app. The security key is copied to the clipboard.
Verification code:	Enter a verification code here that you receive from a hardware token or an authenticator app that you are using. Only numbers can be entered in this field.

6. Click on **Save**.

IMPORTANT: Following successful activation of 2FA, it the internal OTP server is used, the additional button **Emergency codes** is displayed in the line **2-factor authentication**. If you click this button, five emergency codes will be displayed. Each of these emergency codes enables a user account to be accessed **once** only. These codes are **not** limited to a specific time period. The codes should be kept in a safe place. The emergency codes can be used, for example, if a hardware token is lost to enable continued access to the system.

Click on **Get new codes** to create five new codes.

NOTE: A user who has been successfully authenticated against the directory service but who does not have an account with the same name in the database of the KVM system will be given the rights of the user *RemoteAuth*. The OTP is validated by the configured external OTP server.

Change the rights of this special user account to configure the rights of users without their own account (see *Changing the user account rights* on page 57).

Deactivate the user *RemoteAuth* to prevent users from logging in to the KVM system without their own user acoount (see *Enabling or disabling a user account* on page 59).

Once 2FA has been activated in the user acoount, the one-time password (TOTP) will be queried in addition to the username and password on login (see *Starting the web application* on page 4).

Renaming a user account

How to change the name of a user account:

1. In the menu, click on **Users**.
2. Click on the user account you want to configure and then click on **Configuration**.
3. Enter the username under **Name**.
4. *Optional:* Enter the user's full name under **Full name**
5. Click on **Save**.

NOTE: User names can be subject to a naming convention when using external directory services (see *User authentication with directory services* on page 37 ff.).

Changing the password of a user account

NOTE: The activated *Superuser* right
(see *Rights for unrestricted access to the system (Superuser)* on page 63 ff.)
or the right *Change own password*
(see *Rights to change your own password* on page 64 ff.)
are prerequisite for changing the password of a user account.

How to change the password of a user account:

1. In the menu, click on **Users**.
2. Click on the user account you want to configure and then click on **Configuration**.
3. Change the following values in the dialog box:

New password:	Enter the new password.
Confirm password:	Repeat the new password.
Clear text:	Mark this entry to view and check both entered passwords.

4. Click on **Save**.

Changing the user account rights

Any user account can be assigned with different rights.

The following table lists the different user rights. Further information on the rights can be found on the indicated pages.

Name	Right	Page
Change own password	Change own password	page 64
Superuser right	Unrestricted access to the configuration of the system	page 63
Config Panel Login	Login to the *ConfigPanel* web application	page 63
EasyControl Login	Access to *EasyControl* tool	page 64
Confirm monitoring alert	Confirmation of a monitoring alarm	page 64

Changing a user account's group membership

NOTE: Any user within the system can be a member of up to 20 user groups.

How to change a user account's group membership:

1. In the menu, click on **Users**.
2. Click on the user account you want to configure and then click on **Configuration**.
3. Click on the **Membership** tab.
4. In the **Members** column, turn the slider of the group to which you want to add the user to the right (enabled).

   ADVICE: If necessary, use the *Search* field to limit the number of user groups to be displayed in the selection window.

5. In the **Members** column, turn the slider of the group from which the user is to be removed to the left in the (disabled).

   ADVICE: If necessary, use the *Search* field to limit the number of user groups to be displayed in the selection window.

6. Click on **Save**.

Enabling or disabling a user account

IMPORTANT: If a user account is disabled, the user has no access to the KVM system.

How to enable or disable a user account:

1. In the menu, click on **User**.
2. Click on the user account you want to configure and then click on **Configuration**.
3. Mark the check box **Enabled** to activate the user account.

   If you want to block access to the system with this user account, unmark the checkbox.
4. Click on **Save**.

Deleting a user account

How to delete a user account:

1. In the menu, click on **User**.
2. Click on the user account you want to delete and then click on **Delete**.
3. Confirm the confirmation prompt by clicking on **Yes** or cancel the process by clicking on **No**.

Administrating user groups

User groups enable the user to create a common rights profile for several users with the same rights and to add user accounts as members of this group.

This way, the rights of these user accounts do not have to be individually configured, which facilitates the rights administration within the KVM system.

NOTE: The administrator and any user with the *Superuser* right are authorised to create and delete user groups as well as edit the rights and the member list.

Creating a new user group

The user can create up to 256 user groups within the system.

How to create a new user group:

1. In the menu, click on **User groups**.
2. Click on **Add user group**.
3. Enter the following values in the dialog box:

Name:	Enter the username.
Comment:	If desired, enter a comment regarding the user account.
Enabled:	Mark this checkbox to activate the user account.

NOTE: If the user group is disabled, the group rights do *not* apply to the assigned members.

4. Click on **Save**.

IMPORTANT: Directly after the new user group has been created, it contains no rights within the system

Renaming a user group

How to rename a user group:

1. In the menu, click on **User groups**.
2. Click on the user group you want to configure and then click on **Configuration**.
3. Enter the group name under **Name**.
4. Click on **Save**.

Changing the user group rights

The various user groups can be assigned with different rights.

The following table lists the different user rights. Further information about the rights is given on the indicated pages.

Name	Right	Page
Change own password	Change own password	page 64
Superuser right	Unrestricted access to the configuration of the system	page 63
Config Panel Login	Login to the *ConfigPanel* web application	page 63
EasyControl Login	Access to *EasyControl* tool	page 64
Confirm monitoring alert	Confirmation of a monitoring alarm	page 64

Administrating user group members

How to administrate user group members:

1. In the menu, click on **User groups**.
2. Click on the user group you want to configure and then click on **Configuration**.
3. Click on the **Members** tab.
4. In the **Members** column, click on the slider of the users you want to add to the group (enabled).

   ADVICE: If necessary, use the *Search* field to limit the number of users to be displayed in the selection window.

5. In the **Members** column, click on the slider of the users you want to delete from the group (disabled).

   ADVICE: If necessary, use the *Search* field to limit the number of users to be displayed in the selection window.

6. Click on **Save**.

(De)activating a user group

How to (de)activate a user group:

1. In the menu, click on **User groups**.
2. Click on the user group you want to configure and then click on **Configuration**.
3. Activate the **Enabled** slider to activate the user group.

   If you want to lock the access to the KVM system for members of this user group, deactivate the checkbox.

4. Click on **Save**.

Deleting a user group

How to delete a user group:

1. In the menu, click on **User groups**.
2. Click on the user group you want to delete and then click on **Delete**.
3. Confirm the confirmation prompt by clicking **Yes** or cancel the process by clicking **No**.

System rights

Rights for unrestricted access to the system (Superuser)

The *Superuser* right allows a user unrestricted access to the configuration of the KVM system.

NOTE: The information about the user's previously assigned rights remains stored when the *Superuser* right is activated and is reactivated when the right is revoked.

How to assign a user account with unrestricted access to the system:

1. In the menu, click on **Users** or **User groups**.
2. Click on the user account or the user group you want to configure and then click on **Configuration**.
3. Click on the tab **System rights**.
4. Under **Superuser right**, select between the following options:

Activated:	Allow full access to the KVM system and the connected devices
Deactivated:	Deny full access to the KVM system and the connected devices

5. Click on **Save**.

Changing the login right to the web application

How to change the login right to the web application:

1. In the menu, click on **Users** or **User groups**.
2. Click on the user account or the user group you want to configure and then click on **Configuration**.
3. Click on the tab **System rights.**
4. Under **Config Panel Login**, select between the following options:

Activated:	Allow access to web application
Deactivated:	Deny access to web application

5. Click on **Save**.

Rights to access the EasyControl tool

How to change the rights to access the *EasyControl* tool:

1. In the menu, click on **Users** or **User groups**.
2. Click on the user account or the user group you want to configure and then click on **Configuration**.
3. Click on the tab **System rights.**
4. Under **EasyControl Login**, select between the following options:

Yes:	Allow access to the *EasyControl* tool
No:	Deny access to the *EasyControl* tool

5. Click on **Save**.

Rights to change your own password

How to change the right to change your own password:

1. In the menu, click on **Users** or **User groups**.
2. Click on the user account or the user group you want to configure and then click on **Configuration**.
3. Click on the tab **System rights**.
4. Under **Change own password**, select between the following options:

Activated:	Allow users to change their own password
Deactivated:	Deny users the right to change their own password

5. Click on **Save**.

Authorization to confirm a monitoring alarm

How to change the authorization to confirm a monitoring alarm:

1. In the menu, click on **Users** or **User groups**.
2. Click on the user account or the user group you want to configure and then click on **Configuration**.
3. Click on the tab **System rights**.
4. Under Confirm monitoring alert, select between the following options:

Activated:	Confirmation of monitoring alarms allowed
Deactivated:	Confirmation of monitoring alarms denied

5. Click on **Save**.

Advanced functions of the KVM system

Identifying a device by activating the Identification LED

Some devices provide an *Identification* LED.

Use the web application to switch the device LEDs on or off in order to identify the devices in a rack, for example.

How to (de)activate the *Identification* LED of a device:

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure.
3. Open the menu **Service tools** and select the entry **Ident LED**.
4. Click on **LED on** or **LED off**.
5. Click on the red **[X]** to close the window.

Saving the configurations

The backup function lets you save your configurations. You can reset your configurations with the restore function.

How to save the configuration of the :

1. In the menu, click on **System**.
2. Click on **Backup & restore**.
3. Click the **Backup** tab.
4. *Optional:* Enter a **Password** to secure the backup file or a **Comment**.
5. Select the scope of data you want to back up: You can back up either the **network settings** and/or the **application settings**.
6. Click **Backup**.

IMPORTANT: For security reasons, network certificates for the web application and, if used, additional user certificates for the KVM connection are **not** included in a backup and may have to be stored again after a restore.

Saving the configurations with auto backup function

The device can save an automatic backup on a network drive at a defined interval. This means that you do not have to make a manual backup after a configuration option has been changed. You can reset your configurations with the restore function.

How to use the auto backup function:

1. In the menu, click on **System**.
2. Click on **Auto Backup**.
3. Enter the following data:

Auto Backup:	By selecting the corresponding entry in the pull-down menu, you can enable or disable the auto backup function: ▪ **Disabled** (*default*) ▪ **Enabled**
Filename prefix:	Enter the filename prefix. **ADVICE:** When the auto backup function is enabled, the filename prefix field is automatically filled with the **UID** of the device. You can change this entry. **IMPORTANT:** Only letters (upper and lower case), numbers (*0* to *9*) and the characters - and _ are permitted. The prefix may contain a maximum of 25 characters.
Backup password:	*Optional*: Enter a password to secure the backup file. **IMPORTANT:** Double inverted commas („ and “) cannot be used here.
Backup scope:	Select the scope of data you want to back up: You can back up either the **network settings** and/or the **application settings**.
Path:	Enter the path for the backup files. **IMPORTANT:** The syntax of the path specification differs depending on the selected protocol. **Examples:** ▪ **NFS:** *name:/directory1/directory2* ▪ **CIFS:** *//name/directory1/directory2*
Protocol:	Choose between the following protocols: ▪ **NFS** (*default*) ▪ **CIFS**
Port:	Enter the port. This field is filled automatically depending on the selection in the *protocol* field: ▪ **2049** (when selected *NFS*) ▪ **445** (when selected *CIFS*)

User:	*Optional:* Enter the name of the user.
Password:	*Optional:* Enter a password to secure the share.
Time:	Enter the following data: ▪ **Hour** (numbers *0* to *23*) ▪ **Minute** (numbers *0* to *59*)
Selection of the day:	You can choose between the following options: ▪ **1.** to **31. day of the month** ▪ **Select all** (every day of the month)

4. Click on **Save & Test** or **Save**.

ADVICE: Use **Save & Test** and check whether a backup was successfully saved with the desired parameters.

IMPORTANT: For security reasons, network certificates for the web application and, if used, additional user certificates for the KVM connection are **not** included in a backup and may have to be stored again after a restore.

Restoring the configurations

How to restore the configuration of the :

1. In the menu, click on **System**.
2. Click on **Backup & restore**.
3. Click on **Restore** tab.
4. Click **Select file** and open a previously created backup file.
5. Use the information given under **Creation date** and **Comment** to check if you selected the right backup file.
6. Select the scope of data you want to restore: You can restore either the **network settings** and/or the **Application settings**.

   NOTE: If one of these options cannot be selected, the data for this option was not stored.

   NOTE: If a password was entered when the data was saved, it is requested here.

7. Click **Restore**.

IMPORTANT: For security reasons, network certificates for the web application and, if used, additional user certificates for the KVM connection are **not** included in a backup and may have to be stored again after a restore.

Activating premium functions

With every purchase of a premium function, you receive a feature key. This file contains a key to activate the purchased function(s).

The premium function(s) is/are activated by importing this key to the web application.

How to import a feature key to activate the purchased function(s):

1. In the menu, click on **KVM switches**.
2. Click on the device you want to configure.
3. Open the menu **Service tools** and select the entry **Features**.
4. Click on **Import feature key from file...** and import the feature key (file) via the file interface.

   After the file is loaded, the clear text of the feature key is displayed in the text field.

   NOTE: The clear text of the feature key can also be copied into the text field.

5. Click on **Save**.

2 KVM switches

In the web application's *KVM Switches* menu, you can configure various settings of the KVM switch and view the device's status information.

Basic configuration of KVM switches

Changing the name of a KVM switch

How to change the name of a KVM switch

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Enter the desired name of the KVM switch in the **Name** field of the **Device** section.
4. Click on **Save**.

Changing the comment of a KVM switch

The list field of the web application displays the name of a KVM switch as well as the entered comment.

> **ADVICE:** For example, use the comment field to note the location of the KVM switch.

How to change the comment of a KVM switch:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Enter any comment in the **Comment** field of the **Device** section.
4. Click on **Save**.

Deleting a KVM switch from the KVM system

If the system is not able to find a KVM switch that has previously been integrated in the KVM system, it assumes that the device is switched off.

If a KVM switch has been permanently removed from the system, you can manually delete it from the KVM switches list.

> **NOTE:** Only KVM switches that have been *switched off* can be deleted.

How to delete a KVM switch that is switched off or disconnected from the system:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to delete and then click on **Delete**.
3. Confirm the confirmation prompt by clicking on **Yes** or cancel the process by clicking on **No**.

Configuration settings of KVM switches

Device configuration

Changing the hotkey

The hotkey is used to switch to a computer. Press the hotkey and a select key together to switch to the corresponding computer.

> **NOTE:** The default hotkey is set to **Ctrl**.

If many application programs on a computer are operated with key combinations or different KVM devices are used in a cascade, the number of available key combinations may be limited.

If an application program or another device within the cascade uses the same hotkey, you can change the hotkey.

> **NOTE:** Hotkeys can be one or a combination of the keys *Ctrl*, *Alt*, *Alt Gr*, *Win* or *Shift*.

How to change the hotkey:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **General**.
4. In the **Hotkey modifier** field of the **Configuration** section, select *at least* one of the listed modifier keys by marking the corresponding check box:

   - **Ctrl**
   - **Alt**
   - **Alt Gr**
   - **Win**
   - **Shift**

   > **NOTE:** If you selected multiple modifier keys, press them together to trigger the hotkey.

5. Click on **Save**.

Changing a select key set

By default, the select keys **1** to **4** (set »**1…4**«) are active for switching between the computers connected to the KVM switch.

> **EXAMPLE:** The default setting for switching to computer 2 is **Hotkey+2** (default: **Ctrl+2**).

If one of the shortcuts resulting from the select key set collides with a key combination of an installed application program, you can change both the hotkey (see page 72) and the select key set described in this paragraph.

How to change the select key set

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **General**.
4. In the **USB auto refresh** field, select one of the options listed under **Configuration**:

1…4:	Activate the select keys **1**, **2**, **3**, **4**
Num1…4:	Activate the select keys **Num1**, **Num2**, **Num3**, **Num4**
A…D:	Activate the select keys **A**, **B**, **C**, **D**
F1…F4:	Activate the select keys **F1**, **F2**, **F3**, **F4**

> **NOTE:** As an alternative to using select keys for switching between channels, you can use step keys to switch the channels in ascending or descending order (see separate »Installation and Operation« manual).
>
> The active step keys depend on the selected select keys. For your information the step keys are shown behind the name of the select key set.

5. Click on **Save**.

Enabling/disabling switching

Switching to a specific channel can be take place either via the *buttons* on the device, configured *select keys*, the *IP-Control-API*, SNMP or the web application *ConfigPanel*.

If required, you can restrict the options for switching between channels.

How to enable/disable the options for switching between channels:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. In the **Disable switching** field of the **Configuration** section, select the switching options you want to block by checking the appropriate checkbox(es).

Buttons:	Switching via buttons on the front panel of the device disabled
IP-API & EasyControl:	Switching via IP API and *EasyControl* disabled
Serial:	Switching via a serial device disabled
Hotkeys:	Switching via select keys and step keys disabled. disabled
Select key:	Switching via select keys disabled
Step/Scan Up:	Switching via step key **Up** disabled
Step/Scan Down:	Switching via step key **Down** disabled

4. Click on **Save**.

Delaying switching

By default, the KVM switch *immediately* switches to the channel you want to access after you pressed a button or a select key.

The signals of the computer connected to the channel you want to access are transmitted *immediately* to the workstation. The video signal is displayed on the monitor after a short time.

If the connected monitor does not support fast switching and does not display a picture after switching, you can activate a switching delay.

When the switching delay is activated, the KVM switch first disconnects the signals from the workstation and switches to the target channel after the set time span (max. 9,999 ms).

> **NOTE:** If the switching delay is activated, the time without image is noticeably extended.

How to enable/disable the switching delay:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. In the **Switching delay** field of the **Configuration** section, you can adjust the delay.

   > **NOTE:** Switching can be delayed up to 9,999 milliseconds. Entering the value 0 disables the delay.

4. Click on **Save**.

Changing the scancode sets of a PS/2 keyboard

When a key on the PS/2 keyboard is pressed, the keyboard processor sends a data packet called scancode. There are two common scancode sets (sets 2 and 3) that contain different scancodes.

By default, the KVM switch interprets all entries of a PS/2 keyboard with the scan code set 2.

ADVICE: If the pipe ("|") cannot be entered or the arrow keys of the keyboard do not work as expected, it is recommended to switch to scan code set 3.

How to change the setting of the scancode set:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. In the **Scancode set** field of the **Configuration** section, select between the following options:

Set 2:	Activates scancode set 2 for PS/2 keyboard inputs
Set 3:	Activates scancode set 3 for PS/2 keyboard inputs

4. Click on **Save**.
5. Restart the KVM switch.

NOTE: After a restart, the keyboard is initialised and the selected scancode set is applied.

Reinitialising USB input devices

Once you connect a USB keyboard or mouse to the KVM switch, the input device is initialised and can be used without restrictions.

The USB connection of some USB input devices needs to be reinitialised after a certain time. Activate the automatic reinitialisation of the USB input devices if a USB keyboard or mouse no longer reacts to your inputs during operation.

How to enable/disable reinitialisation of USB input devices:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. In the **USB auto refresh** field, select one of the options listed under **Configuratio**:

Only faulty devices:	The status of the USB devices is monitored. If communication to a USB device is interrupted, this device is reinitialised (*default*).
All devices:	The status of the USB devices is monitored. If communication to one USB device is interrupted, all devices are reinitialised.
Off:	The status of the USB devices is **not** monitored. If communication to a USB device is interrupted, the device is **not** reinitialised.

4. Click on **Save**.

Enabling/disabling AuxSnoopEnable

NOTE: This function is only supported by the **DP1.4** variants of the G&D MUX-NT series.

If the video signal of the source is too weak, e. g. when using a docking station, AuxSnoopEnable can be enabled and adjusted via the Equalizer value (siehe *Adjustment of the Equalizer value* auf Seite 85).

NOTE: In most cases, the default settings should be retained.

Only in the case of special sources, adjustments should be made.

Talk to our support if you need assistance.

How to enable/disable AuxSnoopEnable:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. In the **AuxSnoopEnable** field of the **Configuration** section, select one of the options:

Disabled:	This function is disabled (*default)*.
Enabled:	This function is enabled.

4. Click on **Save**.

Channel configuration

Changing the channel name

How to change the channel name:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Enter the channel name in the **Name** field of the **Channel** section.
6. Click on **Save**.

Changing the comment of a channel

How to change the comment of a channel:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Enter any comment in the **Comment** field of the **Channel** section.
6. Click on **Save**.

Enabling/disabling a channel

You can connect up to three computers to the KVM switch. The workstation set up on the device can switch to these channels.

If less than three computers are connected to the KVM switch, you can disable the unused channels. This prevents unnecessary switching and the evaluation of the monitoring data.

How to enable/disable a channel:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Mark the **Channel activated** check box of the **Channel** section to allow switching to this channel, or clear this check box to prohibit switching to this channel.
6. Click on **Save**.

Enabling/disabling the keyboard signal

In the standard setting, the signals of keyboard and mouse connected to the workstation are transmitted to the computer of the connected channel.

In the settings of the KVM switch, you can enable or disable the transmission of the keyboard signal for each channel.

How to enable/disable the transmission of the keyboard signal of a channel:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. In the **Keyboard enabled** of the desired channel, select between the following options:

Enabled:	Keyboard signals are transmitted to the computer of this channel (*default*).
Disabled:	Keyboard signals are *not* transmitted to the computer of this channel.

6. Click on **Save**.

Support for multimedia and other special keys

The preset USB keyboard mode **PC Multimedia** supports the standard keyboard layout with additional multimedia keys.

When using *Apple keyboard* a special keyboard mode allows you to use the special keys of this keyboard.

How to enable/disable the support for multimedia and other special keys

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. In the **USB keymode** of the desired channel, select between the following options:

PC Standard:	Standard keymode
PC Multimedia:	Support for special multi-media keys (*default*)
Apple A1243:	Keymode for Apple computers
LK463:	LK463-compatible keyboard

6. Click on **Save**.

Video channel configuration

NOTE: If you have purchased a multichannel version of the KVM switch, the configuration settings described in this section are available separately for each multichannel channel.

Changing the name of a video channel

How to change the name of a video channel

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Enter the channel name in the **Video channel** field of the **Video channel** section.
6. Click on **Save**.

Changing the comment of a video channel

How to change the comment of a video channel:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Enter any comment in the **Comment** field of the **Video channel** section.
6. Click on **Save**.

Enabling/disabling DisplayPort-Power

NOTE: This function is only supported by the **DP1.4** variants of the G&D MUX-NT series.

DisplayPort-Power supplies a voltage of 3.3V at 500mA. Active adapters can be operated via this functionality, for example.

How to change the comment of a video channel:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. In the **DisplayPort-Power** field of the desired channel, select between the following options:

Enabled:	DisplayPort-Power is enabled (*default*).
Disabled:	DisplayPort-Power is disabled.

6. Click on **Save**.

Adjustment of the Equalizer value

NOTE: This function is only supported by the **DP1.4** variants of the G&D MUX-NT series.

The Equalizer value allows manual adjustment for better transmission of video data if the source video signal is too weak.

NOTE: In most cases, the default settings should be retained.

Only in the case of special sources, adjustments should be made.

Talk to our support if you need assistance.

How to adjust the Equalizer value of a video channel:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on the tab **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. In the **Equalizer value** field of the desired channel, select the desired value (*default*: 2).
6. Click on **Save**.

Reading the EDID profile of a monitor

NOTE: This function is only supported by the **DL-DVI** variants of the G&D MUX-NT series.

The EDID information (*Extended Display Identification Data*) of a monitor informs the graphics card of the connected computer about various technical features of the device. The KVM switch usually forwards this information to computer unaltered via Enhanced-DDC (*Enhanced Display Data Channel*).

The EDID profile of a monitor can also be imported and transmitted to one (or more) of the connected computers via the KVM switch.

NOTE: An EDID profile can be imported either directly from a monitor connected to the KVM switch or from a bin file.

How to import the EDID profile of a connected monitor:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Click on **New EDID profile** in the **Video channel** section.
6. Click in the **Learn** list box and select the monitor whose EDID information you want to read in.

   NOTE: The **Name** and **Comment** fields of the profile are automatically prefilled and the contents of the EDID information are displayed.
7. Click on **Ok**.
8. If desired, change the information in the fields **Name** and/or **Comment**.
9. Click on **Save**.

How to import the EDID profile of a monitor from a file:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. Click on **New EDID profile** in the **Video channel** section.
6. Click on **Search**.
7. Select the bin file to be imported from the file dialog and click on **Open**.

> **NOTE:** The **Name** and **Comment** fields of the profile are automatically prefilled and the contents of the EDID information are displayed.

8. If desired, change the information in the fields **Name** and/or **Comment**.
9. Click on **Save**.

Defining the EDID profile of a channel

NOTE: This function is only supported by the **DL-DVI** variants of the G&D MUX-NT series.

How to select the EDID profile:

ADVICE: If you want to apply an EDID profile to the *same* video channels of the other channels, click the **All** button.

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on **Channels**.
4. Click on the channel you want to configure and then click on **Configuration**.
5. In the **EDID profile** field of the **Video channel** section, select between the following options:

[Auto]:	automatic handling of EDID data (default)
Profile name:	Selection of an EDID profile previously imported by a user

6. Click on **Save**.

Advanced features for KVM switches

Switching between channels

Switching to one of the computers connected to the KVM switch can also be carried out via the web application instead of the buttons on the device and the configured select keys.

Keyboard and mouse inputs as well as the data stream of the USB devices connected to the KVM switch and the incoming audio signal are immediately routed to the active computer after switching.

How to switch the signal transmission to a computer:

1. In the menu, click on **KVM switches**.
2. Select the KVM switch you want to switch.
3. Click on **Switch**.
4. Click on the channel you want to access (e. g. **CPU_2**).

NOTE: The **OK** mark behind the channel name indicates the active channel. A separate window informs you if the switching cannot be executed.

Configuring monitoring values

In the *Monitoring* section, you can define values to be monitored and check the status of these values.

Selecting the values to be monitored

By default, the KVM system monitors a variety of different values of the KVM switch.

If required, you can limit the evaluation and monitoring of properties.

How to manage the values to be monitored:

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on **Monitoring**.
4. Enable or disable individual monitoring values by sliding the slider to the *left* (**off**) or to the *right* (**on**).

   NOTE: In order to enable or disable *all* values you can use the check box in the header of the **Enabled** column.

5. Click on **Save**.

Viewing the status information of a KVM switch

Using the configuration menu of a KVM switch, you can open a window displaying different KVM switch status information.

How to display the status information of a KVM switch

1. In the menu, click on **KVM switches**.
2. Click on the KVM switch you want to configure and then click on **Configuration**.
3. Click on **Information**.
4. The following information is displayed in the dialog box that opens now:

KVM switch	
Name:	Name of the KVM switch
Device ID:	Physical ID of the KVM switch
Status:	Current status (**online** or **offline**) of the KVM switch
Class:	Device class of the KVM switch
Comment:	Comment about the KVM switch entered by the user

Hardware information	
Firmware name:	Firmware name
Firmware rev.:	Firmware version
Hardware rev.:	Hardware revision
IP address A:	IP address of *Network A* interface
IP address B:	IP address of *Network B* interface
MAC A:	MAC address of *Network A* interface
MAC B:	MAC address of *Network B* interface
Serial number	Serial number of the KVM switch

Active features
This area lists all activated additional functions.

Link status	
Link detected:	Connection to the network established (**yes**) or interrupted (**no**).
Auto-negotiation:	The transmission speed and the duplex method have been configured automatically (**yes**) or manually by the administrator(**no**).
Speed:	Transmission speed
Duplex	Duplex method (**full** or **half**)

NOTE: In addition, the *monitoring* information of the device is displayed.

5. Click on **Close** to close the window.

NOTES

G&D. FEELS RIGHT.

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