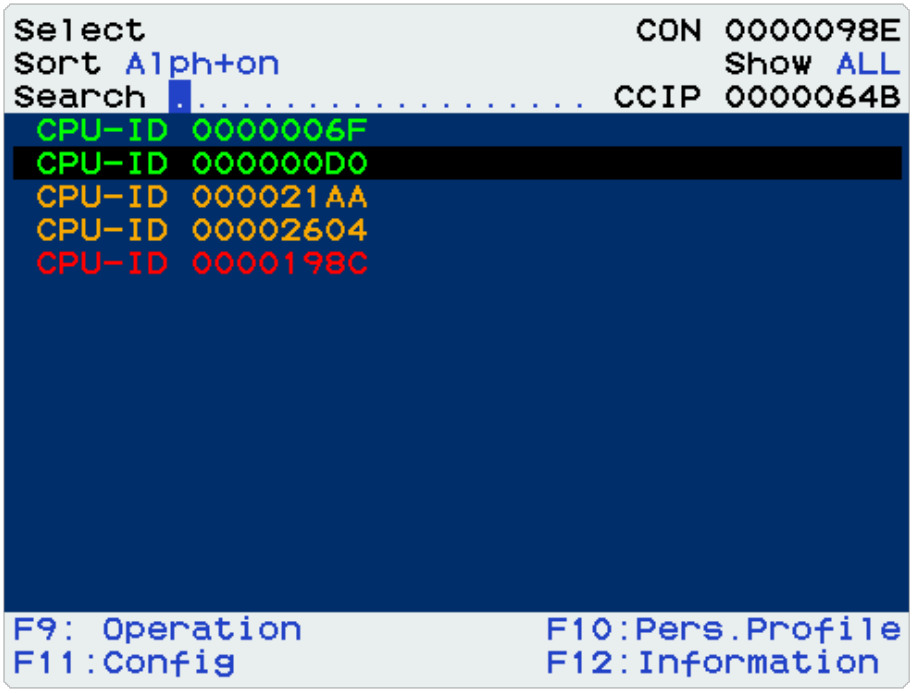
G&D ControlCenter-IP-XS

EN Configuration and Operation



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Matrix switch »ControlCenter-IP-XS«

The matrix switch *ControlCenter-IP-XS* is the central part of a IP matrix system.

You can use the IP matrix system to access an IP computer module (**CPU**) with an IP console module (**CON**). By accessing the computer connected to the computer module, the video image is displayed at the console monitor. You can now operate the accessed computer with console keyboard and console mouse.

You can use any device of the **Vision IP**, **VisionXS-IP** and **RemoteAccess-IP-CPU** series as end devices of the IP matrix.

NOTE: The IP matrix switch supports a maximum of 20 end devices.

Operation

The following paragraphs provide you with various possibilities to operate the KVM matrix system.

On-screen display

Usually, the KVM matrix system is operated through the system's on-screen display (OSD). This display is provided at all console modules by default.

The OSD enables you to define additional select keys. The select keys provide the possibility to switch between the different computer modules by pressing a key combination on the keyboard of the console module.

NOTE: This manual describes how to operate the matrix switch using the OSD of a console module.

Configuration

The KVM matrix system can be configured in different ways.

On-screen display

If the logged-in user holds the required rights, he can use the OSD to access or edit the matrix system's configuration settings.

NOTE: This manual describes how to configure the matrix switches of the *ControlCenter-IP-XS* series via the OSD of a console module.

The »Config Panel« web application

The web application offers a graphical user interface to configure the KVM matrix switches of the *ControlCenter-IP-XS* series. This application can be operated with any web browser.

The web application provides an alternative to configuring the matrix switch through the device's OSD at the console modules and can be applied independently from the console modules in the network.

Thanks to its enhanced possibilities, the graphical user interface provides the following easy to operate features:

- clearly-arranged user interface
- easy operation through drag & drop function
- comprehensive computer module administration
- enhanced network functions (netfilter, syslog, …)
- backup and restore function

NOTE: The »*Config Panel*« manual provides a detailed description of these functions.

Getting started

This chapter describes the basic operation of the KVM matrix system.

NOTE: The following chapters of this manual provide a detailed description of the functions and the configuration settings.

User login at the KVM matrix system

After the console module has been switched on, the KVM matrix system asks you to log in.

How to log in at the KVM matrix system:

1. Enter the following data to the login box:

Terms (of use):	Press **Enter** to display the terms of use.
Accept (of terms of use):	Press **F8** to accept the terms of use.
Username:	Enter your username.
Password:	Enter your user account password.
2-Factor Auth Code (TOTP):	Enter the 2-Factor Auth Code (TOTP) from two-factor authentication.

IMPORTANT: Change the administrator account's default password.

The *default* access data is:

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

NOTE: The default *admin* password for devices manufactured before June 2020 is **<obsolete>**.

NOTE: The *Terms* field and the *Accept* field only appear if Showing terms of use is activated (see *Showing terms of use* on page 9).

NOTE: The *2-Factor Auth Code (TOTP)* field only appears if 2-factor-authentication is enabled. For detailed information, please refer to the separate manual of the web application.

2. Press **Enter** to log in and start the OSD.

NOTE: If a *default action* (see page 117) has been activated for the user account, you can directly access the computer module that has been selected in the *Personal Profile* after your login.

In this case, restart the OSD (see page 13) to call up the *Select* menu.

Configuring the password complexity

You can configure password complexity to comply with your individual password guidelines and improve security.

IMPORTANT: Changes in the section of password complexity have **no** effect on existing passwords, but are only taken into account when a password is changed (see *Changing your password* on page 10 and *Changing the user account password* on page 139) and a new user account is created (see *Creating a new user account* on page 137). You should therefore configure the password complexity as early as possible.

IMPORTANT: Changes in the section of password complexity have **no** effect on user authentication with external directory services. The directory services have their own configuration options.

How to configure the minimum password length:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Password Complexity** line and press **Enter**.
5. Select the **Min. length** line and press **Enter**.
6. Enter the desired minimum password lenght (*Default*: 3 or 15 with activated *SecureCert-Feature*)
7. Press **F2** to save your settings.

How to configure the minimum number of capital letters within a password:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Password Complexity** line and press **Enter**.
5. Select the **Min. capital letters** line and press **Enter**.
6. Enter the desired minimum number of capital letters within a password (*Default*: 0 or 1 with activated *SecureCert-Feature*)
7. Press **F2** to save your settings.

How to configure the minimum number of lowercases within a password:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Password Complexity** line and press **Enter**.
5. Select the **Min. lowercase** line and press **Enter**.
6. Enter the desired minimum number of lowercases within a password (*Default*: 0 or 1 with activated *SecureCert-Feature*)
7. Press **F2** to save your settings.

How to configure the minimum number of digits within a password:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Password Complexity** line and press **Enter**.
5. Select the **Min. digits** line and press **Enter**.
6. Enter the desired minimum number of digits within a password (*Default*: 0 or 1 with activated *SecureCert-Feature*)
7. Press **F2** to save your settings.

How to configure the minimum number of special characters within a password:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Password Complexity** line and press **Enter**.
5. Select the **Min. special characters** line and press **Enter**.
6. Enter the desired minimum number of special characters within a password (*Default*: 0 or 1 with activated *SecureCert-Feature*)
7. Press **F2** to save your settings.

How to configure the minimum number of characters that must be different compared with the previous password when changing the password:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Password Complexity** line and press **Enter**.
5. Select the **Min. different** line and press **Enter**.
6. Enter the desired minimum number of characters that must be differnt compared with the previous password (*Default*: 0 or 8 with activated *SecureCert-Feature*)

   NOTE: The minimum number of different characters compared with the previous password must not be higher than the minimum password length.

7. Press **F2** to save your settings.

Configuring the login options

To improve security, further configuration options are available in the login options area.

You can specify how many failed attempts are accepted when entering a password and how long a user is locked out after exceeding the maximum number of failed attempts.

In this area, you can also specify how many simultaneous superuser sessions are permitted.

How to set the maximum number of failed password entry attempts:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Login options** line and press **Enter**.
5. Select the **Max. failed attempts** line and press **Enter**.
6. Enter the desired maximum number of failed attempts when entering the password (*Default*: 0 = off/unlimited number of failed attempts or. 3 with activated *SecureCert-Feature*, max. 1,000)
7. Press **F2** to save your settings.

How to set the locking time if the maximum number of failed password entry attempts is exceeded:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Login options** line and press **Enter**.
5. Select the **Locking time** line and press **Enter**.
6. Enter the desired locking time in minutes for which a user is locked after exceeding the maximum number of failed password entry attempts (*Default*: 1 (if max. failed attempts > 0) or 15 with activated *SecureCert-Feature*, max. 1,440 minutes)
7. Press **F2** to save your settings.

How to set the maximum number of simultaneous superuser sessions:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Login options** line and press **Enter**.
5. Select the **Max. supueruser sessions** line and press **Enter**.
6. Enter the desired number of maximum simultaneous superuser sessions (*Default*: 0 = off/unlimited number of superuser sessions, max. 1,024)

   NOTE: The maximum number of simultaneous supueruser sessions is effective per interface (device/OSD and ConfigPanel).

7. Press **F2** to save your settings.

Showing terms of use

If the terms of use are displayed, they must be accepted before each (new) device access.

How to configure the display of terms of use:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Terms Of Use Config** line and press **Enter**.
5. Select the **Terms of use** entry and press **F8** to select one of the following options:

off:	*No* terms of use are displayed during log in (*default*).
User:	*Individual* terms of use are displayed during log in.
DoD Notice:	The terms of use of the *US Department of Defense* are used during log in (can only be selected if the optional *SecureCert feature* is activated).

6. If you selected *User* in the previous step, the individual terms of use must be entered in the next step. Select the **Short text...** entry and press **Enter**.
7. Now enter the text that a user is shown before accepting the terms of use (**example**: *I have read the terms of use and hereby agree to them*).
   This text field is limited to 70 characters.
8. Press **F2** to save the text.
9. Press **Esc** to return to the previous screen.
10. Select the **Long text...** entry and press **Enter**.
11. Now enter the desired terms of use. This field is limited to 1,500 characters.
12. Press **F2** to save the text.
13. Press **Esc** and then **F2** to save your settings.

Changing your password

How to change the password of your user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Change password** entry and press **Enter**.
4. Enter the new password into the *Change own password* menu:

Current:	Enter the current password.
	NOTE: No entry is required in this field for users with activated superuser rights (see page 149 ff.).
2-Factor Auth Code (TOTP):	Enter the 2-Factor Auth Code (TOTP) from two-factor authentication.
	NOTE: The *2-Factor Auth Code (TOTP)* field only appears if 2-factor-authentication is enabled. For detailed information, please refer to the separate manual of the web application.
New:	Enter your new password.
Repeat:	Repeat your new password.

5. Press **F2** to save your settings.

User logout at the KVM matrix system

Use the *User logout* function to log out of the KVM matrix system. If the logout was successful, the *Login* window opens.

IMPORTANT: Always use the *User logout* function of the matrix system to protect the console module and the KVM matrix system against unauthorised access.

How to log out of the KVM matrix system:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to open the *Operation* menu.
3. Press **E** or select the **E - User logout** entry and press **Enter**.

ADVICE: After the OSD has been called up, you can activate the *User logout* function by pressing **Ctrl+E**.

Starting the functions of the Operation menu via hotkeys

The *Select* menu is usually displayed after the OSD has been called up. To operate the system, press **F9** to call up the *Operation* menu.

Through the use of hotkeys the functions of the *Operation* menu can also be carried out within the *Select* menu.

How to access a function in the Operation menu by using a hotkey:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press one of the hotkeys listed in the table below to call up the function:

Ctrl+A:	Automatic switching of all computer modules (*Autoscan)*
Ctrl+B:	Automatic switching of all activated computer modules (*Autoskip)*
Ctrl+C:	Manual switching of the computer modules (*Stepscan)*
Ctrl+D:	Disconnects the computer module (*Disconnect*)
Ctrl+E:	*User logout*
Ctrl+G:	Accesses the previously accessed computer module (*Return to last computer module*)
Ctrl+H:	Shows an additional column in the list field of the *Select* menu (*Computer module info*) Pressing the key combination enables you to switch between the following options: ▪ **off:** hides additional column ▪ **id:** displays the physical ID of the computer modules ▪ **select keys:** displays the select keys of the computer modules ▪ **comment:** displays the comments of the computer modules
Ctrl+K:	Show comment of selected computer module. **ADVICE:** Press F5 to switch to the comment editor.
Ctrl+U	If you grouped multiple channels (see page 155 f.), you can hold the USB signal (*USB connection*) on the currently accessed computer. ▪ **Pin:** The *hold function* is enabled. If you access another computer, the KVM signals are switched to that computer. The USB signal is held on the computer you accessed first. The Select menu shows the name of the computer that holds the USB signal. ▪ **Unpin:** The *hold function* is disabled. The USB signal of the currently active computer is accessed.
Ctrl+W:	Send the WoL command to the defined computer of the selected computer module.

Ctrl+X	Select what information you want to show on the *Select* menu: ▪ **select:** The select menu shows the computer modules connected to the matrix system. ▪ **script:** The select menu shows the scripts stored in the matrix system.

The On-Screen Display (OSD)

The OSD allows you to operate and configure the KVM matrix system. By default, it is provided at all console modules.

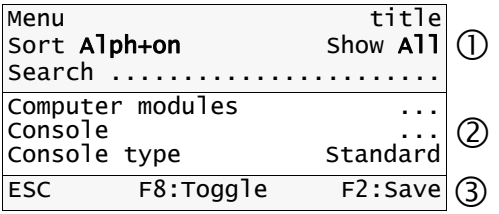
Calling the OSD at a console

The OSD can be activated with a configured key combination.

How to start the OSD:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.

The general OSD structure



The OSD menu is divided into three main sections:

Header ①	The header shows the title of the current menu. Some menus additionally provide a *Sort* and a *Search* function as well as a *View filter* (see page 18 f.). Press the **Tab** key to move the cursor from the list field ② to the header ①.
List field ②	The list field shows all menu entries. The menu entries are divided into two categories: ▪ **Menu items *with* submenu:** These entries are displayed in the right-hand column with three dots (…). Select the entry with the **arrow keys**, and press **Enter** to open the submenu. ▪ **Menu items *without* submenu:** The current setting is displayed behind the menu entry and can be changed directly.
Footer ③	The footer shows the most important keys for operating the menu and, if applicable, further information regarding the menu.

Colour-coded computer module names

The list field lists all computer modules. If the computer module is supplied with power and connected to the matrix system, and if a computer is connected to the computer module and switched on, the name of the computer module is displayed in *green*.

If the computer module is supplied with power and connected to the matrix system, but not connected to the computer or the computer connected to the computer module is switched off, the name is displayed in *yellow*.

If the computer module is disconnected from the KVM matrix system or is not supplied with power, the name is displayed in *red*.

Displaying the status condition

The status condition of the computer modules is displayed in the left column of the *Select* menu:

- An *arrow* (▸) marks the currently accessed computer module.
- If one or more users are currently accessing the computer module, the *number* of accessing users is displayed in the column.

Operating the OSD via keyboard or mouse

Keyboard operation

The OSD is mainly operated by keyboard. The table below shows a list of frequently used keys:

Arrow keys:	Press the arrow keys **Up** and **Down** (in some menus also **Left** and **Right**) to switch between the different menu entries.
Enter key:	This key is often used to confirm entries (e. g. in the login box) or to call a submenu.
Esc:	This key closes the currently displayed menu and shows the superior menu. A message informs you if you changed your entries but forgot to save them.
Tab key:	Use this key to move the cursor from one menu entry to the next (or vice versa). In menu masks, which contain the sort-and-search function or the view filter, the cursor can be moved to the header by pressing this key.
F2:	Press this key to save your entries. The currently displayed menu closes after the data was saved. Afterwards, the toplevel menu is shown.
F8:	Press this key to switch between the different options of a menu entry.
F9:	Press this key on the top menu level to call the *Operation* menu.
F10:	Press this key on the top menu level to call the *Personal Profile* menu.
F11:	Press this key on the top menu level to call the *Configuration* menu.
F12:	Press this key on the top menu level to call the *Information* menu.

Mouse operation

As an alternative to operating the OSD by keyboard, you can use the mouse to execute the following functions:

Mouse movement »Up«:	This mouse movement moves the cursor *upwards* between the different menu entries in the list field.
Mouse movement »Down«:	This mouse movement moves the cursor *downwards* between the different menu entries in the list field.
Left mouse key:	This key is often used to confirm entries (e. g. in the login box) or call a submenu.
Right mouse key:	The currently displayed menu is closed after your settings are saved. Afterwards, the toplevel menu is shown. A message informs you if you changed your entries but forgot to save them.

NOTE: The OSD can only be called with the configured key combination (**Ctrl+Num**).

If a Microsoft »IntelliMouse Explorer« or another compatible mouse with five keys is connected to the user console, you can call the OSD through the mouse keys four and five, which are located at the side of the mouse (see page 28).

OSD functions

Changing the sort criteria of the list entries

In the default settings, the list entries are sorted alphabetically in ascending order (**Alph+**).

Computer modules are listed according to their operating status. Active devices are displayed at first, followed by all inactive devices. Both groups are sorted in ascending order (**Alph+on**).

You can also activate another sort criterion or reverse the sort order.

How to change the sort criteria and/or sort order:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press the **Tab** key to select the **Sort** field in the header.
3. Press **F8** to select the desired sort criterion:

Alph+:	The names of the list entries are sorted alphabetically in *ascending* order.
Alph+on:	Active devices are displayed at first, followed by all inactive devices. Both groups are sorted in ascending order. *This option is only available in the device list.*
Alph-:	The names of the list entries are sorted alphabetically in *descending* order.
Alph-on:	Active devices are displayed at first, followed by all inactive devices. Both groups are sorted in descending order . *This option is only available in the device list.*
ID:	The names of the list entries are sorted in *ascending* order according to the physical device ID. *This option is only available in lists that include computer modules.*
Comment+:	The comments are sorted alphabetically in *ascending* order. *This option is only available in lists that include computer modules.*
Comment-:	The comments are sorted alphabetically in *descending* order. *This option is only available in lists that include computer modules.*

Search function

Some menus (e.g. the *Select* menu or the menu to choose a *select key set*) provide a search function to enable the fast selection of the desired entry in the list field.

How to search a particular entry with a known name:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press the **Tab** key to select the list field.
3. Enter the name of the entry you want to search. You can also enter the first letters of the name to enable a clear allocation. The entered characters are displayed in the **Search** field.

> **NOTE:** After *every* entered character, the first entry this character does apply to is marked in the list field.
>
> Placeholders are not supported.

How to search a particular entry with a known device ID:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Choose the sort criteria **ID** (see *Changing the sort criteria of the list entries* on page 17).
3. Press the **Tab** key to select the list field.
4. Enter the device ID of the entry you want to search. The entered characters are displayed in the **Search** field.

> **NOTE:** After *every* entered character, the first entry this character does apply to is marked in the list field.
>
> Placeholders are not supported.

How to search a particular entry with a known name:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Choose the sort criteria **Comment+** or **Comment-** (see *Changing the sort criteria of the list entries* on page 17).
3. Press the **Tab** key to select the list field.
4. Enter the comment of the entry you want to search. You can also enter the first letters of the comment to enable a clear allocation. The entered characters are displayed in the **Search** field.

> **NOTE:** After *every* entered character, the first entry this character does apply to is marked in the list field.
>
> Placeholders are not supported.

Limiting the entries using the view filter

The **Show** field enables you to limit the list of entries in the list field of some menus:

The *Select* menu lists all computer modules by default. The view filter can limit the computer module list of a particular view group (marked as *folder* in the web application).

> **ADVICE:** Further information regarding the administration of the computer modules of a view filter are provided in the chapter *Administrating view filters* on page 113.

> **NOTE:** If the *Config Panel* web application is used to create and administrate groups (folders) for the view filter, any number of folders can be added to the superior folder.
>
> The OSD only shows the superior view filter. The included computer modules of inferior locations are automatically listed.

How to change the view filter of the entries to be displayed:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press the **Tab** key to move the cursor to the **Show** field in the menu header.
3. Press **F8** to select the desired view filter.

> **ADVICE:** You can select the *ALL* view filter directly by pressing **Ctrl+A**.

Showing an additional column in the Select menu

The *Computer module info* function enables you to display an additional info column in the *Select* menu list field. The column can display the physical ID or the select keys of the computer module.

How to display an additional info column in the Select menu:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.
3. Press **H** (repeatedly) or select the **H - Computer module info** entry and press **F8** (repeatedly) to choose one of the following options:

off:	hide additional column
id:	display the physical ID of the computer modules
select keys:	show the select keys of the computer modules
comment:	display the comments of the computer modules

ADVICE: After the OSD has been called, activate the *Computer module info* function in the *Select* menu by pressing **Ctrl+H**.

Configuration

Many of the OSD basic functions and features can be adjusted to the user's demands.

You can change various settings e.g. define the hotkey and adjust the OSD position and font size.

All adjustable settings are described on the following pages.

Changing the hotkey to call the OSD

The hotkey to call the OSD is used at all console modules within the matrix system. This hotkey enables you to open the OSD in order to operate and configure the system.

NOTE: In the default, the hotkey **Ctrl+Num** is preset.

The hotkey consists of at least one hotkey modifier key and an additional hotkey, which you can select.

Both the **Ctrl** hotkey modifier key and the **Num** hotkey can be changed.

How to change the hotkey to call the OSD:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Hotkey** entry and press **Enter**.
5. Use the **arrow keys** for selecting *at least* one of the listed hotkey modifiers in the **Modifier** entry. Afterwards, press **F8**.

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift	*Shift* key

6. Press **F8** to select a hotkey in the **Key** entry. The OSD can be called up by pressing the hotkey and the selected hotkey modifier(s) at the same time.

Num:	*Num* key
Pause:	*Pause* key
Insert:	*Insert* key
Delete:	*Delete* key
Home:	*Home* key
End:	*End* key
PgUp	*Page Up* key
PgDn	*Page Down* key
Space	*Space* key

7. Press **F2** to save your settings.

Opening the OSD via double keypress

Instead of opening the OSD with the key combination **Hotkey**+**Num**, you can define a key to press twice to open the OSD.

How to define the key to open the OSD via double keypress:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **OSD via 2x keypress** entry and press **F8** to select the desired option:

off:	Open OSD via double keypress disabled (default)
Ctrl:	Open OSD via double keypress of *Ctrl* key
Alt:	Open OSD via double keypress of *Alt* key
Alt Gr:	Open OSD via double keypress of *Alt Gr* key
Win:	Open OSD via double keypress of *Win* key
Shift:	Open OSD via double keypress of *Shift* key
Print:	Open OSD via double keypress of *Print* key

Cursor-Left:	Open OSD via double keypress of *Cursor-Left* key
Cursor-Right:	Open OSD via double keypress of *Cursor-Right* key
Cursor-Up:	Open OSD via double keypress of *Cursor-Up* key
Cursor-Down:	Open OSD via double keypress of *Cursor-Down* key

5. Press **F2** to save your settings.

Automatic closing of the OSD after inactivity

If desired, you can set the OSD to close automatically after a period of inactivity.

The period of inactivity can be defined by entering a value between **5** and **99** seconds.

NOTE: To disable the function, enter the value **0**.

How to change the period of inactivity after which the OSD closes:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Under **Close OSD when inactive for [s]** you can define a time span between **5** and **99** seconds.
4. Press **F2** to save your settings.

Adjusting the OSD transparency

In the OSD default settings, the screen content under the OSD is semi-visible. The screen content shines through the part that is covered by the OSD.

You can either adjust or turn off the OSD transparency in the personal profile of a user.

How to adjust the OSD transperency:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.

3. Select the **OSD transparency** entry and press **F8** (repeatedly) to select one of the following options:

high:	Screen content almost completely visible
average:	Screen content semi-visible (default)
low:	Screen content slightly visible
off:	Screen content is covered

4. Press **F2** to save the changes.

Adjusting the information display

NOTE: You can set the information display separately for computer modules with view rights and all other computer modules.

When switching to a computer module, a temporary information display (5 seconds) opens. The display informs you about the console name, the name of the currently accessed computer module and provides further information.

The information display can also be permanently displayed or deactivated. The selected setting is assigned to your user account and stored in your *Personal Profile*.

ADVICE: When active, the temporary information can be recalled by pressing **Ctrl+Caps Lock**.

How to change the general settings of the information display:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Display** entry and press **F8** (repeatedly) to select one of the following options:

temp:	show information display (five seconds)
perm:	permanent information display
off:	deactivate information display

4. Press **F2** to save the changes.

How to change the settings of the information display for computer modules with view right:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **View only display** entry and press **F8** (repeatedly) to select one of the following options:

Use regular OSD info:	Using the general setting of the information display (see above)
5 seconds:	Temporary information display
Perm:	Permanent information display
Off:	Deactivate information display

4. Press **F2** to save the changes.

Changing the colour of the information display

By default, information displays (like when accessing a computer module) are shownin light green. In their peronal profiles, users can change the colour of the information display.

The following colours are supported:

black	**dark red**
green	**dark yellow**
dark blue	**purple**
dark turquoise	**silver**
light green	**yellow**
blue	**fuchsia**
light turquoise	**white**

How to change the colour of the information display:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Display color** entry and press **F8** (repeatedly) to select the desired colour.
4. Press **F2** to save the changes.

Defining a standard view filter

After the user login, the *Select* menu (see page 54) is displayed. The default setting of the *Select* menu displays all computer modules. By applying the view filter, the displayed computer modules can be filtered.

Use the *Default view filter* setting to activate a certain view filter directly after accessing the *Select* menu.

NOTE: The preset view filter is applied directly after the OSD has been called and after the user has logged in to the matrix system.

The use of a view filter (see page 19) allows you to change the default and therefore activate another filter.

How to select a standard view filter for the Select menu:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Default location** entry and press **F8** (repeatedly) to select the desired setting.

All:	All computer modules are displayed. **ADVICE:** Press **Ctrl+A** to select this view filter directly.
Last:	The view filter that was used by the last user is applied when the *Select* menu is called.
Selection of a folder:	The view filter of the selected group is applied if the *Select* menu is called.

4. Press **F2** to save your changes.

IMPORTANT: If the *LAST* option has been selected and two users are using one user account at the same time, the view filter of the previously active person is stored.

Changing the display‘s position

When accessing a computer module, the information display of the matrix system e.g. provides you with the name of the accessed computer module and the name of the console module.

By default, the information display is located in the left upper corner at the console monitor. You can adjust the display’s position according to your wishes.

Your individual setting is assigned to your user account and stored in your *Personal Profile.*

How to change the display position:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Set display position** entry and press **Enter**.
4. The menu on the right-hand side opens at the display position.
5. Use the **arrow keys** or the mouse to move the menu to the desired position.

> **NOTE:** Press **Ctrl+D** to reset the display's position.

6. Press **F2** to save your settings or press **Esc** to cancel.

Changing the OSD position

By default, the OSD is located in the centre of the console monitor. You can adjust the display's position according to your wishes.

The selected setting is assigned to your user account and stored in your *Personal Profile.*

How to change the OSD position:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Set menu position** entry and press **Enter**.
4. Use the **arrow keys** or the mouse to move the menu to the desired position.

> **NOTE:** Press **Ctrl+D** to reset the on-screen display's position.

5. Press **F2** to save your settings or press **Esc** to cancel the process.

Selecting a keyboard layout for OSD entries

If other characters are displayed on the screen when entering characters on the keyboard of the console monitor, the keyboard layout set for the keyboard is not appropriate.

In this case, determine which keyboard layout the connected keyboard meets to and then configure it in the settings of the console module.

How to select the keyboard layout for the console module keyboard:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings you want to change and press **F5**.
5. Select the **OSD key. layout** entry and press **F8** to select one of the following options:
   - **german**
   - **english US**
   - **english UK**
   - **french**
   - **spanish**
   - **lat. americ.**
   - **portuguese**
   - **swedish**
   - **swiss-french**
   - **danish**
6. Press **F2** to save your settings.

Operating the OSD by mouse

In the default settings of the matrix system, the OSD can only be called with the configured key combination.

If a Microsoft »IntelliMouse Explorer« or another compatible mouse with five keys is connected to the user console, you can call the OSD through the mouse keys four and five at the side of the mouse.

How to (de)activate the mouse support to operate the OSD:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.

4. Select the console module whose settings you want to change and press **F5**.
5. Select the **OSD by mouse** entry and press **F8** to select one of the following options:

yes:	calls the OSD via mouse keys 4 and 5 of a compatible mouse
no:	deactivates the possibility to call the OSD by mouse

6. Press **F2** to save your settings.

(De)activating the OSD

This function defines if the users at the console module are enabled to activate the OSD or if they are only allowed to switch via select keys.

How to (de)activate the OSD at the console module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to (de)activate and press **F5**.
5. Select the **OSD blocked** entry and press F8 to select one of the following options:

yes:	OSD blocked
no:	OSD available
full:	OSD call-up and display of info overlays disabled

6. Press **F2** to save your settings.

Adjusting the OSD resolution

In the defaults of the matrix switch the OSD is displayed on the console monitor in a resolution of 1024 × 768 pixels if the monitor does support this resolution. If the monitor does not support this resolution, a resolution of 640 × 480 pixels is used.

You can also set the OSD resolution for the entire system (see table below). Adjusting the resolution for the entire system includes all console modules. However, you can also individually set the OSD resolution for each console module.

How to adjust the OSD resolution of the entire system:

1. Press the **Ctrl** + **Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **OSD resolution** entry and press **F8** to select one of the following options:

auto:	If supported by the monitor, the OSD is displayed in a resolution of 1024 × 768 pixels. If the monitor does not support this resolution, a resolution of 640 × 480 pixels is used. (*default*).
640×480/60:	OSD is displayed in a resolution of 640 × 480 pixels
720×400/70:	OSD is displayed in a resolution of 720 × 400 pixels
1024×768/60:	OSD is displayed in a resolution of 1024 × 768 pixels

5. Press **F2** to save your settings.

How to adjust the OSD resolution of a particular console module:

How to configure the freeze mode for individual console modules:

1. Press the **Ctrl** + **Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **OSD resolution** entry and press **F8** to select one of the following options:

system:	Use systemwide (see above) setting (*default*).
auto:	If supported by the monitor, the OSD is displayed in a resolution of 1024 × 768 pixels. If the monitor does not support this resolution, a resolution of 640 × 480 pixels is used. (*default*).
640×480/60:	OSD is displayed in a resolution of 640 × 480 pixels
720×400/70:	OSD is displayed in a resolution of 720 × 400 pixels
1024×768/60:	OSD is displayed in a resolution of 1024 × 768 pixels

6. Press **F2** to save your settings.

System settings and functions

Renaming the matrix switch

How to rename the matrix switch:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Name** entry and press **Enter**.
5. Enter the new name and press **Enter**.
6. Press **F2** to save your settings.

Select language

The specified *system language* is assigned to all user accounts by default. If required, you can permanently assign a (different) language to each user account.

> **NOTE:** All language settings apply to both the web application and the OSD of the device.

How to set the system language:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Language** line and press the **F8** key to select the desired language.
5. Press **F2** to save your settings.

How to set the language of a *specific* user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Select the user account you want to configure and press **F5**.
5. Select the **Personal Profile** line and press the **Enter** key.
6. Select the **Language** line and press the **F8** key to select the desired language.
7. Press **F2** to save your settings.

Freeze mode

When the cable connection between the computer module and the console module is lost during operation, the console monitor no longer shows an image in the default settings of the KVM matrix system.

Enable the freeze mode if you want to display the last image received at the console module before the loss of connection. This image is displayed until the connection is reestablished.

> **ADVICE:** To emphasize the lost connection, the image last received is either highlighted by a coloured frame and/or the note **Frozen** and the time past since the loss of connection.

You can set the freeze mode for the entire system, too. The setting for the entire system applies to all console modules. In addition, you can set the freeze mode individually for each console module.

How to configure the freeze mode for the entire system:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Freeze function** entry and press **F8** to select one of the following options:

off:	Shows no image when connection is lost (*default*).
on:	Shows last image when connection is lost.

5. If the *Freeze function* is enabled, select one of the options under **Freeze visualization**:

frame:	Shows a coloured frame when connection is lost.
OSD:	Shows the note **Frozen** and the time past since the loss of connection.
frame+OSD:	Shows a coloured frame and the note **Frozen** with the time past since the loss of connection.

6. Press **F2** to save your settings.

How to configure the freeze mode for individual console modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Freeze function** entry and press **F8** to select one of the following options:

system:	Apply setting to the entire system (see above).
off:	Shows no image when connection is lost.
on:	Shows last image when connection is lost.

6. When the *Freeze function* is explicitly enabled for this console module, enable one or both options under **Freeze visualization**:

frame:	Shows a coloured frame when connection is lost.
OSD:	Shows the note **Frozen** and the time past since the loss of connection.
frame+OSD:	Shows a coloured frame and the note **Frozen** with the time past since the loss of connection.

7. Press **F2** to save your settings.

Network settings

The network port on the back panel of the matrix switch enables you to carry out the following network functions:

- execute the matrix switches' network configuration
- authenticate against directory services (LDAP, Active Directory, RADIUS)
- time synchronisation via NTP server
- forward log messages to syslog servers
- execute firmware updates and backups

NOTE: The functions listed above are carried out in the *Config Panel* web application and described in the manual of the web application.

Configuring the network port

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

- IP address of *network interface A*: **192.168.0.1**
- global network settings: obtain settings dynamically

Configure the network settings in the OSD in order to make the matrix switch available for the entire network.

IMPORTANT: Configuration of **IPv6** should only be performed **by technically experienced users**. While IPv6 offers advanced features and a larger address space, it also introduces **more complex requirements regarding network structure, security, and compatibility**. Incorrect settings may lead to **connectivity issues or unexpected network behavior**. If you are **not familiar** with the IP addressing and network topology specific to IPv6, we recommend that you thoroughly **inform yourself about the implications** before enabling IPv6, or consult with your network administration.

How to configure the network port settings:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Network** entry and press **Enter**.
4. Select the **Interfaces** entry and press **Enter**.

5. Enter the following data in the **Interface A** (interface *Network A*) section:

> **NOTE:** The network interface is assigned a unique **zone ID** in addition to its name, which specifies the interface number. This is required to uniquely identify the corresponding interface when using *IPv6 link-local addresses*.

Operational mode:	Press **F8** to select the operating mode of the interface **Network A**: ▪ **Off:** switches off network interface. ▪ **Static IPv4:** A static IPv4 address is assigned. ▪ **DHCPv4:** oObtain IPv4 address from a DHCP server.
IP address:	Enter the IPv4 address of the interface. *This setting is auto obtained in the DHCPv4 operating mode.*

> **IMPORTANT:** The IP address *192.168.0.1* should **not** be used on the *ControlCenter-IP-XS*. As this IP address is used as standard IP address for the network management interfaces of the KVM-over-IP end devices, conflicts may otherwise occur during communication. If possible, select an IP address in a different 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.

Netmask:	Enter the network netmask. *This setting is auto obtained in the DHCP operating mode.*
IPv6:	Press **F8** to enable IPv6 (**enabled**). By default, IPv6 is **disabled**.

> **NOTE:** When IPv6 is enabled, a link-local IPv6 address is automatically generated based on the MAC address of the interface by default, in accordance with RFC 4921. This link-local IPv6 address cannot be modified by the user.

Static IPv6 address:	Enter the static IPv6 address of the interface.
Prefix:	Specify the prefix length (*default*: 64) for the interface according to the notation rules defined in RFC 5952.

6. Press **F2** to save your settings.

Configuring the global network settings

In complex networks, the global network settings ensure that the matrix switch is available from all sub networks.

How to configure the global network settings:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Network** entry and press **Enter**.
4. Select the **Interfaces** entry and press **Enter**.
5. Enter the following data in the **Main Network** paragraph:

Global preferences	Select the operating mode by pressing **F8**: ▪ **Static:** uses static settings. ▪ **Dynamic:** Partial automatic retrieval of the settings described below from a DHCP server (IPv4) or via SLAAC (IPv6).
Hostname:	Enter the matrix switch hostname.
Domain:	Enter the domain the matrix switch is to belong to.
Gateway IPv4:	Enter the IPv4 address of the gateway.
Gateway IPv6:	Enter the IPv6 address of the gateway.
DNS Server 1:	Enter the IP address of the DNS server.. **NOTE:** If a link-local IPv6 address is entered, the zone ID of the interface must be specified. The zone ID is appended to the link-local IPv6 address, separated by the percent sign **%**.
DNS Server 2:	Enter the IP address of another DNS server (option).. **NOTE:** If a link-local IPv6 address is entered, the zone ID of the interface must be specified. The zone ID is appended to the link-local IPv6 address, separated by the percent sign **%**.
Prioritize IPv6:	Select **yes** by pressing **F8** if IPv6 should be preferred when a destination has both an IPv6 and an IPv4 address (*default*: **no**).
Use SLAAC:	Select **yes** (*default* if the *SecureCert feature* is not activated) by pressing **F8** if SLAAC should be used. Otherwise, select **no** (*default* if the *SecureCert feature* is activated).
Send Mcast Echo Reply (IPv6):	Select **yes** (*default*) by pressing **F8** if ICMPv6 Echo Requests should be answered. Otherwise, select **no**.

Send DestUnreach (IPv6):	Select **yes** (*default*) by pressing **F8** if an ICMPv6 error message should be sent to the sender when a packet cannot be delivered. Otherwise, select **no**.
Process Redirects (IPv6):	Select **yes** (*default*) by pressing **F8** if redirect messages should be accepted and processed. Otherwise, select **no**.
Dupl. addr. detection (IPv6):	Select **yes** (*default*) by pressing **F8** if a check for duplicate IPv6 addresses should be performed before an address is used. Otherwise, select **no**.

6. Press **F2** to save your settings.

Resetting the netfilter rules

In the default settings, all network computers can access the system's IP address (open system access).

With the *Config Panel* web application, you can create netfilter rules to control the access to the matrix system. After a netfilter rule has been created, the open system access is deactivated and all incoming data packets are compared to the netfilter rules.

The created netfilter rules can also be deleted with this function.

How to delete the created netfilter rules:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Reset netfilter configuration** entry and press **Enter**.
5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Defining the ports of the KVM-over-IP connection

To establish the **KVM-over-IP** connection by the end devices, the **control port** and the **communication port** must be defined.

How to configure the ports of the KVM-over-IP connection:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **KVM connection** entry and press **Enter**.
4. Enter the following data:

Control Port:	Enter the number of the port to be used.
Communication Port:	Enter the number of the port to be used.

5. Press **F2** to save your settings.

NOTE: You can find a list of the network ports that can be used by G&D KVM-over-IP in the separate manual of the web application.

Determination of the type of video transmission

In the default setting, the computer modules (**IP-CPU**) send the video streams via multicast to the console modules (**IP-CON**).

This option allows users with »Computer module multi access« right to connect to a computer module to which *another* user is already connected.

> **IMPORTANT:** The multicast streams are controlled by the network switches and enable efficient distribution of the streams to multiple recipients at the same time.
>
> Please note the requirements for the *network switch* for sending the video streams via multicast. Refer to the Installation Guide for detailed information.

Alternatively, you can specify that the computer modules (**IP-CPU**) send the video streams via *unicast* to the console modules (**IP-CON**).

The connection of a user to a computer module to which another user is already connected is *not* possible in this mode (message: **No multicast video**)!

> **NOTE:** This option places significantly *less* demands on the network switch.

You can define the type of video transmission system-wide. The system-wide setting is applied by default by all computer modules. In addition, you can specify the type of video transmission individually for each computer module.

How to configure the system-wide multicast or unicast video transmission setting:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **System** entry and press **Enter**.

4. Select the **Multicast video** entry and press **F8** to select one of the following options:

on:	By default, the computer modules (**IP-CPU**) send the video stream via *multicast* to the console modules (**IP-CON**). This option (*standard*) allows users with »Computer module multi access« right to connect to a computer to which *another* user is already connected.
off:	The computer modules (**IP-CPU**) send the video stream via *unicast* to the console modules (**IP-CON**) by default. The connection of a user to a computer to which another user is *already* connected is *not* possible in this mode (message: **No multicast video**)!

5. Press **F2** to save your settings.

IMPORTANT: The selected setting is only applied when a new connection is established. Existing connections are retained unchanged.

How to configure the individual multicast or unicast video transmission settings of a computer module:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module you want to configure and press **F5**.

ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Multicast video** entry and press **F8** to select one of the following options:Press **F2** to save your settings.

system:	Apply system-wide setting (see above).
on:	This computer module (**IP-CPU**) sends the video stream via multicast to other console modules (**IP-CON**). This option allows users with »Computer module multi access« right to connect to this computer module, even if *another* user is already connected.
off:	This computer module (**IP-CPU**) sends the video stream via unicast to other console modules (**IP-CON**). It is not possible to connect a user to this computer module if *another* user is already connected (message: **No multicast video**).

IMPORTANT: The selected setting is only applied when a new connection is established. Existing connections are retained unchanged.

Enhanced functions

Automatically restore sessions from console modules

Network interruptions lead to the termination of active sessions to the console modules in the affected network segment.

The **Restore console session timeout** function can be used to specify a timeout period for automatically restoring sessions to such console modules as soon as a stable network connection is available again.

How to determine the status of the network interfaces:

1. Press the **Ctrl+Num** (default) hotkey to open the on-screen display.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Network** entry and press **Enter**.
4. Select the **System** entry and press **Enter**.
5. Select the entry **Restore console session timeout** and edit the time within the range of 1 to 60 seconds.

   NOTE: Enter the value **0** to disable this function.

6. Press the **F2** key to save the changes made.

Reading out the status of the network interface

The current status of the network interface can always be read out via the OSD.

How to detect the status of the network interfaces:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Network** entry and press **Enter**.
4. Select the **Link Status** entry and press **Enter**.

5. The **Interface A** (*Network A* interface) paragraph provides you with the following data:

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

NOTE: Press **Enter** to update the displayed data.

6. Press **Esc** to leave the menu.

Checking the availability of a host in the network (Ping)

The OSD can be used to test the availability of a particular host (e. g., a computer or a network device) in the network.

How to check the availability of a host in the network:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Network** entry and press **Enter**.
4. Select the **Ping Host** entry and press **Enter**.
5. Use the **Host** entry to enter the IP address or the host name and press **Enter**.
6. The test results are displayed in the following table:

Transmitted:	number of transmitted data packets
Received:	number of received data packets
Lost:	number of lost data packets
Min. RTT:	minimum round-trip-time
Avg. RTT:	average round-trip-time
Max. RTT:	maximum round-trip-time

NOTE: A message informs the user if the host name cannot be resolved into an IP address.

7. Press **Esc** to leave the menu.

Resetting the default settings

This setting resets the default settings of the matrix switch. All settings that have been changed by the user are reset.

How to reset the default settings of the matrix switch:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Set system defaults** entry and press **Enter**.
5. Select the **Set system defaults** entry and press **Enter**.
6. Press **Enter** to reset the default settings.

Retrieving information about the system

Hotkey settings

The active hotkey, the valid select keys and the tradeswitch keys are displayed in the *Hotkey information* menu.

How to display the hotkey settings:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F12** to call the *Information* menu.
3. Select the **Hotkey information** entry and press **Enter**.

   The desired information is displayed.
4. Press **Esc** to leave the menu.

Displaying firmware information of the matrix system

The *Firmware information* menu displays the firmware of the matrix switch, the console module, and the accessing computer module.

How to call the Firmware information:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F12** to call the *Information* menu.
3. Select the **Firmware information** entry and press **Enter**.

   The desired information is displayed.
4. Press **Esc** to leave the menu.

Displaying hardware information of the matrix switch

The hardware information of the matrix switch can be displayed in the *Hardware information* menu.

This menu lists e.g., the firmware version, the device's serial number, and the MAC and IP addresses of the network ports.

How to display the hardware information:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F12** to call the *Information* menu.
3. Select the **Hardware information** entry and press **Enter**.

   The desired information is displayed.
4. Press **Esc** to leave the menu.

Displaying the premium functions

The *Feature information* menu lists the activated premium functions.

How to display the list of active premuim functions:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F12** to call the *Information* menu.
3. Select the **Feature information** entry and press **Enter**.

   The desired information is displayed.
4. Press **Esc** to leave the menu.

Rights administration

Login rights for the *Config Panel* web application

The *Config Panel* web application offers a graphical user interface to configure the matrix system.

The web application provides an alternative to configuring the matrix switches via the OSD of a console module and can be applied independently from the console modules in the network.

IMPORTANT: For applying the web application, the user accounts or the user groups have to hold the *WebIf Login* right.

How to change the login right for the *Config Panel* web application:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. If you want to change this right of a user account, select the **User** entry.
   For changing this right for a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose login rights for the web application you want to change and press **F5**.
6. Select the **Config rights** entry and press **Enter**.
7. Select the **WebIf login** entry and press **F8** to select one of the following options:

yes:	allows access to *Config Panel* web application
no:	denies access to *Config Panel* web application

8. Press **F2** to save your settings.

Optional premium functions

The functional range of the matrix system can be expanded by purchasing additional premium functions.

Name	Function	Description
Push-Get function	The Push-Get function allows the user to push the image on his monitor to the display of another workplace or a large-screen projection or to get it from there.	page 157
IP-Control-API	The IP-Control-API enables text-based XML control of a KVM matrix system over the network. It offers developers/administrators the ability to create custom applications for control, send switching commands and retrieve selective information on switching states and computer status. Thanks to easy integration into existing systems, including those from third-party manufacturers, the API offers a flexible and expandable solution that goes beyond the standard functions of the KVM matrix system and enables seamless integration into IT infrastructures from various providers.	page 166
Scripting function	With the scripting function, as part of the IP Control API, you can create, manage and execute scripts. A script is an XML document that contains one or more commands that are executed by the matrix switch. This allows you to automate scenarios such as changing the switching status of individual workplaces, several workplaces or the entire system. HTTP requests can also be used to control external devices.	page 200
EasyControl tool	You can use the EasyControl tool integrated in the web application to connect a console module to a specific computer module or to execute an existing script or script group.	manual of the web application

Name	Function	Description
Tradeswitch function	The TradeSwitch-Function (TS function) optimizes the operation of workplaces that, through multiple console modules, are responsible for the simultaneous monitoring or control of multiple computers. Instead of assigning a separate keyboard and mouse to each console module, the TradeSwitch-Function provides a central keyboard and mouse for controlling the entire workplace. The user can switch these two input devices to any console module using a hotkey.	page 212
CrossDisplay-Switching function	With CrossDisplay-Switching (CDS) as part of the TS function, user-friendly switching via mouse movement is enabled. The mouse behaves as if on a “virtual desktop” and can be seamlessly moved across the connected monitors. When the mouse pointer moves from one monitor to another, the keyboard-mouse focus is automatically redirected to another module, thus switching to a different computer.	manual of the web application
FreeSeating function	With the FreeSeating function, as part of the TS-Function, the user’s personal work environment is automatically restored at any workplace within the group – including the last connected sources. The simplified login process optimizes workflows and increases productivity: The login credentials only need to be entered once to log into all console modules of the group and switch to the most recently used sources. Similarly, a single logout is sufficient to log out the entire group.	page 120

Name	Function	Description
Direct Redundancy Shield function	With the DirectRedundancyShield (DRS) the KVM installation can be protected by implementing a redundant KVM-over-IP matrix system that takes over instantly if the first system fails or cannot be accessed. Once the DRS function has been configured, each console module and each computer module establishes two permanent connections to the active and the passive KVM-over-IP matrix via the network, only using one transmission line. If the primary connection is broken, the previously passive connection takes over automatically and directly. The transition is seamless, without any delay in the image transmission.	manual of the web application
2-factor authentication	To provide a greater level of security, optional 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.	manual of the web application

Name	Function	Description
SecureCert Feature	Feature to implement certified security functions. The following certifications are taken into account: ▪ Common Criteria EAL2+ ▪ DoDIN APL as *Video Distribution System over IP* ▪ FIPS 140-3 **IMPORTANT:** This feature is only available with the order of new devices. After sales implementation is **not** possible! The *SecureCert feature* can be ordered with the following devices: ▪ Devices of the *ControlCenter-IP* series from firmware 1.6.0 ▪ Devices of the *ControlCenter-IP-XS* series from firmware 1.1.0 ▪ Devices of the *VisionXS-IP* series from firmware 1.4.0 ▪ Devices of the *Vision-IP* series from firmware 2.4.0 ▪ Devices of the *RemoteAccess-IP-CPU* series from firmware 1.3.0	

Activating a premium function

NOTE: The premium functions can be activated in the *Config Panel* web application. The necessary steps are described in the manual of the web application.

IMPORTANT: The *SecureCert feature* is only available with the order of new devices. After sales implementation is **not** possible!

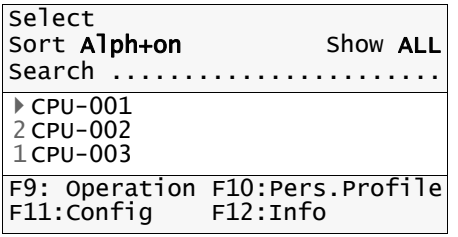
Overview of the menus and functions

The following pages show the main menus of the OSD.

Select menu

The *Select* menu is usually displayed after the OSD has been called.

The computer modules of the matrix system are displayed in this menu:



The chapter *Accessing computer modules (basic functions)* on page 115 ff. describes how to connect a computer module to the console module.

Both the *Search* and *Sort* function as well as the view filter can be used to limit the displayed computer modules. Further information regarding these functions are provided on (see page 18 f.).

Operation menu

After you called the OSD, press **F9** to open the *Operation* menu. This menu lists all functions of the KVM matrix system that the user can carry out directly:

Function	Description
A – Autoscan	page 127
B – Autoskip	page 128
C – Stepscan	page 130
D – Disconnect	page 116
E – User logout	page 10
G – Return to last computer module	page 115
H – Computer module info	page 20
K – Comment	page 11
U – USB Connection	page 11
W – Wake on LAN	page 74
X – Selection dialog	page 201

Personal Profile menu

After you called the OSD, press **F10** to open the *Personal Profile* menu. The menu settings only apply for the user whose name is displayed in the right corner.

This menu lists the settings of the matrix system, which can be individually defined for every user:

Function	Description
Language	page 33
Display	page 24
View only display	page 25
OSD transparency	page 23
OSD color	page 25
TS frame settings	page 219
Close OSD when idle for (s)	page 23
Scantime	page 128
Stepkeys	page 131
Multiuser display	page 76
Def. selection dialog	page 201
Sel. dialog replace sens.	page 201
Default view filter	page 26
Restore session	page 119
Default action	page 117
Default computer module	page 117
Default script	page 117
Scanmode set	page 131
Selectkey set	page 123
Script key set	page 205
Push-Get key set	page 162
Set display position	page 26
Set menu position	page 27
Change password	page 139

Configuration menu

After you called the OSD, press **F11** to open the *Configuration* menu. This menu enables you to configure the settings of the devices connected to KVM the matrix system as well as all user settings.

Function	Description
User	page 137
User group	page 144
Computer modules	page 58
Computer module groups	page 110
View filter	page 113
EDID	page 153
Scripting function	page 200
Console	page 77
System	page 32
Network	page 36
Tradeswitch function	page 212

Information menu

After you called the OSD, press **F12** to open the *Information* menu. This menu provides information on the different devices and versions of the KVM matrix system.

Function	Description
Firmware information	page 46
Feature information	page 53
Hotkey information	page 46
Hardware infomation	page 47
Console status	page 92

Computer modules

The computer modules serve to connect the computers to the matrix system. The computer modules can be accessed through the console modules.

Adjusting the access and config rights

Accessing a computer module

> **ADVICE:** It is recommended to use computer module groups to assign the computer module access rights (see page 140).
>
> This way, you are able to keep an overview of the KVM matrix systems. It also benefits the operating performance within the OSD of the system.

In order to carry out setting deviating from the rights assigned to the existing computer module groups, you can assign individual access rights in addition to the group rights.

How to change the access rights:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. If you want to change this right of a user account, select the **User** entry.
   For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Device rights: Access** entry and press **Enter**.
7. Select the desired computer module whose access right you want to change.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

8. Press **F8** to select one of the following options:

no:	denies access to the computer connected to the computer module
view:	enables to view the screen content of the computer connected to the computer module
full:	full access to the computer connected to the computer module

> **NOTE:** The *View mode* enables you to access the monitor image of the computer. Inputs, however, are *not* possible.

9. Repeat steps 7 and 8 to change the access rights to further computer modules.
10. Press **F2** to save your settings.

Accessing a computer module group

How to change the computer module group access right:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. If you want to change this right of a user account, select the **User** entry. For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Device group rights: Access** entry and press **Enter**.
7. Select the desired computer module group whose access rights you want to change.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

8. Press **F8** to select one of the listed options:

no:	denies access to the computer connected to the group's computer modules
view:	enables to view the screen content of the computer connected to the group's computer modules
full:	full access to the computer connected to the group's computer modules

NOTE: The *View mode* enables you to access the monitor image of the computer. Inputs, however, are *not* possible.

9. Repeat steps 7 and 8 to change the access rights to further computer module groups.
10. Press **F2** to save your settings.

Access mode when simultaneously accessing a computer module

In the default settings of the KVM matrix system, only one user can access a computer module and a computer at the same time.

This restriction can be lifted by changing the *MultiAccess* rights for a user account or a user group.

You can either change the global settings to allow multiple users to access a computer module at the same time (for all computer modules a user or a user group has access to) *or* you can change the rights for particular computer modules or computer module groups only.

> **NOTE:** The right for simultaneous access depends on the user's effective right (see page 135). The effective right is the highest right that results from the individual right of the user accounts and the rights of the assigned group(s).

How to change the MultiAccess rights for *all* computer modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. If you want to change this right of a user account, select the **User** entry.
   For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose multi access rights you want to change and press **F5**.
6. Select the **Global device rights** entry and press **Enter**.
7. Select the **MultiAccess** entry and press **F8** (repeatedly) to select one of the following options:

no:	denies access to an already accessed computer module
view:	allows to view the screen content of the computer; *no* inputs possible
full:	full access to an already accessed computer module

8. Press **F2** to save your settings.

How to change the MultiAccess rights for *a certain* computer module or computer module group:

> **NOTE:** You can configure and apply MultiAccess rights if the user account or the user group are assigned with *general access rights* (see page 58 f.) for the computer module.

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the Configuration menu.
3. If you want to change this right of a user account, select the **User** entry. For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Device rights: MultiAccess/Device group rights: MultiAccess** entry and press **Enter**.
7. Select the computer module or computer module group whose rights you want to change.

   > **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.

8. Press **F8** (repeatedly) to select one of the following options:

no:	denies access to an already accessed computer module
view:	when connecting to a computer module with an already active connection, only the monitor image is displayed; *no* inputs possible
full:	full access to an already accessed computer module

9. Press **F2** to save your settings.

Access to USB devices

In the defaults of the matrix system, users have access to USB devices of a channel group.

This right can be denied by changing the right *USB access* of a user account or a user group.

The right to access USB devices of a certain computer modules can be denied either globally (for all computer modules a user or a user group can access) *or* for certain computer modules or computer module groups.

> **NOTE:** The access right depends on the user's effective right (see page 135). The effective right is the highest right that results from the individual right of user accounts and the rights of assigned group(s).

How to change the right to access USB devices for *all* computer modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. If you want to change this right of a user account, select the **User** entry.
   For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Global device rights** entry and press **Enter**.
7. Select the **USB access** entry and press **F8** (repeatedly) to select one of the following options:

yes:	Allow access to USB devices of the channel group.
no:	Deny access to USB devices of the channel group.

8. Press **F2** to save your settings.

How to change the right to access USB devices for *a certain* computer module or computer module group:

> **NOTE:** You can configure and apply access to USB devices if the user account or the user group are assigned with *general access rights* (see page 58 f.) for the computer.

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. If you want to change this right of a user account, select the **User** entry. For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Device rights: USB access/Device group rights: USB access** entry and press **Enter**.
7. Select the computer module or computer module group whose rights you want to change.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

8. Press **F8** (repeatedly) to select one of the following options:

yes:	Allow access to USB devices of the channel group.
no:	Deny access to USB devices of the channel group.

9. Press **F2** to save your settings.

Rights for configuring the computer modules

How to change the computer module config rights:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. If you want to change this right of a user account, select the **User** entry. For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights to edit and configure the computer modules you want to change and press **F5**.
6. Select the **Config rights** entry and press **Enter**.
7. Select the **Computer module config** entry and press **F8** to select one of the following options:

yes:	allows the right to view and edit the computer module config
no:	denies the right to view and edit the computer module config

8. Press **F2** to save your settings.

Basic configuration of the computer modules

Renaming a computer module

During the booting process of the matrix system, the computer modules are automatically named. The text *CPU-ID* is put before the physical device ID.

All computer modules that are automatically named can be renamed.

> **ADVICE:** The computer modules can be renamed in the *Configuration* (see below) or the *Select* menu (see page 67).

How to rename a computer module in the *Configuration* menu:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module you want to rename and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.

> **NOTE:** The message »*Name exists*« is displayed if a computer module with the same name has already been connected to the system.
>
> The settings of such computer modules are stored within the matrix system and are only visible in the *Config Panel* web application. If necessary, use the web application to delete the computer module from the system.
>
> Afterwards, this name can be assigned to another computer module.

7. Press **F2** to save your settings.

How to rename a computer module in the *Select* menu:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Select the computer module to be renamed.

> **NOTE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

3. Press **F5**.
4. Change the name and press **Enter**.

> **NOTE:** The message »*Name exists*« is displayed if a computer module with the same name has already been connected to the system.
>
> The settings of such computer modules are stored within the matrix system and are only visible in the *Config Panel* web application. If necessary, use the web application to delete the computer module from the system.
>
> Afterwards, this name can be assigned to another computer module.

Deleting a computer module from the KVM matrix system

If the matrix system is not able to detect a computer module that has already been connected to the system, the device is defined as inactive.

Therefore, the list entry of the computer module you want to permanently remove from the system has to be manually removed.

> **NOTE:** Only inactive computer modules can be deleted.

How to delete a computer module that is inactive or disconnected from the system:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module you want to delete and press **F4**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Copying the computer module config settings

If a computer module of the KVM matrix system is replaced by another device, it is possible to copy the previous config settings to the new device.

After the config settings have been copied to the new device, it can be operated immediately.

> **IMPORTANT:** The computer module whose settings you want to copy is afterwards deleted from the KVM matrix system.

How to copy the computer module config settings:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.

   > **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Select the active computer module to which you want to copy the config settings of a computer module that is switched off or disconnected from the matrix system and press **F7**.
5. Select the computer module whose settings you want to copy and press **Enter**.

   > **NOTE:** Only computer modules that are switched off or disconnected from the system are listed in this menu.

6. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.
7. Press **F2** to save your settings.

Settings for special hardware

(De)Activating an USB keyboard mode the Generic USB mode

USB computer modules support different USB input devices. You can use the special features of a USB input device after selecting the specific USB keyboard mode.

As an alternative to the specific USB keyboard modes, you can also use the **generic USB** mode. In this mode, the data from the USB devices connected to the interface of the console module is transmitted to the active computer module.

IMPORTANT: The **generic USB** mode supports USB mass storage devices and many available HID device. However, being able to operate particular USB device in generic USB mode can not be guaranteed.

▪ **USB keyboards:** In addition to the keys of standard keyboard layouts, the default USB keymode **Multimedia** supports several multimedia keys like **Loud** and **Quiet**.

When using *Apple* keyboards, special keyboard modes let you use the special keys of these keyboards.

The following table lists the supported USB keyboards:

INPUT DEVICE	SETTING
PC keyboard with standard keyboard layout	‣ PC Standard:
PC keyboard with additional multimedia keys	‣ Multimedia
Apple keyboard with numeric keypad (A1243)	‣ Apple A1243

▪ **Displays and tablets:** You can operate computers connected to the computer module with one of the supported *displays* or *tablets* (depending on model):

INPUT DEVICE	SETTING
HP 2310tk	‣ HP 2310t
iiyama T1931	‣ iiyama T1931
iiyama TF2415MC	‣ iiyama TF2415
NOTTROT N170 KGE	‣ NOTTROT N170 KGE
Wacom Cintiq 21UX	‣ Wacom Cintiq 21US
Wacom Intuos3	‣ Wacom Intuos 3
Wacom Intuos4 S	‣ Wacom Intuos 4 S
Wacom Intuos4 M	‣ Wacom Intuos 4 M
Wacom Intuos4 L	‣ Wacom Intuos 4 L
Wacom Intuos4 XL	‣ Wacom Intuos 4 XL
Wacom Intuos5 S	‣ Wacom Intuos 5 S
Wacom Intuos5 M	‣ Wacom Intuos 5 M
Wacom Intuos5 L	‣ Wacom Intuos 5 L
Wacom Cintiq Pro 24 Pen	‣ Wacom CP24 Pen
Wacom Cintiq Pro 27	‣ Wacom CP27 Pen/Touch
Wacom Cintiq Pro 32 Pen	‣ Wacom CP32 Pen
Wacom Cintiq Pro 32 Touch	‣ Wacom CP32 Touch
Wacom DTK-2451	‣ Wacom DTK-2451

▪ **Generic-USB mode:** In this mode, data of the USB device connected to the interface of the console module is transmitted to the computer module without being altered.

INPUT DEVICE	SETTING
any USB mass storage or USB HID device	‣ Generic USB

IMPORTANT: The **generic USB** mode supports many available USB mass storage devices and HID devices. However, being able to operate particular device in generic USB mode can not be guaranteed.

▪ **Controller:** The **ShuttlePRO v2** multimedia controller is used to control various audio and video programs. With a special USB keyboard mode, you can use the controller to operate the computer connected to the computer module:

INPUT DEVICE	SETTING
Contour ShuttlePRO v2	‣ Contour Shuttle Pro 2

▪ **LK463-compatible keyboard:** You can connect an LK463-compatible keyboard to the console module. The arrangement of the 108 keys of such keyboards corresponds to the OpenVMS keyboard layout.

A special USB keyboard mode ensures that the pressing of a special key on this keyboard is transmitted to the computer:

INPUT DEVICE	SETTING
LK463-compatible keyboard	‣ LK463

How to select a USB keyboard mode:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module whose settings you want to change and press **F5**.

ADVICE: Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **USB HID mode** entry and press **F8** to select one of the options.
6. Click **OK** to save your settings.

Defining the EDID profile to be used

The EDID information (*Extended Display Identification Data*) of a monitor inform the graphics card of a connected computer about the technical features of the device.

The EDID profile of the monitor, which is connected to the console module, is not available at the computer module. Therefore, the computer module transmits a standard profile to the computer. The EDID information of this profile are optimised for the majority of available graphics cards.

We provide additional profiles for special resolutions.

> **ADVICE:** In some cases it is recommended to read out the EDID profile of the console monitor (see page 153 f.) and activate the configuration of the computer module.

How to choose the EDID profile to be transmitted to the computer:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **EDID** entry and press **F8** to choose between the standard profile (**Device specific default profile**) or another profile from the list.

default:	activates the device-specific default profiles
user:	activates a user-defined profile

> **IMPORTANT:** Select the **Assign EDID** entry to choose the user-defined profile and press **Enter**.
>
> Select the desired profile and press **F8**.
>
> Press **F2** to save your settings.

> **NOTE:** The names of the special G&D profiles provide information on the maximum resolution and refresh rate for the profile.
>
> The **GUD DVI1024D4 060 1280×1024/60** profile is provided for a resolution of 1280×1024 pixels at 60 Hz refresh rate.

6. Press **F2** to save your settings.

Reducing the colour depth of the image data to be transmitted

In the default settings of a computer module, the central module transmits the image information with a maximum colour depth of 24 bit to the console module.

Using a high resolution and displaying moving images can result in the console module "skipping" several images.

In such cases, reduce the colour depth of the image data to 18 bits. This way the data volume to be transmitted can be reduced.

> **NOTE:** Depending on the image contents, reducing the colour depth may result in slight colour grades.

How to change the colour depth of the image data to be transmitted:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the **Colour depth** entry and press **F8** to choose between the following options:

24 Bit:	transmits the image data with a maximum colour depth of 24 bits
18 Bit:	reduces the colour depth of image data to 18 bits

6. Press **F2** to save your settings.

Enhanced functions

Wake On LAN

Wake on LAN (WoL) is a standardized method to start a computer that is powered off or in sleep mode via a network command. If a WoL-compatible and accordingly configured computer receives a so-called magic packet on the LAN connection, the network card and BIOS initiate the startup process. In addition to the network card and the BIOS, the computer's operating system also needs to be configured accordingly.

The matrix switch also supports this function to use WoL in a KVM installation.

How to configure WoL function:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Wake on LAN** entry and press **Enter**.
6. Enter the following data:

Enable:	Choose **yes** to enable or **no** to disable the *WoL* function.
MAC address:	Enter the MAC address of the WoL-compatible and configured computer connected to the selected computer module.
Password:	Enter a password if a password has been stored on the computer at the WoL setup.
Auto mode:	Choose **on** to enable or **off** to disable the automatic Wake On LAN when connection to the defined computer module.

7. Press **F2** to save your settings.

How to send a WoL command to the defined computer:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.
3. Press **W** or select the **W - Wake on LAN** entry and press **Enter** to send the WoL command to the defined computer.

Displaying Multiuser information

If several users are accessing a computer module (*Multiuser* mode), the *Multiuser* information can be activated. This way, all accessing users are provided at the console module with the information that at least one other user is currently accessing the computer module.

NOTE: The setting to display the *Multiuser* information for the entire system are usually carried out in the *Configuration* menu. This setting of the *Personal Profile* menu enables you to individually configure this setting for each user account.

Both possibilities are described on this page.

How to (de)activate the Multiuser information *for the entire system*:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Multiuser display** entry and press **F8** to select one of the following options:

yes:	activates *Multiuser* display
no:	deactivates *Multiuser* display

5. Press **F2** to save your settings.

How to (de)activate the Multiuser information for a particular *user account*:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Multiuser display** entry and press **F8** (repeatedly) to select one of the following settings.

System:	The global setting made in the *Configuration* menu applies for this user account.
on:	displays *Multiuser* information
off:	does *not* display *Multiuser* information

4. Press **F2** to save your settings.

Console modules

The computers connected to the KVM matrix system are operated at the console modules of the system.

Operating modes of console modules

Depending on the intended use of the console module, the module's operating mode can be selected from the following three options:

Standard operating mode

NOTE: This operating mode is set by default, if you use the console module as a matrix switch module.

The *Standard* operating mode only permits access to the matrix system after the user has entered their username, a password and, if two-factor authentication and/or showing terms of use are activated, with an additional one-time password and/or after accepting the terms of use.

The user rights can be individually adjusted in the settings of the user accounts.

OpenAccess operating mode

In this mode, the access to the matrix system is not password-protected.

For this console module, you can configure the same access rights as for a user account.

IMPORTANT: The configured access rights apply for all users at this console module.

Video operating mode

A video console (only possible when combined with the optional *Push/Get function*) is especially suited when used with a projector since mouse and keyboard do not have to be connected.

If the video console is provided with mouse and keyboard, inputs can only be made in the OSD.

It is possible to configure the same access rights for this console module as for a user account.

IMPORTANT: The configured access rights apply for all users at this console module.

NOTE: A video console *does not* create an occupancy state. The accessing video console is therefore not highlighted to other accessing users. A user without *Multi-user* rights can access the console module simultaneously to the video console.

Selecting the console module operating mode

How to select the console module's operating mode:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the **Console type** entry and press **F8** to select an access type:

Standard:	Standard operating mode
OpenAccess:	OpenAccess operating mode
Video:	Video operating mode

NOTE: By selecting the *OpenAccess* or *Video* options, you can activate further submenus to configure the access rights.

The settings are explained in the chapter *Administrating user accounts* on page 137 ff.

5. Press **F2** to save your settings.

Basic configuration of the console modules

Renaming a console module

How to rename a console module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to rename and press **F5**.

> **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.
7. Press **F2** to save your settings.

(De)activating the console module

If you want to deny a console module the access to the matrix system, the console module can be deactivated.

> **NOTE:** After the console module has been deactivated, the monitor displays the message »*This console has been disabled*«. It is therefore not possible to call the OSD or the login box.
>
> If a user is currently accessing this console module, access is *immediately* withdrawn.

How to (de)activate the console module:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the console module you want to (de)activate and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Select the **Enable** entry and press **F8** to select one of the following options:

yes:	activate console module
no:	deactivate console module

5. Press **F2** to save your settings.

Enabling/disabling the keyboard support for console modules

By default, console modules start without a keyboard. After the startup, the console monitor shows the OSD of the matrix switch. Operating the OSD, however, requires a keyboard.

As an alternative, the console module can inerrupt startup by showing a message regarding the missing keyboard. Once you connect a keyboard to the console module, the startup process continues.

How to enable/disable the startup of a console module without a keyboard:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the console module you want to (de)activate and press **F5**.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Select the **Keyboard support** entry and press **F8** to select one of the following options:

yes:	Console module can be started only when a keyboard is connected.
no:	Console module can be started without a keyboard (*default*).

5. Press **F2** to save your settings.

Copying the console module config settings

If a console module of the matrix system is replaced by another device, the config settings of the device can be copied to the new device.

The new device can be operated immediately.

IMPORTANT: The console module whose settings are to be copied is deleted from the system afterwards.

How to copy the console module config settings:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Select the active console module to which you want to copy the config settings of an inactive or disconnected console module. Press **F7**.
5. Select the console module whose settings you want to copy and press **Enter**.

   NOTE: This menu only list console modules that are switched off or disconnected from the system.

6. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.
7. Press **F2** to save your settings.

Deleting a console module from the matrix system

If the matrix system is not able to detect a console module that already has been connected to the system, the device is considered inactive.

Therefore, you have to manually delete the list entry of the console module you want to permanently remove from the system.

> **NOTE:** Only inactive console modules can be deleted by the administrator and all users with the *Superuser* right.

How to delete an inactive or disconnected console module from the system:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to delete and press **F4**.

   > **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

(De)Activating access to exclusive signals

There are signals that cannot be connected to several console modules at the same time (e.g. Generic-HID, RS232, GPIO). In the default setting, the console module that connects to computer module first is given access to these exclusive signals.

It may be that the exclusive signals are not needed at this console module or that certain users should not have access to them. Therefore, access to the exclusive signals can be deactivated for console modules as well as users and user groups.

How to (de)activate access to exclusive signals for a console module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the Configuration menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.

5. Select the **Exclusive signals** entry and press **F8** to select one of the following options:

yes:	Basically access to the exclusive signals (*default*)
no:	**No** access to the exclusive signals

> **IMPORTANT:** The user only has access to the exclusive signals if the access is enabled at the corresponding console module **and** the user has the corresponding right (*default*).

6. Press **F2** to save your settings.

Rights for access to exclusive signals

You can either change the global settings to allow access to exclusive signals (for all computer modules to which a user or a user group has access) *or* you can change the rights for particular computer modules or computer module groups only.

> **NOTE:** The access right depends on the user's effective right (see page 135). The effective right is the highest right that results from the individual right of user accounts and the rights of assigned group(s).

How to change the rights to access exclusive signals for *all* computer modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the Configuration menu.
3. If you want to change this right of a user account, select the **User** entry.
   For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Global device rights** entry and press **Enter**.
7. Select the **Exclusive signals** entry and press **F8** (repeatedly) to select one of the following options:

yes:	Basically access to the exclusive signals of the computer modules (*default*)
no:	**No** access to the exclusive signals of the computer modules

> **IMPORTANT:** The user only has access to the exclusive signals if the user has the corresponding right **and** the access is enabled at the corresponding console module (*default*).

8. Press **F2** to save your settings.

How to change the right to access exclusive signals for *a certain* computer module or computer module group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the Configuration menu.
3. If you want to change this right of a user account, select the **User** entry.
   For changing the right of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Device rights: Excl. signals/Device group rights: Excl. signals** entry and press **Enter**.
7. Select the computer module or computer module group whose rights you want to change.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.

8. Press **F8** (repeatedly) to select one of the following options:

yes:	Basically access to the exclusive signals of the computer module or computer module group (*default*)
no:	**No** access to the exclusive signals of the computer module or computer module group

> **IMPORTANT:** The user only has access to the exclusive signals if the user has the corresponding right **and** the access is enabled at the corresponding console module (*default*).

9. Press **F2** to save your settings.

Settings for special hardware

Adjusting the scancode set of a PS/2 keyboard

If a key is pressed on the PS/2 keyboard, the keyboard processor sends a data packet that is called scan code. The two common scan code sets (set 2 and 3) contain different scan codes.

The KVM switch interprets all inputs of the PS/2 keyboard with scan code set 2.

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

How to select the scancode set of the PS/2 keyboard:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Scancode** entry and press **F8** to select the scancode sets **2** or **3**.
6. Press **F2** to save your settings.
7. Restart the console module to apply your changes.

Support of any USB device

In the **Generic USB** mode, the data from the USB devices connected to the interface of the console module is transmitted to the active computer module.

NOTE: When the **Generic USB** mode is enabled, it is *not possible* to operate the OSD with a keyboard connected to this interface.

IMPORTANT: The **generic USB** mode supports many available HID devices (including FIDO security keys, for example). However, the operation of a particular HID device in **generic USB** mode can not be guaranteed.

NOTE: In the *Multi User* mode, the generic USB device is available at the first active console module. Once this console module logs off and another console module logs in, the generic USB device of the other console module is available.

How to enable/disable the generic USB mode of the console module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Select the **Generic USB** entry and press **F8** to select the keyboard type:

off:	You can connect either a USB keyboard or a USB mouse to this **Keyb./Mouse** interface of the console module.
on:	The data from any USB device connected to this **Keyb./Mouse** interface of the console module is transmitted to the active computer module.

   IMPORTANT: To use the generic USB device, enable the USB-HID mode **Generic USB** of the computer modules you want to access (see page 69).

5. Press **F2** to save your settings.

Reinitialising USB input devices

After connecting a USB keyboard or mouse to the console module, the input devices are initialised and can be used immediately.

Some USB input devices require a reinitialisation of the USB connection. Enable the automatic reinitialisation of USB devices if a USB keyboard or mouse does not respond to your inputs during operation.

How to enable/disable the reinitialisation of USB devices:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Select the **USB Auto Refresh** entry and press **F8** to select the keyboard type:

off:	The status of the USB devices is **not** monitored. If communication to a USB device is interrupted, the device is **not** reinitialised.
all:	The status of the USB devices is monitored. If communication to one USB device is interrupted, all devices are reinitialised.
only faulty:	The status of USB devices is monitored. If the communication with a USB devices is interrupted, this device is reinitialised (*recommended setting*).

5. Press **F2** to save your settings.

Enhanced functions

Setting the auto user logout

The console module can be configured so that it auto-disconnects the access to the computer module after a user has been inactive for a certain amount of time. After the configured period of time, the user is logged out from the matrix system.

How to set the auto user logout:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Auto logout (min)** entry and press **Enter**.
6. Enter a number between **1** and **999** minutes to set the auto logout and press **Enter**.

> **NOTE:** The value »0« deactivates the automatic user logout on the console module.

7. Press **F2** to save your settings.

Auto-disconnecting the access to a computer module

The console module can be configured so that the active access to a computer module is auto-disconnected after the user has been inactive for a certain amount of time.

If the OSD is opened at the moment of disconnection, it remains on the screen even after it has been auto-disconnected.

In case the OSD is closed at the moment of disconnection, the message displayed on the right appears on the screen of the console module.

```
CON-Admin
Not connected
```

How to auto-disconnect the access to a computer module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Auto disconnect (min)** entry and press **Enter**.
6. Enter a number between **1** and **999** minutes to start the screensaver and press **Enter**.

> **NOTE:** The value »0« deactivates the auto disconnection when a computer module is accessed.

7. Press **F2** to save your settings.

Viewing information about the console modules

The *Console status* menu provides detailed information about the console modules and displays e.g. the unique ID, the accessing user, and the firmware version.

How to call detailed information about the console modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F12** to call the *Information* menu.
3. Select the **Console status** entry and press **Enter**.
4. Press **F8** (repeatedly) to select the information to be displayed in the right-hand column:

ID:	displays unique device ID
Port:	displays connection port at matrix switch
User:	displays active user
Computer module:	displays accessing computer module
Firmware:	displays firmware version of the console module
Type:	displays operating type of the console module
Comment:	displays a comment about the console module **ADVICE:** Press **Enter** to show the comment viewer of the console module. Press **F5** to switch to the comment editor.

5. Press **Esc** to leave the menu.

Remembering the user name in the login box

If the same user often works at a certain console module, their user name can be saved as default in the login box.

After a user has logged out of the system, the login box remembers the user name of the last active user.

How to remember the user name in the login box:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Remember last username** entry and press **F8** to select one of the following options:

yes:	remember last user name
no:	do not remember last user name

6. Press **F2** to save your settings.

Setting the hold time for the screensaver

The screensaver deactivates the screen display at the console module after the user has been inactive for a configurable amount of time.

> **NOTE:** This setting works independently from the screensaver settings of the computer.

How to set the hold time of the screensaver:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings are you want to change and press **F5**.

   > **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Screensaver (min)** entry and press **Enter**.
6. Enter a number between **1** and **999** minutes to activate the screensaver and press **Enter**.

   > **ADVICE:** The value »0« deactivates the screensaver.

7. Press **F2** to save your settings.

Setting the hold time for the login screensaver

The screensaver deactivates the screen display at the console module after the user has been inactive for a configurable amount of time.

> **NOTE:** This setting works independently from the screensaver settings of the computer.

How to set the hold time of the screensaver:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings are you want to change and press **F5**.

   > **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Login Screensaver (min)** entry and press **Enter**.
6. Enter a number between **1** and **999** minutes to activate the screensaver and press **Enter**.

   > **ADVICE:** The value »0« deactivates the screensaver.

7. Press **F2** to save your settings.

Enabling or disabling DDC/CI support

Most of the computer and console modules supported by the *ControlCenter-IP-XS* system are ready to support monitors with **DDC/CI** functionality.

After the function has been activated, the DDC/CI information is *transparently* forwarded to the monitor in order to support as many monitors as possible. However, we *cannot* guarantee the support for all monitors.

> **NOTE:** The paragraph *Technical data* of the manuals of the computer and console modules shows which modules (after an update to the latest firmware) support **DDC/CI**.

You can set the **DDC/CI** support for the entire system. The system-wide setting is used by all console modules. In addition, you can define these settings for each console module individually.

How to configure the sytem-wide setting of the DDC/CI support:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **DDC/CI support** entry and press **F8** to select the desired option:

Disabled:	The transmission of DDC/CI signals is disabled (*default*).
CPU > monitor:	The transmission of DDC/CI signals is carried out exclusively from the computer module to the monitor.
Bidirectional:	The transmission of DDC/CI signals is carried out bidirectionally.

5. Press **F2** to save your settings.

How to configure the individual settings of the DDC/CI support of a console module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module whose settings are you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **DDC/CI support** entry and press **F8** to select the desired option:

System:	Use system-wide setting (see above).
Disabled:	The transmission of DDC/CI signals is disabled (*default*).
CPU > monitor:	The transmission of DDC/CI signals is carried out exclusively from the computer module to the monitor
Bidirectional:	The transmission of DDC/CI signals is carried out bidirectionally.

6. Press **F2** to save your settings.

Remote gateways and remote targets

The computer modules of the **RemoteAccess-IP-CPU** series let you integrate virtual machines into a digital matrix switch. You can access these virtual machines via network.

NOTE: To establish a network connection to virtual machines, you can use the **SSH**, **VNC** or **RDP** protocol.

With the fee-based **RemoteAccess Streaming Feature**, streams can also be received via **RTP/TCP**, **RTSP/TCP** and **MMSH** transport protocols. The **H.265**, **H.264**, **VP8** and **VP9** codecs for decoding video data and **MPGA**, **MP3** and **AC3** for decoding audio data are supported.

Like other computer modules, the virtual machines connected via these computer modules are integrated into the OSD and the operating concept of the matrix switch:

As usual, you connect to a virtual machine (*remote target*) via the **Select** menu in the OSD and can also use functions such as *push-get*, *multi-user access* or *CrossDisplay-Switching* with these virtual machines.

The instructions and functions provided in the chapter *Computer modules* on page 58 ff. also apply for remote targets (apart from marked exceptions).

To connect a *remote target*, you need to configure the *remote gateway*, the different *remote targets* and the *remote pools*.

NOTE: The following terms are important to distinguish in connection with remote targets:

- **Remote gateway:** Each connected computer module of the **RemoteAccess-IP-CPU** series is listed under *Remote Gateways* in the web application.

Remote gateways establish a connection between a KVM matrix system and virtual machines

- **Remote targets:** Configured virtual machines are called remote targets within a KVM matrix system. They are listed under *Remote targets* in the web application
- **Remote pools:** A remote pool groups all remote targets that are accessible via the remote gateways included in the pool.

Configuring remote gateways

IMPORTANT: The configuration of the remote gateway (name, comment and network interface) is only possible in the web application. For detailed information, please refer to the separate manual of the web application.

Configuring remote targets

Changing the name of a remote target

How to change the name of a remote target:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to rename and press **F5**.

   ADVICE: Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.

   NOTE: The message »*Name exists*« is displayed if a computer module with the same name has already been connected to the system.

   The settings of such computer modules are stored within the matrix system and are only visible in the *Config Panel* web application. If necessary, use the web application to delete the computer module from the system.

   Afterwards, this name can be assigned to another computer module.

7. Press **F2** to save your settings.

Saving the resolution of a virtual machine

To make sure the video signal from the virtual machine is displayed correctly on the console modules, you need to provide information about the resolution set in the virtual machine.

How to save the resolution set in a virtual machine in the KVM matrix system:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the **Resolution** entry and press **F8** to choose between the following options:

> **ADVICE:** Press the **Ctrl+F8** key combination to display a list of all options. Select the desired option and press **Enter**.

1024x768
1280x1024
1680x1050
1600x1200
1920x1200
2048x2160
2560x1440
2560x1600

6. Press **F2** to save your settings.

Reducing the colour depth of the image data to be transmitted

By default, a remote target transmits image information with a maximum colour depth of 24 bit to the console module.

When using a high image resolution and displaying moving images, it may happen in exceptional cases that some images are "skipped" on the console module.

In this case, reduce the colour depth of the image data to be transmitted to 18 bit. This can reduce the data volume to be transmitted.

NOTE: Depending on the content of the image, slight colour gradations may occur when reducing the colour depth.

How to reduce the colour depth of image data to be transmitted:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

ADVICE: Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the **Colour depth** entry and press **F8** to choose between the following options:

24 Bit:	Transmit image data with a maximum colour depth of 24 bits.
18 Bit:	Reduce colour depth of image data to 18 bits.

Holding a connection

IMPORTANT: Activating this option may pose a security risk, since reconnecting to the remote target *within the holding period* does not require a new login!

In the default setting of the matrix switch, the existing connection is disconnected when switching from a *remote target* to a *classic computer module* or to a remote target of another pool. The connection to the classic computer module is then established.

You can also hold the connection to the remote target for a specified period of time (**1** to **10** minutes). Within this time span, you can quickly continue the existing connection by reconnecting to the console module.

NOTE: When connecting to another remote target of the same pool, the existing connection cannot be maintained, since only one connection via a remote gateway is possible at any time.

How to set the hold period of a connection:

1. Press the **Ctrl**+**Num** (default) hotkey to open the on-screen display.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to rename and press **F5**.

   ADVICE: Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the **Keep session** entry and press **F8** to choose between the following options:

no:	Connection is *not* held.
× min:	Hold connection × minute/s (1 to 10 minutes) long.
permanent:	Connection is held *permanently*.

6. Press **F2** to save your settings.

Connection repeats

If the connection to a remote target is interrupted or not possible, you can configure a number and interval of connection repeats.

NOTE: Connection repeats are **disabled** in the default settings.

How to set the number and the interval of connection repeats:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

   ADVICE: Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Number of connection repeats** entry and press **Enter**.
6. Define the number of connection repeats (between **0** and **999**) and press **Enter**.
7. Select the **Reconnect delay** entry and press **Enter**.
8. Define an intervall between **1** and **999** seconds at which several connection repeats are executed and press **Enter**.
9. Press **F2** to save your settings.

Defining the basic connection parameters for a remote target

How to configure the basic connection parameters for a remote target:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Specify the IP address or virtual machine name in the **Server** line.
6. Use the **Protocol** entry and press **F8** to choose between the following options:

SSH
VNC
RDP
Streaming

7. Press **F2** to save your settings.

Saving login data or use the matrix credentials for login

To automatically log on a user after connecting to the virtual machine, you can save the login data in the web application.

How to save the login data of a virtual machine:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the Configuration menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.

5. Enter the following values:

Use matrix credentials	Enable (*Yes*) or disable (*No*) this function. *Default*: function is disabled. If you enable this function, any remote target credentials (username and password) that may have been entered are ignored.
Username	Enter the username of the user to log on.
Password	Enter the password of the user to log on.

> **NOTE:** Depending on the configuration of the virtual machine, it is sometimes necessary to enter both username *and* password; sometimes you only need to enter the password!

6. Press **F2** to save your settings.

Defining the RDP connection parameters for a remote target

How to configure the RDP connection parameters for a remote target:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **RDP** line and press **Enter**.
6. Specify the **Port** through which the connection to the Terminal Server is established.
7. Specify the IP address or virtual machine name in the **Server** line.
8. Use the **RemoteFX** entry and press **F8** to choose between the following options:

off:	By default, RemoteFX optimisation is disabled. Only enable RemoteFX Optimisation if the RDP server supports it!
image:	RemoteFX optimisation for static images (**Image**) of a common desktop environment
video:	RemoteFX optimisation for moving images (**Video**).

9. Press **F2** to save your settings.

Defining the VNC connection parameters for a remote target

How to configure the VNC connection parameters for a remote target:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **VNC** line and press **Enter**.
6. Specify in the **Port** through which the connection to the Terminal Server is established.
7. Select the **Quality** line and press the **F8** key to select the quality level between **0** (low) and **9** (high).
8. Select the **Compression** line and press the **F8** key to select the compression level between **0** (fast) and **9** (best).
9. Use the **Local cursor** entry and press **F8** to choose between the following options:

off:	Only the cursor of the virtual machine is displayed.
on:	The local cursor (circle) of the *RemoteAccess-CPU* is displayed in addition to the cursor of the virtual machine.

10. Press **F2** to save your settings.

Defining the streaming connection parameters for a remote target

How to configure the streaming connection parameters for a remote target:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Streaming** line and press **Enter**.
6. In the **Audio delay (ms)** line, enter the delay in the range from -2500 to 2500 ms.
7. Press **F2** to save your settings.

Adjusting the mouse speed

If *CrossDisplay-Switching* is enabled, the mouse speed is not controlled by the operating system of the computer, but by the matrix switch.

If the cursor on the monitor of the computer moves too fast or too slow, you can adjust the speed in the matrix switch.

You can adjust the mouse speed for the entire system (see *Adjusting the mouse speed* on page 223) or for one computer module only.

How to change the mouse speed of a specific remote target:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the remote target you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the **Mouse speed** entry and press **F8** to choose between the following options:

System:	Apply the system mouse speed setting for the remote target
[value]:	Use individual mouse speed (level **1** to **10**).

6. Press **F2** to save your settings.

Computer module groups and view filters

Difference between computer module groups and view filters

The computer modules of the matrix system can be organised into computer module groups and view filters.

Intended use of computer module groups

Computer module groups enable the administrator to quickly assign the rights of a user or a user group for all computer modules within a group.

NOTE: The different computer modules can be members of *several* computer module groups.

Intended use of view filters

View filters enable the users of a matrix system to organise the different computer modules into view groups. Especially in large matrix systems, the creation of view groups gives you the possibility to keep a better overview over the system.

You can group the computer modules according to their view filter (e.g. the server room) or to any other features (e.g. to the operating system of the connected computer).

Administrating computer module groups

The »New IP Targets« computer module group

The *New IP Targets* computer module group is preconfigured in the matrix system. This group automatically contains any computer module that is connected to the system. For this, the computer connected to the module also has to be switched on.

If you want to provide a user or a user group with particular rights to all recently connected computer modules, change the device group rights of either the user account or the user group.

Creating a new computer module group

How to create a new computer module group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer module group** entry and press **Enter**.
4. Press **F3** to create a new group.
5. In the **Name** line, enter the name of the computer module group.
6. Select **Device class** and press **F8** to create a group for computer modules or for *remote targets*.
7. Press **F2** to save your inputs and create a computer module group.

NOTE: The rights for this computer module group can be assigned when access rights to a computer module group (see page 59) of either the user account or the user group are changed.

Renaming a computer module group

How to rename a computer module group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer module group** entry and press **Enter**.
4. Select the computer module group you want to rename and press **F5**.
5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.
7. Press **F2** to save your settings.

Administrating the computer module group members

NOTE: You can assign up to 20 computer modules to a computer module group within the matrix system.

How to administrate the members of a computer module group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer module group** entry and press **Enter**.
4. Select the computer module group whose members you want to administrate and press **F5**.
5. Select the **Members** entry and press **Enter**.
6. Select the computer module you want to add to or delete from the computer module group.

   NOTE: The special *MEMBERS* and *NONMEMBERS* options of this menu's view filter (see page 19) enable you to only list the computer modules that are or are not assigned to this group.

   You can also use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

7. Press **F8** to add the computer module to the selected computer module group or to delete it from this group.

   NOTE: The computer modules that are assigned to a computer module group are marked with an arrow (▸).

8. Repeat steps 6 and 7 to edit the group membership of further computer modules.

Deleting a computer module group

How to delete a computer module group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer module group** entry and press **Enter**.
4. Select the computer module group you want to delete and press **F4**.
5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Administrating view filters

Creating a new view filter

How to create a new view filter:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **View filter** entry and press **Enter**.
4. Press **F3** and enter the view filter name.
5. Press **F2** to save your inputs and create a view filter.

Assigning a computer module to a view filter

How to assign a view filter to a computer module or cancel the existing assignment:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **View filter** entry and press **Enter**.
4. Select the view filter which you want to assign a computer module to or whose assignment you want to cancel and press **F5**.
5. Select the **Members** entry and press **Enter**.

   The *Assign View Filter* menu opens. This menu contains a list of all computer modules within the matrix system.
6. Mark a computer module which you want to assign to the view filter or whose assignment you want to cancel.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.
7. Press **F8** to (de)activate the assignment.

   NOTE: A computer module, which is assigned to a view filter, is marked with an arrow (▸).
8. Repeat steps 6 and 7 for further computer modules.
9. Press **F2** to save your settings.

Renaming a view filter

How to rename a view filter:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **View filter** entry and press **Enter**.
4. Select the view filter you want to rename and press **F5**.
5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.
7. Press **F2** to save your settings.

Deleting a view filter

The created view filters can be deleted at any time. Deleting a view filter has no effect on the computer modules assigned to the view filter.

How to delete a view filter:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **View filter** entry and press **Enter**.
4. Select the view filter you want to delete and press **F4**.
5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Accessing computer modules (basic functions)

Switching analog video, keyboard, mouse, and audio signals to a console module allows you to operate the computer connected to the computer module.

This chapter describes how to access the computer modules by using the OSD. Information on how to access the computer modules via select keys are provided on page 121 ff.

Accessing a computer module via OSD

The OSD of the matrix system allows you to access a computer module via a console module.

How to access a computer module via OSD:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Use the **arrow** keys to select the computer module you want to access.

> **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

3. Press **Enter**.

> **NOTE:** A computer module can also be accessed using *select keys*. Further information regarding this topic are provided on page 121.

Returning to the previously accessed computer module

The *Return to last computer module* function allows you to switch from the currently accessed computer module to the previously accessed computer module.

> **NOTE:** This function does not apply if you have only worked on the currently accessing computer module since your login.

How to return to the last accessed computer module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.

3. Press **G** or select the **G - Return to last computer module** entry and press **Enter**.

> **ADVICE:** After the OSD has been called, you are enabled to activate the *Return to last computer module* function in the *Select* menu by pressing **Ctrl+G**.

Disconnecting the computer module

The *Disconnect* function disconnects the current connection to the computer module. After the function has been carried out, the *Select* menu is displayed.

> **NOTE:** After the *Disconnect* function has been carried out, you are still logged in at the matrix system.
>
> Use the *User logout* function described on page 10 to log out of the system.

How to disconnect the connection to a computer module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.
3. Press **D** or select the **D - Disconnect** entry and press **Enter**.

> **ADVICE:** After the OSD has been called, you are enabled to activate the *Disconnect* function by pressing **Ctrl+D**.

Enhanced functions

Configuring default actions after a user logon

After the user has logged on to a console module, the OSD usually opens on the screen of said console module.

The configuration setting **Default execution** allows you to define a computer module that is automatically accessed after the user logs on, *or* a script that runs automatically.

> **IMPORTANT:** If a *Restore session* function (TS workplace or Computer module) is activated, the user´s configured *default action* is ignored.
>
> To configure a *default execution*, the *Restore session* function must be switched off (see page 120 f.).

How to select a default computer module that is automatically accessed after a user logon:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Default execution** entry and press **F8** (repeatedly) to select **Computer module**.
4. Select the **Default computer module** entry and press **Enter**.

   The *Default computer module* menu opens. If already defined, the footer displays the currently selected computer module (*Current*).
5. Select the computer module to be accessed directly after the login.

   > **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.
6. Press **F8** to activate the selection. The active computer module is marked with an arrow (▸).
7. Press **F2** to save your changes.

How to select a default script or a script group that is automatically executed after a user logon:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Default execution** entry and press **F8** (repeatedly) to select **script**.
4. Select the **Default script** entry and press **Enter**.

   The *Default Script* menu opens. If already defined, the footer displays the currently selected script (*Current*).
5. Select the script to be executed directly after the login.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.
6. Press **F8** to activate the selection. The active script is marked with an arrow (▸).
7. Press **F2** to save your changes.

How to disable the configured default action:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Default execution** entry and press **F8** (repeatedly) to select **off**.
4. Press **F2** to save your changes.

Returning to the computer module that was last accessed in the previous session

Enable the **Restore session** function and **Computer module** option in the personal profile to remember the computer module the user last accessed even after the logout. After the next login, the user automatically accesses the last computer module.

NOTE: Turning off the console module on which the user is logged in is treated like a logout.

IMPORTANT: When enabling the **Restore session** function, the user's configured default action (see page 117 f.) is ignored.

How to enable automatic access to the last accessed computer module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Restore session** entry and press **F8** (repeatedly) to select the **Computer module** option.
4. Press **F2** to save your settings.

Restore the last FreeSeating session

Enable the **Restore session** function and **TS workplace** option in the personal profile to save the connection status of FreeSeating members. With this function, the last connection state can be restored when logging in again at the same workplace or another workplace that is set up and configured accordingly. By logging in or logging out to the Tradeswitch leader, all other FreeSeating members are automatically logged in with the same user (if no other user is logged in yet) or logged out (if the same user is logged in).

IMPORTANT: The prerequisite for this is the activation and configuration of the premium *Tradeswitch* function (see page 212 f.).

NOTE: Turning off the console module on which the user is logged in is treated like a logout.

IMPORTANT: When enabling the **Restore session** function, the user's configured default action (see page 117 f.) is ignored.

How to enable the restore last FreeSeating session function:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Restore session** entry and press **F8** (repeatedly) to select the **TS workplace** option.
4. Press **F2** to save your settings.

Deactivation of the Restore session function

How to disable the Restore session function:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Restore session** entry and press **F8** (repeatedly) to select the **off** option.
4. Press **F2** to save your settings.

Accessing computer modules via select keys

After the select key modifier(s) and a select key set have been adjusted and a select key set has been activated in the user account, the computer module can be accessed with key combinations.

Accessing a computer module using select keys

Calling the OSD is not required when accessing the computer module using select keys. The computer module can be accessed faster via select keys.

How to access a computer module via select keys:

1. Press the select key modifier(s) that have been adjusted in the matrix system and the select keys assigned to the computer module.

   EXAMPLE:

   - Select key modifiers: **Alt Gr+Shift**
   - Select keys for computer module: **S**

   Press **Alt Gr+Shift** and the select key **S**. As soon the keys are released, the switching to the computer module takes place.

Further information:

- *Changing the select key modifier and the valid keys* on page 121
- *Administrating select key sets* on page 123
- *Assigning a select key set to a user account* on page 126

Changing the select key modifier and the valid keys

The select keys enable fast access to a particular computer module by pressing a key combination. For this, select key sets can be created in the matrix system.

Both the select key modifier and a select key set define the key combination to be pressed to access a particular computer module.

You can also define valid keys for the select keys.

How to change the select key modifier or the valid keys:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select **System** entry and press **Enter**.
4. Select the **Select key** entry and press **Enter**.
5. Use the **arrow keys** to select *at least* one of the select key modifiers listed in the **Modifier** entry. Afterwards, press **F8**.

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift	*Shift* key

6. Select the **Valid keys** entry and press **F8** to select one of the following options:

Num:	*only numerical keys* are interpreted as select keys when pressed in combination with the select key modifier
Alph:	*only alphabetic keys* are interpreted as select keys when pressed in combination with the select key modifier
AlphNum:	*alphabetical and numerical keys* are interpreted as select keys when pressed in combination with the select key modifier

IMPORTANT: Both the selected valid keys and the select key modifier are *no longer* provided as key combinations to the operating system and the applications on the computer.

7. Press **F2** to save your settings.

Administrating select key sets

The KVM matrix system enables you to create 20 global select key sets or ten individual select key sets for each user.

Within the select key sets, you can define the select key sets for the computer modules you wish to access.

NOTE: The global select key sets are displayed in the *Personal Profile* menu of all users of the matrix system.

Creating a select key set

How to create a select key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Select key set** entry and press **Enter**.
4. Press **F3** and enter the following data in the *Add select key set* menu:

Name:	Enter the new select key set name and press **Enter**.
Global:	Select **yes** by pressing **F8** if you want the select key set in the personal profile to be available for all users of the system. default: **no** **NOTE:** This option can only be activated by users with the *Superuser* right (see page 149).
Return to last computer module:	Add, change or delete the special select key for quick access to the last activated computer module.

5. Press **F2** to save your inputs and to create the select key sets.

Changing a select key set

How to change the name and/or *Global* setting of a select key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Select key set** entry and press **Enter**.
4. Select the select key set whose setting you want to change.
5. Press **F5** to change the following data in the *Edit select key set* menu:

Name:	Enter the new select key set name and press **Enter**.
Global:	Select **yes** by pressing **F8** if you want the select key set in the personal profile to be available for all users of the system. default: **no** **NOTE:** This option can only be activated by users with the *Superuser* right (see page 149).
Return to last computer module:	Add, change or delete the special select key for quick access to the last activated computer module.

6. Press **F2** to save your settings.

Defining the select keys for the computer modules

NOTE: Global select key sets can only be edited by users with activated *Superuser* right (see page 149).

Without this right, only the select keys, which are assigned to the computer modules, can be viewed.

How to define the select keys for computer modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu
3. Select the **Select key set** entry and press **Enter**.
4. Choose a select key set and press **F5**.
5. Select the **Members** entry and press **Enter**.

   The *Assign select key set* dialogue opens. The left column displays the name of the computer module and the right column shows the assigned select key(s).
6. Select the computer module you want to assign a select key to or whose select key you want to change.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.
7. Press **F5** and enter the desired select key.

   NOTE: The chapter *Changing the select key modifiers and the valid keys* provides information on how to use valid keys as select key set.
8. If you want to create or change the select keys for other computer modules, repeat steps 6 and 7.
9. Press **F2** to save your settings.

Assigning a select key set to a user account

By assigning a select key set to a user account, the select keys defined in the set are interpreted and the particular computer module is accessed.

How to assign a select key set to a user account or cancel the existing assignment:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Select key set** entry and press **Enter**.
4. Select the desired select key set.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Press **F8** to (de)activate the assignment.

> **NOTE:** An assigned select key set is marked with an arrow (▸).

6. Press **F2** to save your settings.

Deleting a select key set

> **NOTE:** Only users with the *Superuser* right (see page 149) are allowed to delete a global select key set.

How to delete a select key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Select key set** entry and press **Enter**.
4. Select the select key set you want to delete and press **F4**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Switching the computer modules automatically or manually

Auto scanning all computer modules (Autoscan)

The *Autoscan* function successively accesses all computer modules that are mentioned in the active scancode set and available to the user.

The *Scantime* setting (see page 128) enables you to define how long a computer module is to be accessed.

When accessing the computer modules, the workplace name, the name of the currently accessed computer module, and a note regarding the *Autoscan* function are displayed.

NOTE: If the *Autoscan* function is active, the keyboard and mouse inputs are transmitted to the currently accessed computer module.

During your inputs, the *Autoscan* function stops and continues after you finished your inputs.

Applying the *Autoscan* function

Requirements for using the *Autoscan* function:

- *Creating a scanmode set* on page 131
- *Assigning a scanmode set to a user account* on page 134

How to start the *Autoscan* function:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.
3. Press **A** or select the **A - Autoscan** entry and press **Enter**.

ADVICE: After the OSD has been called, you can activate the *Autoscan* function in the *Select* menu by pressing **Ctrl+A**.

How to stop the *Autoscan* function:

1. Press the hotkey **Ctrl+Num** (*default*) to call the OSD.

   This causes the *Autoscan* function to stop.

Configuring the scantime of the Autoscan function

By default, each computer module is accessed for ten seconds. After that, the computer module is disconnected and the next computer module is accessed.

Select a time span between 1 and 99 seconds to define how long the computer module is to be accessed.

How to change the scantime:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Move the cursor to the **Scantime** entry and enter a span between **1** and **99** seconds.
4. Press **F2** to save your settings.

Auto scanning all active computer modules (Autoskip)

The *Autoskip* function successively accesses any computer module that is included into the active scancode set and available to the user.

The connected computer must be active to carry out this function.

The *Scantime* setting (see page 128) enables you to define how long each computer module is to be accessed.

When accessing the computer modules, the workplace name, the name of the currently accessed computer module, and a note regarding the *Autoskip* function are displayed.

NOTE: If the *Autoskip* function is active, the keyboard and mouse inputs are transmitted to the currently accessed computer module.

During the inputs, the *Autoskip* function stops and continues after you finished your inputs.

Applying the Autoskip function

Requirements for using the *Autoskip* function:

- *Creating a scanmode set* on page 131
- *Assigning a scanmode set to a user account* on page 134

How to start the *Autoskip* function:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.
3. Press **B** or select the **B - Autoskip** entry and press **Enter**.

> **ADVICE:** After the on-screen display has been called, you are enabled to activate the *Autoskip* function in the *Select* menu by pressing **Ctrl+B**.

How to stop the *Autoskip* function:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.

   This causes the *Autoskip* function to stop.

Configuring the scantime of the *Autoskip* function

By default, each computer module is accessed for ten seconds. After that, the computer module is disconnected and the next computer module is accessed.

Select a time span between 1 and 99 seconds to define how long the computer module is to be accessed.

How to change the scantime:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Move the cursor to the **Scantime** entry and enter a span between **1** and **99** seconds.
4. Press **F2** to save your settings.

Scanning the computer modules manually (Stepscan)

By pressing a key, the *Stepscan* function successively accesses any computer module that is included in the scanmode set and available to the user.

When accessing the computer modules, the workplace name, the name of the currently accessed computer module, and a note regarding the *Stepscan* function are displayed.

(De)activating the *Stepscan* function

Requirements to use this function:

- *Creating a scanmode set* on page 131
- *Configuring keys to scan the computer modules manually* on page 131
- *Assigning a scanmode set to a user account* on page 134

How to activate the *Stepscan* function:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F9** to call the *Operation* menu.
3. Press **C** or select the **C - Stepscan** entry and press **Enter**.

ADVICE: After the OSD has been called, you are enabled to activate the *Stepscan* function in the *Select* menu by pressing **Ctrl**+**C**.

How to deactivate the *Stepscan* function:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.

   This causes the *Stepscan* function to stop.

Switching between the computer modules

How to switch between computer modules via *Stepscan* function:

1. Press the **Up** stepkey (*default*) to access the next computer module or the **Down** stepkey (*default*) to access the previous computer module.

Configuring keys to scan the computer modules manually

By pressing a key, the *Stepscan* function successively switches to all computer modules that are available to the user.

You can select different keys to access the next (*default* **Up**) or the previous (*default* **Down**) computer module.

How to select the keys for using the *Stepscan* function:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Stepkeys** entry and press **F8** (repeatedly) to select between the following options:

Up/Down:	*Up* and *Down* arrow keys
PgUp/PgDn:	*Page*↑ and *Page*↓ keys
Num Up/Down:	*Up* and *Down* arrow keys of the numeric keypad
Num PgUp/PgDn:	*Page*↑ and *Page*↓ keys of the numeric keypad
Num +/-	*plus* and *minus* keys of the numeric keypad

4. Press **F2** to save your changes.

Administrating the scanmode sets

The matrix system enables you to create 20 global select key sets or ten individual scanmode sets for each user.

The select key sets allow you to define the computers to be accessed when performing the *Autoscan*, *Autoskip* or *Stepscan* function.

NOTE: The global scanmode sets are displayed in the *Personal Profile* menu of all users of the matrix system.

Creating a scanmode set

How to create a scanmode set:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Scanmode set** entry and press **Enter**.

4. Press **F3** and collect the following data in the *Add Scanmode Set* menu:

Name:	Enter the desired scanmode set name and press **Enter**.
Global:	Select **yes** by pressing **F8** if you want the scanmode set in the personal profile to be available for all users of the system. default: **no**

NOTE: This option can only be activated by users with the *Superuser* right (see page 149).

5. Press **F2** to save your settings.

Changing the name and global allocation of a scanmode set

How to change the name and/or *Global* setting of a scanmode set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Scanmode set** entry and press **Enter**.
4. Select the scanmode set whose setting you want to change.
5. Press **F5** to change the following data in the **Edit Scanmode Set** menu:

Name:	Enter the desired scanmode set name and press **Enter**.
Global:	Select **yes** by pressing **F8** if you want the scanmode set in the personal profile to be available for all users of the system. default: **no**

NOTE: This option can only be activated by users with the *Superuser* right (see page 149).

6. Press **F2** to save your settings.

Assigning the computer modules to a scanmode set

NOTE: Global scanmode sets can only be edited by users with activated *Superuser* right (see page 149).

Without this right, only the assigned computer modules can be viewed.

How to assign computer modules to a scanmode set or cancel the existing assignment:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Scanmode set** entry and press **Enter**.
4. Press **F5** to edit the selected scanmode set.
5. Select the **Members** entry and press **Enter**.

   The *Scanmode Set Members* menu opens. This menu lists all computer modules within the matrix system that you are allowed to access.
6. Mark a computer module to be assigned to the scanmode set or whose assignment is to be cancelled.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.
7. Press **F8** to (de)activate the selection.

   NOTE: The computer module that has been assigned to the scanmode set is marked with an arrow (▸).
8. If you want to assign further computer modules to the scanmode set, repeat steps 6 and 7.
9. Press **F2** to save your settings.

Assigning a scanmode set to a user account

A scanmode set defines the computer modules to be accessed when the *Autoscan*, *Autoskip* or *Stepscan* function is carried out.

How to assign a scanmode set to the user account or cancel the existing assignment:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Scanmode set** entry and press **Enter**.
4. Select the desired scanmode set in the list field.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Press **F8** to (de)activate the selection.

> **NOTE:** An assigned scanmode set is marked with an arrow (▸).

6. Press **F2** to save your settings.

Deleting a scanmode set

> **NOTE:** Only users with activated *Superuser* right (see page 149) can delete a global scanmode set.

How to delete a scanmode set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Scanmode set** entry and press **Enter**.
4. Select the scanmode set you want to delete and press **F4**.

> **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Users and Groups

Efficient rights administration

The matrix system administrates up to 1,024 user accounts and the same amount of user groups. Each user within the system can be a member of up to 20 groups.

Both user accounts and user groups can be provided with different rights.

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

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

The effective right

The effective right determines the right to carry out a particular function.

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

In the OSD, the individual right is highlighted in yellow. The effective right is highlighted in green.

Press **Ctrl+F12** to open the **Right Source** window. Here you can see the groups the effective right results from.

Example: The user *JDoe* is member of the groups *Office* and *Computer module config*.

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 *Computer module config*	Effective right
Computer module config	No	No	**Yes**	**Yes**
Change own password	No	**Yes**	No	**Yes**
Device rights: access	**Full**	View	No	**Full**

The settings of the *Computer module config* and *Change own password* rights result from the rights assigned to the user groups. The *Device rights: access* right which, in this case, enables full access to a computer module, was given directly in the user account.

NOTE: To be able to better differentiate between individual and effective right displayed in the menus of the user management, the rights are highlighted in different colours.

- Individual rights are displayed in *yellow*.
- Effective rights are displayed in *green*.

Efficient user group administration

User groups enable the creation of a shared right profile for several users with identical rights. Furthermore, the user accounts that are included in the member list can be grouped and therefore no longer have to be individually configured. This facilitates the rights administration within the matrix system.

If the rights administration takes place within the user groups, the user profile only stores general data and user-related settings (key combinations, language settings, …).

When initiating the matrix 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 the user rights are to be further divided. If, for example, some users of the »*Office*« group are to be provided with the *MultiAccess* right, a respective user group can be created:

- Create a user group (e. g., »*Office_MultiAccess*«) with identical settings for the »*Office*« group. The *Device rights: MultiAccess* right is set to *full*. Assign the respective user accounts to this group.
- Create a user group (e. g., »*MultiAccess*«) and only set the *Device rights: MultiAccess* 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 *full* effective right for *MultiAccess*.

ADVICE: The user profile offers the possibility to provide extended rights to a group member.

Administrating user accounts

Creating a new user account

A matrix system can contain up to 1,024 user accounts.

The owner of a user account is provided with individual login data, rights and user-related settings for the system.

IMPORTANT: If an individual password policy is to be taken into account, you must configure the password complexity (see *Configuring the password complexity* on page 4) before creating a new user account.

How to create a new user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Press **F3** and enter the following data in the *Add User* menu:

Name:	username of the new account
Password:	password of the new account
Repeat:	repeat new password

5. Press **F2** to save your inputs and create a user account.

IMPORTANT: The recently created user account can neither configure nor access the computer modules.

Before the account can be used, it has to be added to an existing user group or provided with individual rights.

Renaming the user account

How to rename a user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Select the user account you want to rename and press **F5**.
5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.
7. Press **F2** to save your settings.

Changing the user account password

NOTE: The personal password can be changed in the *Personal Profile* menu (see page 10) if the user account is provided with the *Personal Profile* or the *Change own password* right.

NOTE: When changing the password, any defined password policies (see *Configuring the password complexity* on page 4) are taken into account.

How to change the user account password:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Select the user account whose password you want to change and press **F5**.
5. Select the **Password** entry and press **Enter**.
6. Enter the following data into the *Change Password* menu:

Current:	Enter the current password. **NOTE:** No entry is required in this field for users with activated superuser rights (see page 149 ff.).
2-Factor Auth Code (TOTP):	Enter the 2-Factor Auth Code (TOTP) from two-factor authentication. **NOTE:** The *2-Factor Auth Code (TOTP)* field only appears if 2-factor-authentication is enabled. For detailed information, please refer to the separate manual of the web application.
New:	Enter your new password.
Repeat:	Repeat your new password.

7. Press **F2** to save your settings.

Changing the user account rights

A user account can be assigned with different rights.

The following tables list the different rights. Further information regarding these rights are provided in the respective chapters.

Superuser right

Name	Right	Page
Superuser right	Unrestricted access to the configuration of the system	page 149

Config rights

Name	Right	Page
Computer module config	Configuration of computer modules	page 65
WebIf login	Login to the *Config Panel* web application	page 48

Global device rights

Name	Right	Page
Personal profile	Change personal user settings	page 150
MultiAccess	Access mode when a computer module is simoultaneously accessed	page 61
USB access	USB access	page 63
Exclusive signals	Access to exclusive signals	page 85
Change own password	Change own password	page 151
Replace device	Execution of the “Replace device” function	page 152

Device rights and device group rights

Name	Right	Page
Device rights: Access	Access to a computer module	page 58
Device group rights: Access	Access to a computer module group	page 59
Device rights: MultiAccess	Access if a computer module is accessed by several users	page 61
Device rights: USB access	Access USB devices for a certain computer module	page 63
Device rights: Excl. signals	Access to exclusive signals of a certain computer module	page 86

Scripting rights

Name	Right	Page
Scripting rights	Carry out a global script	page 204

Push-Get rights

Name	Right	Page
Device rights: Push-Get	Carry out *Push-Get function*	page 165

Changing a user account's group membership

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

How to change a user account's group membership:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Select the user account whose group membership you want to change and press **F5**.
5. Select the **Group membership** entry.
6. Select the user group to which you want to add a user account or from which you want to delete a user account.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

7. Press **F8** to add the user account to or delete it from the selected user group.

   NOTE: User groups to which the user account is assigned to are marked with an arrow (▸).

8. Repeat steps 6 and 7 to edit the group membership for further accounts.
9. Press **F2** to save your settings.

(De)activating a user account

How to (de)activate a user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the user account you want to (de)activate and press **F5**.
4. Select the **Enable** entry and press **F8** to select one of the following options:

yes:	user account activated
no:	user account deactivated

5. Press **F2** to save your settings.

Deleting a user account

How to delete a user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Mark the user account you want to delete and press **F4**.
5. Select **Yes** and press **Enter** to respond to the prompt for confirmation.

Administrating user groups

Creating a new user group

The matrix system can contain up to 1,024 user groups.

How to create a new user group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User group** entry and press **Enter**.
4. Press **F3** and enter the user group name.
5. Press **F2** to save your inputs and create a user group.

IMPORTANT: The recently created user group can neither configure nor access the computer modules.

Renaming a user group

How to rename a user group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User group** entry and press **Enter**.
4. Select the user group you want to rename and press **F5**.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Name** entry and press **Enter**.
6. Enter the new name and press **Enter**.
7. Press **F2** to save your settings.

Changing the user group rights

The user groups can hold different rights.

The following tables list the different rights. Further information regarding these rights are provided in the respective chapters.

Superuser right

Name	Right	Page
Superuser right	Unrestricted access to the configuration of the system	page 149

Config rights

Name	Right	Page
Computer module config	Configuration of computer modules	page 65
WebIf login	Login to the *Config Panel* web application	page 48

Global device rights

Name	Right	Page
Personal profile	Change personal user settings	page 150
MultiAccess	Access mode when a computer module is simoultaneously accessed	page 61
USB access	USB access	page 63
Exclusive signals	Access to exclusive signals	page 85
Change own password	Change own password	page 151
Replace device	Execution of the “Replace device” function	page 152

Device rights and device group rights

Name	Right	Page
Device rights: Access	Access to a computer module	page 58
Device group rights: Access	Access to a computer module group	page 59
Device rights: MultiAccess	Access if a computer module is accessed by several users	page 61
Device rights: USB access	Access USB devices for a certain computer module	page 63
Device rights: Excl. signals	Access to exclusive signals of a certain computer module	page 85

Scripting rights

Name	Right	Page
Scripting rights	Carry out a global script	page 204

Push-Get rights

Name	Right	Page
Device rights: Push-Get	Carry out *Push-Get function*	page 165

Administrating the user group members

How to administrate the members of a user group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User group** entry and press **Enter**.
4. Select the user group whose members you want to administrate and press **F5**.
5. Select the **Member management** entry and press **Enter**.
6. Select the user account you want to add to or delete from the user group.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

7. Press **F8** to add the user account to the selected user group or to delete it from this group.

> User accounts that are assigned to the user group are marked with an arrow (▸).

8. Repeat steps 6 and 7 to change the group membership for further accounts.
9. Press **F2** to save your settings.

(De)activating a user group

How to (de)activate a user group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User group** entry and press **Enter**.
4. Select the user group whose status you want to change and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **Enable** entry and press **F8** to select one of the following options:

yes:	activate user group
no:	deactivate user group

> **IMPORTANT:** If the user group is deactivated, the group rights do *not* apply to the assigned members.

6. Press **F2** to save your settings.

Deleting a user group

How to delete a user group:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User group** entry and press **Enter**.
4. Select the user group you want to delete and press **F4**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Rights regarding the user account

The Superuser right

The *Superuser* right enables you to fully access and configure the matrix system.

NOTE: The information on the user rights that have been assigned before are still stored when the *Superuser* right is activated. After the *Superuser* right has been withdrawn, the saved rights do apply again.

How to change the *Superuser* right of a user account:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. If you want to change this right for a user account, select the **User** entry.
   For changing this right for a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose *Superuser* rights you want to change and press **F5**.
6. Select the **Superuser right** entry and press **F8** to select one of the following options:

yes:	full access to KVM matrix system
no:	access authorisation according to user and group rights

7. Press **F2** to save your settings.

Changing settings in the Personal Profile menu

How to change a user account's operating rights:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. If you want to change this right for a user account, select the **User** entry.
   For changing this right for a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Global device rights** entry and press **Enter**.
7. Select the **Personal Profile** row and press **F8** to select one of the following options:

yes:	allows to view and edit the personal profile
no:	denies to view and edit the personal profile

8. Press **F2** to save your settings.

Changing your own password

How to change a user account's operation rights:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. If you want to change this right for a user account, select the **User** entry.
   For changing this right for a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Global device rights** entry and press **Enter**.
7. Select the **Change own password** row and press **F8** to select one of the following options:

yes:	allows to change the password of the own user account
no:	denies to change the password of the own user account

8. Press **F2** to save your settings.

Authorisation to execute the »Replace device« function

If a computer or a console module is replaced by new device, the previous config settings can be copied to the new device. After the config settings have been copied to the new device, it can be operated immediately.

In the default settings, the authorisation to execute the function is limited to the administrator and all users with activated superuser rights.

If desired, the authorization can be granted to other users.

How to change the right to change your own password:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. If you want to change this right for a user account, select the **User** entry.
   For changing this right for a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights you want to change and press **F5**.
6. Select the **Global device rights** entry and press **Enter**.
7. Select the **Replace device** row and press **F8** to select one of the following options:

yes:	Allow users to execute the function
no:	Deny users to execute the function

8. Press **F2** to save your settings.

Administrating EDID profiles

The EDID information (*Extended Display Identification Data*) of a monitor inform the graphics card of a connected computer about various technical features of the device.

The EDID profile of the monitor that is connected to the console module, is not available at the computer module. Therefore, the computer module transmits a standard profile to the computer. The EDID information of the profile are optimised for the majority of available graphics cards.

We provide additional profiles for special resolutions.

ADVICE: In some cases it is recommended to read out the EDID profile of the console monitor (see page 72) and then activate the configuration of the computer module.

Importing the EDID profile of a monitor

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

How to import the EDID profile of a connected monitor:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **EDID** entry and press **Enter**.
4. Press **F3**.
5. Select the console module to which the monitor whose EDID profile you want to import is connected to and press **Enter**.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

   The imported data is displayed in the *Add EDID* entry.
6. If you wish, you can rename the EDID profile.
7. Press **F2** to save the imported EDID profile.

Renaming the EDID profile of a monitor

How to rename an existing EDID profile:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **EDID** entry and press **Enter**.
4. Choose the EDID profile you want to rename and press **F5**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Rename the EDID profile.
6. Press **F2** to save your settings.

Deleting the EDID profile of a monitor

How to delete an EDID profile:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **EDID** entry and press **Enter**.
4. Choose the EDID profile you want to delete and press **F4**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Respond to the confirmation prompt by selecting **Yes** and press **Enter**.

Defining the EDID profile to be applied for a computer module

In some cases it is recommended to read out the EDID profile of the console monitor and then activate the configuration of the computer module.

Detailed information regarding this topic is provided on page 72.

Expanding switchable signals

You can expand the switchable signals of a computer or a console through *channel grouping*

> **EXAMPLE:** To transmit a second video signal and a USB 2.0 signal of the same computer, in addition to a first computer module, connect a second computer module (second video channel) and a **U2-LAN-04-CPU** module (USB2.0) to the computer.
>
> In addition to the first console module, connect a second console module (second video channel) and a **U2-LAN-04-CON** module (USB2.0) to the console the aforementioned computer is accessing.

With the *ControlCenter-IP-XS*, you can switch various computer modules of *one* computer or various console modules of *one* console at the same time.

> **NOTE:** Only in this mode, you can hold the USB signal using the OSD **Operation** menu at the currently active computer. If you switch to another computer after executing the *hold function*, the USB signal remains on the computer that you accessed first.
>
> After disabling the *hold function* on the **Operation** menu, the USB signal switches to the currently active computer.

Expanding the system through channel grouping

The web application lets you assign up to seven additional video channels and one USB 2.0 channel to the KVM channel of the console.

You can also assign up to seven additional video channels to the KVM channel of the computer. In addition, you can create **pools** of four devices for the USB 2.0.

> **NOTE:** Within the channel groups of the console a USB 2.0 channel represents one single device. For computers such a channel represents a group of up to four devices.

By using pools, you can grant up to four users the right to access the USB 2.0 channel *at the same time*. For this, the matrix switch selects an available device from the pool after switching.

Assigning multiple channels to a console or computer creates a *channel group*.

> **NOTE:** The OSD does *not* show any console or computer modules that you added as additional channels to the channel group.

Shared editing

The matrix system enables two users with the respective rights to edit the settings at the same time.

If two users simultaneously change the user account settings, for example, the OSD informs the other user about these changes:

- The upper row of the footer displays a *purple* message, which highlights the changes of the other user.
- The changed setting or the menu item in the submenu ,which contains this setting, is displayed in *green*.

If you made changes in this sector, the following options are provided to process the entered data when leaving the menu (by pressing **Esc**):

Save:	In order to save the changes, select this menu entry with the **Tab** key or the **arrow keys** and press **Enter**.
Discard:	In order to discard the changes, select this menu entry with the **Tab** key or the **arrow keys** and press **Enter**.
Cancel:	In order to cancel the data storage, select this menu entry with the **Tab** key or the **arrow keys** and press **Enter**. Your values are displayed again.
Load:	In order to load the current values from the databank, select this menu entry with the **Tab** key or the **arrow keys** and press **Enter**.

Push-Get function (optional)

IMPORTANT: Using the Push-Get function requires the purchase and activation of the premium **Push-Get-Function**.

The optional *Push-Get function* allows the user to push the switch state of his console module to another console module or to get it from there.

Push the switch state

Push the switch state to another console module

How to push the switch state to another console module:

1. Press the hotkey **Ctrl+Num** (*default*) to call the OSD.
2. Use the Select menu to choose the computer module that you want to connect with another console module.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.

3. Press **F7** to open the **Push** menu.

   The menu displays all active console modules within the KVM matrix system, which you have access to and are therefore allowed to perform the *Push-Get* function. The right-hand column additionally provides you with the names of the computer modules that are accessing the console modules.

4. Select the console module to which the switch state is to be moved to and press **Enter**.

Stop the push of the switch state

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F7** to call the **Push** menu.

   The menu displays all active console modules within the KVM matrix system, which you have access to and are therefore allowed to perform the *Push-Get* function. The right-hand column additionally provides you with the names of the computer modules that are accessing the console module.

3. Select the console module to be disconnected from the computer module with the **arrow keys** and press **F4**.

Get the switch state (Get)

Get the switch state from another console module

How to get the switch state from another console module:

1. Press the hotkey **Ctrl**+**Num** (*default*) to open the OSD.
2. Press **F8** to call the *Get* menu.
3. The menu displays all active console modules within the KVM matrix system, which you have access to and are therefore allowed to perform the *Push-Get* function. The right-hand column additionally provides you with the names of the computer modules that are accessing the console module.
4. Use the **arrow keys** to select the console module whose screen content you want to access and press **Enter**.

NOTE: This function stops if another computer module (see page 115) is accessing the console module.

Push/get switch state via push get keys

After having defined push get key modifier(s) and a push get key set and after having activated a push get key set in the user account, you can push/get the switch state of the console module by using the console keyboard.

Push switch state	1. Press and hold configured modifier key(s). 2. Press **P** 3. Press push get key of console module. 4. Release configured modifier key(s).
Stop push of switch state	1. Press and hold configured modifier key(s). 2. Press **D** 3. Press push get key of console module. 4. Release configured modifier key(s).
Get switch state	1. Press and hold configured modifier key(s). 2. Press **G** 3. Press push get key of console module. 4. Release configured modifier key(s).

Setting push get keys

After you adjust the push-get key modifier(s) and a push/get key set and activate the push-get key set in the user account, you can use key combinations on the console module keyboard to push/get switch states.

Changing push-get key modifiers and valid keys

Push-get keys let you push or get switch states from or to a console module by using key combinations. For this, you can create *Push-get key sets* in the matrix system.

In combination with a defined push-get key modifier a push-get key set defines the key combination to be pressed for push or get switch states.

In addition to the push-get key modifier you can also define valid keys to be used as push-get keys.

How to change push-get key modifiers or valid keys:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select **System** entry and press **Enter**.
4. Select the **Push-Get key** entry and press **Enter**.
5. Use the **arrow keys** to select *at least* one of the Push-Get key modifiers listed in the **Modifier** entry. Afterwards, press **F8**.

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift	*Shift* key

6. Select the **Valid keys** entry and press **F8** to select one of the following options:

Num:	*Only numerical keys* are interpreted as push-get keys when pressed in combination with the push get key modifier
Alph:	*Only alphabetic keys* are interpreted as push-get keys when pressed in combination with the push get key modifier
AlphNum:	*alphabetical and numerical keys* are interpreted as push-get keys when pressed in combination with the push get key modifier

IMPORTANT: Both the selected valid keys and the Push-Get key modifier are *no longer* provided as key combinations to the operating system and the applications on the computer.

7. Press **F2** to save your settings.

Administrating push get key sets

The KVM matrix system allows you to create 20 global push get key sets or ten individual push get sets for each user.

Within push get key sets you can define push get keys for selected console modules to move the switch state of a console module.

NOTE: Global push get key sets are displayed in the personal profile of all users of the KVM matrix system.

Creating push get key sets

How to create push get key sets:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Push-Get key set** entry and press **Enter**.
4. Press **F3** and enter the following data in the *Add Push-Get key set* menu:

Name:	Enter the new Push-Get key set name and press **Enter**.
Global:	Select **yes** by pressing **F8** if you want the Push-Get key set in the personal profile to be available for all users of the system. default: **no**

NOTE: This option can only be activated by users with the *Superuser* right (see page 149).

5. Press **F2** to save your inputs and to create the Push-Get key sets.

Changing name, comment or global allocation

How to change the name, comment and/or the *Global* setting of push get key sets:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Push-Get key set** entry and press **Enter**.
4. Select the Push-Get key set whose setting you want to change.
5. Press **F5** to change the following data in the *Edit Push-Get key set* menu:

Name:	Enter the new name of the Push-Get key set and press **Enter**.
Global:	Press **F8** for selecting **yes** if you want to make the Push-Get key set in the personal profile available to all users of the system. default: **no**

6. Press **F2** to save your settings.

Defining push get keys for console modules

NOTE: Global push get key sets can only be edited by users with activated *Superuser* rights (see page 149).

Without this right, only push get keys assigned to the console modules can be viewed.

How to define push get keys for console modules:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the Personal Profile menu.
3. Select the **Push-Get key set** entry and press **Enter**.
4. Choose a Push-Get key set and press **F5**.
5. Select the **Members** entry and press **Enter**.

   The *Assign Push-Get key set* dialogue opens. The left column displays the name of the console modules and the right column shows the assigned Push-Get key(s).
6. Select the console module you want to assign a Push-Get key to or whose Push-Get key you want to change.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.
7. Press **F5** and enter the desired Push-Get key.
8. If you want to create or change the Push-Get keys for other console modules, repeat steps 6 and 7.
9. Press **F2** to save your settings.

Assigning push get key sets to user accounts

By assigning a push get key set to a user account, the push get keys of the set are evaluated for entries at the console module and the switch state of the console module can be pushed or got.

How to assign a push get key set to a user account or cancel an existing assignment:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Push-Get key set** entry and press **Enter**.
4. Select the desired Push-Get key set.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Press **F8** to (de)activate the assignment.

   NOTE: An assigned Push-Get key set is marked with an arrow (▸).

6. Press **F2** to save your settings.

Deleting push get key sets

NOTE: Global push get key sets can only be deleted by users with activated *Superuser* rights (see page 149).

How to delete a push get key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to call the *Personal Profile* menu.
3. Select the **Push-Get key set** entry and press **Enter**.
4. Select the Push-Get key set you want to delete and press **F4**.

   ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Changing a user account's *Push-Get* right

How to change a user account's *Push-Get* right:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the Configuration menu.
3. If you want to change this right of a user account, select **User** entry. For changing the rights of a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose right to execute the *Push-Get* function you want to change and press **F5**.
6. Select the **Push-Get rights** entry and press **Enter**.
7. Select the console module whose user rights you want to change.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 ff.) to limit the selection of list entries.

8. Press **F8** to select one of the following options:

yes:	allows usage of *Push-Get* function
no:	denies usage of *Push-Get* function

9. Repeat steps 7 and 8 to change the *Push-Get* right for further console modules.
10. Press **F2** to save your settings.
11. Press **Esc** to leave the menu.

IP-Control-API (optional)

IMPORTANT: Using the IP-Control-API requires the purchase and activation of the premium **IP-Control-API**.

After you activate the additional *IP-Control-API* function, you are able to access the KVM matrix system over a TCP/IP connection and you can use the network interfaces to send text-based commands in the form of XML files to the matrix switch.

ADVICE: The separate chapter *Controlling the matrix switch via XML (optional)* on page 167 ff. provides you with detailed information on this topic.

Supported functions via text-based control

You can use the text-based control to perform the following functions:

- **Logon User:** ▪user logon at a console module
- **Logout User:** ▪user logout at a console module
- **Connect CPU:** ▪Accesses a computer module with a console module

  NOTE: This function can only be executed if an user with the computer module access rights *ViewOnly* or *FullAccess* is logged on to the console module or if it is an *OpenAccess* console with these rights.

- **Disconnect CPU:** ▪disconnects active access
- **List Connections:** ▪queries connections between connected devices
- **List MatrixSwitch:** ▪queries known matrix switches
- **List CPUs:** ▪queries known computer modules
- **List Consoles:** ▪queries known console modules
- **Redirection:** ▪redirects keyboard and mouse data

  NOTE: Only after you have purchased the additional *Tradeswitching* function, you are enabled to forward keyboard and mouse data to another console module or computer module.

Controlling the matrix switch via XML (optional)

IMPORTANT: Activate the additional »IP-Control-API« function to send text-based commands.

XML enables you to control digital matrix switches using third-party devices (e.g. AMX® and Crestron®). The matrix switch uses the ethernet interface to process any XML commands received from third-party devices.

NOTE: For controlling external devices **HTTP requests** can be used. For more information, please refer to the separate manual of the web application.

Structure of a valid XML document

Any commands are transmitted as XML documents to the G&D device. Valid XML documents start with an optional, standardized header. On the top level, they are surrounded by the **<root>** tag:

STRUCTURE OF A VALID XML DOCUMENT

```
<?xml version="1.0" encoding="utf-8"?>    <!-- optional header -->
<root>                                    <!-- start tag of document -->
</root>                                   <!-- end tag of document  -->
```

Any commands you want to execute are placed between a tag that starts and ends the document (**root**). The commands are described on page 178.

Selecting devices

As of version 1.1, the XML API lets you specify devices not only by ID, but also by name.

Use the attribute **type** to select devices via ID (**"id"**) or via name (**"name"**). The attribute is supported by all commands referring to devices with a name.

> **ADVICE:** The use of the **type** attribute is optional. If you do not use this attribute, devices are identified via ID.

USING THE NAME OF A CONSOLE MODULE FOR IDENTIFICATION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <logon>
        <IpConsole type="name">CON1</IpConsole>
        <User>JohnDoe</User>
        <Password>secret</Password>
    </logon>
</root>
```

USING THE ID OF A CONSOLE MODULE FOR IDENTIFICATION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <logon>
        <IpConsole type="id">0x22222222</IpConsole>
        <User>JohnDoe</User>
        <Password>secret</Password>
    </logon>
</root>
```

Use of device IDs

For responses and messages, device IDs are output as hexadecimal values including the prefix **0x (**as of version 1.1 of the XML API).

> **IMPORTANT:** In version 1.0, device IDs were often output as described above. In some responses, however, IDs were output as hexadecimal values.

In commands, device IDs can be stated as hexadecimal values including the prefix **0x**, as octal values including the prefix **0** or as decimal values.

Responses and messages of G&D devices

As of version 1.1 of the XML API, G&D devices respond with a *complete* XML document after processing an XML document.

IMPORTANT: In some cases, version 1.0 of the XML API sent a message in unstructured plain text.

Responses of G&D devices

Responses of the device are included in a **<result>** tag.

The attribute **<type>** includes the name of the executed command. When executing several commands within an XML document (see below), you can assign the responses to the different commands.

In the following example, data of a console module was requested. The available information is listed within **<item>** tags:

EXEMPLARY RESPONSE OF XML API

```
<?xml version="1.0" encoding="utf-8"?>
<root>
<result type="list">
     <IpConsole>
          <item>
               <id>0x22222222</id>
               <cl>IpConsole</cl>
               <type>IP-CON</type>
               <name>CON1</name>
               <ownerId>0x11111111</ownerId>
               <ownerCl>IpMatrix</ownerCl>
               <enable>1</enable>
               <poweredOn>true</poweredOn>
          </item>
     </IpConsole>
</result>
</root>
```

Messages of G&D devices

If the XML service is not able to process a request, the service responds with an error document:

STRUCTURE OF AN ERROR DOCUMENT

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <Error>Invalid request document</Error>
</root>
```

Depending on the type of message, responses to commands, which are not executed by the XML service itself, but are delegated to the device service of the matrix switch, are output in different XML containers.

The following containers are used for this purpose:

- Error messages are output within the container **<Error>**.
- Warnings are output within the container **<Warning>**.
- Success messages and general messages not fitting the categories given above are output within the container **<commandStatus>**.

IMPORTANT: Until version 1.0 of the XML API, all responses of delegated commands were output within the container **<commandStatus>**.

EXEMPLARY ERROR MESSAGE

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="logon">
        <Error>authentication failed</Error>
    </result>
</root>
```

Combining multiple commands in an XML document

You can combine several commands within one XML document. The XML service processes the commands in the same order in which they are listed in the XML document.

An XML document as described above can look as follows:

COMBINING MULTIPLE COMMANDS IN ONE XML DOCUMENT

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <logon>
        <IpConsole>0x22222222</IpConsole>
        <User>JohnDoe</User>
        <Password>secret</Password>
    </logon>
    <connect>
        <IpConsole>0x22222222</IpConsole>
        <IpCpu>0x33333333</IpCpu>
    </connect>
    <showmessage>
        <Type>INFO</Type>
        <Text> Message</Text>
        <IpConsole>0x22222222</IpConsole>
    </showmessage>
</root>
```

The corresponding response combines individual commands in one document.

Push notifications for events occurred

For TCP connection, the service for text-based control sends *push notifications* to inform users about events occurred.

Such events are reported via **<pushNotification>** container. The type of notification is listed as **type** attribute of this tag.

EXAMPLE: Connecting and disconnecting of devices triggers push notifications for every channel. It is not important how the connection was established or disconnected (e.g. via OSD or XML).

PUSH NOTIFICATION WHEN ESTABLISHING A CONNECTION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <pushNotification type="connection_event">
        <consoleId>0x22222222</consoleId>
        <consoleCl>IpConsole</consoleCl>
        <consoleName>CON1</consoleName>
        <targetId>0x33333333</targetId>
        <targetCl>IpCpu</targetCl>
        <targetName>CPU1</consoleName>
        <userName>JohnDoe</userName>
    </pushNotification>
</root>
```

PUSH NOTIFICATION WHEN DISCONNECTING A CONNECTION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <pushNotification type="disconnection_event"
        ><consoleId>0x22222222</consoleId>
        <consoleCl>IpConsole</consoleCl>
        <consoleName>CON1</consoleName>
        <targetId>0x33333333</targetId>
        <targetCl>IpCpu</targetCl>
        <targetName>CPU1</consoleName>
    </pushNotification>
</root>
```

ADVICE: When evaluating push notifications, you can reproduce any switching processes of the device, for example.

By default, the following notifications are active:

- **connection_event:** Connection between console module and computer module established
- **disconnection_event:** Connection between console module and computer module disconnected
- **user_push_event:** Push event triggered by user

In addition, you can subscribe to the following notifications:

- **device_online_event:** Status change of a module to *online*
- **device_offline_event:** Status change of a module to *offline*
- **peripheral_power_on_event:** The computer connected to the computer module is active.
- **peripheral_power_off_event:** The computer connected to the computer module is inactive.
- **redirect_event:** Redirection of keyboard and mouse data executed

Subscribing to push notifications

NOTE: The subscription applies only for the connection on which the *subscribe* command is sent.

Use the **<subscribe>** container, to subscribe to push notifications for one or more types of notifications.

Within the **<Notification>** tag, you can specify the type of notification (see above) by using the **type** attribute.

To activate notifications for the event that the device status changes, you can use the following XML document:

ACTIVATING NOTIFICATIONS FOR CHANGES OF THE DEVICE STATUS

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <subscribe>
        <Notification type="device_online_event"/>
        <Notification type="device_offline_event"/>
    </subscribe>
</root>
```

Unsubscribing from push notifications

NOTE: The unsubscription applies only for the connection on which the *subscribe* command is sent.

Use the **<unsubscribe>** container, to unsubscribe to push notifications for one or more types of notifications.

Within the **<Notification>** tag, you can specify the type of notification (see above) by using the **type** attribute.

To activate notifications for events regarding connections, you can use the following XML document:

DEACTIVATING NOTIFICATIONS FOR EVENTS REGARDING CONNECTIONS

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <unsubscribe>
        <Notification type="connection_event"/>
        <Notification type="disconnection_event"/>
    </unsubscribe>
</root>
```

Configuration and encryption

As of version 1.1, the XML API supports two ways of encryption:

- **Transport encryption:** If this type of encryption is enabled, the entire outgoing data stream is encrypted by the XML service.

  Incoming XML commands are only accepted and executed when encrypted with the identical key and initialisation vector.
- **Password encryption:** This type of encryption encrypts only the passwords of user accounts included in XML responses of G&D devices. For this, a subset of XML encryption (see page 176) is used.

  Within XML commands, passwords can either be encrypted (recommended) or in plain text when sent to the device.

For encoding **CBC-3DES** or **TLS** are used. The required key and the initialization vector (only required with transport encryption and enabling of **CBC-3DES**) are configured in the web application *Config Panel*.

NOTE: For detailed information, please refer to the separate manual of the web application

ADVICE: On request, our support will provide you with examples for API encryption in the programming languages **C#** and **C++**.

Configuring accesses of devices for XML control

Use the web application *Config Panel* to define »remote control« accesses and their settings.

IMPORTANT: These accesses are required to control the device via XML.

How to create a new access or edit an existing access:

1. In the directory tree, click **KVM matrix systems > [Name] > Matrix switches**.
2. Right-click the device you want to configure and click **Configuration** on the context menu.
3. Click the **Network> Remote Control** tabs.
4. To add a new remote control access, click **Add remote control access**.
   To edit an existing access, click **Edit**.

5. Enter or edit the following data:

Access:	Select TCP (*default*) or TCP (IPv6).
Port:	Enter the port you want to use for text-based communication. Some ports are *not* available for XML control (see *Used network ports and protocols* in the separate manual of the web application).
Status:	Select if the access is **enabled** or **disabled**.
Encryption:	The following types of encryption are supported: ▪ **Unencrypted:** Select **None** to transmit the data without encryption (default). ▪ **Partly encrypted:** Select **Password: CBC-3DES**, to transmit only login passwords with encryption. ▪ **Encrypted:** Select **CBC-3DES** or **TLS** to transmit the data entirely encrypted.
Key:	After enabling the encryption type **CBC-3DES**, enter the key (192 bit) in the form of 48 hex digits.
Initialization vector:	Enabling the encryption type **CBC-3DES** additionally requires an initialization vector. Enter the initialization vector (64 bit) in the form of 16 hex digits.
Certificate Authentication:	With **TLS encryption** *enabled*, you can additionally enable **Certificate authentication** after uploading a certificate (in the *Remote Control* section of the *Network* tab).

6. Click on **Save**.

Instructions for encrypting passwords

If the transcription type *transport encryption* is enabled, the entire outgoing data stream is encrypted. When using *Password encryption*, however, only the passwords of user accounts are encrypted in XML requests.

> **NOTE:** In XML requests, passwords can either be encrypted (recommended) or in plain text when sent to the device.

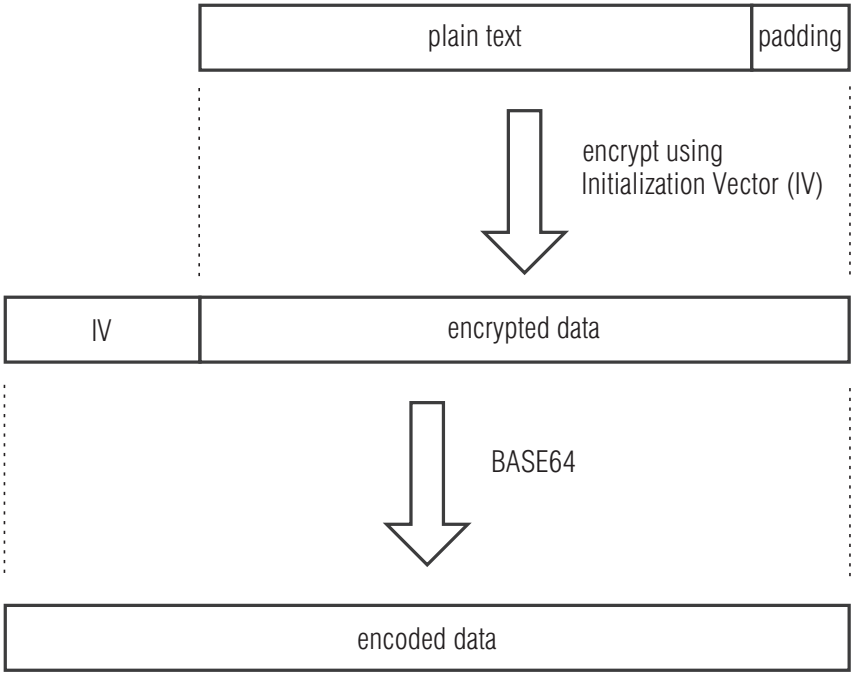
A subset of the W3C standard **XML encryption** is used to encrypt passwords. An **<EncryptedData>** container replaces the password with the XML namespace **"http://www.w3.org/2001/04/xmlenc#"**. This container includes the **<CipherData>** container, which inlcudes the **<CipherValue>** container:

PASSWORD AS EMBEDDED ENCRYPTED TEXT

```
<?xml version=\"1.0\" encoding=\"utf-8\"?>
<root>
    <logon>
        <IpConsole>0x22222222</IpConsole>
        <User>JohnDoe</User>
        <Password>
            <EncryptedData xmlns="http://www.w3.org/2001/04/xmlenc#">
                <CipherData>
                    <CipherValue>B2Wmn52teOPvY31wq0l4nw==</CipherValue>
                </CipherData>
            </EncryptedData>
        </Password>
    </logon>
</root>
```

The encrypted data block (**CipherValue**) consists of a combination of initialization vector and encrypted text with BASE64-coded padding.

The data block is formed as follows:



Padding is required to make the data block to be encrypted multiple times larger than block size (8 bytes). The XML API expects that the last byte of the padding states the number of added padding bytes. The padding bytes are to be randomly selected.

The initialization vector is required for stream ciphers (here: **CBC**). It is randomly selected in the encryption mode **Password encryption**. Its size corresponds to the block size of the selected encryption (8 bytes).

Commands

User logon and user logoff

User can log in with the command **<logon>**. The command **<logoff>** logs users off.

A successful login requires the following parameters:

<IpConsole>	IP console module of user logon
<User>	Name of user who wants to log in
<Password>	Password of user who wants to log in
<OTP>	Optional parameter to transfer the one-time password
<DropMinorErrors>	The message that an user has already logged on or logged off is suppressed.
<AllowTemporaryLogon/>	Allow temporary user login to OpenAccess or video console

Transmitting username and password is not required when logging in.

USER LOGIN

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <logon>
        <IpConsole>0x22222222</IpConsole>
        <User>JohnDoe</User>
        <Password>secret</Password>
        <OTP>secret</OTP>
    </logon>
</root>
```

NOTE: Information about *optional* password encryption is given on page 176.

USER LOGOFF

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <logoff>
        <IpConsole>0x22222222</IpConsole>
    </logoff>
</root>
```

Establishing a connection to a computer module or disconnecting a connection

The command **<connect>** allows a console module to access a computer module.

The ID or name of the computer module to be accessed and the ID or name of the console module are used as parameters:

<IPConsole>	IP console module
<IpCpu>	IP computer module
<VtCpu>	Computer module of the RemoteAccess series
<CloseDialogs>	Close OSD after establishing a connection (connect)
<OpenSelectDialog>	Close OSD after disconnection (disconnect)
<DropMinorErrors>	The message that a computer module is already connected or disconnected is suppressed.

ESTABLISHING A CONNECTION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <connect>
        <IpConsole>0x22222222</IpConsole>
        <IpCpu>0x33333333</IpCpu>
        <CloseDialogs/>
    </connect>
</root>
```

DISCONNECTING A CONNECTION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <disconnect>
        <IpConsole>0x22222222</IpConsole>
        <OpenSelectDialog/>
    </disconnect>
</root>
```

Disconnecting all connections to a computer module

The command **<disconnect>** can alternatively be used for a computer module. This has the consequence that all connected console modules are disconnected from this computer module.

The ID or name of the computer module to be disconnected is used as parameter:

<IpCpu>	IP computer module
<VtCpu>	Computer module of the RemoteAccess series
<OpenSelectDialog>	Close OSD after disconnection (disconnect)

DISCONNECTING ALL CONNECTION

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <disconnect>
        <IpCpu>0x33333333</IpCpu>
        <OpenSelectDialog/>
    </disconnect>
</root>
```

Select video stream

Use the command **<selectvideostream>** to assign the »Dual-Head (**DH**)« video streams to the display channels.

<IpConsole>	Ip console module whose transmission channel is to be selected
<VideoOut1>	Optional: Number of the video stream to be displayed on the first video output.
<VideoOut2>	Optional: Number of the video stream to be displayed on the second video output.

SELECTION OF A TRANSMISSION CHANNEL VIA THE ACTIVE ROUTE

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <selectvideostream>
        <IpConsole type="name"> Platz_007 </IpConsole>
        <VideoOut1> 2 </VideoOut1>    <!-- Optional: Video output 1 outputs the
                                           second video stream. -->
        <VideoOut2> 1 </VideoOut2>    <!-- Optional: Video output 2 outputs the
                                           first video stream. -->
    </selectvideostream>
</root>
```

Transferring the configuration settings of a module

If a module within the KVM matrix system is replaced by another module, you can use the command **<movedevice>** to transfer the configuration settings of the previous module to the new module.

Once the configuration settings have been transferred, the new module is immediately ready for use.

The ID of the old and the new module and the access data of the user account are transferred as parameters.

IMPORTANT: The transmission of the configuration settings is only possible if both modules belong to the same device class.

<IpConsole>	IP console module
<IpCpu>	IP computer module
<User>	Name of the user account (has to be assigned with the required rights) to execute the command
<Password>	User password
<OTP>	Optional parameter to transfer the one-time password

HOW TO TRANSFER THE CONFIGURATION SETTINGS OF A CONSOLE MODULE

```
<?xml version="1.0" encoding="utf-8"?>
<root>
  <movedevice>
    <IpConsole>0x22222222</IpConsole>
    <IpConsole>0x33333333</IpConsole>
    <User>JohnDoe</User>
    <Password>secret</Password>
    <OTP>secret</OTP>
  </movedevice>
</root>
```

Defining the leader workplace of a tradeswitch workplace

Within a tradeswitch workplace, you have to define a console module to which you want to connect a keyboard and a mouse. This leader workplace also provides information dispalys containing information about the current connection.

Use the command **<setworkplacemasterconsole>** to determine the leader workplace of a specific tradeswitch workplace.

The ID of the tradeswitch worksplace and the leader console module as well as the access data of the user account are transferred as parameters.

IMPORTANT: To delete the assignment of the leader workstation, execute the command without the **<DviConsole>** parameter.

<Workplace>	Tradeswitch workplace
<IpConsole>	IP console module
<User>	Name of the user account (has to be assigned with the required rights) to execute the command
<Password>	User password
<OTP>	Optional parameter to transfer the one-time password

HOW TO DEFINE THE LEADER WORKPLACE

```
<?xml version="1.0" encoding="utf-8"?>
<root>
  <setworkplacemasterconsole>
    <Workplace>101</Workplace>
    <IpConsole>0x22222222</IpConsole>
    <User>JohnDoe</User>
    <Password>secret</Password>
    <OTP>secret</OTP>
  </setworkplacemasterconsole>
</root>
```

HOW TO DELETE THE ASSIGNMENT OF THE LEADER WORKPLACE

```
How to delete the assignment of the leader workplace
<?xml version="1.0" encoding="utf-8"?>
<root>
  <setworkplacemasterconsole>
    <Workplace>101</Workplace>
    <User>JohnDoe</User>
    <Password>secret</Password>
    <OTP>secret</OTP>
  </setworkplacemasterconsole>
</root>
```

Showing messages

Use the command **<showmessage>** to send a message to a console module. Users at the console module can see the message on their OSD.

> **NOTE:** As of version 1.1 of the XML API, you can add an optional timeout (time in seconds). After the time elapses, the message closes automatically.

The following parameters are required to send commands:

<Type>	Type of message (**INFO**, **WARNING** or **ERROR**)
<Text>	Text of message to be shown
<Timeout>	Time in seconds after which the message is closed automatically
<IpConsole>	IP console module

SHOWING A MESSAGE (WITH TIMEOUT)

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <showmessage>
        <Type>INFO</Type>
        <Text>Message</Text>
        <Timeout>5</Timeout>
        <IpConsole>0x22222222</IpConsole>
    </showmessage>
</root>
```

Opening or closing the OSD

Use the commands **<openmenu>** and **<closemenu>** to open or close the OSD (*Select menu*) on a console module.

The following parameters are required to send commands:

<openmenu>	Open OSD on a console module
<closemenu>	Close OSD on a console module

OPEN OSD

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <openmenu>
        <IpConsole>0x22222222</IpConsole>
    </openmenu>
</root>
```

CLOSE OSD

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <closemenu>
        <IpConsole>0x22222222</IpConsole>
    </closemenu>
</root>
```

Redirecting keyboard and mouse data

NOTE: Redirecting keyboard and mouse data to another console module or computer module requires the premium **Tradeswitching** function.

With the optional Tradeswitching function, you can use the command **<redirect>** to redirect a device's in- and outputs to another device.

In the syntax, the target of the redirection is stated by a device-specific marker. The same applies to the source.

<IpConsole>	IP console module (tag can be used for source and target)
<IpCpu>	IP computer module (tag can be used for target only)

REDIRECTING KEYBOARD AND MOUSE DATA

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <redirect>
        <IpConsole>0x22222222</IpConsole>
        <IpCpu>0x33333333</IpCpu>
    </redirect>
</root>
```

Executing a script

You can use the command **<executeScriptlet>** to execute a script stored in the matrix switch.

The following parmeters are required to send the command:

<IpConsole>	IP console module that is used to trigger the script
<Name>	Name of script

NOTE: The script can be executed only if a user with the required rights is logged on at the console module.

EXECUTING A SCRIPT

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <executeScriptlet>
        <IpConsole>0x22222222</IpConsole>
        <Name>MeinScriptlet</Name>
    </executeScriptlet>
</root>
```

Listing information about devices and connections

Use the command **<list>** to list information about devices and connections.

The parameters of the command define the type of information you want to list:

<IpMatrixswitch>	Data about IP matrix switch
<IpConsole>	Data about IP console modules
<UsbIpConsole>	Data about USB console modules
<IpCpu>	Data about IP computer modules
<VtCpu>	Data about remote targets
<UsbIpCpu>	Data about USB computer modules
<MatrixConnectionList>	Data about connections between the connected devices
<Workplace>	Data about configured Tradeswitch workplaces
<Team>	Data about channel groups

- **List of information about matrix switches**

REQUESTING DATA FROM MATRIX SWITCHES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <IpMatrixSwitch/>
    </list>
</root>
```

LIST OF INFORMATION ABOUT A MATRIX SWITCH

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <IpMatrixSwitch>
            <item>
                <id>0x11111111</id>                    <!-- ID -->
                <cl>IpMatrix</cl>                      <!-- Device class -->
                <type>ControlCenter-IP</type>          <!-- Variant -->
                <name>Matrix1</name>                   <!-- Name -->
                <poweredOn>true</poweredOn>            <!-- Status of power supply -->
                <pushGet>yes</pushGet>                 <!-- Push/Get function enabled? -->
                <tradeSwitching>yes</tradeSwitching>   <!-- TradeSwitch function enabled? -->
                <ipSwitching>yes</ipSwitching>         <!-- IP-Control-API enabled? -->
                <monitoring>yes</monitoring>           <!-- Monitoring enabled? -->
                <matrixGuard>yes</matrixGuard>         <!-- MatrixGuard enabled? -->
            </item>
        </IpMatrixSwitch>
    </result>
</root>
```

- **List of information about a console module**

REQUESTING DATA FROM CONSOLE MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <IpConsole/>
    </list>
</root>
```

LIST OF INFORMATION ABOUT CONSOLE MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <IpConsole>
            <item>
                <id>0x22222222</id>                    <!-- ID  -->
                <cl>IpConsole</cl>                     <!-- Device class -->
                <type>IP-CON</type>                    <!-- Variant -->
                <name>CON1</name>                      <!-- Name  -->
                <ownerId>0x11111111</ownerId>          <!-- ID of connected device -->
                <ownerCl>IpMatrix</ownerCl>            <!-- Device class of connected device -->
                <ownerName>CCIP-1</ownerName>          <!-- Name of connected device -->
                <enable>1</enable>                     <!-- Console module enabled? -->
                <poweredOn>false</poweredOn>           <!-- Status of power supply -->
            </item>
        </IpConsole>
    </result>
</root>
```

- **List of information about a USB console module**

REQUESTING DATA FROM USB CONSOLE MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <UsbIpConsole/>
    </list>
</root>
```

LIST OF INFORMATION ABOUT USB CONSOLE MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <UsbIpConsole>
            <item>
                <id>0x22222222</id>                 <!-- ID  -->
                <cl>UsbIpConsole</cl>               <!-- Device class -->
                <type>U2-CON</type>                 <!-- Variant -->
                <name>U2-CON</name>                 <!-- Name  -->
                <ownerId>0x11111111</ownerId>       <!-- ID of connected device -->
                <ownerCl>IpMatrix</ownerCl>         <!-- Device class of connected device -->
                <ownerName>CCIP</ownerName>         <!-- Name of connected device -->
                <enable>1</enable>                  <!-- Console module enabled? -->
                <poweredOn>false</poweredOn>        <!-- Status of power supply -->
            </item>
        </UsbIpConsole>
    </result>
</root>
```

- **List of information about a computer module**

ADVICE: The optional sub-element **<User>** restricts the list of the computer modules to which the respective user has the right to connect with full access or view-only access.

REQUESTING DATA FROM COMPUTER MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <IpCpu>
            <User>Admin<\User>
        <\IpCpu>
    </list>
</root>
```

LIST OF INFORMATION ABOUT COMPUTER MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <IpCpu>
            <item>
                <id>0x33333333</id>                  <!-- ID -->
                <cl>IpCpu</cl>                       <!-- Device class -->
                <type>DVI-CPU (2.0)</type>           <!-- Variante-->
                <name>CPU1</name>                    <!-- Name -->
                <ownerId>0x11111111</ownerId>        <!-- ID of connected device -->
                <ownerCl>IpMatrix</ownerCl>          <!-- Device class of connected device -->
                <ownerName>CCIP-1</ownerName>        <!-- Name of connected device -->
                <poweredOn>false</poweredOn>         <!-- Status of power supply -->
            </item>
        </IpCpu>
    </result>
</root>
```

- **List of information about a Remote-Target**

REQUESTING DATA FROM REMOTE-TARGET

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <VtCpu>
            <User>Admin<\User>
        <\VtCpu>
    </list>
</root>
```

LIST OF INFORMATION ABOUT REMOTE-TARGETS

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <VtCpu>
            <item>
                <id>0x0000016C</id>                    <!-- ID -->
                <cl>VtCpu</cl>                         <!-- Device class -->
                <type>RemoteTarget</type>              <!-- Variante-->
                <name>CPU-ID 0000016C</name>           <!-- Name -->
                <poweredOn>false</poweredOn>           <!-- Status of power supply -->
            </item>
        </VtCpu>
    </result>
</root>
```

- **List of information about a USB computer module**

REQUESTING DATA FROM USB COMPUTER MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <UsbIpCpu>
            <User>Admin<\User>
        <\UsbIpCpu>
    </list>
</root>
```

LIST OF INFORMATION ABOUT USB COMPUTER MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <UsbIpCpu>
            <item>
                <id>0x00000A6E</id>                  <!-- ID  -->
                <cl>UsbIpCpu</cl>                    <!-- Device class -->
                <type>U2-CPU</type>                  <!-- Variante-->
                <name>U2-CPU 00000A6E</name>         <!-- Name  -->
                <ownerId>0x11111111</ownerId>        <!-- ID of connected device -->
                <ownerCl>IpMatrix</ownerCl>          <!-- Device class of connected device -->
                <ownerName>CCIP-1</ownerName>        <!-- Name of connected device -->
                <poweredOn>false</poweredOn>         <!-- Status of power supply -->
            </item>
        </UsbIpCpu>
    </result>
</root>
```

- **List of connections between connected devices**

ADVICE: You can restrict the list of connections to a specific console module or computer module. To do this, use the **<IpConsole>** or **<IpCpu>** parameter.

REQUESTING CONNECTIONS BETWEEN CONNECTED DEVICES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <MatrixConnectionList/>
    </list>
</root>
```

LIST OF CONNECTIONS BETWEEN CONNECTED DEVICES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <MatrixConnectionList>
            <item>
                <cpuId>0x33333333</cpuId>                       <!-- CPU ID  -->
                <cpuCl>IpCpu</cpuCl>                            <!-- CPU device class  -->
                <cpuName>CPU1</cpuName>                         <!-- CPU name  -->
                <cpuPoweredOn>false</cpuPoweredOn>              <!-- CPU power supply  -->
                <signalType>normal</signalType>                 <!-- Signal: normal|viewonly  -->
                <consoleId>0x22222222</consoleId>               <!-- CON ID  -->
                <consoleCl>IpConsole</consoleCl>                <!-- CON device class  -->
                <consoleName>CON1</consoleName>                 <!-- CON name  -->
                <connectionOwnerId>0x11111111</connectionOwnerId>    <!-- Matrix ID  -->
                <connectionOwnerCl>IpMatrix</connectionOwnerCl>      <!-- Matrix class  -->
                <consoleConfigEnable>1</consoleConfigEnable>    <!-- CON enabled?  -->
                <consolePoweredOn>true</consolePoweredOn>       <!-- CON power supply  -->
                <userName>JohnDoe</userName>                    <!--Username  -->
            </item>
        </MatrixConnectionList>
    </result>
</root>
```

- **List of configured Tradeswitch workplaces**

NOTE: The output of the list of workplaces has been changed.

The output lists the members of a workplace within a **<members>** container.

REQUESTING DATA OF CONFIGURED TRADESWITCH WORKPLACES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <Workplace/>
    </list>
</root>
```

LIST OF CONFIGURED TRADESWITCH WORKPLACES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <Workplace>
            <item>
            <id>0x88888888</id>                              <!-- Workplace ID -->
            <name>Workplace1</name>                          <!-- Workplace name -->
            <catcenterId>0x11111111</catcenterId>            <!-- Matrix ID -->
            <catcenterCl>IpMatrix</catcenterCl>              <!-- Matrix class -->
            <masterconsoleId>0x22222222</masterconsoleId>    <!-- ID of leader console -->
            <masterconsoleCl>IpConsole</masterconsoleCl>     <!-- Class of leader console -->
                <members>
                    <item>
                        <id>0x22222222</id>                  <!-- Member ID (CON or CPU) -->
                        <cl>IpConsole</cl>                   <!-- Member class -->
                        <keys>1</keys>                       <!-- Member key  -->
                    </item>
                    <item>
                        <id>0x22222223</id>
                        <cl>IpConsole</cl>
                        <keys>2</keys>
                    </item>
                    <item>
                        <id>0x22222224</id>
                        <cl>IpConsole</cl>
                        <keys>3</keys>
                    </item>
                    <item>
                        <id>0x22222225</id>
                        <cl>IpConsole</cl>
                        <keys>4</keys>
                    </item>
                </members>
            </item>
        </Workplace>
    </result>
</root>
```

- **Requesting a list of configured channel groups**

The list of configured port groups supports four different variants:

REQUESTING LIST OF ALL CHANNEL GROUPS

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <Team/>
    </list>
</root>
```

REQUESTING LIST OF ALL CHANNEL GROUPS WITH A CONSOLE MODULE AS MAIN CHANNEL

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <Team><IpConsole/></Team>
    </list>
</root>
```

REQUESTING LIST OF ALL CHANNEL GROUPS WITH A PARTICULAR CONSOLE MODULE AS MAIN CHANNEL

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <Team><IpConsole>0x22222222</IpConsole></Team>
    </list>
</root>
```

REQUESTING LIST OF ALL CHANNEL GROUPS WITH A PARTICULAR COMPUTER MODULE AS MAIN CHANNEL

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <list>
        <Team><IpCpu>0x33333333</IpCpu></Team>
    </list>
</root>
```

This is an exemplary response of the XML service:

LIST OF CONFIGURED CHANNEL GROUPS

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="list">
        <Team>
            <item>
                <leaderId>0x33333333</leaderId>        <!-- Leading device of group -->
                <leaderCl>IpCpu</leaderCl>             <!-- Class of leading device -->
                <members>
                    <item>
                        <id>0x33333334</id>            <!-- ID of group member -->
                        <cl>IpCpu</cl>                 <!-- Class of group member -->
                        <slotType>KVM</slotType>       <!-- Assigned channel type (KVM|USB) -->
                        <slot>0</slot>                 <!-- Number of channel -->
                    </item>
                </members>
            </item>
        </Team>
    </result>
</root>
```

NOTE: If several **Members** are listed with the same **slot** and **slotType**, they are part of a device pool.

Requesting monitoring values

The XML tag **<monitor>** is used to request monitoring values. As parameter, the **<monitor>** tag expects the class tag (e.g. **<IpCpu>**) of the device class for which you want to request monitoring values.

REQUESTING ALL MONITORING VALUES OF ALL COMPUTER MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <monitor>
        <IpCpu />
    </monitor>
</root>
```

In addition to the class tag, you can also add the ID or name of the requested monitoring value as shown in the example:

REQUESTING ALL MONITORING VALUES OF COMPUTER MODULE 0X33333333

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <monitor>
        <IpCpu><id>0x33333333</id></IpCpu>
    </monitor>
</root>
```

By stating the desired monitoring value, you can limit the list even further.

REQUESTING MONITORING VALUE »TEMPERATURE SWITCH« OF MATRIX SWITCH 0X11111111

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <monitor>
        <IpMatrixSwitch>
            <id>0x11111111</id>
            <monitorName>Temperature switch</monitorName>
        </IpMatrixSwitch>
    </monitor>
</root>
```

This is an exemplary response of the XML service:

LIST OF MONITORING VALUES OF MATRIX SWITCHES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <result type="monitor">
        <IpMatrixSwitch>
            <item>
                <id>0x11111111</id>
                <monitorName>Temperature switch</monitorName>
                <value>35.0</value>
                <alarm>off</alarm>
                <acknowledged>no</acknowledged>
            </item>
        </IpMatrixSwitch>
    </result>
</root>
```

NOTE: In addition to name and value of the respective monitoring value, the two flags **acknowledged** and **alarm** are always returned as well. With the **alarm** flags, you can check if the monitoring value lies inside (**off**) or outside (**on**) of its defined range. **Acknowledged** complies with the *Viewed* function of the web application.

You can list several device class tags within the XML tag **<monitor>**:

REQUESTING MONITORING VALUES OF ALL COMPUTER MODULES AND CONSOLE MODULES

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <monitor>
        <IpCpu />
        <IpCon />
    </monitor>
</root>
```

Scripting function (optional)

IMPORTANT: Using the scripting function requires the purchase and activation of the premium function **IP-Control-API**.

The scripting function lets users store the switching condition of one or multiple consoles or of the entire system.

The switching conditions are stored in a script. The scripts stored in the matrix system can be accessed and executed via OSD provided that the console is assigned with the respective rights.

Users can create their own scripts and execute them. Global scripts can be executed by users without the **Superuser** right only if these users are assigned with **Script execute rights** for the global script (see page 204).

NOTE: You can create up to 1024 scripts within a matrix system.

Executing scripts

The scripts stored in the matrix system can be executed via the OSD of the KVM matrix system.

In the defaults, after accessing the OSD at a console module, you can select a computer via the *Select* menu.

ADVICE: Press **X** in the *Operation* menu or use the hotkey **Ctrl + X** on the *Select* menu to access the *Script* menu (see page 56).

If desired, you can use your personal profile to define that the *Script menu* is shown directly after accessing the OSD (see page 201).

You can also use the mouse to switch between select menu and script menu (see page 201).

Executing a script via OSD

How to execute a script via OSD:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. If the OSD is opened in the *Select* menu, press **Ctrl+X** to switch to the *Script* menu.
3. Use the **arrow keys** to select the script you want to execute.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

4. Press **Enter**.

Editing the default menu mode

In the defaults, after accessing the OSD at a console module, you can select a computer via the *Select* menu. If desired, you can use your personal profile to define that the *Script* menu is shown directly after accessing the OSD.

ADVICE: Independent of the default setting, you can always use the hotkey **Ctrl+X** to switch between *Select* menu and *Script* menu.

How to edit the default menu mode:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Def. selection dialog** entry and press **F8** (repeatedly) to select one of the following options:

select:	The *Select* menu is shown after accessing the OSD.
script:	The *Script* menu is shown after accessing the OSD.

4. Press **F2** to save your settings.

Switching threshold to switch the menu mode by mouse

In addition to switch the menu mode via the hotkey **Ctrl+X** you can also use the mouse to switch between menu modes.

ADVICE: After the activation of the switching of the menu mode by mouse, you can move the mouse to the left or to the right to switch between the two modes in the *Select* menu and in the *Script* menu.

IMPORTANT: Switching the menu mode by mouse is not possible if the entry is not available in the *Select* menu or in the *Script* menu!

How to activate/deactivate the switching threshold and/or adjust its sensitivity:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Sel. dialog replace sens** entry.
4. Adjust the sensitivity of the switching threshold by entering a value between **1** and **10**.

NOTE: To deactivate the switching between menus by mouse, enter **0**.

5. Press **F2** to save your settings.

Creating, editing and deleting scripts

Creating scripts

NOTE: Users without **Superuser** rights can create and store scripts only for their console. The options **Owner** (*currentuser*) and **Scope** (*console*) are auto-assigned and can not be viewed or edited.

Users with **Superuser** rights can view and edit all options.

How to create a script:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Scripting function** entry and press **Enter**.
4. Press **F3** and enter the following data under *Add Script*:

Name:	Enter the desired name of the script key set and press **Enter**.
Owner:	Press F8 to select if the script should be assigned to the logged on user account (**current user**) or if it should be used globally by all users (**none**).
	NOTE: Executing global scripts requires **Script execute rights** for the script.
Scope:	Select if the switching condition of the console module (**console**), the entire system (**system**) or a list if console modules (**console list**) should be stored in the script. The leader console of a Tradeswitch console is provided with the option **workplace**.
	NOTE: When selecting the option **console list** you can define the list of console modules via the **Consoles** entry.

5. Press **F2** to save your settings and the script.

Editing the settings of a script

NOTE: Users without **Superuser** rights can view and edit only the names and **Enable** settings of their own scripts.

Users with **Superuser** rights can view and edit all settings of all scripts.

How to edit the settings of a script:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Scripting function** entry and press **Enter**.
4. Select the script you want to edit and press **F5**.
5. Enter the following data under *Edit Script*:

Name:	Enter the desired name of the script key set and press **Enter**.
Enable:	Select if the script should be activated and editable (**yes**) or if it should be deactivated (**no**).
Ignore device response:	Select whether to ignore (**yes**) or analyze (**no**) the device response to the execution of the script. **NOTE:** The function can only be activated if the script is executed on another device.
Execution delay:	You can delay the execution of the script by up to 999 seconds after it is called. Enter the desired delay time in seconds.
Owner:	Press **F8** in the user list to assign a script to a user or to cancel the assignment. If the script is not assigned to any user account, it is a global script. global scripts can be used by all users. **NOTE:** Executing global scripts requires **Script execute rights** for the script.
Script Availabilty	Select the console modules whose script menu lists this script.
Available via EasyControl	Select whether the script should be available in the **EasyControl** tool of the web application.

6. Press **F2** to save your settings.

Deleting a script

How to delete a script:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Scripting function** entry and press **Enter**.
4. Select the script you want to delete and press **F4**.
5. Confirm the security prompt with **Yes** and press **Enter**.

Defining rights to execute scripts

NOTE: Users are always able to view and delete their *own* scripts (**Owner**) without having to be assigned with additional rights.

Executing *global* scripts requires **Script execute rights** for the script.

You can assign this right directly in the settings of a user account. As an alternative, you are able to administrate this right via user groups (see *Efficient user group administration* on page 136).

How to change the right to execute global scripts:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. If you want to change this right for a user account, select the **User** entry.
   For changing this right for a user group, select the **Usergroup** entry.
4. Press **Enter**.
5. Select the user account or the user group whose rights to execute scripts you want to edit and press **F5**.
6. Select the **Script execute rights** entry and press **Enter**.
7. Select the script from the list whose execute rights you want to edit.

ADVICE: Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

8. Press **F8** t select one of the following options:

no:	Denies right to execute script
yes:	Grants right to execute script

9. Repeat steps 7. and 8. to edit the execute rights of another script.

10. Press **F2** to save your settings.

Executing a script with script keys

After the script key modifier(s) and a script key set have been adjusted and a script key set has been activated in the user account, scripts can be executed at the console keyboard via key combinations.

Opening the OSD is not required to execute scripts using script keys. This way, scripts can be executed much faster.

How to execute a script with script keys:

1. Press the script key modifier(s) that have been adjusted in the matrix system and the script keys assigned to the script.

EXAMPLE:

- Script key modifiers: **Win+Shift**
- Script key for script: **1**

Press and hold **Win+Shift** together with the script key **1**. After releasing the keys, the script is executed.

Further information:

- *Changing the script key modifier and the valid keys* on page 205
- *Administrating script key sets* on page 206
- *Assigning script key sets to user accounts* on page 209

Changing the script key modifier and the valid keys

Script keys enable the fast execution of scripts by pressing a key combination. For this, script key sets can be created in the matrix system.

Both the script key modifier and a script key set define the key combination to be pressed to execute a script.

You can also define valid keys for the script keys.

How to change the script key modifier or the valid keys:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Script key** entry and press **Enter**.
5. Use the **arrow keys** to select *at least* one of the script key modifiers listed under **Modifier**. Afterwards, press **F8**:

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift	*Shift* key

6. Select the **Valid keys** entry and press **F8** to select one of the following options:

Num:	*only numerical keys* are interpreted as script keys when pressed in combination with the script key modifier
Alph:	*only alphabetic keys* are interpreted as script keys when pressed in combination with the script key modifier
AlphNum:	*alphabetical and numerical keys* are interpreted as script keys when pressed in combination with the script key modifier

IMPORTANT: Both the selected valid keys and the script key modifier are *no longer* provided as key combinations to the operating system and the applications on the computer.

7. Press **F2** to save your settings.

Administrating script key sets

The KVM matrix system enables you to create 20 global script key sets or ten individual script key sets for each user.

Within the script key sets, you can define script keys to execute scripts.

NOTE: Global script key sets are displayed in the *Personal Profile* menu of all users of the matrix system.

Creating a script key set

How to create a script key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Script key set** entry and press **Enter**.
4. Press **F3** and enter the following data under *Add Script Key Set*:

Name:	Enter the desired name of the script key set and press **Enter**.
Global:	Press **F8** for selecting **yes** if you want to make the script key set in the personal profile available to all users of the system. Default: **no**

NOTE: This option can only be activated by users with the *Superuser* right (see page 149).

5. Press **F2** to save your settings and the script key set.

Changing name and global allocation of a script key set

How to change the name and/or global allocation of a script key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Script key set** entry and press **Enter**.
4. Select the script key set whose name or global allocation you want to change.
5. Press **F5**-Taste and change the following data under *Edit Script Key Set*:

Name:	Enter the desired name of the script key set and press **Enter**.
Global:	Press **F8** for selecting **yes** if you want to make the script key set in the personal profile available to all users of the system. Default: **no**

6. Press **F2** to save your settings.

Defining script keys for scripts

NOTE: Global script key sets can be edited only by users with activated *Superuser* right (see page 149).

Without this right, only script keys assigned to scripts can be viewed.

How to define script keys for scripts:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Script key set** entry and press **Enter**.
4. Select a script key set and press **F5**.
5. Select the **Members** entry and press **Enter**.

   The *Assign script key set* dialogue opens. The left column shows the name of the scripts and the right column shows the assigned script key(s).
6. Select the script you want to assign a script key to or whose script key you want to edit.

   ADVICE: Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.
7. Press **F5** and enter the desired script key.

   NOTE: The chapter *Changing the script key modifier and the valid keys* on page 205 provides information on how to edit valid keys that are used as script keys.
8. Repeat steps 6. and 7. to define or change the script keys of other scripts.
9. Press **F2** to save your settings.

Assigning script key sets to user accounts

By assigning a script key set to a user account, the script keys defined in the set are interpreted and the particular script is executed.

How to assign a script key set to a user account or cancel the existing assignment:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Script key set** entry and press **Enter**.
4. Select the desired script key set.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Press **F8** to activate or deactivate the assignment.

> **NOTE:** Script key sets that are already assigned to a user account are marked with an arrow (**▸**).

6. Press **F2** to save your settings.

Deleting script key sets

> **NOTE:** Only users with the *Superuser* right (see page 149) are allowed to delete global script key sets.

How to delete a script key set:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F10** to open the *Personal Profile* menu.
3. Select the **Script key set** entry and press **Enter**.
4. Select the script key set you want to delete and press **F4**.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Confirm the security prompt with **Yes** and press **Enter**.

Push events (optional)

NOTE: This function is available only after activating the additional **IP-Control-API** function.

Push event keys let users at consoles trigger push events via XML control. The triggered push event contains the following information:

- the string entered by the user,
- the console's name and device ID,
- name and device ID of the computer module switched to the console.

Triggering push events

You can trigger push events by pushing and holding the push event key modifier and entering a valid string (see below).

PUSH EVENT OF THE XML SERVICE

```
<?xml version="1.0" encoding="utf-8"?>
<root>
    <pushNotification type="user_push_event">
        <sourceId>0x00000115</sourceId>                  <!-- device ID of console module on which
                                                              the push event was triggered -->
        <sourceCl>IpConsole</sourceCl>                   <!-- device class -->
        <sourceName>CON</sourceName>                     <!-- device name-->
        <text>123</text>                                 <!-- user input -->
        <targetId>0x00001D4E</targetId>                  <!-- device ID of computer module -->
        <targetCl>IpCpu</targetCl>                       <!-- device class of computer module -->
        <targetName>CPU</targetName>                     <!-- device name of computer module -->
        <originatorId>0x00000115</originatorId>          <!-- device ID of console module operated
                                                              by user -->
        <originatorCl>IpConsole</originatorCl>           <!-- device class -->
        <originatorName>CONn</originatorName>            <!-- device name -->
    </pushNotification>
</root>
```

NOTE: The values of **<originatorId>** and **<sourceId>** differ only when using Tradeswitching.

Changing push event key modifiers and valid keys

You can trigger push events by pushing and holding the push event key modifier and entering a valid string (see entry **Valid keys)**.

How to change push event key modifiers or valid keys:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to open the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Push event key** entry and press **Enter**.
5. Under **Modifier**, select *at least* one modifier key by selecting the control box with the **arrow keys** and press **F8** to confirm your selection:

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift:	*Shift* key

6. Under **Valid keys**, press **F8** to select one of the following options:

Num:	*Only numerical keys* are interpreted as push event keys when pressed together with the push event key modifier.
Alph:	*Only alphabetic keys* are interpreted as push event keys when pressed together with the push event key modifier.
AlphNum:	*Numerical and alphabetical keys* are interpreted as push event keys when pressed together with the push event key modifier

7. Press **F2** to save your settings.

Tradeswitch function (optional)

IMPORTANT: Using the Tradeswitch function requires the purchase and activation of the premium **TS-Function**.

The Tradeswitch function optimises the operation of console modules, which monitor several computers over several monitors.

Instead of connecting keyboard and mouse to every console module, the Tradeswitch function provides a central keyboard/mouse for all operating tasks of the workplace.

In order to enable this, several console modules of a KVM matrix system are arranged into a group. Each console module within this group is provided with a monitor, but only one of the group's console modules is provided with keyboard and mouse.

By using a hotkey, users are now able to switch the two input devices to the monitors of the other console modules. This makes it possible to operate the connected computer modules and computers.

Computer modules can also be integrated into the tradeswitch group and the keyboard and mouse signals can be switched directly to them. This makes it possible, for example, to operate a laptop that has its own monitor.

Switching keyboard and mouse signals

The switching of the keyboard and mouse signals from a console module to another console module or a computer module is carried out by entering one of the configurable key combinations.

How to switch the keyboard and mouse signals:

1. Press the Tradeswitch key modifier adjusted in the KVM matrix system and the Tradeswitch key assigned to the computer module.

   EXAMPLE:

   - Tradeswitch key modifier: **Ctrl+Shift**
   - Tradeswitch key of a computer module: **T**

   Press **Ctrl+Shift** and the tradeswitch key **t**. When the keys are released, the keyboard and mouse signals are switched to the computer module.

Further information:

- *Creating Tradeswitch workplaces* on page 213
- *Assigning devices to a Tradeswitch workplace* on page 215
- *Defining the leader workplace of the Tradeswitch workplace* on page 216
- *Changing the Tradeswitch key and the valid keys* on page 214

Basic configuration

Creating Tradeswitch workplaces

How to create a new Tradeswitch workplace:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Tradeswitch function** entry and press **Enter**.
4. Press **F3** and enter the name of the new workplace in the **Add Workplace** menu.
5. Press **F2** to save your inputs and create the Tradeswitch workplace.

Renaming a Tradeswitch workplace

How to rename a Tradeswitch workplace:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Tradeswitch function** entry and press **Enter**.
4. Select the Tradeswitch workplace you want to rename.
5. Press **F5** and change the name in the **Name** entry.
6. Press **F2** to save your settings.

Deleting a Tradeswitch workplace

How to delete a Tradeswitch workplace:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Tradeswitch function** entry and press **Enter**.
4. Select the Tradeswitch workplace you want to delete and press **F4**.
5. Use the arrow keys to select **Yes** and press **Enter** to respond to the prompt for confirmation.

Changing the Tradeswitch key and the valid keys

The Tradeswitch keys enable you to switch the keyboard and mouse signals from one console module to another or to a computer module by pressing a key combination.

In the *Tradeswitch function* section of the *Configuration* menu, several console modules and/or computer modules can be grouped to a workplace. You can also define the keys to be pressed for switching the keyboard and mouse signals to a particular console module or a particular computer module.

In addition to the Tradeswitch key modifier, you can also define the valid keys for the Tradeswitch keys.

How to change the Tradeswitch key modifier or the valid keys:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **Tradeswitch key** entry and press **Enter**.
5. Select *at least* one of the listed select key modifiers in the **Modifier** entry by marking the respective box using the **arrow keys**. Press **F8**.

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift	*Shift* key

6. Select the **Valid keys** entry and press **F8** to select one of the following options:

Num:	*only numerical keys* are interpreted as select keys when pressed in combination with the select key modifier
Alph:	*only alphabetic keys* are interpreted as select keys when pressed in combination with the select key modifier
AlphNum:	*alphabetical and numerical keys* are interpreted as select keys when pressed in combination with the select key modifier

IMPORTANT: Both the selected keymode and the selected tradeswitch key modifier(s) are *no longer* provided as key combinations to the operating system and the applications on the computer.

7. Press **F2** to save your settings.

Detailed configuration of a Tradeswitch workplace

Assigning devices to a Tradeswitch workplace

NOTE: Giving self-explanatory names refering to the function or the location of the device facilitates configuring the Tradeswitch workplace.

Detailed information on renaming the computer modules is provided on page 66.

How to assign computer or console modules to the Tradeswitch workplace:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Tradeswitch function** entry and press **Enter**.
4. Press **F5** to edit the selected Tradeswitch workplace.
5. Select the **Members** entry and press **Enter**.
6. The *Assign Tradeswitch Function* menu opens. The left-hand column displays the computer module name or the console module name. The right-hand column provides the assigned Tradeswitch key(s).

ADVICE: The *view filter* (see page 19) can be used to either display the console modules or the computer modules in the list.

7. Select the console or the computer module to assign a Tradeswitch key to or whose Tradeswitch key you want to change.

> **ADVICE:** Use the menu's *search function* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

8. Press **F5** and enter the desired Tradeswitch key.
9. Repeat steps 7 and 8 to create or change the Tradeswitch keys.
10. Press **F2** to save your settings.

Defining the leader workplace of the Tradeswitch workplace

> **ADVICE:** Giving self-explanatory names that refer to the function or the location of the device simplifies the configuration of the Tradeswitch workplace.
>
> Detailed information on how to rename the computer modules can be found on page 66.

Define a console module within the Tradeswitch workplace to which keyboard and mouse are connected to. This leader workplace also provides information on any accessing users.

How to define a leader workplace of the Tradeswitch workplace:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Tradeswitch function** entry and press **Enter**.
4. Select the Tradeswitch workplace whose leader workplace you want to change and press **F5**.
5. Select the **Members** entry and press **Enter**.
6. Select the desired leader workplace and press **F8**.

> **NOTE:** The active leader workplace is marked with an arrow (▸).

7. Press **F2** to save your settings.

Defining FreeSeating members

Define the console modules within the Tradeswitch workplace to be included when restoring the FreeSeating session (see page 120).

How to define the FreeSeating members of the Tradeswitch workplace:

1. Press the hotkey **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to call the Configuration menu.
3. Select the **Tradeswitch function** entry and press **Enter**.
4. Select the Tradeswitch workplace whose settings you want to change and press **F5**.
5. Select the **Members** entry and press **Enter**.
6. Select the desired workplace and press **F9**.

   NOTE: The FreeSeating members are marked with **FS**.

7. Press **F2** to save your settings.

Enhanced functions

De)activate Tradeswitch frame for a console module

If you purchased the *Tradeswitch function*, the messages »*Forwarding to...«* (on the Tradeswitch leader) or »*FORWARDED«* (on the target workplace) can be displayed at the monitor (see *(De)activating the Tradeswitch information* on page 220).

Additionally (or alternatively) you can activate a frame that permanently or temporarily marks the monitor of the module connected via tradeswitch function.

How to (de)activate the Tradeswitch frame:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the Configuration menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to (de)activate and press **F5**.
5. Select the **Tradeswitch frame** entry and press **F8** to select one of the following options:

off:	no Tradeswitch frame
temp:	A frame temporarily marks the monitor of the module connected via tradeswitch function.
perm:	A frame permanently marks the monitor of the module connected via tradeswitch function.

6. Press **F2** to save your settings.

Customizing the appearance of the tradeswitch frame

You can set the display duration of the tradeswitch frame as well as its appearance (color settings, transparency effect and frame width) system-wide.

Each user of the matrix system can use his or her personal profile to change the system-wide default by making an individual adjustment.

How to change the *system-wide* appearance of the tradeswitch frame:

1. Press the hotkey **Ctrl**+**Num** (*default*) to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select **System** and press **Enter**.
4. Customize the settings to suit your needs:

TS frame time:	Set the temporary display duration of the tradeswitch frame between **0.0** (off) and **10.0** seconds.
TS frame color:	Select the **brightness** and **colour** of the tradeswitch frame.
TS frame transparency:	Select the transparency effect (**normal** or **high**) of the Tradeswitch frame.
TS frame width:	Select the frame width (**normal** to **quadruple**) of the Tradeswitch frame.

5. Press **F2** to save your settings.

How to change the appearance of the tradeswitch frame for a *specific* user account:

1. Press the **Ctrl**+**Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **User** entry and press **Enter**.
4. Select the user account you want to configure and press **F5**.
5. Select **Personal Profile** and press the **Enter** key.
6. Select the **TS frame settings** and press the **F8** key (repeatedly) to apply the *system setting* (see above) or to make your *own* setting (step 7).

7. Enter the following data when activating your *own* setting:

TS frame time:	Set the temporary display duration of the tradeswitch frame between **0.0** (off) and **10.0** seconds.
TS frame color:	Select the **brightness** and **colour** of the tradeswitch frame.
TS frame transparency:	Select the transparency effect (**normal** or **high**) of the Tradeswitch frame.
TS frame width:	Select the frame width (**normal** to **quadruple**) of the Tradeswitch frame.

8. Press **F2** to save your settings.

(De)activating the Tradeswitch information

If you purchased the additional *Tradeswitch function*, the messages »*Forwarding to...*« (at the leader workplace) or »*FORWARDED*« (at the target workplace) can be displayed at the monitor.

How to (de)activate the Tradeswitch information:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Console** entry and press **Enter**.
4. Select the console module you want to (de)activate and press **F5**.
5. Select the **Display Tradeswitching** entry and press **F8** to select one of the following options:

yes:	activated Tradeswitch information
no:	deactivated Tradeswitch information

6. Press **F2** to save your settings.

CDS mouse positioning

When moving the mouse cursor to an edge of the active monitor with a second monitor placed next to the active monitor, the mouse cursor remains at the position at which the switching to the module of the second monitor takes place.

NOTE: When switching between channels via CDS, a mouse cursor may be visible on several monitors.

In addition, when leaving the monitor, the matrix switch can position the mouse cursor so that it is barely visible. For this, you can use the settings **Right** and **Bottom**.

You can define this setting for the entire system. By default, all CDS console modules use the systemwide setting. However, you can also individually define the mouse position for each CDS console module.

How to change the system setting of the mouse position:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **System** entry and press **Enter**.
4. Select the **CDS mouse positioning** entry and press **F8** to select one of the following options:

off:	The mouse cursor remains at the position at which the switching to the module of the next monitor takes place (*default*).
on:	According to the **CDS mouse hideout** setting the mouse cursor is positioned so that it is barely visible. Only during *multi-user access*, the cursor remains at the position at which the switching to the next monitor takes place.
on+Multi:	According to the **CDS mouse hideout** setting, even during *multi-user access*, the mouse cursor is positioned so that it is barely visible.

ADVICE: You can activate or deactivate this function for particular modules independently from the selected system setting (see below).

5. If the CDS mouse positioning is enabled, select one of the options under **CDS mouse hideout**:

right:	The mouse cursor is placed at the right edge of the monitor so that it is barely visible.
bottom:	The mouse cursor is placed at the bottom edge of the monitor so that it is barely visible.

6. Press **F2** to save your settings.
7. Press **F2** to save your settings.

How to change the mouse position of a particular computer module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the *Configuration* menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function*, the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Select the **CDS mouse positioning** entry and press **F8** to select one of the following options:

System:	Use systemwide (see above) setting (*default*).
Off:	The mouse cursor remains at the position at which the switching to the module of the next monitor takes place.
On:	According to the **CDS mouse hideout** setting the mouse cursor is positioned so that it is barely visible. Only during *multi-user access*, the cursor remains at the position at which the switching to the next monitor takes place.
On+Multi:	According to the **CDS mouse hideout** setting, even during *multi-user access*, the mouse cursor is positioned so that it is barely visible.

6. When the CDS mouse positioning is explicitly enabled for this console module, enable one or both options under **CDS mouse hideout**:

Right:	The mouse cursor is placed at the right edge of the monitor so that it is barely visible.
Bottom:	The mouse cursor is placed at the bottom edge of the monitor so that it is barely visible.

7. Press **F2** to save your settings.

Adjusting the mouse speed

If *CrossDisplay-Switching* is enabled, the mouse speed is not controlled by the operating system of the computer, but by the matrix switch.

If the cursor on the monitor of the computer moves too fast or too slow, you can adjust the speed in the matrix switch.

You can adjust the mouse speed for the entire system or for one computer module only.

How to change the system settings of the mouse speed:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **System** entry and press **Enter**.
4. Use the **Mouse speed** entry and press **F8** to choose a setting.

> **NOTE:** You can enable or disable the function individually for specific modules regardless of the selected system setting (see below).

5. Press **F2** to save your settings.

How to change the mouse speed of a specific computer module:

1. Press the **Ctrl+Num** (*default*) hotkey to open the OSD.
2. Press **F11** to call the **Configuration** menu.
3. Select the **Computer modules** entry and press **Enter**.
4. Select the computer module you want to configure and press **F5**.

> **ADVICE:** Use the menu's *search function,* the *view filter* or the *sort criteria* (see page 18 f.) to limit the selection of list entries.

5. Use the **Mouse speed** entry and press **F8** to choose between the following options:

System:	Apply the system mouse speed setting for the computer module
[value]:	Use individual mouse speed (level **1** to **10**).

6. Press **F2** to save your settings.

Possible messages and their meanings

There are various messages that can appear on the monitor of the console module in certain cases. You have the option of adjusting or deactivating these information displays (see *Adjusting the information display* on page 24 ff.).

Below you find a selection of possible messages and their meanings:

Message	Meaning
Forwarding to ...	The console module is the leader workplace of the Tradeswitch workplace (see *Defining the leader workplace of the Tradeswitch workplace* on page 216). This message appears when the input devices are switched to another console module or DWC. You can switch this message off if you want (see *(De)activating the Tradeswitch information* on page 220).
FORWARDED	The console module is a target workplace of the Tradeswitch workplace. This message appears when the input devices are switched from the leader workplace to this console module. You can switch this message off if you want (see *(De)activating the Tradeswitch information* on page 220).
No CDS: Globally disabled	No CDS possible as the function is deactivated for the entire system (for detailed information, please refer to the separate manual of the web application).
No CDS: Disabled	No CDS possible as the computer module uses relative mouse coordinates (for detailed information, please refer to the separate manual of the web application).
No CDS: No Tradeswitch modifier	No CDS possible because no tradeswitch key modifier (see *How to change the Tradeswitch key modifier or the valid keys:* on page 214) has been configured.
No CDS: Computer module not found	No CDS possible because the computer module was not found.
No CDS: Computer module multiuser mode	No CDS possible as a user is already connected to the computer module and this does not support MultiAccess (see *Access mode when simultaneously accessing a computer module* on page 61).
No CDS: Computer module not supported	No CDS possible as the computer module does not support switching via CDS. Contact our support team for more information.
No CDS: Console not found	No CDS possible because the console module does not exist in the matrix switch database (anymore).
No CDS: Console MultiAccess mode	No CDS possible because the console module is included in several Workplaces (Tradeswitch configurations) and does not support multiuser CDS.
No CDS: Unknown error	No CDS possible. Contact our support team for more information.

Message	Meaning
Not connected	The console module is not connected to any computer module (see *Accessing computer modules (basic functions)* on page 115 ff.).
Computer module not available	The console module should be connected to a computer module. However, this computer module is not available in the system.
No user logged in	The console module should be connected to a computer module. However, no user is logged on (see *User login at the KVM matrix system* on page 3 ff.).
Insufficient access rights	The console module should be connected to a computer module. However, the user rights do not allow this (see *Adjusting the access and config rights* on page 58 ff.).
No MultiAccess right	The console module should be connected to a computer module. However, another user is already connected and the user does not have MultiAccess rights (see *Access mode when simultaneously accessing a computer module* on page 61 ff.).
Unknown route to computer module	The console module should be connected to a computer module. However, the matrix switch does not know where the computer module is connected.
No route to computer module available	The console module should be connected to a computer module. The matrix switch knows how to reach the computer module. However, there is no free line via which the computer module can be reached.
Connection failed	The console module should be connected to a computer module. However, the router was unable to fulfill its task.
VIEW ONLY	Operation of the connected computer module is disabled (see *Adjusting the access and config rights* on page 58 ff.). You can switch this message off if you want (see *How to change the general settings of the information display:* on page 24).
MULTIUSER	If several users are connected to a computer module, the number of connected users is displayed. You can switch this message off if you want (see *Displaying Multiuser information* on page 76).
AUTOSCAN	The computer module uses the autoscan function (see *Auto scanning all computer modules (Autoscan)* on page 127 ff.).
AUTOSKIP	The computer module uses the autoskip function (see *Auto scanning all active computer modules (Autoskip)* on page 128 ff.).
STEPSCAN	The console module uses the stepscan function and the keys to scan the computer modules manually are active (see *Scanning the computer modules manually (Stepscan)* on page 130 ff.).
HDCP content suppressed	The connected computer module has detected HDCP-protected image data that may not be displayed.

Message	Meaning
Frozen for ...	When using freeze mode, the image last received is either highlighted by a coloured frame and/or the note Frozen and the time past since the loss of connection (see *Freeze mode* on page 34 ff.)
Please reconnect	A disconnection has been detected. Check the cables.
Communication was interrupted Auto-switched to channel ...	A CON-2 console module was automatically switched to the specified channel due to a connection failure.
Stream CPU ...	Index of the displayed video stream when switching of the video stream (when connected to a DH computer module)
Illegal format	Problem with video parameters: Incorrect data format
Pixel clock too high	Problem with video parameters: Pixel clock higher than supported by the current console module
Resolution too high	Problem with video parameters: Image width or image hight greater than supported by the current console module
Pixel clock too low	Problem with video parameters: Pixel clock below the minimum clock rate
Resolution too low	Problem with video parameters: Image width or image height less than required for output
Invalid parameter	Problem with video parameters: Image parameters inconsistent or incorrect
No AV-stream received	The reception of AV data is configured. However, no AV data is received.

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