Tera Tool

Software

User Manual

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Introduction

This manual contains important safety instructions as well as instructions for configuring IHSE KVM products and operating them. Observe the general safety instructions (see chapter 2) and additional instructions in the respective chapters.

Product Identification

The model and serial number of your products are indicated on the bottom of our products. Always refer to this information when you need to contact your distributor or the support of IHSE GmbH.

Trademarks and Trade Names

All trademarks and trade names mentioned in this document are acknowledged to be the property of their respective owners.

Validity of this Manual

This manual applies to all versions named on the cover page.

The manufacturer reserves the right to change specifications and functions described here without notice. Information in this manual can be changed, expanded, or deleted without notice. You can find the current version of the manual in the download area of our website.

Copyright

Available Documentation

Name	Format	Description	Provision
User Manual	PDF	Provides an overview of the product together with technical data and safety instructions. Contains all instructions required to configure and operate the products.	Download from website

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1 Important Information

1.1 Symbols for Warnings and Helpful Information

The meaning of the symbols used for warnings and helpful information in this manual is described below:

⚠ WARNING
WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION
CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or in a loss of data.

NOTICE
NOTICE identifies information, if not observed, endangers the functionality of your device or the security of your data.

This symbol indicates information about special features on the device or when using device and function variants.

This symbol indicates instructions for procedures recommended by the manufacturer for an effective utilization of the device potential.

1.2 Terms and Spellings

Uniform terms are used in this manual for better readability or easier assignment.

The following terms are used for products and descriptions:

Term	Description
Matrix	Draco tera enterprise, Draco tera flex
Tera Tool	Software to configure, monitor and operate IHSE KVM devices
Source	Computer, graphics card (USB, video, audio, data)
Sink	Console (monitor, keyboard, mouse, video, audio, data)
CPU Unit	Encoder to connect to the source
CON Unit	Decoder to connect at the console peripherals.
EXT Unit	Logical object for representing a CPU or CON Unit in the matrix
CPU Device	Logical object for switching EXT Units of CPU Units via matrix
CON Device	Logical object for switching EXT Units of CON Units via matrix

The following spellings are used for keyboard commands:

Keyboard command	Description
key	Key on the keyboard
key + key	Press keys simultaneously
key, key	Press keys successively
2x key	Press key quickly, twice in a row (like a mouse double-click)
Number/number on the keyboard	Numeric key at the top end of the alphanumeric keyboard usually used for described operations
Number on the numerical pad	Numeric key on the numeric pad. If the use of the numeric pad is required, it is explicitly described

The following spelling is used for, e.g., descriptions of editing files or updating firmware:

Keyboard command	Description
`Config.txt`	For instance, file name.
`#CFG`	For instance, file content.

The following spellings are used for software descriptions:

Spelling	Description
Bold print	Description of terms that are used in the device firmware or the Tera Tool software
Bold print > Bold print	Tera Tool software: selection of a menu item in the working area, the menu bar, or the toolbar, e.g., **Extras > Options**

Mouse button	Description
Left mouse button	Primary mouse button* (default in most operating systems)
Right mouse button	Secondary mouse button*
* Unless you have customized your mouse settings in the used operating system.	
Descriptions containing "click...", "mouse click" or "double-click" each means a click with the primary (left) mouse button. If the right mouse button has to be used, this is explicitly declared in the description.	

1.3 Intended Use

The Tera Tool software is a comfortable software program to configure, operate, and maintain IHSE KVM devices (matrices, extender modules) in single matrix systems and in matrix grids, and to establish connections via IP Gateway.

The Tera Tool software offers various functions, e.g.:

- Advanced configuration of matrix systems and matrix grids with up to 2,032 ports (4096 ports from firmware V06.00)
- Extended monitoring options
- Switching of KVM devices
- System update (firmware update) of matrices and connected IHSE KVM devices
- Local backup option
- Documentation
- Defining macros
- Updating IHSE KVM devices directly
- Configuring IP Gateway connections

The Tera Tool software is available as a single executable program file that does not require installation. It can be downloaded from the link https://www.ihse.com/software.

2 Safety Instructions

To ensure reliable and safe long-term operation of your device, please note the following guidelines:

- ➡ Read this user manual carefully.
- ➡ If using the Tera Tool software, only configure and operate the device according to this user manual. Failure to follow the instructions described can damage the device or endanger the security of your data.

3 Getting Tera Tool Software

The Tera Tool software is available as a single executable program file that does not require any installation. You can download it from our homepage www.ihse.com. There are two versions: one for Windows operating systems and one for Mac OS and Linux operating systems. For using the Tera Tool software, a computer should be used that is not part of the KVM system.

NOTICE

Connection to the matrix blocked

Synchronization directories or offline directories require special attention regarding the firewall settings, e.g., Windows: roaming directories. If blocked by the firewall, no connection to the matrix can be established.

➡ Save the Tera Tool software in a locally available directory.

3.1 Requirements for Using the Tera Tool Software

For Windows

Computer/Software/Network		Requirements/Recommendations
Free memory	RAM	Recommendation: 1 GB
Operating system	Microsoft	Windows 10, Windows 11
Connection	-	Between computer and matrix with LAN cable, between computer and extender module with Mini-USB/USB A cable.

For MacOS, Linux

Computer/Software/Network		Requirements/Recommendations
Free memory	RAM	Recommendation: 1 GB
Operating system	Linux	e.g. Debian, Ubuntu, Mint, openSUSE
	macOS	macOS 10.14 (Mojave) or higher, Intel platform
Specification	Java	Java 11 is the minimum version required. However, we recommend using a newer version of Java. (https://adoptopenjdk.net, https://github.com/ojdkbuild/ojdkbuild)
Connection	-	Between computer and matrix with LAN cable, between computer and extender module with Mini-USB/USB A cable.

Contact your system administrator concerning JRE and network connection.

3.1.1 Setting up Network and Firewall Releases

Releasing Network Ports

The following ports are used by the matrix depending on the configuration and have to be released at the security gateway if necessary. The ports will only have to be released if you want to use the respective function.

Function	Port
FTP	21/TCP
DNS	53
SNTP	123/UDP
SNMP	161/162, both UDP
LDAP	389 (636 for SSL)
Syslog	514/UDP
API	5555/TCP (5565 for SSL)
Broadcast	5556/UDP (5566 for SSL)
Matrix Grid	5557/TCP (5567 for SSL)

Releasing Java Application in the Firewall

The Java application (file javaw.exe) has to be released in the firewall settings for port 5555 to use the Tera Tool software. Contact your administrator to configure the firewall settings accordingly.

Using the Tera Tool software with integrated Java Runtime, a request of the operating system could appear, e.g., if opening the Device Finder.

3.1.2 Connecting the Computer with installed Tera Tool Software to a Matrix

NOTICE

For a connection between the computer and matrix via switch or hub, parallelly assembled network cables are required.

➡ Only use a network connection between computer and the matrix that is not primarily used for streaming audio or video data. We strongly recommend using a computer that is not part of the KVM system (e.g., a laptop).

➡ Connect the network cable to the RJ45 port of the computer and the controller board of the matrix.

3.1.3 Connecting the Computer with installed Tera Tool Software to an Extender Module

➡ Connect a Mini-USB/USB type A cable to the Mini-USB port of the extender module and an USB A port of the computer.

3.1.4 Starting the Tera Tool Software

1. Download one of the Tera Tool software zip files from our website and store it on your computer.
2. Unpack the zip file (unzip).
3. Open the unzipped folder “Tera Tool”.
4. Double-click the entry **TeraTool**.

   The Tera Tool software starts in offline mode.

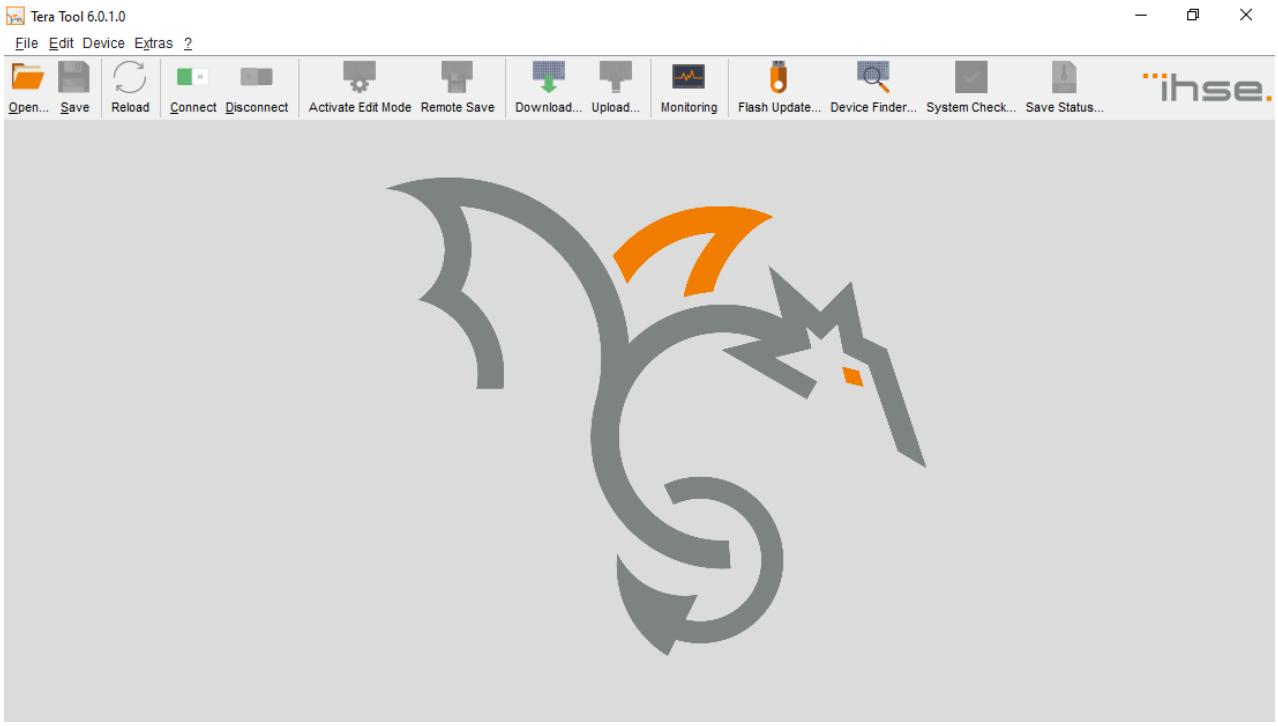


Fig. 1 ***Landing page in offline mode***

There are two options to connect to a device e.g., matrix, Draco MV, SNMP board via network connection.

- Via known IP address
- Via Device Finder

3.1.5 Connecting to the Matrix with known IP Address

At least power user rights are required, and the function **External Configuration & Control** in the network menu has to be enabled (default setting).

Up to 16 connections between the matrix and the Tera Tool software can be established at the same time due to a limitation of available sockets.

1. Run the Tera Tool software.
2. Click **Connect** in the tool bar.

   A login dialog appears.

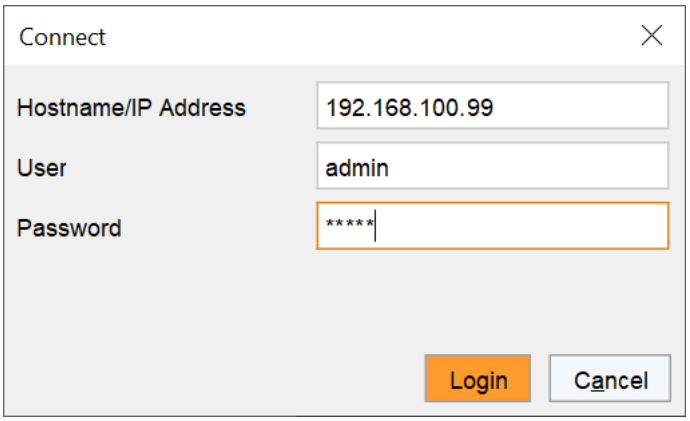


*Fig. 2 Dialog **Connect***

3. Enter the IP address according to the network configuration of the matrix. Use the OSD to view the network configuration.

   By default, the IP address of the matrix is 192.168.100.99 and DHCP is deactivated.
4. Enter the username and password of an administrator.

   By default, the username is **admin**, and the password is **admin**.
5. Click **Login** to confirm your entries.

The data must be entered each time the network connection is re-established. Alternatively, the data can be entered and stored in the Tera Tool software under **Extras > Options** (see section 4.1, page 16).

3.1.6 Connecting to the Matrix via Device Finder

At least power user rights are required, and the function **External Configuration & Control** in the network menu has to be enabled (default setting).

Up to 16 connections between the matrix and the Tera Tool software can be established at the same time due to a limitation of available sockets.

The Device Finder offers the possibility to find all matrices, SNMP boards and MV42 that are in the same subnet. This is useful, e.g., if the IP address of a specific matrix is unknown and should be accessed via IP.

1. Click **Device Finder** in the tool bar.
   A window opens.

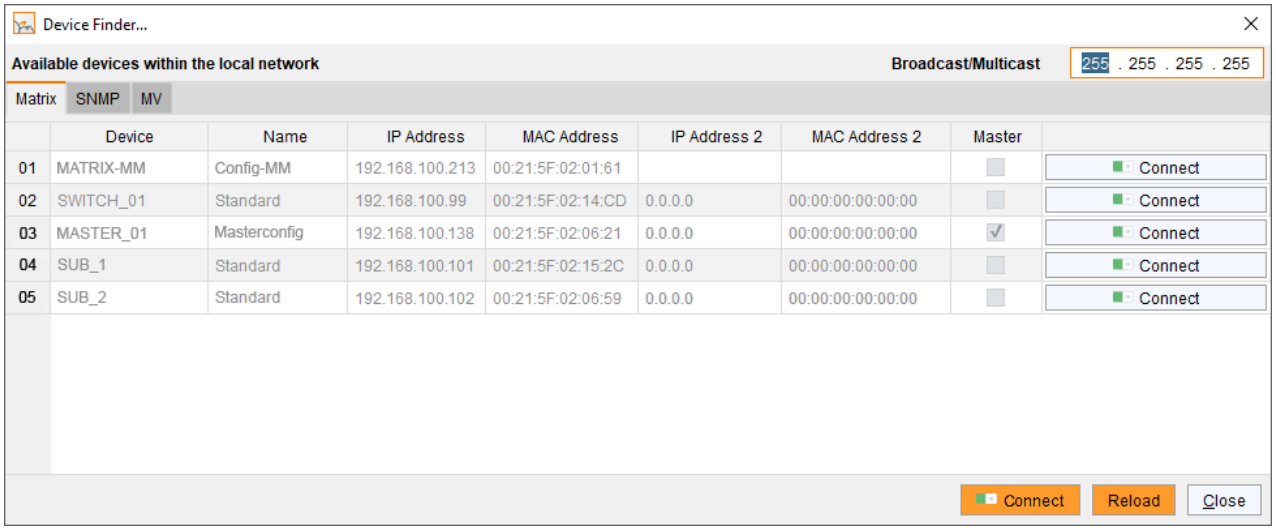


*Fig. 3 Menu **Device Finder***

The following device information is shown in the Device Finder:

Information	Description
Broadcast/Multicast	Search parameters for finding devices. Search via broadcast: 255.255.255.255 (default). Input for search within a multicast group: multicast address (section 6.5.7, page 50).
Device	Name of the device
Name	Name of the active configuration
IP Address	Current IP address of the device
MAC Address	MAC address of the device
Master	Type of the device

2. For searching within a multicast group, enter the multicast address. By default, the search is set via broadcast: 255.255.255.255.
3. Click **Connect** in the last column of the Device Finder to establish a direct connection to the respective device within the same subnet or the button **Connect** in the bottom right-hand corner or press Enter.
4. Enter the username and password of the administrator.
   By default, the username is **admin**, and the password of the administrator is **admin**.
5. Click **Login** to confirm your entries.
   The online mode is started.
6. Click the button **Close** to close the Device Finder window.

4 Basic Setting up of Tera Tool Software

The settings of the Tera Tool software can be customized and optimized to support the configuration of the matrix and to avoid the repetition of data to be entered. The look of the software can also be customized. The settings can be changed in offline mode.

To activate changes in the **Options** menu, the Tera Tool software must be closed and restarted.

4.1 Default Settings for Connection and Directories

To avoid the repetition of data to be entered in the Tera Tool software, this data can be saved in the default settings.

1. Select **Extras > Options** in the menu bar.

   The **Options** menu opens and shows the **Default Settings** tab.

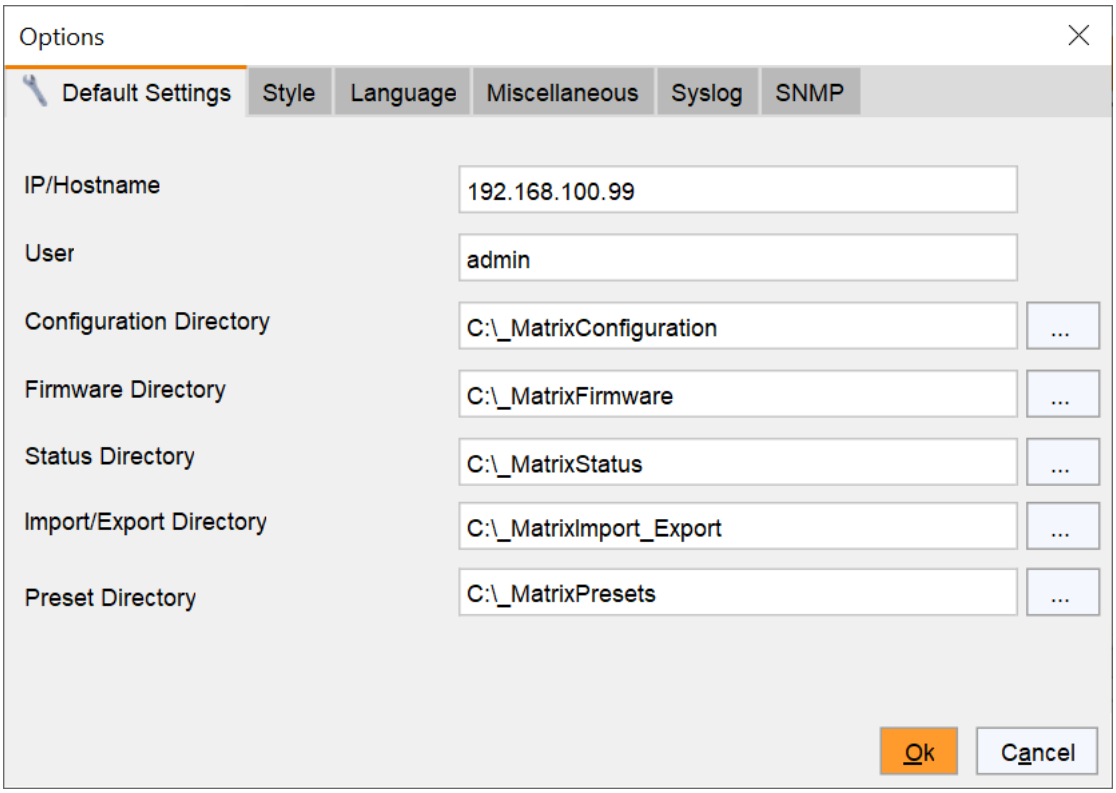


*Fig. 4 Menu **Extras - Options - Default Settings***

The following parameters can be configured:

Option	Description
IP/Hostname	Default IP address or host name of the matrix for establishing a connection.
User	Default username for establishing a connection.
Configuration Directory	Default directory for storing configuration files.
Firmware Directory	Default directory for loading and storing firmware files.
Status Directory	Default directory for storing status files.
Import/Export Directory	Default directory for import and export files.
Presets Directory	Default directory for storing presets.

2. Enter the appropriate data.
3. Click **Ok** to confirm the settings.
4. Close the Tera Tool software and restart it.

4.2 Setting Font Size, Tooltip, and Theme

1. Select **Extras > Options** in the menu bar and open the **Style** tab.

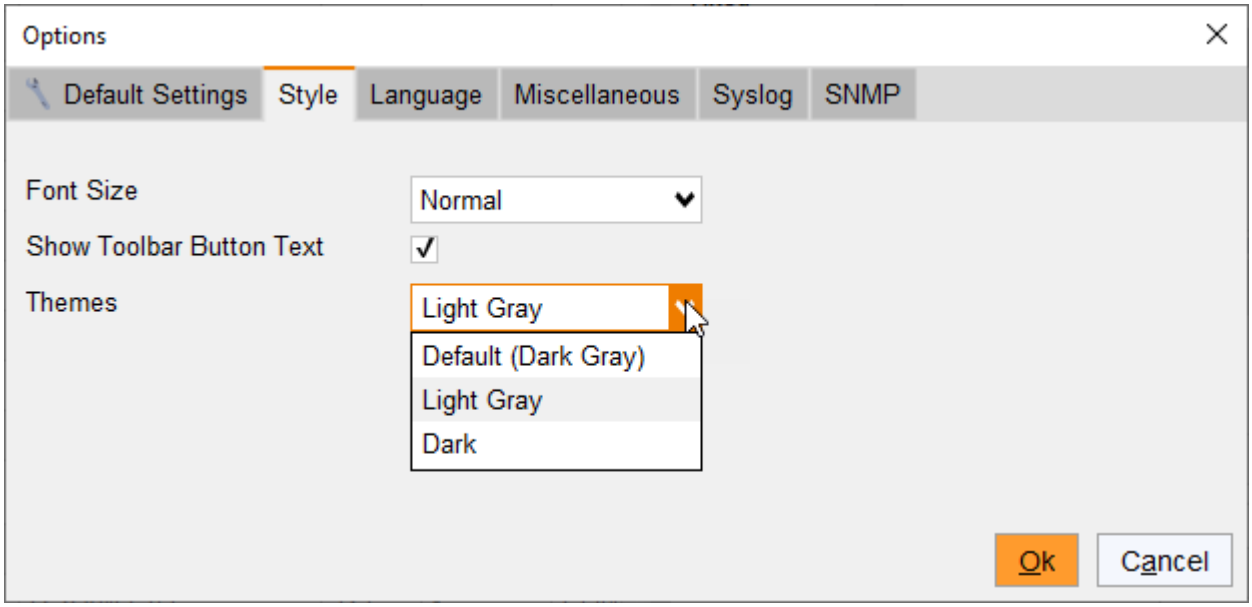


*Fig. 5 Menu **Extras - Options - Style***

2. Select the desired font size (**Normal** or **Large**).
3. Tick the **Show Toolbar Button Text** checkbox to display a tooltip when hovering over an item in the toolbar.
4. Select the color theme for the Tera Tool software (**Default (Dark Gray)**, **Light Gray** or **Dark**). The figures in this manual were made with the setting Light Gray.
5. Click **Ok** to confirm the changes.
6. Close the Tera Tool software and restart it.

4.3 Setting the Language

The language within the Tera Tool software is set in this menu. The charset must match the selected language to ensure correct representation.

1. Select **Extras > Options** in the menu bar and open the **Language** tab.
2. Select the desired language within the Tera Tool software and the corresponding charset.
3. Click **Ok** to confirm the changes.
4. Close the software and restart it.

If using Linux-based matrix systems, it is possible to enter Chinese characters. Therefore, a respective firmware package has to be installed, and the Chinese Encoding has to be enabled in the system settings. Please contact the manufacturer’s technical support for further information.

4.4 Changing the Background of Landing Page

1. Copy a png image named “Background” into the Tera Tool folder.
2. Start the Tera Tool software. Upon starting, the software checks if a png image named Background is present and displays it in full screen.

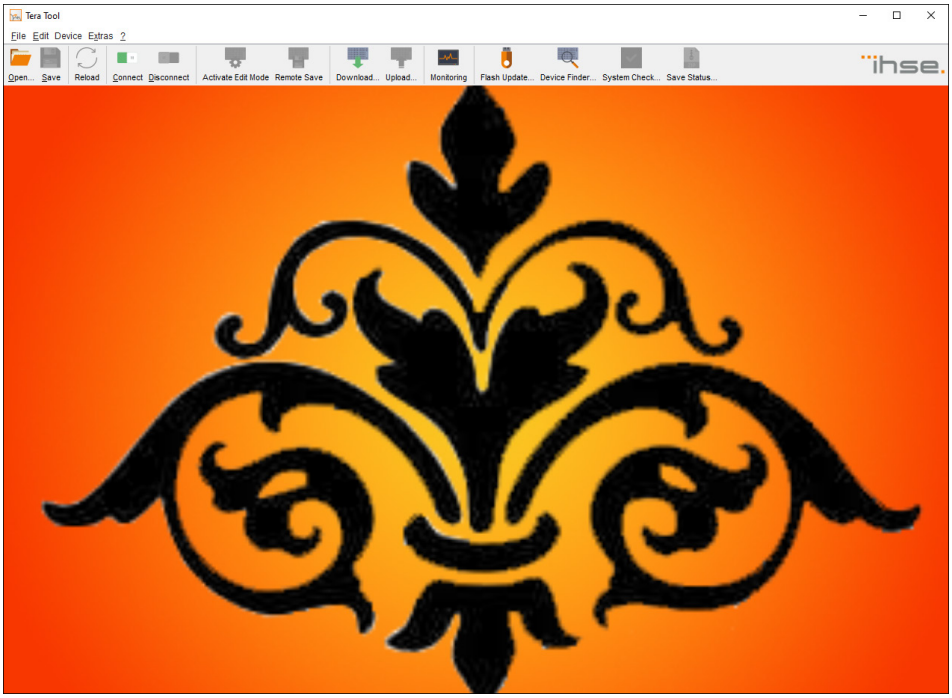


Fig. 6 Changed Background

3. Instead of a whole background, you can display a logo in the center of the window by copying a png image named “Logo” into the Tera Tool folder. The height of the logo is half the height of the area.

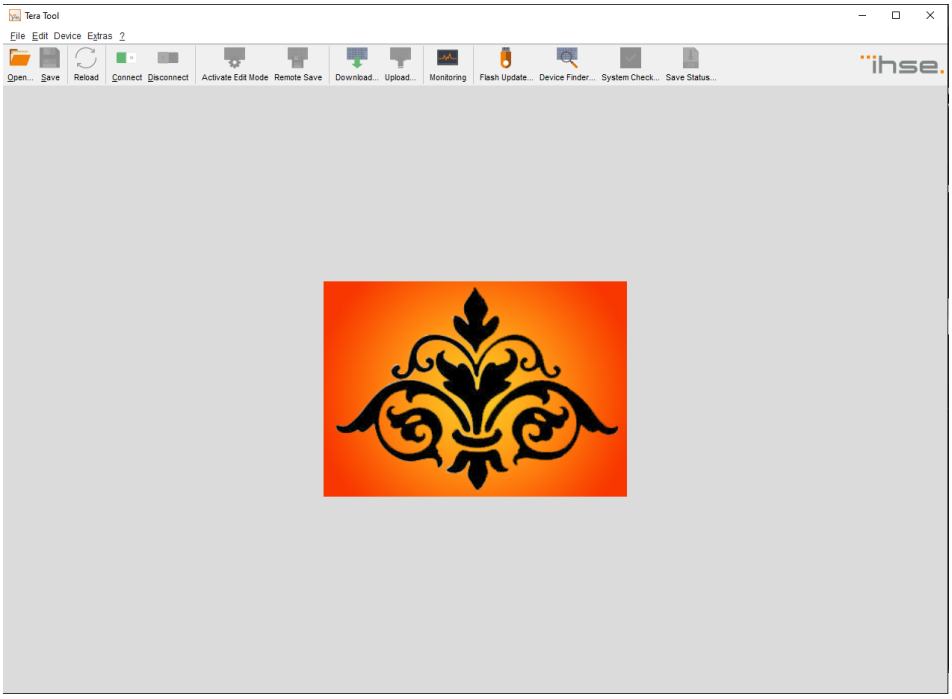


Fig. 7 Displayed logo

When both png images (Background and Logo) are present in the Tera Tool folder, the software takes the background image.

4.5 Setting Autostart of the Device Finder and further Options

Additional options for the Tera Tool software can be enabled in this menu.

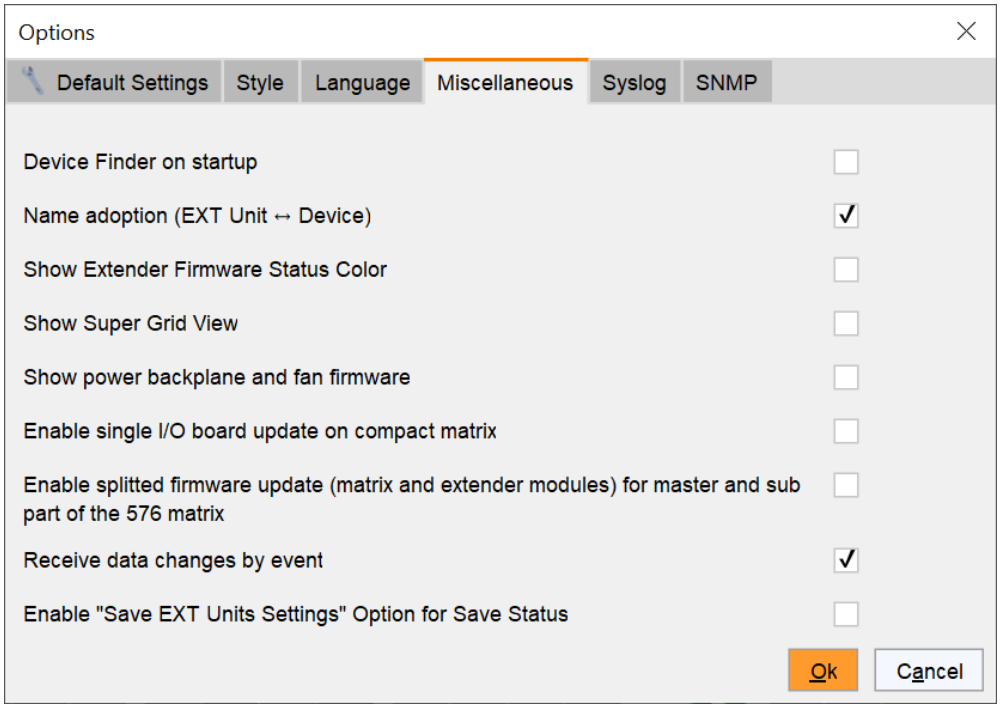


*Fig. 8 Menu **Extras - Options - Miscellaneous***

The following options can be enabled:

Option	Description
Device Finder on startup	Starts the Device Finder automatically when starting the Tera Tool software.
Name adoption (EXT Unit <--> Device)	Applies the entered name for a CON/CPU Device also to the EXT Unit and vice versa.
Show Super Grid View	Shows the Super Grid option in the task area.
Show power backplane and fan firmware	Shows the firmware of the fans and the power backplane in the menu **Status & Updates > Status - Matrix Firmware**.
Enable single I/O board update on compact matrix	Option available only for Draco tera flex.
Enable splitted firmware update (matrix and extender) for master and sub part of the 576 matrix	Option available only for Draco tera enterprise 576.
Receive data changes by event	When changes occur while Tera Tool is open (e.g. switching), the display is updated immediately (no need to click the button **Reload** in the toolbar).
Enable “Save EXT Units Settings” Option for Save Status	Enables this option in the **Save Status** dialog.

To start the Device Finder automatically when starting the Tera Tool software, proceed as follows:

1. Select **Extras > Options** in the menu bar and open the **Miscellaneous** tab.
2. Tick the **Device Finder on startup** checkbox.
3. Click **Ok** to confirm the changes.
4. Close the Tera Tool software and restart it.

   After restarting the software, the **Device Finder** appears.

5 User Interface and Control Options

5.1 Menu Structure

The main user interface elements for options and functions of the Tera Tool software are described in this chapter. This allows us to keep the user manual clear. Further options and functions are explicitly declared in the respective chapters.

The menu structure of the Tera Tool software is subdivided into several sections:

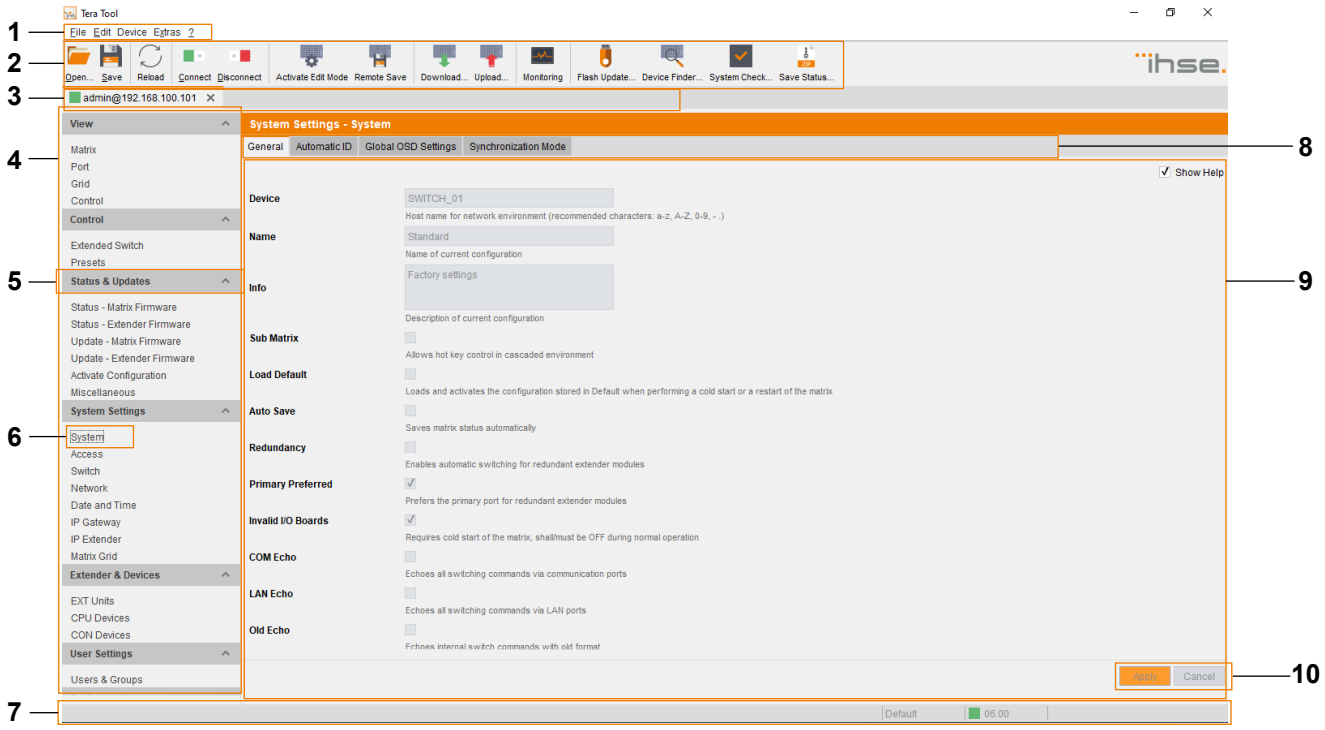


Fig. 9 ***Menu structure*** *(Example 1)*

1 Menu bar
2 Toolbar
3 Tab bar (shows connections or configurations)
4 Task area
5 Task menu
6 Task menu item
7 Status bar (shows config version, activated Edit Mode and online mode)
8 Tabs (for additional sub menus)
9 Working area
10 Buttons

The following control elements are included in the menus:

Designation	Element	Description
Checkbox	☐	Function is not active, disabled by default or by mouse click.
	☑	Function is active, enabled by default or by mouse click.
Radio button	○	Option is not active, disabled by default or by mouse click.
	◉	Option is active, enabled by default or by mouse click.
Drop-down menu	--- ⌄	A selection list is opened by mouse click on the arrow.
	0 ⇕	The value (+/-) is set by mouse click on the up/down arrow.

The following actions are available in most of the menus:

Button	Function
Apply	Confirm changes (temporary storage of the active configuration in the volatile memory of the matrix).
Cancel	Reject changes.

Based on the following figure, basic functions are described that are available in the working area of several menus for individual tabs. Further functions are explained separately in the respective chapters.

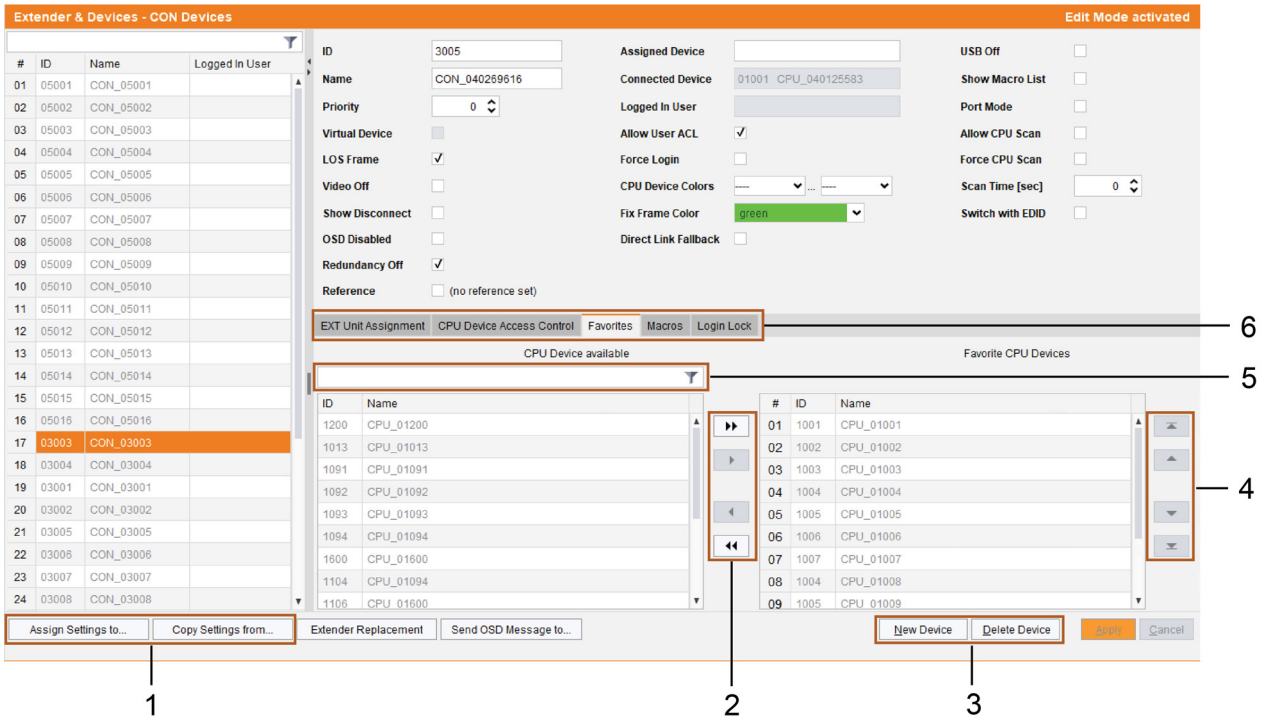


Fig. 10 ***Menu structure*** *(Example 2)*

1 Assigning/Copying settings
2 Assigning/Removing elements* to/from an assignment or list
3 Creating/Deleting elements*
4 Moving elements* up/down
5 Field for filter function
6 Tabs (for additional functions)

☑ * Element is a placeholder and stands for EXT Units, CON/CPU Devices, Extender Modules, Users, or Favorites (see respective configuration sections).

These buttons for main functions are available in the lower part of the working area of several menus.

Button	Function
Assign Settings to…	Assign settings from the highlighted element to one or more other element(s).
Copy Settings from…	Copy settings from another element to the highlighted element.
New Element	Create a new element.
Delete Element*	Delete an element.

The following functions are available in most of the tabs or dialogs to assign elements.

Button	Function
▶	Assign the selected element to an element.
▶▶	Assign all available elements to an element.
◀	Remove the selected element from an element.
◀◀	Remove all elements from an element.
▼	Change the index number of an element downwards.
▲	Change the index number of an element upwards.
⤒	Change the index number of an element to first position.
⤓	Change the index number of an element to last position.

Keyboard Command	Function
+	Change the index number of elements upwards.
-	Change the index number of elements downwards.

5.1.1 Access Rights Menus

In menus to assign access, available keyboard commands are displayed in the lower area of the tab menu.

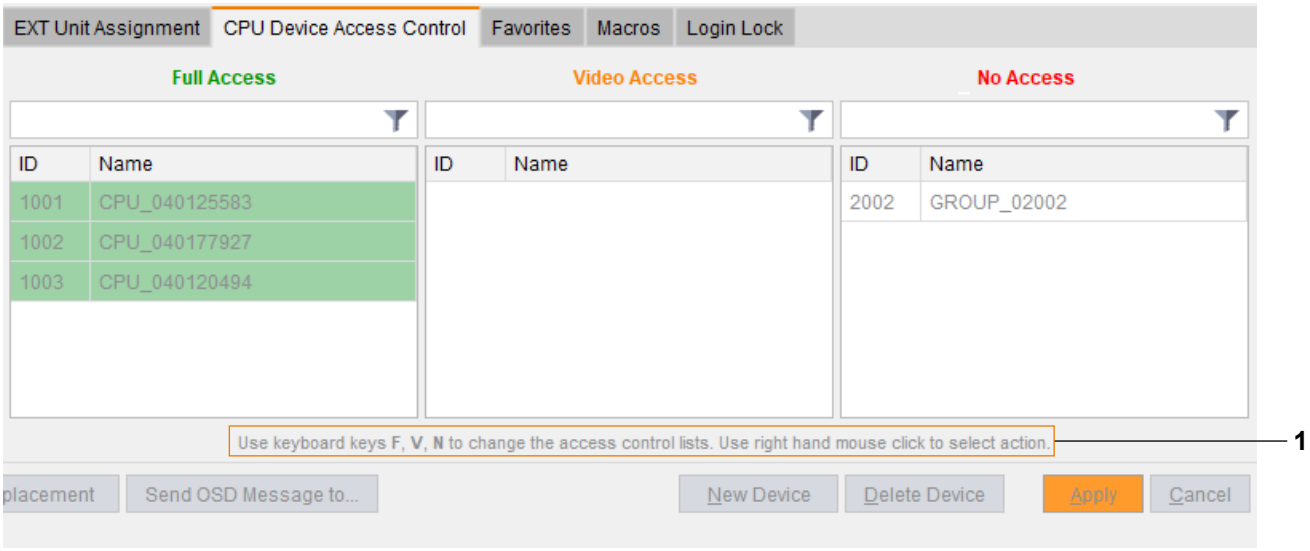


Fig. 11 ***Menu structure*** *(Example 3)*

1 Keyboard commands

The following keyboard commands (always lower-case letter) are available in access assignment tabs.

Keyboard command	Function
f	Add highlighted element to **Full Access** list
v	Add highlighted element to **Video Access** list
n	Add highlighted element to **No Access** list

A context menu is available when clicking with the right mouse button on an element:

- Assign Full Access rights
- Assign Video Access rights
- Assign No Access rights

5.1.2 Ports Overview and Information and Options Panel

The information and options panel displays information and offers options for the matrix system, e.g., for the Matrix Status, Routing Information, I/O Port Color Coding, I/O Port Symbols, MSC and Redundancy.

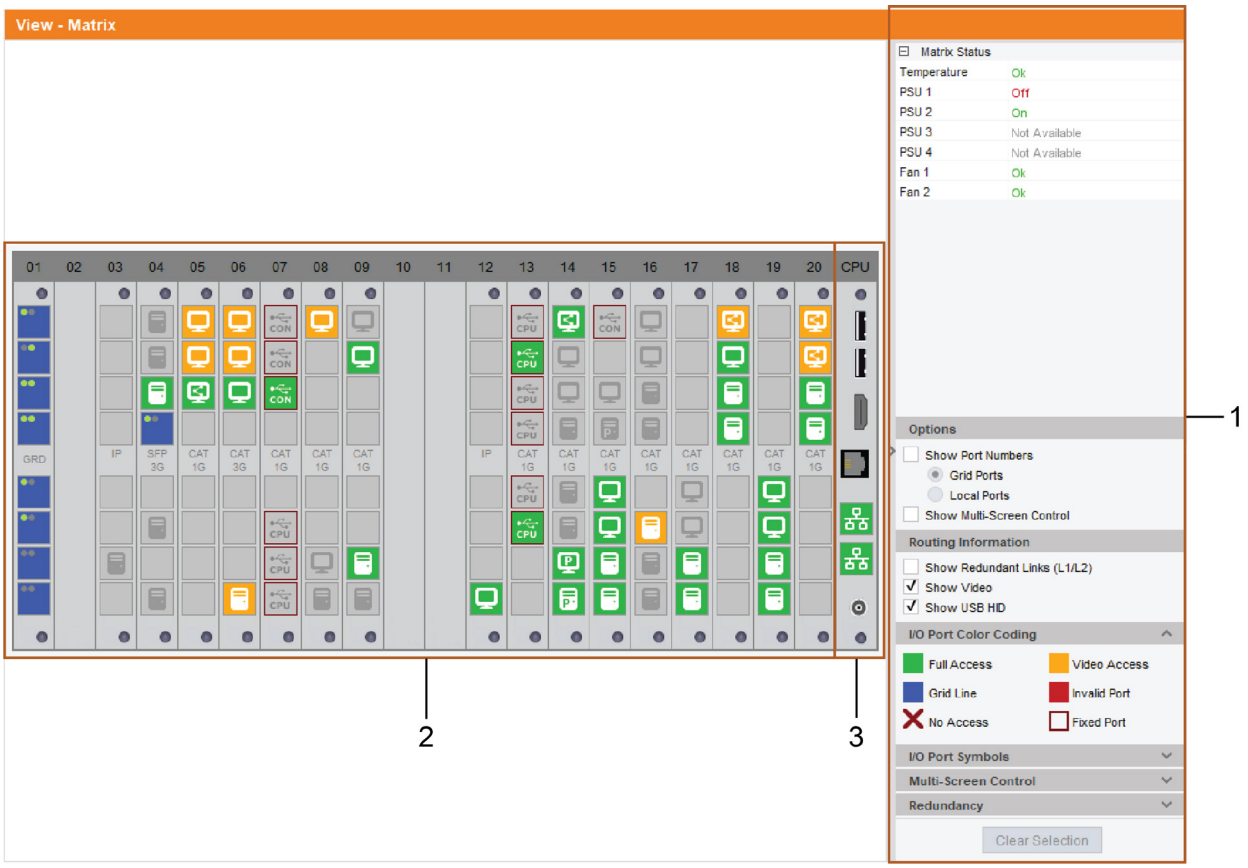


Fig. 12 ***Menu structure*** *(Example 4)*

1 Information and options panel
2 Display of ports at I/O boards
3 Display of ports at the controller (CPU) board

5.1.2.1 Colors for Controller Board Network Ports

Network port color	Description
Green	Port is connected.
Red	Port is not connected or not available.

5.1.2.2 Color Coding for I/O Board Ports

Port color	Description
Grey	Port not connected.
Yellow	Port with video connection.
Green	Port with KVM connection.
Red	Faulty port.
Blue with green dots	Port connected to another matrix via grid line. Grind lines are used (CON Device switched to CPU Device).
Blue with gray dots	Port connected to another matrix via grid line. Grind lines are not used (CON Device not switched to CPU Device).

Port color	Description
4 blue static squares	Port is selected. All other ports are transparent, except those connected to the currently selected port.
Red cross	CON Device to be connected does not have access rights to the respective CPU Device at this port.
Red frame	Fixed port (e.g., for USB 2.0 connections).

5.1.2.3 Color Coding for I/O Board Ports with Multi-Screen Control (MSC)

Port color	Description
Blue	CON Device with connected keyboard and mouse in the MSC setting.
Light blue	CON Device without connected keyboard and mouse in the MSC setting.
Blue frame	Frame around the CON Units that are contained in an MSC setting (Screen Cluster).
Rose	Not available, e.g., if one EXT Unit is set on position 2 and all other EXT Units are set on position 1 in the EXT Unit assignment.
Red	Invalid if link 1 and link 2 of a redundant extender module are connected within the same block.
Temporarily off	Display switched off.

5.1.2.4 Symbols for I/O Board Ports

Symbol	Description
	Port is connected to a CPU Unit.
	Port is connected to a CPU Unit that is switched to a CON Unit in **Private Mode**.
	Port is connected to a CON Unit.
	Port is connected to a CON Unit with **Shared Access** to a CPU Unit.
	Port is connected to a CON Unit that is connected to a CPU Unit in **Private Mode**.
CPU	Port is connected to a USB 2.0 CPU Unit.
CON	Port is connected to a USB 2.0 CON Unit.
CSC CON	Port is configured as Cascaded CON port for cascading of matrices.
CSC CPU	Port is configured as Cascaded CPU port for cascading of matrices.
UNI CON	UNI port is configured as CON port to connect USB 3.0 CON extender modules, for example.
UNI CPU	UNI port is configured as CPU port to connect USB 3.0 CPU extender modules, for example.
UNI	Universal port without further specification.
IP	IP port but access is denied e.g., because license for IP CON software client is missing.
	Shows which channel is used.

Symbol	Description
	A user is logged in at this CON Unit.
	No device is connected to this port.

5.1.2.5 Redundancy Symbols for I/O Board Ports

Symbol	Description
	Redundant extender module connected with interconnection port 1.
	Redundant extender module connected with interconnection port 2.
Light green label	Active link, switched to this interconnection port.

5.1.2.6 Information Panel on the right side of the working area

➡ Click a port with the left mouse button to show the EXT Unit and CPU/CON Device information of the currently selected port in the panel on the right side of the working area.

The following information is available:

Port

Field	Description
EXT Unit Name	Name of the Ext Unit connected to the selected port.
EXT Unit Type	Type of the selected Ext Unit.
Port	Number of the selected port, in brackets: number of connected port.
Slot (global)	Slot of I/O board of the matrix.

Device

Field	Description
Device ID	ID number of the associated CON Device or CPU Device.
Device Name	Name of connected CON Device or CPU Device.
Extender 1…8	Up to 8 assigned EXT Units per CPU/CON Device.

Connections

Field	Description
Connections	List of assigned connections to selected port (Full Access or Video Access)

5.1.2.7 Port's Context Menu

➡ Click a port with the right mouse button to open the context menu with additional functions for the currently selected port.

The following context functions are available:

Field	Description
Open EXT Unit	Open the menu for definition of the currently selected EXT Unit.
Open Device	Open the menu for the definition of the currently selected CON/CPU Device.
Extended Switch	Open the menu for execution of switching operations.
Disconnect	Disconnect CON Device and CPU Device.
Restart Extender Module	Restart the extender module.

Field	Description
Locate Extender Module	Set a time span for the LEDs at the extender module to flash.
Restart I/O Board	Restart the I/O board.
Factory Reset I/O Board	Reset the I/O board to factory settings.

5.1.2.8 Information for Operating and for Support Functions

The operation of the Tera Tool software is intuitive and corresponds to the user interface of common operating systems.

The Tera Tool software contains its own support function. The integrated help texts in the working area of the Tera Tool software can be activated or deactivated by ticking the checkbox in the upper right corner. Auxiliary names (tooltips) for the menu items can be activated under **Extras > Options** on the **Style** tab.

5.2 Description of Toolbar

Some functions are only available if a connection to the matrix has been established (online mode). The respective functions are colored if available.

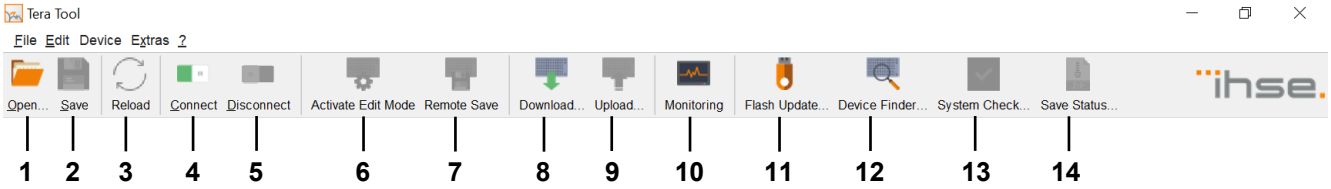


Fig. 13 ***Toolbar***

1 Load a locally saved configuration
2 Save a configuration locally
3 Reload the current configuration
4 Connect to the matrix
5 Disconnect from the matrix
6 Activate/deactivate the edit mode
7 Save the active configuration on the matrix
8 Download and show a predefined configuration saved on the matrix
9 Upload a predefined configuration on the matrix
10 Monitoring
11 Flash update for single devices
12 Overview of devices in the subnet
13 System check
14 Save status locally

5.3 Mouse and Keyboard Control

The following mouse commands are selectable for menu functions:

Mouse command	Function
Left mouse button	Select menu, select function, open drop-down menus, enter input field, activate/deactivate option checkboxes, etc.
Double-click left mouse button	Open function specific selection menus.
Right mouse button	Open context specific selection menus.

The following keyboard commands are available for the navigation and configuration within the menus:

Keyboard command	Function
Left Arrow	Cursor to the left
Right Arrow	Cursor to the right
Up Arrow	Line up
Down Arrow	Line down
Page Up	In input or status menus with more than one page: previous page
Page Down	In input or status menus with more than one page: next page
Tab	In input menus: next field
Left Shift + Tab	In input menus: previous field
Spacebar	• Switch in selection fields between two conditions (check mark or not). • Open already marked fields with editing or selecting possibility.
Enter	• Select menu item • In menus: save data
Ctrl + Tab	• Leave tables • Jump from tables into the next field
Ctrl + Left Shift + Tab	• Leave tables • Jump from tables into the previous field

Several functions within the menus in the menu bar can be executed with the provided keyboard commands (e.g., press Ctrl + s to execute **Save**) that are listed to the right of the respective menu item.

5.4 Reload Options

The information about the current configuration of the matrix, shown in the Tera Tool software, can be reloaded in different ways:

- Press F5 on the used keyboard.
- Click **Reload** in the toolbar.
- Click **Edit >Reload** in the drop-down menu of the menu bar.

5.5 Context Function

The Tera Tool software offers several context functions that support user-friendly and effective operation. The context functions are described in the respective chapters.

Context function	Action	Result
Execute context function	Click with the right mouse button on a field.	A context menu opens and displays functions available for the corresponding filed (if existing).
	Click with the left mouse button on the desired function.	The desired function is executed.

5.6 Filter Function

Lists and tables in the Tera Tool software offer a filter function that supports a fast and smooth search. The filter entry field is located above the header. An active filter is indicated by a green or red filter symbol in the filter entry field.

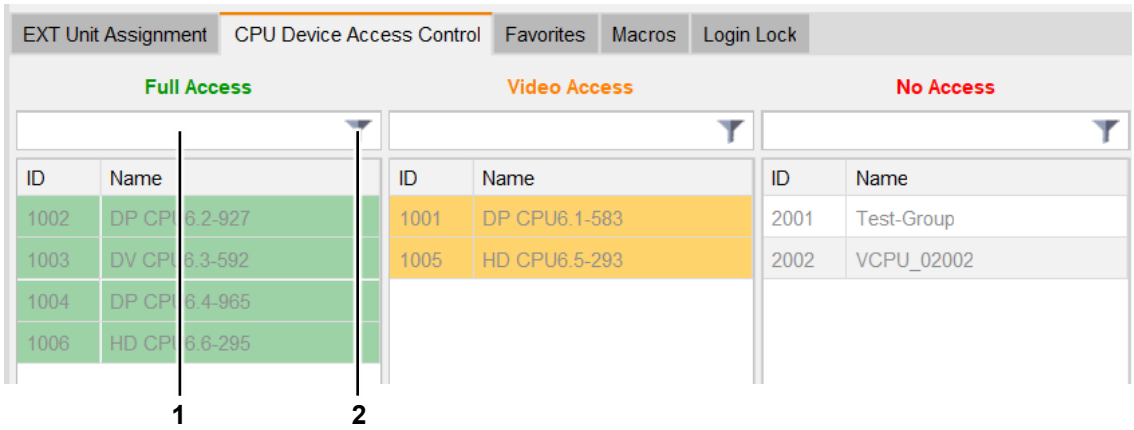


Fig. 14 ***Filter function***

1 Filter entry field
2 Filter symbol (grey: filter is not active
green: filter is active, results were found and are displayed.
red: filter is active, no results were found)

Filter function	Action	Result
Activate the filter	Click with the left mouse button in the filter entry field above the header to search in all columns under the filter entry field. Write the word or part of a word to be filtered. It is possible to search for two words with space in between (the space bar acts as AND link).	• The filter results are shown immediately, and the filter symbol is green. • When the filter symbol is red, no search results were found.
Clear the filter	Delete the text in the filter entry field.	• The list or table shows the complete content. • The filter symbol is displayed in gray.

5.7 Sort Function

Lists and tables in the Tera Tool software offer a sorting function for fast and smooth search. An active filter is indicated by an arrow in the header.

Sort Function via Mouse Click

Sort function	Action	Result
Ascending sort	Click with the left mouse button once on the header of the column to be sorted.	• The column is sorted in ascending order. • The sorting of status is indicated by an arrow pointing upwards.
Descending sort	Click with the left mouse button twice on the header of the column to be sorted.	• The column is sorted in descending order. • The sorting is displayed by an arrow that points downwards.
Cancel sort	Click with the left mouse button once or twice on the head of the sorted column.	The arrow disappears.

5.8 Report Function

The Tera Tool software is equipped with a report function that shows the current switching status and all relevant parts of the matrix configuration in a PDF file.

The report function can be used in both online and offline mode of the Tera Tool software.

1. Select **File > Report...** in the menu bar.

   A selection dialog appears.

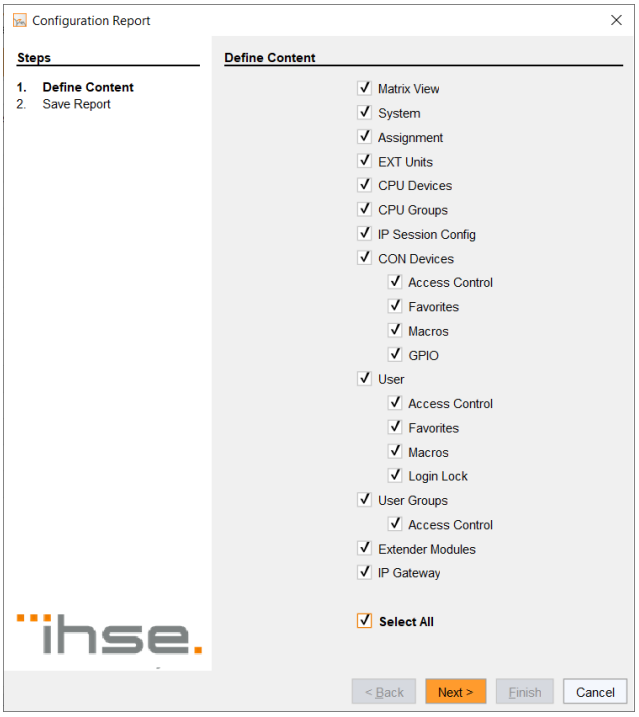


*Fig. 15 Dialog **File - Report - Define Content***

2. Select contents that should be included in the report (**Matrix View**, **EXT Units**, **CPU Devices**, **CON Devices**, **Users**, etc.).
3. Click **Next >** to confirm the selection.

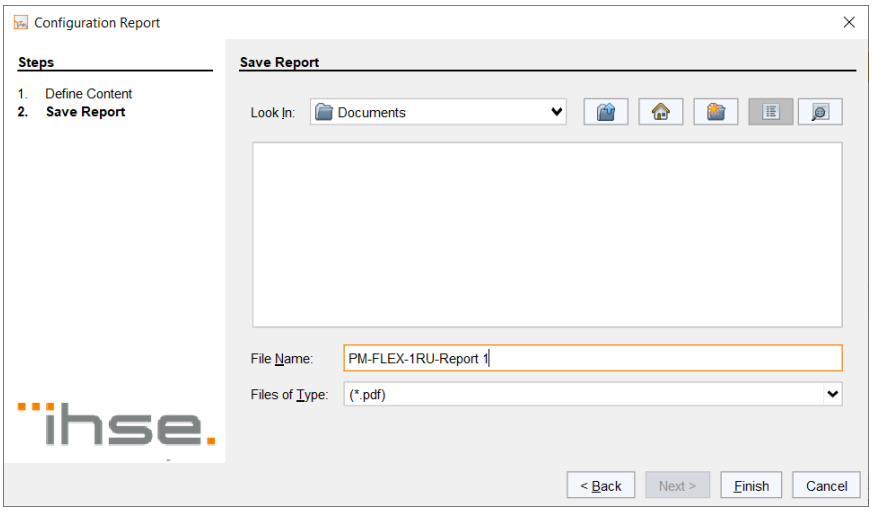


*Fig. 16 Dialog **File - Report - Save Report***

4. Go to the preferred location for storage of the report.
5. Click **Finish** to confirm the report. The report will be created as a PDF file.

6 Configuration of a Matrix via Tera Tool Software

⚠ CAUTION

Possible loss of configuration changes

By clicking **Apply**, changes are applied to the active configuration and saved in the volatile memory of the matrix. In the event of a sudden power failure, these changes are lost. To save changes permanently:

save the configuration changes into the active configuration (**Remote Save**, see section 6.4, page 35), or perform a restart (see section 7.2.1, page 183).

NOTICE

A change in system-relevant parameters (e.g., change in the IP address) is immediately displayed in the Tera Tool software. To initialize system-relevant configuration changes on the matrix, the controller board must be restarted. All connections remain active but switching is not possible during the restart.

After changing the configuration of the system, we recommend that you de-register the primary controller board and to boot the secondary controller board until the boot process is finished.

Configurations can be saved as a file that can be stored independently of the matrix.
We recommend saving a configuration every time the configuration has been changed. Use the **Save as…** function (see section 6.4, page 35) for that.

6.1 Configuring in Online Mode

Configurations and system settings can be edited via Tera Tool software in online mode with an active connection between matrix and software. Hereby, the following steps are necessary:

1. Click **Connect** to connect the Tera Tool software with the matrix.
   After the connection is established, the current configuration of the matrix is shown.
2. Click **Activate Edit Mode** in the toolbar.
   The edit mode is active. A symbol is shown in the status bar.
3. Make any edits in the configuration and system settings (see following chapters).
4. Click **Apply** to confirm the changes.
   The changes are applied immediately to the current configuration running in the volatile memory of the matrix.
5. Click **Remote Save** to save the current settings into the active configuration of the matrix.
6. Click **Deactivate Edit Mode** in the toolbar.
7. Click **Save Status** to save the matrix status (backup file).
8. Optionally: restart the system (depending on the settings made).

It is often sufficient to restart only the controller board instead of the matrix. This has the advantage that all switched connections remain active, only switching is not possible during the restart.

6.2 Creating/Changing Configurations in Offline Mode

Configuration and system settings via Tera Tool software can be created/changed in offline mode without a direct connection to the matrix. Afterwards, the configuration must be uploaded to the matrix.

Creating a New Configuration in Offline Mode

1. Start Tera Tool software. Do not connect to any device.
2. Click **File > New** in the menu line.

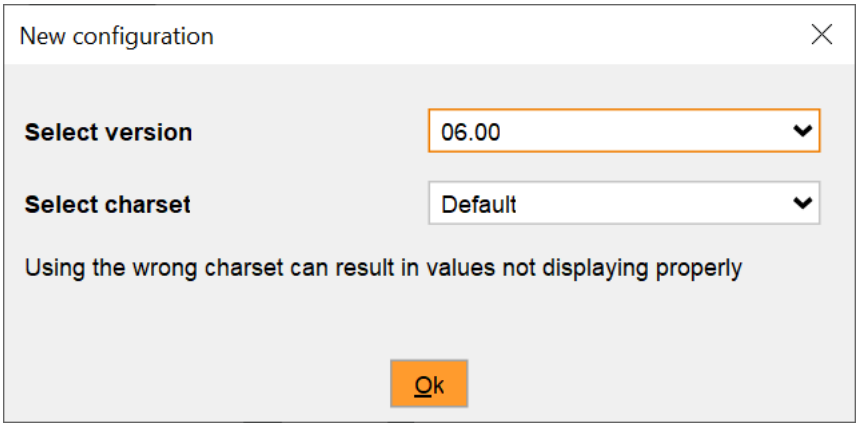


*Fig. 17 Dialog **New configuration***

3. Select the version and the charset if necessary. Click **Ok**. The offline menu appears with all parameters that can be set offline (see next figure).

Changing a locally stored Configuration in Offline Mode

1. Click **File > Open** in the menu line or the symbol Open in the toolbar.
2. Navigate to the storage location and select the desired configuration file (*.`dtc`). Click **Open**.

   The offline menu appears with all parameters that can be set in offline mode.

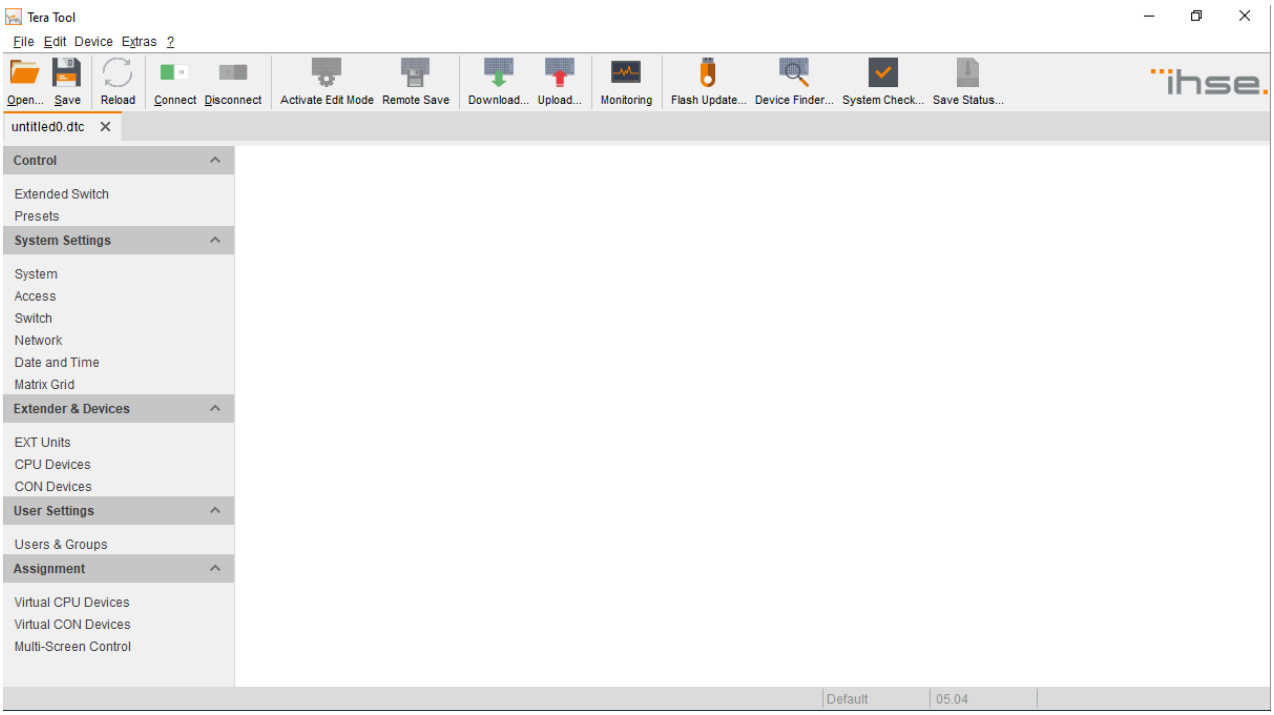


*Fig. 18 Menu **Tera Tool in Offline Mode***

3. Configure the parameters as you see fit.

4. Click **File > Save as** … in the menu line and save the new configuration under a suitable name preferably in the directory that is stated in the **Options** menu for configurations (see section 6.5.1, page 40).

   or

5. Click the symbol **Save** in the toolbar to save the changes to the existing configuration.

Uploading a Configuration to the Matrix

1. Click **Connect** to connect the Tera Tool software with the matrix.

   After the connection is established, the current configuration of the matrix is shown.

2. Click **Upload** in the toolbar. The Upload wizard opens.

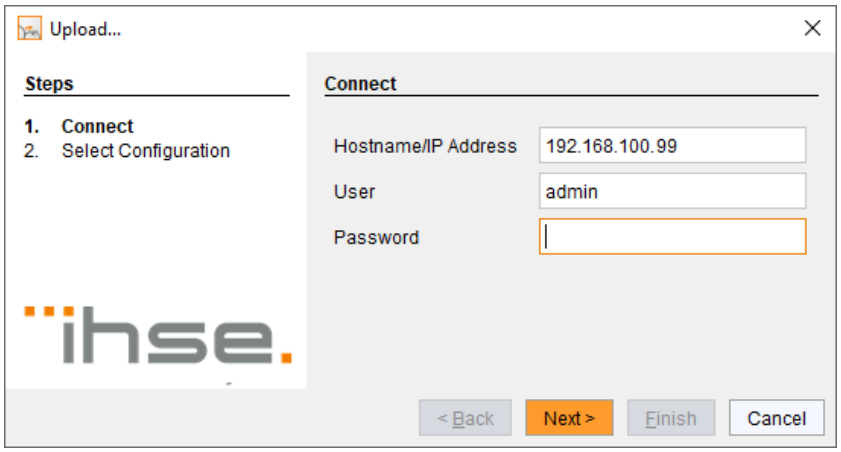


*Fig. 19 Dialog **Upload - Connect***

3. Enter username and password and click the button **Next >**.

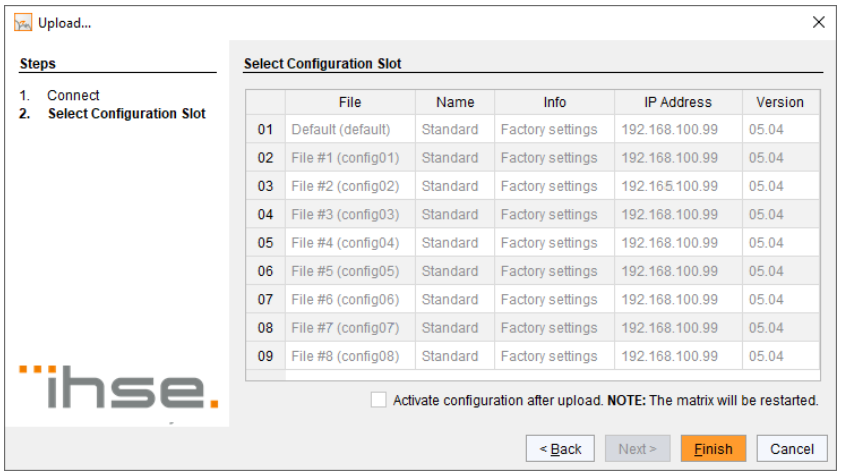


*Fig. 20 Dialog **Upload - Select a slot***

4. Select the slot where you want to store the configuration. The existing configuration in this slot will be overwritten.
5. Tick **Activate configuration after upload** to activate the uploaded configuration immediately. The matrix will be restarted.

☑ We recommend saving the status as a backup file after uploading the matrix configuration settings.

6.3 Saving Options

To avoid loss of configuration changes in the event of a sudden power failure, we strongly recommend that you save the configuration changes into the active configuration via **Remote Save**.

	Save	Save as	Remote save	Save Status
Saving location	Local memory	Local memory	Permanently in the matrix memory	Local memory
File extension	`.dtc`	`.dtc`	Internally	`.zip`
Target	Configuration file for offline changes and as backup. Can be uploaded and activated to all tera matrices.	Configuration file for offline changes and as backup. Can be uploaded and activated to all tera matrices.	Saves online changes to non-volatile memory.	Snapshot of the whole system for technical analysis, documentation, configuration backup and offline changes.
Saved configuration	Current configuration as `dtc` file.	Copy of current configuration as `dtc` file.	Current configuration.	Current configuration as `config.dtc`, and configurations stored in the slots **Default**, or **File#1** to **File#8** as `default.dtc`, or `config01.dtc` to `config08.dtc`.
Type of matrix	---	---	---	X
Current matrix and extender module firmware	---	---	---	X
System settings (System, Access, Switch, Network. Date and Time, Matrix Grid)	X	X	X	X
EXT Units, CPU Devices, CON Devices	X	X	X	X
Assignments of Virtual CPU Devices and Virtual CON Devices	X	X	X	X
Users & Group settings (access rights, favorites, macros)	X	X	X	X
Stored configurations	---	---	---	X
Connected ports	X	X	X	X
Switching status with access rights (Control - Extended Switching)	X	X	X	X
View (Matrix, Port, Grid, Control)	---	---	---	X

--- not available

X available

6.4 Saving and Activating Configurations

NOTICE
By default, the last configuration that has been saved in the permanent matrix memory will be restored after the restart of the matrix.

First starting the matrix, the factory configuration will be copied into the current configuration. There are three ways to save configuration changes:

- Save the current configuration permanently in the matrix memory (**Remote Save**)
- Save configuration on a local memory (**Save** or **Save as**)
- Save the configuration in one of 9 predefined storage slots (**Upload**). These storage slots are all offline and not in use during normal operation.

6.4.1 Saving the Current Configuration to the Matrix

By default, the last configuration that has been saved in this way will be restored after a restart of the matrix.

To save the current configuration permanently in the matrix memory, proceed as follows:

1. Click **Remote Save** in the toolbar.
   A query to save the configuration appears.
2. Click **Yes** to confirm the saving.
   The previously active configuration is overwritten and saved in the permanent memory of the matrix.

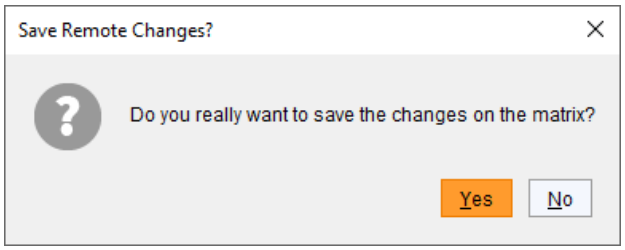


*Fig. 21 Dialog **Save Remote Changes***

6.4.2 Saving A Configuration Externally (Backup)

Configurations can be saved as a file on any computer (not on the matrix). The configuration can then be changed in offline mode (independently of the live operation) or serve as backup (for the content, see section 6.3, page 34).

To save a configuration file externally, proceed as follows:

1. Click **File > Save** or **File > Save As** in the menu bar.
2. Select the directory of the configuration on your storage medium where the configuration is to be saved.
3. Enter a name for the configuration and click **Save**.

Configurations are always saved with the file extension *`.dtc`.

Externally saved configuration files can be opened in the Tera Tool software (see next section), be uploaded to the matrix (see section 6.4.4, page 37) and be used as active configuration (see section 6.4.5, page 38) in the system.

6.4.3 Opening an Externally Saved Configuration

1. Click **Open…** in the toolbar.
2. Go to the location of the configuration file to be opened.
3. Click the configuration file to be opened.
4. Click **Open** to open the configuration file.

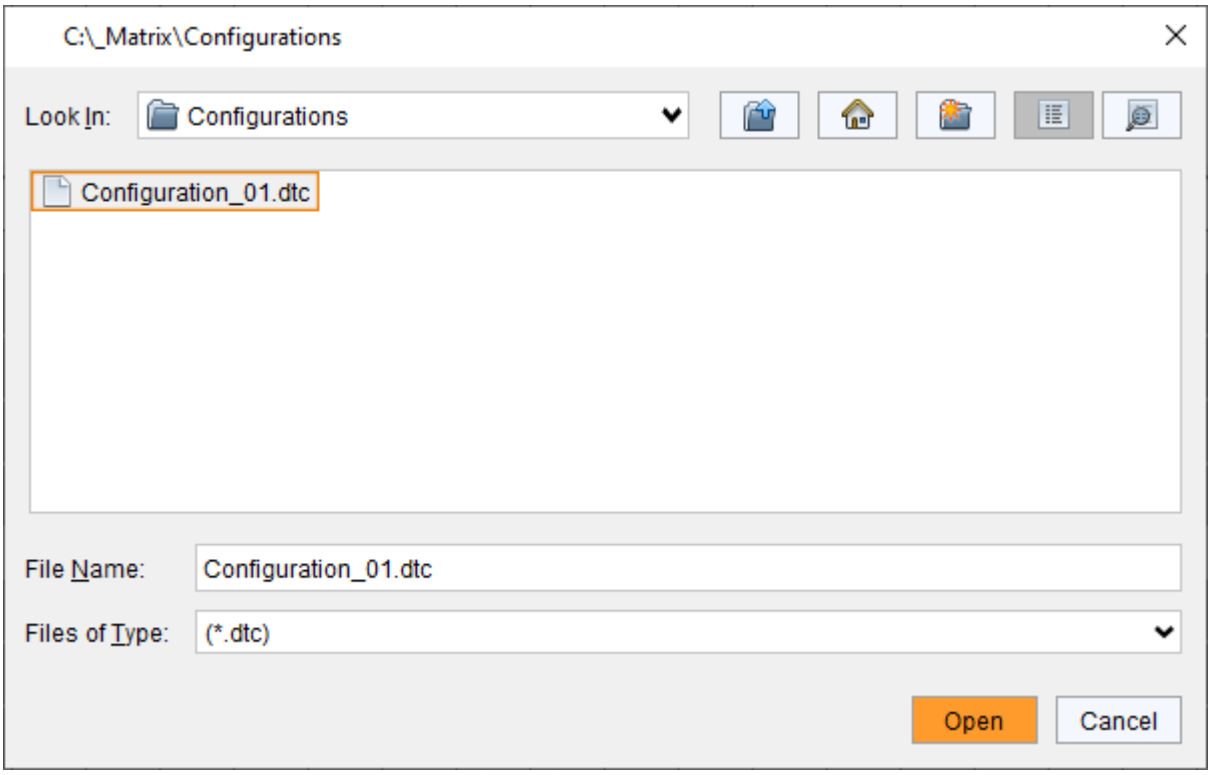


*Fig. 22 Dialog **Open***

☑ The configuration can also be opened via drag & drop. To do this, click on the configuration file, hold down the left mouse button and drag the configuration file into the Tera Tool software.

6.4.4 Uploading an External Configuration to the Matrix

Using the function **Upload**, the configuration can be saved within nine storage locations (slots) in the matrix (**Default**, **File#1** to **File#8**).

The configuration stored in the **Default** slot can be automatically loaded with each start of the matrix (for activation of this function see section 6.5.1, page 40).

1. Click **Upload** in the toolbar.

   An access window appears.

*Fig. 23 Dialog **Upload - Connect***

2. Enter the IP address of the matrix.
3. Enter the username and password of an administrator. Click **Next >**.

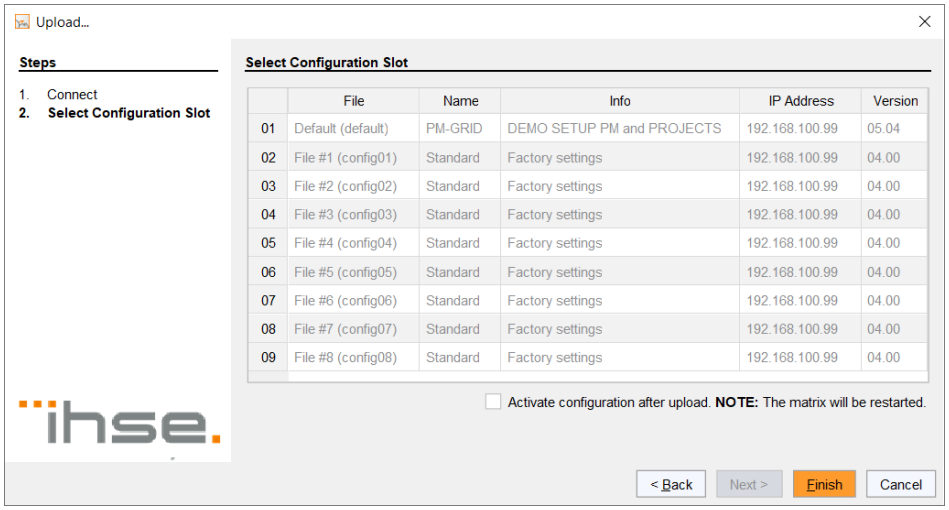


*Fig. 24 Dialog **Upload - Select Configuration Slot***

4. Under **Select Configuration Slot**, select the storage slot for the configuration (**Default** or **config01** to **config08**).
5. Option: to activate the uploaded configuration immediately, tick the **Activate configuration after upload** checkbox.

NOTICE

If you tick the **Activate configuration after upload** checkbox, the matrix will be restarted immediately after the upload process has been completed. The restart of the matrix may take several minutes, and the matrix is not available during the restart.

6. Click **Finish** to save the configuration to the selected storage location. A message appears to inform about successful upload.

6.4.5 Activating a Configuration

Previously saved configurations are loaded in this menu. In **Active Configuration**, the name and detailed information of the currently loaded configuration is displayed. The selection of the configuration to be loaded can be made between nine customizable configurations.

NOTICE

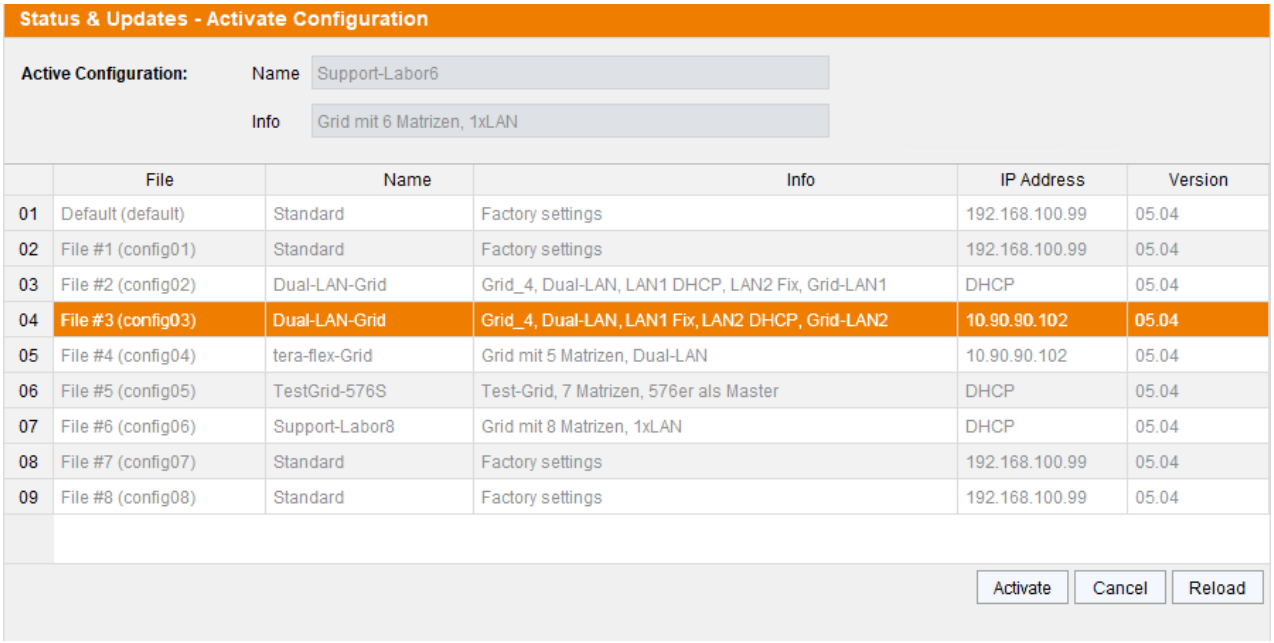
Activating a configuration will disconnect and restart the matrix. The selected configuration is loaded on restart and is shown in the menu as active configuration under **Active Configuration** in the working area. The previously active configuration is overwritten.

The restart of the matrix may take several minutes, and the matrix is not available during the restart.

➡ If the IP address of the matrix is different to the prior configuration, you have to reconnect the Tera Tool software.

To activate an uploaded configuration, proceed as follows:

1. Click **Status & Updates > Activate Configuration** during online-mode in the task area.
2. Select the configuration to be activated.



	File	Name	Info	IP Address	Version
01	Default (default)	Standard	Factory settings	192.168.100.99	05.04
02	File #1 (config01)	Standard	Factory settings	192.168.100.99	05.04
03	File #2 (config02)	Dual-LAN-Grid	Grid_4, Dual-LAN, LAN1 DHCP, LAN2 Fix, Grid-LAN1	DHCP	05.04
04	File #3 (config03)	Dual-LAN-Grid	Grid_4, Dual-LAN, LAN1 Fix, LAN2 DHCP, Grid-LAN2	10.90.90.102	05.04
05	File #4 (config04)	tera-flex-Grid	Grid mit 5 Matrizen, Dual-LAN	10.90.90.102	05.04
06	File #5 (config05)	TestGrid-576S	Test-Grid, 7 Matrizen, 576er als Master	DHCP	05.04
07	File #6 (config06)	Support-Labor8	Grid mit 8 Matrizen, 1xLAN	DHCP	05.04
08	File #7 (config07)	Standard	Factory settings	192.168.100.99	05.04
09	File #8 (config08)	Standard	Factory settings	192.168.100.99	05.04

*Fig. 25 Menu **Status & Updates - Activate Configuration***

3. Click **Activate** to activate the selected configuration.

   A query to restart the matrix appears.

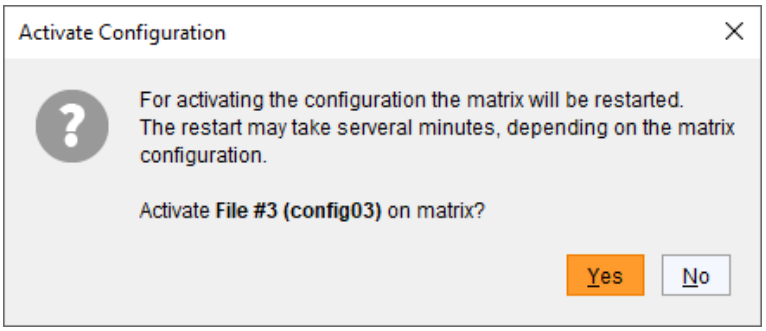


*Fig. 26 Dialog **Status & Updates - Activate Configuration***

4. Click **Yes** to confirm the activation of the selected configuration.

   The matrix is restarted. The selected configuration is loaded upon restarting and is shown in the menu as active configuration under **Active Configuration** in the working area. The previously active configuration is overwritten.

6.4.6 Downloading a Configuration from the Matrix

Configurations saved in the matrix can be downloaded for offline editing in this menu.

To download a configuration from the matrix, proceed as follows:

1. Click **Download** in the toolbar.

   An access window appears.

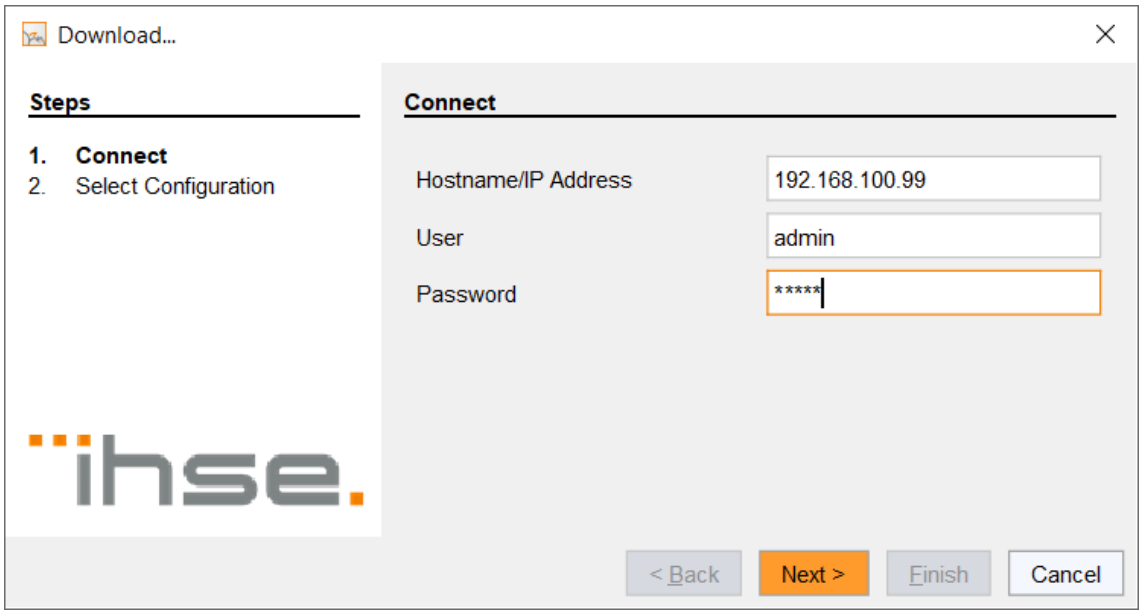


*Fig. 27 Dialog **Download - Connect***

2. Enter the IP address of the matrix.
3. Enter the username and password of an administrator.
4. Click **Next >**.
5. Under **Select Configuration**, select the storage location of the desired configuration (**default** or **config01** to **config08**).
6. Click **Finish** to download the desired configuration to the Tera Tool software.

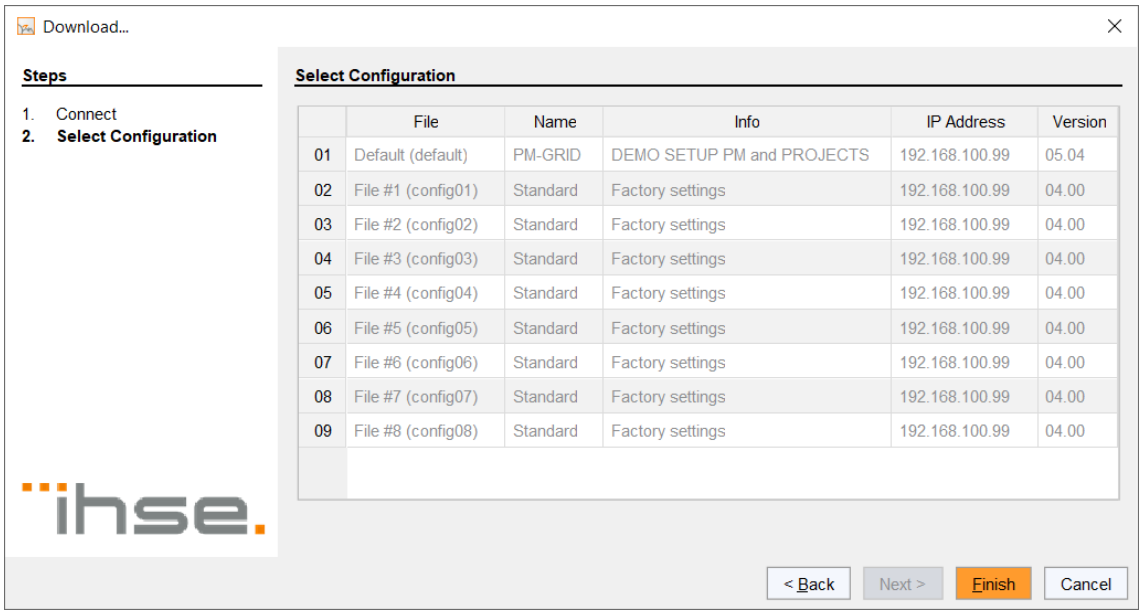


*Fig. 28 Dialog **Download - Select Configuration***

The downloaded configuration is automatically opened and displayed in the Tera Tool software.

6.5 System Settings

The configuration of system settings can only be done by users with administrator rights.

6.5.1 General Settings for the System Configuration

1. Click **System Settings > System** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

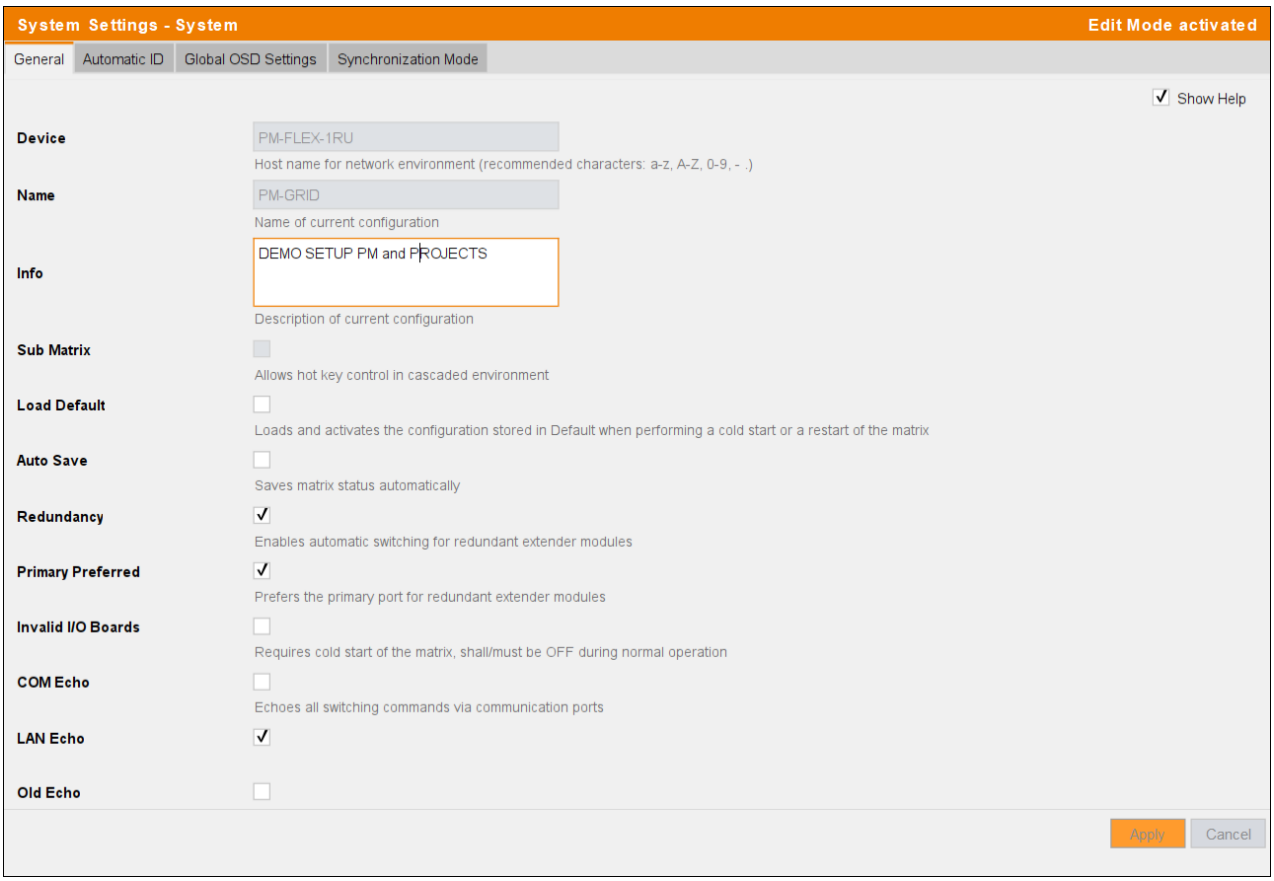


*Fig. 29 Menu **System Settings - System - General***

The following parameters can be configured:

System

Field	Entry	Description
Device	Text	Device name of the matrix (default: SWITCH_01). The device name is used as the host name in the network.
Name	Text	Name of the configuration that is used to save the current settings (default: Standard).
Info	Text	Additional text to describe the configuration if required (default: Factory settings). We recommend entering the configuration date.
Sub Matrix	Activated	Defines the matrix as sub matrix. **Note:** If the matrix is defined as a sub matrix in the OSD, the user will lose control. Control can be recovered by using the keyboard command Hot Key, s, o. The OSD for the matrix that has been defined as sub matrix will be reopened. This works only in a cascaded system of two matrices but not in a grid system.
	Deactivated	Function not active (default).

Field	Entry	Description
Load Default	Activated	Starts the matrix after a restart or a switch-on with the configuration which is stored in the “Default” configuration slot.
	Deactivated	Starts the matrix after a restart or a switch-on with the last saved configuration (default).
Auto Save	Activated	Saves the current configuration of the matrix in the flash memory periodically. **Note**: During the saving process, the matrix will not react to commands. Savings take place every 600 seconds if changes of configuration or switching operations have been executed in the meantime.
	Deactivated	Function not active (default)
Redundancy	Activated	Switches automatically to the second link of a connected redundant CON Unit when losing the primary link of a CPU Unit (default). **Note**: This function will have to be activated: • for a single matrix when using redundant link connections. • for both matrices in a fully redundant setup.
	Deactivated	Function not active
Primary Preferred	Activated	Prefers the primary interconnection port Link 1 for redundant CON/CPU Units (default). We recommend that you activate this function to ensure the connection is switched back to Link 1 if, e.g., an interconnection cable at interconnection port 1 was temporarily disconnected.
	Deactivated	Function not active
Invalid I/O Boards	Activated	Keeps I/O boards with incorrect or invalid firmware online in the matrix. **Note**: To keep an I/O board with wrong or damaged firmware online in the matrix, the maintenance mode of the matrix will be activated.
	Deactivated	Shuts down I/O boards with incorrect or invalid firmware automatically (default).
COM Echo	Activated	Sends all switching commands performed in the matrix as an echo via serial interface. **Note:** This function should be enabled when using a media controller via serial interface.
	Deactivated	Function not active (default)
LAN Echo	Activated	Sends all switching commands performed in the matrix as an echo via LAN connection. • **Note:** This function should be enabled when using a media controller via LAN connection or when stacking two or more matrices.
	Deactivated	Function not active (default)
Old Echo	Activated	Translates current switching command (implemented since V02.09) internally into the old, already known switching commands and sends them as echo.
	Deactivated	Function not active (default)

3. Change the desired settings.
4. Click **Apply** to confirm your entries.

6.5.2 Enabling the Automatic Creation of Real CPU and CON Devices

On all matrices, switching extender modules follows the same principle:

- A CON/CPU Unit (hardware) is represented by an EXT Unit (logical object) in the matrix. The EXT Unit is automatically created when the extender module is connected to the matrix for the first time.
- This EXT Unit needs to be assigned to a CON or CPU Device/Real CON or CPU Device (logical object).
- The actual switching takes place at the level of the CPU and CON Devices.
- To facilitate switching of groups of CON or CPU Devices (logical objects), virtual CON or CPU Devices (logical objects) can be created.

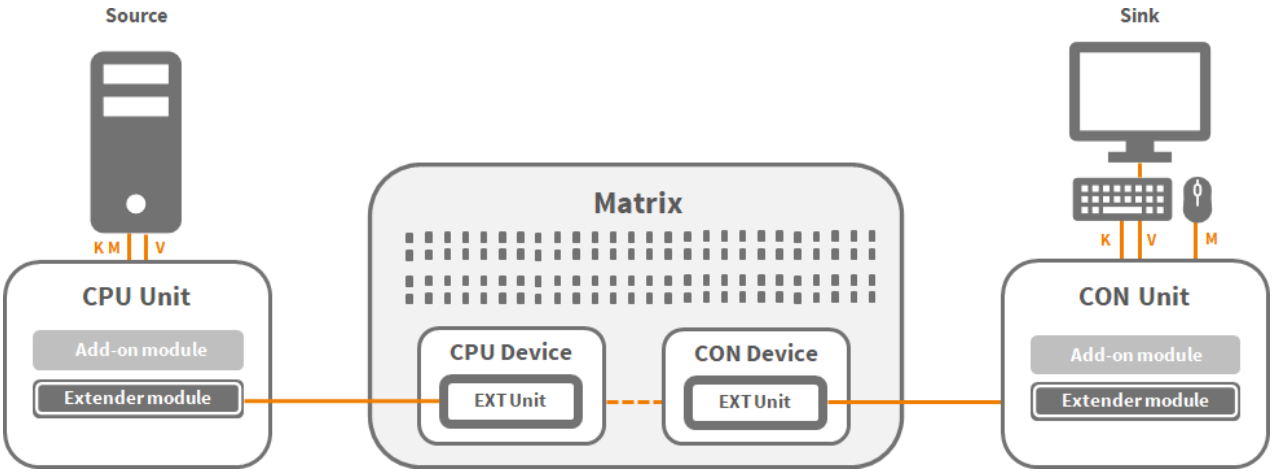


Fig. 30 Matrix system with connected hardware and logical objects

The creation of Real CON or CPU Devices and the assignment of EXT Units can be made manually or automatically when connecting a new extender module to the matrix.

1. Click **System Settings > System** in the task area.
2. Click the **Automatic ID** tab in the working area.

   The settings for automatic creation of CPU and CON Devices and the initial values for the ID numbers of Real or Virtual CON or CPU Devices are set in this menu.

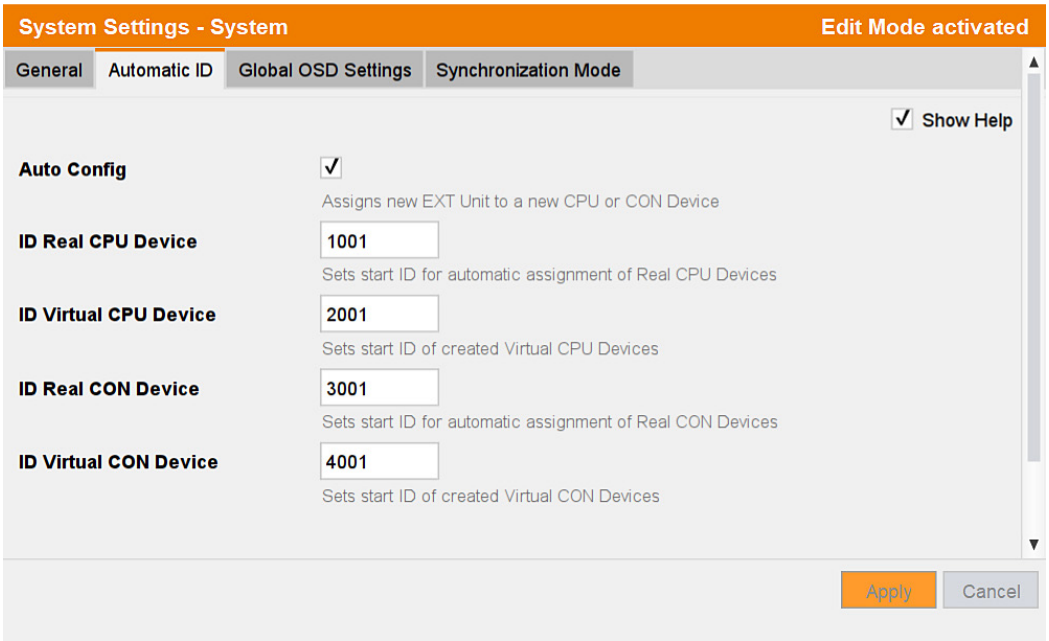


*Fig. 31 Menu **System Settings - System - Automatic ID***

The following parameters can be configured:

Field	Entry	Description
Auto Config	Activated	Enables the automatic creation of a new Real CPU or CON Device if new extender modules are connected (default). The new Real CON or CPU Device is assigned to the automatically created EXT Unit of the extender module.
	Deactivated	Function not active
ID Real CPU Device	Numerical	Sets start ID for automatic assignment of Real CPU Devices (default: 1001).
ID Virtual CPU Device	Numerical	Sets start ID for created Virtual CPU Devices (default: 2001).
ID Real CON Device	Numerical	Sets start ID for automatic assignment of Real CON Devices (default: 3001).
ID Virtual CON Device	Numerical	Sets start ID for created Virtual CON Devices (default: 4001).

3. Change the desired settings.
4. Click **Apply** to confirm your entries.

☑ The function **Auto Config** is enabled by default. This is very useful when configuring a matrix or matrix grid for the first time. After completing the configuration and checking that the whole system works as intended, we recommend disabling this function. This makes it easier to replace an extender module as described in section 9.2, page 203.

6.5.3 Setting the Matrix OSD Access

1. Click **System Settings > System** in the task area.
2. Click the **Global OSD Settings** tab in the working area.

The Hot Key for accessing command mode and the Fast Key to open the matrix OSD are configured in this menu.

Hot Key or Fast Key set in the CON EXT Units have priority over the global settings made here.

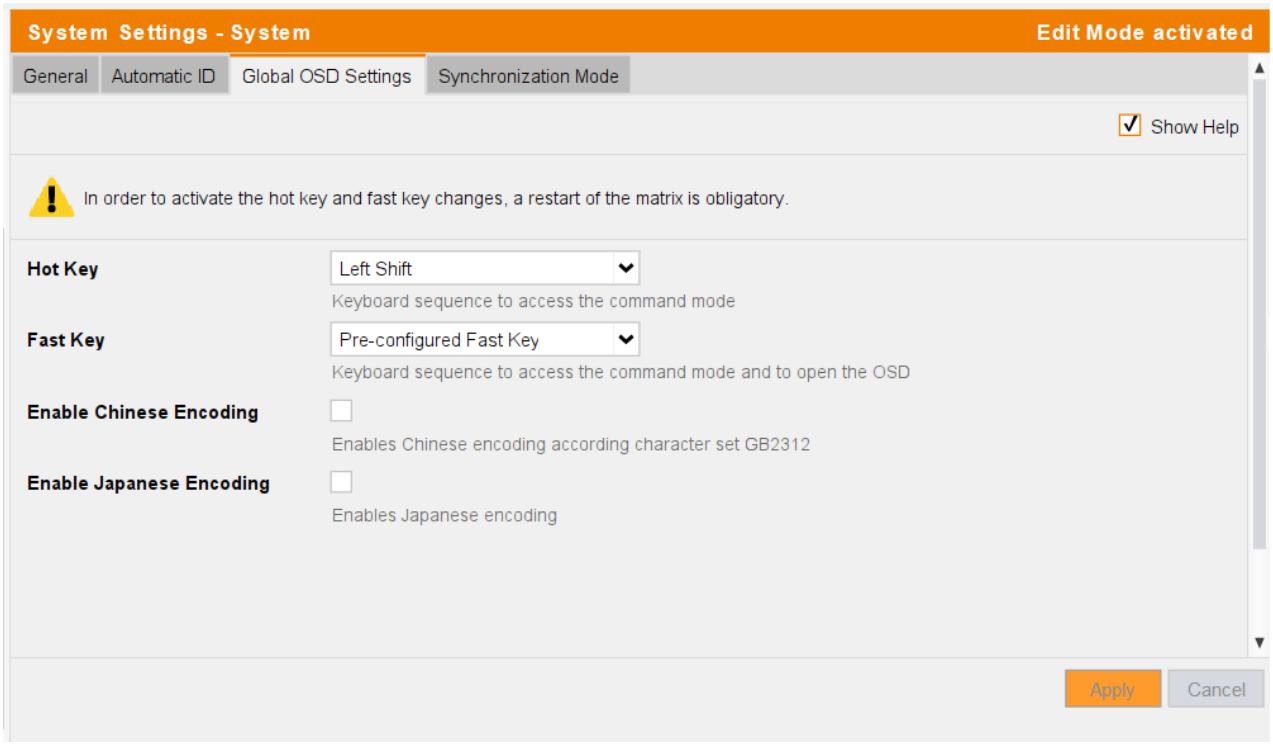


*Fig. 32 Menu **System Settings - System - Global OSD Settings***

The following parameters can be configured:

Field	Entry	Description
Hot Key	Keyboard command	Starts the command mode via keyboard sequence.
Fast Key	Keyboard command	Opens the OSD via direct access (default: 00). How often the shortcut key has to be pressed depends on the specified key: 1x for function keys or print key, 2x for all other keys.
Enable Chinese Encoding	Activated	Enables Chinese encoding for keyboard keys.
	Deactivated	Function not active (Default)
Enable Japanese Encoding	Activated	Enables Japanese encoding for keyboard keys.
	Deactivated	Function not active (Default)

3. Change the desired settings.
4. Click **Apply** to confirm the changes.

More information on Hot Key and Fast Key setting can be found in the OSD descriptions in the matrix and extender manuals.

6.5.4 Setting the Synchronization Mode

Synchronization is important when using two redundant matrices (master and sub) without a matrix grid.

1. Click **System Settings > System** in the task area.
2. Click the **Synchronization Mode** tab in the working area.
3. Click **Activate Edit Mode** in the toolbar.

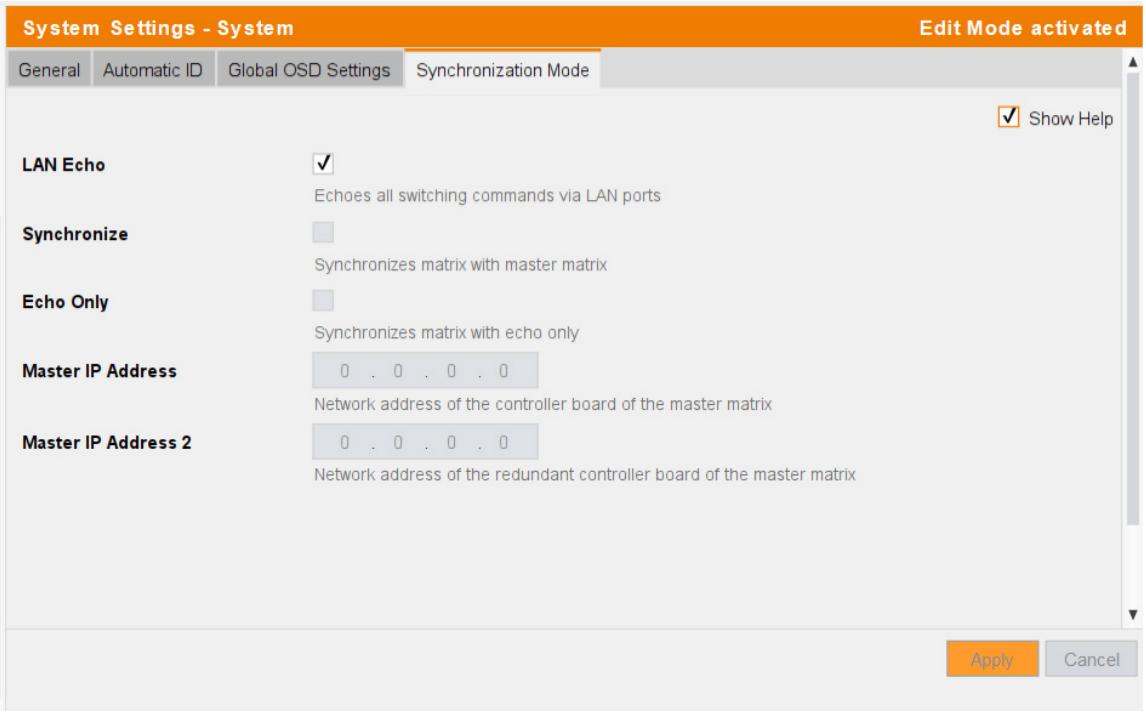


*Fig. 33 Menu **System Settings - System - Synchronization Mode***

The following parameters can be configured:

Field	Entry	Description
LAN Echo	Activated	Sends all switching commands performed in the matrix as an echo via LAN connection. **Note:** This function should be enabled when using a media controller via LAN connection or when stacking two or more matrices.
	Deactivated	Function not active (default).
Synchronize	Activated	Synchronizes the sub matrix to the switch status of the master matrix.
	Deactivated	Function not active (default).
Echo Only	Activated	Synchronizes the matrix according to the echo of a second matrix. **Note:** This is a bidirectional synchronization where both matrices have to be configured as **Synchronize** with the **Master IP** of the respective other matrix.
	Deactivated	Function not active (default).
Master IP Address	Numerical	Sets the first network address of the master matrix (default: 000.000.000.000).
Master IP Address 2	Numerical	Sets the second network address of the master matrix (default: 000.000.000.000).

4. Change the desired settings.
5. Click **Apply** to confirm your entries.
6. Click **Deactivate Edit Mode** in the toolbar.

6.5.5 Setting the Access Rights Configuration

There are two different access control lists, one for users and one for CON Devices.

- User ACL: For each user, an individual list of CPU Devices that they can access (either full or video only) can be created in the User Menu (see section 6.6.2, page 69).
- CON ACL: For each CON Device, an individual list of CPU Devices that can be accessed from the assigned CON unit (either full or video only) can be created in the CON Device menu (see 6.9.8, page 128).

Both can be combined with the logical functions AND and OR.

- OR: A user at a CON unit has access to a CPU unit when either User ACL or CON ACL permit the connection.
- AND: This is the most restrictive setting, only when User ACL and CON ACL both permit the connection, the user can at this CON unit access a CPU unit.

The access configuration is set in this menu.

1. Select **System Settings > Access** in the task area.

The following window opens:

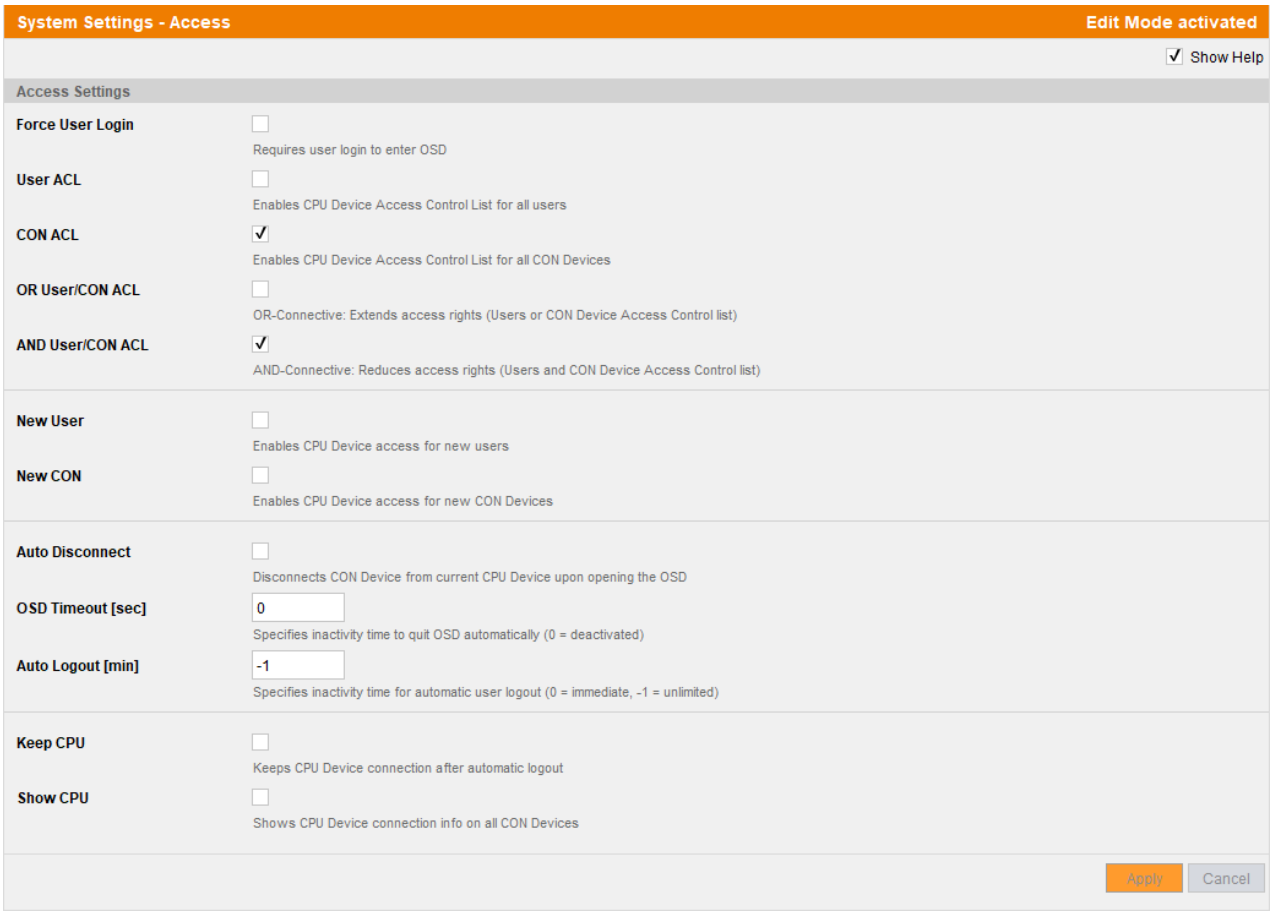


*Fig. 34 Menu **System Settings - Access***

The following parameters can be configured:

Field	Entry	Description
Force User Login	Activated	Forces the user to login with a username and a password once to enter OSD. Thereafter the user remains logged in until they explicitly log out or an auto logout is affected. **Note:** If **Force User Login** is active, user access rights are not automatically active. User ACL and CON ACL can be configured independently. Force User Login only prevents the OSD and switching functionality from unauthorized access.

	Deactivated	Function not active (default).
User ACL	Activated	Restricts CPU Device access according to the permissions in the ACL (Access Control List). • User login is required. • Switching by keyboard Hot Keys requires a prior login.
	Deactivated	Function not active (default).
CON ACL	Activated	Restricts CPU Device access according to the permissions in the respective CON Device ACL (Access Control List). No login required.
	Deactivated	Function not active (default).
OR User/CON ACL	Activated	The user is granted access if they either have access rights to this CON Unit or personal access rights as a user after logging in (extended access).
	Deactivated	Function not active (default).
AND User/CON ACL	Activated	The user is granted access if he has both access rights to this CON Unit and personal access rights as a user after logging in (reduced access).
	Deactivated	Function not active (default).
New User	Activated	Newly created users automatically receive access to all CPU Devices.
	Deactivated	Function not active (default).
New CON	Activated	Newly created CON Devices automatically receive access to all CPU Devices.
	Deactivated	Function not active (default).
Auto Disconnect	Activated	Disconnects the CON Device automatically from the current CPU Device upon opening the OSD.
	Deactivated	Function not active (default).
OSD Timeout [sec]	0 to 999 seconds	Period of inactivity after which OSD will be closed automatically. • Select 0 seconds for no timeout (default: 0 seconds).
Auto Logout [min]	0 to 999 minutes	Period of inactivity of a logged-in user at a CON Device after which they will be automatically logged out. In addition to the logout process, a complete disconnection from the connected CPU Device occurs under **Full Access** and **Private Mode**. • Select **0** minutes for an automatic user logout when leaving OSD. • Using the setting **-1** allows the user to be logged in permanently, until a manual logout is executed. The timer is not active as long as the OSD is open (default: 0 minutes).
Keep CPU	Activated	Keeps the connection to the CPU Device active in the background after Auto Logout. After a new login there is no need to re-connect to the CPU Device.
	Deactivated	Function not active (default).
Show CPU	Activated	Shows the name of the currently connected CPU Device permanently in the upper right-hand corner.
	Deactivated	Function not active (default).

2. Click **Activate Edit Mode** in the toolbar.
3. Change the desired settings.
4. Click **Apply** to confirm your entries.
5. Click **Deactivate Edit Mode** in the toolbar.

6.5.6 Setting Shared Operation of Sources

This menu enables shared operation of a CPU Unit by two or more CON Units. A CPU Unit can be controlled by only one CON Unit at a time but can be taken over successively by other CON Units. Control of a CPU Unit by a CON Unit is relinquished after the expiration of an associated inactivity timer with the controlling CON Device. The mouse or keyboard may also be used to take over USB-HID control.

To allow a smooth and accurate function of the shared operation, you should use identical mice and keyboards. They should be connected to the same USB-HID ports of each CON Unit. The alternative is using the USB-HID Ghosting (see matrix user manual).
When taking over control within 10 s, any assigned USB 2.0 EXT Unit if available, will not be switched due to security and stability aspects.
The shared operation will be deactivated between CON Devices with a different priority as well as the Release Time.

To configure shared operation, proceed as follows (only relevant for a single matrix but not for a matrix grid):

1. Click **System Settings > Switch** in the task area.

The switching parameters are set in this menu.

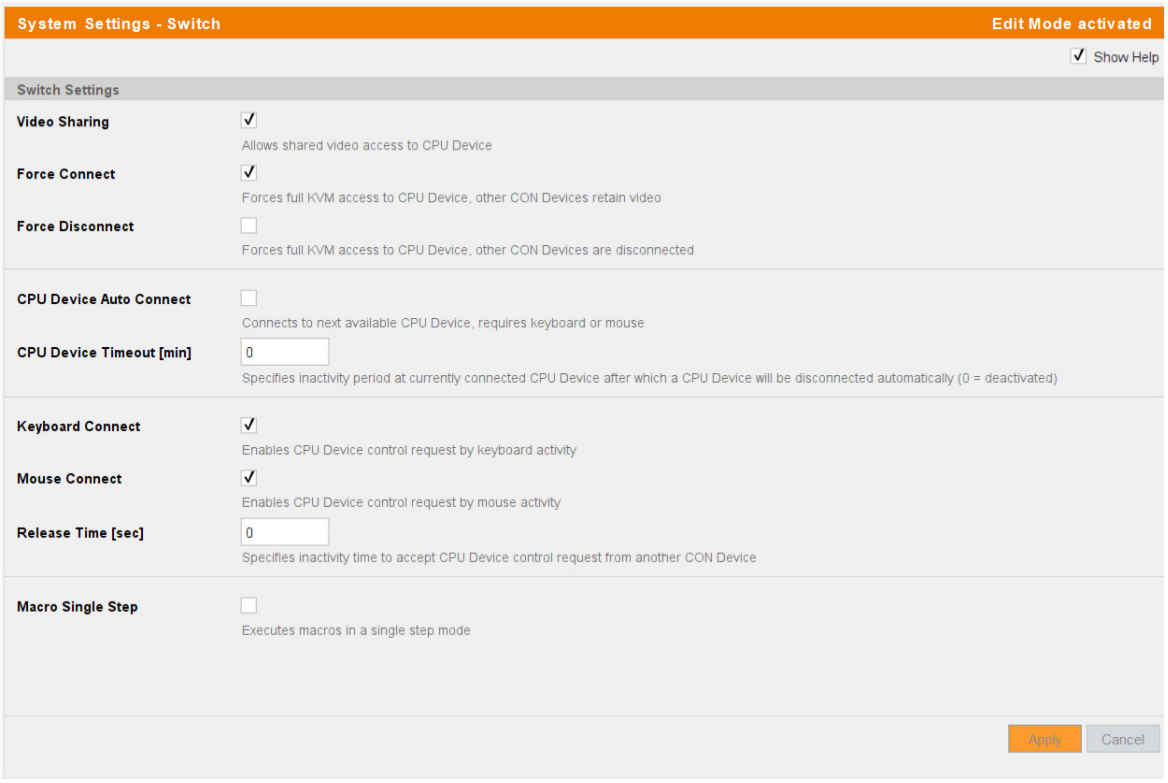


*Fig. 35 Menu **System Settings - Switch***

The following parameters can be configured:

Field	Entry/Status	Description
Video Sharing	Activated	Enables the user to switch to any CPU Device as an observer, including ones that are already assigned to another user (observer without keyboard/mouse access) (default). **Note:** The switching has to be performed by pressing Space, not Enter. The operator only will be informed if further users connect as an observer to the CPU Device that is connected to his CON Device, if the option **Update Connection Info** is activated for his CON EXT Unit (see section 6.7.7.2, page 104).
	Deactivated	Function not active (Default)

Field	Entry/Status	Description
Force Connect	Activated	Enables the user to connect to every single CPU Device as an operator, including those that are related to another user (default). **Note:** The previous user is set to Video Only status. To share K/M control, **Force Connect** has to be activated.
	Deactivated	Function not active
Force Disconnect	Activated	Extends **Force Connect**: If the user connects as an operator to a CPU Device already related to another user, the previous user will be disconnected (default). **Note:** To share K/M control **Force Disconnect** has to be deactivated and **Video Sharing** has to be activated.
	Deactivated	Function not active
CPU Device Auto Connect	Activated	Enables automatically connecting to the next available CPU Device from the “Favorite list” by entering any key or clicking a mouse button when a CON Device is not connected to a CPU Device.
	Deactivated	Function not active (default)
CPU Device Timeout [min]	0 to 999 minutes	Period of keyboard/mouse inactivity after which a CON Device will be automatically disconnected from its current CPU Device (default: 0=not activated).
Keyboard Connect	Activated	Enables request of K/M control by keyboard event (first key stroke will be lost).
	Deactivated	Function not active (Default)
Mouse Connect	Activated	Enables request of K/M control by mouse event.
	Deactivated	Function not active (Default)
Release Time [sec]	0 to 999 seconds	Period of inactivity of a connected CON Device after which K/M control can be requested by other CON Devices connected to the CPU Device. **Note:** Set **0** for an immediate transfer in real time. Only one CON Device can have keyboard and mouse control at a time. The other CON Devices that are connected to the same CPU Device have a Video Only status (default: 2 seconds).
Macro Single Step	Activated	Executes macro commands sequentially.
	Deactivated	Function not active (default)

2. Click **Activate Edit Mode** in the toolbar.
3. Tick the **Video Sharing** checkbox.
4. Tick the **Force Connect** checkbox.
5. Tick the **Keyboard Connect** checkbox if taking over control by a keyboard event is to be permitted.
6. Tick the **Mouse Connect** checkbox if taking over control by a mouse movement should be possible.
7. Define a **Release Time** of inactivity (0 to 999 seconds) after which control can be taken over.
8. Click **Apply** to confirm the changes.
9. Click **Deactivate Edit Mode** in the toolbar.

Keyboard Connect and/or **Mouse Connect** are only effective if **Force Connect** and/or **CPU Auto Connect** are activated.
If the **Keyboard Connect** and/or **Mouse Connect** options are enabled, the **Keyboard Connect** and/or **Mouse Connect** will not take effect until the time interval entered in the **Release Time** has elapsed.

6.5.7 Setting up the Network Configuration

NOTICE

Any change in system-relevant parameters (e.g., change of the IP address) is immediately displayed in the Tera Tool software. To initialize system-relevant configuration changes, the matrix must be restarted. Restarting the matrix may take several minutes, and the matrix is not available during the restart.

NOTICE

Consult your system administrator before changing the network parameters. Otherwise, unexpected results and failures can occur in combination with the network.

1. Click **System Settings > Network** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

The parameters for the network configuration are set in this menu.

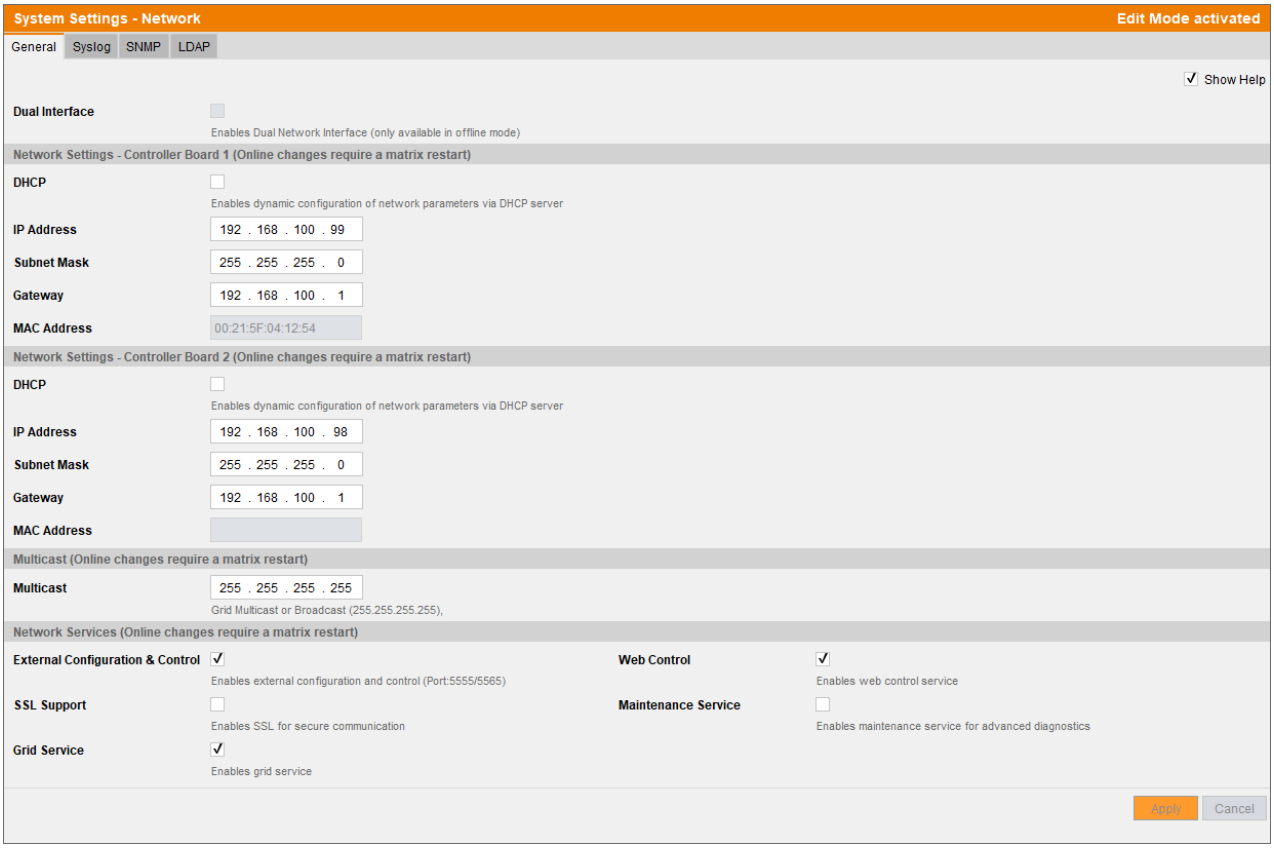


*Fig. 36 Menu **System Settings - Network - General***

The following parameters can be configured:

Field	Status	Description
Dual Interface	Activated	Disables the redundant network interface and enables two different network interfaces to be used, e.g., for 1x grid and 1x API or SNMP communication. 2x API is possible, 2x grid is not possible. **Note:** This option can be changed only in offline mode of a downloaded configuration.
	Deactivated	Redundant network connection is enabled (default).

With enabled **Dual Interface**, an additional tab (Network Interface 2) opens for the second network port settings.

Network Settings - Controller Board 1 and 2

Field	Entry/Status	Description
DHCP	Activated	The network settings are automatically supplied by a DHCP server. **Note:** If DHCP is activated and there is no physical network connection available, the boot times might increase.
	Deactivated	Function not active (default).
IP Address	Numerical	IP address if DHCP is not active (default: 192.168.100.99).
Subnet Mask	Numerical	Subnet mask in the form "255.255.255.0" if DHCP is not active (default: 255.255.255.0).
Gateway	Numerical	Gateway address in the form "192.168.1.1" if DHCP is not active.
MAC Address	Numerical	Unchangeable, is retrieved automatically. Must be stated.

Multicast

Field	Entry	Description
Multicast	Numerical	Multicast address if there is a a Multicast group (default: Broadcast 255.255.255.255).

Network Services

Field	Status	Description
External Configuration & Control	Activated	Enables the LAN interface at the matrix for access via Tera Tool software or third-party media controller (API control) (default, API service port 5555/5565).
	Deactivated	Function not active.
SSL Support	Activated	Enables SSL encryption for API, Tera Tool software and matrix grid communication.
	Deactivated	Function not active (default).
Grid Service	Activated	Enables communication between matrices in a matrix grid (grid service port 5557/5567).
	Deactivated	Function not active (default).
Web Control	Activated	Enables the Tera Web Control app.
	Deactivated	Function not active (default).
Maintenance Service	Activated	Enables maintenance service for advanced diagnostics.
	Deactivated	Function not active (default).

3. Change the desired settings.
4. Click **Apply** to confirm your entries.
5. Click **Deactivate Edit Mode** in the toolbar.

6.5.8 Setting up the Dual Network Configuration

6.5.8.1 Hardware Requirements

- Draco tera enterprise with 480-CTRL2
- Draco tera flex

6.5.8.2 Firmware Requirements

- MATLCPU version 04.01.211217 or later
- MATLOS version 01.10.211220 or later

6.5.8.3 Configuration Requirements

The following points must be considered for the dual LAN configuration.

Device Finder

The Device Finder always takes the IP address of LAN 1 if clicking **Connect** or pressing the key Enter. There is no implementation which compares the IP address of the computer with the two IP addresses of the matrix and the Device Finder automatically selects the reachable one.

IP Address and Network Configuration

The IP addresses of the two LAN ports must not be within the same subnet. Both LAN ports must be connected to two different networks. The two networks must either be physically split without any connection to each other, or the two networks must be part of two different VLAN. This is because the two LAN ports are internally (at the matrix controller board) connected by a network switch.

Configuration of Services

Grid Service: The grid service may only be activated on one LAN port and must not be activated on both LAN ports at the same time.

API Service: The API service is necessary for the Tera Tool software and for API access by a media controller. This service can be deactivated for both LAN ports, activated for one LAN port or activated for both LAN ports simultaneously.

Syslog and SNMP

The two Syslog and two SNMP server addresses are not fix assigned to any of the LAN ports. The matrix decides automatically due to the sub net which port is used. For the two Syslog servers as well as for the two SNMP servers you have the following options:

- Both servers are part of the same subnet as LAN port 1.
- Both servers are part of the same subnet as LAN port 2.
- Server 1 is part of the same subnet as LAN port 1 and Server 2 is part of the same subnet as LAN port 2.
- Server 1 is part of the same subnet as LAN port 2 and Server 2 is part of the same subnet as LAN port 1.

6.5.8.4 Dual Network Dependencies

The availability of Tera Tool software functions depends on connected LAN port and enabled grid service when operating a matrix grid.

	Grid service at LAN 1				Grid service at LAN 2			
	Connected to master matrix		Connected to sub matrix		Connected to master matrix		Connected to sub matrix	
Tera Tool software functions	LAN 1	LAN 2	LAN 1	LAN 2	LAN 1	LAN 2	LAN 1	LAN 2
Device Finder	X	---	X	---	---	X	---	X
View Matrix	X	X	X	X	X	X	X	X
View Port	X	X	X	O	X	X	-	O
View Grid	X	X	X	-	X	X	-	-
Extended Switch	X	X	X	X	X	X	X	X
Status Matrix Firmware	X	X	X	O	X	X	O	O
Status Extender Firmware	X	X	X	O	X	X	O	O
Extender Firmware on IO-Board	X	X	X	O	X	X	O	O
Matrix Grid	X	X	O	O	X	X	---	---
Update - Matrix Firmware	X	X	X	X	X	X	X	X
Update - Extender Firmware	X	X	X	X	X	X	X	X
Change Configuration	X	X	X	X	X	X	X	X
Save Configuration	X	X	X	X	X	X	X	X
Direct Connect to other Matrices (View Port, View Grid, Matrix Grid)	X	X	X	X	X	X	X	X

X fully supported
O supported with limitations (e.g., some information missing)
--- not supported (e.g., error, wrong information)

6.5.9 Setting the Syslog Function

NOTICE

For an activation of the Syslog function or changes of the IP address, a restart of the matrix or the controller board is necessary. Restarting the matrix or the controller board may take several minutes, and the matrix is not available during the restart.

1. Click **System Settings > Network** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **Syslog** tab in the working area.

The parameters for the Syslog function are set in this menu:

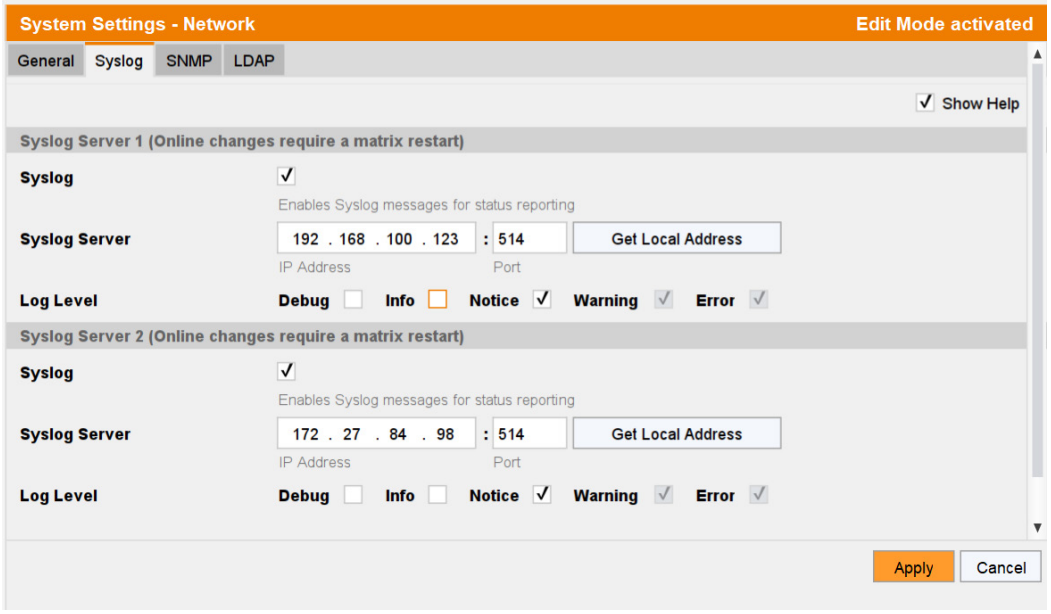


*Fig. 37 Menu **System Settings - Network - Syslog***

The following parameters can be configured:

Field	Entry/Status	Description
Syslog	Activated	Syslog server for status request is active.
	Deactivated	Function not active (default).
Syslog Server	Numerical	IP address of the Syslog servers in the form “192.168.1.1”.
Port	Numerical	Enter the Syslog port (default: 514).
Log Level	Debug	Enables debug messages in Syslog (default: N). **Note:** The debug messages are exclusively for matrix diagnostics of the syslog server. They should only be activated after consultation with the manufacturer. Otherwise, an increased traffic of data might limit the performance of the controller board.
	Info	Enables information messages in Syslog (default: N).
	Notice	Enables notification messages in Syslog (default: Y).
	Warning	Warning messages in Syslog (default: Y), always active
	Error	Error messages in Syslog (default: Y), always active

4. Change the desired settings.
5. Click **Apply** to confirm the settings.
6. Click **Deactivate Edit Mode** in the toolbar.
7. Restart the matrix or the controller board.

6.5.9.1 Setting the Syslog Options

This is only relevant when you wish to use Tera Tool software as syslog server. To set or activate the presetting, proceed as follows:

1. Click **Extras > Options** in the menu bar and open the **Syslog** tab.

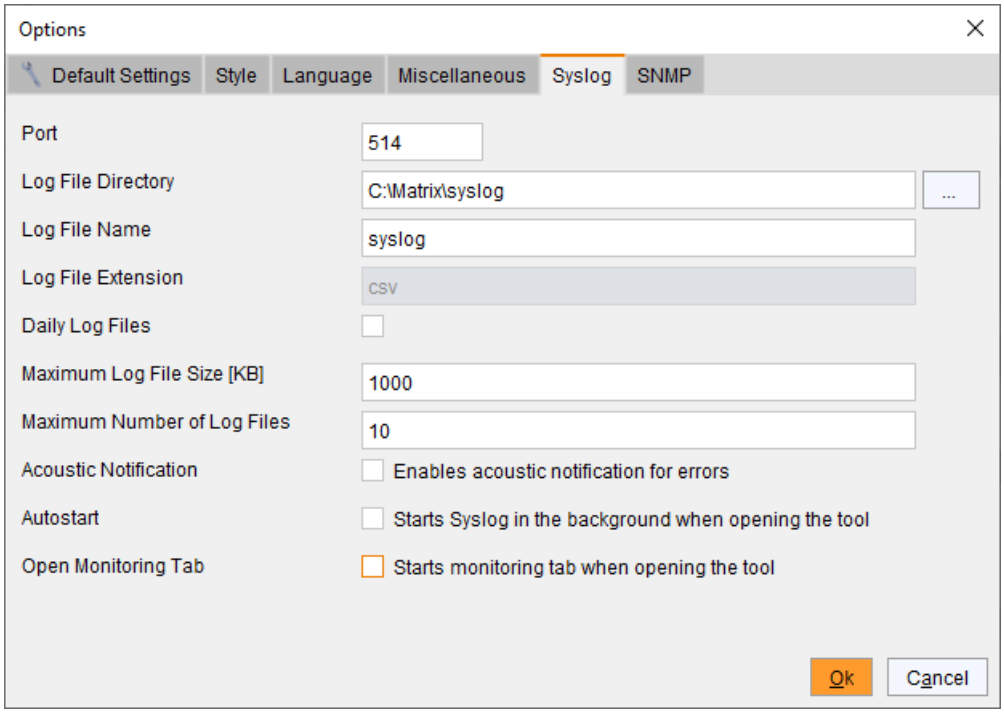


*Fig. 38 Menu **Extras - Options - Syslog***

The following options are available:

Option	Description
Log File Directory	Default directory to store the log files.
Log File Name	Default name of the log file.
Log File Extension	Default extension for the log file.
Daily Log Files	Log files are stored every 24 hours (daily).
Maximum Log File Size [KB]	Allowed maximum size of log file. When reaching the maximum log file size, a new log file will be created.
Maximum Number of Log Files	Allowed maximum number of log files. When the maximum number of log files is exceeded, the oldest logfile will be overwritten with the new information (log rotate).
Acoustic Notification	Enables acoustic notification for errors.
Autostart	Starts the Syslog logging in the background when starting the Tera Tool software.
Open Monitoring Tab	Opens the monitoring tab when starting the Tera Tool software.

2. Enter the appropriate data and tick the checkboxes for desired options.
3. Click **Ok** to confirm the settings.
4. Close the Tera Tool software and restart it.

6.5.9.2 Activating I/O Board Diagnosis

For dedicated trouble shooting, Syslog can be enabled for selected I/O boards in this menu.

1. Click **Status & Updates > Miscellaneous** in the task area.

   The **I/O Board Diagnosis** tab opens in the working area.

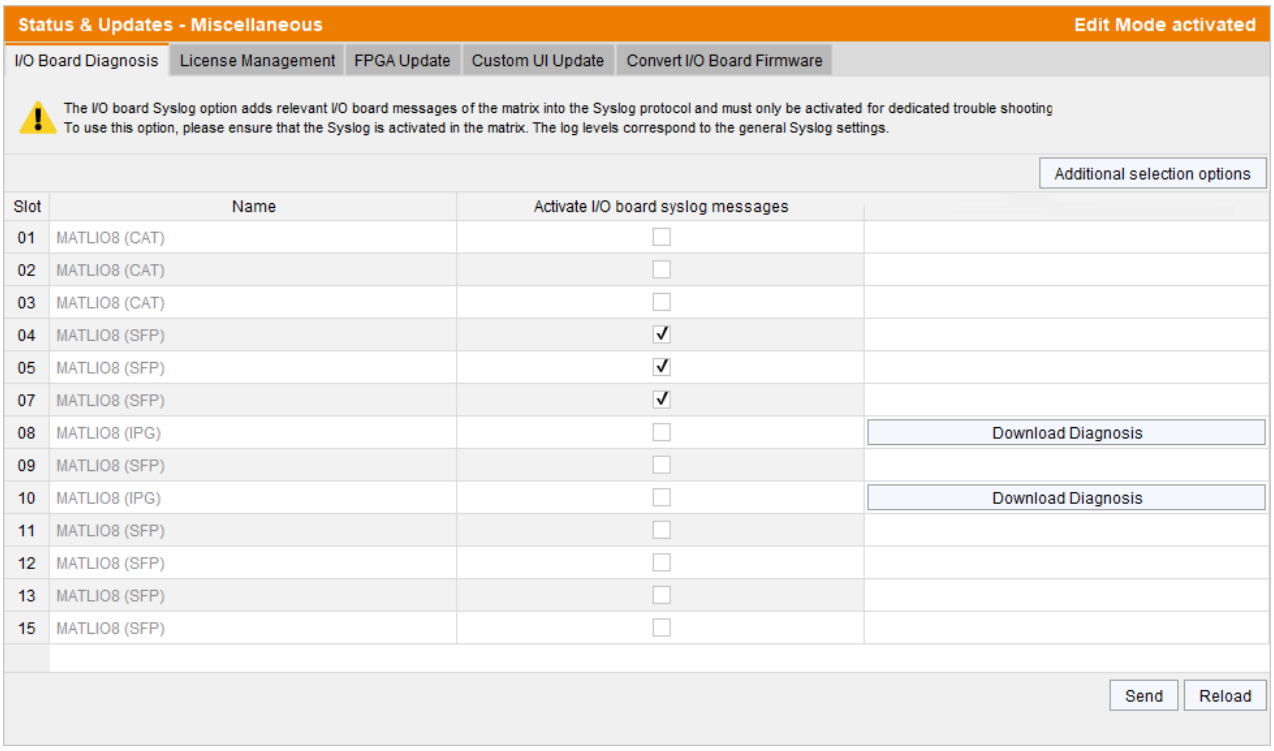


*Fig. 39 Menu **Status & Updates - Miscellaneous - I/O Board Diagnosis***

The following functions are available:

Button	Function
Send	Sends settings to the matrix to activate the Syslog protocol for the selected I/O boards.
Reload	Reloads settings.

The following options are available in the **Additional selection options** drop-down menu on the right upper side in the working area:

Option	Description
Select All	Selects all I/O boards.
Deselect All	Deselects all selected I/O boards.

2. Click **Activate Edit Mode** in the toolbar.
3. Select the desired I/O boards to activate the additional diagnosis.

   Messages of the selected I/O boards will be added to the Syslog protocol.
4. For IP Gateway boards, click the button **Download Diagnosis** in the corresponding line.
   The Save dialog appears.
5. Select the desired folder and enter a suitable name for the diagnosis file which is a text file that can be opened with every text editor.
6. Click **Send** to send the settings to the matrix.
7. Click **Deactivate Edit Mode** in the toolbar.

6.5.10 Setting the SNMP Function

The SNMP function allows all function-critical and safety-critical elements of the matrix to be monitored and queried. This function complies with the RFC 1157 conformal standard. Two SNMP servers can be used at the same time.

Enabling the SNMP function, the unencrypted SNMP monitoring (SNMPv2) is activated with Draco tera flex and Draco tera enterprise with 480-CTRL2. With Draco tera compact and Draco tera enterprise with 480-CTRL1, SNMPv1 is activated.

When Tera Tool is used as SNMP server, an SNMPv3 User for encrypted SNMP monitoring (SNMPv3) can be set in the user settings (see section 6.6, page 67) and the login data for an SNMPv3 User at the SNMP server can be set in the default settings (see page 60).

NOTICE

When using SNMP monitoring, for reasons of access security, the use of a dedicated network according to the IT-Grundschutz-Kompendium (IT Baseline Protection) is recommended. The read-only community for the MIB file is **kvm**.

NOTICE

For an activation of the SNMP agent function or the SNMP server function, a restart of the matrix or the controller board is necessary. Restarting the matrix or the controller board may take several minutes, and the matrix is not available during the restart.

To activate the SNMP agent, proceed as follows:

1. Click **System Settings > Network** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **SNMP** tab in the working area.

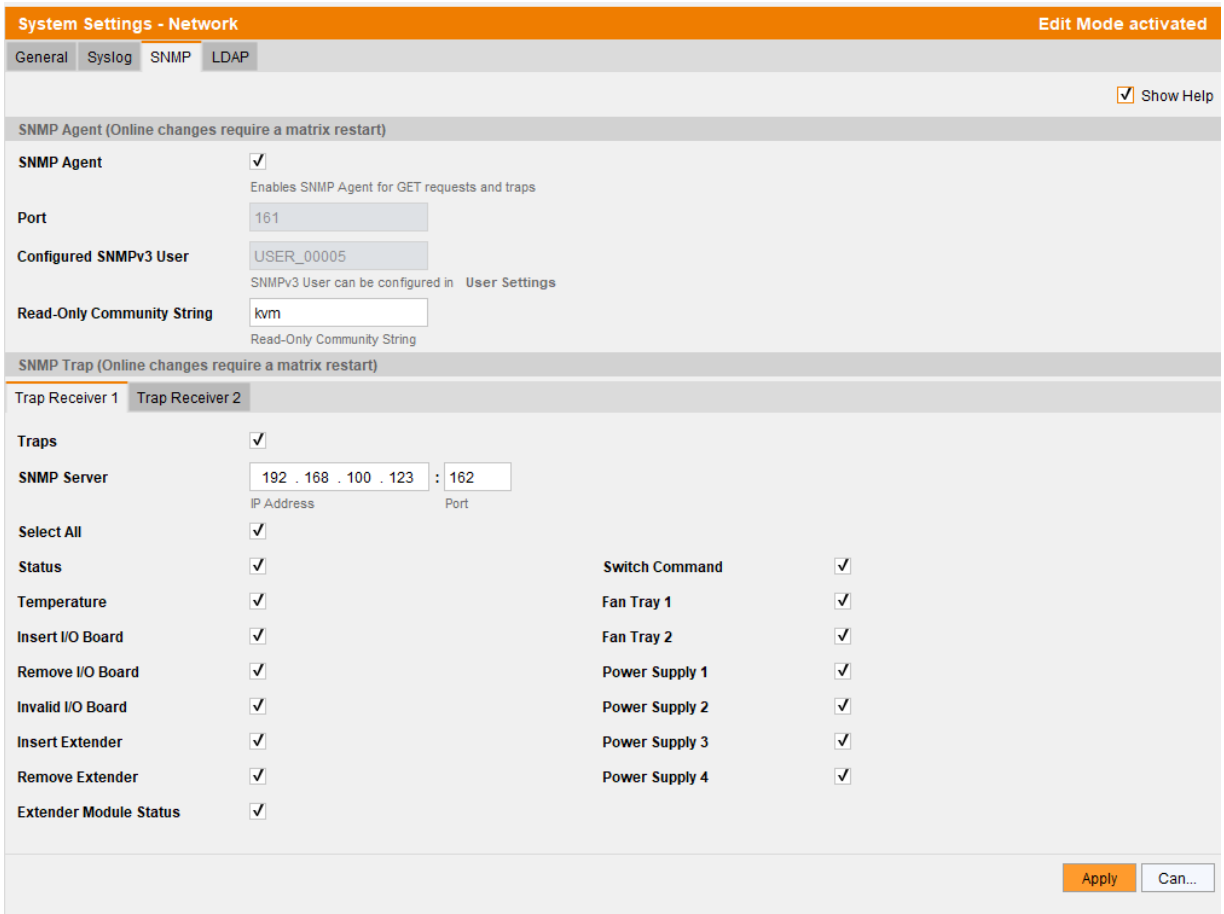


*Fig. 40 Menu **System Settings - Network - SNMP***

SNMP Agent

Traps	Description
SNMP Agent	Grants permission for an active query of the SNMP agent for traps.
Port	The SNMP port is called up automatically (default: 161).
Configured SNMPv3 User	Name of the SNMP user
Read-Only Community String	The read-only community string for SNMP Get requests is **kvm**. This can be changed.

SNMP Trap

The SNMP agent must be activated to enable SNMP traps. Traps are always set for both SNMP servers.

Traps	Description
Traps	Sends trap messages from the SNMP agent to the SNMP server.
SNMP Server	IP address of the SNMP server in the form “192.168.1.1”.
Port	SNMP port (default: 162) at the SNMP server.
Select All	Select/deselect all traps.
Status	Notification about matrix status.
Temperature	Notification about temperature changes within the matrix.
Insert I/O Board	Notification about insertion of a new I/O board into a slot.
Remove I/O Board	Notification about removal of an I/O board out of a slot.
Invalid I/O Board	Notification about the wrong firmware installed on the I/O board.
Insert Extender	• Notification about a newly connected extender module to the matrix, notification about a switched-on extender module. • Notification about a newly established link between extender module and matrix.
Remove Extender	• Notification about a removed extender module from the matrix. • Notification about a switched off extender module. • Notification about an interrupted link between extender module and matrix.
Switch Command	Notification about a performed switching operation at the matrix.
Fan Tray 1	Notification about the fan 1 status (interface view of the matrix: left side (K048/K080) or bottom (K152-K576)*.
Fan Tray 2	Notification about the fan 2 status (interface view of the matrix: right side (K048/K080) or top (K152-K576)*.
Power Supply 1	Notification about the status of power supply unit 1.
Power Supply 2	Notification about the status of power supply unit 2.
Power Supply 3	Notification about the status of power supply unit 3.
Power Supply 4	Notification about the status of power supply unit 4.

* Only for Draco tera enterprise matrices.

4. Tick the **SNMP Agent** checkbox within the **SNMP Agent** area.

   By activating this option, permission for an active query of the SNMP agent is granted.
5. Tick the **Traps** checkbox within the **SNMP Trap** area.
6. Enter the IP address of the SNMP server under **SNMP Server**.
7. Tick the checkboxes of the desired traps to activate them. The traps of both receivers are linked. When you tick a parameter on the tab **Trap Receiver 1**, the same parameter is automatically ticked on the tab **Receiver 2** and vice versa.

8. Click **Apply** to confirm the changes.
9. Click **Deactivate Edit Mode** in the toolbar.
10. Restart the matrix or the controller board.

6.5.10.1 Setting up SNMP Options

This is only relevant when you wish to use Tera Tool software as SNMP server. Presets for an SNMPv3 user can be set up for the computer on which the Tera Tool software is operated. These are set in this menu.

To set or activate the presetting, proceed as follows:

1. Click **Extras > Options** in the menu bar and open the **SNMP** tab.

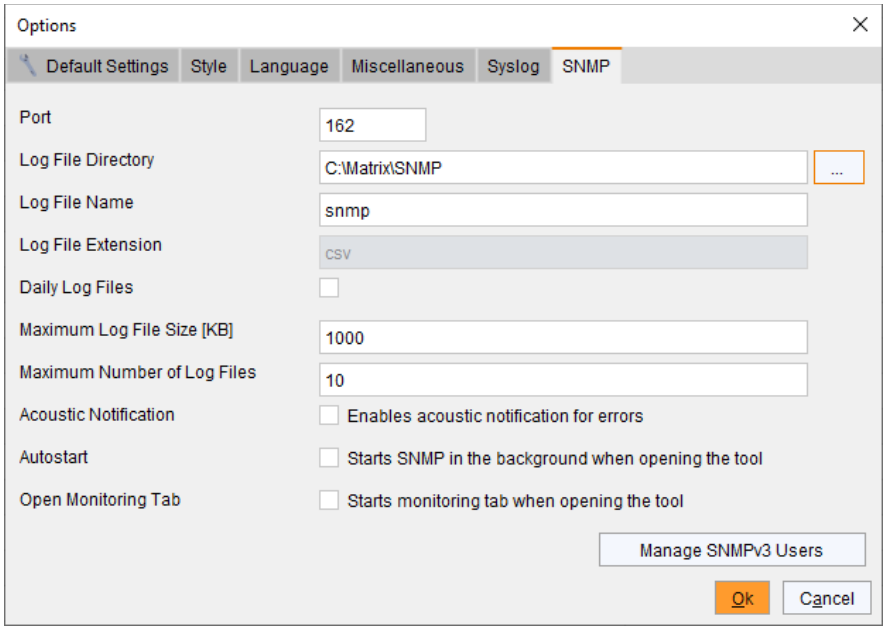


*Fig. 41 Menu **Extras - Options - SNMP***

The following options are available:

Option	Description
Port	SNMP port (default: 162) of SNMP server
Log File Directory	Default directory to store the log files.
Log File Name	Default name of the log file.
Log File Extension	Default extension for the log file.
Daily Log Files	Log files are stored every 24 hours (daily).
Maximum Log File Size [KB]	Allowed maximum size of log file. When reaching the maximum log file size, a new log file will be created.
Maximum Number of Log Files	Allowed maximum number of log files. When the maximum number of log files is exceeded, the oldest logfile will be overwritten with the new information (log rotate).
Acoustic Notification	Enables acoustic notification for errors.
Autostart	When starting the Tera Tool software, the SNMP logging will be started in the background.
Open Monitoring Tab	When starting the Tera Tool software, the monitoring tab will be opened.

2. Enter the appropriate data and tick the checkboxes for desired options.
3. Click **Ok** to confirm the settings.
4. Close the Tera Tool software and restart it.

6.5.10.2 Creating an SNMPv3 User for the SNMP Server

In the following menu, the login data for an SNMPv3 user can be set up for the SNMP server. The SNMP server authenticates itself to the agent using this login data.

NOTICE

Failed SNMP logging

If the login data differs between the matrix (set up in the **User Settings** menu) and the SNMP server, no SNMP traps are transmitted.

➡ Ensure the login data (username and password) in both settings are identical.

To configure the login data for an SNMPv3 User at the SNMP server, proceed as follows:

1. Click **Extras > Options** in the menu bar and open the **SNMP** tab.
2. Click **Manage SNMPv3 Users**.

   A list appears with already created SNMPv3 users.
3. Click **Add User**.

   A dialog window appears.

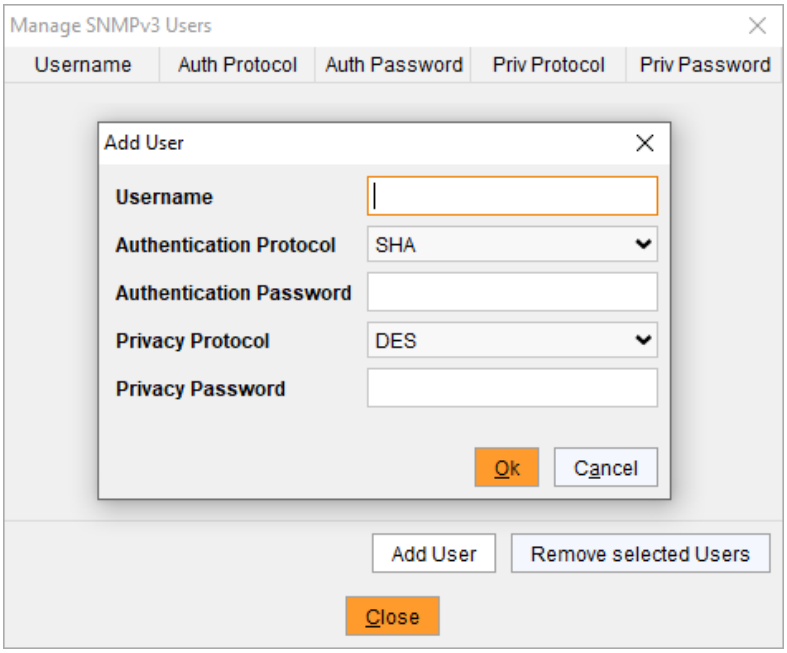


*Fig. 42 Menu **Extras - Options - SNMP - Manage SNMPv3 Users - Add User***

The following parameters are required to create a new SNMPv3 user on the SNMP server:

Option	Description
Username	SNMPv3 username.
Authentication Protocol	Only SHA protocol, no selection available.
Authentication Password	Authentication password for the SNMPv3 user (case sensitive, input of minimum 8 characters up to 16 characters).
Privacy Protocol	Only DES protocol, no selection available.
Privacy Password	Must be identical to the authentication password.

4. Enter the required data and click **Ok** to confirm the settings.
5. Click **Close** to close the users list.
6. Click **Ok** in the **SNMP** tab to confirm your settings.
7. Close the Tera Tool software and restart it.

6.5.11 Setting the LDAP Configuration (Active Directory)

The description in this section refers to matrix firmware 04.04.240716 and newer.

NOTICE
To initialize the LDAP configuration changes, the matrix must be restarted. Restarting the matrix may take several minutes, and the matrix is not available during the restart.

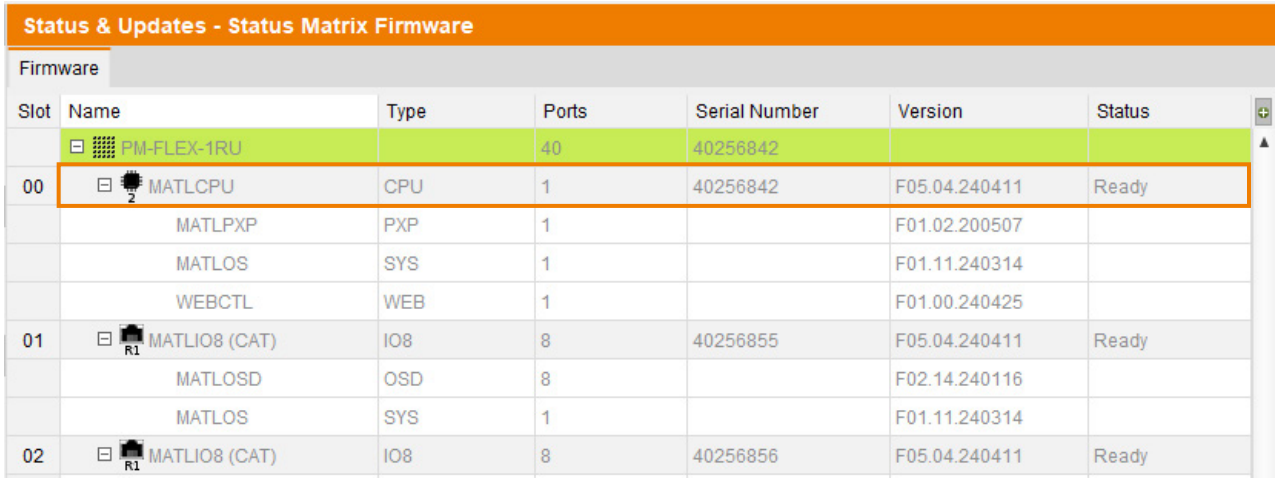
Hardware Requirements

LDAP is only available for tera flex and tera enterprise with 480-CTRL2 controller board. These units use the firmware named “MAT**L**CPU” at the controller board.

Tera enterprise with 480-CTRL controller boards and tera compact do not support the communication with an LDAP server. These units use the firmware named “MAT**X**CPU” at the controller board.

For a matrix grid, the controller board of the master matrix is decisive. The type of controller board of the sub matrices doesn’t matter if the master matrix has a suitable controller board.

➡ Click **Status & Updates > Status Matrix Firmware** in the task area (see following figure).
➡ Check the firmware in column **Name** of the **Type** CPU.



Slot	Name	Type	Ports	Serial Number	Version	Status
	PM-FLEX-1RU		40	40256842		
00	MATLCPU	CPU	1	40256842	F05.04.240411	Ready
	MATLPXP	PXP	1		F01.02.200507	
	MATLOS	SYS	1		F01.11.240314	
	WEBCTL	WEB	1		F01.00.240425	
01	MATLIO8 (CAT)	IO8	8	40256855	F05.04.240411	Ready
	MATLOSD	OSD	8		F02.14.240116	
	MATLOS	SYS	1		F01.11.240314	
02	MATLIO8 (CAT)	IO8	8	40256856	F05.04.240411	Ready

*Fig. 43 Menu **Status & Updates - Status Matrix Firmware - Check Firmware of Controller Board***

The matrix can be synchronized with the directory service Active Directory regarding user authentication. This allows the user to log in at the matrix using login information from the Active Directory service and to contact the Active Directory Server for each authentication that does in fact the proper authentication.
The connection between matrix and the Active Directory server is established via OpenLDAP and periodically synchronized every 5 minutes.
The search for users to be synchronized and automatically added to the matrix configuration can either be based on a **group** or **organizational unit (OU)**. In both cases a user requires to be at least assigned to one group:

- In the case of the group, all users belonging to a previously defined group on the active directory server are added to the KVM matrix and synchronized. In this alternative, the organizational structure of the organizational units (OUs) is added as matrix user group to the KVM matrix configuration. This means that the organizational unit (OU) that includes the user can be found as a matrix user group in the KVM matrix configuration after the synchronization. A user can be a member of up to 17 groups.
- In the case of the organizational unit, all users belonging to groups that are located directly under this organizational unit are added and synchronized. The groups can also include subgroups. The structure of the groups is added to the KVM matrix configuration as user group. Each group will be represented in the KVM matrix as a user group after the synchronization. Groups that are in sub organizational units will be ignored.

6.5.11.1 Configuration

To configure and enable the synchronization to the Active Directory server, proceed as follows:

1. Click **System Settings > Network** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **LDAP** tab in the working area.

The general LDAP settings for the synchronization with the directory service Active Directory are set in this menu.

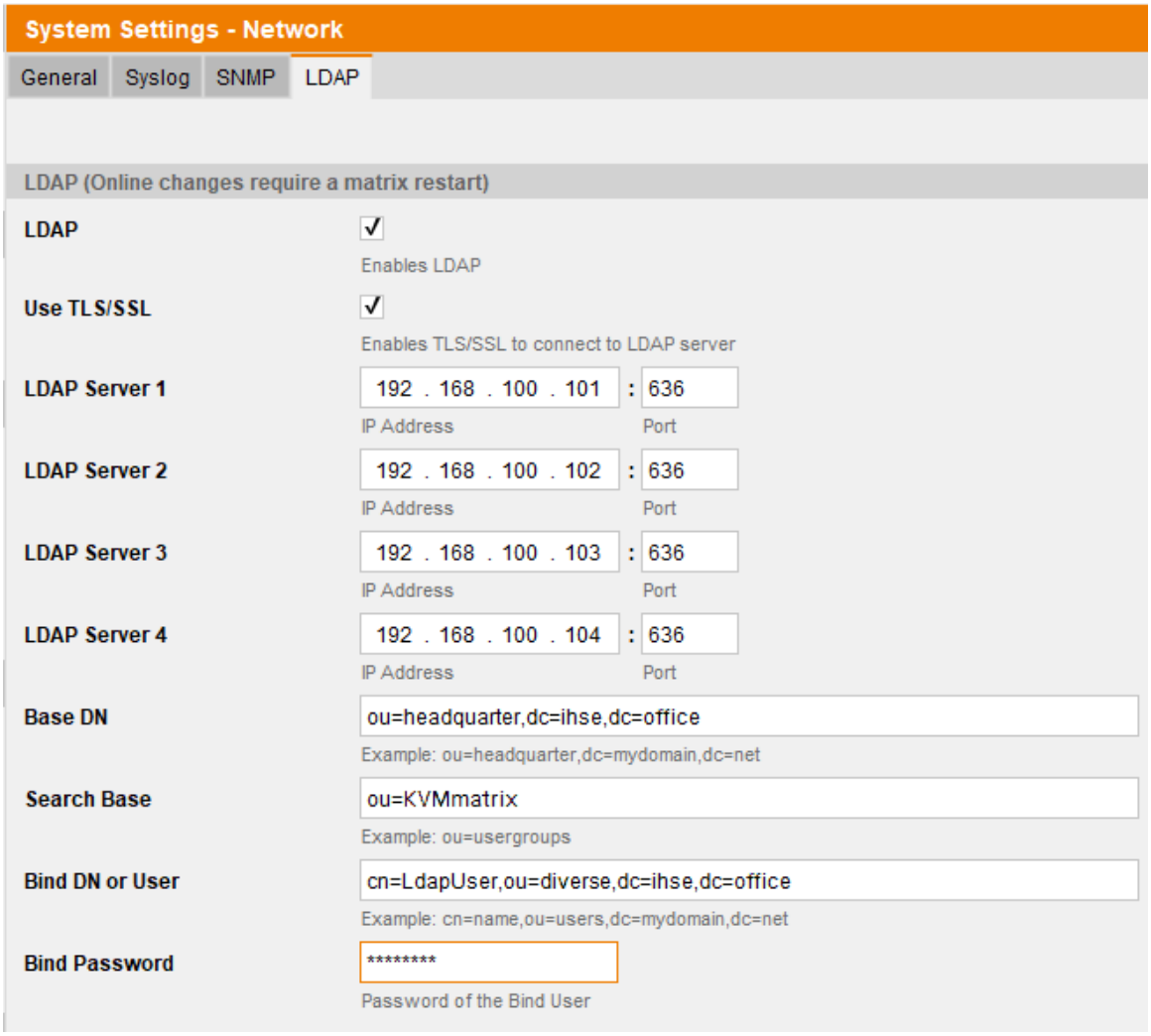


*Fig. 44 Menu **System Settings - Network - LDAP***

The following parameters can be configured:

Parameter	Mandatory	Length	Restart	Description
LDAP	Yes	-	Yes	Enables or disables LDAP synchronization and authentication.
Use TLS/SSL	No	-	Yes	Enables a secure transmission (transport layer security) for the Active Directory access.
LDAP Server 1	Yes	-	Yes	IP address and port (389 without TLS/SSL, 636 with TLS/SSL) of the respective LDAP server in the form "192.168.1.1".
LDAP Server 2-4	No	-	Yes	Optional redundant LDAP servers 2 to 4: LDAP server 2 is used if LDAP server 1 is not reachable. LDAP server 3 is used if LDAP server 2 is not reachable. LDAP server 4 is used if LDAP server 3 is not reachable.

Parameter	Mandatory	Length	Restart	Description
Base DN	Yes	Max. 256 byte	No	The search base DN is an element of the search request that works in conjunction with the LDAP search scope to define the subtree of entries that should be considered when processing the search request. Only entries at or below the search base DN will be considered candidates for matching against the LDAP synchronization and authentication.
Search Base	Yes	Max. 256 bytes	No	Defines the organizational unit (OU) in which the matrix searches for user groups and users. Config Option 1: If you only enter the name of the OU, the name of the OU has to be unique within the Base DN so that the matrix finds one unique object. The OU has to be placed below the Base DN. Config Option 2: If the name of this OU is not unique, enter the distinguished name (DN) of the OU where the matrix should search for users and user groups.
Bind DN	Yes	Max. 256 bytes	No	Enter the Bind DN or User for the Bind request.
Bind Password	Yes	Max. 128 bytes	No	Enter the password for the Bind request (password of the Bind user).

A matrix configuration should only include one LDAP user and one LDAP group at the same time. The LDAP user and the LDAP group can be created, changed, or deleted during ongoing operation: no restart of the matrix is required.

4. Tick the **LDAP** checkbox**.**
5. Optionally tick the **Use TLS/SSL** checkbox to activate this function.
6. Enter the respective IP address and port number into the field **LDAP Server** (default port number: 389 (636 for SSL)).
7. Optional: Enter further IP addresses and port numbers into the fields **LDAP Server 2 to 4**.
8. Enter the LDAP **Base DN** into the respective field (e.g., dc=ihse, dc=office).
9. Enter the LDAP **Search Base** into the respective field (e.g., ou=KVMMatrix).
10. Enter the LDAP **Bind DN or User** into the respective field (e.g., cn=LdapUser,ou=diverse,dc=ihse,dc=office).
11. Enter the LDAP **Bind Password** into the respective field.
12. Click **Apply** to confirm the settings.
13. Restart the matrix.

Changes done in step 4 to 7 only come into effect after a restart of the matrix.

6.5.11.2 Search and Synchronize Process

The matrix searches the complete OU specified as Search Base for groups. All groups found are then imported into the matrix. The members of each group found are also added to the matrix.

If a new group is found as a member of an existing group, this new group and its members are also added to the matrix. The members can be outside the defined search base and be both user and user groups.

This search process continues until no new users or groups are found. The matrix repeats the search process every 30 minutes.

6.5.11.3 Results of a Search

User Groups

[Menu: **User Settings -> Users & Groups -> Groups**]

Here you can find and check the automatically synchronized (imported) user groups. The “common name” is used for the user groups (limited to 32 characters). Each user group can be a member of up to 17 other user groups at the same time.

Users

[Menu: **User Settings -> Users & Groups -> Users**]

Here you can find and check the automatically synchronized (imported) users.

The matrix imports two different fields for each user:

sAMAcountName or UID (depending on kind of LDAP server)	Limited to 32 characters	Can be used for login
UserPrinicalName or Mail (depending on kind of LDAP server)	Limited to 64 characters	Can be used for login

The password is limited to 32 characters and cannot be changed in the matrix.

After successful login, the user password is temporarily stored in the matrix and serves as backup in case the LDAP server is not accessible. Empty means the user has never successfully logged in.

Each user can be a member of up to 17 different user groups at the same time.

The total number of user + user groups is limited to 256. You can check it using “System Check”.

6.5.12 Setting Date and Time

1. Click **System Settings > Date and Time** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

The parameters for the system configuration are set in this menu, based on Simple Network Time Protocol (SNTP):

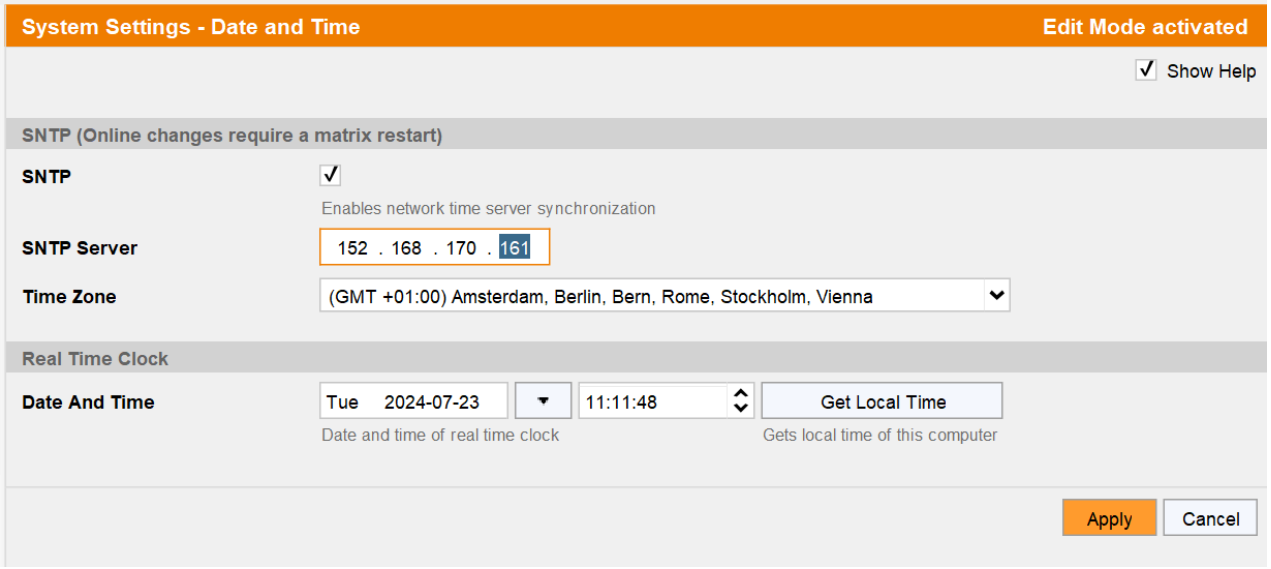


*Fig. 45 Menu **System Settings - Date and Time***

The following parameters can be configured:

SNTP

Field	Entry/Status	Description
SNTP	Activated	Enables the network time server synchronization.
	Deactivated	Function not active (default).
SNTP Server	Numerical	SNTP server IP address (default: 000.000.000.000).
Time Zone	Region	Sets your specific time zone (default: GMT + 00).

Real Time Clock

Field	Description
Date and Time*	Sets date and time of the real time clock.
Get Local Time	Gets local time of this computer.

* Date format yyyy-mm-dd.

Configuring the Time Server

To configure a time server, proceed as follows:

3. Tick the **SNTP** checkbox to enable the SNTP option.
4. Enter the IP address of your SNTP server into the **SNTP Server** field.
5. Select your time zone from the **Time Zone** drop down list.
6. Click **Apply** to confirm your settings.
7. Click **Deactivate Edit Mode** in the toolbar.
8. Restart the matrix.

   After the restart, the system time is now provided by the SNTP server.

Configuring the Real Time Clock without Time Server

1. Click **System Settings > Date and Time** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Set the current date in the **Date and Time** section.
4. Set the current time in the **Date and Time** section.
   The entered time is set immediately in the settings.
5. Option: if you want to receive the time from your currently used computer, click **Get Local Time**.
6. Click **Apply** to confirm your settings.
7. Click **Deactivate Edit Mode** in the toolbar.

6.6 Configuring User Settings

Different types of users with different rights can be created.

	Administrator	Super User	Power User	Normal User
Configuration of all devices	✓	-	-	-
Access to all devices	✓	-	-	-
Switching in *Private Mode*	✓	✓	-	-
Disconnecting a *Private Mode* connection	✓	-	-	-
User ACL can be limited	-	-	✓	✓
ACL can be limited by *Login Lock* option	-	-	✓	✓
Limited switching options if *user ACL* is active (requires login at CON unit)	-	-	-	✓
Defining favorites	✓	✓	✓	✓
Executing macros	✓*	✓	✓	✓

* with restrictions

6.6.1 Description of User Menu

1. Click **User Settings > Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

New users and their user settings and permissions are set in this menu.

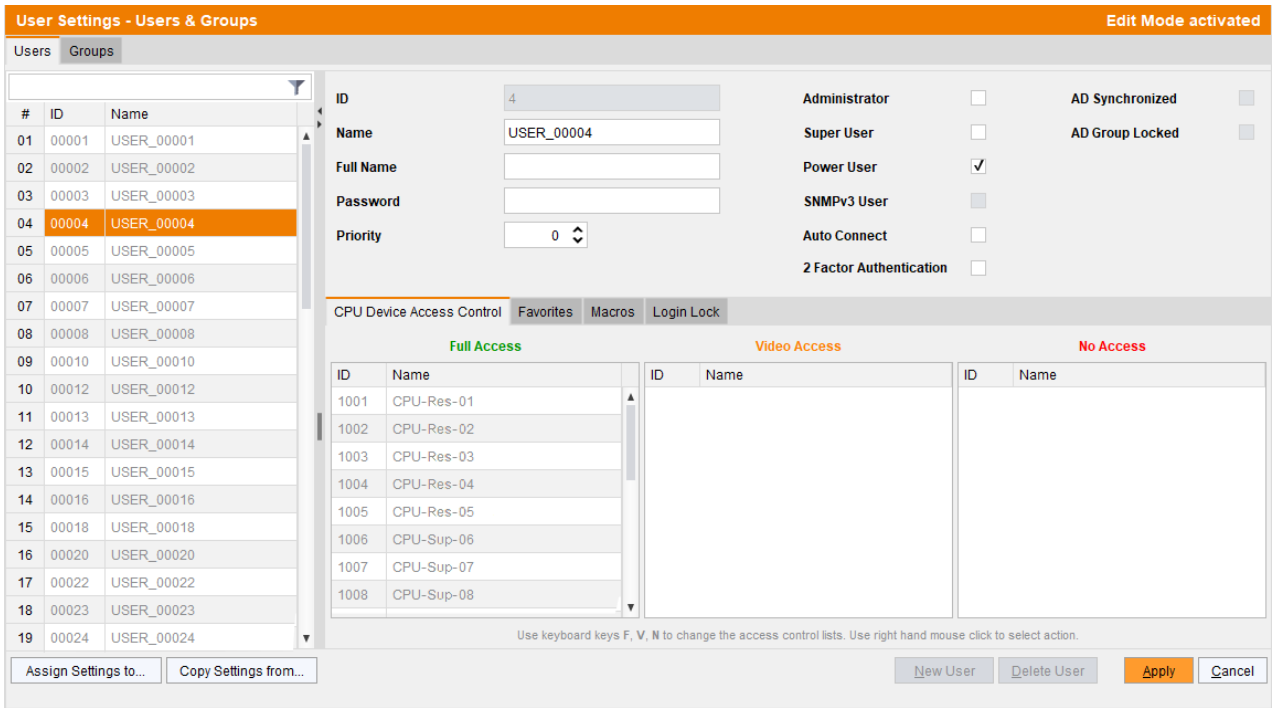


*Fig. 46 Menu **User Settings - Users & Groups - Users***

NOTICE

Failed SNMP logging

If the login data of the SNMPv3 user differs between the matrix and the SNMP server, no SNMP loggings are transmitted.

➡ Ensure the login data (username and password) in both settings are identical (see section 6.5.10.2 on page 60).

The following parameters can be configured or offer information.

Field	Entry/Status	Description
ID	Numerical	Ident number of the user.
Name/ sAMAccountName	Text	For administrators/power users/SNMP users it is the login name (input of minimum 1 character up to 32 characters). Can be used to log in to the OSD.
		For users imported via Tera Tool and LDAP, it is the sAMAccountName or UID (depending on kind of LDAP server), automatically retrieved from the LDAP server. Can be used to log in to the OSD.
Full Name/ userPrincipalName	Text	For administrators/power users/SNMP users it is the full name (optional input of up to 64 characters). Can be used to log in to the OSD.
		For users imported via Tera Tool and LDAP, it is the userPrincipalName or Mail (depending on kind of LDAP server), automatically retrieved from the LDAP server. Can be used to log in to the OSD.
Password	Text	For standard users (optional input of up to 32 characters, case sensitive). Can be used to log in to the OSD.
		For LDAP Users (case sensitive, input of minimum 1 character up to 32 characters). Can be used to log in to the OSD.
Priority	Value	Priority of the user. The priority of the user “admin”, which always exists by default, cannot be changed. All other users can get any priority between 0 and 999 (default: 999)
Administrator	Activated	User role with rights for system configuration and all switching operations.
	Deactivated	Function not active (default)
Super User	Activated	User role with rights for switching any CON Device to any CPU Device in **Extended Switching**.
	Deactivated	Function not active (default)
Power User	Activated	User role with rights for switching CON Devices to CPU Devices in **Extended Switching** according to the **CON** or **User ACL**, but not in Private Mode.
	Deactivated	Function not active (default)
SNMPv3 User	Activated	User role with rights to use SNMPv3 (encrypted).
	Deactivated	SNMPv3 is not enabled.
Auto Connect	Activated	Re-establishes the previous user connection after login.
	Deactivated	Function not active
2 Factor Authentication	Activated	Enables 2 factor authentication. If enabling the **2 Factor Authentication** for a user, this user needs a smartphone/tablet with an installed authentication app to login. The smartphone needs to use the same date and time settings as the matrix system. With the first login after enabling, a QR code (security key) will be generated and displayed in the OSD. A QR code scan with the authentication app is required to get access. After authentication, a login token will be created. For further logins, a token has to be requested via authentication app to get access.
	Deactivated	Function not active.
AD Synchronized	Activated	User was added through synchronization with an LAPD server.
	Deactivated	User was created manually.

Field	Entry/Status	Description
AD Group Locked	Activated	Locks synchronization of group attribute for an Active Directory user.
	Deactivated	Function not active (default)

6.6.2 Creating a new Standard User Account

To create a new user, proceed as follows:

1. Click **New User**.

   A selection dialog appears.

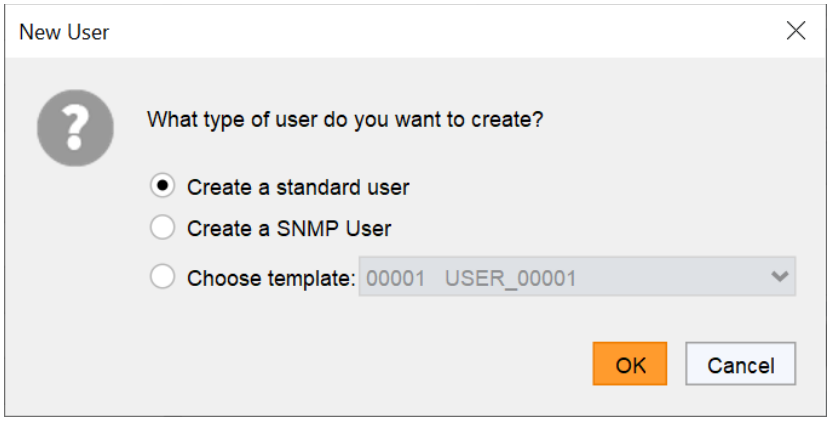


*Fig. 47 Selection menu **New User***

2. Select a template of an existing user if applicable (**Choose template**) in the selection box (appears only when at least one user has already been created).
3. Click **Ok**.
4. Enter a name.
5. Optionally enter a full name and a password (password is only needed for using Tera Tool software)
6. Optionally enable the **2 Factor Authentication**.
7. Set user permissions for CPU Device access (described on following pages).
8. Set user favorites (described on following pages).
9. Click **Apply** to confirm the new user settings.

6.6.2.1 Creating a Power User, Super User or Administrator Account

1. Create a standard user as described in the previous section.
2. Tick the respective checkbox **Power User**, **Super User** or **Administrator**.
3. Click **Apply** to confirm the new user settings.

6.6.2.2 Changing a User Account

1. Click **User Settings > Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select a user in the **Users** list.
4. Change the desired settings.
5. Click **Apply** to confirm the changes.

6.6.2.3 Configuring User Access Rights

1. Click **User Settings > Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select a user in the **Users** list.
4. By clicking with the right mouse button once on a CPU Device in one of the respective access lists (**Full Access**, **Video Access,** and **No Access**), a context menu for selection appears in which the respective CPU Device can be moved, and the access rights can be changed. Alternatively, press f, v, or n to set the respective access rights.
5. Click **Apply** to confirm the changes.

6.6.3 Setting User Favorites

Individual favorite lists of CPU Devices that will be switched frequently can be created for different users in this menu. A favorite list can contain up to 32 different CPU Devices (from firmware V3.05).

The switching of the favorites is done via keyboard command (see matrix user manual).

1. Click **User Settings> Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

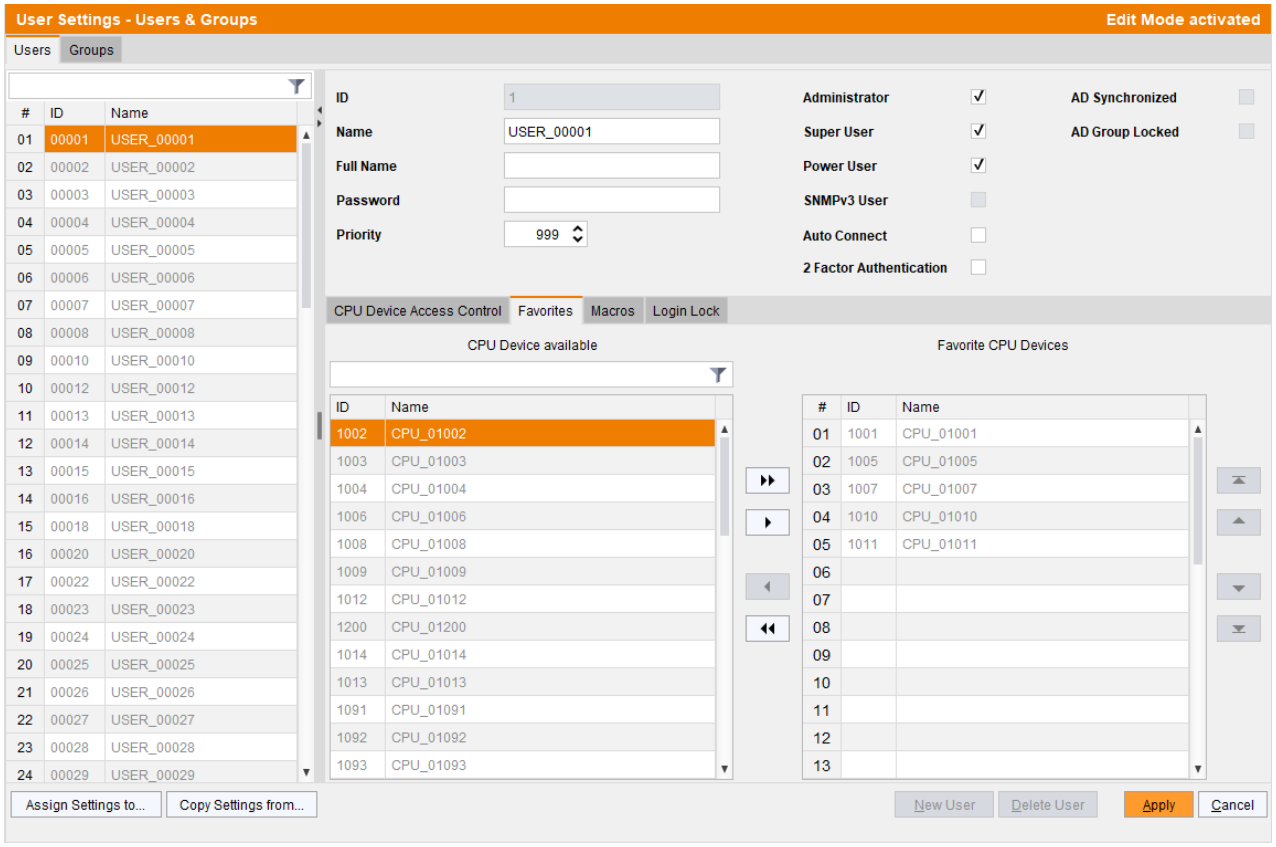


*Fig. 48 Menu **User Settings - Users & Groups - Users - Favorites***

Creating a Favorites List for Users

The list **CPU Device available** contains only CPU Devices the user can access according to the access rights configuration.

To create a favorites list for any user, proceed as follows:

3. Select the respective user for the favorites list in the **Users** list.
4. Click the **Favorites** tab in the working area.
5. Select the CPU Devices in the **CPU Device available** list that should be added to the favorites list (**Favorite CPU Devices**). By pressing and holding down Ctrl at the same time, more than one CPU Device can be highlighted.
6. Click ▶ to move the highlighted CPU Devices to the favorites list. By clicking ▶▶, all CPU Devices from the **CPU Device available** list will be moved to the favorites list (**Favorite CPU Devices**).
7. To remove highlighted CPU Devices from the favorites list, click ◀. By clicking ◀◀, all CPU Devices will be removed from the favorites list.
8. Click ▼ or ▲ to change the order of the CPU Devices within the favorites list.
   Or press + or - to change the order of the CPU Devices within the favorites list.
9. Click **Apply** to confirm the changes.

6.6.4 Setting User Macros

In this menu macro commands for switching, disconnection or user administration can be created. Macro commands are created for each user separately. A macro can execute up to 16 commands successively. The execution of the macros is done via Hot Key and the F1 to F16 function keys and Shift+F1 to Shift+F16 (S1 to S16).

To execute user macros the user has to be logged in to the matrix. An admin user can execute macros only if Force Login is active or via OSD menu “Macro List”.

1. Click **User Settings > Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the user for which macros are to be created.
4. Open the **Macros** tab.

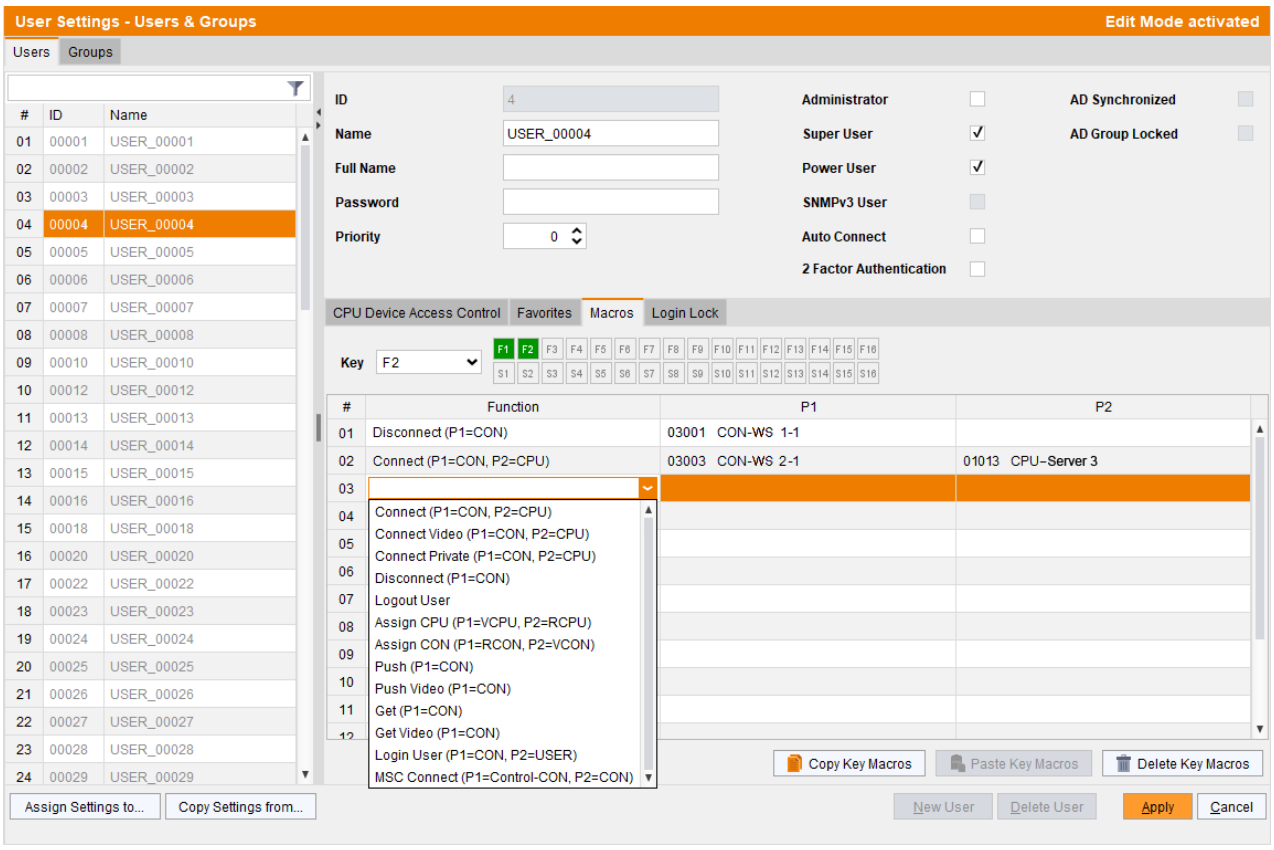


*Fig. 49 Menu **User Settings - Users & Groups - Users - Macros***

The following parameters can be configured:

Field	Selection	Description
Key	**F1 to F16** **S1 to S16**	Selects the function key to be configured.
Function (01 to 16)	**Connect (P1=CON, P2=CPU)**	Sets a bidirectional connection from CON Device P1 to CPU Device P2.
	Connect Video (P1=CON, P2=CPU)	Sets a Video Only connection from CON Device P1 to CPU Device P2.
	Connect Private (P1=CON, P2=CPU)	Sets a Private Mode connection from CON Device P1 to CPU Device P2.
	Disconnect (P1=CON)	Disconnects the CON Device P1.
	Logout User	Logs out the current user.
	Assign CPU (P1=VCPU, P2=RCPU)	Assigns a Virtual CPU Device to a Real CPU Device.
	Assign CON (P1=RCON, P2=VCON)	Assigns a Real CON Device to a Virtual CON Device.
	Push (P1=CON)	Shifts the current access status (FA or VO) to CON Device P1.
	Push Video (P1=CON)	Forwards the video signal of the current connection (Full Access or Video Only) to CON Device P1. The user's connection remains unchanged (Full Access or Video Only).
	Get (P1=CON)	The user's CON Device gets a Full Access connection to the CPU Device that is currently connected to CON Device P1. The connection of CON Device P1 is changed into a Video Only connection.
	Get Video (P1=CON)	The user's CON Device gets a Video Only connection to the CPU Device that is currently connected to CON Device P1. The connection of CON Device P1 remains unchanged (Full Access or Video Only).
	Login User (P1=CON, P2=User)	Logs in a certain user P1 at CON Device P2.
	MSC Connect (P1=Control-CON, P2=CON)	Sets USB-HID control within activated MSC from the Control CON Device P1 to another Control CON Device P2.
P1	**CON Device** **VCPU Device** **RCON Device** **Control-CON Device**	Name of CON Device, Virtual CPU Device, RCON Device or Control-CON Device
P2	**CPU Device** **RCPU Device** **VCON Device** **User** **CON Device**	Name of CPU Device, Real CPU Device, Virtual CON Device, User or CON Device

5. Select in the **Key** field the function key for which a macro has to be created.
6. Double-click in the **Function** column to display a list of all available commands.
7. Select the desired command in the selection list.
8. Double-click **P1** columns and, if necessary, **P2** column and select the respective parameters for the macro functions (e.g., corresponding CON Devices and CPU Devices) from the drop-down list.

Example: In figure 40 (see previous page) in line 2 the following elements were selected:
Function: Connect (P1=CON, P2=CPU)
P1: 03003 CON-WS 2-1
P2: 01013 CPU-Server 3
When the user executes this macro with Hotkey, F2, after the first command, CON-WS 2-1 is switched in Full Access mode to CPU-Server 3.

9. Click **Apply** to confirm the changes.
10. Click **Deactivate Edit Mode** in the toolbar.

6.6.5 CON Specific Selective User Access

Users can be blocked from logging in to certain CON Devices. Requirement for the feature **Login Lock** is to activate **Force User Login** and **Enable User ACL** in the access settings (see section 6.5.5, page 46).

Example: A user who works in a restricted area should not be able to log in at a publicly exposed workplace.

1. Click **User Settings> Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the appropriate user from the **Users** list for whom the login should be restricted.
4. Click the **Login Lock** tab in the working area.

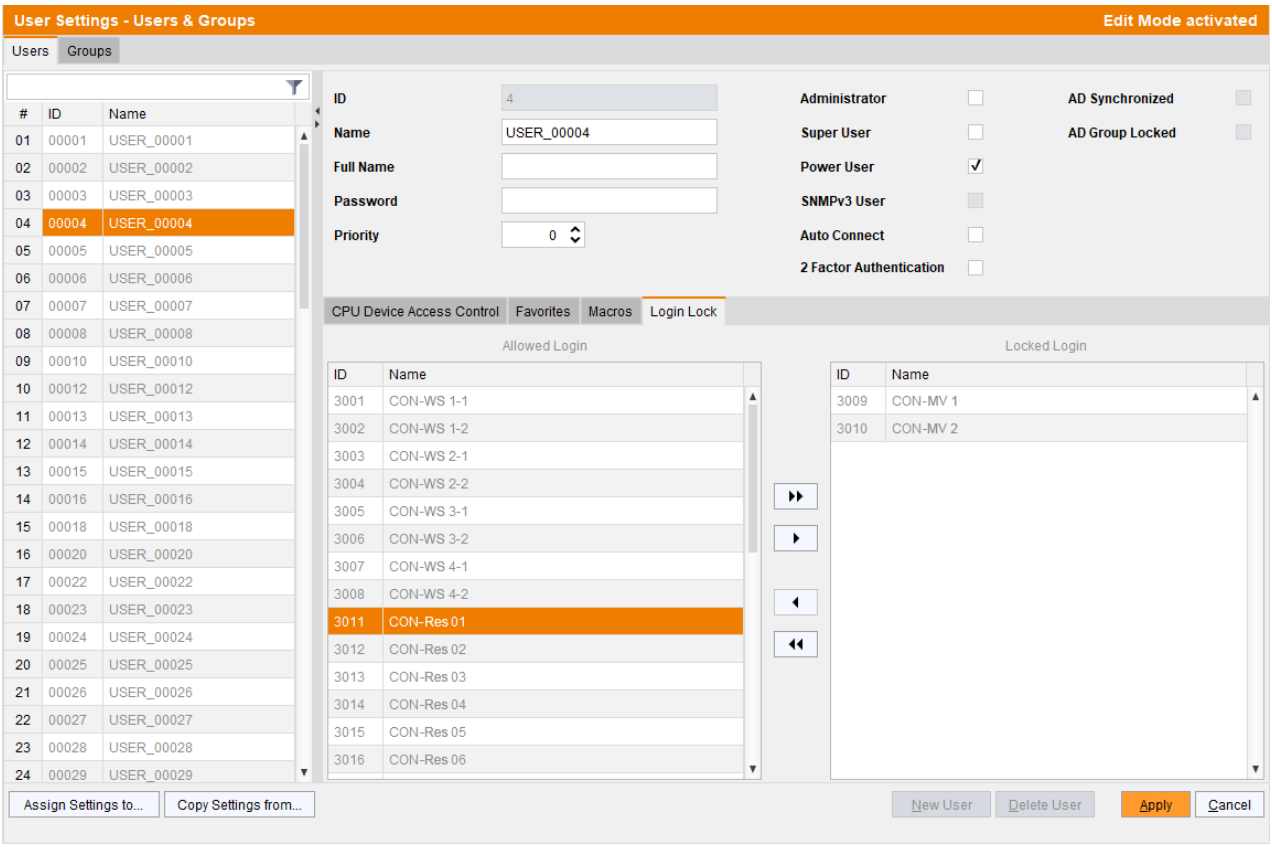


*Fig. 50 Menu **User Settings - Users & Groups - Users - Login Lock***

Users can log in to all CON Devices that are listed under **Allowed Login**. They cannot log in to CON Devices that are listed under **Locked Login** (provided the functions **Force User Login** and **Enable User ACL** are active).

To move the CON Devices from one list to the other proceed as follows:

5. Select the CON Devices in the **Allowed Login** list that should be added to the list of locked CON Devices, (**Locked Login**). By pressing and holding down Ctrl at the same time, more than one CON Device can be highlighted.
6. Click ▶ to move the highlighted CON Devices to **Locked Login** list. By clicking ▶▶, all CON Devices from the **Allowed Login** list will be moved to the **Locked Login** list.
7. To remove highlighted CON Devices from the **Locked Login** list, click ◀. By clicking ◀◀, all CON Devices will be removed from the **Locked Login** list.
8. Click **Apply** to confirm the changes.
9. Click **Deactivate Edit Mode** in the toolbar.

6.6.6 Setting User Groups

The KVM matrix allows to bundle the users of a configuration into User Groups. The groups can be used to subdivide the users logically or thematically. As an application example you can group all power users together. The configuration of User Groups at the same time increases the clarity of the configuration.

General rules

A group member always has at least the access rights of the group. For single group members the hereditary rights cannot be reduced.

Users and groups count together for the total number of configurable entries.

Manual creation: A user can be a member of only one group. A group can be a member of only one other group.

LDAP user and groups: A user can be a member of up to 17 groups. A group can be a member of up to 17 other groups.

To create and configure a User Group, proceed as follows:

1. Click **User Settings > Users & Groups** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **Groups** tab in the upper left-hand corner of the working area.
4. Click **New Group.**
   A selection window appears.

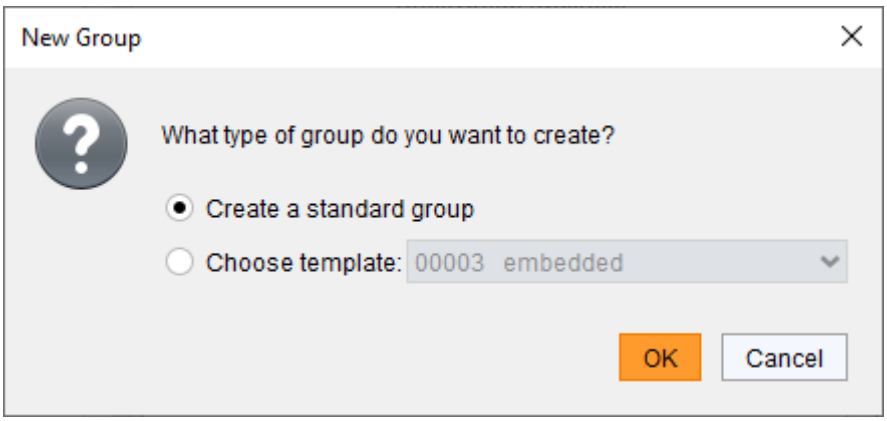


Fig. 51 Selection menu of new user group

5. Select **Create a standard Group** in the selection box.
6. Click **Ok**.

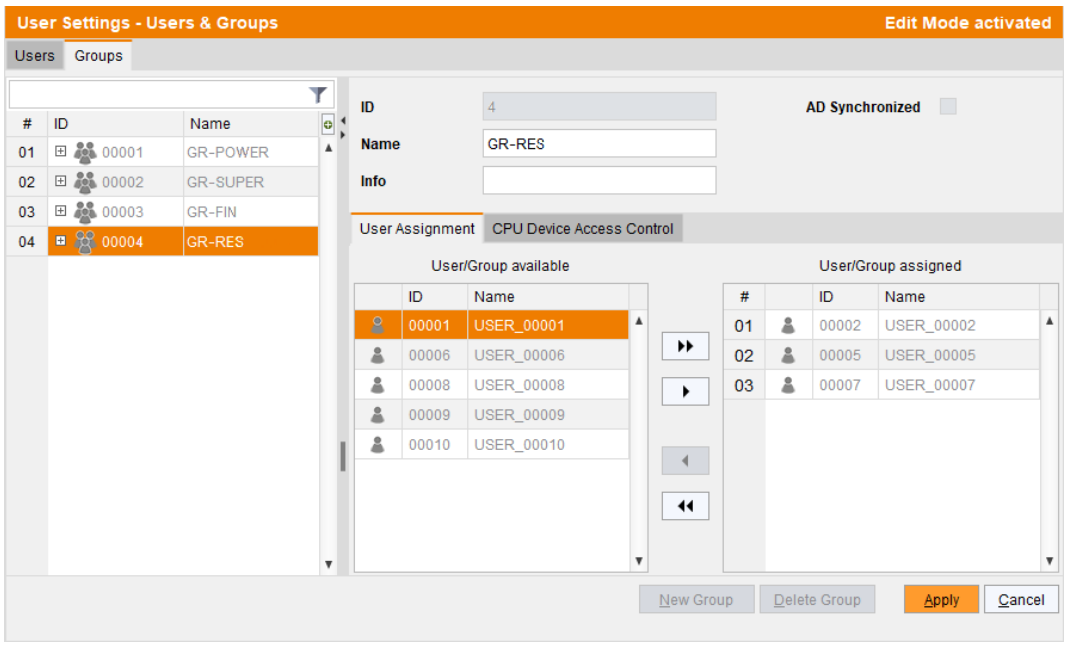


*Fig. 52 Menu **User Settings - Users & Groups - Groups - User Assignment***

7. Enter a group name into the field **Name**.

Assigning Users to a Group

8. Select the User Group.
9. Select a user in the **User/Group available** list that should be assigned to the User Group. By pressing and holding down Ctrl at the same time, more than one user can be highlighted.
10. Click ▶ to move the highlighted user to the User Group list (**User/Group assigned**). By clicking ▶▶, all users from the **User/Group available** list will be moved to the **User/Group assigned** list.
11. To remove highlighted users from the User Group list, click ◀. By clicking ◀◀, all Users will be removed from the User Group list.

Assigning Access to CPU Devices to a User Group

12. Select a user group from the **Groups** list.
13. Click the tab **CPU Device Access Control**.

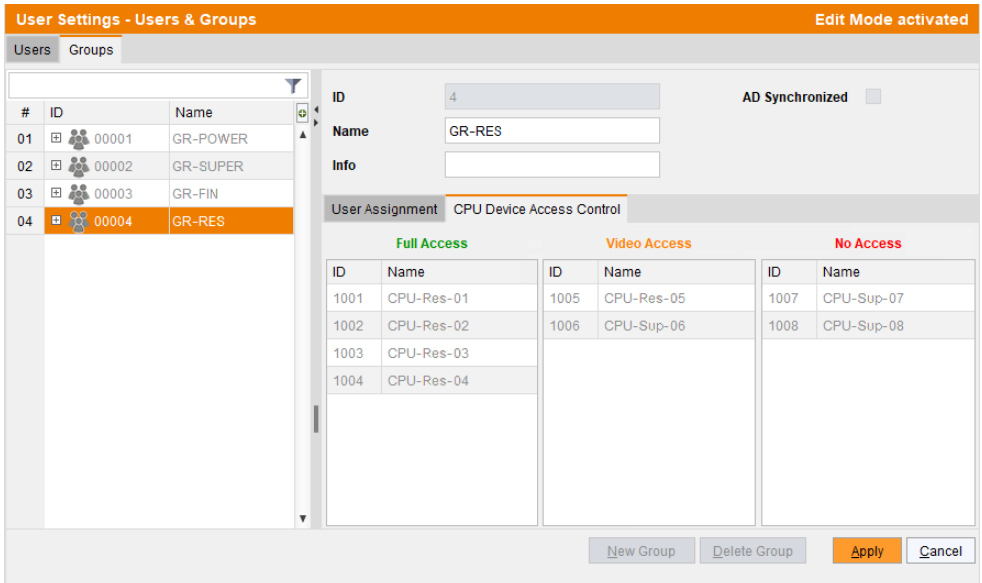


*Fig. 53 Menü **User Settings - Users & Groups - Groups - CPU Device Assignment***

14. By clicking with the right mouse button once on a CPU Device in one of the respective access lists (**Full Access**, **Video Access,** and **No Access**), a context menu for selection appears in which the respective CPU Device can be moved, and the access rights can be changed. Alternatively, press f, v, or n to set the respective access rights.
15. Click **Apply** to confirm the configuration of the user group.
16. Click **Deactivate Edit Mode** in the toolbar.

☑ For an efficient user configuration, user settings can be assigned to other users (see description in section 6.10.1, page 139) or be copied from another user (see section 6.10.2, page 141).

6.7 Configuring Extender Modules and EXT Units

6.7.1 Automatic Creation of EXT Units

The matrix automatically recognizes every extender module, physically connected to the matrix with a direct cable connection, reads out its serial number and creates EXT Units automatically. When disconnecting the extender module from the original port and reconnecting it at another port, the previous assignment to a Device remains active. This is the Flex Port function of the matrix.

Add-on modules are not created as independent EXT Units. The data of add-on modules is included in one EXT Unit together with the associated extender module.

All EXT Units are managed in this menu. This includes the manual creation of new EXT Units (e.g. for fixed ports) and the deletion of existing EXT Units.

NOTICE

In contrast to a Flex Port, an extender connected to a Fixed Port must remain there and cannot be connected to another port. EXT Units with fixed ports, e.g., USB 2.0 extender modules, have to be created manually (see section 6.7.3, page 87).

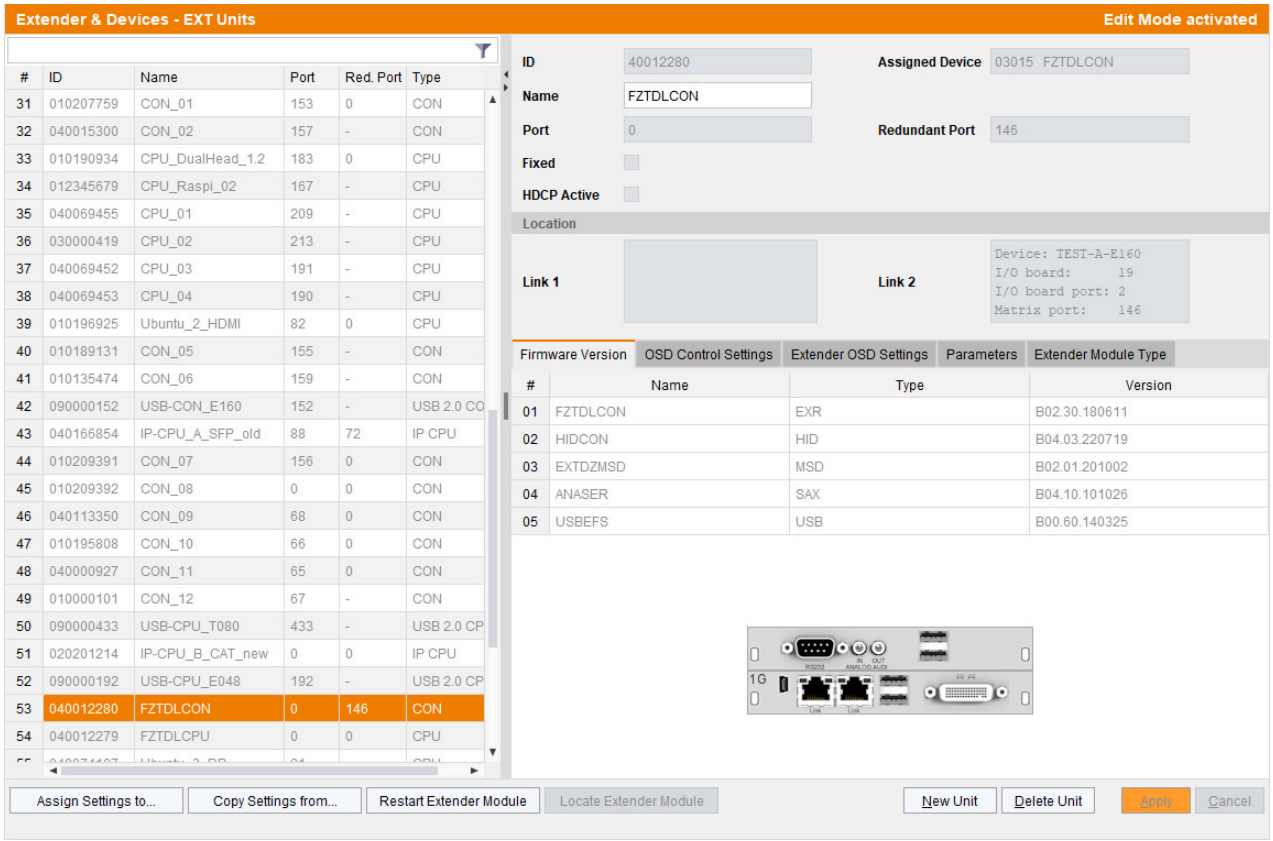


*Fig. 54 Menu **Extender & Devices - EXT Units***

The following parameters are recognized automatically (exceptions for USB 2.0 units and cascading units):

Field	Entry/Status	Description
ID	Text	Numerical value of the KVM extender module ID. The ID is provided by the extender module (serial number) and cannot be changed.
Name	Text	Name of the EXT Unit.
Port	Number	• **0** if the primary interconnection port of the extender module is currently not connected to the matrix. • **> 0** if the primary interconnection port of the extender module is currently connected to the matrix.

Field	Entry/Status	Description
Fixed	- / ✓	If ticked, this EXT Unit represents one fixed port extender module (e.g., USB 2.0 CON Unit, USB 2.0 CPU Unit). No other extender module works at this port.
HDCP Active	- / ✓	If ticked, HDCP is active on the respective extender module (retrieved automatically).
Assigned Device	-	CPU Device or CON Device assigned to an EXT Unit.
Redundant Port	-, 0 or >0	• **0** if there is no redundant port or if the redundant interconnection port of the extender module is currently not connected to the matrix. • **> 0** if the redundant interconnection port of the extender module is currently connected to the matrix or to a matrix grid. • **-** if the extender module does not have a redundant interconnection port.

6.7.1.1 Displaying Extender Module Firmware Version

1. Click **Extender & Devices > EXT Units** in the task area.
2. Select the EXT Unit of an extender module to be displayed.

   The **Firmware Version** overview is displayed on the right-hand side of the working area.

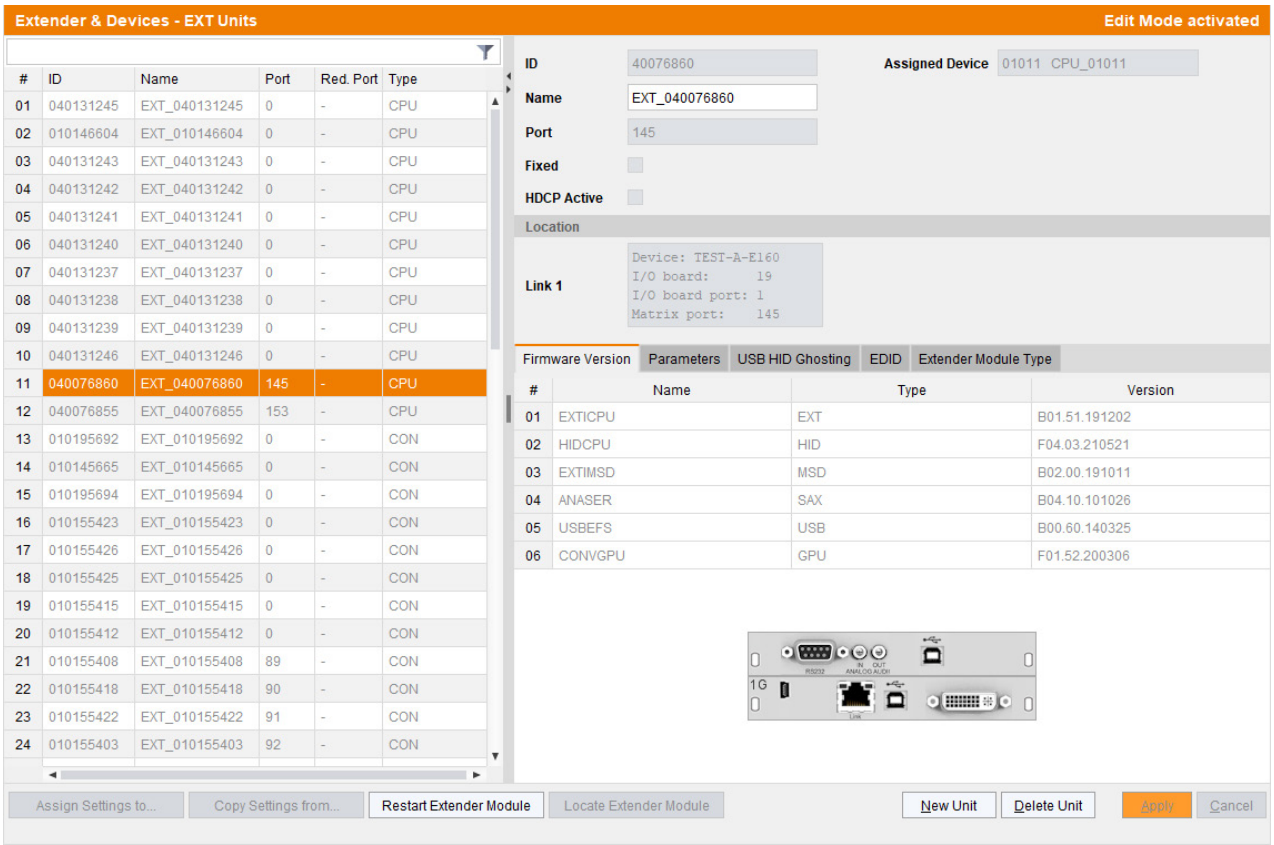


*Fig. 55 Menu **Extender & Devices - EXT Units - Firmware Version***

Add-on modules are shown together with the associated extender module in one EXT Unit.

6.7.1.2 Displaying Extender Module Type

To display the type data of an extender module, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Select the EXT Unit of the extender module whose type is to be displayed.
3. Click the **Extender Module Type** tab on the right side of the working area.

   The extender module type is displayed.

   – The **Basic** column stands for the extender module of the selected EXT Unit.

   – The **Add-on Module** column stands for the add-on module of the selected EXT Unit.
4. Click on the button **Expert View** to display more parameters for input signals and output signals.

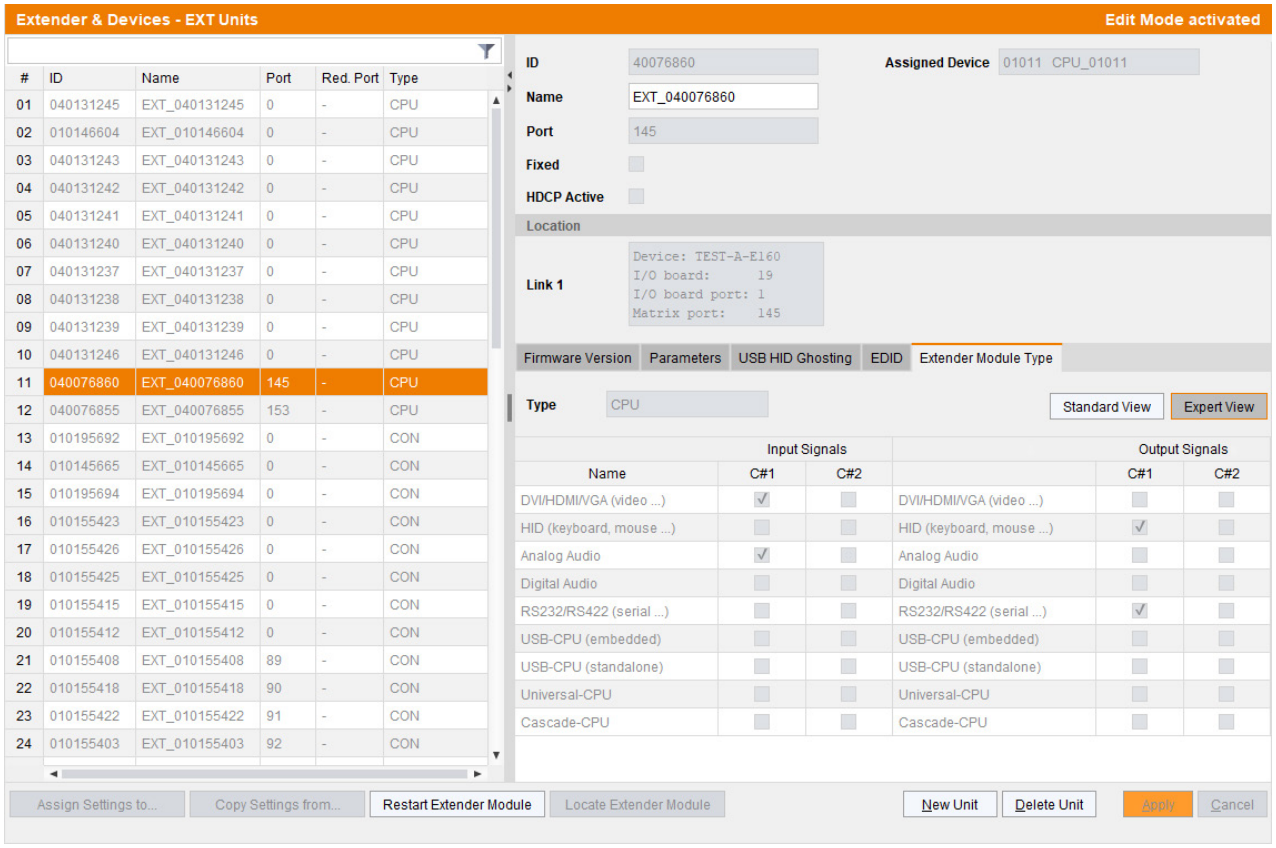


*Fig. 56 Menu **Extender & Devices - EXT Units - Extender Module Type - Expert View***

The tabs “USB HID Ghosting” and “EDID” are CPU-specific and explained in section 6.7.6, page 92.

6.7.1.3 Renaming an EXT Unit

To rename an EXT Unit after initially connecting an extender module to the matrix, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of an extender module to be renamed.
4. Delete the name in the **Name** field and enter the new name.
5. Click **Apply** to confirm the changes.
6. Click **Deactivate Edit Mode** in the toolbar.

6.7.2 Managing Extender Parameters

Extender module related parameters can be read out, displayed, and changed in this menu. The behavior of the parameters depends on the individual extender modules. Please refer to the manual of the respective extender module to get information about what the displayed parameters mean.

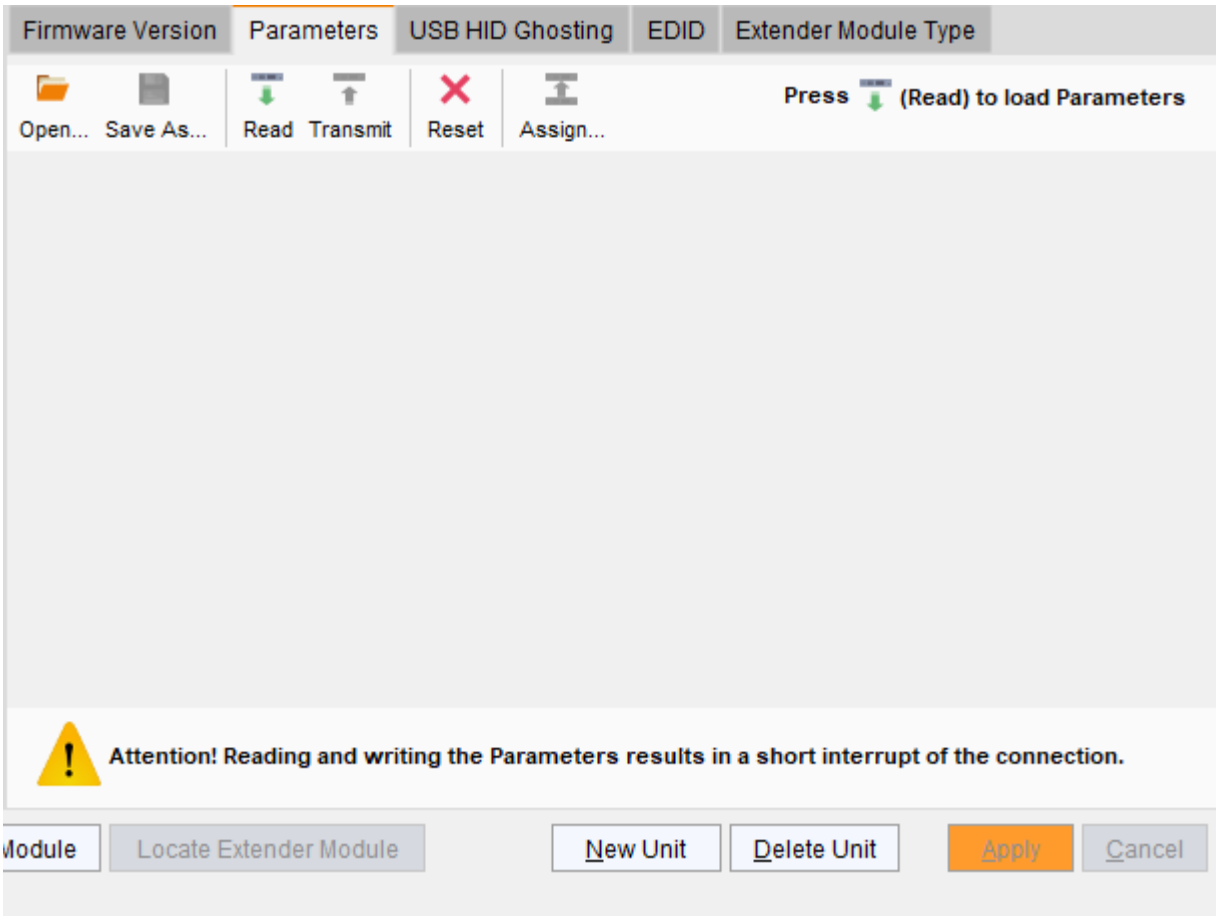


*Fig. 57 Menu **Extender & Devices - EXT Units - Read parameters***

The following functions are available in the **Parameters** tab:

Button	Function
Open…	Open locally saved parameters.
Save As…	Save the parameters locally (file Config.txt).
Read	Read the parameters of the extender module.
Transmit	Transmit the parameters to the extender module and activate.
Reset	Reset the parameters of the extender module to factory settings.
Assign	Assign the parameters to several extender modules at the same time.

NOTICE
Reading and writing parameters will result in an interruption of the connection. Do not execute this procedure in live operation.

6.7.2.1 Reading Parameters

To read out and display parameters of an extender module, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the extender module whose parameters are to be displayed.
4. Click the **Parameters** tab on the right side of the working area.
5. Click the button **Read** in the toolbar of the tab.

   A notification appears.

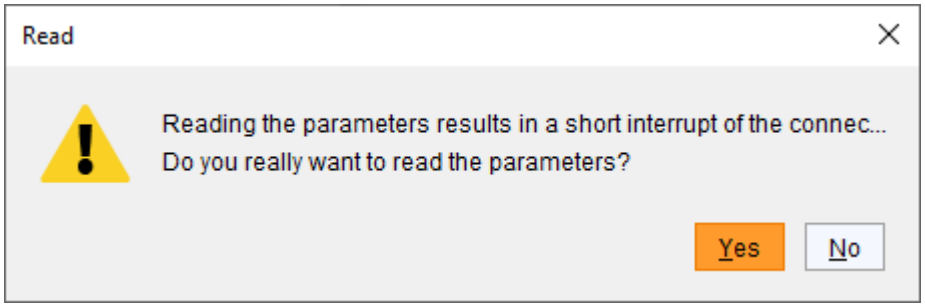


*Fig. 58 Notification **Extender & Devices - EXT Units - Reading Parameters***

6. Click **Yes** to confirm the reading.

   The parameters of the extender module are read out and displayed on the right side of the working area. At the same time, the connection will be disconnected for a few seconds.

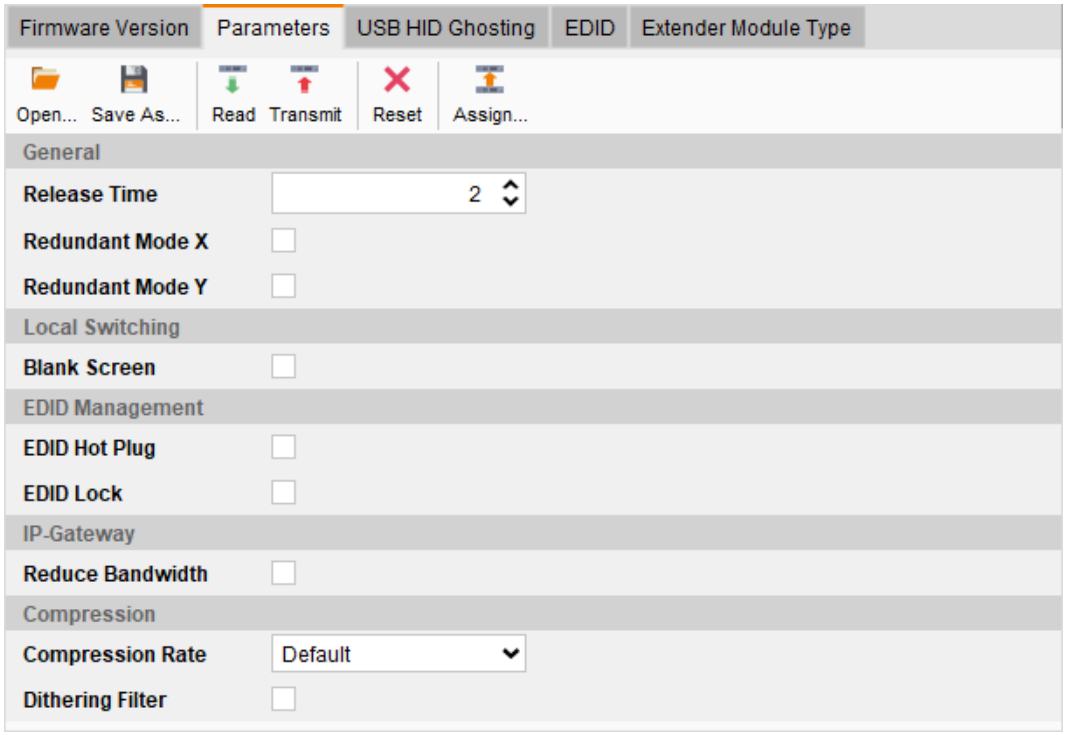


*Fig. 59 Menu **Extender & Devices - EXT Units - Displayed parameters***

The parameters depend on the type and firmware version of the extender module. To find out more about possible extender module parameters, please refer to the respective extender module manual or contact the manufacturer's technical support.

6.7.2.2 Changing Parameters

To change parameters of an extender module, proceed as follows:

1. Read the parameters as described in the previous section.
2. Change the parameters.
3. Click **Transmit**.

   A query for transmission appears.
4. Click **Yes** to transmit the modified parameters to the extender module.

   The connection is interrupted for a short time. The progress of the transmission of parameters is displayed.
5. Click **Close** when the transmission is completed (green line).

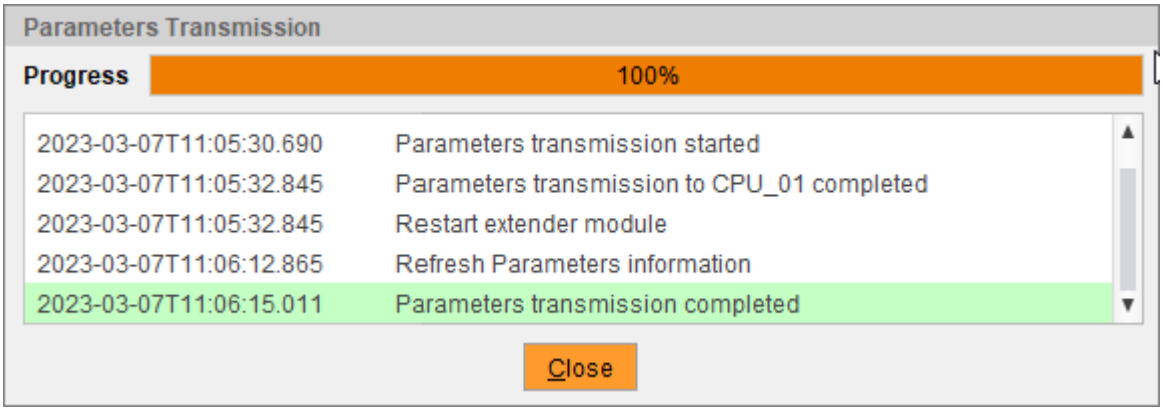


*Fig. 60 Menu **Extender & Devices - EXT Units - Transmission finished***

6. Click **Deactivate Edit Mode** in the toolbar.

6.7.2.3 Assigning Parameters

To assign parameters of an extender module to another one, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the extender module whose parameters are to be displayed.
4. Click the **Parameters** tab on the right side of the working area.
5. Click **Read** in the toolbar of the tab.

   A notification appears.
6. Click **Yes** to confirm the reading.

   The parameters of the extender module are read out and displayed on the right side of the working area. At the same time, the connection will be disconnected for a few seconds.
7. Click **Assign**.

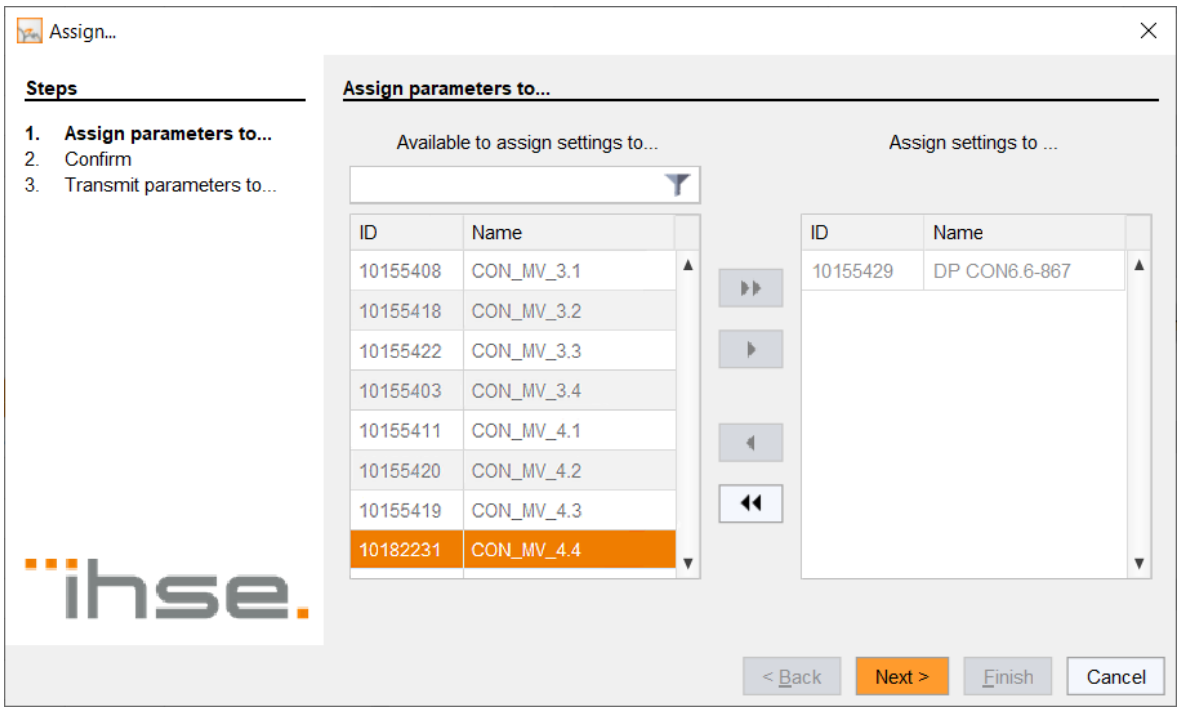


*Fig. 61 Menu **Extender & Devices - EXT Units - Select EXT Units***

8. Select the EXT Units of those extender modules the currently displayed parameters should be assigned to. By pressing and holding down Ctrl at the same time, more than one EXT Unit can be highlighted.
9. Click ▶ to move the highlighted EXT Units to the **Assign settings to** list. By clicking ▶▶, all EXT Units will be moved to the **Assign settings to** list.
10. To remove highlighted EXT Units from the **Assign settings to** list, click ◀. By clicking ◀◀, all EXT Units will be removed from the **Assign settings to** list.
11. Click **Next >**.

    A query to start the assignment appears.

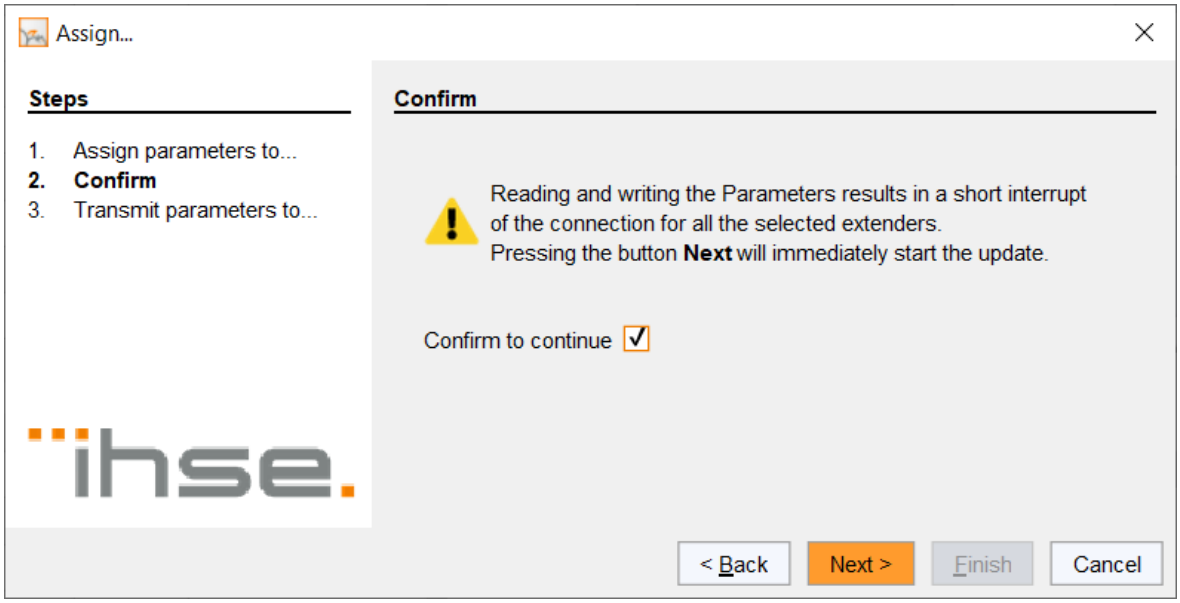


*Fig. 62 Menu **Extender & Devices - EXT Units - Start parameter assignment***

12. Tick the **Confirm to continue** checkbox to confirm the start of the assignment.
13. Click **Next >** to start the assignment.

    The progress of the parameter assignment is displayed.

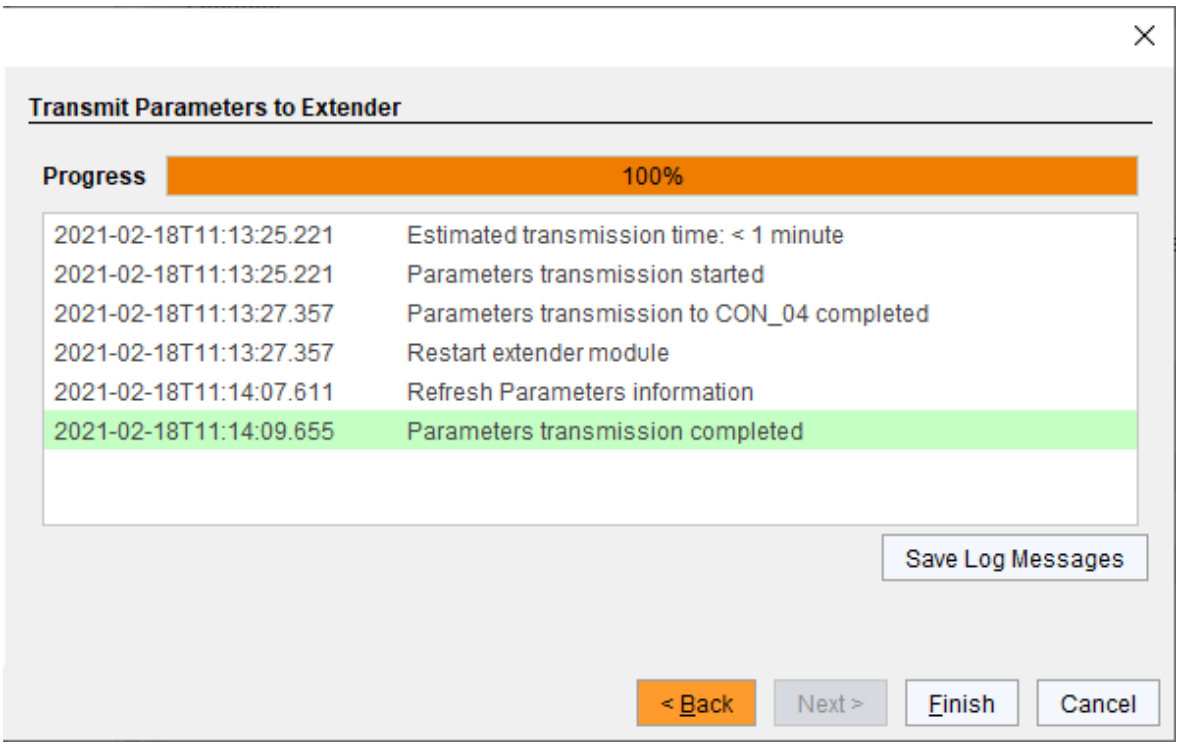


*Fig. 63 Menu **Extender & Devices - EXT Units - Assignment finished***

14. Click **Finish** when the parameter assignment is completed (green line).
15. Click **Deactivate Edit Mode** in the toolbar.

6.7.3 Manual Creation and Configuration of Fixed Port EXT Units

There are three types of Fixed Port EXT Units.

- USB 2.0 CON/CPU Unit: To connect a CON/CPU extender module via USB cable (see following section).
- Cascading CON/CPU Unit: Necessary for creating a cascaded system of two matrices (see section 6.12, page 153.
- Fixed CON/CPU Unit: Useful in systems where it is necessary to be able to exchange faulty extender modules without any need to change the configuration.

6.7.3.1 Configuring EXT Units for USB 2.0 Extender Modules

To use USB 2.0 extender modules, the respective EXT Unit has to be created manually and be configured as fixed port in this menu. USB 2.0 EXT Units can be configured for independent switching or can be assigned to already existing CON Devices or CPU Devices.

1. Select **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click **New Unit**.
   A selection dialog appears.

The selection menu only contains the entries **Fixed CON Unit** and **Fixed CPU Unit** with matrix firmware version 5.04 or higher.

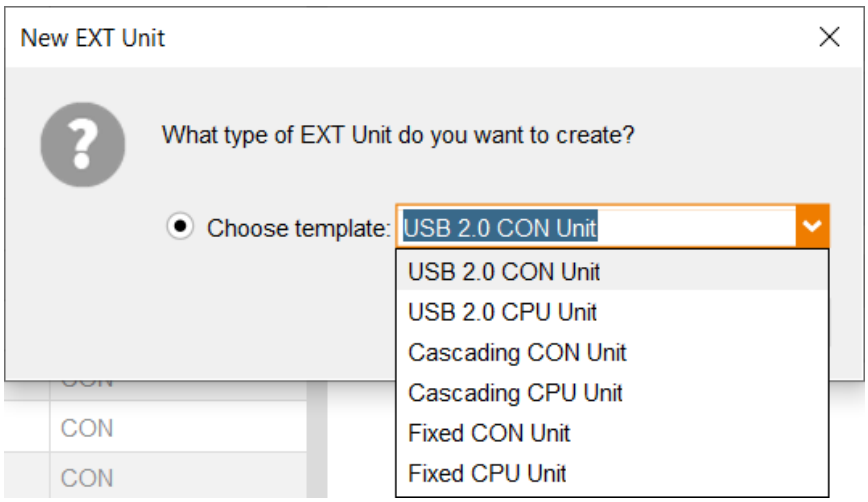


*Fig. 64 Dialog **New EXT Unit***

4. Click on the arrow to open a drop-down menu and select either **USB 2.0 CON Unit** or **USB 2.0 CPU Unit**.
   An EXT Unit with an eight-digit ID will be created, starting with digit **9**.

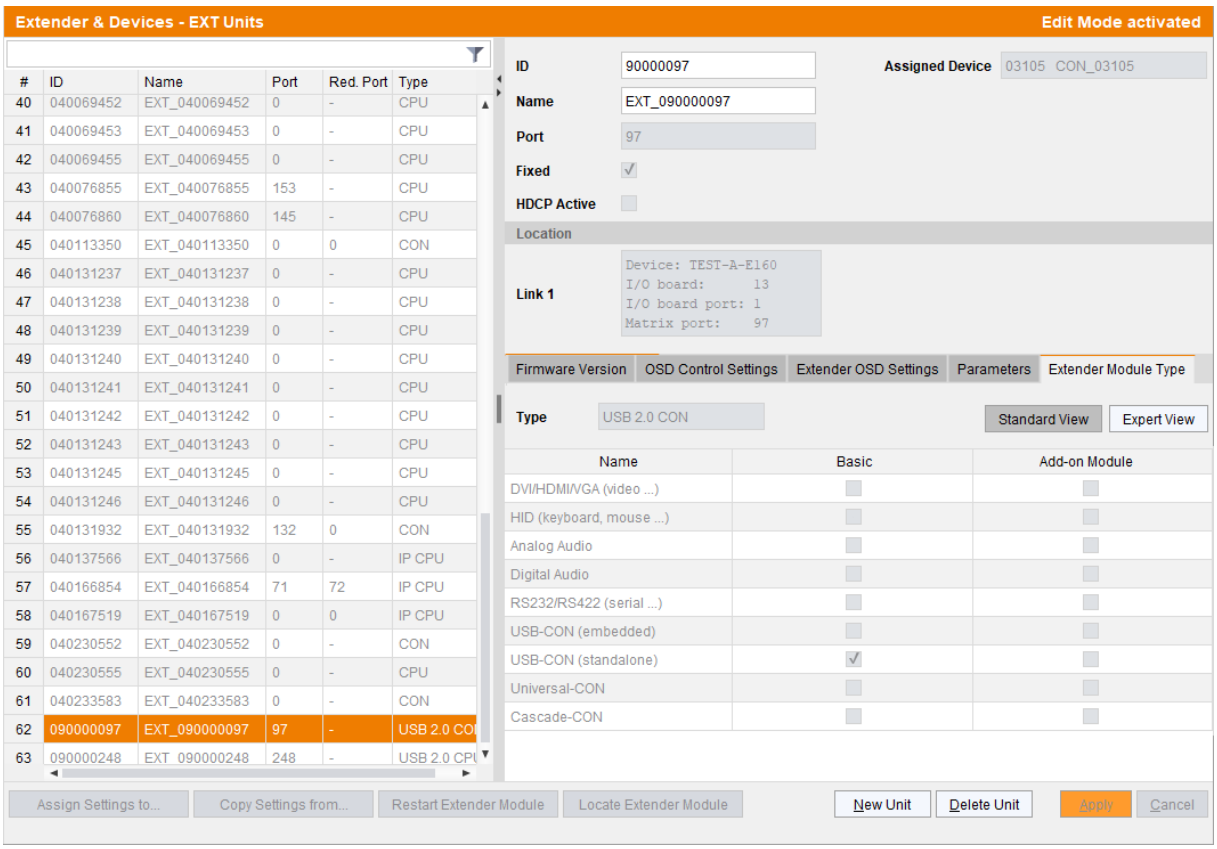


*Fig. 65 Menu **Extender & Devices - EXT Units - Extender Type - USB 2.0***

5. Enter an appropriate name for the EXT Unit in the **Name** field.
6. Enter the port number of the matrix in the **Port** field to which the USB 2.0 stand-alone extender module is physically connected.
7. Click **Apply** to confirm the creation of the EXT Unit.

   A dialog appears to restart the I/O board.

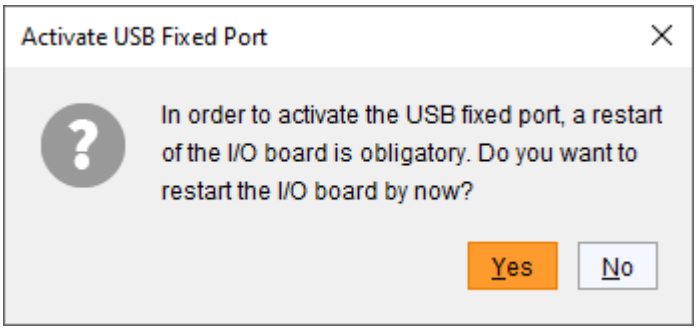


*Fig. 66 Dialog **Activate USB Fixed Port***

8. Click **Yes** to restart the I/O board to activate the fixed port for the new EXT Unit.

   After restarting the I/O board, the parameters and settings of the USB 2.0 extender module are shown in the working area of the respective EXT Unit.
9. The USB 2.0 CPU/CON EXT Unit has to be either assigned to an existing CPU/CON Device or a new CPU/CON Device has to be created for the assignment:
   - for a **CPU Device** see section 6.8, page 106
   - for a **CON Device** see section 6.8.8, page 113
10. If you use parallel operation within the matrix, set the **Release Time** in the **System Settings > Switch** menu to **10 s** or more (see section 6.5.6, page 48).

    The USB 2.0 EXT Unit is now configured and can be used.

Manually created EXT Units are always set as fixed port EXT Units. This configuration is necessary if you want to switch, e.g., USB 2.0 connections via the matrix.
To make a fixed port available again for Flex Port EXT Units after deleting a fixed port EXT Unit, a restart of the I/O board is necessary.

6.7.4 Configuring EXT Units for USB 3.0 Extender Modules

To use USB 3.0 extender modules connected to a UNI I/O board, SFP modules based on 6.25 Gbit/s are required.

USB 2.0 extender modules can alternatively be connected to fixed ports of I/O boards (see section 6.7.3, page 87).

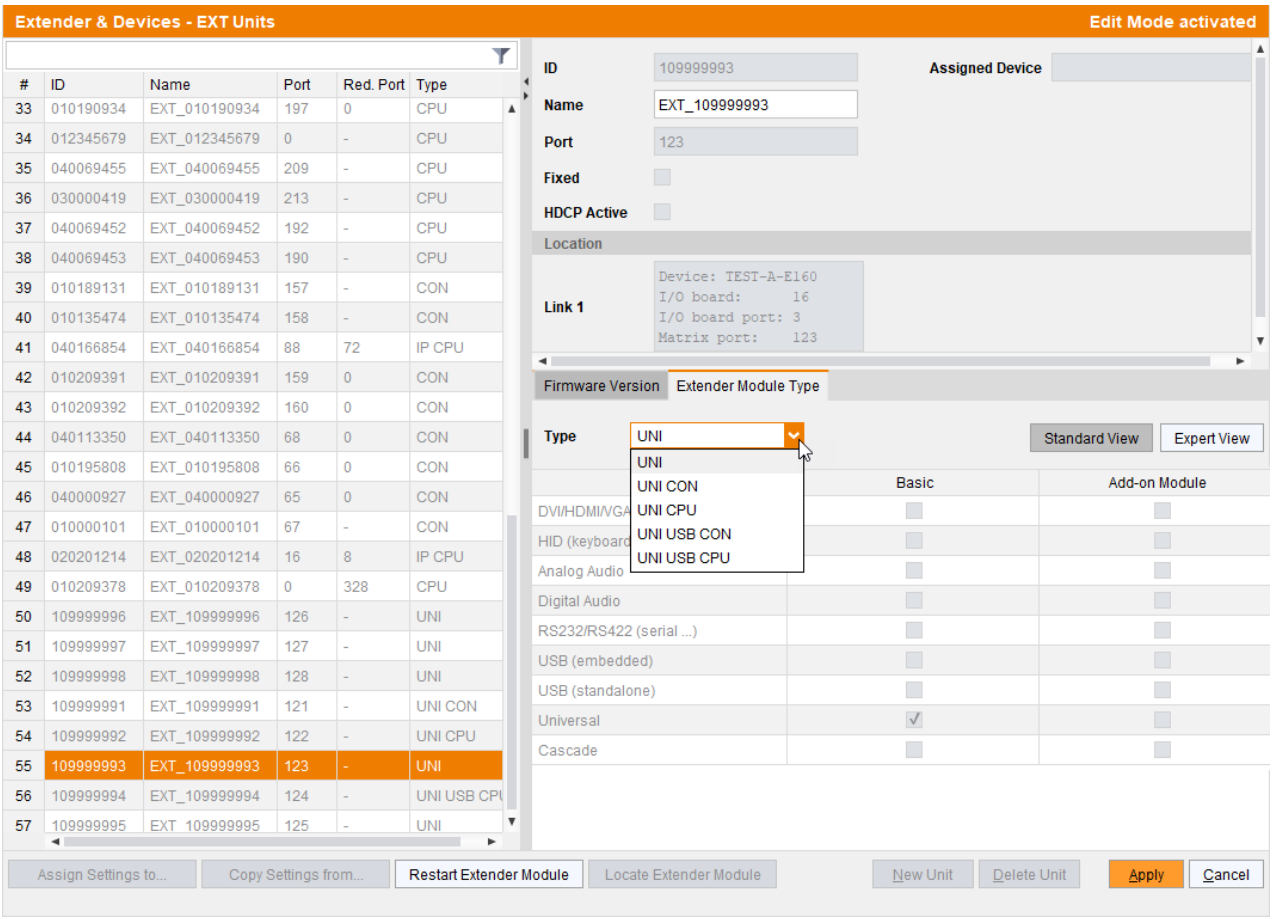


*Fig. 67 Menu **Extender & Devices - EXT Units - Configuring EXT Units at UNI I/O Boards***

To configure an I/O port for use with USB 3.0 extender modules, proceed as follows:

1. Select **Extender & Devices > EXT Units** in the task area.
2. Insert a UNI I/O board with fiber or Cat X SFPs to the matrix and connect the USB 3.0 extender module according to the required application.

An EXT UNIT will only be created for a port when an SFP is inserted. If the SFP is removed, the extender is displayed with port 0. The ID of the EXT Unit is the serial number of the I/O board plus the port number within the I/O board. This makes the IDs one digit longer. The appropriate types always start with “UNI”.

3. To configure a UNI EXT Unit as a EXT-CON Unit:
   3.1. Select one of the UNI EXT Units in the **EXT Units** list that are physically connected to a USB 3.0 CON Unit.
   3.2. Select the item **UNI USB CON** in the **Type** selection box of the **Extender Module Type** tab.
   3.3. Click **Apply** to confirm the setting.
   3.4. Click **Yes** to restart the I/O board upon request in the dialog.

4. To configure an EXT Unit as a CPU Unit:
   4.1. Select one of the EXT Units in the **Ext Units** list that are physically connected to a USB CPU Unit.
   4.2. Select the item **UNI CPU USB** in the **Type** selection box of the **Extender Module Type** tab.
   4.3. Click **Apply** to confirm the setting.
   4.4. Click **Yes** to restart the I/O board upon request in the dialog.
5. The USB 3.0 CPU/CON EXT Unit has to be either assigned to an existing CPU/CON Device or a new CPU/CON Device has to be created for the assignment:
   - for a **CPU Device** see section 6.8, page 106
   - for a **CON Device** see section 6.8.8, page 113

   After assigning EXT Units to CON/CPU Devices, the USB 3.0 CON/CPU Ext Units are configured and can be used.
6. If you use parallel operation within the matrix, set the **Release Time** in the **System Settings > Switch** menu to **10 s** or more (see section 6.5.6, page 48).

If changing an EXT Unit from a USB CON to a USB CPU, a restart of the I/O board is necessary.

6.7.5 Configuring EXT Units for native 3G SDI Usage

For the use of SDI (Serial Digital Interface), the matrix has to be configured in this menu. Using SDI requires at least one UNI I/O board and appropriate SDI SFP modules according to the SDI video signal to be used.

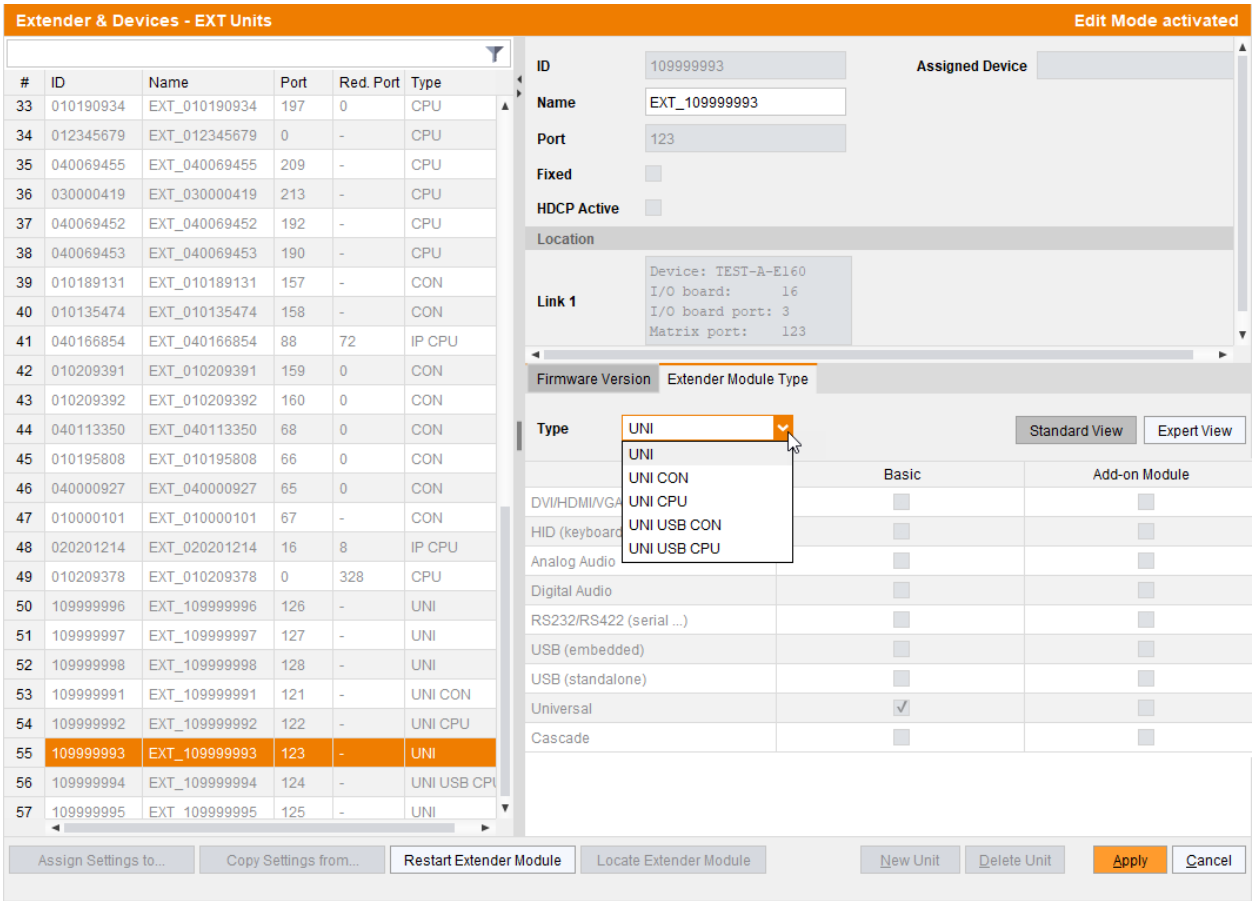


*Fig. 68 Menu **Extender & Devices - EXT Units - Configuring EXT Units***

To configure an SFP for using as an SDI input/output, proceed as follows:

1. Select **Extender & Devices > EXT Units** in the task area.
2. Insert an I/O board with SDI connectors to the matrix and connect the SDI extender module according to the required application.

An EXT UNIT will only be created for a port when an SFP is inserted. If the SFP is removed, the extender is displayed with port 0. The ID of the EXT Unit is the serial number of the I/O board plus the port number within the I/O board. This makes the IDs one digit longer. The appropriate names always start with “UNI”.

3. To configure an EXT Unit as an SDI input:
   3.1. Select one of the extender modules in the **EXT Units** list that are physically connected to an SDI CON Unit.
   3.2. Select the **UNI CPU** item in the **Type** selection box of the **Extender Module Type** tab.
   3.3. Click **Apply** to confirm the setting.
   3.4. Click **Yes** to restart the I/O board upon request in the dialog.
4. To configure an EXT Unit as an SDI output:
   4.1. Select one of the extender modules in the **Ext Units** list that are physically connected to an SDI CPU Unit.
   4.2. Select the **UNI CON** item in the **Type** selection box of the **Extender Module Type** tab.
   4.3. Click **Apply** to confirm the setting.
   4.4. Click **Yes** to restart the I/O board upon request in the dialog.
5. The edited EXT Units for the SDI inputs and outputs have to be either assigned to an existing CPU/CON Device or a new CPU/CON Device has to be created for the assignment:
   - for a **CPU Device** see section 6.8, page 106
   - for a **CON Device** see section 6.8.8, page 113

   After assigning EXT Units to CON/CPU Devices, the SDI inputs and outputs are configured and can be used.

If changing a UNI Unit from a UNI CON to a UNI CPU, a restart of the I/O board is necessary. UNI ports of type CON can only be assigned to CON Devices, UNI ports of type CPU can only be assigned to CPU Devices. After classification into CONs and CPUs, CONs can only be switched to CPUs and vice versa. It is not possible to switch a CON to another CON or a CPU to another CPU.

6.7.6 Configuring Specific CPU Extender Module Settings

6.7.6.1 Managing USB-HID Ghosting

This function allows specific keyboard and mice descriptors (device descriptions) to be permanently stored in the CPU Unit. This eliminates the need to register and deregister the keyboard and mouse on an operating system each time there is a shared use of a source by two or more consoles within a matrix.

Next to the use of keyboard commands (see matrix user manual), the activation and management of the USB-HID Ghosting information can also be handled centrally via matrix to reach all connected extender modules at the same time.

☑ We strongly recommend the usage of USB-HID Ghosting when configuring Multi-Screen Control.

General Preparation

To use the USBHID Ghosting management via Tera Tool software, it is required that USB-HID Ghosting has already been activated at at least one CPU Unit via keyboard command or the USB-HID Ghosting information is already available as a file with the file extension *`.dhg`.

Several general options are available.

1. Click **Extender & Devices > EXT Units** in the task area.
2. Select a CPU EXT Unit and click the **USB HID Ghosting** tab in the working area.

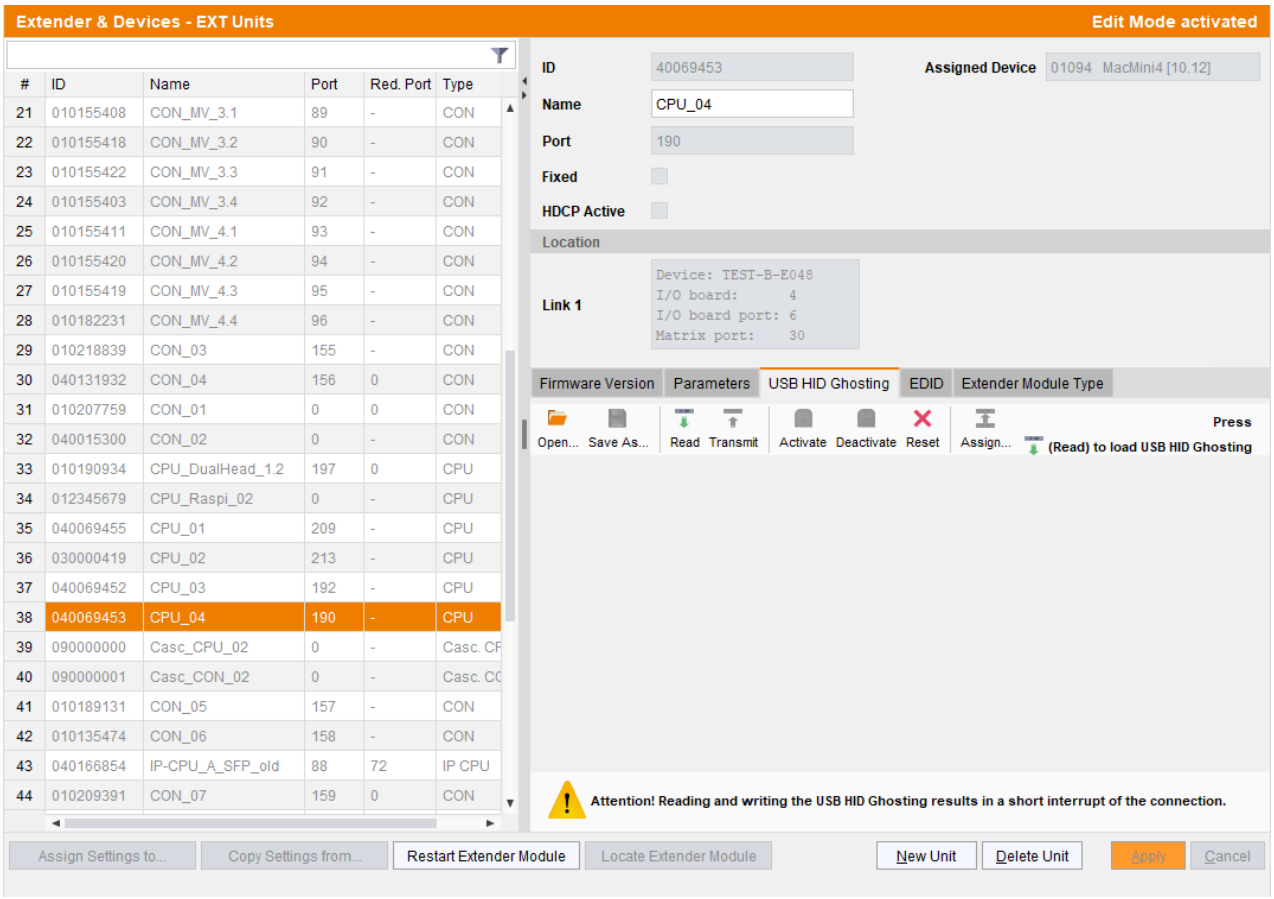


*Fig. 69 Menu **Extender & Devices - EXT Units - USB HID Ghosting***

The following functions are available in the **USB HID Ghosting** tab:

Button	Function
Open…	Open the locally saved USB-HID Ghosting file.
Save As…	Save the USB-HID Ghosting locally (`EXT_ID-Nr.dhg` file e.g. 40069453.dhg).
Read	Read the USB-HID Ghosting of the extender module.

Button	Function
Transmit	Transmit the USB-HID Ghosting to the extender module and activate.
Activate	Activate temporarily deactivated USB-HID Ghosting.
Deactivate	Deactivate the USB-HID Ghosting. The USB descriptor is not deleted. It is still stored in the extender but not used.
Reset	Reset the USB-HID Ghosting of the extender module to factory settings. The USB descriptor will be deleted, and USB-HID Ghosting is no longer active.
Assign	Assign the USB-HID Ghosting to several extender modules at the same time

NOTICE
While reading and writing USB-HID Ghosting information, there will be a short interrupt of the USB-HID and video signal.

Reading USB-HID Ghosting

To read out and display the USB-HID Ghosting of CPU extender modules, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the CPU extender module with active USB-HID Ghosting to be displayed.
4. Click the **USB HID Ghosting** tab on the right side of the working area.
5. Click **Read** in the symbol bar of the tab.

   A query to read the USB-HID Ghosting appears.

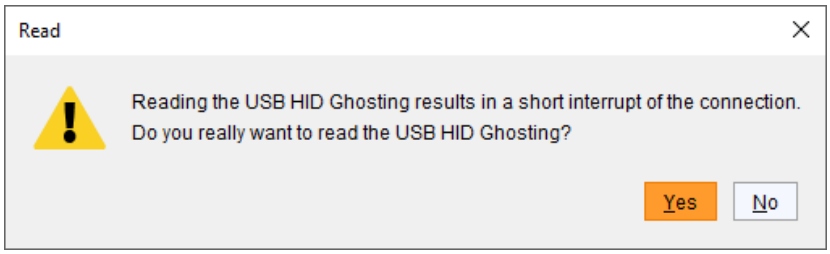


*Fig. 70 Notification **Extender & Devices - EXT Units - Reading USB-HID Ghosting***

6. Click **Yes** to confirm the reading.

   The current USB-HID Ghosting information of the CPU extender module is read out and displayed on the right side of the working area. At the same time, the connection will be disconnected for a few seconds.

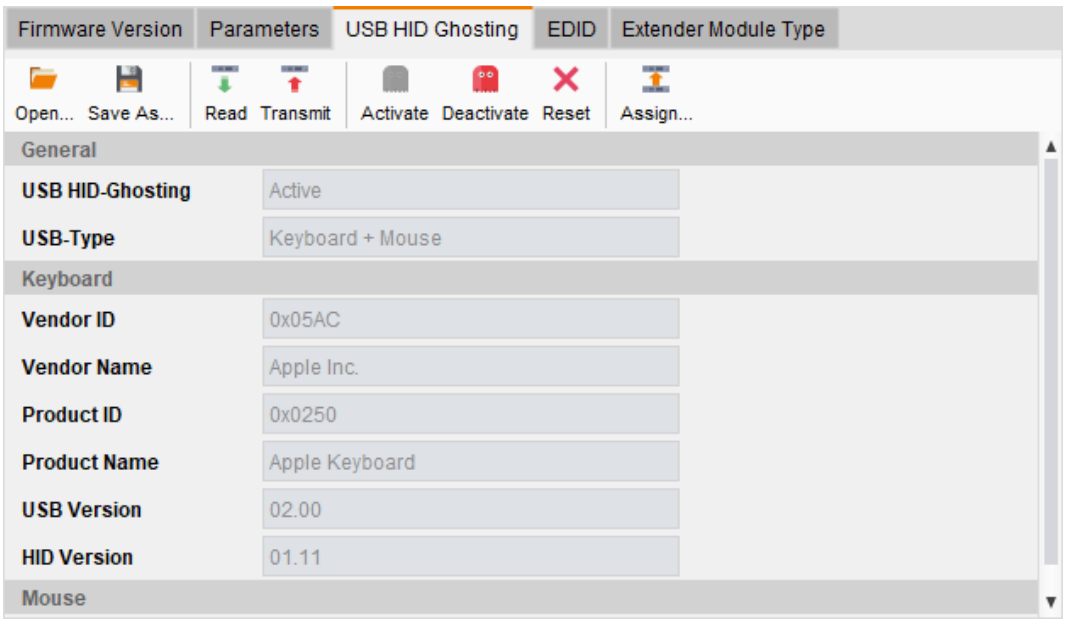


*Fig. 71 Display of **USB-HID Ghosting** information read out*

Loading a USB-HID Ghosting Template

To load a USB-HID Ghosting template (file extension: *`.dhg`) for a further distribution proceed as follows: ???

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the CPU extender module to transmit the USB-HID Ghosting to.
4. Click the **USB HID Ghosting** tab on the right side of the working area.
5. Click **Open** in the symbol bar of the tab.
6. Go to the storage location of the respective template with the file extension *`.dhg`, select the desired template to be loaded and click **Select** in the dialog.

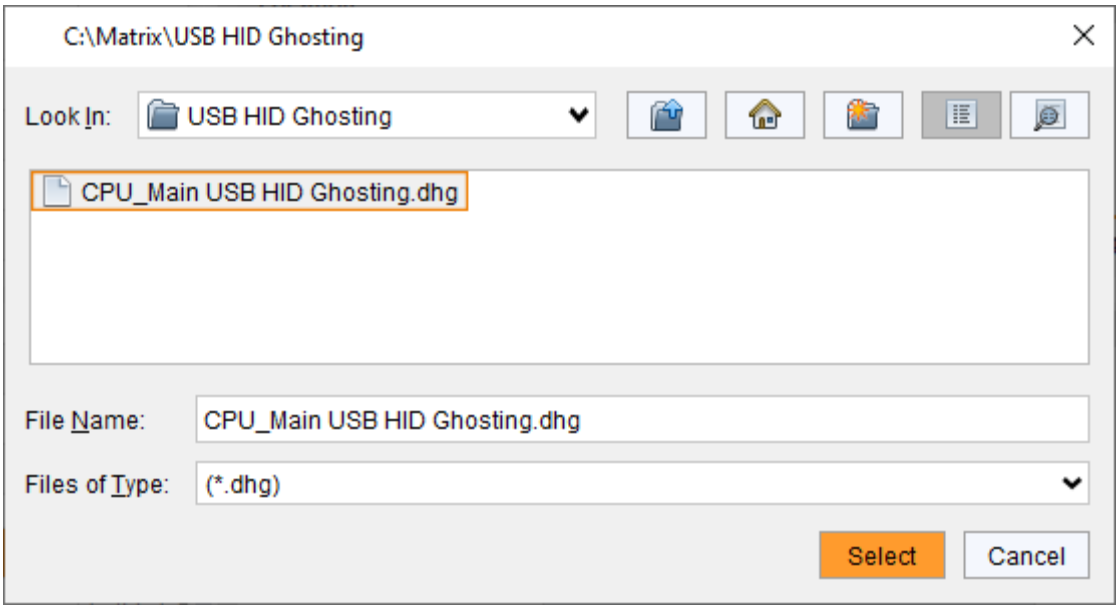


*Fig. 72 Selection dialog **Extender & Devices - EXT Units - Opening USB-HID Ghosting template***

7. The USB-HID Ghosting template is displayed on the right side of the working area.
8. Click **Transmit** in the symbol bar of the tab.
   A query for transmission appears.
9. Click **Yes** to transmit the loaded USB-HID Ghosting to the CPU extender module.

The progress of the transmission is displayed.

10. Click **Close** when the USB-HID Ghosting transmission is completed (green line).

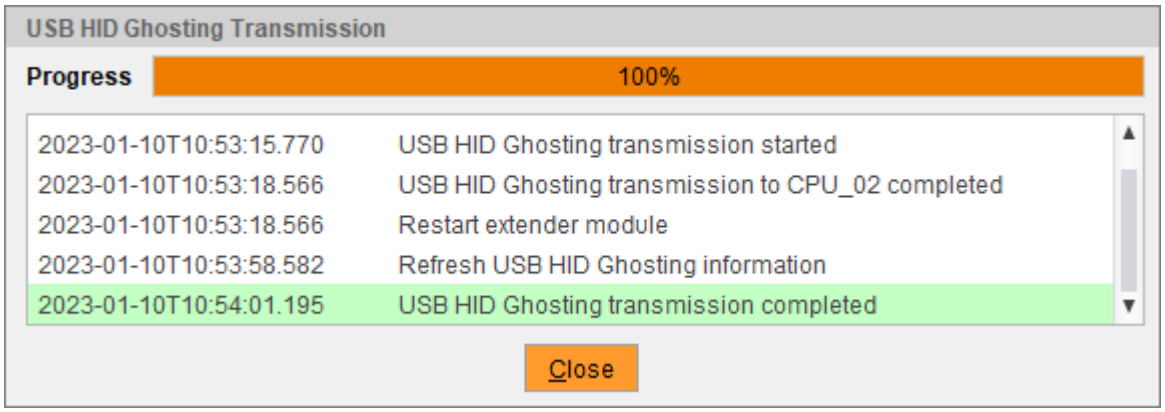


*Fig. 73 Menu **Extender & Devices - EXT Units - Transmission finished***

11. Click **Deactivate Edit Mode** in the toolbar.

Assigning USB-HID Ghosting

To assign any manually activated USB-HID Ghosting of a CPU extender module to any to the matrix connected CPU extender module, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the CPU extender module with active USB-HID Ghosting to be displayed.
4. Click the **USB-HID Ghosting** tab on the right side of the working area.
5. Click **Read** in the symbol bar of the tab.

   A query to read the USB-HID Ghosting appears.
6. Click **Yes** to confirm the reading.

   The current USB-HID Ghosting information of the CPU extender module is read out and displayed on the right side of the working area. At the same time, the connection will be disconnected for a few seconds.
7. Click **Assign** in the symbol bar of the tab.

   A dialog to assign the USB-HID Ghosting appears.

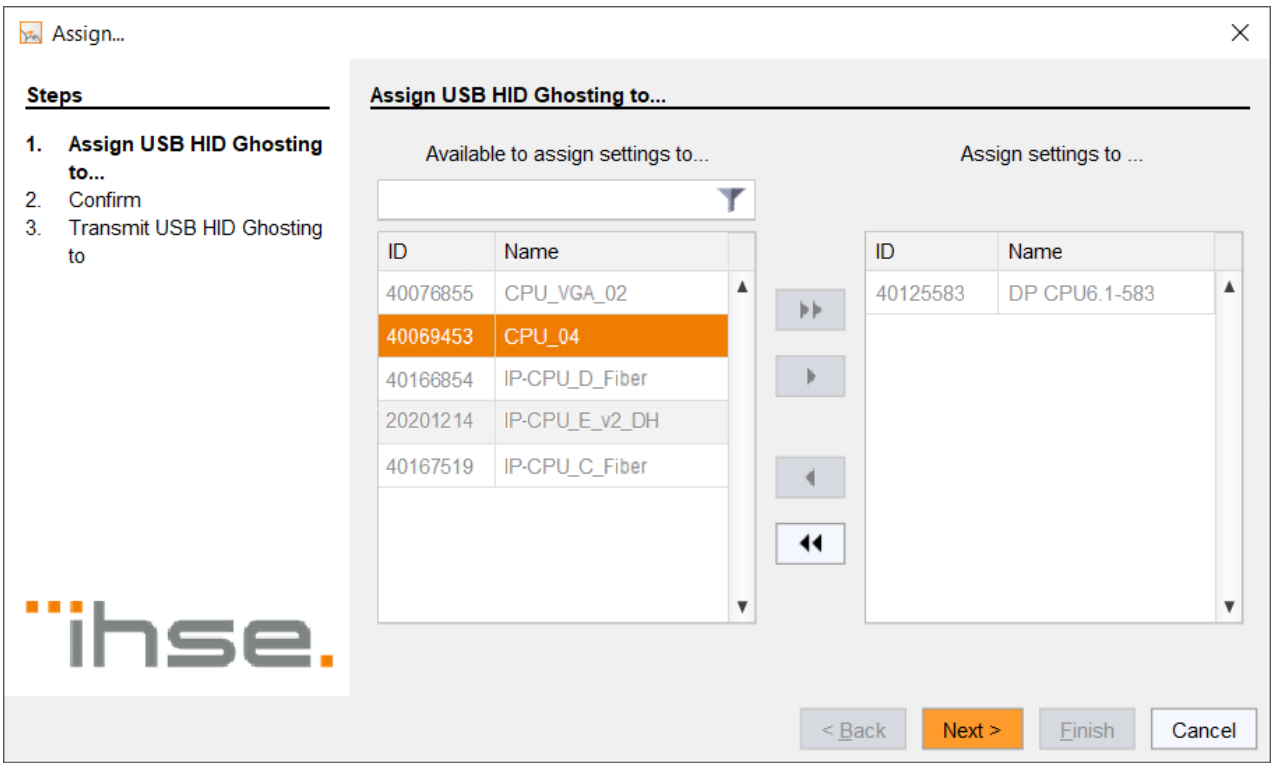


*Fig. 74 Menu **Extender & Devices - EXT Units - Assign USB-HID Ghosting to***

8. Select those EXT Units in the **Available to assign settings to** field that are intended to receive the USB-HID Ghosting information. By pressing and holding down Ctrl at the same time, more than one EXT Unit can be highlighted.
9. Click ▶ to move the highlighted EXT Units to the **Assign settings to** list. By clicking ▶▶, all EXT Units will be moved to the **Assign settings to** list.
10. To remove highlighted EXT Units from the **Assign settings to** list, click ◀. By clicking ◀◀, all EXT Units will be removed from the **Assign settings to** list.
11. Click **Next >**.

    A query to start the assignment appears.

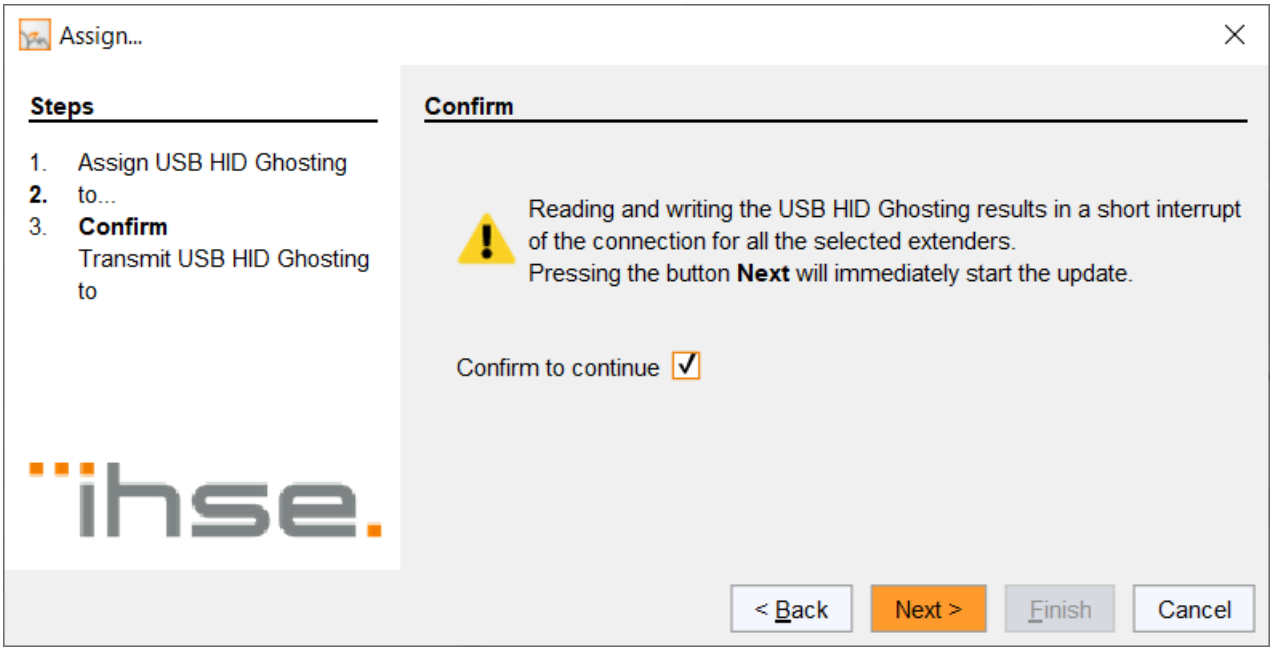


*Fig. 75 Query **Extender & Devices - EXT Units - Confirm assignment***

12. Tick the **Confirm to continue** checkbox to confirm the assignment.

13. Click **Next >** to start the assignment process.

    The progress of the USB-HID Ghosting assignment is displayed.

14. Click **Finish** when the USB-HID Ghosting assignment is completed (green).

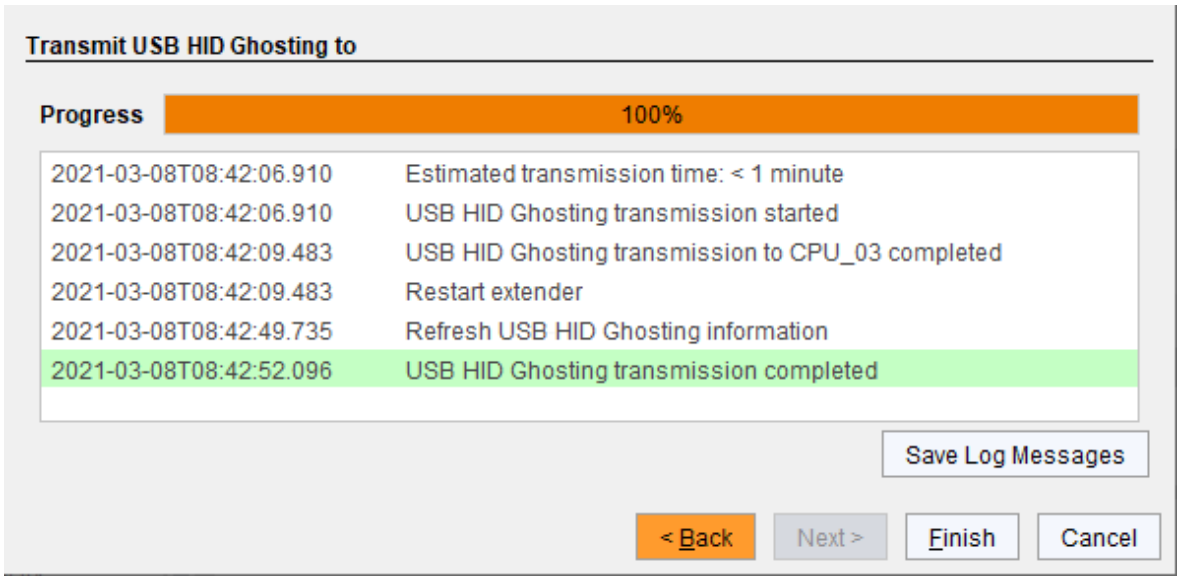


*Fig. 76 Menu **Extender & Devices - EXT Units - Assignment finished***

The USB-HID Ghosting assignment is finished.

15. Click **Deactivate Edit Mode** in the toolbar.

Further options:

- To locally store existing USB-HID Ghosting information of a selected CPU EXT Unit, click **Save As…** in the symbol bar of the tab.
- To delete existing USB-HID Ghosting information of a selected CPU EXT Unit, click **Reset** in the symbol bar of the tab.

6.7.6.2 Managing EDID Transfer

By default, the CPU extender modules transmit the factory preset EDID to the sources. This information is suitable in most cases. The EDID can be retrieved and uploaded as a binary file to the CPU Unit.

Next to the use of keyboard commands (see matrix user manual), the management of the EDID can also be handled centrally via matrix to reach all connected extender modules at the same time.

General Preparation

To use EDID management via Tera Tool software it is required that the EDID has already been transmitted to a CPU Unit via keyboard command or the EDID is already available as a file with the file extension *`.bin`.

Several general options are available.

1. Select the menu **Extender & Devices > EXT Units** in the task area.
2. Select the EXT Unit of an extender module and select the **EDID** tab (**EDID 2** for dual head) in the working area.

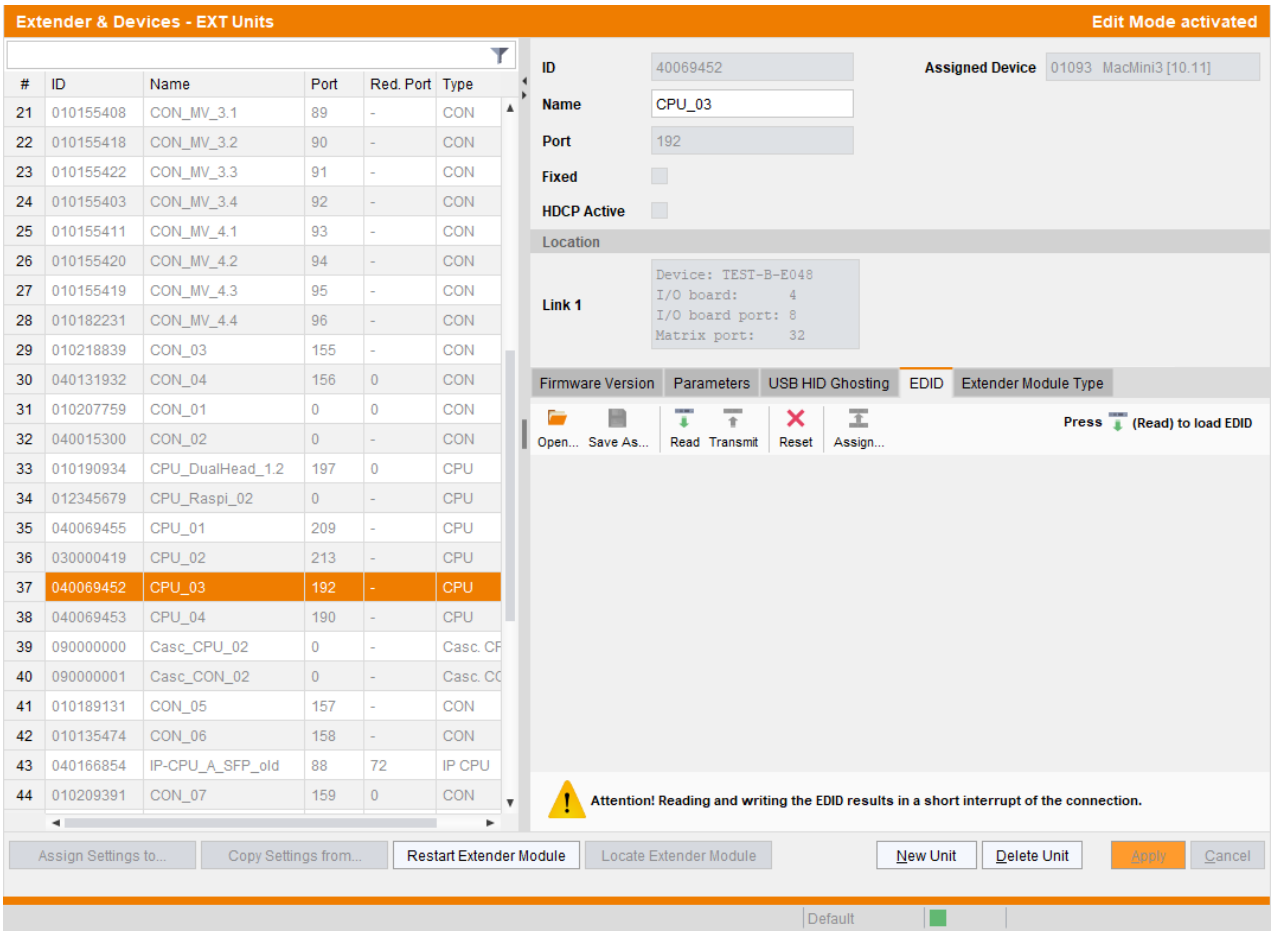


*Fig. 77 Menu **Extender & Devices - EXT Units - EDID***

Button	Function
Open…	Open the locally saved EDID.
Save As…	Save the EDID locally (file extension: `.bin`).
Read	Read the EDID of the extender module.
Transmit	Transmit the EDID to the extender module and activate the EDID.
Reset	Reset the EDID of the extender module to factory settings.
Assign	Assign the EDID to several extender modules at the same time.

Reading an EDID

To read out and display the EDID of an extender module, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the extender module whose EDID is to be displayed.
4. Click the **EDID** tab on the right side of the working area.
5. Click **Read** in the symbol bar of the tab.

   A query to read out the EDID appears.

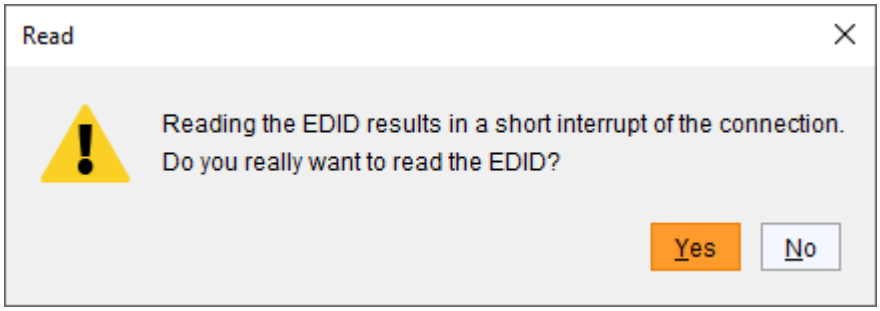


*Fig. 78 Query **Extender & Devices - EXT Units - Reading EDID***

6. Click **Yes** to confirm the reading.

   The EDID of the extender module is read out and displayed. At the same time, the connection will be disconnected for a few seconds.

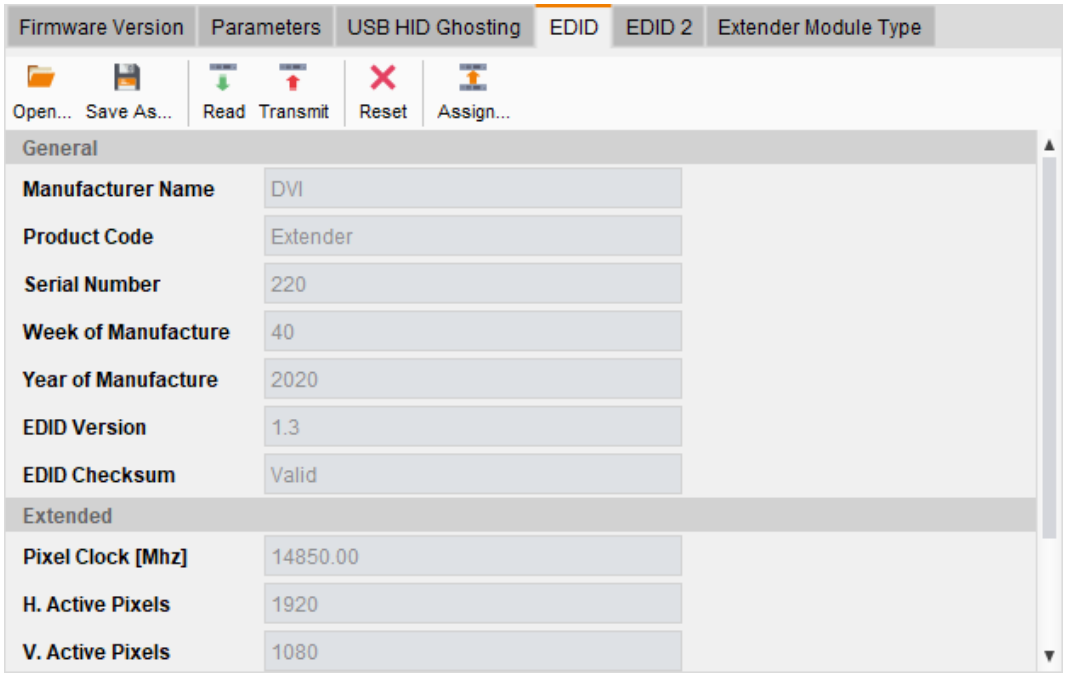


*Fig. 79 Tab **Extender & Devices - EXT Units - EDID - EDID information displayed***

Loading an EDID Template

To load an EDID template (file extension: *`.bin`) for further distribution, proceed as follows:

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **EDID** tab on the right side of the working area.
4. Select the EXT Unit of a CPU extender module to transmit the EDID to.
5. Click **Open** in the symbol bar of the tab.
6. Go to the storage location of the respective template with the file extension *`.bin`, click it and click **Select** in the dialog.

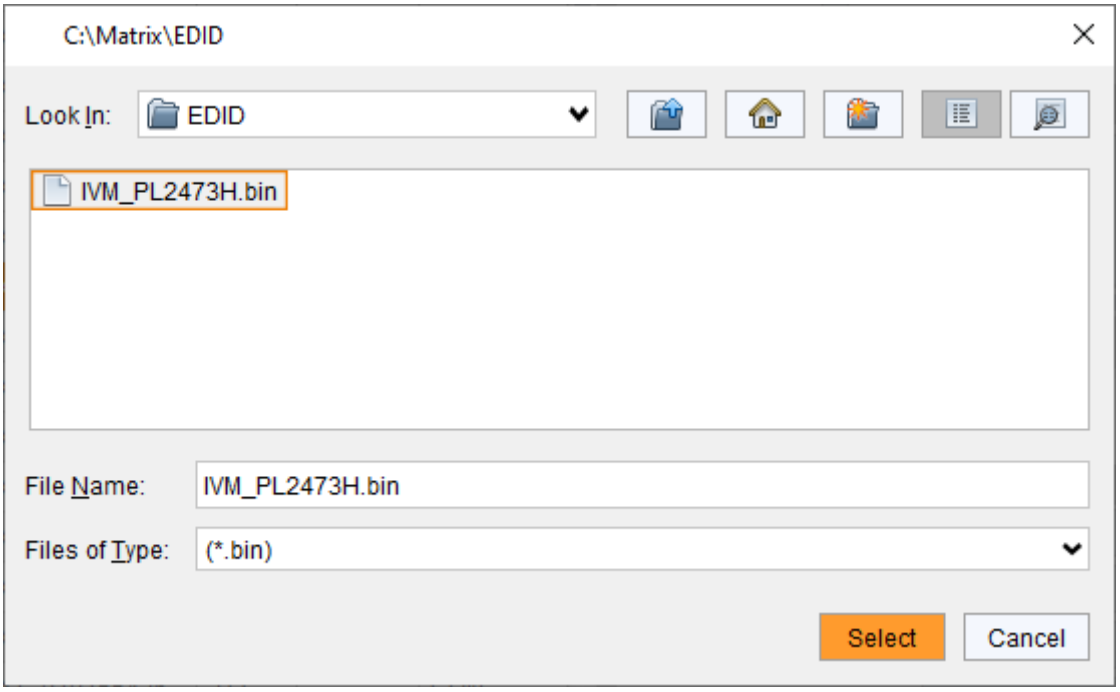


*Fig. 80 Menu **Extender & Devices - EXT Units - Loading EDID***

The EDID is displayed on the right side of the working area.

7. Click **Transmit** in the symbol bar of the tab.
   A query for transmission appears.
8. Click **Yes** to transmit the loaded EDID to the CPU extender module.
   The progress of the transmission is displayed.
9. Click **Close** when the EDID transmission is completed (green).

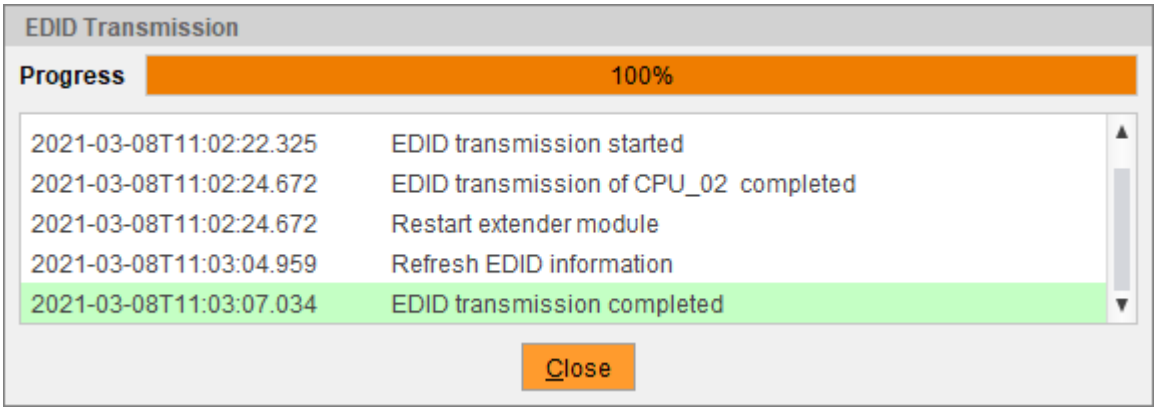


*Fig. 81 Menu **Extender & Devices - EXT Units - Transmission finished***

10. Click **Deactivate Edit Mode** in the toolbar.

Further options:

- To locally store existing EDID of a CPU extender module whose EXT Unit is selected, click **Save As…** in the symbol bar of the tab.
- To set the existing EDID of a CPU extender module whose EXT Unit is selected back to factory settings, click **Reset** in the symbol bar of the tab.

Assigning an EDID

To assign any manually transmitted EDID of an extender module to another one, proceed as follows:

1. Click **Extender & Devices > EXT Units in the task area**.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the extender module with the already transmitted EDID.
4. Click the **EDID** tab on the right side of the working area.
5. Read out and display the EDID (see description in section before).
6. Click **Assign** in the symbol bar of the tab.

   A dialog to assign the EDID appears.

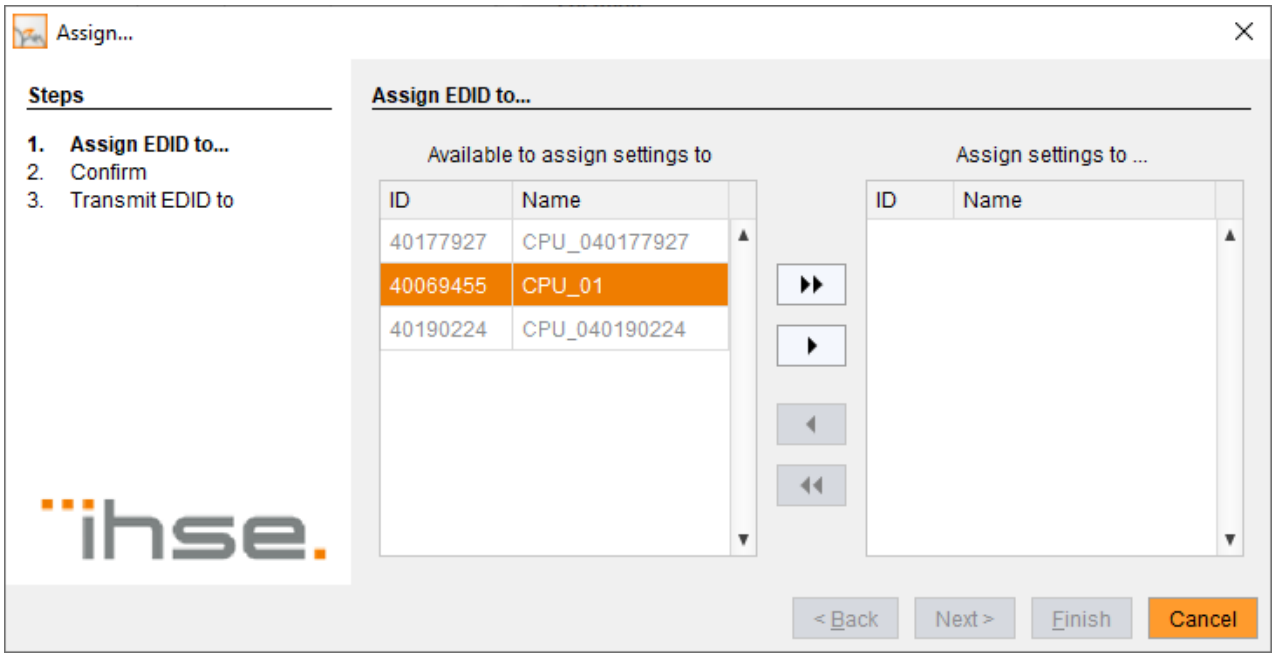


*Fig. 82 Dialog **Extender & Devices - EXT Units - Assign EDID to***

7. Select the EXT Units of those extender modules in the **Available to assign settings to** field that are intended to receive the EDID. By pressing and holding down Ctrl at the same time, more than one EXT Unit can be highlighted.
8. Click ▶ to move the highlighted EXT Units to the **Assign settings to** list. By clicking ▶▶, all EXT Units will be moved to the **Assign settings to** list.
9. To remove highlighted EXT Units from the **Assign settings to** list, click ◀. By clicking ◀◀, all EXT Units will be removed from the **Assign settings to** list.
10. Click **Next >**.

    A query to start the assignment appears.

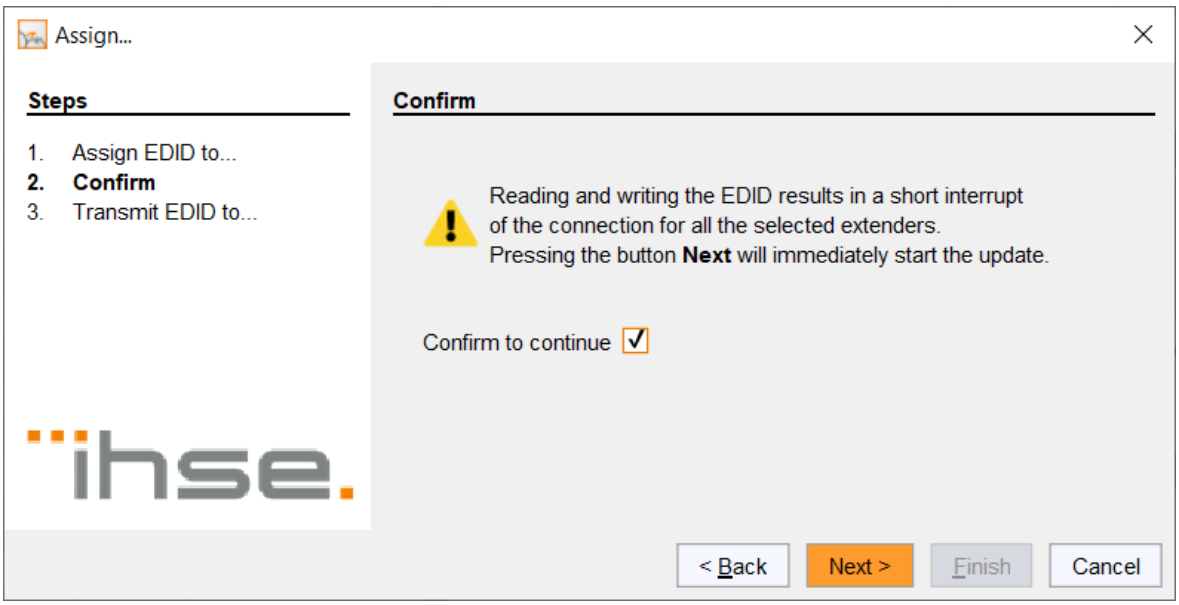


*Fig. 83 Query **Extender & Devices - EXT Units - Confirm assignment***

11. Tick the **Confirm to continue** checkbox to confirm the start of the assignment.
12. Click **Next >**to start of the assignment.

    The progress of the EDID assignment is displayed.
13. Click **Finish** when the EDID assignment is completed (green).

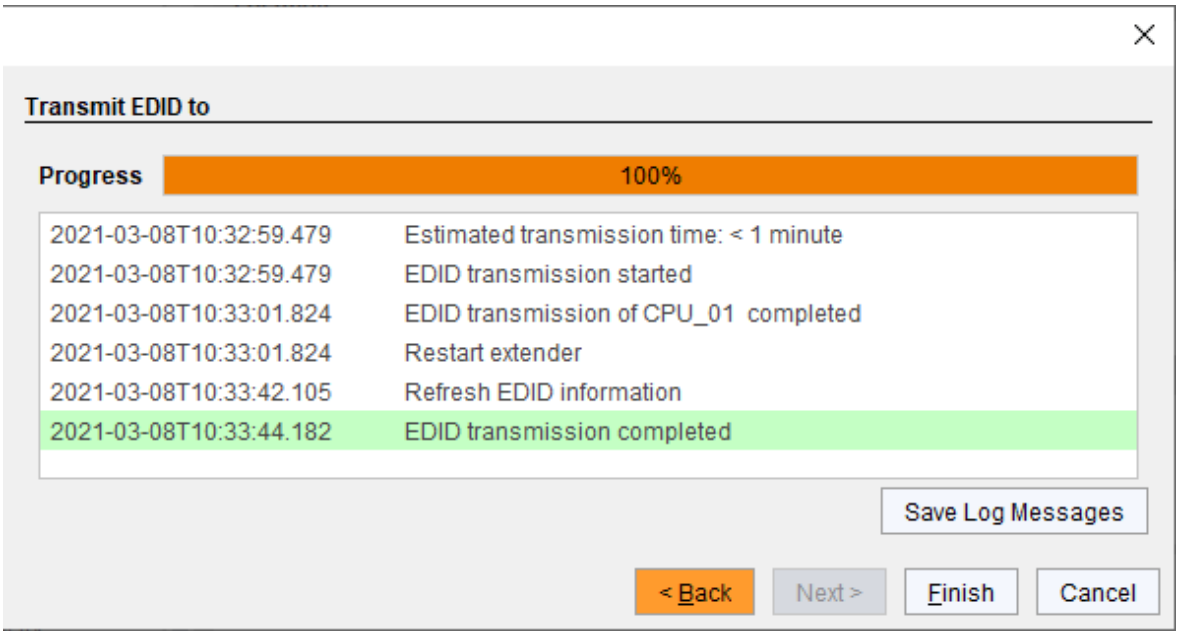


*Fig. 84 Menu **Extender & Devices - EXT Units - EDID Assignment finished***

The EDID assignment is finished.

14. Click **Deactivate Edit Mode** in the toolbar.

6.7.7 Configuring Specific CON Extender Module Settings

6.7.7.1 Configuring Mouse and Keyboard Settings

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON EXT Unit in the **EXT Units** list whose OSD Control settings have to be adjusted.
4. Click the **OSD Control Settings** tab.

   The mouse and keyboard settings for the OSD Control of a CON extender module that is connected to a matrix are made in this menu.

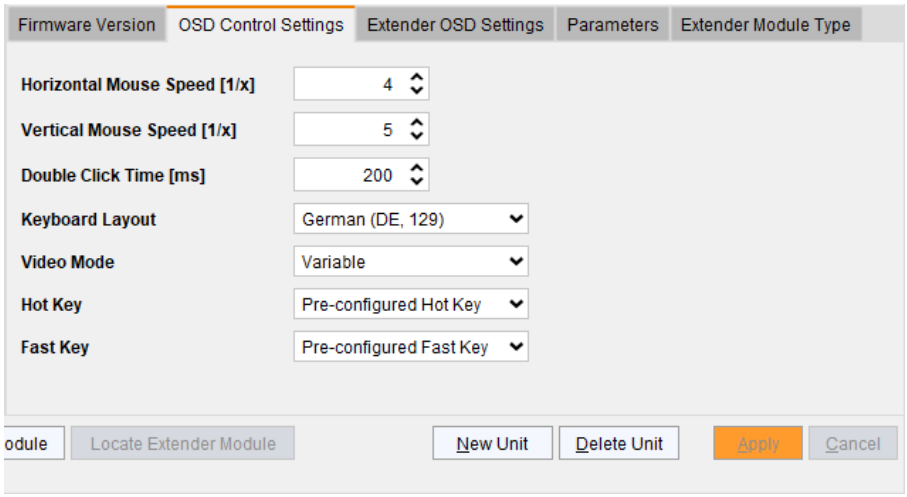


*Fig. 85 Menu **Extender & Devices - EXT Units - OSD Control Settings***

The following parameters can be configured for controlling the OSD:

Field	Entry/Status	Description
Horizontal Mouse Speed [1/x]	1 to 9	Adjusts the horizontal mouse speed, 1 = slow, 9 = fast (default: 4).
Vertical Mouse Speed [1/x]	1 to 9	Adjusts the vertical mouse speed, 1 = slow, 9 = fast (default: 5).
Double Click Time [ms]	100 to 800	Adjusts the time slot for a double-click (default: 200 ms).
Keyboard Layout	Region	Sets the OSD keyboard layout according to the used keyboard (default: German (DE)).
Video Mode	Variable or specific resolution	Sets the resolution that is used when opening the OSD.
Hot Key	Keyboard command	Starts the command mode via keyboard sequence.
Fast Key	Keyboard command	Opens the OSD via direct access. How often the shortcut key has to be pressed depends on the specified key: 1x for function keys or print key, 2x for all other keys.

The settings for the mouse and keyboard are CON EXT Unit-specific and can be set for each CON EXT Unit.

5. Change the desired settings.
6. Click **Apply** to confirm your entries.
7. Click **Deactivate Edit Mode** in the toolbar.

6.7.7.2 Setting optional OSD Functions for CON Extender Modules

Additional to the standard OSD for extender modules connected to a matrix, there are two local OSD setting options that can be defined individually for each CON Extender module.

- The standard OSD can be reduced to a smaller and translucent OSD to display only the switch menu when opening the OSD.
- A second OSD can be enabled and set to show the current connection info.

If the **Update Connection Info** function is deactivated, the **Connection Info** only appears on the monitor when switching via OSD.

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the EXT Unit of the CON extender module whose OSD settings have to be changed.
4. Click the **Extender OSD Settings** tab.

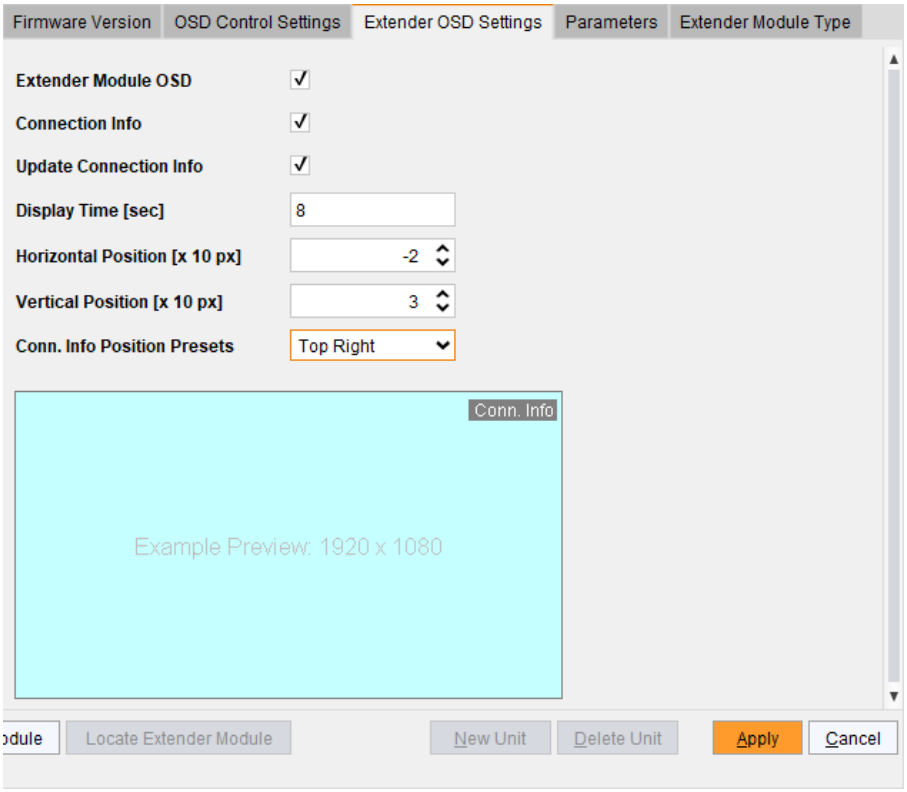


Fig. 86** Menu **Extender & Devices - EXT Units - Extender OSD Settings

The following parameters can be configured:

Field	Entry/Status	Description
Extender Module OSD	Activated	Enables a smaller and translucent Switch menu with selectable CPU Devices displayed in the center of the monitor. When entering the keyboard command for opening the OSD, a selection list for switching CPU Devices will be displayed in the center of the monitor. Pressing F7 within the selection list opens the standard OSD menu (Default).
	Deactivated	Function not active.
Connection Info	Activated	Enables a small OSD on the CON extender module to show the current CPU Device connection after closing the OSD (default).
	Deactivated	Function not active.

Field	Entry/Status	Description
Update Connection Info	Activated	Updates every change of the extender module connection status by fade-in of the extender module OSD (e.g., sharing situation) (default).
	Deactivated	Function not active.
Display Time [sec] **Horizontal Position [10 px]**	0 to 999 seconds	Sets the fade-in duration of the connection info (0 = unlimited, default: 10)
	-127 to +127 pixels	Horizontal **Update connection info** position (default: -2). Sets the entered value x 10 px from the left border (range: 0 to +127), e.g., value 5 means 50 px distance to the left border. Sets the entered value x 10 px from the right border (range: -1 to -127), e.g., -5 means 50 px distance to the right border.
Vertical Position [10 px] **Display Time [sec]**	-127 to +127 pixels	Vertical **Update connection info** position (default: 3) Sets the entered value x 10 px from the top border (range: 0 to +127), e.g., value 5 means 50 px distance to the top border. Sets the entered value x 10px from the bottom border (range: -1 to -127), e.g., value -5 means 50 px distance to the bottom border
	0 to 999 seconds	Sets the fade-in duration of the connection info (0 = unlimited, default: 10)
Horizontal Position [10 px] **Vertical Position [10 px]**	-127 to +127 pixels	Horizontal **Update connection info** position (default: -2). Sets the entered value x 10 px from the left border (range: 0 to +127), e.g., value 5 means 50 px distance to the left border. Sets the entered value x 10 px from the right border (range: -1 to -127), e.g., -5 means 50 px distance to the right border.
	-127 to +127 pixels	Vertical **Update connection info** position (default: 3) Sets the entered value x 10 px from the top border (range: 0 to +127), e.g., value 5 means 50 px distance to the top border. Sets the entered value x 10px from the bottom border (range: -1 to -127), e.g., value -5 means 50 px distance to the bottom border
OSD Position Preset	Selection list	Selects a preset position for the connection info OSD: Centered, Top Left, Top Right, Bottom Left, Bottom Right, Custom

5. Change the desired settings.
6. Click **Apply** to confirm your entries.
7. Click **Deactivate Edit Mode** in the toolbar.

☑ For an efficient CON extender OSD configuration, OSD settings can be assigned to CON extender modules (see description in section 6.10.1, page 139) or be copied from a CON extender module (see section 6.10.2, page 141).

6.8 Setting CPU Devices

New CPU Devices are configured in this menu including their assignment to EXT Units.

The assignment helps to describe and switch more complex computer configurations (e.g., Quad-Head with USB 2.0) in the matrix. To run a CPU Device via a matrix, one or more CPU EXT Units must be assigned.

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

   The following window is displayed.

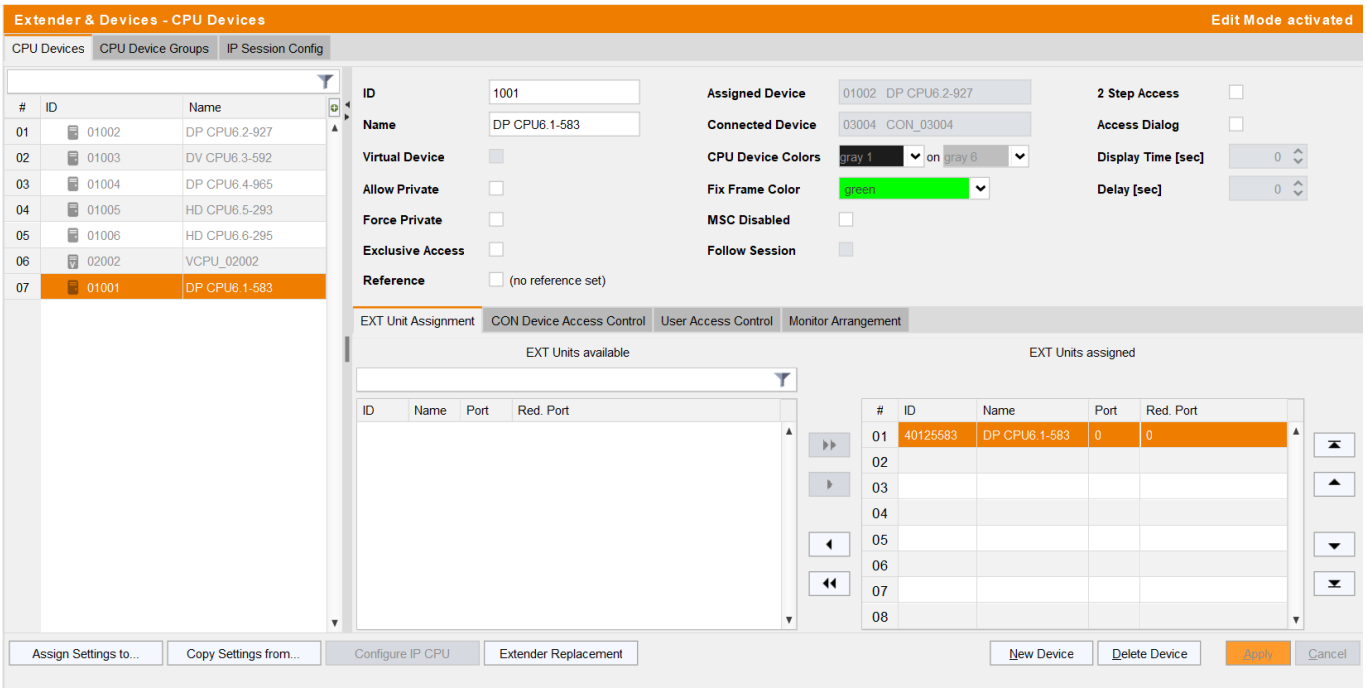


*Fig. 87 Menu **Extender & Devices - CPU Devices - EXT Unit Assignment***

The following parameters can be configured:

Field	Entry/Status	Description
ID	Text	Ident number of the CPU Device (max. value 32767)
Name	Text	Name of the CPU Device
Virtual Device	Activated	Automatically set for a Virtual CPU Device.
	Deactivated	Function not active (default).
Allow Private	Activated	Allows switching to the respective CPU Device in Private Mode.
	Deactivated	Function not active (default).
Force Private	Activated	Forces switching to the respective CPU Device only in Private Mode.
	Deactivated	Function not active (default).
Fix Frame Color	Selection list	Shows a colored frame when switching to the respective CPU Device. 7 colors available.
Reference	Activated	Enables a reference CPU Device that passes both Device and EXT Unit settings to any CPU Unit that is connected to the matrix for the first time. **Note**: The reference setting should be activated for one single CPU Device only.
	Deactivated	Function not active (default).

Field	Entry/Status	Description
2 Step Access	Activated	When someone else has a Full Access connection to a particular CPU Device, a pop-up window appears after switching to this CPU Device. In the background a Video Only connection will be established (Sharing situation). A confirmation in the pop-up window is required to establish a Full Access connection to the CPU Device.
	Deactivated	Function not active (default).
Assigned Device	-	ID and name of the assigned Virtual CPU Device, cannot be changed, is retrieved automatically.
Connected Device	-	ID and name of the connected CON Device, cannot be changed, is retrieved automatically.
CPU Device Colors	Selection list	Highlights the CPU Device name according to the color setting for text and background. 16 colors are available. Works only if the option “Show CPU” is active (see section 6.5.5, page 46).
Exclusive Access	Activated	Enables an access limitation for the case that a CPU Device is already connected via Full Access connection. When having the same priorities, any additional access to the CPU Device can only be established with a Video Only connection. Having a lower priority any additional connection is not possible. Only when having a higher priority, an additional Full Access connection can be established, and K/M control can be taken over.
	Deactivated	Function not active (default).
MSC Disabled	Activated	Disables the MSC function. When MSC is active, mouse coordinates do not change to absolute for this CPU Device.
	Deactivated	Enables the MSC function (default).
Access Dialog	Activated	When a user tries to connect to another CPU Device, the current user of the CPU Device gets a message and must explicitly allow shared access or the takeover of control.
	Deactivated	Function not active (default).
Follow Session	Activated	If several CON Devices are connected in sharing with one IP CPU Device session, the connection to all CON Devices remains intact when the session is switched.
	Deactivated	Function not active (default). This means the shared CON Devices (without Full Access) are disconnected when the CON Device with Full Access switches to another session of the IP CPU Device.
Display Time [sec]	-99 to +99 seconds	Time of displaying the Access dialog: With positive value +1 to +99, the CPU Device is accessed after the set time has expired. With negative value -99 to 0 there is no access to the CPU Device after the set time has expired.
Delay [sec]	0 to 99 seconds	Time until the next positive request.

6.8.1 Creating a new CPU Device

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click **New Device**.
   A selection menu appears.

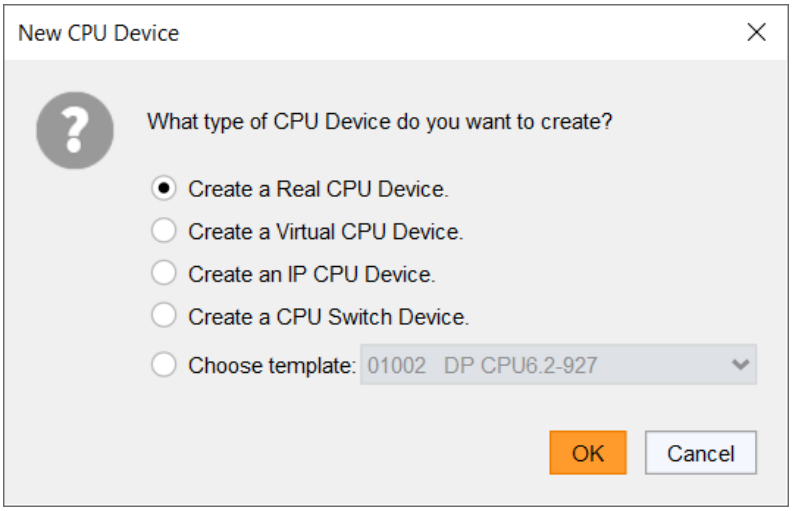


*Fig. 88 Selection menu **Extender & Devices - CPU Devices - Selection of CPU Device type***

4. Click **OK**.
   A new Real CPU Device will be created.
5. Determine all parameters that are relevant for the CPU Device.
6. Click **Apply** to confirm the creation of the CPU Device.

If creating a Virtual CPU Device, the Virtual CPU Device has to be assigned to a Real CPU Device (see section 0, page 110). A template is only available if there is at least one existing CPU Device.

6.8.2 Changing Settings of a CPU Device

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select a CPU Device in the CPU Device list.
4. Change the desired settings.
5. Click **Apply** to confirm the changes.

6.8.3 Assigning an EXT Unit to a CPU Device

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the new CPU Device in the **CPU Devices** list.
4. Select an EXT Unit in the **EXT Units available** list that you want to assign to the CPU Device. By pressing and holding down Ctrl at the same time, more than one EXT Unit can be highlighted.
5. Click ▶ to move the highlighted EXT Units to the **EXT Units assigned** list. By clicking ▶▶, all available EXT Units from the **EXT Units available** list will be moved to the **EXT Units assigned** list.
   The assignments are displayed in the **EXT Units assigned** list.
6. Click ▼ or ▲ to change the order of the EXT Units within the **EXT Units assigned** list.
   Or press + or - to change the order of the EXT Units within the **EXT Units assigned** list.
7. Click **Apply** to confirm the assignment.

6.8.4 Unassigning an EXT Unit from a CPU Device

To remove an EXT Unit assignment, e.g., for servicing or replacing a faulty extender unit, proceed as follows:

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select a CPU Device in the **CPU Devices** list.
4. Select one or more EXT Units in the **EXT Units assigned** list.
5. To remove highlighted EXT Units from the **EXT Units assigned** list, click ◀. By clicking ◀◀, all CPU Devices will be removed from the **EXT Units assigned** list.
6. Click **Apply** to confirm the removal.

6.8.5 Setting CON Device Access Rights for CPU Devices

The settings made here are only considered when “CON ACL” is active (see section 6.5.5, page 46). Otherwise, they are ignored.

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CPU Device in the **CPU Devices** list which should get access rights by a CON Device.
4. Click the **CON Device Access Control** tab.

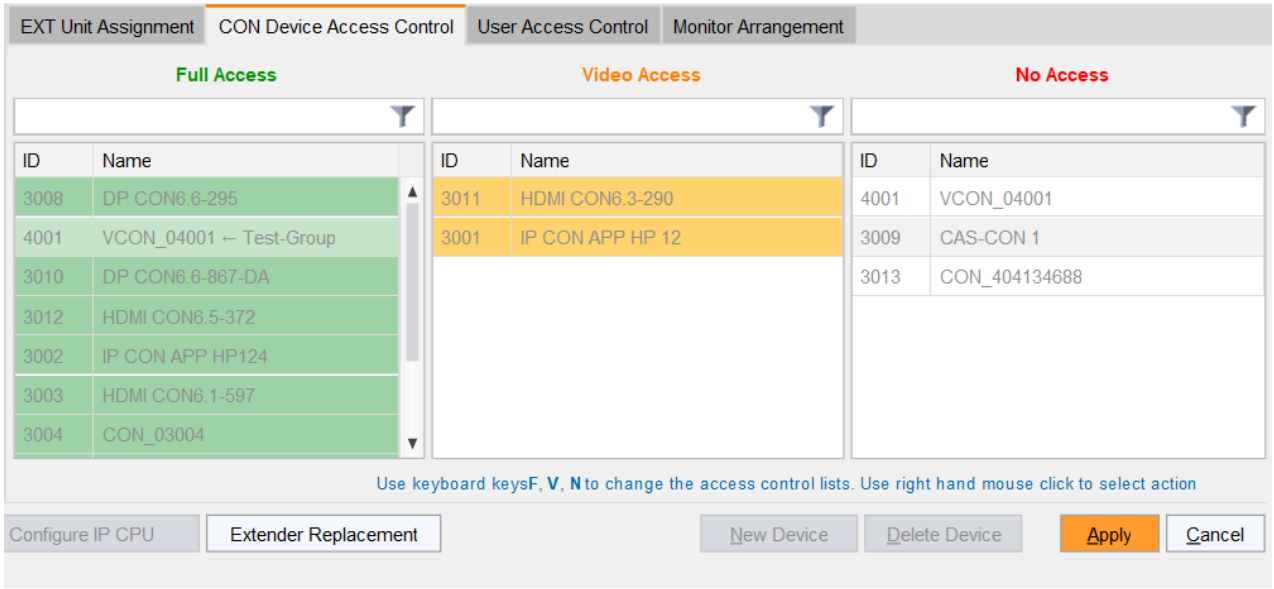


*Fig. 89 Menu **Extender & Devices - CPU Devices - CON Device Access Control***

5. By clicking with the right mouse button once on a CON Device in one of the respective access lists (**Full Access**, **Video Access,** and **No Access**), a context menu for selection appears for changing the respective CON Device access rights. Alternatively, press f, v, or n to set the respective access rights.
6. Click **Apply** to confirm the changes.

6.8.6 Assigning Virtual CPU Devices

In this menu, either one or more Virtual CPU Devices can be assigned to a Real CPU Device.

With a Virtual CPU Device, the effort of switching several CON Devices to the same CPU Device can be reduced. If several CON Devices are connected to a Virtual CPU Device that is assigned to a Real CPU Device, you only have to change the Real CPU Device once and all CON Devices will receive the video signal of the new Real CPU Device.

Some important remarks

- A Real CPU Device can be assigned to several Virtual CPU Devices.
- A Real CPU Device can still be connected individually, even if it has been assigned to a Virtual CPU Device.
- Power, Super or Administrator role is necessary to change Virtual Device assignments.
- Virtual CPU Device assignments can be changed during normal operation by Tera Tool, OSD, API command or macro.

NOTICE

If the **Auto Send** checkbox is ticked in the lower left corner of the working area, the switching operations will be performed immediately without user confirmation by clicking **Send**.

1. Click **Assignment > Virtual CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

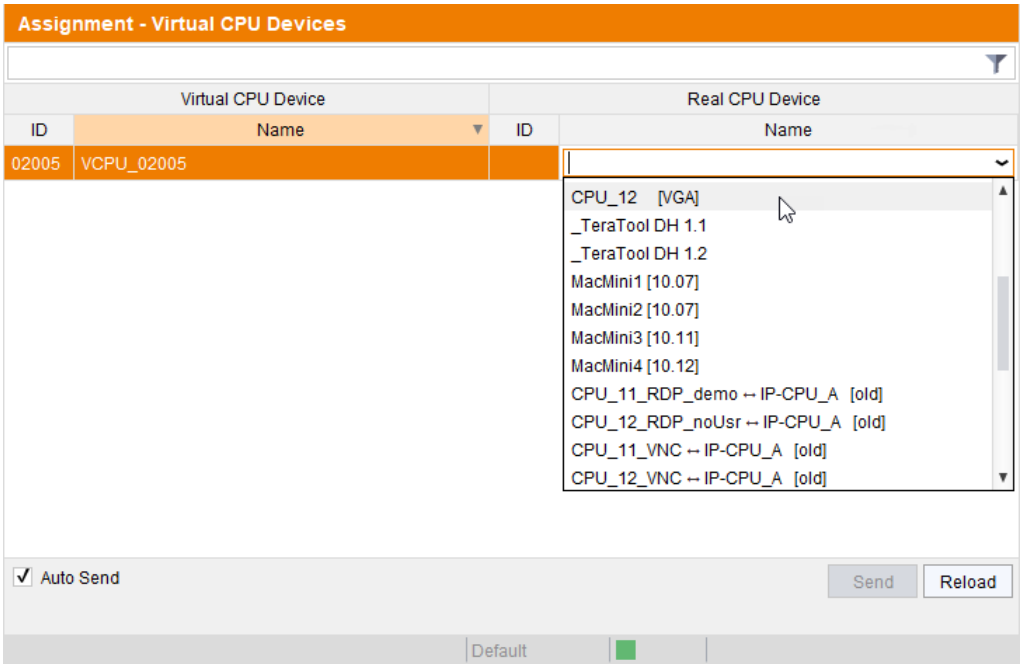


*Fig. 90 Menu **Assignment - Virtual CPU Devices***

The following functions are available:

Button	Function
Send	Send assignments to the matrix
Reload	Reload changes

The selection boxes in the **Real CPU Device** column contain a filter function for an easy selection of a single CPU Device from a larger pool of CPU Devices.

3. Select a Virtual CPU Device in the **Virtual CPU Device** list.
4. Double-click in the **Real CPU Device** column to display a list of all available Real CPU Devices.
5. Select a Real CPU Device in the selection list.

6. Click **Send** to send the assignment to the matrix.

The Tera Tool software offers the option to switch directly from the **Assignment** menu to the definition menu to check specific settings for the respective Real CPU Device or Virtual CPU Device.

➡ Click with the right mouse button on the respective Real CPU Device or Virtual CPU Device and select **Open CPU Device** in the context menu.

The definition menu for the CPU Device settings is opened (see page 106).

6.8.7 Setting CPU Device Groups

The KVM matrix permits to bundle the CPU Devices of a configuration into CPU groups. The groups can be used to subdivide the CPU Devices logically or thematically. As an application example you can group all CPU Devices together that are connected to a specific matrix within a matrix grid. The configuration of CPU groups at the same time increases the clarity of the configuration.

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **CPU Device Groups** tab in the working area.

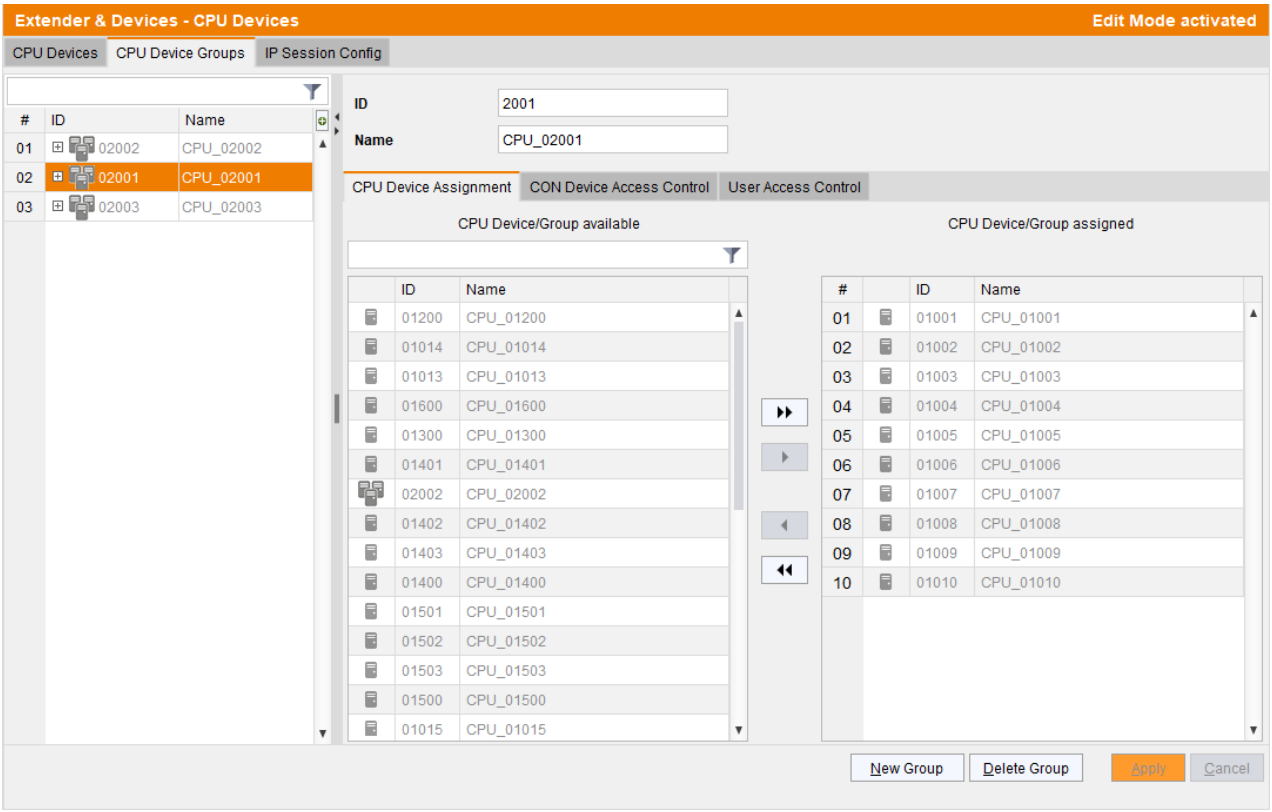


*Fig. 91 Menu **Extender & Devices - CPU Devices - CPU Groups***

6.8.7.1 Creating a new CPU Device Group

4. Click **New Group**.
5. Enter a **CPU Device** group name into the field **Name**.
6. Click **Apply** to confirm the creation of the group.

After creating the first group, a template is available in a selection box that appears after clicking **New Group**.

6.8.7.2 Assigning a CPU Device to a CPU Group

A Device can only be assigned to one group at the same time. The OSD can only show one group layer. Therefore, you should not assign a group to another group.

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **CPU Device Group** tab in the working area.
4. Select the **CPU Device Group** to be assigned with a CPU Device.
5. Select a CPU Device in the list **CPU Device/Group available** that you want to assign to the **CPU Device Group**. By pressing and holding down Ctrl at the same time, more than one CPU Device can be highlighted.
6. Click ▶ to move the highlighted CPU Devices to the **CPU Device/Group assigned** list. By clicking ▶▶, all CPU Devices from the **CPU Device/Group available** list will be moved to the **CPU Device/Group assigned** list.
7. To remove highlighted CPU Devices from the **CPU Device/Group assigned** list, click ◀. If clicking ◀◀, all CPU Devices will be removed from the **CPU Device/Group assigned** list.
8. Click **Apply** to assign the CPU Device to the **CPU Device Group**.

6.8.7.3 Configuring CON Device Access Rights for CPU Device Groups

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the **CPU Device Groups** tab in the working area.
4. Select a CPU Device Group in the **CPU Device Groups** list.
5. Click the tab **CON Device Access Control**.

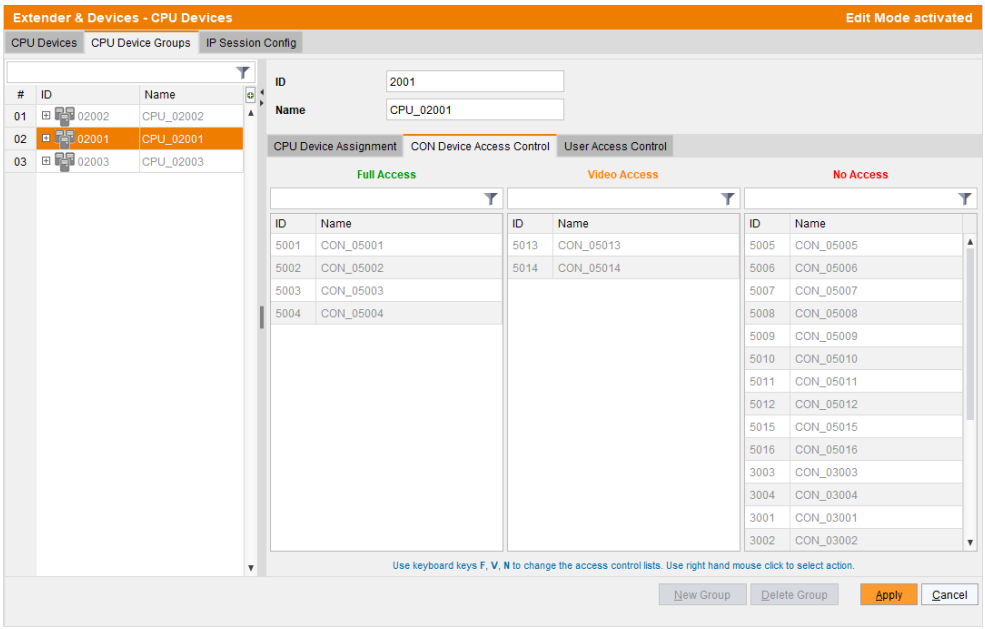


*Fig. 92 Menu **Extender & Devices - CPU Devices - CON Device Access Control***

6. By clicking with the right mouse button once on a CON Device in one of the respective access lists (**Full Access**, **Video Access,** and **No Access**), a context menu for selection appears for changing the respective CON Device access rights. Alternatively, press f, v, or n to set the respective access rights.
7. Click **Apply** to confirm the changes.
8. Click **Deactivate Edit Mode** in the toolbar.

For an efficient CPU Device configuration, settings can be assigned to other CPU Devices (see description in section 6.10.1, page 139) or be copied from another CPU Device (see section 6.10.2, page 141).

6.8.8 Configuring CPU Access to Virtual Machines (VDI)

An IP/SIRA CPU extender requires an individual configuration (session) to be able to connect to a source (computer, CPU, virtual machines) via TCP/IP network.

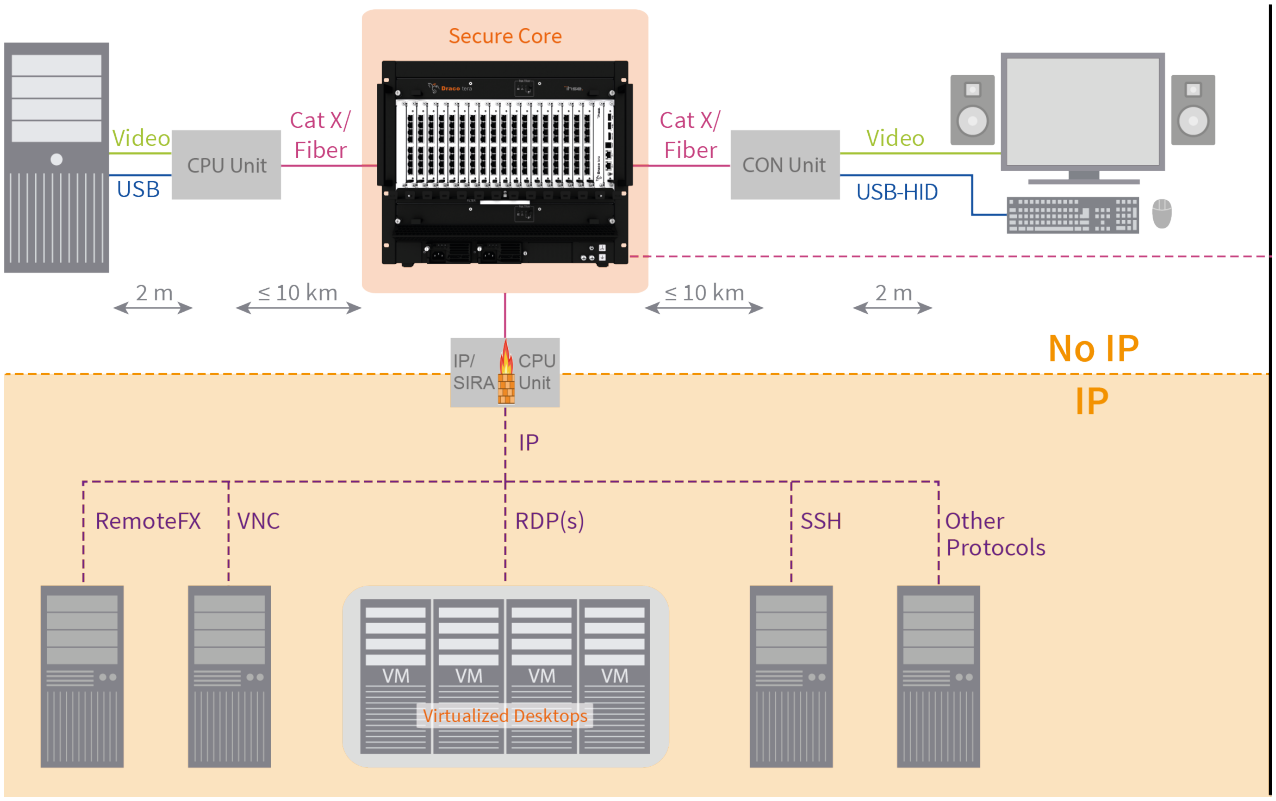


Fig. 93 Function of an IP/SIRA CPU Unit

The configuration is performed solely via Draco tera matrix and consists of three parts:

1. Creating IP Session Configs
2. IP CPU EXT Unit and IP CPU Device configuration
3. Assignment of the configured IP Session Config to the IP CPU Device (creating one or several Session Devices)

6.8.8.1 Configuration of an IP Session Config

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the tab **IP Config Session**.

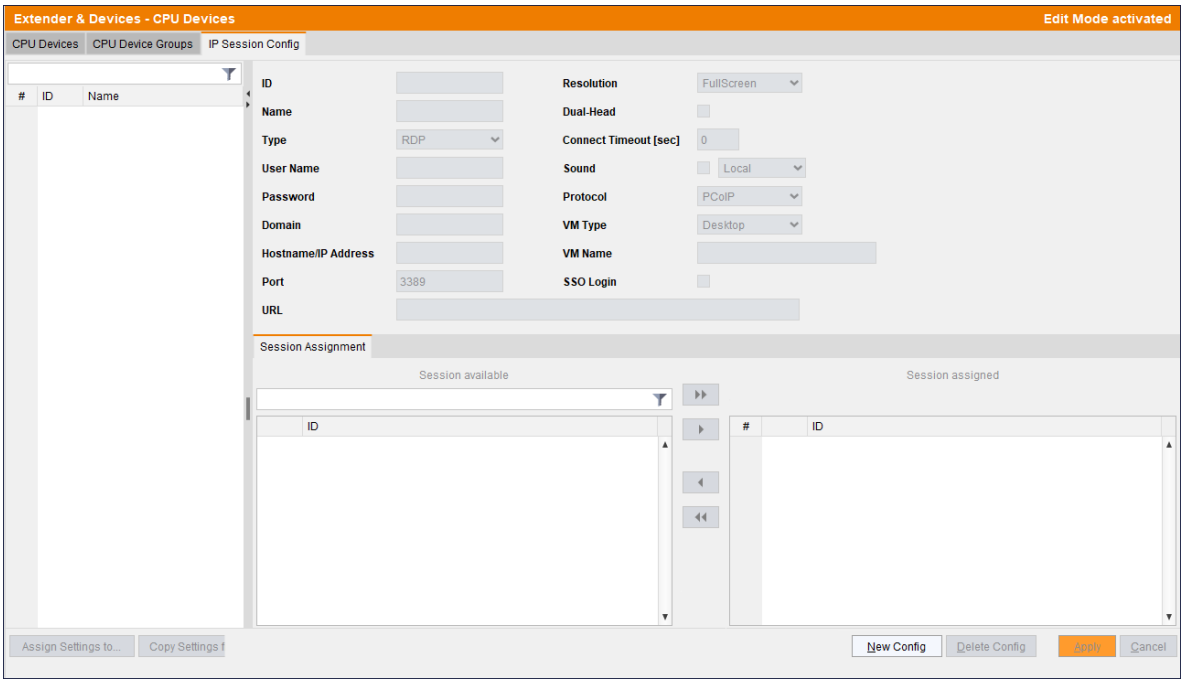


*Fig. 94 Menu **Extender & Devices - CPU Devices - Tab IP Session Config***

The figure above shows all possible parameters, but not all are available for all remote access types. The following table contains the common ones that are almost always present. For more details about the remote access protocols ask your network administrator or refer to information that is freely available on the internet.

Field	Entry/Status	Description
ID	Number	Ident number of the IP Session Config
Name	Text	Name of the IP Session Config
Type	Text	Type of remote access
User Name	Text	Name of IP Session user
Password	Text	Password of IP Session user
Domain	Text	If the user is part of a domain, enter the domain here.
Hostname/IP Address	Text/Number	Hostname or IP address of the IP CPU extender
Port	Number	The standard port of the chosen remote access type is preset here. You can enter another port.
Resolution	Text/Number	Resolution of the IP Session window, you can choose between several resolutions, Fullscreen means the window covers the whole screen, default is 1920x1080. For type VNC there are two additional entries: FitScreen and AutoScreen.
Connect Timeout [sec]	Number	Determines how long the CPU unit waits for the establishment of a connection. 0 means default value (5s).
Sound	Activated	Audio is transmitted, you can choose between Local (Default) or Remote.
	Deactivated	Function not active (Default).
SSO Login	Activated	Single-Sign On is enabled.
	Deactivated	Function not active (Default)

4. Click the button **New Config**.

   A new IP Session Config will be created.

Generally, an IP Session Config can be used for multiple IP CPU extenders.

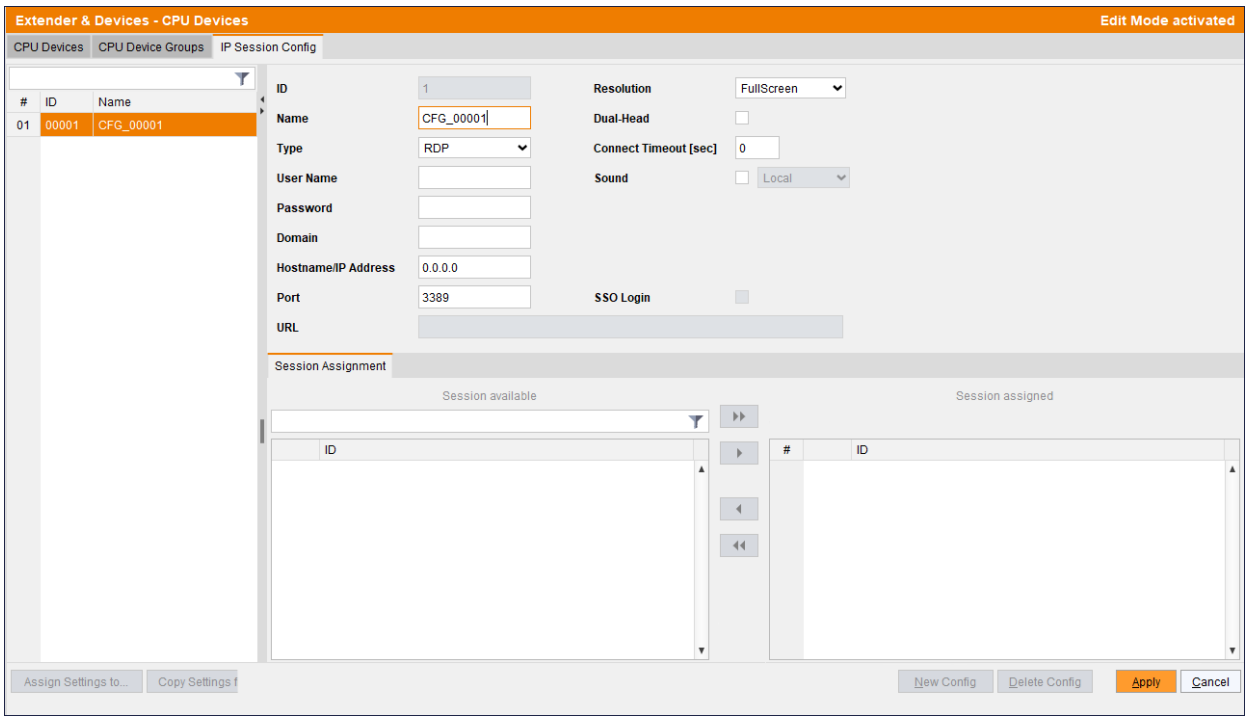


*Fig. 95 Menu **Extender & Devices - CPU Devices - Creating new config***

5. Name the IP Config in the input field **Name**.
6. Select the **Type** of remote access in the corresponding field. The displayed parameters change accordingly.

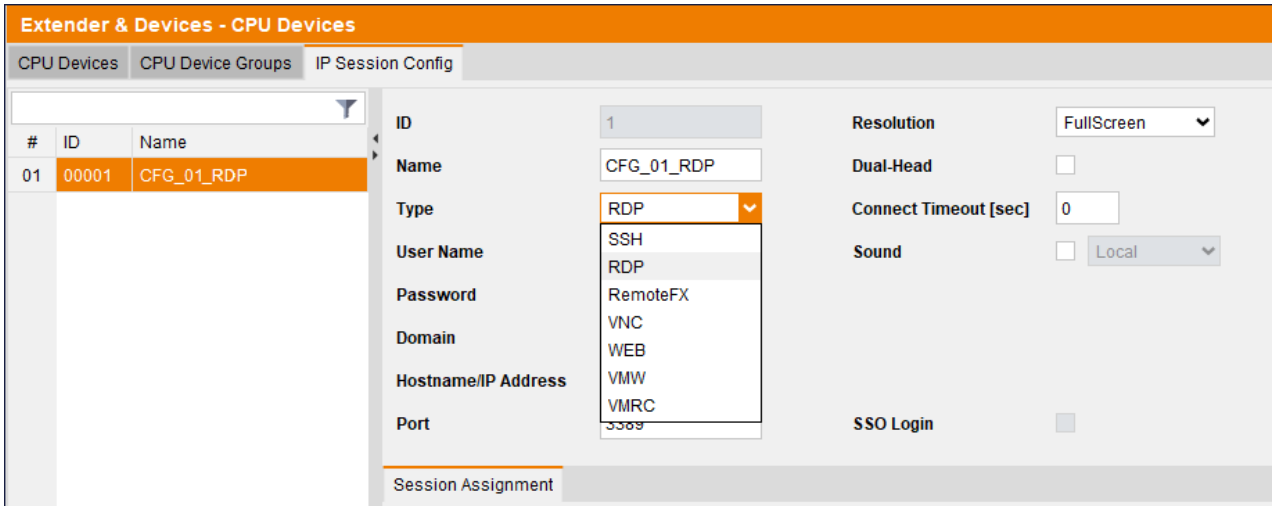


*Fig. 96 Menu **Extender & Devices - CPU Devices - Adjusting new RDP config***

7. Insert a **User Name** and **Password** for the IP session user. The user can be a local user or part of a domain.
   7.1. If the user is a domain user, enter the **Domain** name into the corresponding field.
8. If the network port of the remote access type is not the standard one (e.g. RDP port: 3389), enter the respective port into the input field **Port**.
9. The remote connection runs in a window. Select the size of the window with **Resolution**. **FullScreen** means that the window fills out the entire screen. Default means 1920 x 1080.
10. Tick **Dual-Head** to enable Dual-Head operation.

11. Set a time for how long the IP CPU unit should wait for the setup of a connection with **Connect Timeout**. 0 means default value (5 seconds).
12. If you want to transmit digital HDMI audio, check the box **Sound**. You can choose Local (Default) or Remote.
13. Tick **SSO Login** if applicable to enable Single Sign On support of the system.
14. Click the button **Apply** to confirm your configuration settings.

6.8.8.2 Configuration of an IP CPU Extension Unit

Described here is only the configuration of the network settings of the IP CPU extender.

1. Ensure that the IP CPU extender is physically connected to the Draco tera matrix and switched on. It can take up to 30 seconds until it is registered at the matrix.
2. Click **Extender & Devices > EXT Units** in the task area.
3. Click **Activate Edit Mode** in the toolbar.
4. Select the IP EXT CPU Unit to be configured in the list and open the tab **Server Settings**.

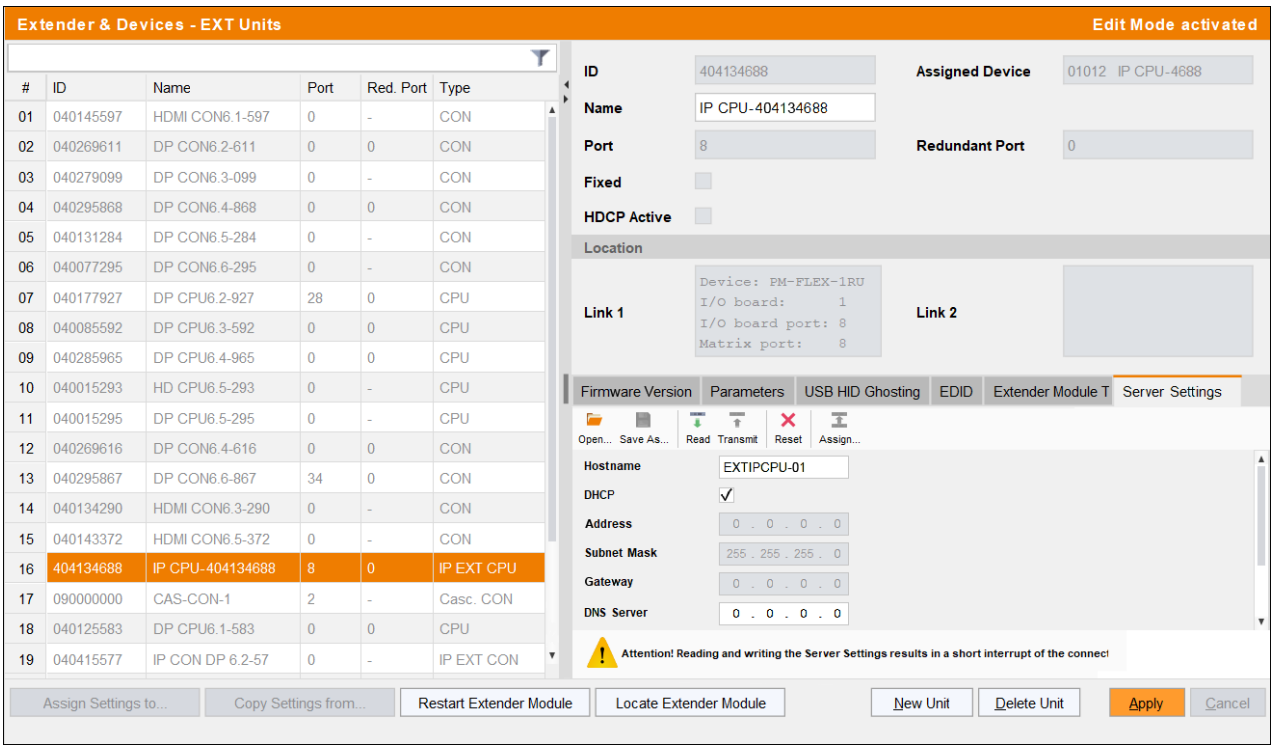


*Fig. 97 Menu **Extender & Devices - CPU Devices - Server Settings of IP CPU extender***

5. Click the button **Read** to show the current network settings of the selected IP CPU EXT Unit.
6. Enter a **Hostname** into the corresponding input field.
7. When you want to use a DHCP server, check the box DHCP.
8. Configure the remaining server settings:
   - Mandatory settings: **Address**, **Subnet Mask**, **Gateway**, **NTP Server**, **Time Zone** and **Keyboard Layout**.
   - Optional setting: **DNS Server**
9. Click **Apply** to confirm the settings.
10. If you have not done so already, create an IP CPU Device (see section 6.8.1, page 108) and assign the IP CPU EXT Unit to it.

More information on IP CPU extenders is contained in the manual Draco Sira CPU (L488).

6.8.8.3 Assignment of configured IP Session Configs to an IP CPU Device

There are two possibilities to assign an IP Session Config to an IP CPU Device:

- Directly (only one IP Session Config possible)
- With the button **Configure IP CPU** (for multiple IP Session Configs)

Directly

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select an IP CPU device in the list.

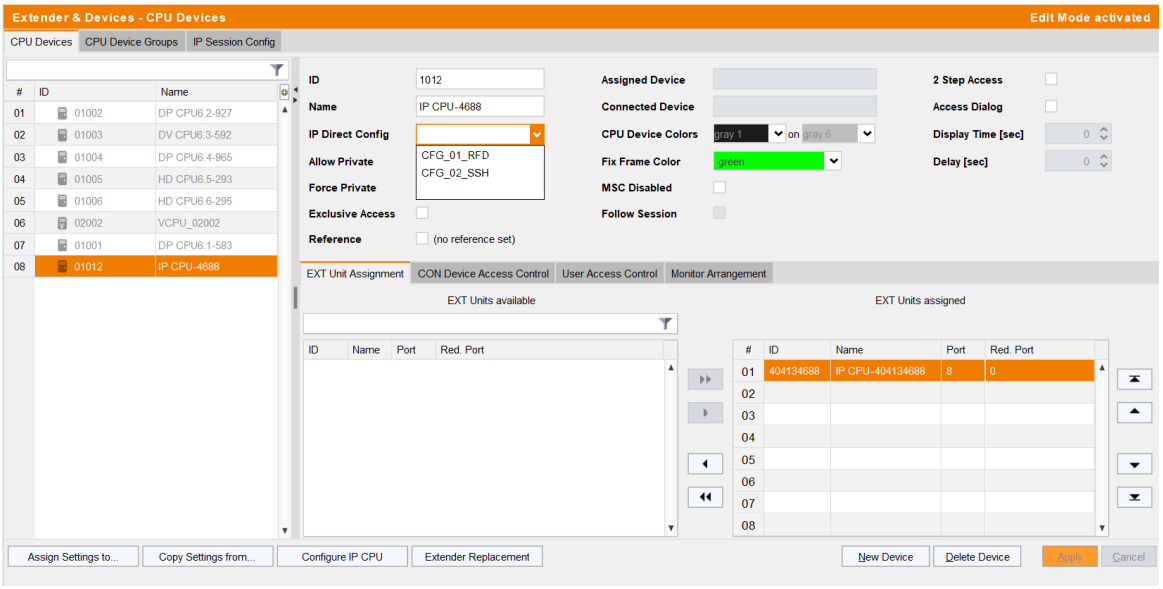


*Fig. 98 Menu **Configure IP CPU - Assign IP Config Session to an IP CPU Device***

4. Select an IP Session Configuration in the field **IP Direct Config**.
5. Click on **Apply**.

With the button Configure IP CPU

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the button **Configure IP CPU**. The following window opens.

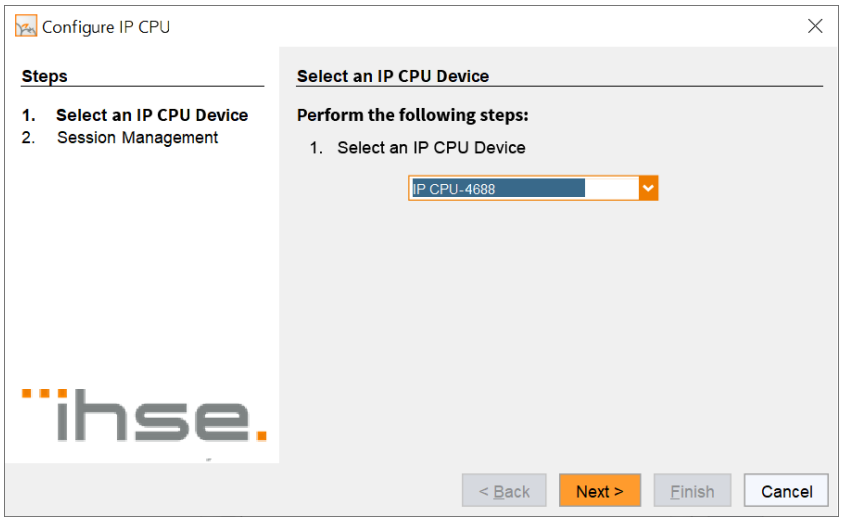


*Fig. 99 Menu **Configure IP CPU - Select an IP CPU Device***

4. Select an IP CPU Device and click **Next >**.

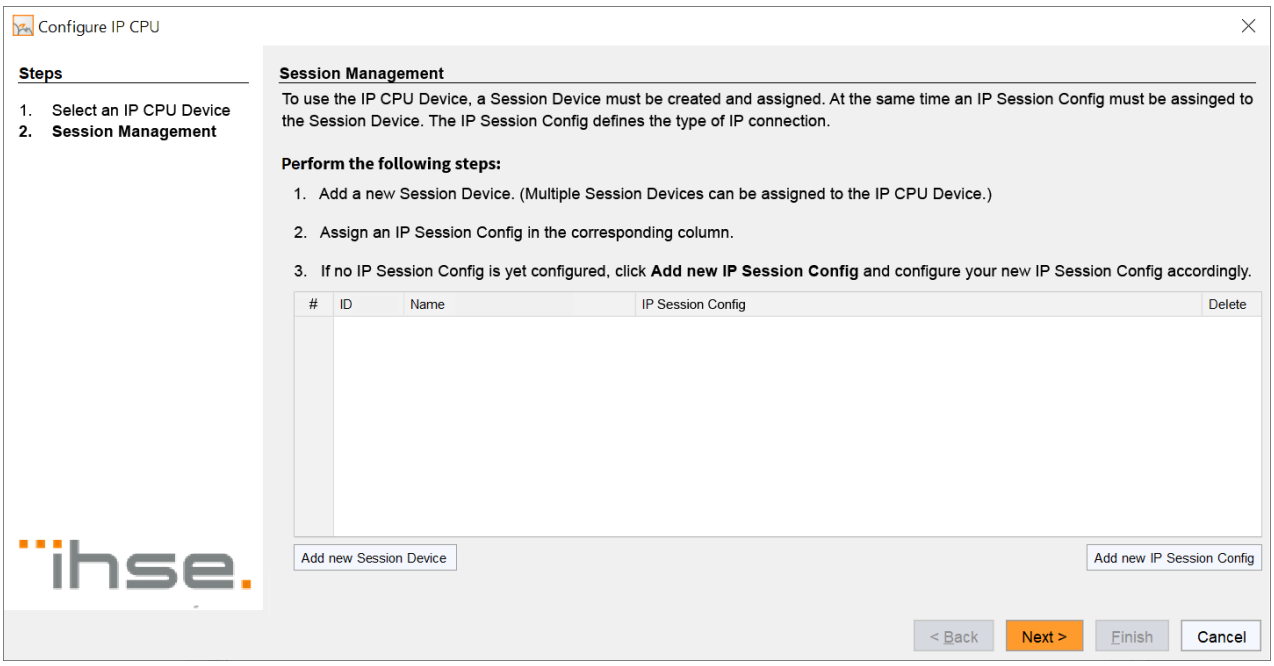


*Fig. 100 Menu **Configure IP CPU - Add new Session Device***

5. Click the button **Add new Session Device**.
   A new Session Device is created.

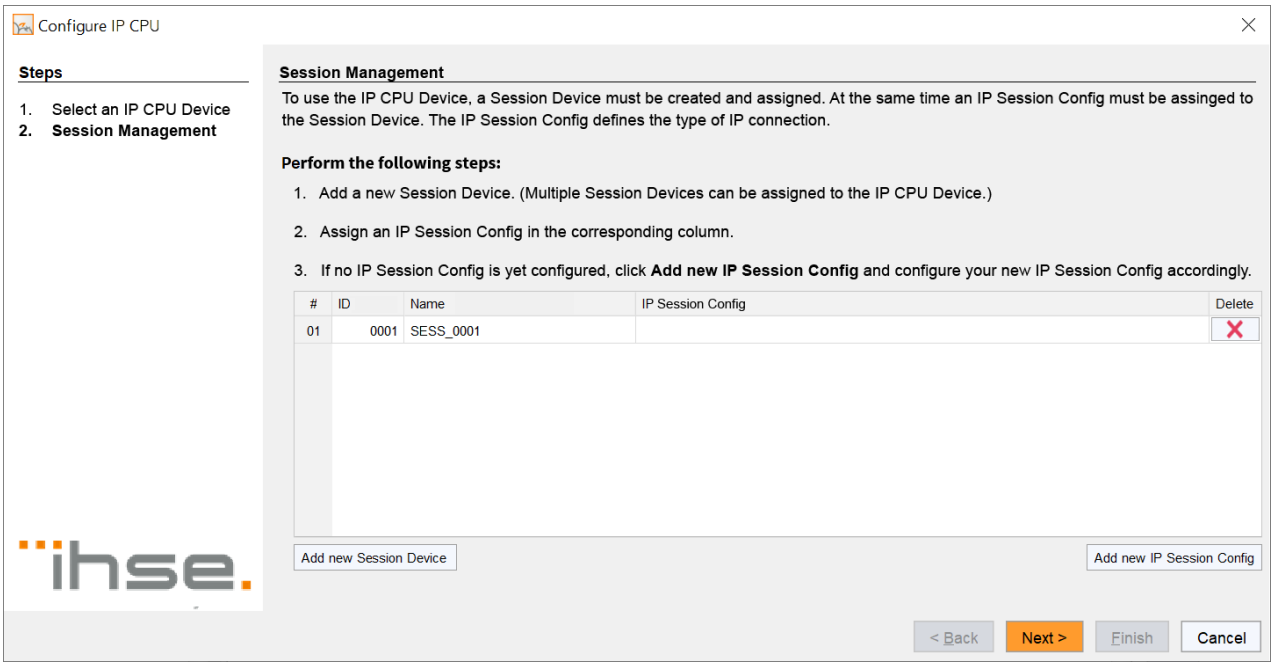


*Fig. 101 Menu **Configure IP CPU - New Session Device created***

6. Double-click in the corresponding field in the column **IP Session Config**. A drop-down list of IP Session Configs appears.
7. Select the desired IP Session Config.
8. When there are no IP Session Configs or not the right ones, click the button **Add new IP Session Config** and create a suitable IP Session Config as described in section 6.8.8.1, page 114.

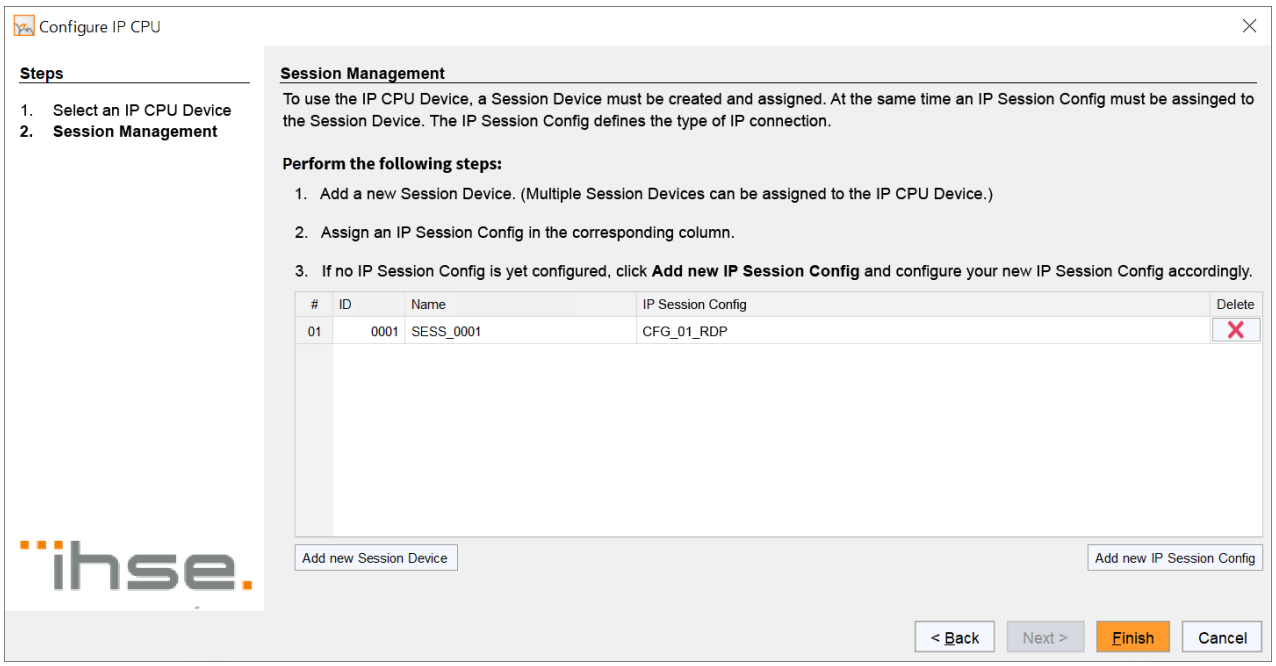


*Fig. 102 Menu **Configure IP CPU - Session Device complete***

9. After selecting the IP session Config, click the name field and rename the Session Device.
10. Create more Session Devices if you like or click the button **Finish**.

    The IP CPU Unit is now configured and can be used.

6.9 Setting CON Devices

A CON EXT Unit has to be assigned to a CON Device. Switching operation is only possible between CON Device and CPU Device. All steps to create switchable CON Devices are described in this section. Several Real CON Devices can be assigned to a Virtual CON Device to reduce operation efforts (see section 6.9.10, page 131).

New CON Devices are created in this menu including access rights and assignment to EXT Units. To run a CON Device via a matrix, one or more CON EXT Units must be assigned.

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

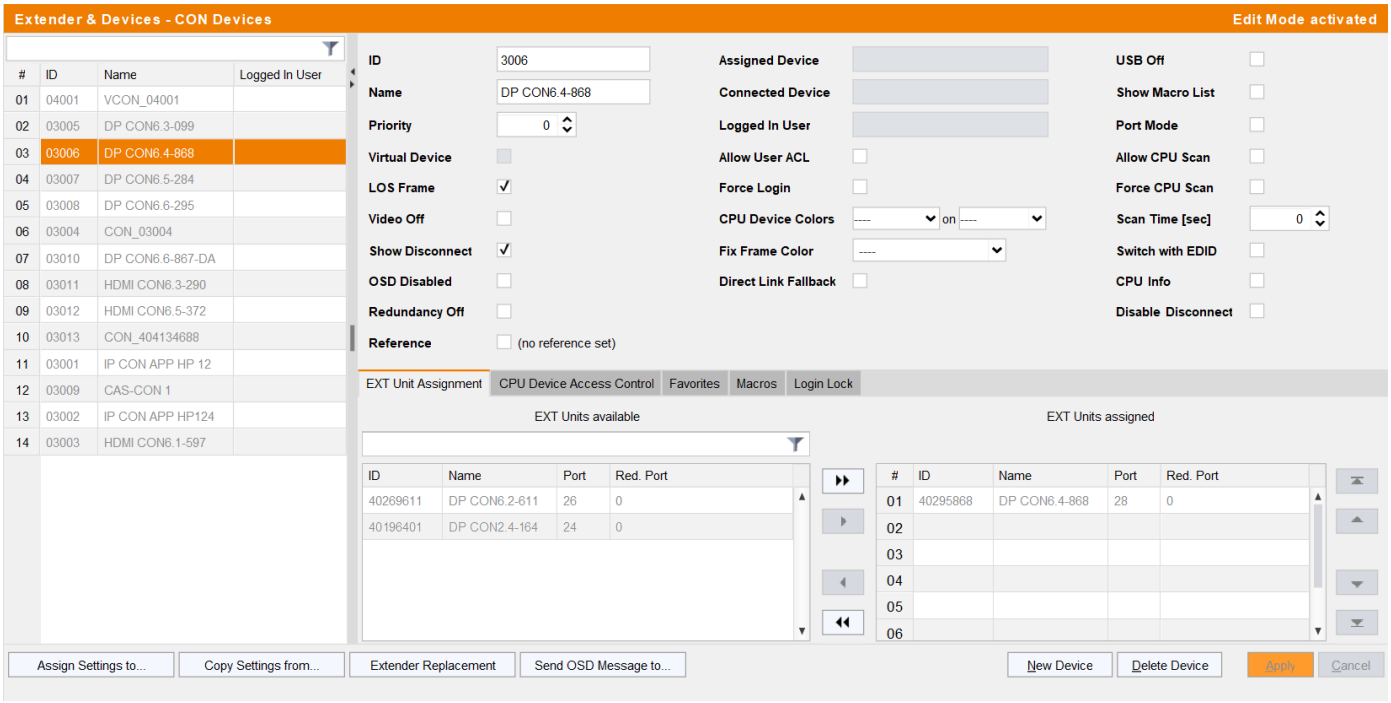


*Fig. 103 Menu **Extender & Devices - CON Devices - EXT Unit Assignment***

The following parameters can be configured:

Field	Entry/Status	Description
ID	Text	Ident number of the CON Device (max. 32767).
Name	Text	Name of the CON Device.
Priority	0 to 999	Priority of the CON Device. **Note:** There is no K/M sharing between CON Devices with a different priority and the release time does not come into account. CON Devices with lower priority can never switch to a CPU Device when a CON Device with higher priority is connected (not even Video Only). When the CON Device with lower priority was first connected to the CPU Device, it remains in Video Only mode when a CON Device with higher priority is switched to the CPU Device.
Virtual Device	Activated	Automatically set for a Virtual CON Device.
	Deactivated	Function not active (default)
Allow User ACL	Activated	Enables activation of the User ACL at the local CON Device.
	Deactivated	Function not active (default)

Field	Entry/Status	Description
Force Login	Activated	Forces the user to login with a username and a password once to enter OSD. Thereafter the user remains logged in until they explicitly log out or an auto logout is affected. **Note:** When using the **Force Login** function, CON ACL and User ACL are not automatically active. User ACLs have to be activated separately. When the **Force Login** function is activated and a user is logged in, only the user favorites are available. The CON favorites are not accessible.
	Deactivated	Function not active (default)
LOS Frame	Activated	• When the video signal between source and the CPU Unit or the connection between matrix and the CON Unit is lost, an orange frame will be displayed. • When switching to a CPU Unit without video signal, a blank screen will appear surrounded by an orange frame.
	Deactivated	Function not active (default)
Show Macro List	Activated	Show the macro list instead of the CPU Device selection list.
	Deactivated	Function not active (default)
OSD Disabled	Activated	Disables OSD access for the respective CON Device (executing macros and favorite switching is still possible). Requires the deactivation of the “Extender Module OSD” (see section 6.7.7.2, page 104).
	Deactivated	Function not active (default)
Video Off	Activated	Switches off the video signal after 60 sec without connection to the CPU Device so that the monitor can go into stand-by mode.
	Deactivated	Function not active (default)
Show Disconnect	Activated	Shows a message if the connection to the CPU Device is lost.
	Deactivated	Function not active (default)
Assigned Device	-	ID and name of the assigned Virtual CPU Device, cannot be changed, is retrieved automatically.
Connected Device	-	ID and name of the connected CPU Device, cannot be changed, is retrieved automatically.
Allow CPU Scan	Activated	Allows a scan mode with an automatic change of the video signal for the favorite list (CPU Devices) of the respective CON Device or a logged in user. **Note:** An active scanner can be stopped by a mouse or keyboard event. You gain Full Access for the currently switched CPU Device if **Force Connect** is activated.
	Deactivated	Function not active (default)
Force CPU Scan	Activated	Forces a scan mode with an automatic change of the video signal for the favorite list (CPU Devices) of the respective CON Device or a logged in user. Scanning cannot be stopped if this function is active.
	Deactivated	Function not active (default)
Scan Time [sec]	0 to 99 seconds	Retention period until switching to the next CPU Device.
Port Mode	Activated	Replaces the favorite list by a port list where the ports from 1 to 999 can be directly selected at each matrix or matrix grid. **Note:** The selection only works for CPU Devices and has to be made according to the switching of favorites. When using Port Mode, CON and User favorites will be deactivated.
	Deactivated	Function not active (default)

Field	Entry/Status	Description
Redundancy Off	Activated	Function not active
	Deactivated	Switches automatically to the second link of a connected redundant CON Unit when losing the primary link of a CPU Unit (default).
Reference	Activated	Enables a reference CON Device that inherits both Device and EXT Unit to any CON Unit that is connected to the matrix for the first time. **Note**: We recommend that you activate the reference setting for one single CON Device only.
	Deactivated	Function not active (default)
CPU Device Colors	Selection list	Highlights the CPU Device name according to the color setting for text and background (only relevant when the option “Show CPU” is active (see section 6.5.5, page 46). Select between 16 colors.
Fix Frame Color	Selection list	Shows a colored frame at the CPU Device. Select between 7 colors. The colored frame of the CPU Device is displayed with priority to the one of the CON Device.
Direct Link Fallback	Activated	When the CON and CPU Units are not only connected via matrix (via primary ports) but also directly (via secondary ports), in case of a matrix failure the system switches automatically to the direct connection.
	Deactivated	Function not active (default).
Switch with EDID	Activated	Upon switching in Full Access mode to a CPU Device, the EDID of the monitor connected to the CON unit is automatically transferred to the CPU unit (not in sharing constellations or Video Only switching).
	Deactivated	Function not active (default)
Only visible when using a matrix with firmware from version 6 on		
CPU Info	Activated	Shows all connected CON Devices with logged-in users in OSD.
	Deactivated	Function not active (default)
Disable Disconnect	Activated	Disables ability to disconnect the current connection via hotkey.
	Deactivated	Function not active (default)

6.9.1 Creating a new CON Device

1. Click **New Device.**
   A selection menu appears.

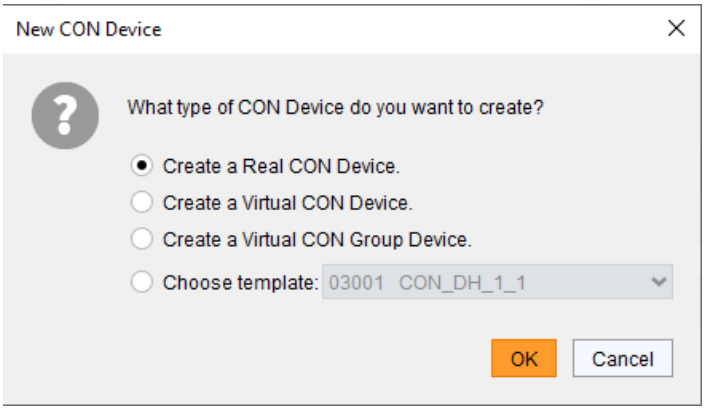


*Fig. 104 Selection Menu **Extender & Devices - CON Devices - New CON Device***

2. Click **OK**.
   A new Real CON Device will be created.

3. Determine all parameters that are relevant for the CON Device.
4. Click **Apply** to confirm the creation of the CON Device.

If creating a Virtual CON Device, the Virtual CON Device has to be assigned to a Real CON Device (see section 6.9.10, page 131).

A template is only available if there is at least one existing CON Device.

6.9.2 Changing Settings of a CON Device

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select a CON Device in the CON Device list.
4. Change the desired settings.
5. Click **Apply** to confirm the changes.

6.9.3 Assigning EXT Units to a CON Device

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device from the **CON Devices** list you wish to assign EXT Units to.

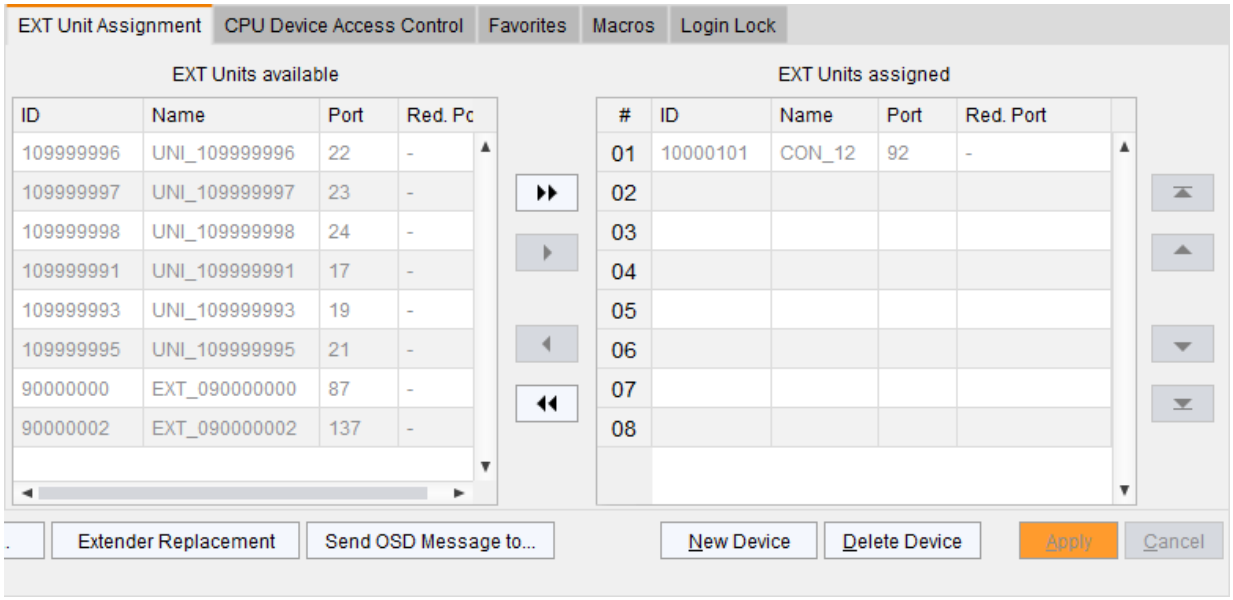


*Fig. 105 Menu **Extender & Devices - CON Devices - EXT Unit Assignment***

4. Select the EXT Unit from the **EXT Units available** list you wish to assign to the CON Device.
5. Click ▶ to move the highlighted EXT Unit to the **EXT Units assigned** list. By clicking ▶▶, all EXT Units from the **EXT Units available** list will be moved to the **EXT Units assigned** list.
6. Optional: Click ▼ or ▲ to change the order of the EXT Units within the **EXT Units assigned** list.
   Click **Apply** to confirm the assignment.

6.9.4 Unassigning an EXT Unit from a CON Device

To remove an EXT Unit assignment, e.g., for servicing or replacing a faulty extender unit, proceed as follows:

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select a CON Device from the **CON Devices** list.
4. Select one or more EXT Units in the **EXT Units assigned** list.
5. To remove highlighted EXT Units from the **EXT Units assigned** list, click ◀. By clicking ◀◀, all EXT Units will be removed from the **EXT Units assigned** list.
6. Click **Apply** to confirm the removal.

6.9.5 Setting CPU Device Access Rights for CON Devices

The settings made here are only considered when “CON ACL” is active (see section 6.5.5, page 46). Otherwise, they are ignored.

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device to be modified from the **CON Devices** list.
4. Click the **CPU Device Access Control** tab.

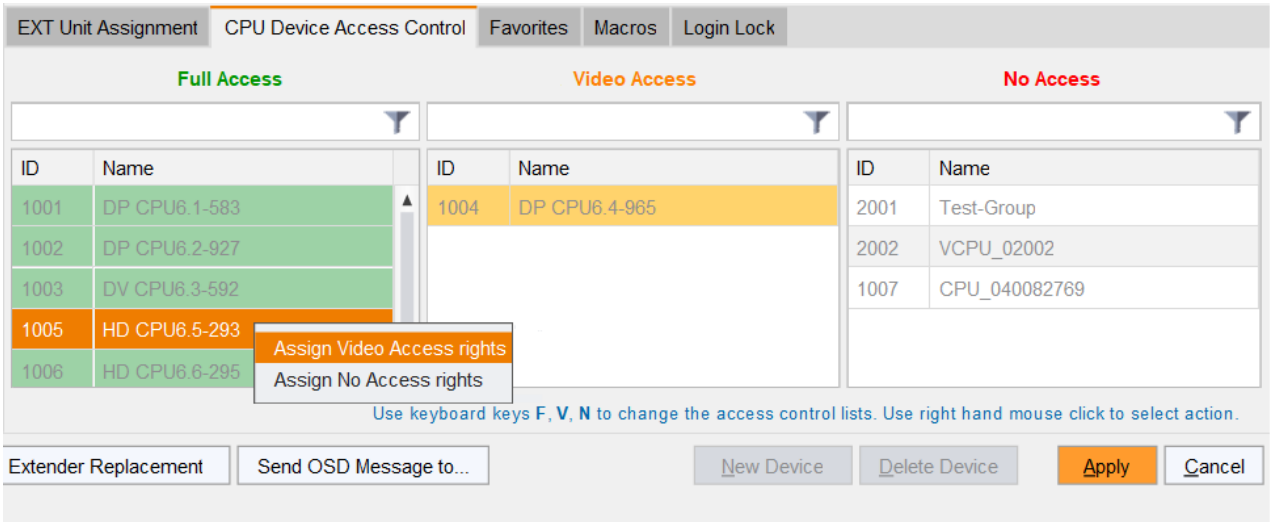


*Fig. 106 Menu **Extender & Devices - CON Devices - CPU Device Access Control***

5. By clicking with the right mouse button once on a CPU Device in one of the respective access lists (**Full Access**, **Video Access,** and **No Access**), a context menu for selection appears for changing the respective CPU Device access rights. Alternatively, press f, v, or n to set the respective access rights.
6. Click **Apply** to confirm the changes.

6.9.6 Setting CON Device Favorites

Individual favorites list of CPU Devices to be switched frequently can be created for a CON Device in this menu. The list “CPU Device available” contains only CPU Devices for which the CON Device has access right according to the CON ACL. A favorites list can contain up to 32 different CPU Devices (from firmware V3.05).

The switching of the favorites is done via keyboard commands (see matrix user manual).

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device for which a favorites list is to be created.
4. Click the **Favorites** tab.

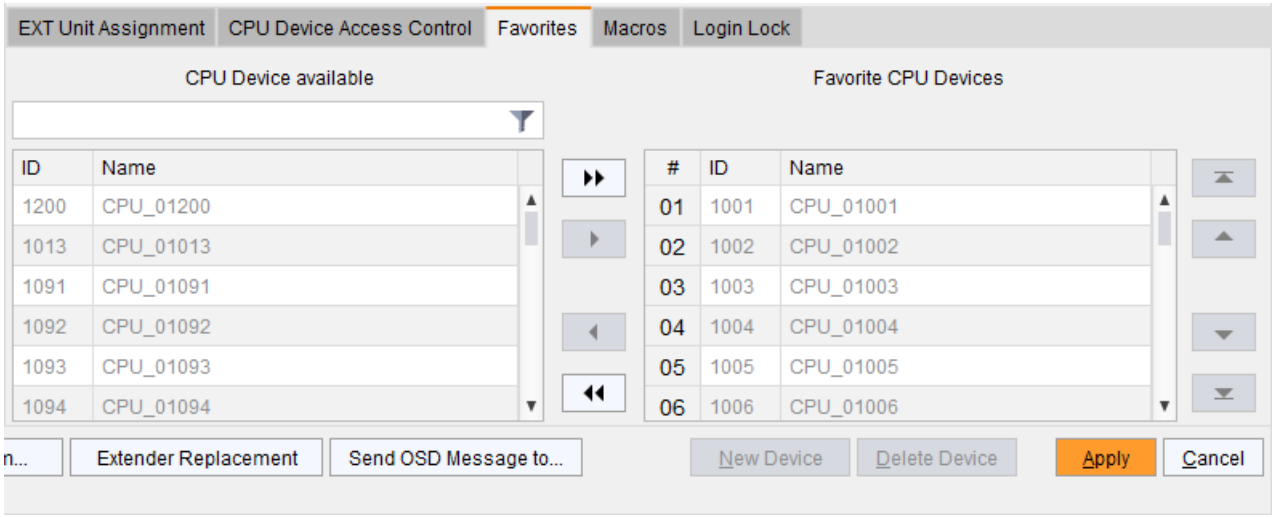


*Fig. 107 Menu **Extender & Devices - CON Devices - Favorites***

5. Select the CPU Devices in the **CPU Device available** list that should be added to the favorites list (**Favorite CPU Devices**). By pressing and holding down Ctrl at the same time, more than one CPU Device can be highlighted.
6. Click ▶ to move the highlighted CPU Devices to the favorites list. By clicking ▶▶, all CPU Devices from the **CPU Device available** list will be moved to the favorites list (**Favorite CPU Devices**).
7. To remove highlighted CPU Devices from the favorites list, click ◀. By clicking ◀◀, all CPU Devices will be removed from the favorites list.
8. Optional: Click ▼ or ▲ to change the order of the CPU Devices within the favorites list.
9. Click **Apply** to confirm the changes.

☑ For an efficient favorite configuration, favorite settings can be assigned to CON Devices (see description in section 6.10.1, page 139) or can be copied from a CON Device (see description in section 6.10.2, page 141).

6.9.7 Setting CON Device Macros

In this menu macro commands for switching, disconnection or user administration can be created. The macro commands are created for each CON Device separately.

A macro can execute up to 16 switching commands successively. 32 macros can be configured.

The execution of the macros is done by entering a keyboard command by pressing the Hot Key and the function keys F1 to F16 (see matrix user manual) and Shift+F1 to Shift+F16 (S1 to S16).

The macros can also be used to switch to CPU groups.

To create a macro for the selected CON Device, proceed as follows:

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device for which a CON Device macro is to be created.
4. Click the **Macros** tab.

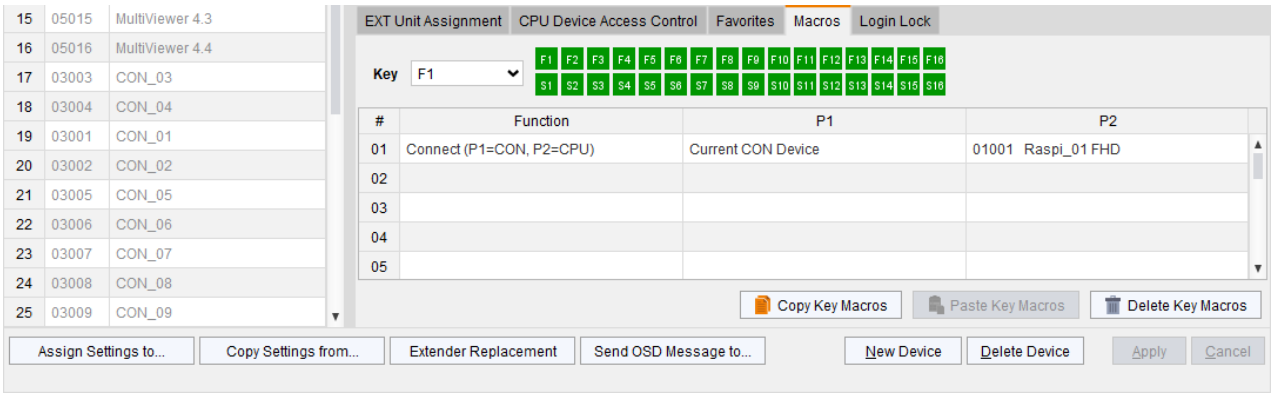


*Fig. 108 Menu **Extender & Devices - CON Devices - Macros***

The following parameters can be configured:

Field	Selection	Description
Key	**F1 to F16** **S1 to S16**	Selects the function key to be configured.
Function (01 to 16)	**Connect (P1=CON, P2=CPU)**	Sets a bidirectional connection from CON Device P1 to CPU Device P2.
	Connect Video (P1=CON, P2=CPU)	Sets a Video Only connection from CON Device P1 to CPU Device P2.
	Disconnect (P1=CON)	Disconnects the CON Device P1.
	Logout User	Logs out the current user.
	Assign CPU (P1=VCPU, P2=RCPU)	Assigns a Virtual CPU Device to a Real CPU Device.
	Assign CON (P1=RCON, P2=VCON)	Assigns a Real CON Device to a Virtual CON Device.
	Push (P1=CON)	Shifts the current access status (FA or VO) to CON Device P1.
	Push Video (P1=CON)	Forwards the video signal of the current connection (Full Access or Video Only) to CON Device P1. The user's connection remains unchanged (Full Access or Video Only).

Field	Selection	Description
Function (01 to 16)	**Get (P1=CON)**	The user's CON Device gets a Full Access connection to the CPU Device that is currently connected to CON Device P1. The connection of CON Device P1 is changed into a Video Only connection.
	Get Video (P1=CON)	The user's CON Device gets a Video Only connection to the CPU Device that is currently connected to CON Device P1. The connection of CON Device P1 remains unchanged (Full Access or Video Only).
	Login User (P1=CON, P2=User)	Logs in a certain user P1 at CON Device P2. ???
	MSC Connect (P1=Control-CON, P2=CON)	Sets USB-HID control within activated MSC from the Control CON Device P1 to another Control CON Device P2.
P1	**CON Device** **VCPU Device** **RCON Device** **Control-CON Device**	Name of CON Device, Virtual CPU Device, RCON Device or Control-CON Device
P2	**CPU Device** **RCPU Device** **VCON Device** **User** **CON Device**	Name of CPU Device, Real CPU Device, Virtual CON Device, User or CON Device

5. Select in the **Key** field the function key (**F1** to **F16, S1** to **S16**) for which a macro is to be created.
6. Select in the **Function** column the commands that should be part of the macro. The selection list will be opened by a double-click on the empty fields in all three columns.
7. Select the respective parameters for the macro functions (e.g., corresponding CON Devices or CPU Devices) in the **P1** and **P2** columns.
8. Click **Apply** to confirm your entries.

For efficient macro configuration, the following context functions are available:

➡ When clicking on the **Macros** tab, macros can be assigned to other CON Devices using the **Assign Settings to...** function (see description in section 6.10.1, page 139) and be copied from other CON Devices using the **Copy Settings from...** function (see description in section 6.10.2, page 141).

➡ When clicking on the macro list, commands of the selected key can be copied into the cache by using the **Copy Key Macros** function. You can paste the commands from the cache into another key by using the **Paste Key Macros** function and you can reset all commands of the selected key by using the **Delete Key Macros** function.

6.9.8 Setting Access Rights for Logging in to a CON Device

Users can be blocked from logging in for certain CON Devices.

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device that is assigned to the CON unit(s) for which the login should be locked in the **CON Device** list.
4. Click the **Login Lock** tab in the working area.

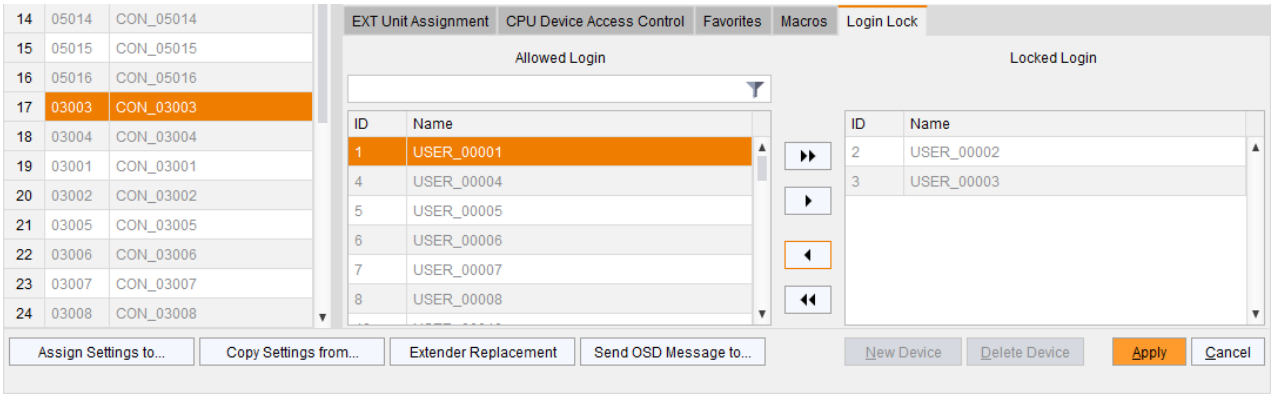


*Fig. 109 Menu **Extender & Devices - CON Devices - Login Lock***

5. Select the Users in the **Allowed Login** list that should be added to the list of locked Users (**Locked Login**). By pressing and holding down Ctrl at the same time, more than one User can be highlighted.
6. Click ▶ to move the highlighted User to the **Locked Login** list. All users in this list cannot log in at the CON Unit(s) that has/have the selected CON Device assigned to. By clicking ▶▶, all Users from the **Allowed Login** list will be moved to the **Locked Login** list.
7. To remove highlighted Users from the **Locked Login** list, click ◀. By clicking ◀◀, all Users will be removed from the **Locked Login** list.
8. Click **Apply** to confirm the changes.
9. Click **Deactivate Edit Mode** in the toolbar.

6.9.9 Configuring a GPIO CON Module

Functions for an external switching solution connected to a GPIO add-on module are set in this menu.

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device of the CON extender module with GPIO add-on module to define the functions of the pins.
4. Click the **GPIO** tab in the working area (only present when a GPIO add-on module is used).

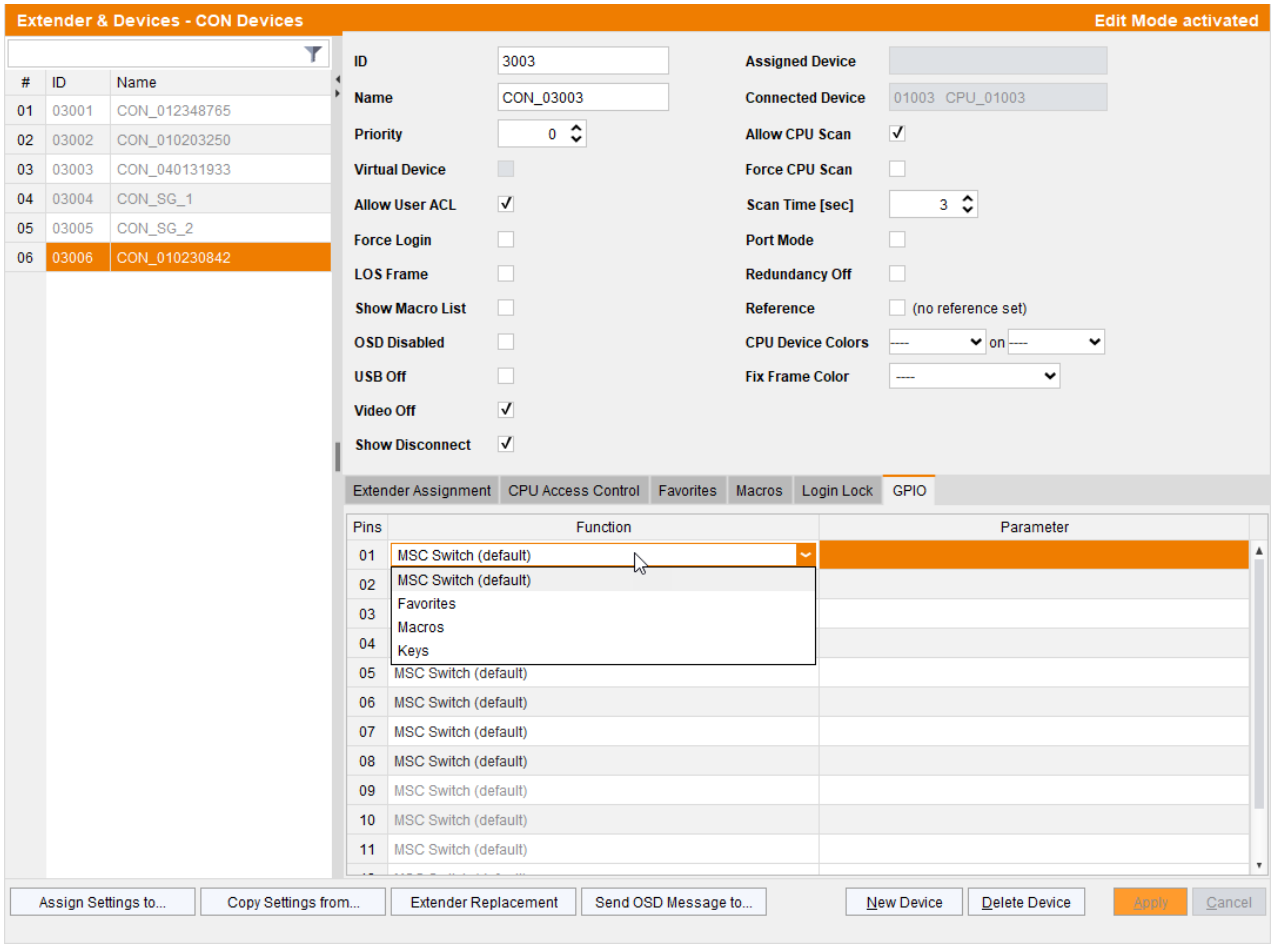


*Fig. 110 Menu **Extender & Devices - CON Devices - GPIO***

5. Double-click in the **Function** column of the pin to be defined.
   A selection menu is opened.
6. Select **Favorites** as a function for the pin.
7. Double-click in the **Parameter** column of the selected pin.
   A selection menu is opened.
8. Select the favorite CPU Device from the **Favorite CPU Devices** list.
9. Click **Apply** to confirm the changes.

☑ Defining a macro for a pin is done in the same way.

More information on GPIO add-on modules is contained in the manual 474-Add-on Modules.

To set keys for an external switching solution, proceed as follows:

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device of the extender module with GPIO add-on module to define the functions of the pins.
4. Click the **GPIO** tab in the working area.
5. Double-click in the **Function** column of the pin to be defined.
   A selection menu is opened.
6. Select **Key** as function for the pin.
7. Double-click in the **Parameter** column of the selected pin.
   A menu opens.

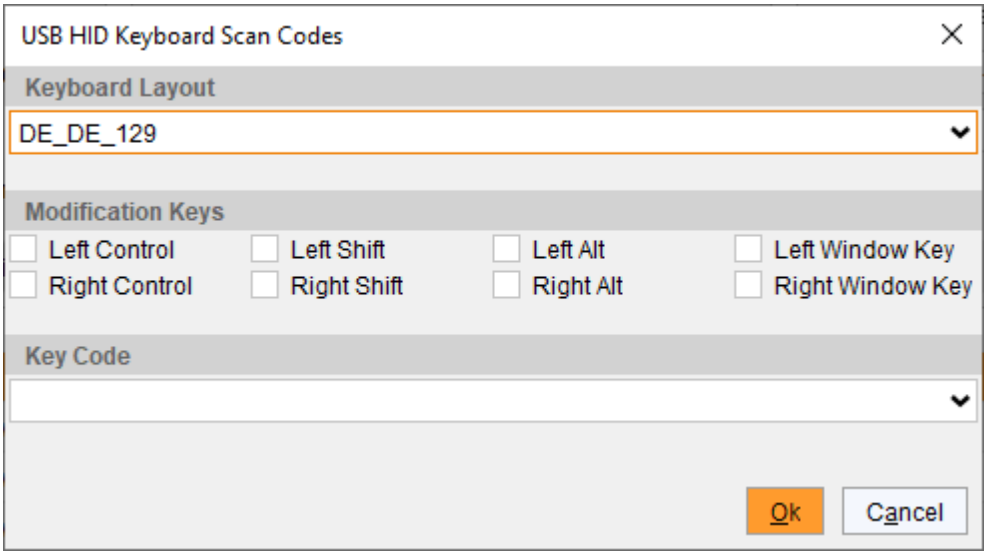


*Fig. 111 Menu **Extender & Devices - CON Devices - GPIO - Keyboard Scan Codes***

8. If required, click the arrow under **Keyboard Layout** and select the desired keyboard layout in the opened selection list.
9. Tick the checkbox for the desired key under **Modification Keys** or click the arrow under **Key Code** and select the desired key in the opened selection list.
10. Click **Ok** to confirm the settings.
11. Click **Apply** to confirm the settings.
12. Click **Deactivate Edit Mode** in the toolbar.

6.9.10 Assigning Real CON Devices to a Virtual CON Device

In this menu, several Real CON Devices can be assigned to a Virtual CON Device.

This function reflects changes in permission made to Virtual CON Devices onto Real CON Devices. Virtual CON Devices can be switched in the same way as Real CON Devices. Real CON Devices that are assigned to a Virtual CON Device that is connected to a CPU Device will all receive the shared video signal. The last assigned CON Device will also have control of the keyboard and mouse.

NOTICE

If the **Auto Send** checkbox is ticked in the lower left corner of the working area, the switching operations will be performed immediately without user confirmation as is the case when clicking **Send**. If a Real CON Device is assigned to a Virtual CON Device, the settings for the Virtual CON Device for priority, CON ACL, macros and favorites are valid. The settings of the Real CON Device are ignored.

1. Click **Assignment > Virtual CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

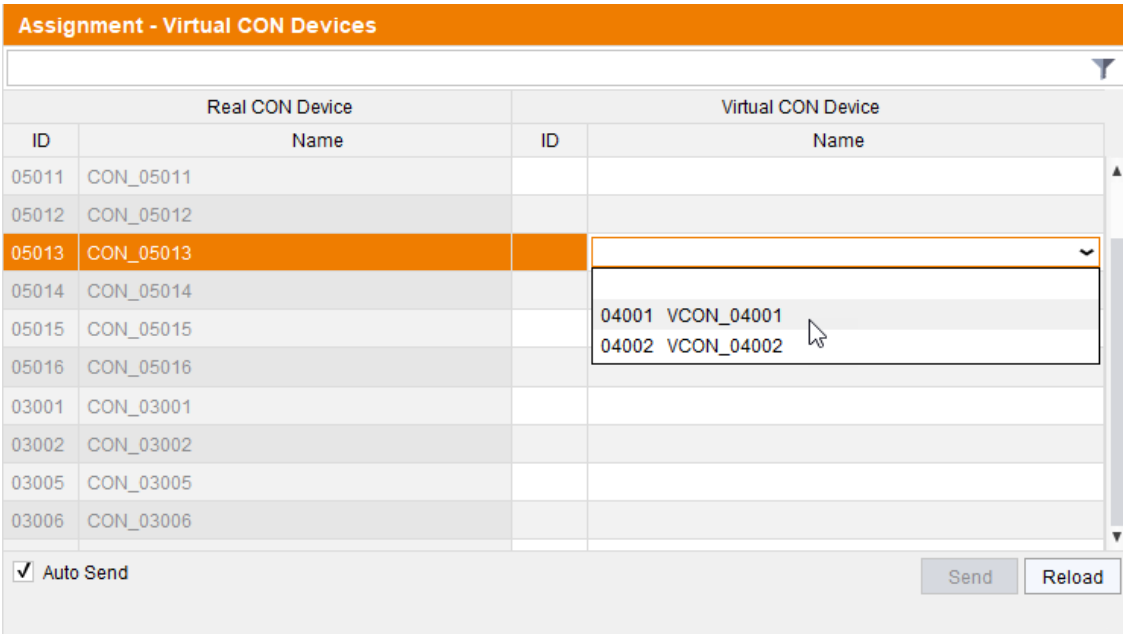


*Fig. 112 Menu **Assignment - Virtual CON Devices***

The following functions are available:

Button	Function
Send	Sends assignments to the matrix
Reload	Reloads changes

The selection boxes in the **Virtual CON Device** column contain a filter function.

3. Select the required Real CON Device in the **Real CON Device** list.
4. Click in the **Virtual CON Device** column to display a list of all available Virtual CON Devices.
5. Select the required Virtual CON Device in the selection list.
6. Click **Send** to send the assignment after confirmation to the matrix.
7. Click **Deactivate Edit Mode** in the toolbar.

The Tera Tool software offers the option to switch directly from the **Assignment** menu to the definition menu to check specific settings for the respective **Real CON Device** or **Virtual CON Device**.

➡ Click with the right mouse button on the respective **Real CON Device** or **Virtual CON Device** and select **Open CON Device** in the context menu. The definition menu for the CON Device settings is opened (see page 113).

6.9.11 Configuring Multi-Screen Control

When using MSC, switching up to eight connected sources can be performed at one sink with only one connected mouse or keyboard. The sink can consist of up to eight CON Units and accordingly up to eight monitors, or up to sixteen monitors when using dual head extender modules. In a matrix system, MSC can be set up at multiple sinks. The CON Units of a sink with MSC must all be physically connected to the same block of 8 ports on the I/O board. When using one of these I/O boards (480-C8, 480-S8 or 480-V8), the block size is limited to 4 ports (port 1 to 4, or port 5-8).

One of the CON Devices is designated for USB-HID control of the connected sources, below referred to as “Control CON Device”. Control CON Devices refer to the extender modules within the MSC that are connected to keyboard and mouse for operation. If the USB-HID control has to be performed via several USB-HID devices, several CON Devices have to be defined as Control CON Device.

Smooth switching of sources with the mouse is performed by dragging the mouse pointer beyond the respective display to an adjacent display in an arrangement of displays. The displays can be arranged side by side, in a grid layout, or completely free. Alternatively, switching can be performed via keyboard commands according to the ID number in the MSC setup.

NOTICE

When using CON Units with the possibility to connect a local source in a MSC environment, the local switching will be disabled.

The connected sources need to support absolute mouse coordinates. Else a specific mouse driver needs to be installed.

CON Units that have already been configured for MSC can be connected all together to other blocks of 8 ports at another I/O board. In this case any further configuration is not necessary, their functionality will remain as set previously.

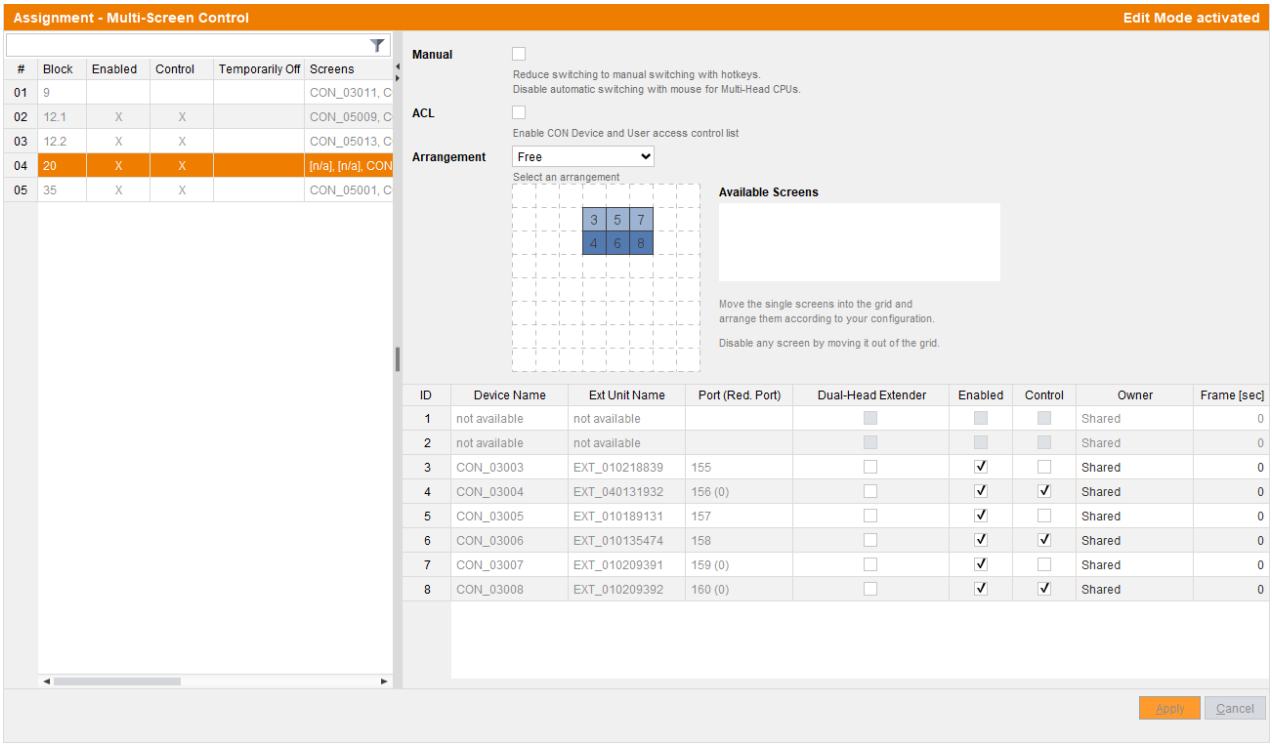


*Fig. 113 Menu **Assignment - Multi-Screen Control***

The following parameters can be configured:

Field	Entry/Status	Description
Manual	Activated	Reduces switching to manual switching with hotkeys. Disables automatic switching with mouse, necessary for Multi-Head installations.
	Deactivated	Function not active (default)
ACL	Activated	Enables CON Device and User Access control lists (CON ACL and User ACL).
	Deactivated	Function not active (default)
Arrangement	Selection	To select the layout type (Free, Horizontal, Block)
Dual-Head Extender (module)	Activated	Enables configuring two displays for the dual head extender module
	Deactivated	Function not active (default)
Enabled	Activated	Enables the respective display for MSC.
	Deactivated	Function not active (default)
Control	Activated	Enables the CON Device for USB-HID control of other CON Devices if access is permitted.
	Deactivated	Function not active (default)
Owner	Selection	• Shared (default) permits access from a Control CON Device to all other CON Devices including other Control CON Devices. • Defines which Control CON Device is authorized to operate this CON Device. Only Control CON Devices appear in this list.
Frame	0 to +/- 999 seconds	Negative value: Sets the keyboard/mouse inactivity time after which a red frame flashes in the display with current mouse/keyboard control. This frame remains active until mouse/keyboard are used. Positive value: Sets the inactivity time after which a frame flashes briefly when the mouse is dragged into this display.

Configuring Multi-Screen Control

To configure more than four CON Devices for MSC, the free layout has to be used. If the horizontal or block layout is used for up to four CON Devices, the CON Units have to be connected to the ports 1 - 4 or 5 - 8 of the respective I/O board. E.g., if connecting four CON Units to ports 1, 2, 5, and 6 of an I/O board, configuring MSC for these CON Devices will not be possible.

1. Click **Assignment > Multi-Screen Control** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the block of four or eight ports in the list of the working area that should be configured for MSC.
   Only blocks of four or eight ports that contain at least one CON Unit are shown.
4. Tick the **Manual** checkbox if the USB-HID switching is to be restricted to keyboard commands (see matrix user manual, section “Switching via Multi-Screen Control”). Manual switching allows the use of multi-head consoles.
5. In the **Arrangement** field, select the layout for the CON Devices you want to configure. Select as follows:
   - **Horizontal**: horizontal arrangement for a maximum of four CON Units
   - **Block**: block arrangement for a maximum of four CON Units
   - **Free**: free arrangement for a maximum of eight CON Units (The free arrangement permits a flexible positioning of the screens for diverse applications.) Move the displays from the **Available Screens** field to the arrangement field.
     The fields for the configuration of the individual displays will be arranged accordingly.

We recommend using always the free arrangement type.

6. If the CON Unit to be configured is a dual head extender module, tick the **Dual-Head Extender** checkbox to activate the option.

   An additional display appears in the **Available Screens** field.
7. Tick the **Enable** checkboxes for all CON Devices to be enabled for MSC.

   Enabled CON Devices are shown as light blue screens in the arrangement field.
8. Tick the **Control** checkbox for one or more CON Devices to be enabled as Control CON Device.

   Enabled Control CON Devices are shown as dark blue screens in the arrangement field.
9. Use the **Frame** function to configure a red frame that flashes on the display with current mouse control in two scenarios: after a specified time of inactivity (-x sec.) permanently or when entering the display with the mouse pointer after a specified time (+x sec.) briefly. The frame can be activated individually for each screen by using a timer with negative or positive values.

   9.1. Double-click in the respective CON Device in the **Frame** column.

   9.2. Select a **positive** or **negative** value (seconds.
10. Click **Apply** to confirm the settings.

    A dialog appears querying a restart of the I/O board.
11. Click **Yes** to restart the I/O board.
12. Wait until the boot process of the matrix is finished and the status LED 1 flashes green.
13. Click **Remote Save** in the toolbar.

All Control CON Devices are enabled to control USB-HID of all other CON Devices in the setup. To restrict access to other CON Devices, see the following section.

Access Restriction when using Multiple Control CON Devices

To enable access to a display for only one Control CON Device, proceed as follows:

1. Double-click on the selection box within the **Owner** column of the Control CON Device and select the name of this Control CON Device.
2. Double-click on the selection box within the **Owner** column of all CON Devices whose display should be only accessible by one Control CON Device and select the name of this Control CON Device.

   The mouse can now be used to access those displays whose CON Device is enabled for access by the assigned Control CON Device.
3. Click **Apply** to confirm the settings.

   A dialog appears querying a restart of the I/O board.
4. Click **Yes** to restart the I/O board.
5. Wait until the boot process of the I/O board is finished and the status LED 1 flashes green.
6. Click **Remote Save** in the toolbar.

No simultaneous USB-HID sharing of multiple Control CON Devices

Example: In a setup of 8 CON Devices, if CON Device 1 and 2 are each Control CON Devices and six other "non-Control CON Devices" are configured, both Control CON Devices can access the displays of CON Device 3 to 8 if they are configured with **Owner = Shared**.
However, Control CON Device 1 and 2 cannot access the display of a "non-Control CON Device" at the same time. The Control CON Device that first had USB-HID control is reset to its "own" display when the second Control CON Device takes over.

Changing Multi-Screen Control

Changes of the MSC are permitted only if the USB-HID control is switched to the Control CON Device.

1. Switch the USB-HID control to the Control CON Device.
2. Select the ports setup in the list whose MSC should be changed.
3. Make edits at the configuration and system settings.
4. Click **Apply** to confirm the changes.
   A dialog appears querying a restart of the I/O board.
5. Click **Yes** to restart the I/O board.
6. Wait until the boot process of the I/0 board is finished and status LED 1 flashes green.
7. Click **Remote Save** in the toolbar.

Deleting Multi-Screen Control

Changes of the MSC are permitted only if the USB-HID control is switched to the Control CON Device.

To delete the MSC for a setup, proceed as follows:

1. Switch the USB-HID control to the Control CON Device.
2. Select the ports setup in the list for which the MSC should be deleted.
3. Tick the **Enable** checkboxes for all CON Devices to remove the checkmarks.
4. Tick the **Control** checkbox for all CON Devices to remove the checkmarks.
   The disabled Control CON Devices are shown as gray screens in the arrangement field and the MSC is disabled.
5. Click **Apply** to confirm the changes.
   A dialog appears querying a restart of the I/O board.
6. Click **Yes** to restart the I/O board.
7. Wait until the boot process of the I/O board is finished and the status LED 1 flashes green.
8. Click **Remote Save** in the toolbar.

Configuring Multi-Head Sources for Multi-Screen Control

NOTICE

A Multi-Head configuration for Apple Mac sources is not supported due to limitations of the macOS.

For the use of Multi-Head sources, an additional configuration of the CPU Devices is mandatory. The configuration of CPU Devices which are connected to single head sources is not mandatory.

NOTICE

- ➡ For the use of Multi-Head sources, all CPU extenders have to be connected by video **and** USB cable to the source.
- ➡ The monitor arrangement of the CPU Device has to be configured in exactly the same way as the graphics card settings of the connected source. The monitor arrangement of the physical monitors at the workplace does not matter and can be ignored.

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CPU Device to be configured.
4. Click the **Monitor Arrangement** tab.

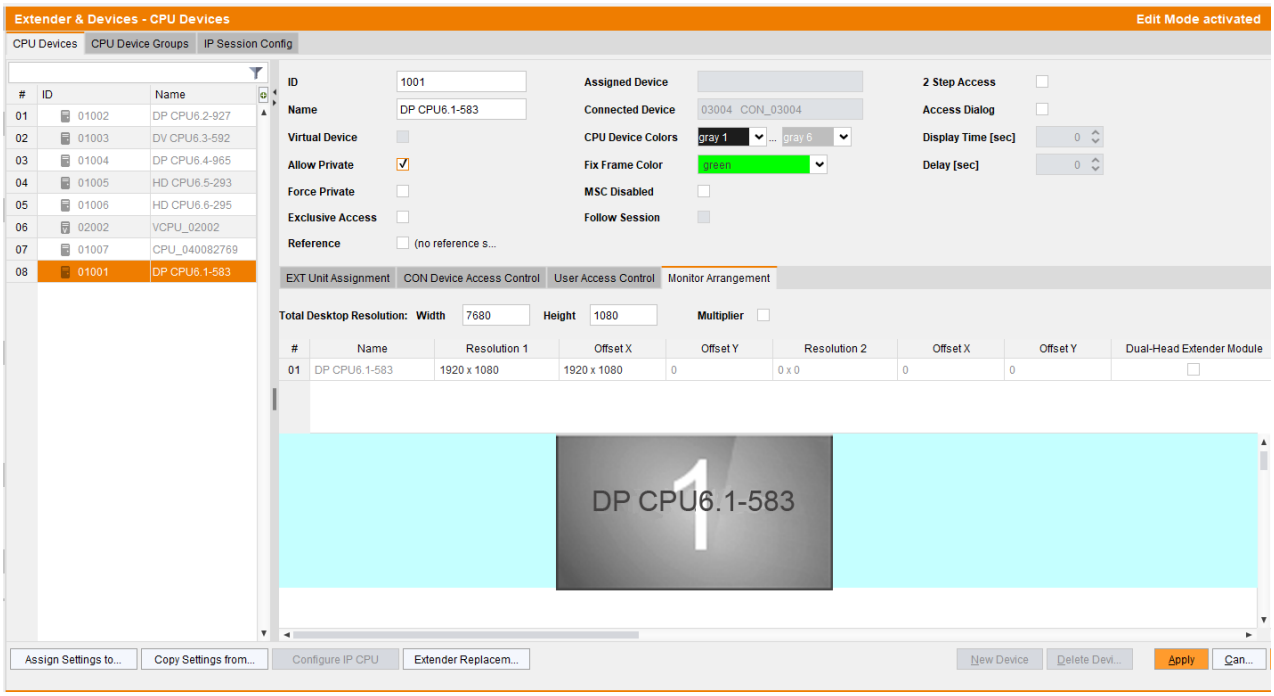


*Fig. 114 Menu **Extender & Devices - CPU Devices - Monitor Arrangement***

5. Enter the resolution of the total desktop area into the fields **Total Desktop Resolution**. For instance, if there are 4 graphic card outputs with a resolution of 1920x1080 each, you have to enter 7680 under **Width** and 1080 under **Height**. The light blue gird symbolizes the total desktop area.
6. Select the individual resolution of the graphic card output from the selection list in the field **Resolution 1** (e.g., 1920x1080). This is the graphic card output the CPU Device is connected to.
7. Enter the respective pixel coordinates that particular screen in the MSC arrangement into the fields **Offset X** and **Offset Y**.
   Note: Offset: X=0/Y=0 defines the upper left corner.
   For instance, you have to enter 1920 for a shift of 1920 pixels to the right into the field Offset X.
   The corresponding screen will be positioned accordingly within the light blue grid.

8. If the CPU Device to be configured as a dual head extender module, tick the **Dual-Head Extender** checkbox to activate the option. Enter the resolution of the 2nd graphic card output and the offset information in the field **Resolution 2**.
9. For some operating systems it is necessary to activate the option **Multiplier**. This is mandatory if you cannot reach all areas of the desktop with your mouse cursor.
10. Click **Apply** to confirm the settings.

    A dialog appears to restart the extender module.

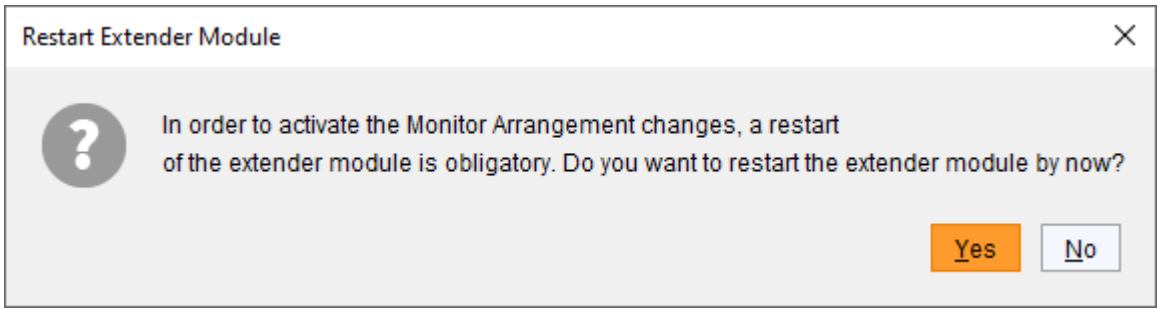


*Fig. 115 Dialog **Monitor Arrangement - Restart Extender***

11. Click **Yes** to restart the extender module with the new configuration.
    The CPU Device is now configured for the Multi-Head operation.
12. Click **Deactivate Edit Mode** in the toolbar.

6.9.12 Enabling Direct Link Fallback

Direct Link Fallback needs redundant CON and CPU Units. Link 1 port of both units is connected to the matrix. Link 2 port of the Con Unit is directly connected to Link 2 port of the CPU Unit. In case of a matrix failure, it is still possible to work with the directly connected computer/CPU.

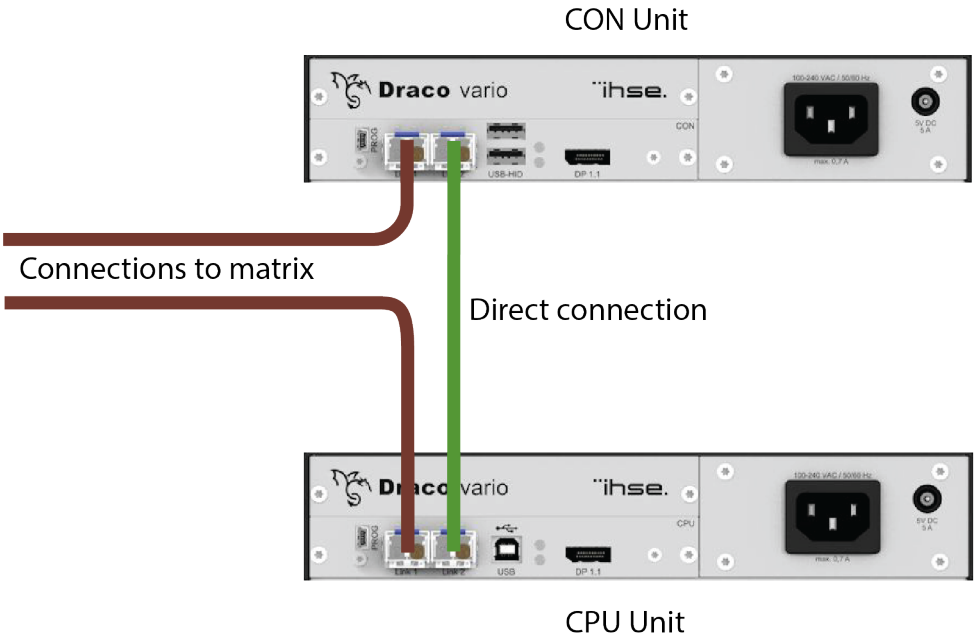


Fig. 116 Illustration of Direct Link Fallback

This function is enabled in the menu for CON Devices.

1. Click **Extender & Devices > Con Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

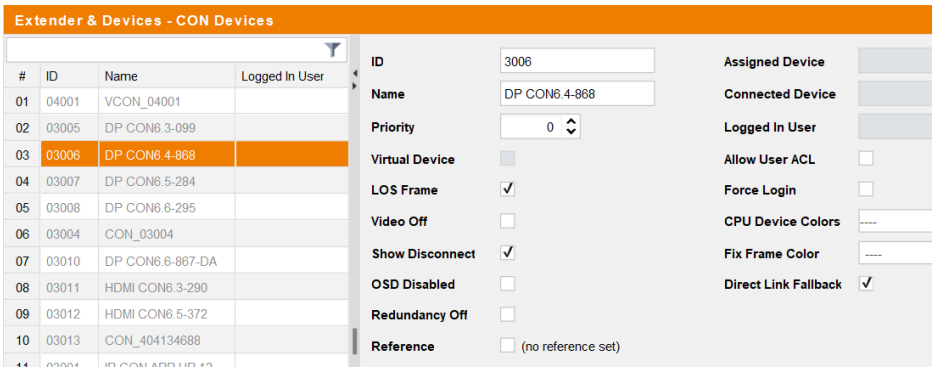


*Fig. 117 Menu **Extender & Devices - CON Devices***

3. Select a CON Device that has an EXT Unit assigned to which represents a CON Unit with a direct connection to a CPU Unit.
4. Tick the function **Direct Link Fallback**.
5. Click **Apply**.

6.10 Assigning/Copying Settings

These functions are available for settings of:

- Users
- CON EXT Units
- CPU Devices
- CON Devices
- Favorites

The process is always the same, only the selection menus for settings vary.

6.10.1 Assigning Settings

This function is described using CPU Devices as an example.

1. Click **Extender & Devices > CPU Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CPU Device whose settings are to be assigned to another CPU Devices.
4. Click **Assign Settings to…** below the CPU Device list.
   Step 1 appears: select the parameters whose settings are to be assigned to other CPU Devices.

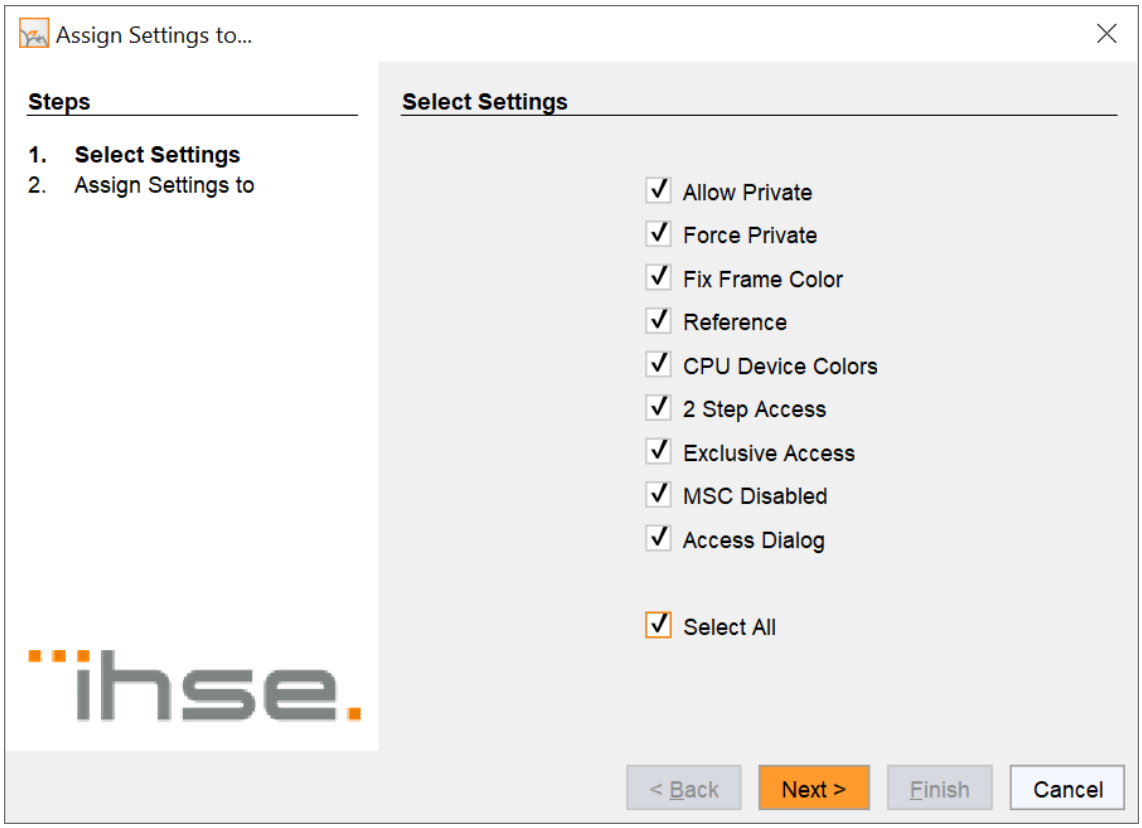


*Fig. 118 Menu **Extender & Devices - CPU Devices - Select parameters***

5. Tick the checkboxes to select the desired settings.

NOTICE
The value of a setting which is not selected in the “Select Settings” step is not copied to the target. This means the value of this setting remains as it is.

6. Click **Next >**.
   Step 2 appears: select the target CPU Devices.

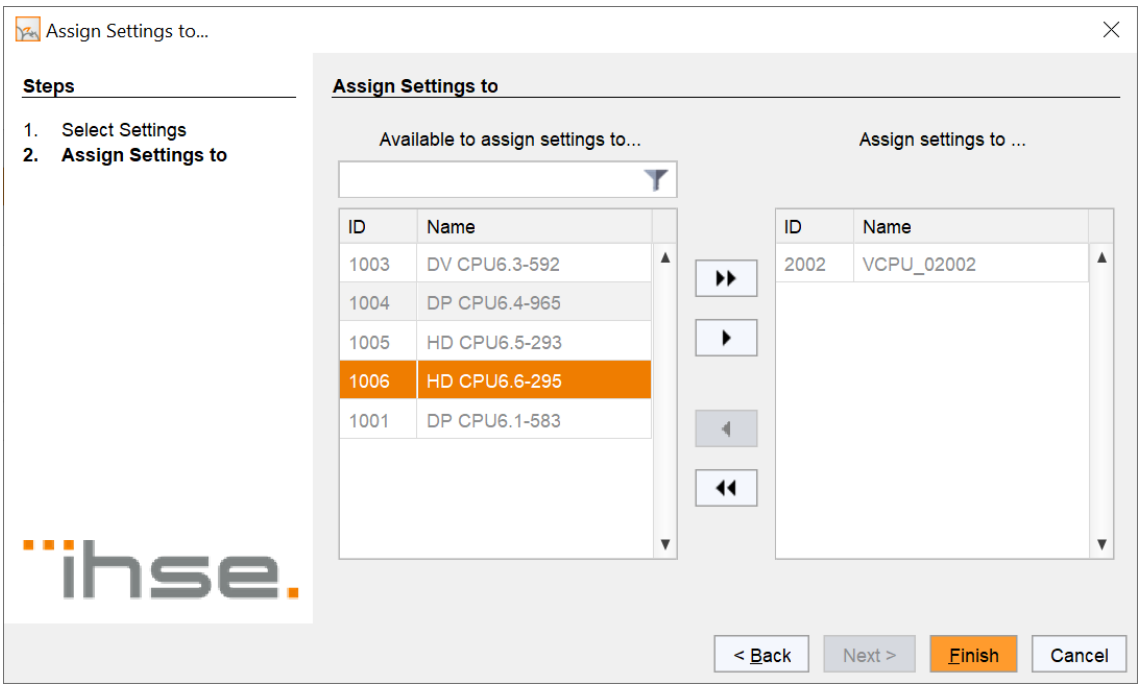


*Fig. 119 Menu **Extender & Devices - CPU Devices - Assign Settings to…***

7. Select the CPU Device in the **Available to assign settings to** list to which the settings are to be assigned. By pressing and holding down Ctrl at the same time, more than one CPU Device can be highlighted.
8. Click ▶ to move the highlighted CPU Device to the **Assign settings to** list. By clicking ▶▶, all CPU Devices will be moved to the **Assign settings to** list.
9. To remove highlighted CPU Devices from the **Assign settings to** list, click ◀. By clicking ◀◀, CPU Devices will be removed from the **Assign settings to** list.
10. Click **Finish**.

    The settings are immediately assigned (copied) to the selected CPU Devices.
11. Click **Deactivate Edit Mode** in the toolbar.

6.10.2 Copying Settings

This function is described using CON Devices as an example.

1. Click **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Select the CON Device to copy the settings to. By pressing and holding down Ctrl at the same time, more than one CON Device can be highlighted.
4. Click **Copy Settings from** below the CON Device list.

   Step 1 appears: selection of the parameters whose settings are to be copied.

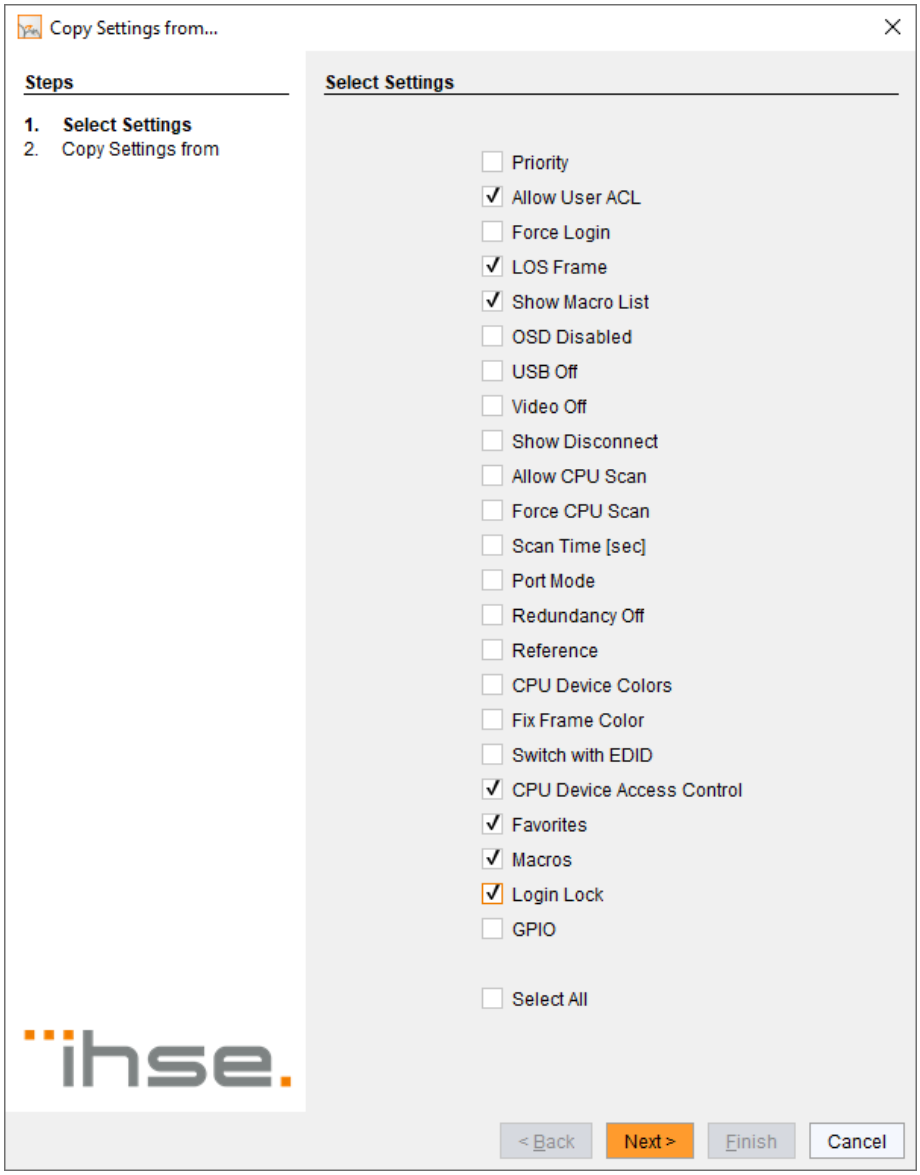


*Fig. 120 Menu **Extender & Devices - CON Devices - Select parameters***

5. Tick the checkboxes to select the desired parameters.
6. Click **Next >**.

   Step 2 appears: select the CPU Device whose settings are to be copied.

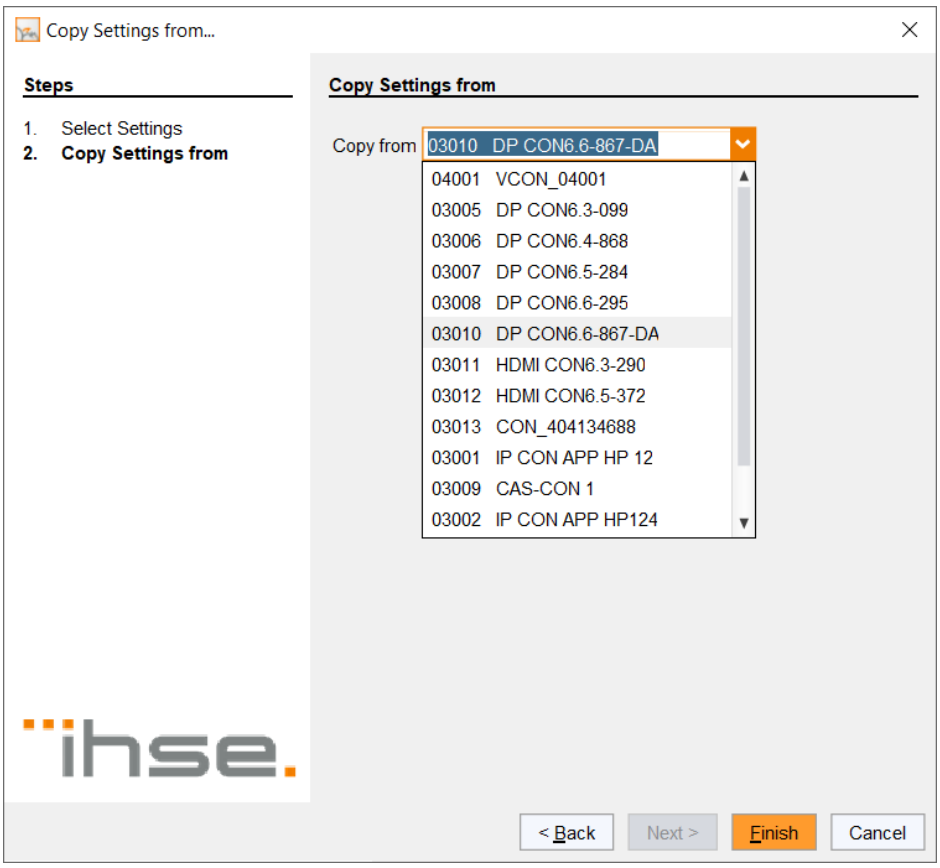


*Fig. 121 Menu **Extender & Devices - CON Devices - Copy Settings***

7. Select the CON Device in the selection list from which the settings are to be copied.
8. Click **Finish**.
   The settings are immediately copied to the previously selected CON Devices.
9. Click **Deactivate Edit Mode** in the toolbar.

6.11 Configuring IP Gateway Connections

The configuration of IP Gateways and the connection via IP to another IP Gateway is set in this menu. Each IP Gateway board is internally managed with eight ports for up to eight connections over a 1G channel to establish connections to other IP Gateway boards or to an IP Gateway extender.

To set an IP Gateway connection between two matrices, it is only necessary to configure the master matrix. For a connection to an IP Gateway extender in another network than the matrix, the matrix and the extender need to be configured using the Tera Tool software.

It is possible to reprogram the IP Gateway board so that it no longer has IP functionality. It is then a normal grid board that can be used in existing matrix grids.

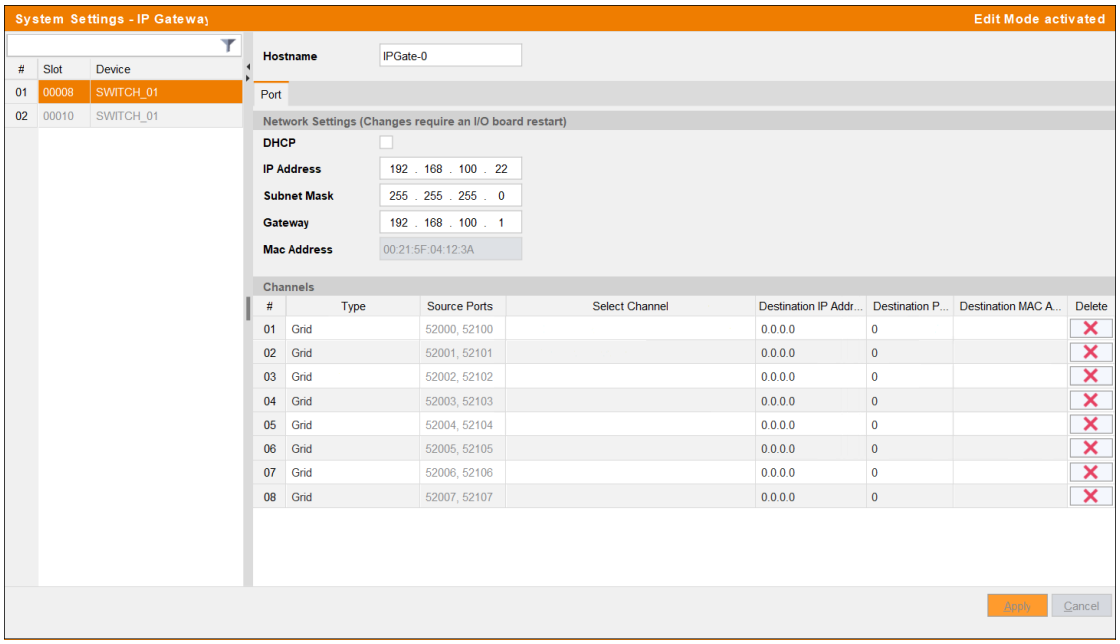


*Fig. 122 Menu **System Settings - IP Gateway***

6.11.1 Setting an IP Gateway Connection for a Grid

We strongly recommend setting up IP Gateway connections only via master matrix.

1. Connect to the master matrix.
2. Click **System Settings > IP Gateway** in the task area.
3. Click **Activate Edit Mode** in the toolbar.
4. Click the slot with the IP Gateway board under **Slot** for which an IP Gateway connection has to be set.
5. By default, the channel type is set to **Grid**. If the channel type in the line of a source port that has to be used for matrix grid connection via IP Gateway is set to **EXT Unit**, double-click on the corresponding selection box of the port to be configured within the **Type** column and select **Grid**.
6. Double-click in the respective **Select Channel** field.

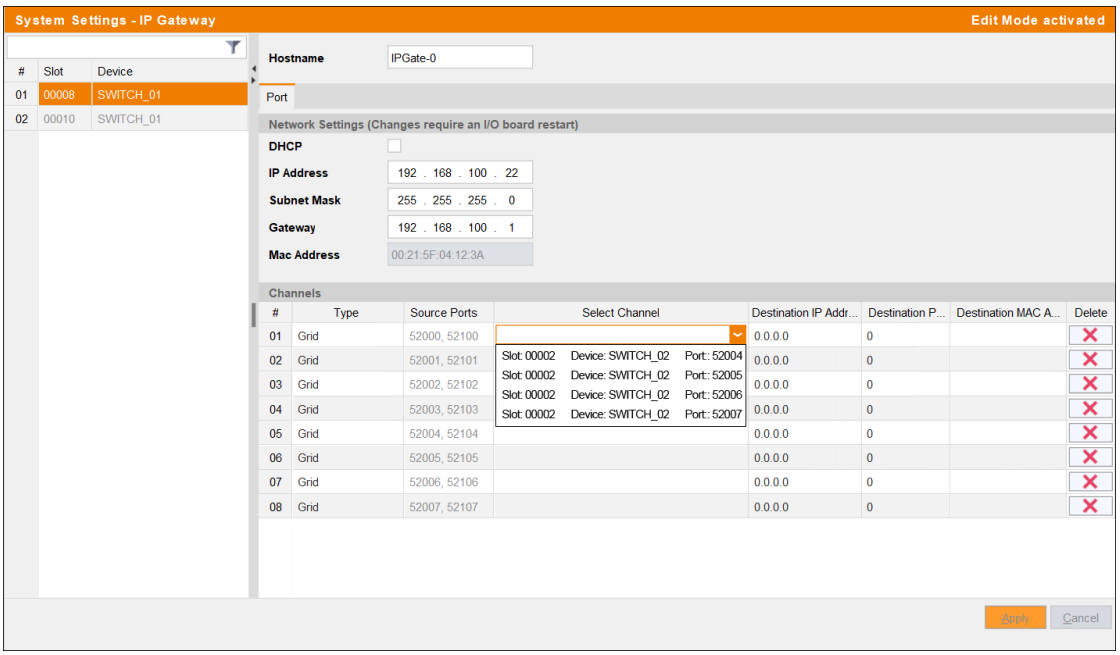


*Fig. 123 Menu **System Settings - IP Gateway - Select Grid Channel***

A drop-down menu is opened listing all available channels of other matrices in the subnet.
A channel is available when the type is set to **Grid**. Stated are the device (matrix) name, the slot of this matrix that contains an IP gateway board and the port number.

7. Click on the desired channel in the list.
8. The data of the selected channel are read and automatically entered in the selected channel line in this menu.

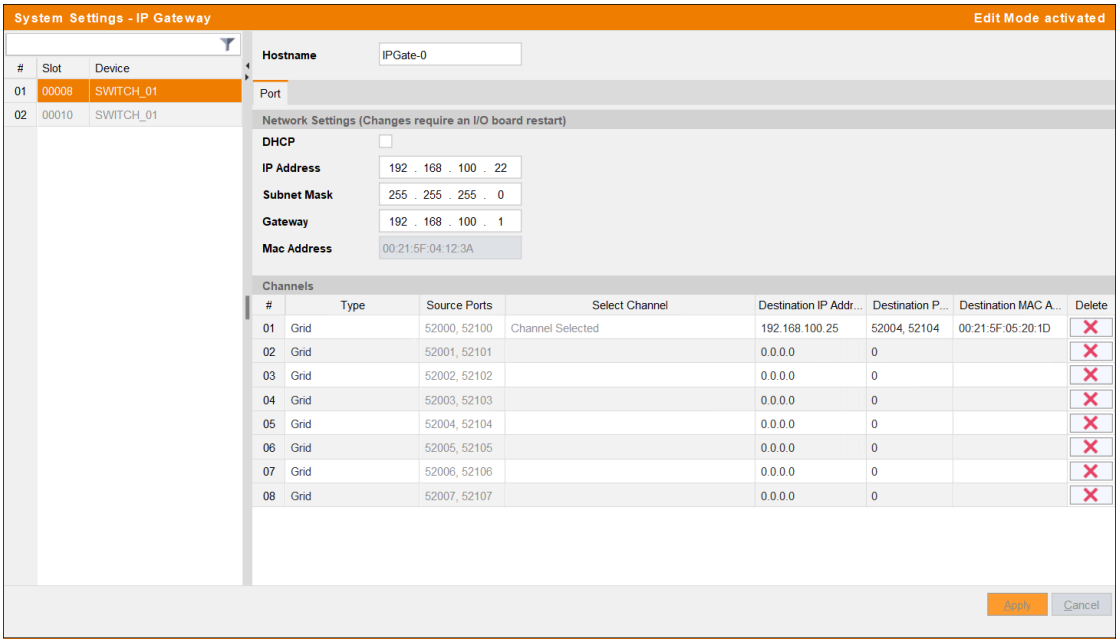


*Fig. 124 Menu **System Settings - IP Gateway - Selected Grid Channel***

9. Click **Apply** to confirm the selection.

   The data of the selected master matrix channel (01) are read and sent to the selected channel of the IP Gateway board of the sub-matrix to be connected. The data of the master matrix channel is automatically entered into the line of the selected grid channel at the sub-matrix (see following figure).

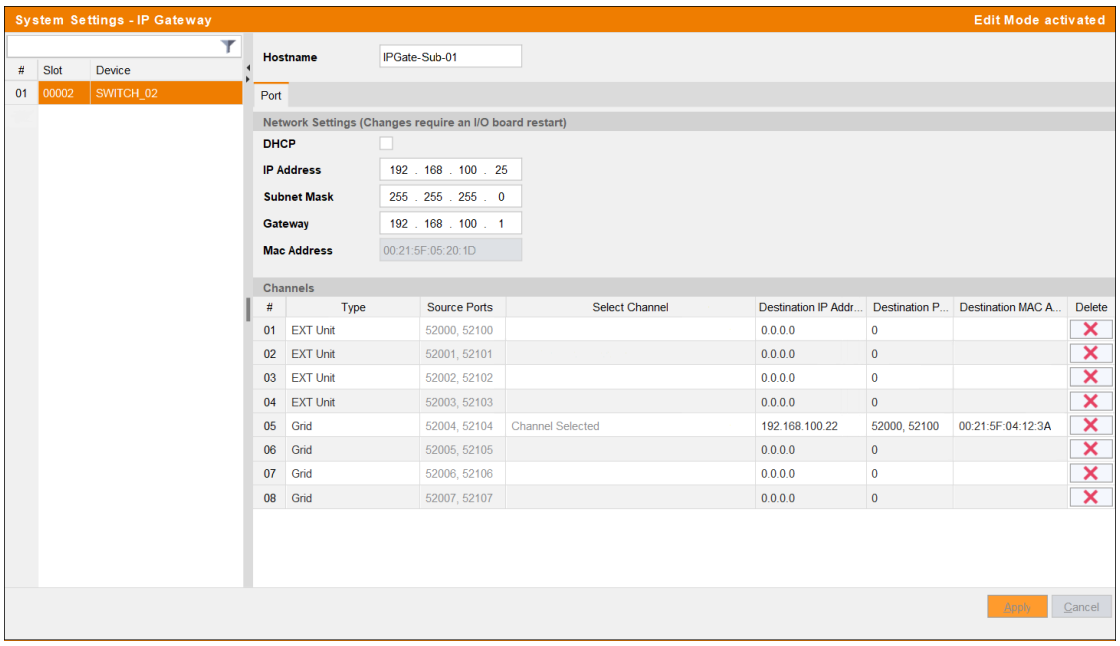


*Fig. 125 Menu **System Settings - IP Gateway - Filled in grid channel in sub matrix***

6.11.2 Setting an IP Gateway Connection for an IP Gateway CON Unit

6.11.2.1 IP Gateway CON in the same Network

1. Connect a computer or laptop to the matrix and start Tera Tool.
2. Click **Activate Edit Mode** in the toolbar.
3. Click **System Settings > IP Gateway**.
4. Create at least one **EXT Unit** channel. By default, the channel type is set to **Grid**. Double-click on the corresponding selection box of the channel to be configured within the **Type** column and select **EXT Unit**. In the following figure channels 6 and 7 are of the type EXT Unit.

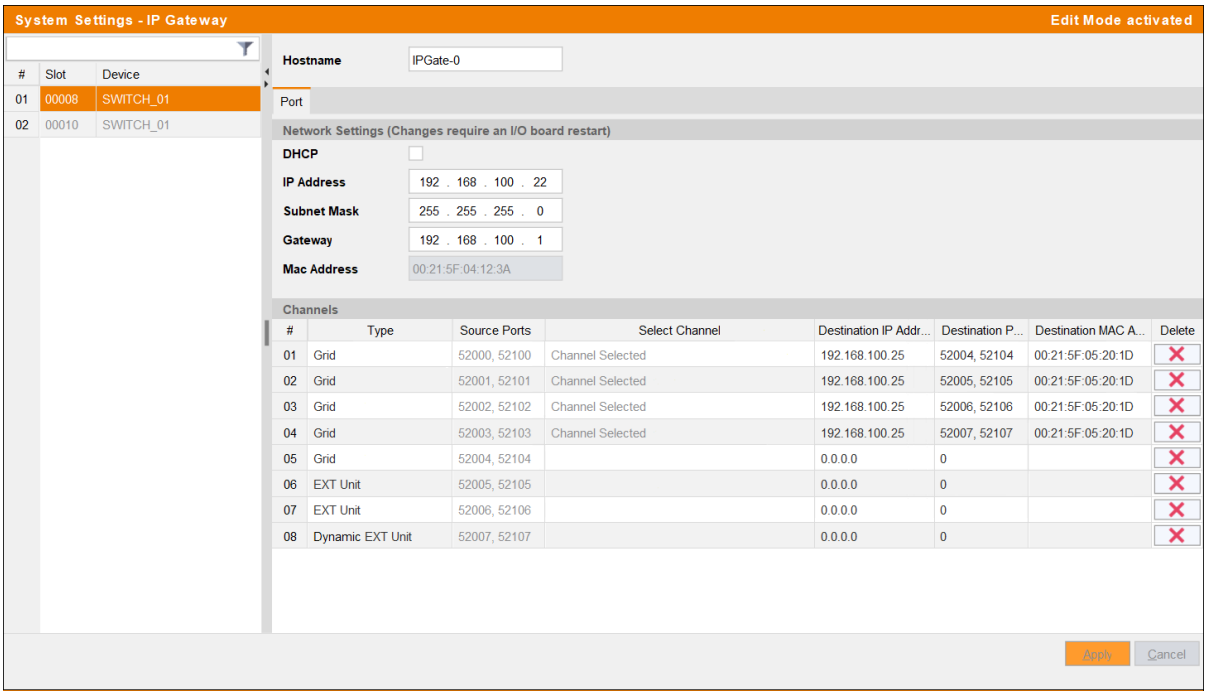


*Fig. 126 Menu **System Settings - IP Gateway with EXT Unit channels***

5. Click **System Settings > IP Extender**.

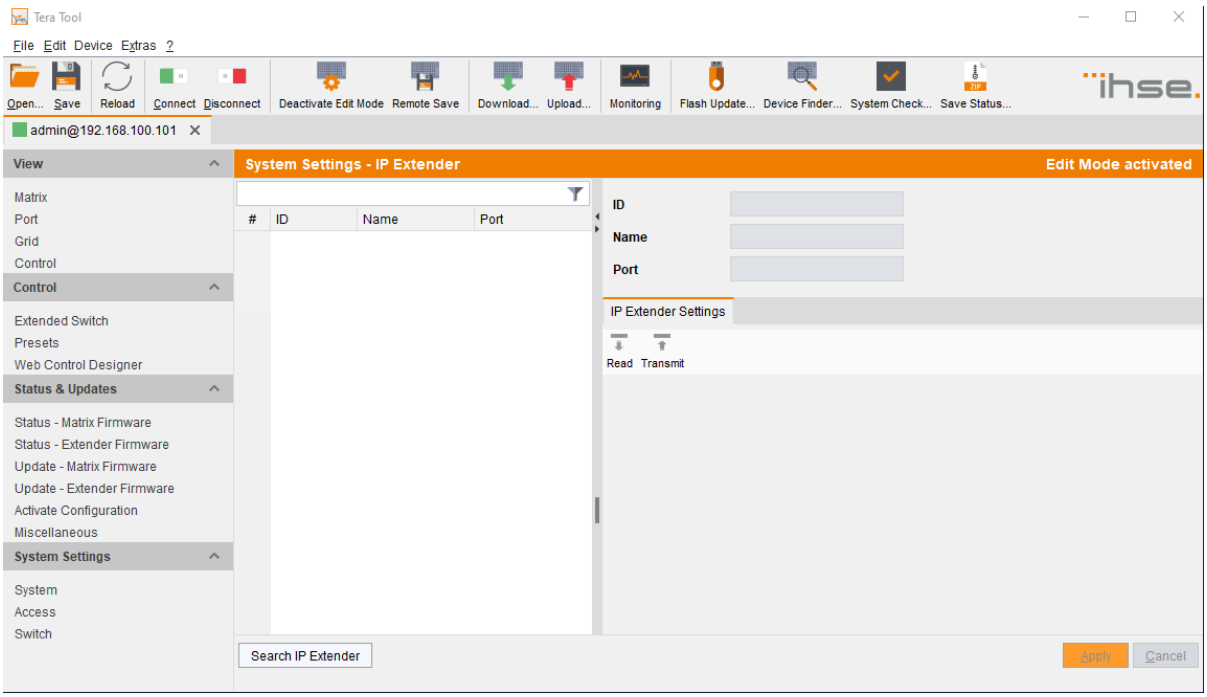


*Fig. 127 Menu **System Settings - IP Extender***

6. Click the button **Search IP Extender**.
   The **Search IP Extender** dialog appears, listing all IP Gateway CONs that are recognized in the same subnet.
7. Click the desired IP Gateway CON. The network settings are displayed.

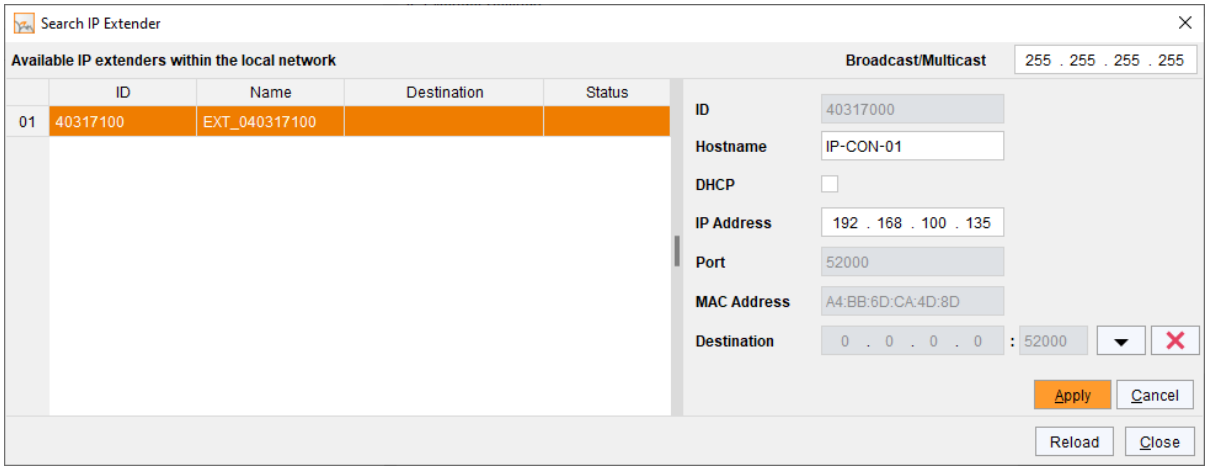


*Fig. 128 Dialog **Search IP Extender with changed hostname and IP address***

8. Change the hostname if desired.
9. Set the IP address if DHCP has to be deactivated.

If using a system without DHCP server, we recommend deactivating DHCP and entering a static IP address different from the default IP address 192.168.100.81.
➡ Note: The IP Gateway CON will restart and will only be found when connecting to the respective network.

10. Click the down arrow ▾ to assign a destination.
    A window appears showing all channels available for IP Gateway CON connection via IP.

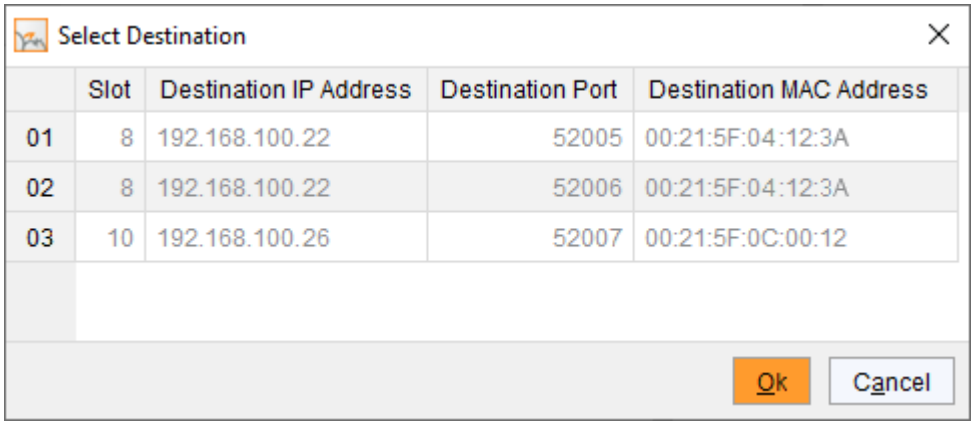


*Fig. 129 Dialog **Select Destination***

11. Select the desired channel in the list.
12. Click **Ok** to confirm the selection.
    The selected destination is stated in the Destination field.

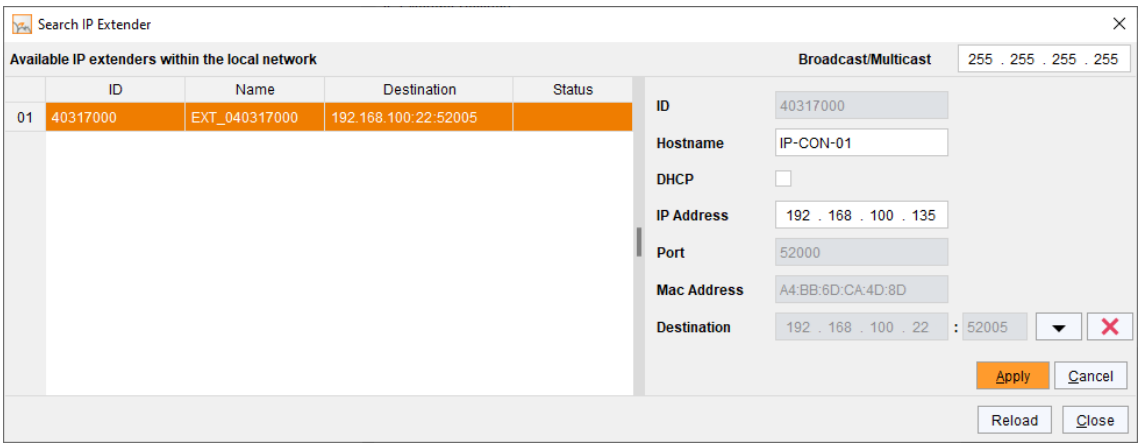


*Fig. 130 Dialog **Search IP Extender - Destination set***

13. Click **Apply**, **Reload** and **Close**.

    The IP Gateway Channels table now looks like this:

Channels

#	Type	Source Ports	Select Channel	Destination IP Add...	Destination P...	Destination MAC A...	Delete
01	Grid	52000, 52100	Channel Selected	192.168.100.25	52004, 52104	00:21:5F:05:20:1D	
02	Grid	52001, 52101	Channel Selected	192.168.100.25	52005, 52105	00:21:5F:05:20:1D	
03	Grid	52002, 52102	Channel Selected	192.168.100.25	52006, 52106	00:21:5F:05:20:1D	
04	Grid	52003, 52103	Channel Selected	192.168.100.25	52007, 52107	00:21:5F:05:20:1D	
05	Grid	52004, 52104		0.0.0.0	0		
06	EXT Unit	52005, 52105	Channel Selected	192.168.100.135	52000, 52100	A4:BB:6D:CA:4D:8D	
07	EXT Unit	52006, 52106		0.0.0.0	0		
08	Grid	52007, 52107		0.0.0.0	0		

*Fig. 131 **Channels table with connected IP Gateway CON unit***

☑ By clicking **Reload**, the MAC address of the extender was automatically retrieved and written into the table.

The assigned IP Gateway CON is listed in the **System Settings > IP Extender** menu.

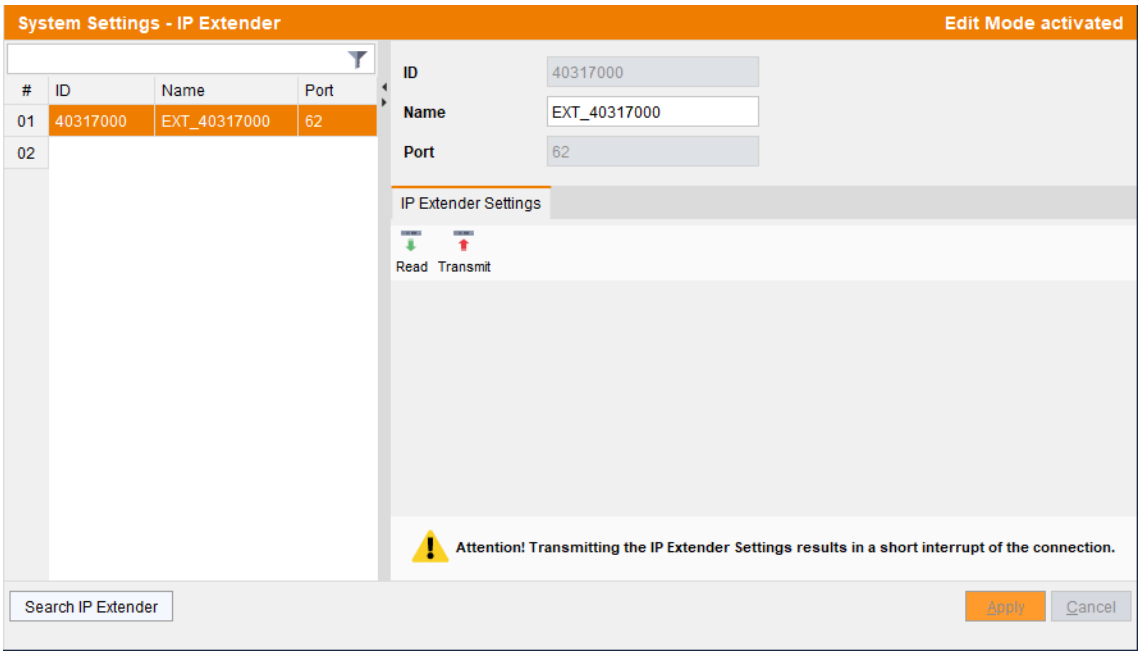


*Fig. 132 Menu **System Settings - IP Extender***

ℹ The port number stated here is derived from the slot the IP Gateway board is in (here: slot 8). The 8 channels are numbered in the same way as 8 ports of an I/O board in this slot would be numbered.

6.11.2.2 IP Gateway CON Unit in a different Network than Matrix and/or IP Gateway board

You have to configure the matrix with the IP Gateway board **and** the IP Gateway CON Unit using the Tera Tool software. How this is done is described in detail in the IP Gateway manual.

6.11.3 Setting an IP Gateway Connection for Draco CON App

The Draco CON App is a client software for access to Draco tera matrices over IP. It is equivalent to an IP CON unit. Running it on your computer, you can access another computer via matrix and a CPU unit.

Requirement

- The version of the firmware MATLETC of the IP Gateway board must be at least D00.42.240417.

Proceed as follows:

1. Connect to the matrix.
2. Click **System Settings > IP Gateway** in the task area.
3. Click **Activate Edit Mode** in the toolbar.
4. Click the slot with the IP Gateway board under **Slot** for which an IP Gateway connection has to be set.

There are two possibilities:

- Creating a **Dynamic EXT Unit** which is useful when you want to access more than one matrix. All matrices and the Draco CON app have to be in the same subnet.
- Creating an **EXT Unit** when you want to access only one matrix. The app is configured and treated in the same way as an IP Gateway CON extender that means a fixed connection between IP gateway board and Draco CON app is created.

Dynamic EXT Unit

1. By default, the channel type is set to **Grid**. Double-click on the corresponding selection box of the port to be configured within the **Type** column and select **Dynamic EXT Unit**.
2. Click **Apply**.

   This is all you have to do; no further settings are necessary.

EXT Unit

1. Double-click on the corresponding selection box of the port to be configured within the **Type** column and select **EXT Unit**.
2. Type in IP address and port of the device (notebook, laptop, etc.) where the Draco CON App is or will be installed if known.
3. Click **Apply**.

Configuration and operation of Draco CON App is described in the IP Gateway manual.

6.11.4 Deleting an IP Gateway Connection

We strongly recommend deleting IP Gateway connections only via master matrix.

1. Connect to the master matrix.
2. Click **System Settings > IP Gateway** in the task area.
3. Click **Activate Edit Mode** in the toolbar.
4. Click the slot with the IP Gateway board under **Slot** of which an IP Gateway connection has to be deleted.
5. Click the red cross ✕ in the respective line to delete the connection of an IP Gateway board.
   The connection settings are deleted on both IP Gateway boards.
6. Click **Deactivate Edit Mode** in the toolbar.

6.11.5 Reprogramming an IP Gateway Board

An IP Gateway board can be converted into a normal Grid board without IP functionality to be included in existing matrix grids. This is achieved by changing the firmware of the board. Please contact our Tech Support for suitable firmware files.

1. Click **Status & Updates > Miscellaneous** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click the tab **Convert I/O Board Firmware**.

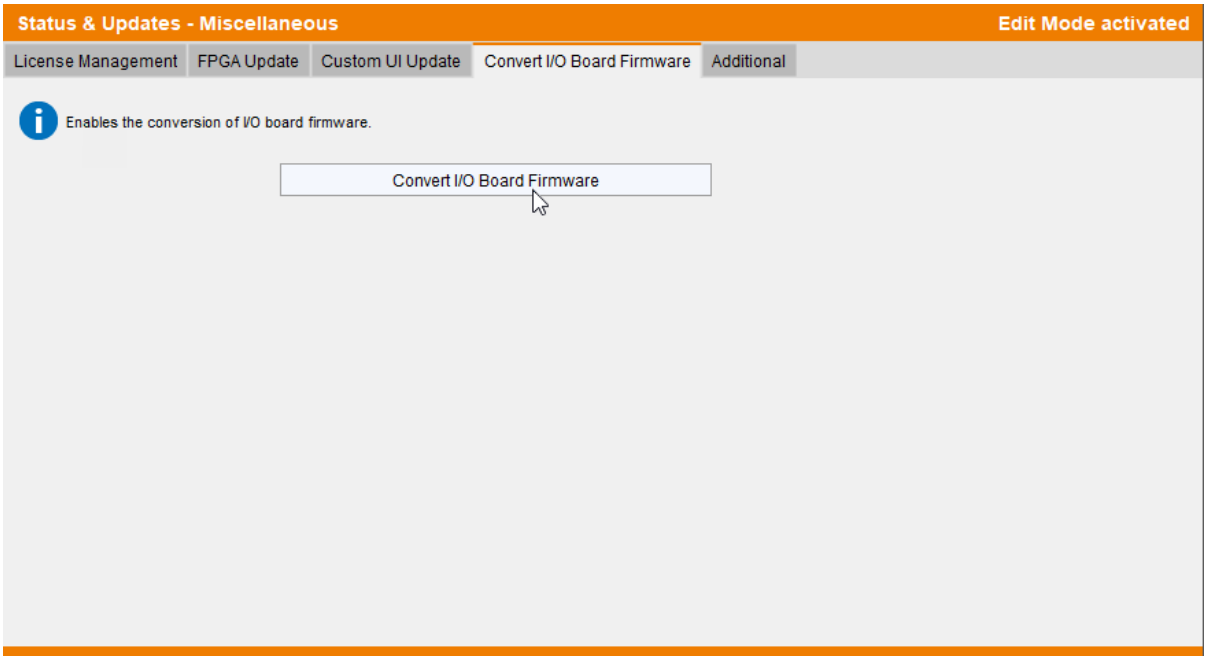


*Fig. 133 Menu **Status & Updates – Miscellaneous – Convert I/O Board Firmware***

The following window appears.

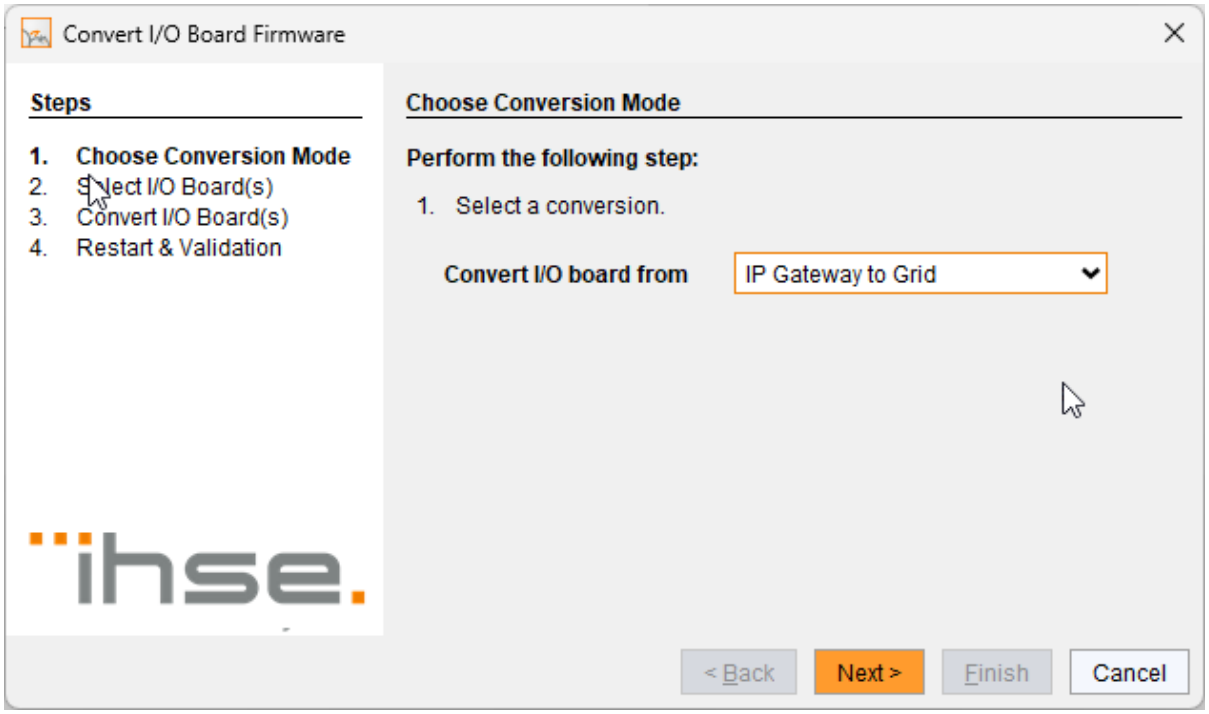


*Fig. 134 Menu **Convert I/O Board Firmware – Choose Conversion Mode***

4. Select the conversion mode **IP Gateway to Grid** in the drop-down menu.
5. Click **Next**.

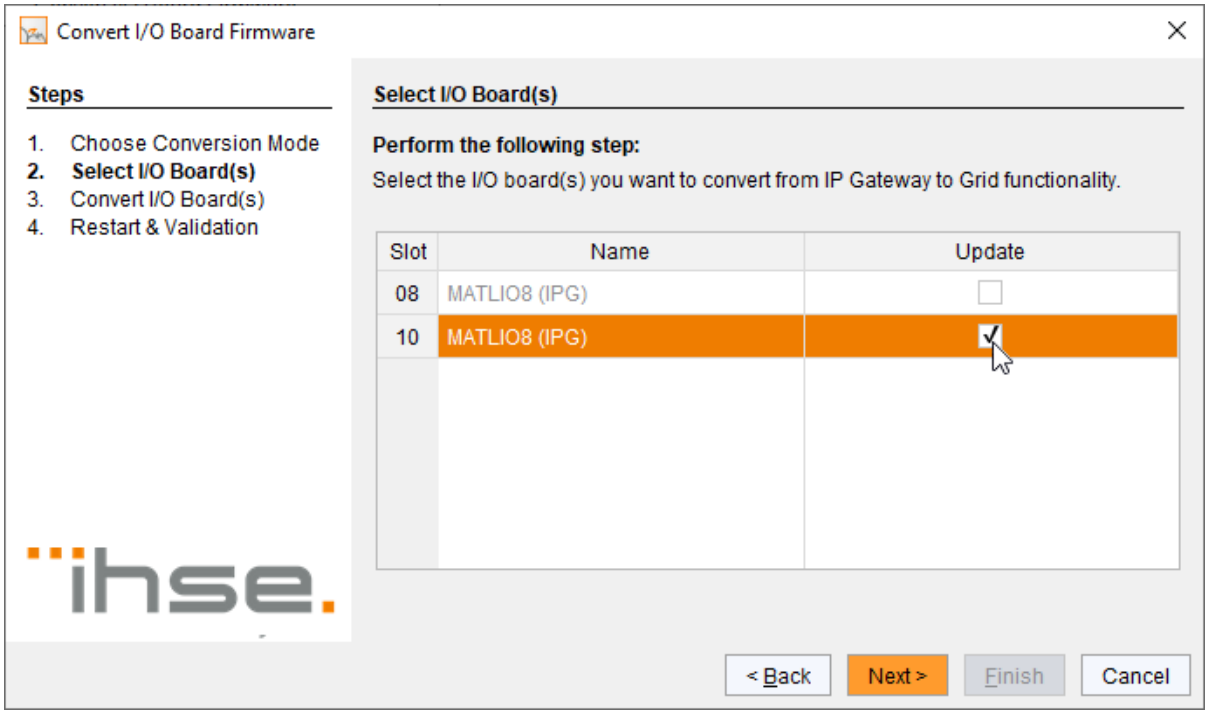


*Fig. 135 Menu **Convert I/OBoard Firmware – Select I/O Board(s)***

Slot and current firmware type of each IP Gateway board is listed.

6. In the column **Update** tick all IP Gateway boards you wish to convert.
7. Click **Next**.
8. Click **Browse** and go to the location of the firmware file.
9. Select the firmware file MATLLNC.tfw and click **Select**.
10. Click **Update**.
    The conversion process starts, progress is displayed, and log messages appear in the white field.

11. Click **Save Log Messages** if you want to store the log messages.
12. When the conversion is finished, click on **Finish**.
13. Follow the instructions on-screen and restart the IP Gateway board(s).
    They can now be used as simple Grid boards without IP functionality in existing matrix grids.

It is of course possible to reverse this process using the same wizard.

➡ Proceed as described above. In step 4 select **Grid to IP Gateway** instead of IP Gateway to Grid.

6.12 Configuring Matrix Cascading

This method of cascading allows a switchable connection between two matrices via so called **Tie Lines**.

This kind of configuration may become necessary if certain important connections should be distributed to several matrices due to maintenance reasons.

A Tie Line connects physically one fixed Cascading CON Ext Unit of matrix 1 with one fixed Cascading CPU Ext Unit of matrix 2 and vice versa.

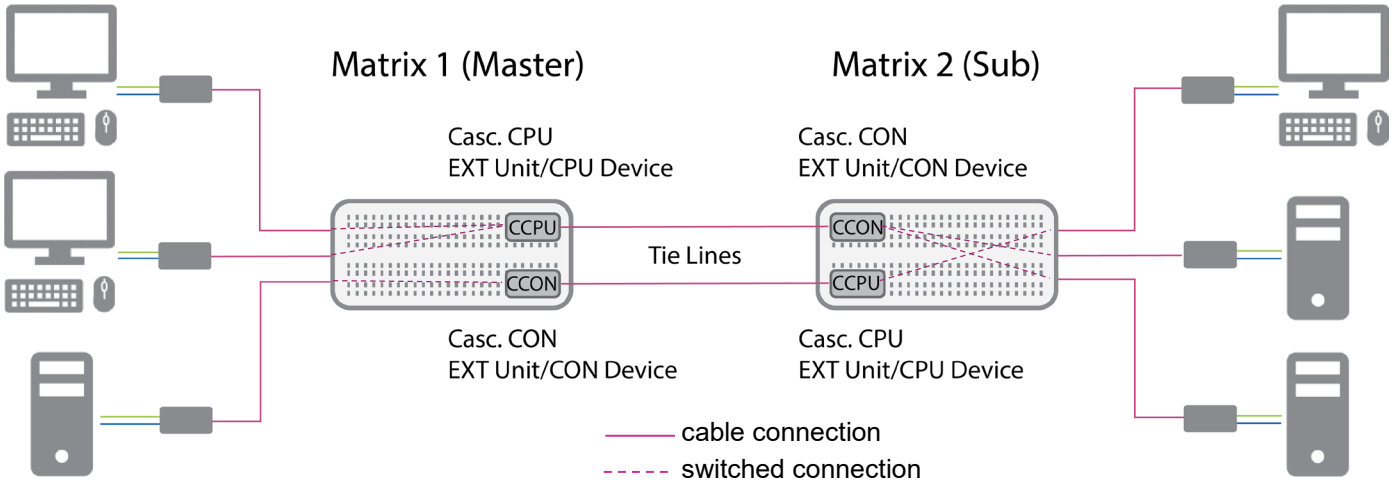


Fig. 136 Illustration of Matrix Cascading

Before connecting Tie Lines to the matrices, you first have to create fixed EXT Units for Cascading CON and Cascading CPU on both matrices as well as **Cascading CON Devices** and **Cascading CPU Devices** that can then be switched within the cascaded environment.

Ensure that the Tie Lines will only be connected after finishing the configuration.

6.12.1 Activating the Sub Matrix Option

To be able to open the OSD on both matrices, it is necessary to define one matrix as sub matrix, the other is named master matrix.

1. Connect to the defined sub matrix and click **Activate Edit Mode** in the toolbar.
2. Click **System Settings > System** in the task area.

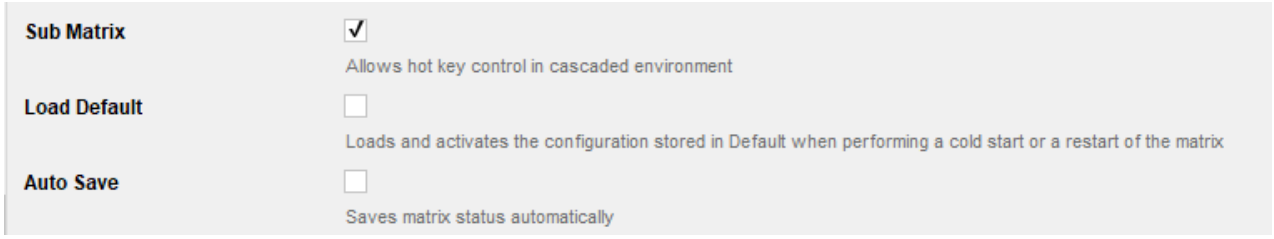


*Fig. 137 Menu **System Settings - System (extract)***

3. Tick the **Sub Matrix** checkbox in the working area.
4. Click **Apply** to confirm the sub matrix option.

The OSD of the sub matrix will immediately freeze and will be only accessible by using the keyboard command Hot Key, s, o.

6.12.2 Creating Cascading EXT Units and Devices

This needs to be done at both matrices (master and sub). For each Cascading CON EXT Unit at the master matrix there must be a Cascading CPU EXT Unit at the sub matrix and vice versa. Cascading EXT Units are fixed units that means you have to state a connection port. Note down the port numbers and the type (CON or CPU) so that it is later possible to connect a cable between a Cascading CON port and a Cascading CPU port. For each EXT Unit, create a suitable Device for switching.

At the master matrix:

Creating Cascading EXT Units

1. Connect to the master matrix.
2. Click **Activate Edit Mode** in the toolbar.
3. Click **Extender & Devices > EXT Units** in the task area.
4. Click **New Unit**.

   A selection dialog appears.

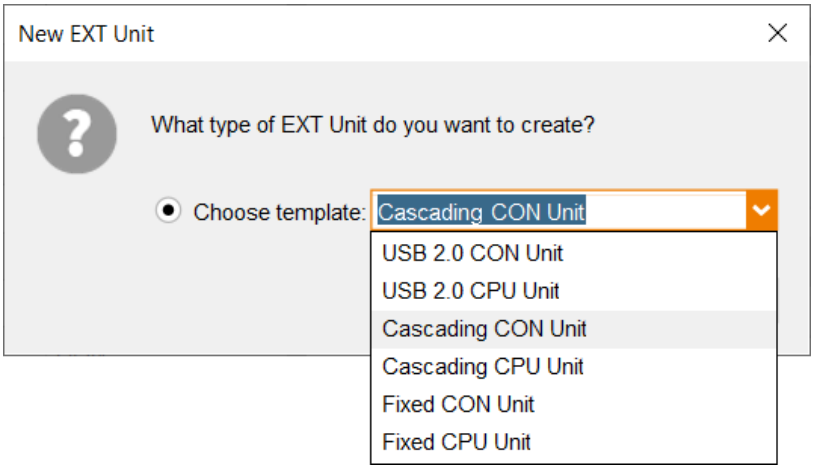


*Fig. 138 Menu **Extender & Devices - EXT Units - Choose EXT Unit type***

5. Select **Cascading CPU Unit** or **Cascading CON Unit** in the **Choose template** selection box.
6. Click **OK**.

   A new Cascading CPU or CON Unit will be created. The **ID** number starts with 9 and the box **Fixed** is ticked.

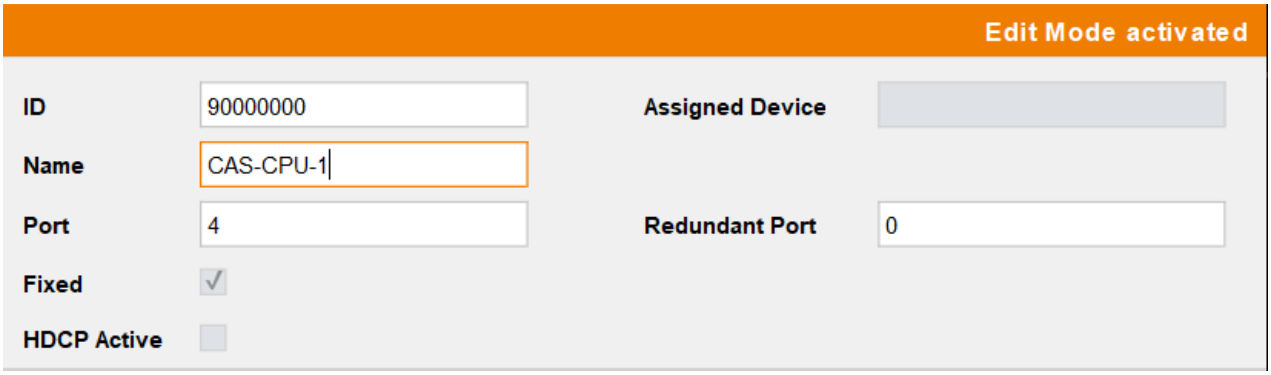


*Fig. 139 Menu **Extender & Devices - EXT Units - Cascading CPU Unit***

7. Enter an appropriate name for the Cascading CPU/CON Unit into the **Name** field.
8. Enter the port number of a free port of the matrix into the **Port** field.
9. Click **Apply** to confirm the creation.
10. Create as many Cascading CPU and Cascading CON EXT Units as needed. Remember to note down the port number and type of the Cascading EXT Units.

Creating CON and CPU Devices

This function is described using CPU Devices as an example.

1. Click **Extender & Devices > CPU Devices** in the task area of the master matrix.
2. Click **New Device**.
   A selection dialog appears.
3. Select **Create a Real CPU Device** and click **OK**.

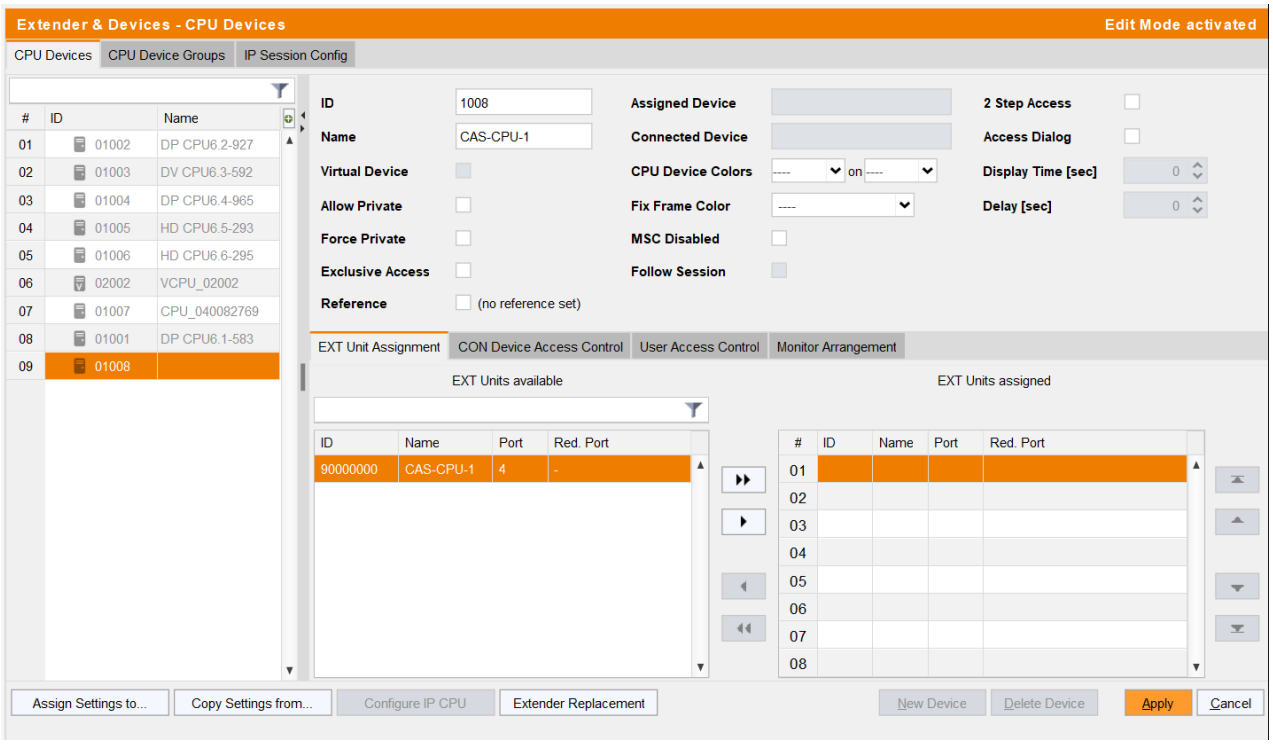


*Fig. 140 Menu **Extender & Devices - CPU Devices - Cascading CPU Device***

4. Enter an appropriate name for the Cascading CPU Device into the **Name** field.
5. Select the previously configured Cascading CPU EXT Unit in the **EXT Units available** list.
6. Click ▶ to move the highlighted Cascading CPU EXT Unit to the **EXT Units assigned** list.
7. Click **Apply**.
8. Proceed in the same way to create a CPU Device or a CON Device for each Cascading EXT Unit.
9. Click **Deactivate Edit Mode** in the toolbar and close the Tera Tool Software.
10. Restart all I/O boards on which any CON Units or CPU Units have been configured (see section 7.2.3, page 185) or alternatively restart the master matrix (see section 7.2.1, page 183).

At the submatrix

1. Connect to the sub matrix.
2. Click **Activate Edit Mode** in the toolbar.
3. Create as many Cascading CON EXT Units as you have created Cascading CPU EXT Units on the master matrix. Proceed in the same way as described for the master matrix. Note down the port numbers and type of each unit.
4. Create as many Cascading CPU EXT Units as there are Cascading CON EXT Units on the master matrix.
5. Click **Apply** to confirm the creation of all Cascading CPU and CON EXT Units.
6. Create a CPU Device for each CPU EXT Unit you created and assign a cascading CPU EXT Unit to each.
7. Click **Apply** to confirm the creation of the CPU Devices.
8. Create a CON Device for each CON Ext Unit you created and assign a cascading CON EXT Unit to each.

9. Click Apply to confirm the creation of the CON Devices.
10. Click **Deactivate Edit Mode** in the toolbar.
11. Restart all I/O boards on which any CON Units or CPU Units have been configured (see section 7.2.3, page 185) or alternatively restart the sub matrix (see section 7.2.1, page 183).

6.12.3 Connecting the Tie Lines

1. Make sure that a list of ports with Cascading EXT Units and their types (CON or CPU) is ready at hand.
2. Connect a port of the master matrix with a Cascading CON Unit to a port of the sub matrix with a Cascading CPU Unit and vice versa using interconnection cables. This ensures switching ability between the two matrices.

The Matrix Cascading is now configured and can be used. The use of cascading is described in the matrix user manuals.

6.13 Configuring Matrix Grid

A matrix grid to connect two or more matrices can be configured in this menu. This kind of configuration may become necessary if the number of ports in the entire system has to be increased or if certain important connections should be distributed to several matrices due to reasons of redundancy.

The connections between two matrices have to be established by so called grid lines that are connected between particular I/O ports as connecting links. The grid lines can be used bidirectionally and can respectively handle a full access connection of a CON Device to a CPU Device.

The number of grid lines in the system specifies whether a CON Device can be switched to a CPU Device in Non-Blocking Access or in Blocking Access and has to be separately determined for each grid environment.

In this case Non-Blocking Access means that a grid line for a cross-matrix switching operation of a CON Device to a CPU Device is available at any time.

Whereas Blocking Access means that for a certain switching operation no grid line may be available according to the switching status within the grid. The result will be that no cross-matrix switching will be possible.

Administration of Settings

Within a matrix grid you have to differ between settings that have to be made locally for each matrix and settings that can be made globally so that they are valid for the whole matrix grid.

The settings in the following menus have to be made separately for each matrix or within the master matrix to affect all matrices in the matrix grid:

System, Access, Switch, Network, Date + Time, SNMP, Matrix Grid

The settings in the following menus have to be made globally and only once within the matrix grid:

EXT Units, CPU Devices, CON Devices, User, CON Macros, User Macros, CON Favorites, User Favorites, Virtual CPU Devices, Virtual CON Devices, Multi-Screen Control

If global settings are made in the respective menus, they will be immediately available on each matrix within the matrix grid.

General Preparation

The following requirements have to be fulfilled before starting the matrix grid configuration:

- First configure all matrices that have to be added to the grid the first time.
- Ensure that for both the existing matrices in the matrix grid and the new matrix a suitable configuration file is available.
- Save the current configuration as backup, and upload it to e.g., configuration slot 8.
- The Matrix Grid function (Bundle 4) must be activated on all matrices to be connected to the grid by a license key (see section 6.15). Please contact the technical support of the manufacturer if the Matrix Grid function is missing (not ticked).
- Firmware V03.10 or newer must be installed on all matrices to be connected to the matrix grid, but with the same firmware on each matrix. For using IP Gateway boards for grid lines, firmware V04.04 or newer is necessary.
- All matrices to be connected to the grid must be within the same TCP/IP network (see section 6.5.7, page 50).
- Port 5556/5566 needed for network communication must not be blocked by a firewall.

The Tera Tool offers a Grid Wizard for online configuration of matrix grids (see section 6.13.1, next page) that can be stored in the configuration slots of the matrix. For complex matrix systems, it is possible to set up offline matrix grids (see section 6.13.2, page 157) and to check if all is setup failure free.

6.13.1 Configuring Matrix Grid online

To configure the matrix grid online, proceed as follows:

1. Click **System Settings > Matrix Grid** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

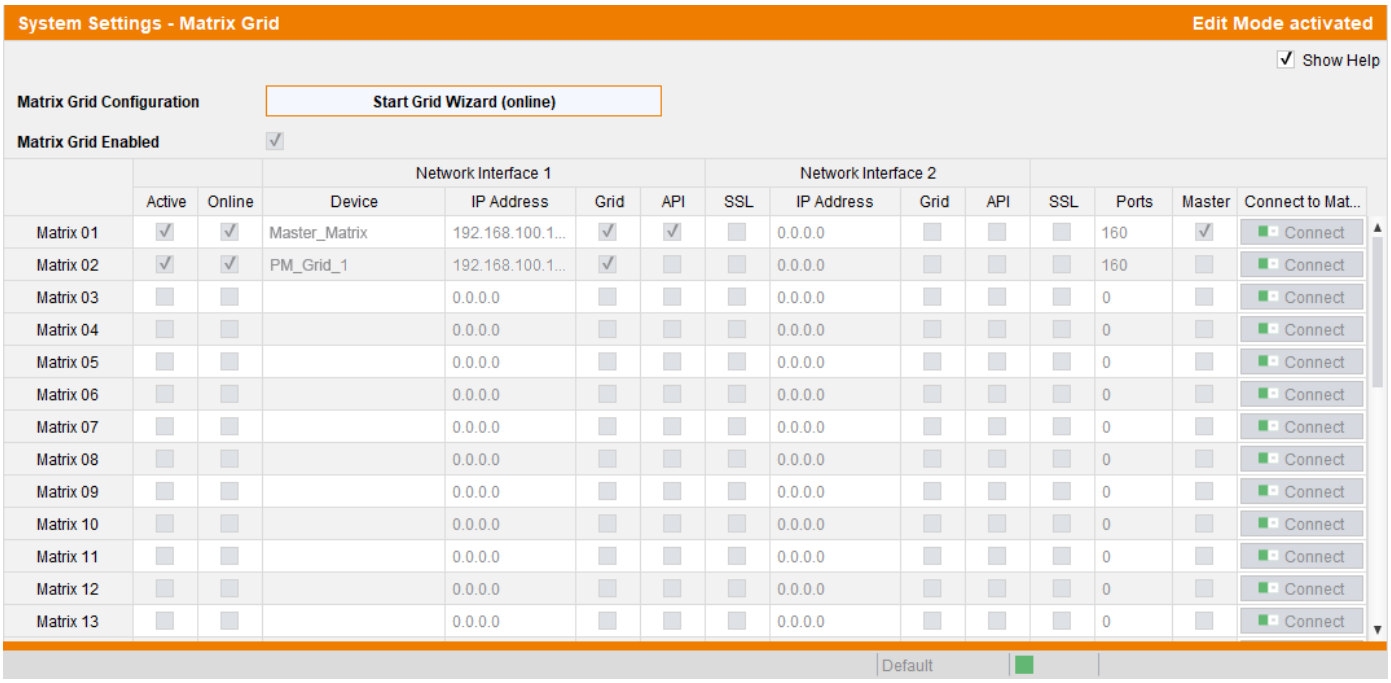


*Fig. 141 Menu **System Settings - Matrix Grid***

3. Click **Start Grid Wizard (online)** in the working area.

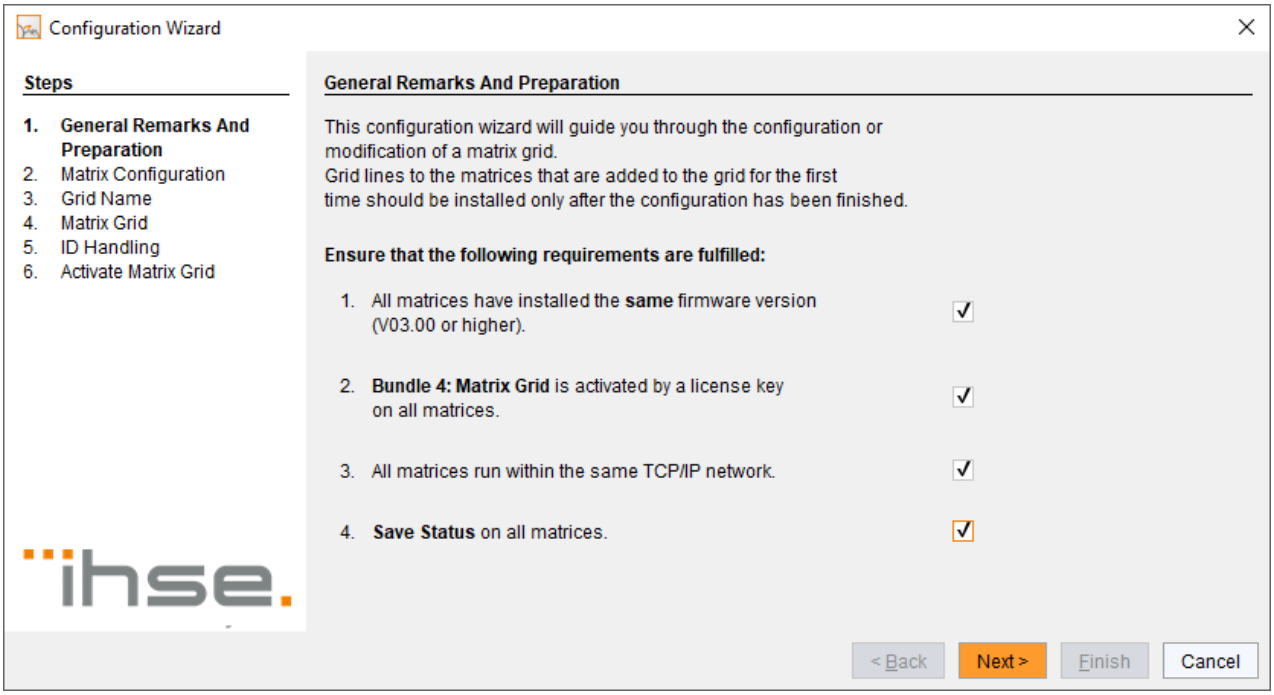


*Fig. 142 Menu **Matrix Grid - Configuration Wizard - General Remarks and Preparation***

4. Verify the requirements and tick the checkboxes.
5. Click **Next >**.

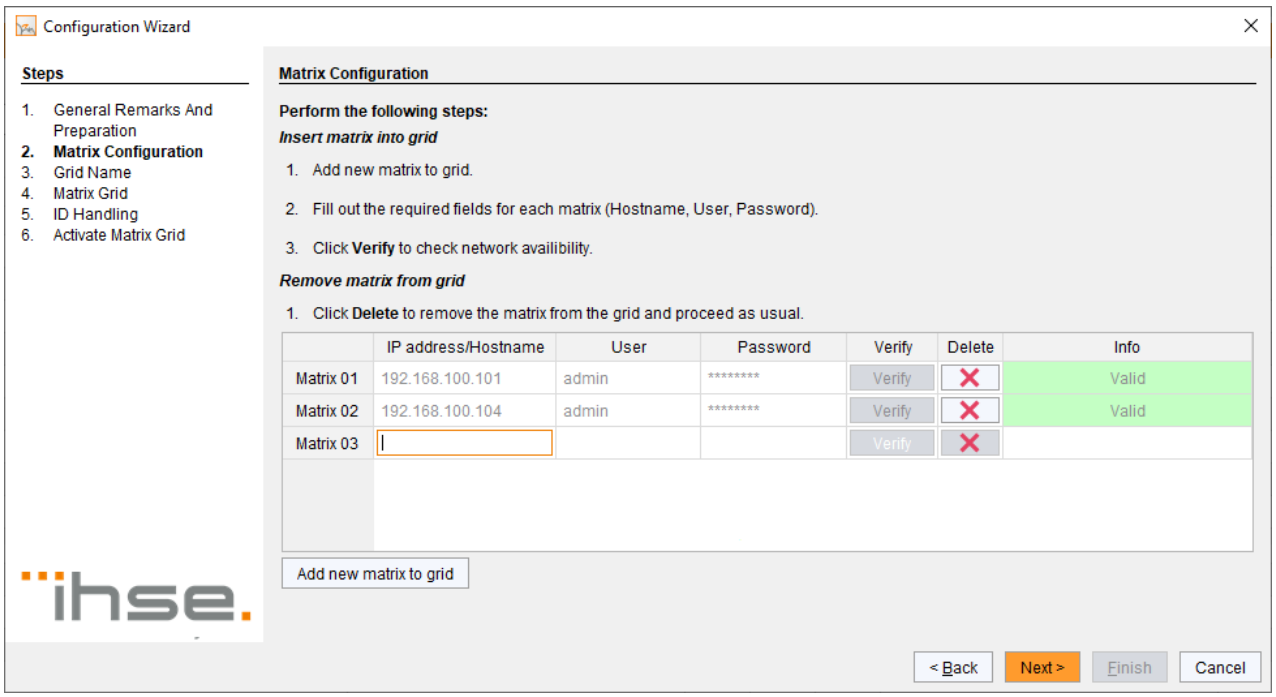


*Fig. 143 Menu **Matrix Grid - Configuration Wizard - Matrix Configuration***

6. Click **Add new matrix to grid** below the matrix list.
7. Fill out the required fields for each matrix (IP address/Hostname, User and Password).
8. Press the Tabulator key to enable the **Verify** button.
9. Click **Verify** to check network availability.
10. Click **Next >**.

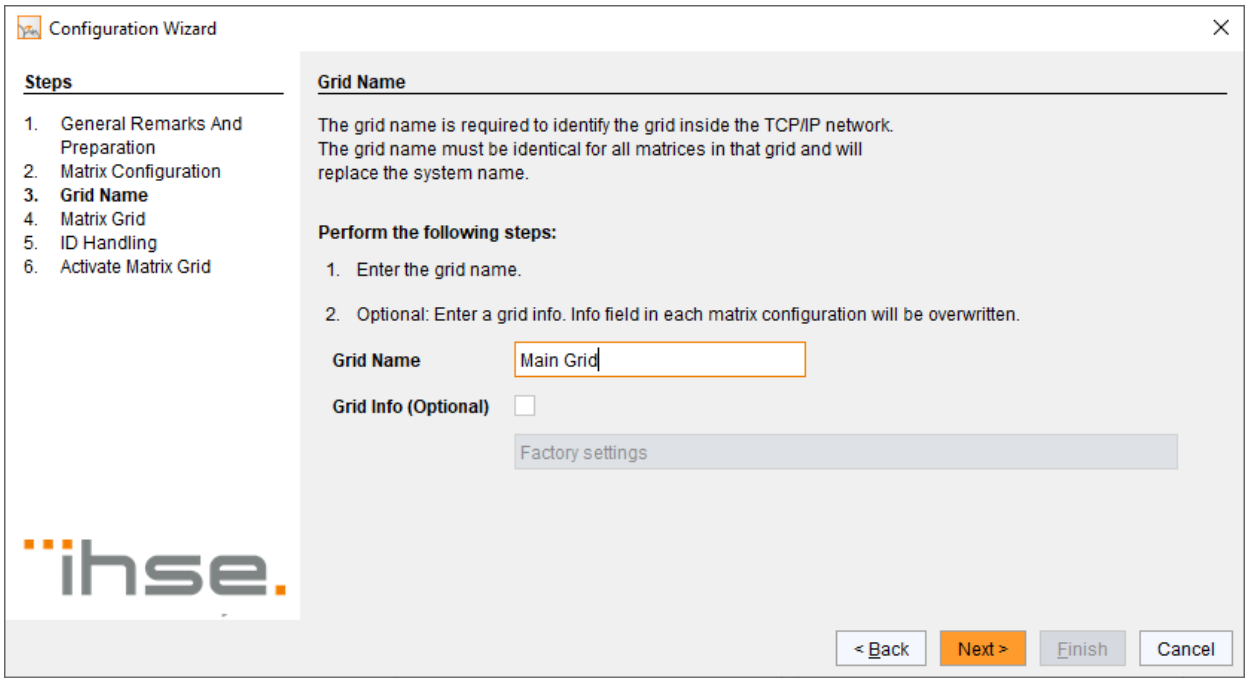


*Fig. 144 Menu **Matrix Grid - Configuration Wizard - Grid Name***

11. Enter the **Grid Name** for the matrix grid.
12. Optionally tick the **Grid Info (optional)** checkbox to enter a description for the matrix grid.
13. Click **Next >**.

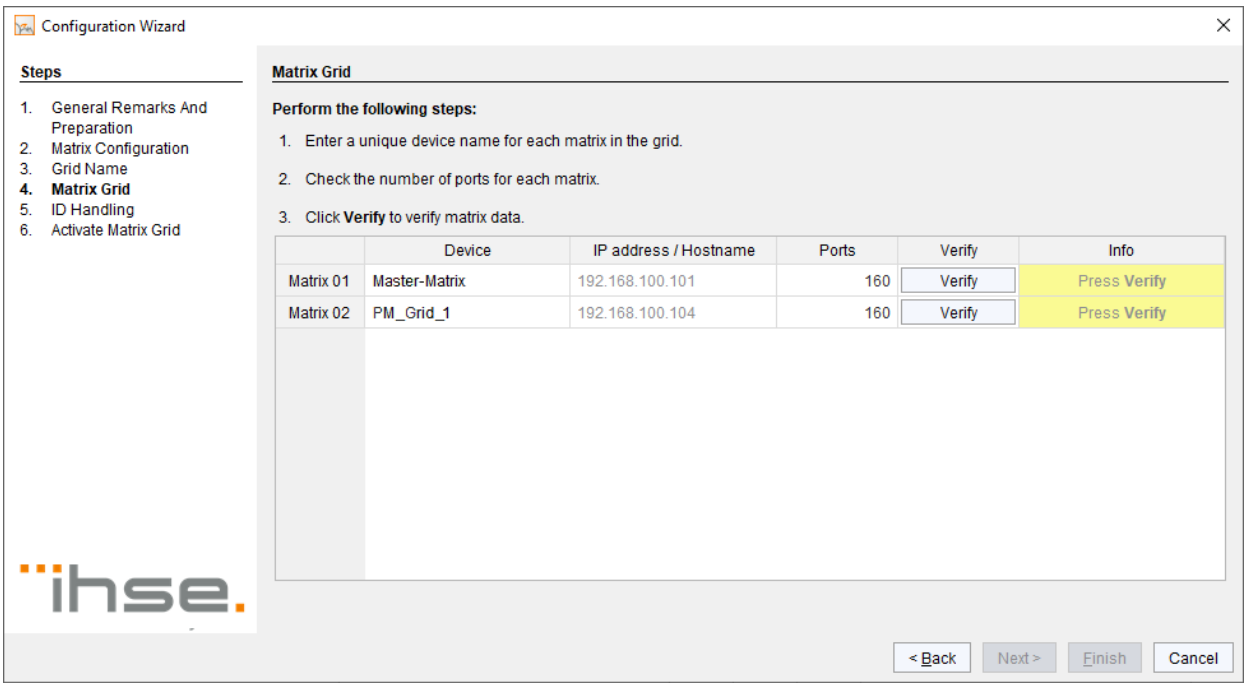


*Fig. 145 Menu **Matrix Grid - Configuration Wizard - Matrix Grid***

14. Enter a unique name under **Device** for each matrix in the grid.
15. Check the number of ports for each matrix.
16. Click **Verify** to verify the matrix data.
17. Click **Next >**.

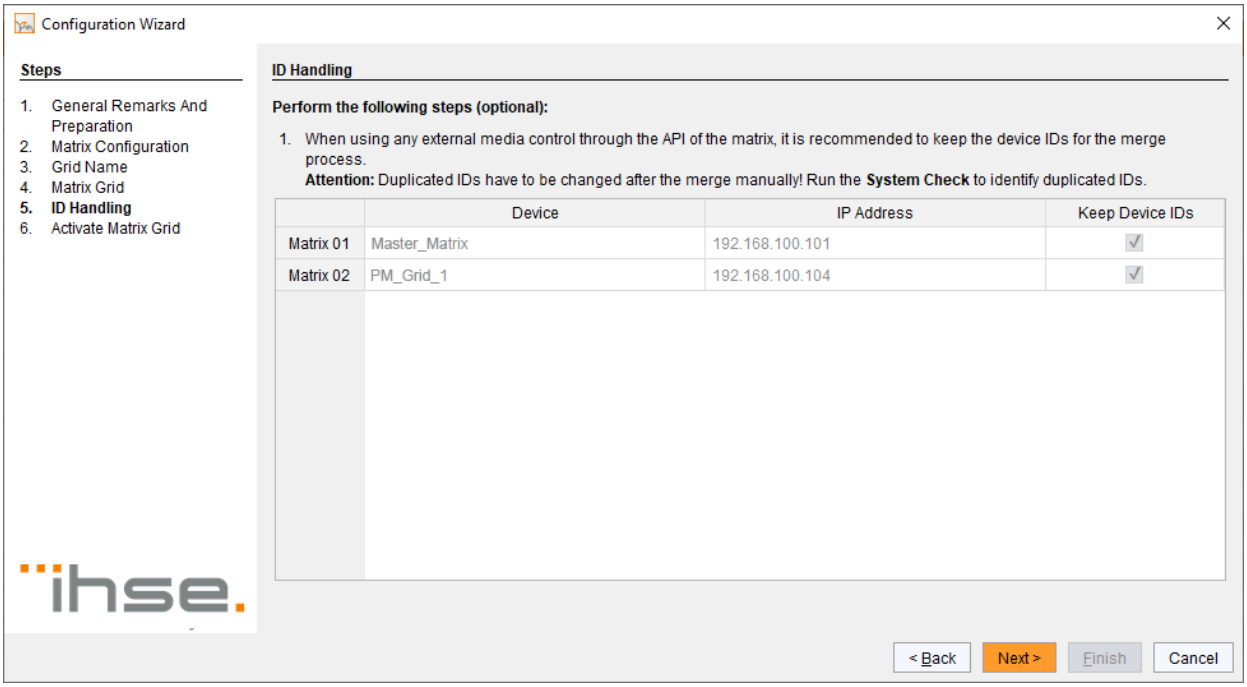


*Fig. 146 Menu **Matrix Grid - Configuration Wizard - ID Handling***

18. Optional: If using a media control through the API of the matrix, tick the **Keep Device IDs**.
19. Click **Next >**.

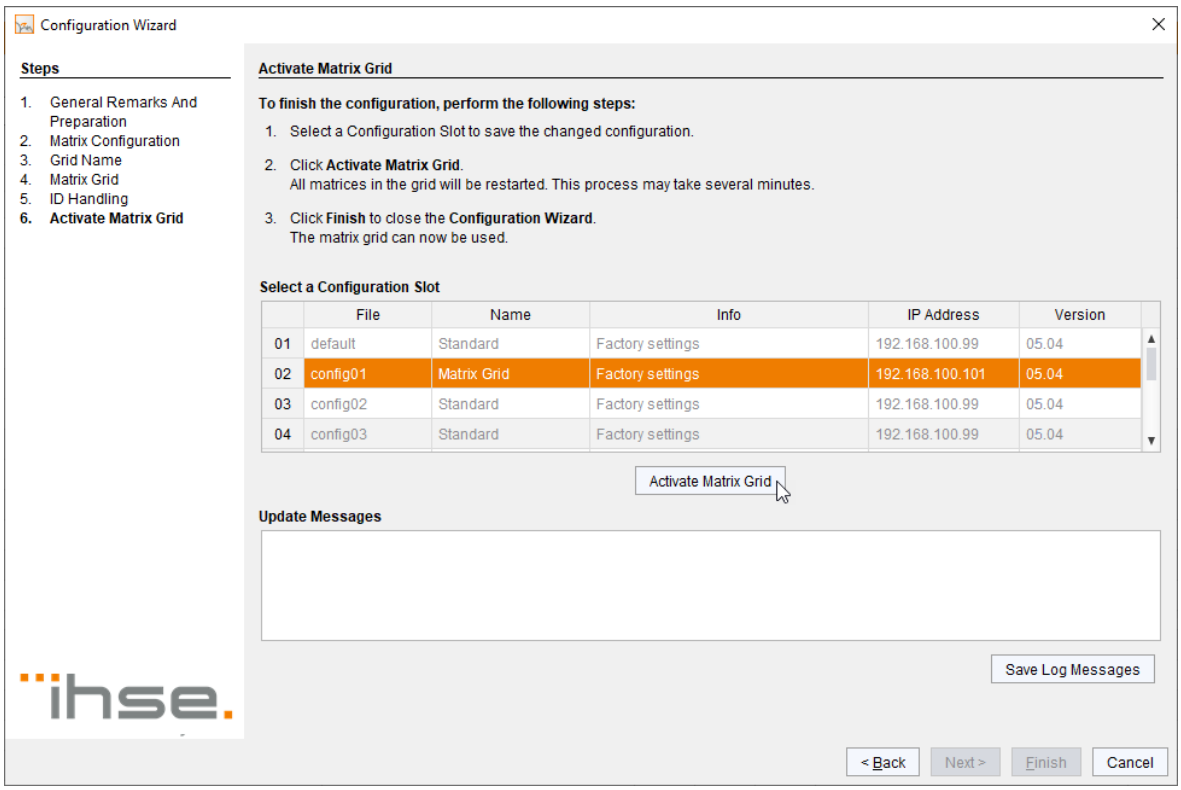


*Fig. 147 Menu **Matrix Grid - Configuration Wizard - Activate Matrix Grid***

20. Select the configuration slot for storing the matrix grid configuration. All matrices in the grid use the same slot.
21. Click **Activate Matrix Grid** to activate the matrix grid on all matrices connected to the master matrix.
22. Go to the storage location for the merged matrix grids and select the desired folder. Click **Save**.

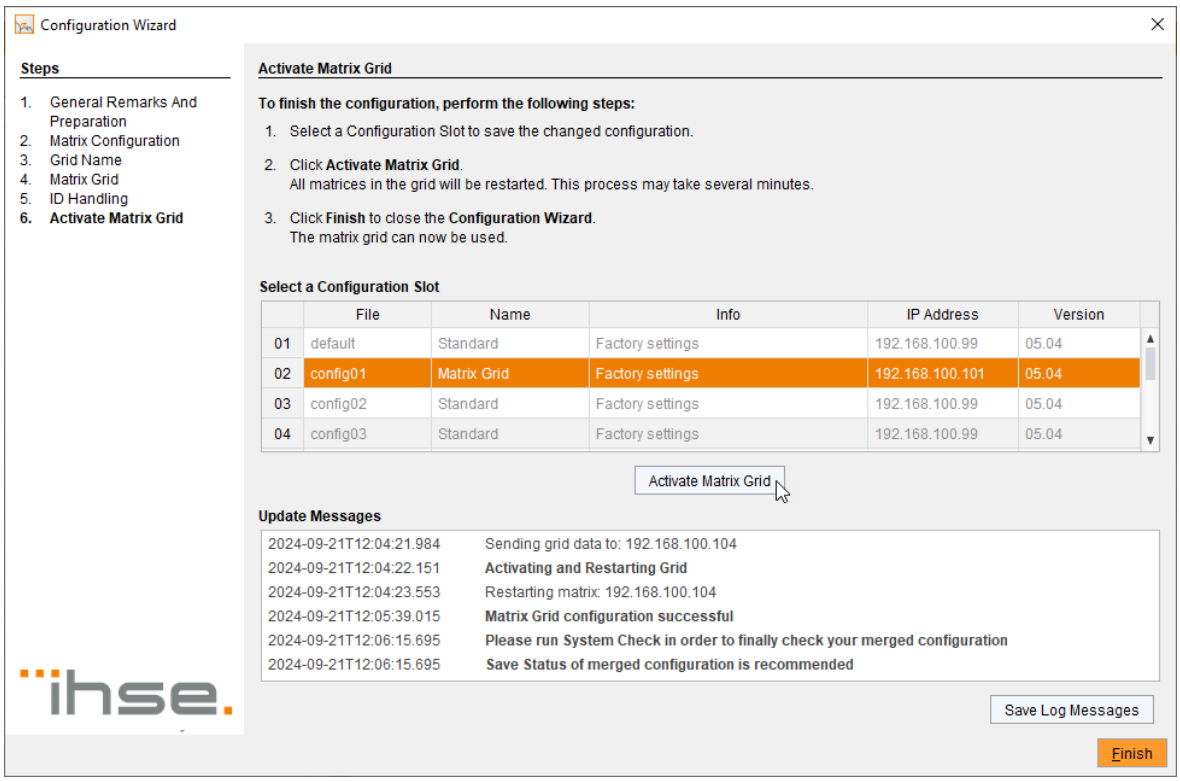


*Fig. 148 Menu **Matrix Grid - Configuration Wizard - Matrix Grid activated***

Run the **System Check** (see section 9.3.10, page 219) to identify duplicated Device IDs. Change duplicated device IDs manually to avoid issues.

6.13.2 Configuring Matrix Grid offline

To configure the matrix grid offline, proceed as follows:

1. Firstly, connect the computer sequentially to each matrix that is to be part of the grid (including master matrix), start Tera Tool and save the current configuration using the **Save** button in the toolbar in the format *.`dtc` on your computer.
2. Without connection to a matrix, start Tera Tool.
3. Click **System Settings > Matrix Grid** in the task area.

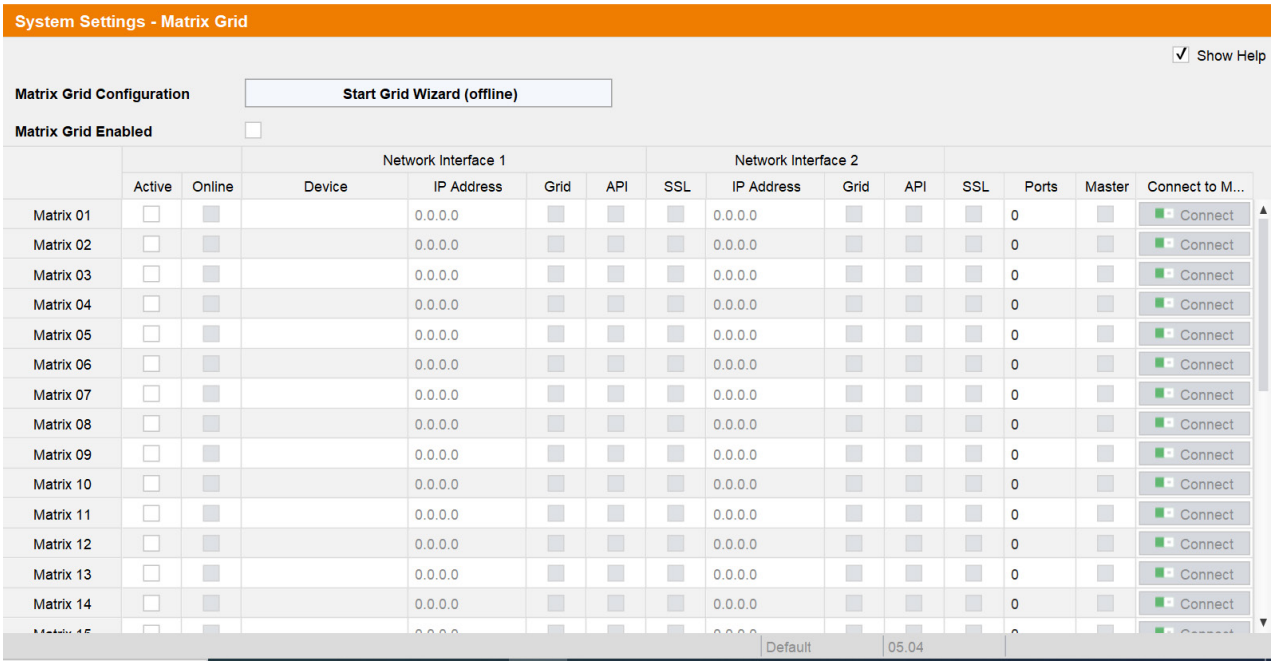


*Fig. 149 Menu **System Settings - Matrix Grid (offline)***

4. Click **Start Grid Wizard (offline)** in the working area.
5. Verify the requirements and tick the checkboxes.

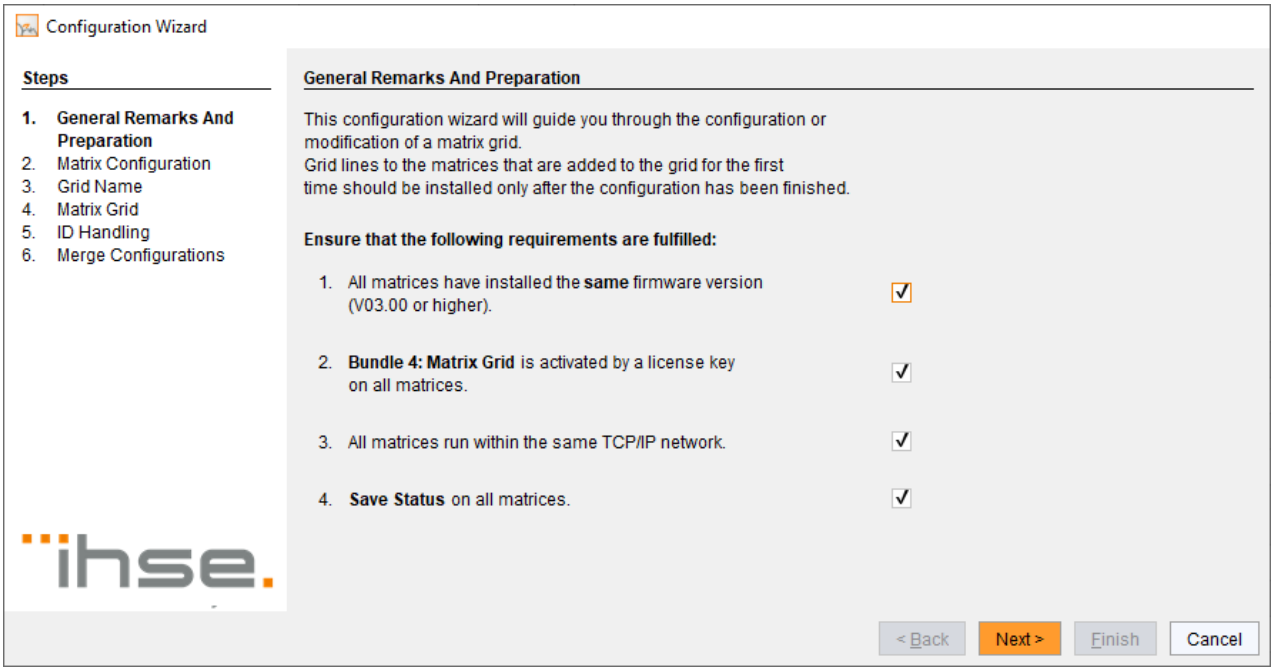


*Fig. 150 Menu **Matrix Grid - Configuration Wizard (offline) - General Remarks And Preparation***

6. Click **Next >**.

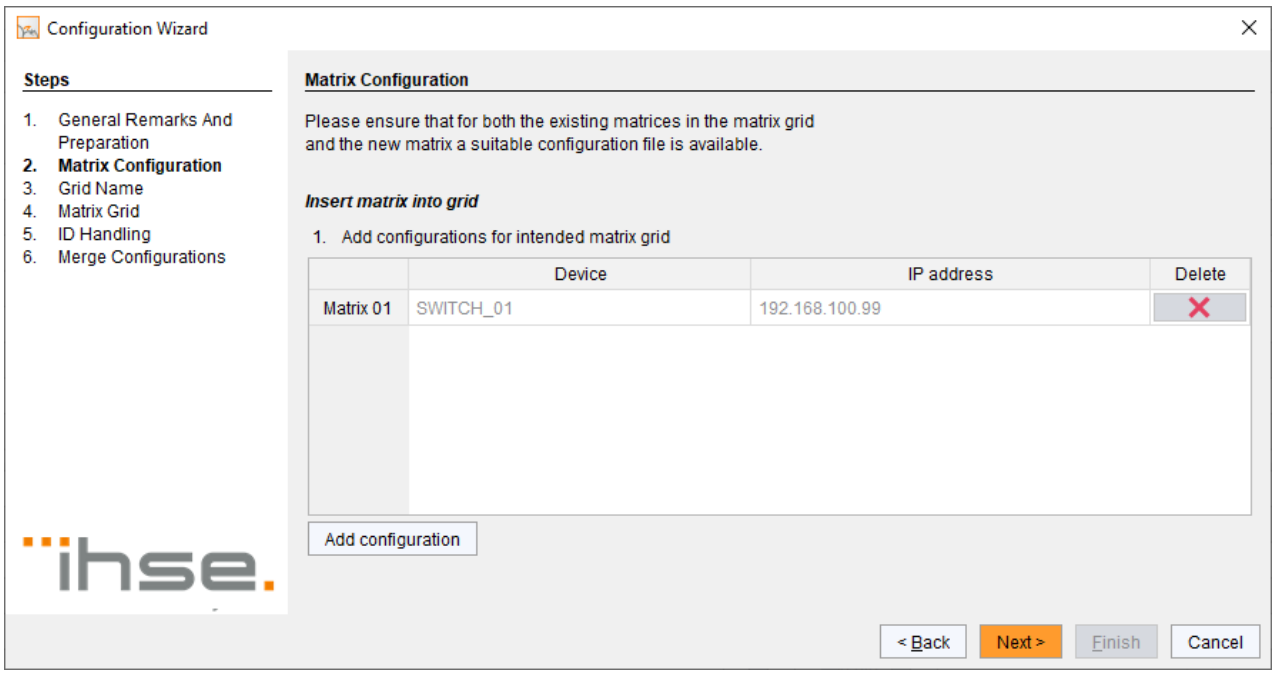


*Fig. 151 Menu **Matrix Grid - Configuration Wizard (offline) - Matrix Configuration***

7. Click **Add configuration** below the matrix list.
8. Go to the storage location where you have stored the current configuration of each matrix (see step 1).
9. Select the first configuration and click **Open**.

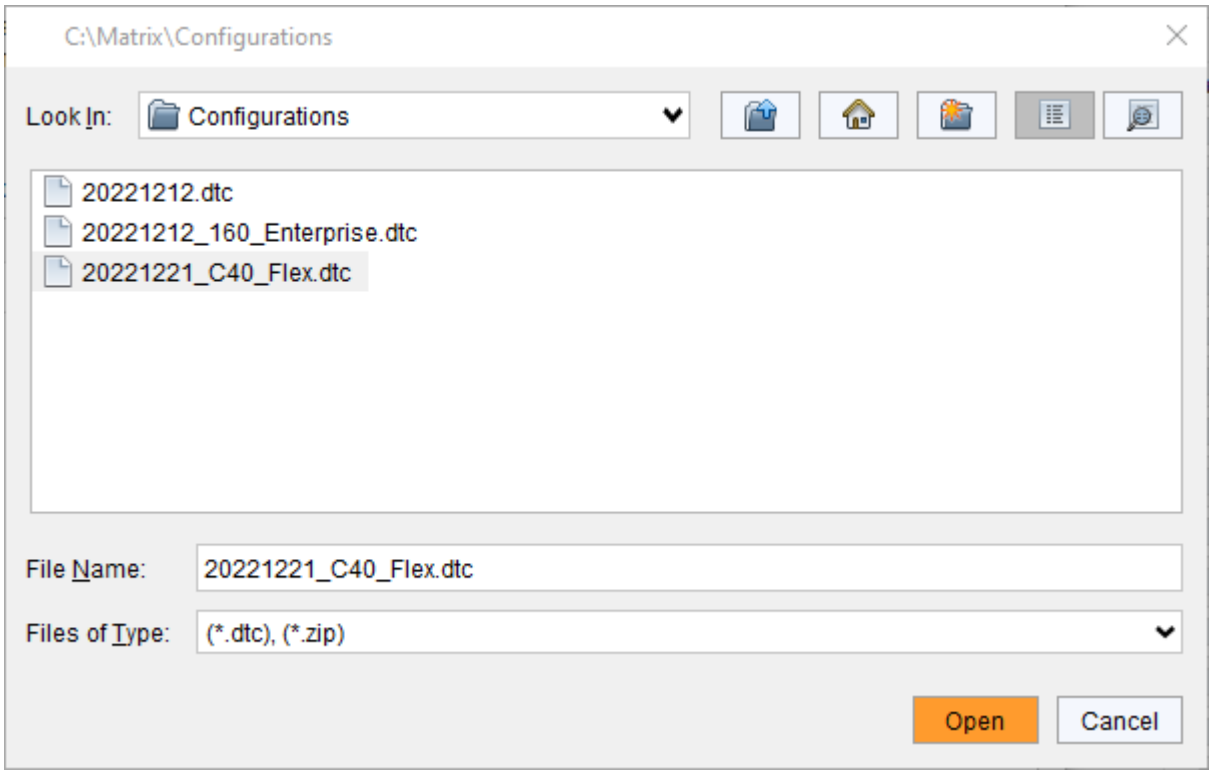


*Fig. 152 Dialog **Matrix Grid - Configuration Wizard (offline) - Select Configuration***

10. Repeat selecting further configurations if required and click **Open**.

11. Click **Next >**.

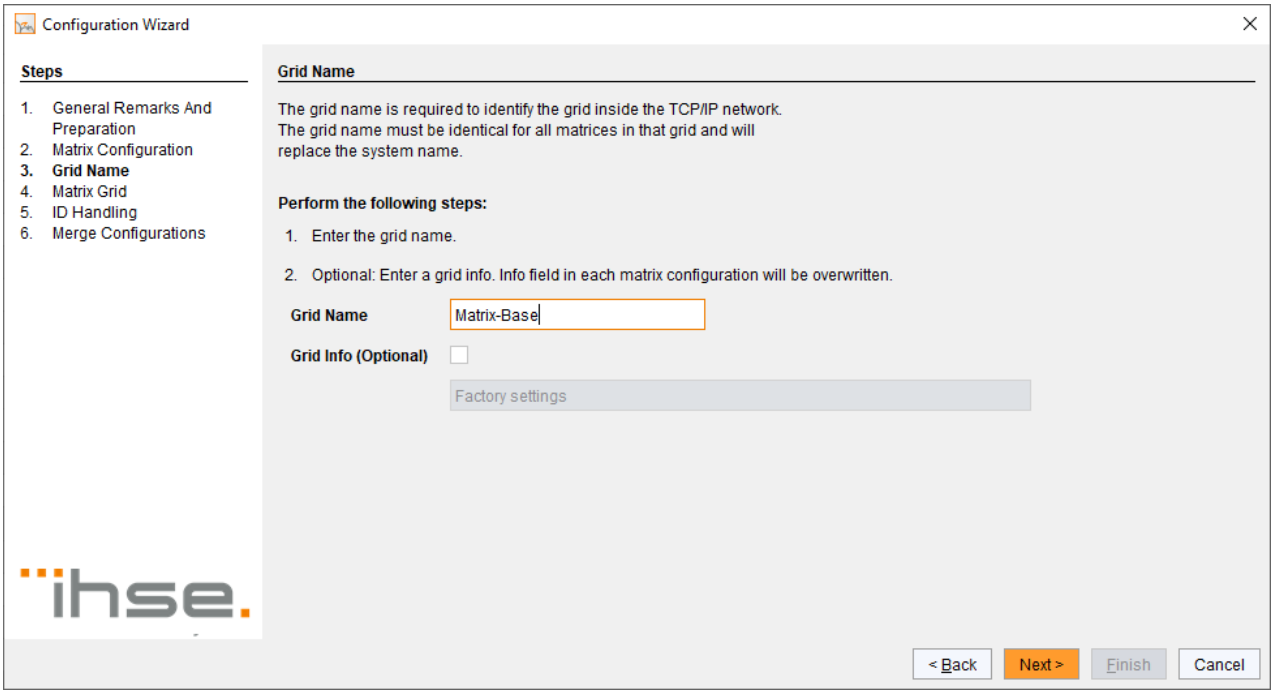


*Fig. 153 Menu **Matrix Grid - Configuration Wizard offline) - Enter grid name***

12. Enter the **Grid Name** for the matrix grid. This name must be unique if you run different matrix grids in the same network.
13. Optionally, tick the **Grid Info (optional)** checkbox to enter a description for the matrix grid. The info field of all matrices in the grid will be changed to this setting.

☑ We recommend ticking the Grid info checkbox. Otherwise, each matrix keeps its own info field with maybe different content.

14. Click **Next >**.

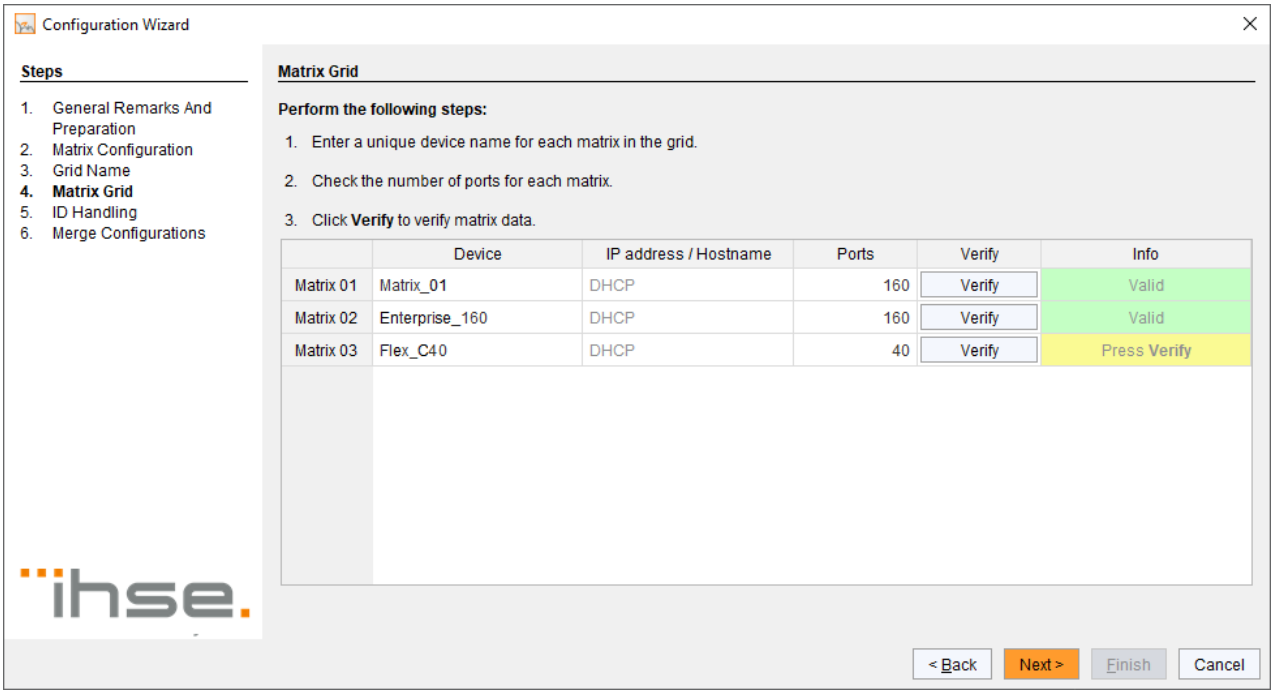


*Fig. 154 Menu **Matrix Grid - Configuration Wizard (offline) - Enter matrix data***

15. Enter a unique name under **Device** for each matrix in the grid.
16. Enter the number of ports by double-clicking the Ports field and selecting the number from the list.

17. When all matrices show Valid in the Info field, click **Verify** to verify the matrix data.
18. Click **Next >**.

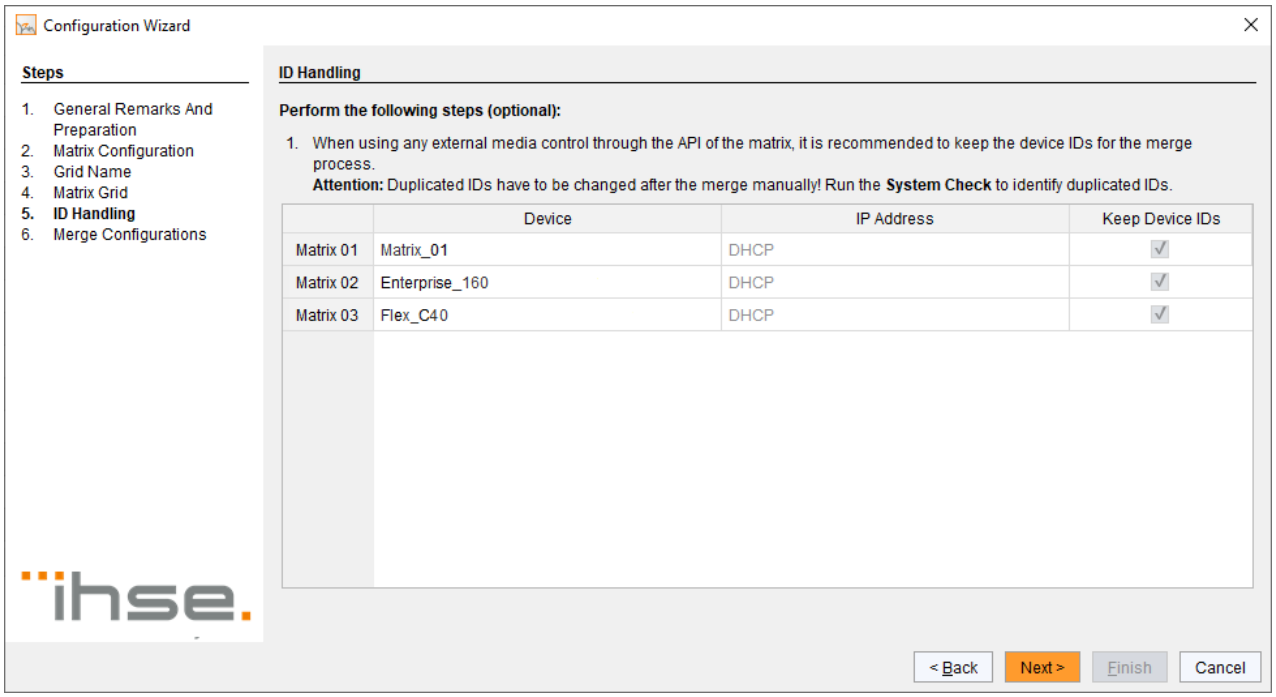


*Fig. 155 Menu **Matrix Grid - Configuration Wizard (offline) - ID Handling***

19. Optional: If using a media control through the API of the matrix, tick the **Keep Device IDs**.
20. Click **Next >**.

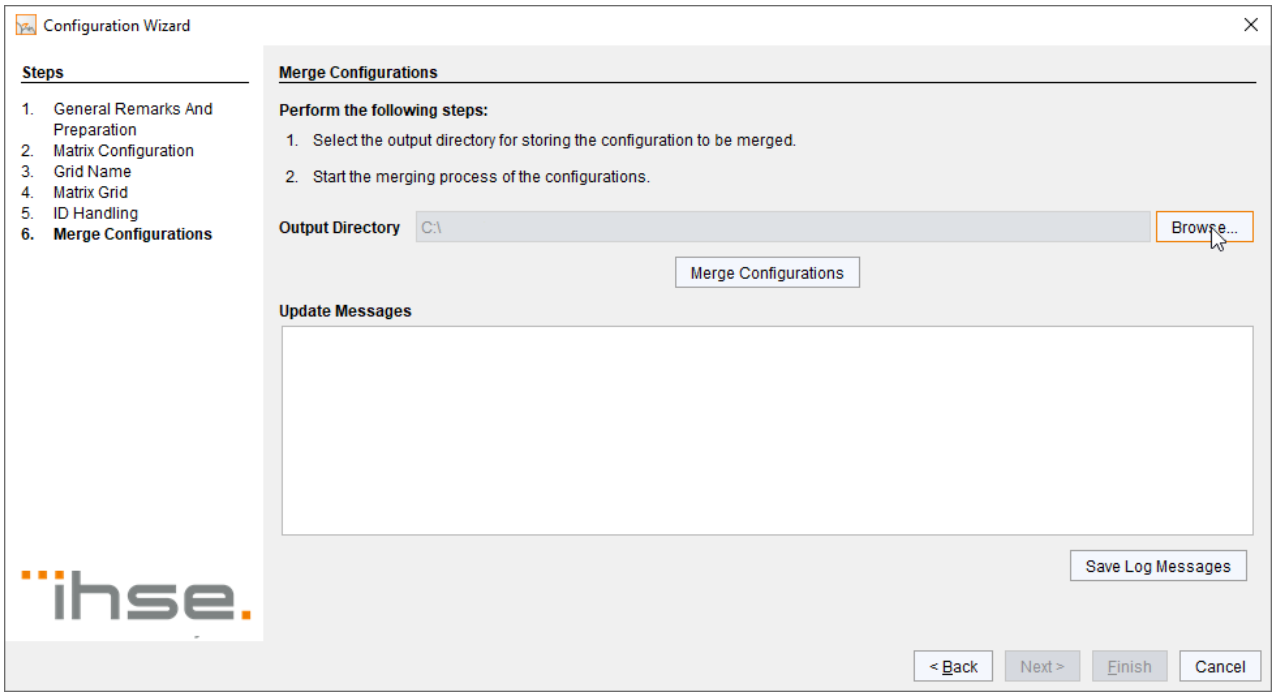


*Fig. 156 Menu **Matrix Grid - Configuration Wizard (offline) - Go to output directory***

21. Click **Browse** to select the output directory for storing the configurations for each matrix of the matrix grid.

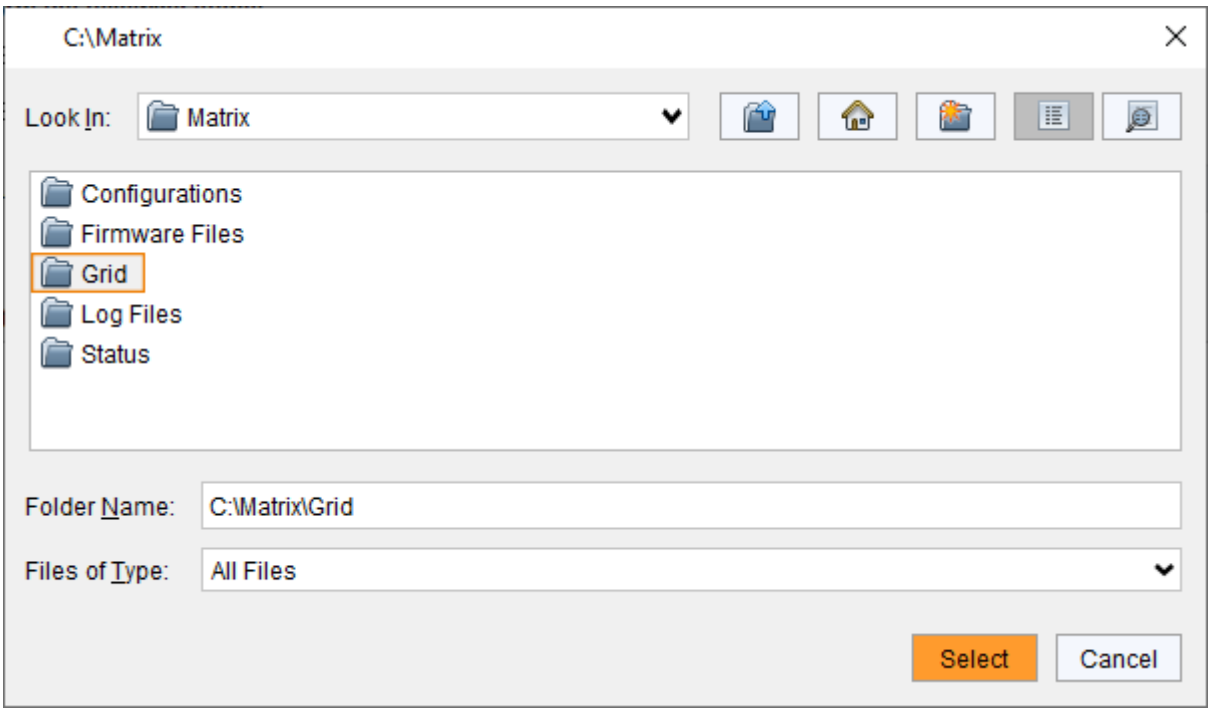


*Fig. 157 Menu **Matrix Grid - Configuration Wizard (offline) - Select storage location***

22. Select the desired folder and click **Select**.
23. Click **Merge Configurations**.

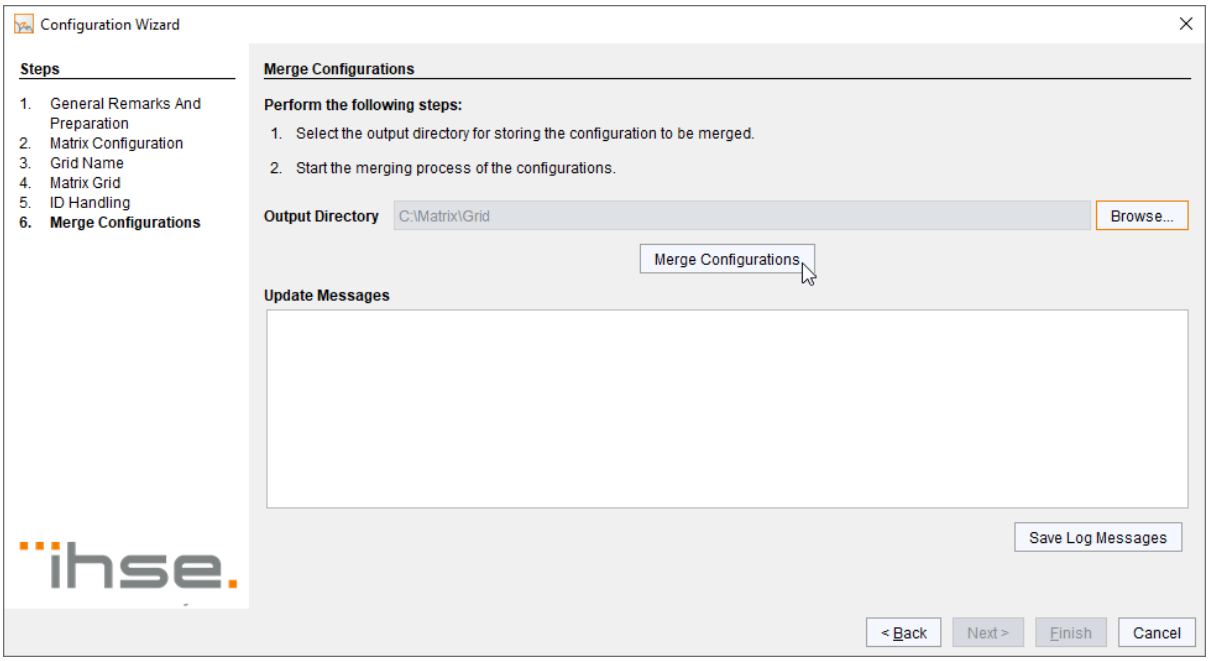


*Fig. 158 Menu **Matrix Grid - Configuration Wizard (offline) - Merge Configurations***

Messages appear in the **Update Messages** field.

24. Optionally, click **Save Log Messages** if the messages should be saved (recommended).

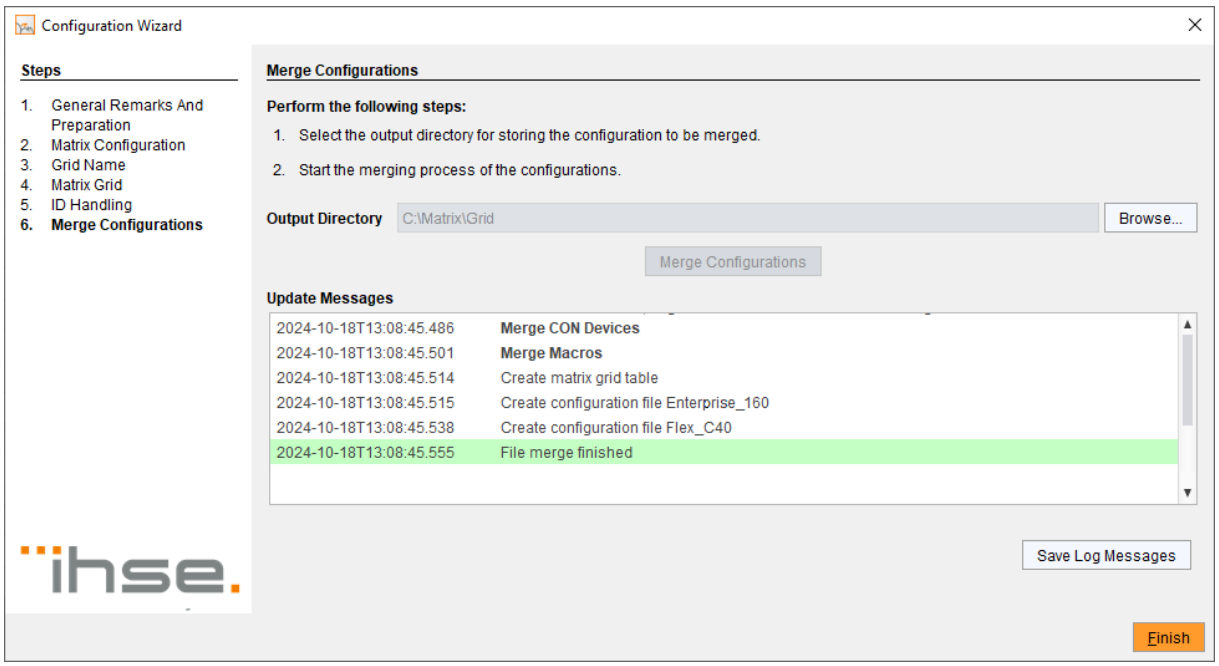


*Fig. 159 Menu **Matrix Grid - Configuration Wizard (offline) - Merge Configurations***

25. Click **Finish** to close the Wizard.
    The output directory contains now a configuration file for each matrix. Each matrix has its own configuration file.
26. Open the configuration files in Tera Tool and check them. Pay particular attention to the following elements:
    - EXT Units
    - CPU Devices
    - CON Devices
    - User & Groups

Run the System Check (see section 9.3.10, 219) to identify duplicated Device IDs. Change duplicated device IDs manually to avoid issues.

27. Once the configuration files have been checked, they can be uploaded to each matrix and activated (see section 6.4.4, page 37). We strongly recommend uploading the files to the same configuration slot at all matrices in the grid.

6.13.3 Modifying Matrix Grid Configuration

The Grid Wizard is used to change the grid including the name change of a matrix. It is important that all matrices are active and online when performing changes to a grid and that the master matrix is used.

1. Make sure that all matrices are switched on and connected to the grid.
2. At the master matrix, open the Grid Wizard in the menu **System Settings > Matrix Grid**.
3. In step 2 **Matrix Configuration** (see Fig. 143 on page 159) you can add new matrices, delete a matrix or change the order.
4. In step 3 **Grid Name** (see Fig. 144 on page 159) you can change name and info field of the grid.
5. In step 4 **Matrix Grid** (see Fig. 145 on page 160) you can change the name of a matrix. Bear in mind that the name must be unique.

When a matrix is part of a matrix grid, it is not possible to change the name in the normal way (via **System Settings > System > General**, only via Grid Wizard.

6. Complete the Grid Wizard and finally click **Activate Matrix Grid** and **Finish**.

NOTICE
The entire grid (all matrices part of the grid) restarts immediately and is not available during this time.

6.13.4 Deleting Matrix Grid Configuration

1. Make sure that all matrices of the grid are switched on and online.
1. At the master matrix, open the Grid Wizard in the menu **System Settings > Matrix Grid**.
2. Click **Next >** to get to step 2 **Matrix Configuration**.

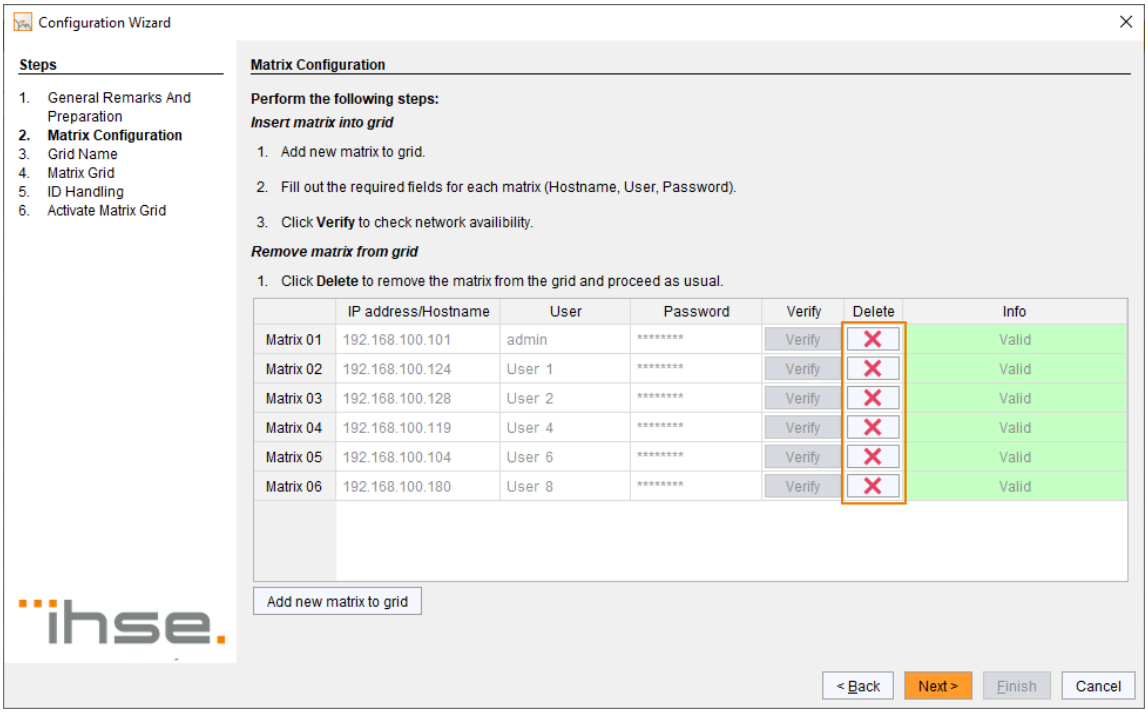


*Fig. 160 Menu **Matrix Grid - Configuration Wizard (offline) - Matrix Configuration***

3. Click the **Delete** button for each matrix to delete all matrices form the grid.

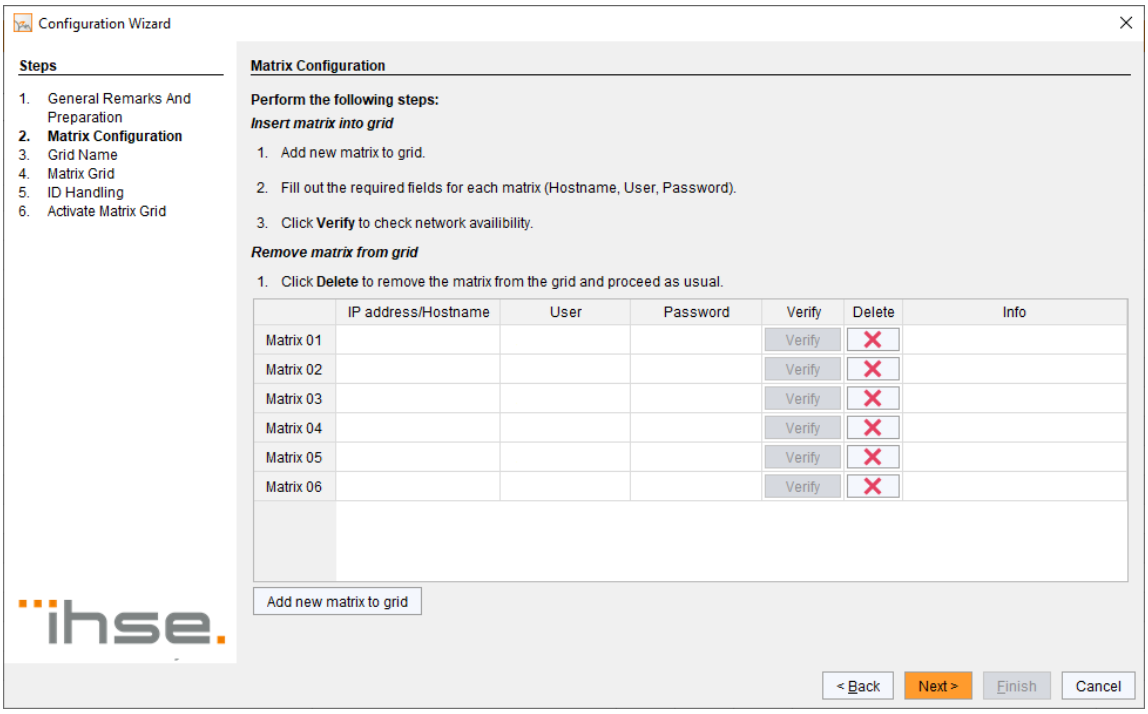


*Fig. 161 Menu **Matrix Grid - Configuration Wizard (offline) - All matrices deleted***

4. Click **Next >** several times until you get to step 6: **Activate Matrix Grid**.

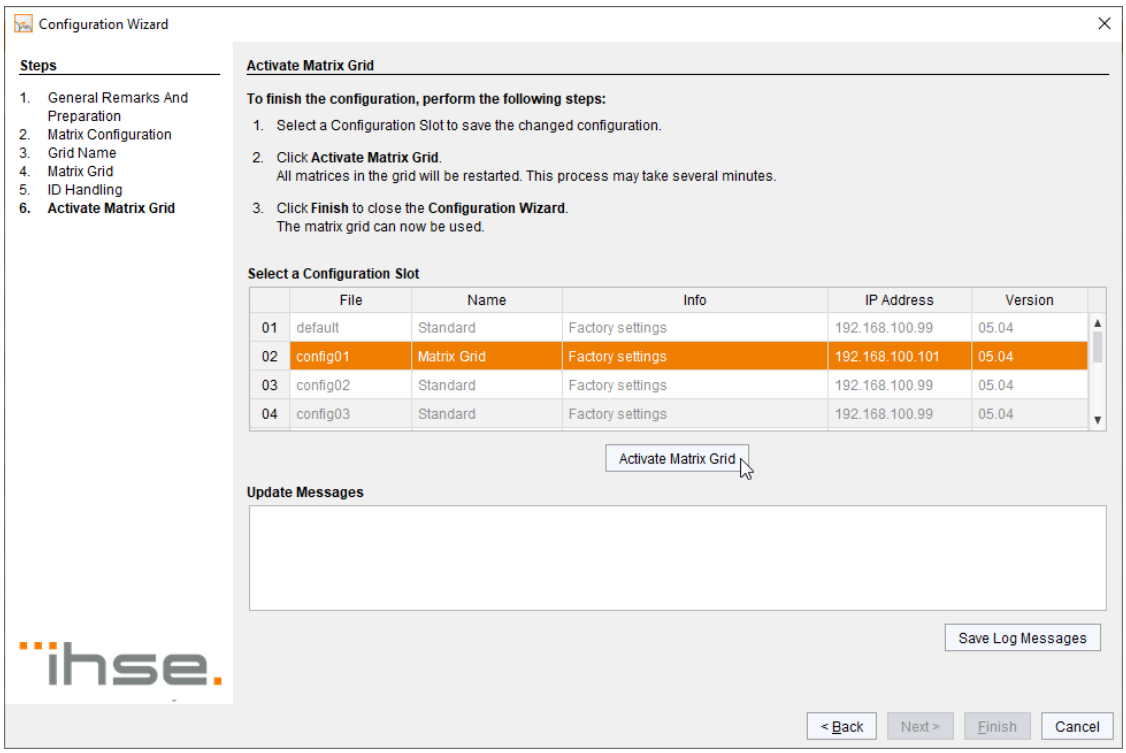


*Fig. 162 Menu **Matrix Grid - Configuration Wizard (offline) - Select grid configuration***

5. Select the slot where the configuration of the grid to be deleted is stored.
6. Click the button **Activate Matrix Grid**.

   A configuration file without grid settings overwrites the existing grid configuration file on all matrices.

NOTICE
The entire grid (all matrices part of the grid) restarts immediately and is not available during this time.

6.14 Export and Import Options

The matrix offers the ability to read out available data of e.g., extender modules, CPU Devices, CON Devices, users, etc. from the configuration file for export and import via Tera Tool software.

Exported data are always saved in .csv format that allows offline editing with common spreadsheet applications.

6.14.1 Export Options

1. Click **File > Export** in the menu bar.

The following menu opens.

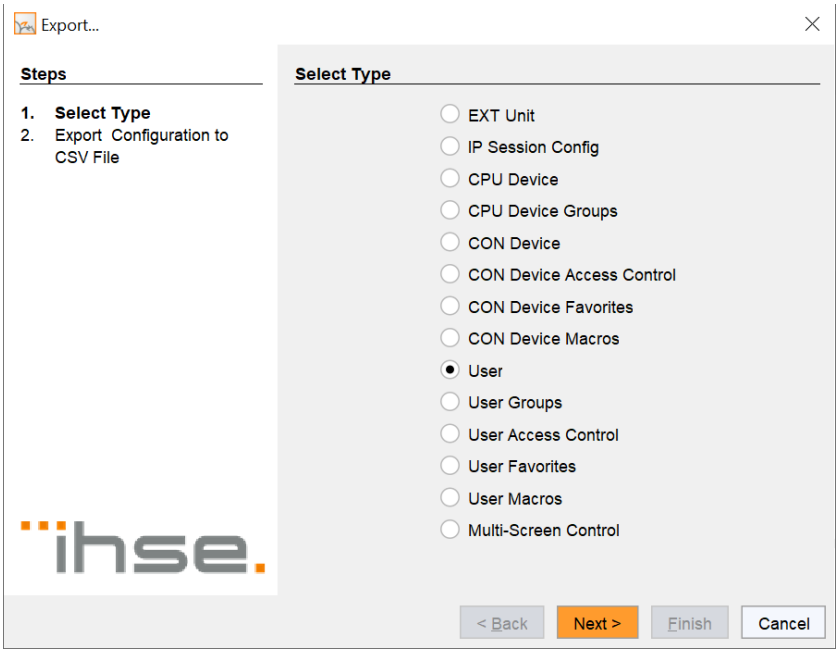


*Fig. 163 Dialog **File - Export - Select Type***

2. Select the type to be exported. Each type has to be exported individually.
3. Click **Next >**.

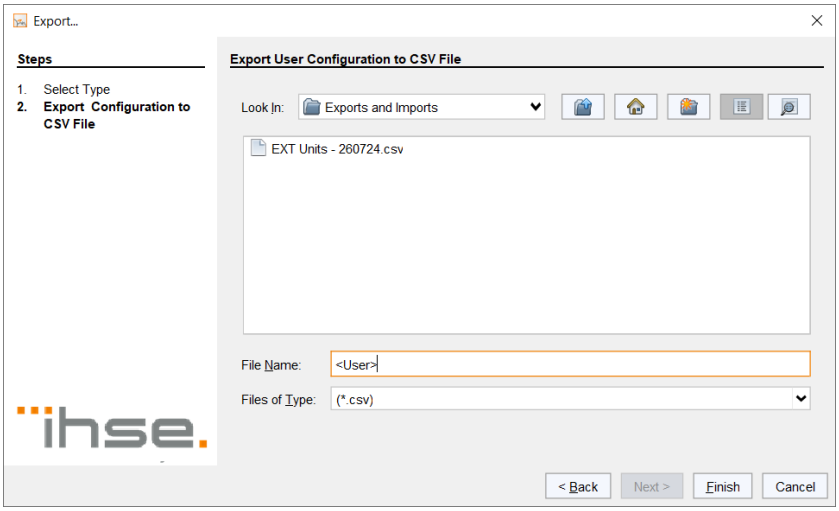


*Fig. 164 Dialog **File - Export - Export Data to CSV File***

4. Go to the desired location for the exported data.
5. Enter a name for the exported CSV file.
6. Click **Finish** to confirm the export.

6.14.2 Import Options

Importing data is only possible into offline configuration files of the type (*.dtc).

NOTICE

The individual parts of a configuration file relate to each other. If you want to import several types of data into a configuration file, it is very important that you stick to the same sequence as displayed in the **Select Type** list (see following figure).

For example, when you want to import the types of EXT Unit and CPU Device, always import the EXT Unit *.csv file first and then the CPU Device *.csv file and not vice versa.

1. Open a locally saved configuration file or create a new configuration file.
2. Click **File > Import** in the menu bar.

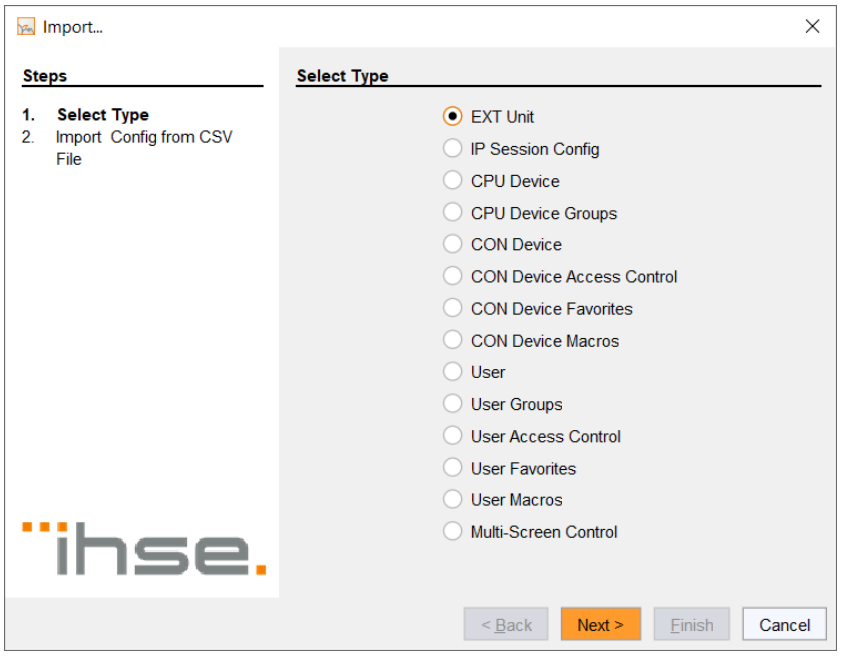


*Fig. 165 Dialog **File - Import - Select Type***

3. Select the type of data to be imported.
4. Click **Next >**.

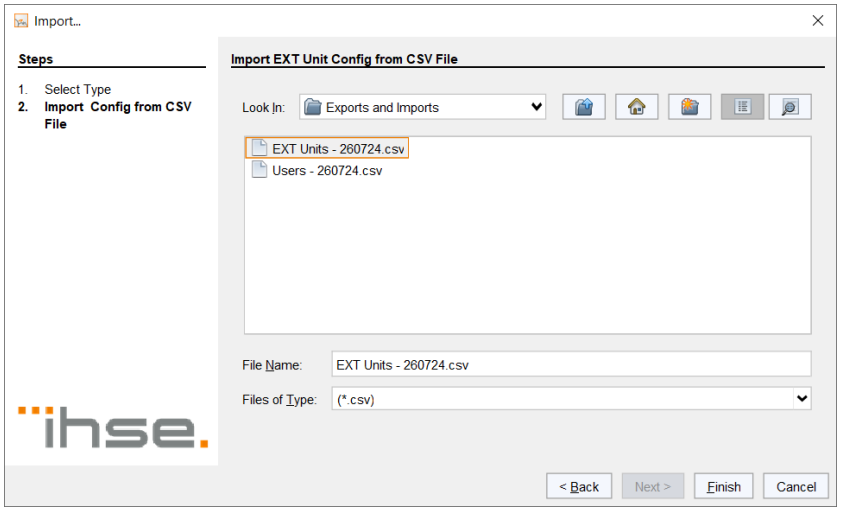


*Fig. 166 Dialog **File - Import - Import data into *.dtc file***

5. Go to the location of the desired *.csv file to be imported.
6. Select the *.csv file to be imported.

7. Click **Finish** to confirm the import.

   If data of the type to be imported already exists in the current configuration, a dialog appears.

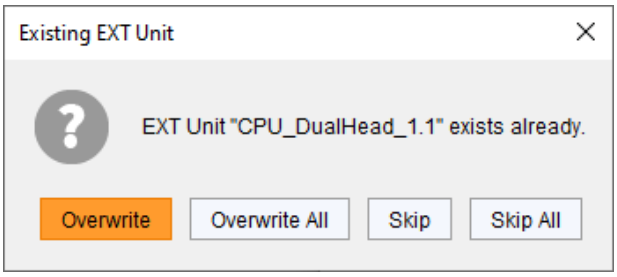


*Fig. 167 Dialog **File - Import - Import CSV File to Config***

8. Click the corresponding button to overwrite the specified data or not.

NOTICE
When importing/exporting the types of IP Session Config and User, no passwords are imported/exported. An export is no complete backup and cannot replace the functions **Save** or **Save Status**.

6.15 License Management

In this menu, the matrix can be upgraded with new function bundles by means of license keys.

To obtain license keys to upgrade matrix functions, contact your distributor.

To activate a function bundle, proceed as follows:

1. Click **Status & Updates > Miscellaneous** in the task area.
2. Click the **License Management** tab.

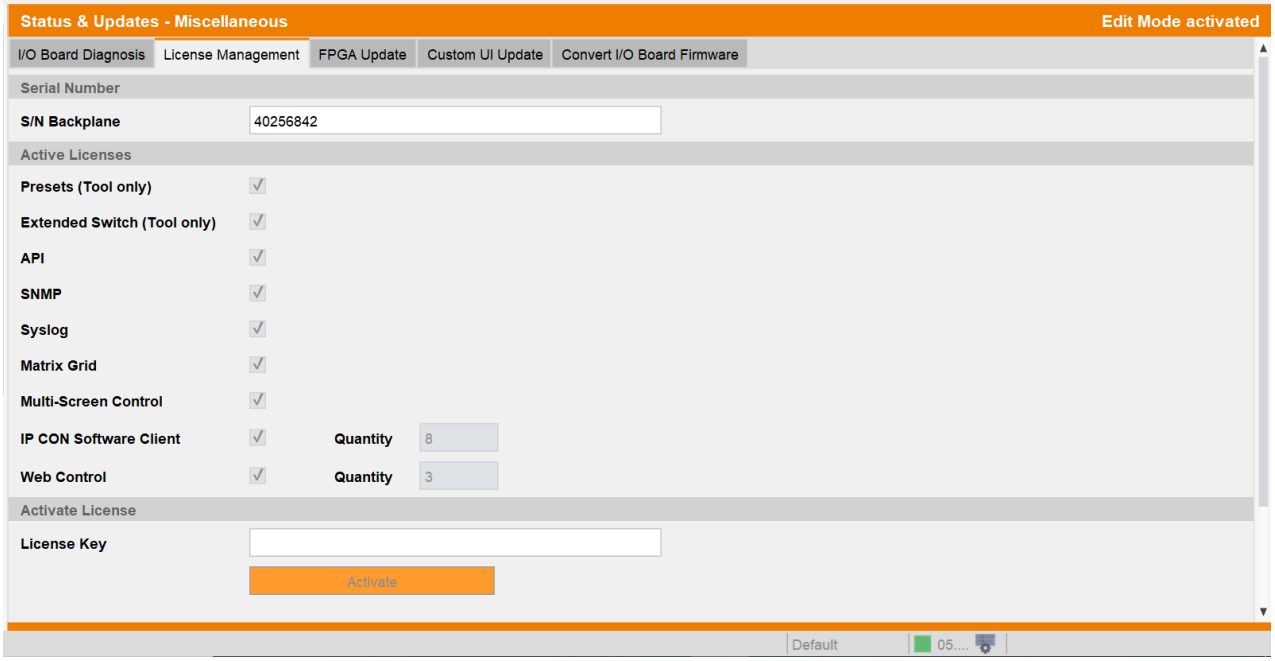


*Fig. 168 Menu **Status & Updates - Miscellaneous - License Management***

3. Enter your license key in the working area under **Activate License** in the **License Key** field.
4. To activate the license key, click **Activate**.

   The new functions will be immediately enabled, a restart of the matrix will not be necessary.

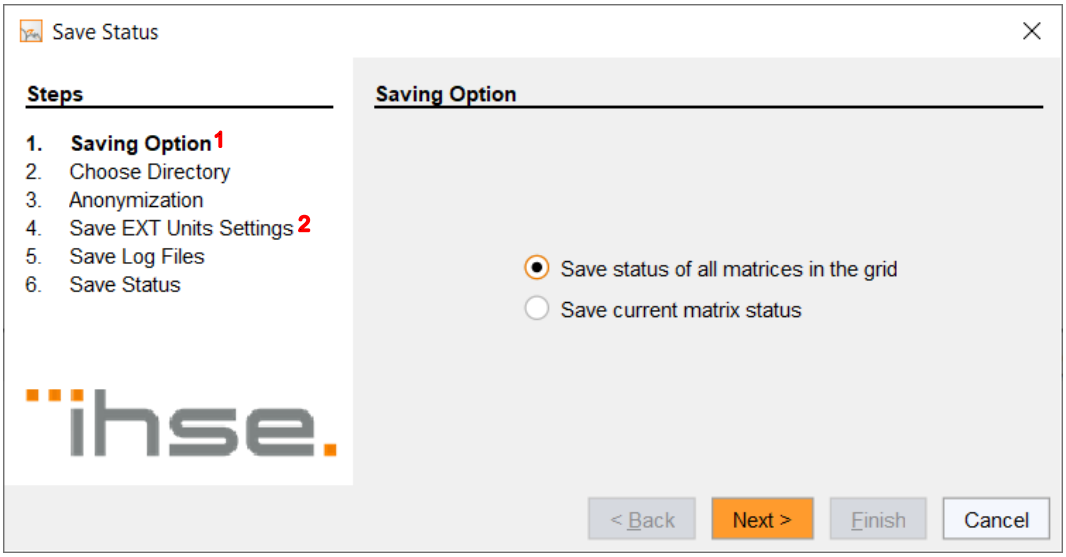
Please note that the license key is case sensitive. If the key is not accepted, check for hidden blanks or wrong case.

6.16 Saving Configuration Status

6.16.1 Saving a Status

A snapshot of the whole system will be saved as `.zip` file on the computer on which Tera Tool is running. Content, see section 6.3, page 34.

1. Click **Save Status** in the toolbar to read out the overall status of the device and store it locally.
   A dialog appears.



1 appears only if a grid exists
2 appears only if the option was enabled under **Extras > Options > Miscellaneous**

*Fig. 169 Dialog **Save Status - Saving Option***

2. Choose the status option to be saved.
3. Click **Next >**.

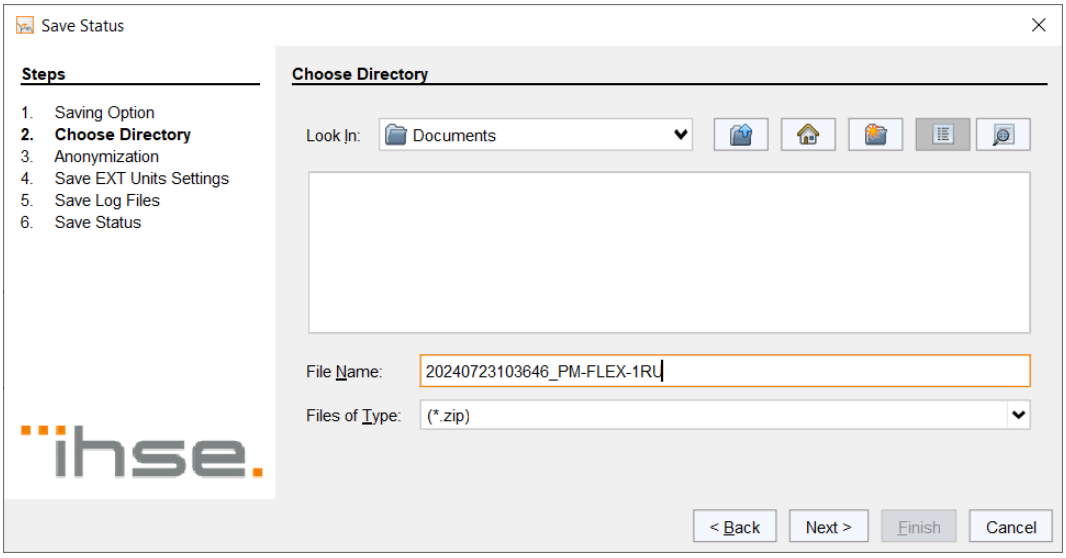


*Fig. 170 Menu **Save Status - Choose Directory***

4. Go to the directory where you want to save the status file.
5. Click **Next >**.

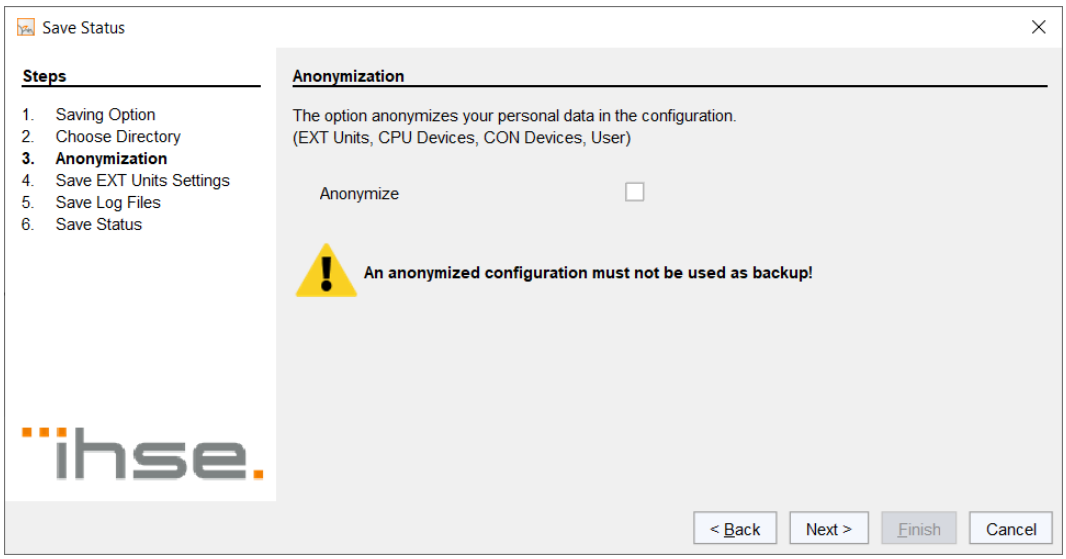


*Fig. 171 Menu **Save Status - Anonymization***

6. Tick the **Anonymize** checkbox to anonymize your personal data when saving the status file if necessary (not recommended for backup).

   If you want to use the status file as a backup, do **not** tick the **Anonymize** checkbox.

We recommend **not** ticking any options in the **Save Status** dialog for normal use or backup. These options are only for troubleshooting and our tech support team will ask for an option if necessary.

7. Click **Next >**.

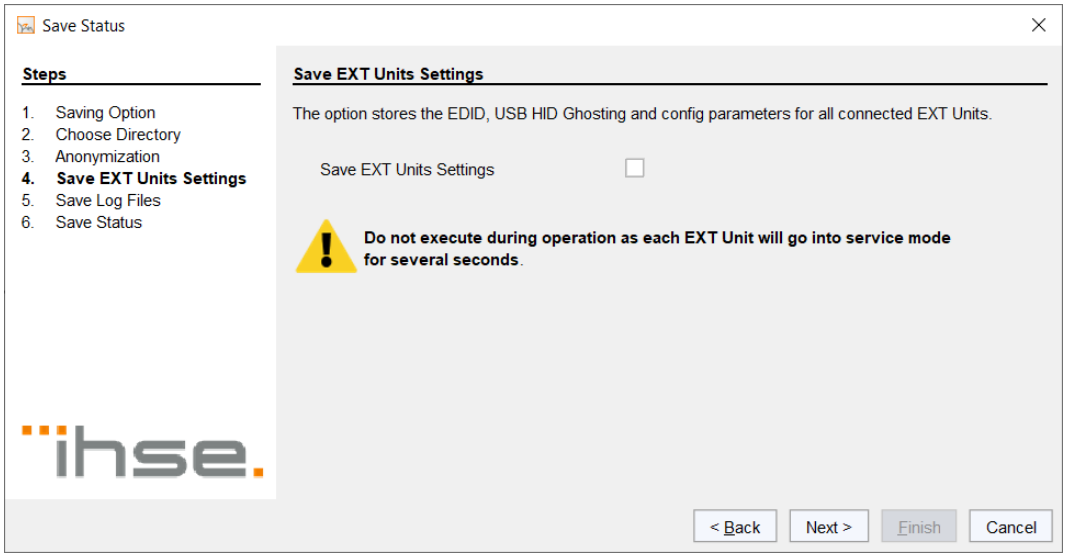


*Fig. 172 Menu **Save Status - Save EXT Unit Settings***

8. Do **not** tick the **Save EXT Units Settings** checkbox unless having been prompted to do so.
9. Click **Next >**.

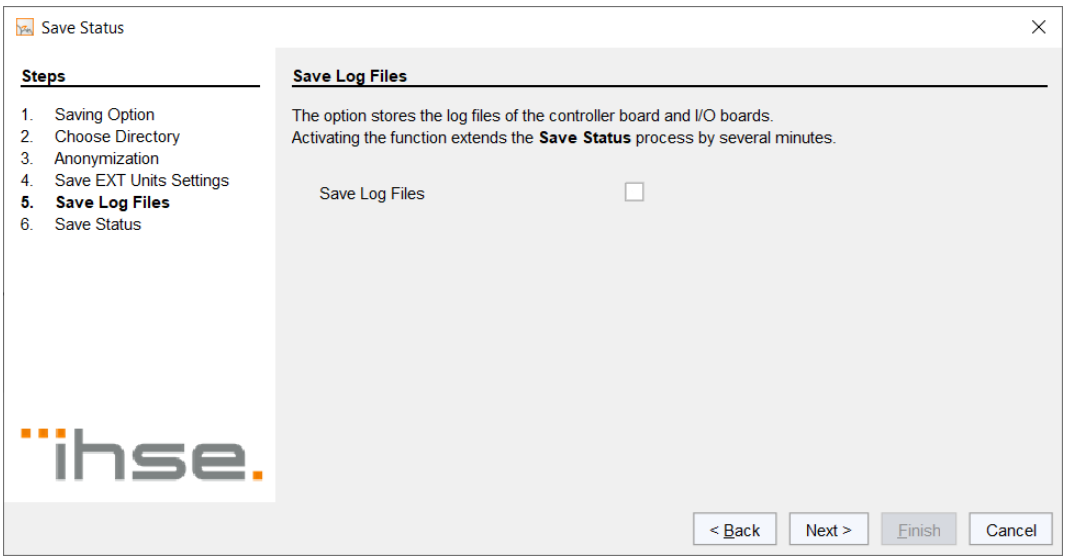


*Fig. 173 Menu **Save Status - Save Log Files***

10. Click **Next >**.

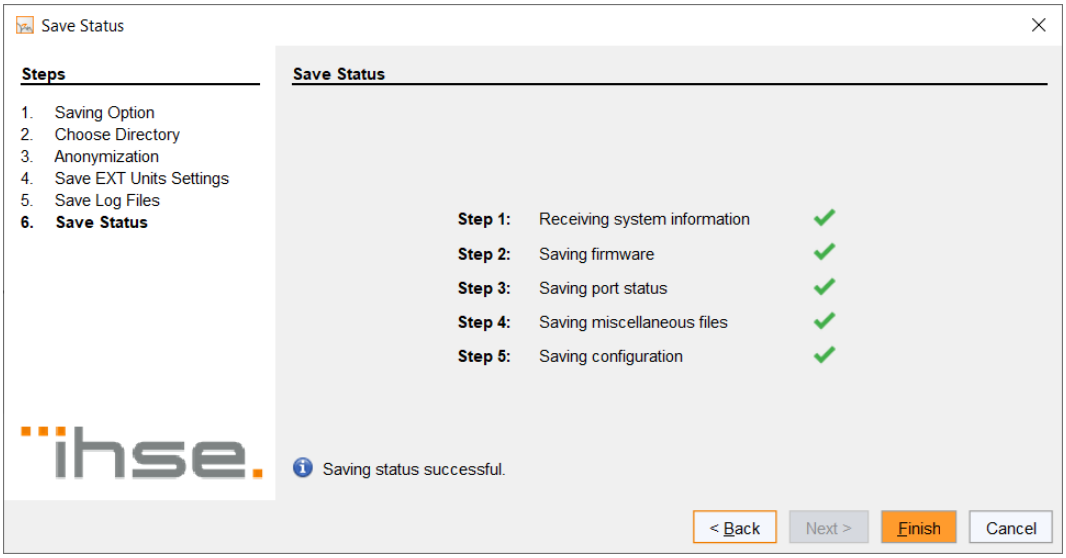


*Fig. 174 Menu **Save Status - Save Status***

11. Wait until all steps show green checkmarks and the **“Saving status successful”** message is displayed.
12. Click **Finish** to complete the status saving process.

6.16.2 Opening a Locally Saved Configuration Status

1. Click **Device > Load Status…** in the menu bar.

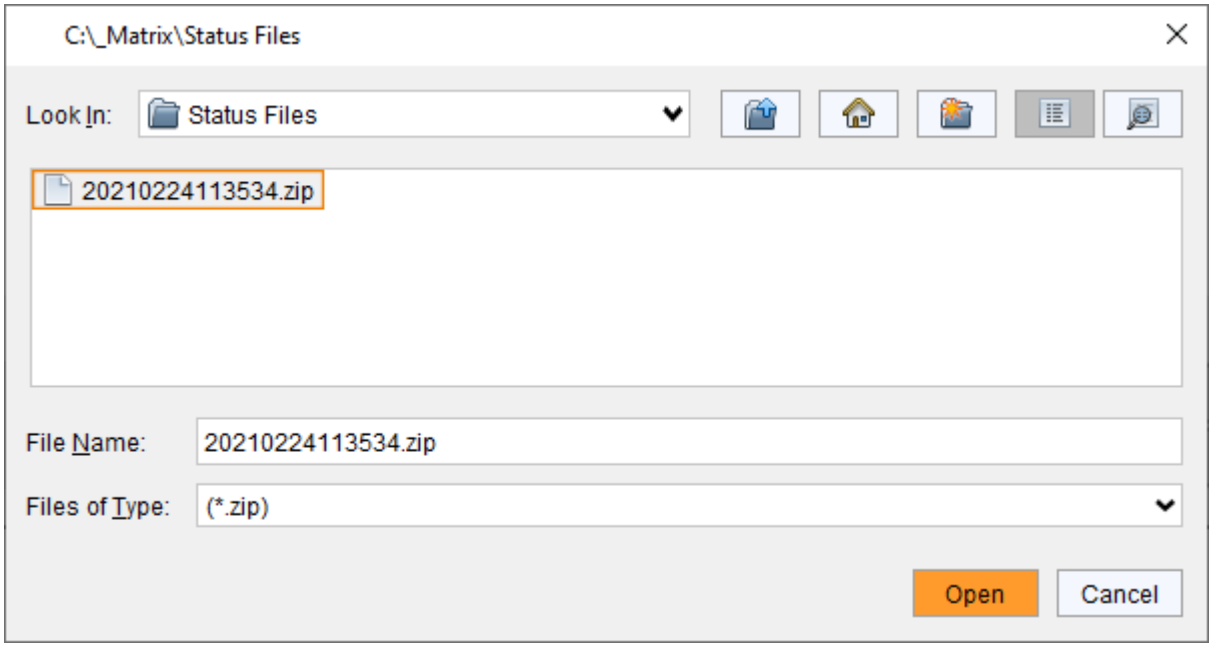


*Fig. 175 Menu **Device - Load Status***

2. Go to the storage location of the status file to be opened.
3. Click the status file to be opened.
4. Click **Open** to open the status file.

The status can also be opened via drag & drop. To do so, open the file browser, go to the storage location of the status file, click on the status file, hold down the left mouse button and drag and drop the status file into the Tera Tool software.

6.16.3 Uploading a Locally Saved Configuration Status

1. Open a locally saved status.
2. Perform the uploading process (see section 6.4.4, page 37).

Uploading the opened status will only save the `config.dtc` as current configuration to the matrix (including the switch status). Other information contained in the zip file like matrix and extender firmware is not loaded.

If you want to upload further configurations saved in the zipped status file, proceed as follows:

1. Extract the zipped status file.
2. Click **Open**, go to the storage location of the extracted configuration files, select the file to be uploaded and click **Open** in the dialog.
3. Click **Upload** and proceed as described above.

7 Operation via Tera Tool Software

7.1 Switching Operation via Tera Tool Software

7.1.1 Extended Switching

Switching operations can only be performed in online mode. That means an active network connection is required between the matrix and the Tera Tool software.
At least power user rights are required according to the **CON Device ACL** or **User ACL**.
In a matrix grid, all switching operations must be performed at the master matrix.

You have three options to perform switching operations for the matrix via Tera Tool software.

Possibility 1

1. Click **Control > Extended Switch** in the task area.
2. Click Activate Edit Mode in the toolbar.

All CON Devices and the associated CPU Device connections, if present, are shown in columns in the working area in this menu.

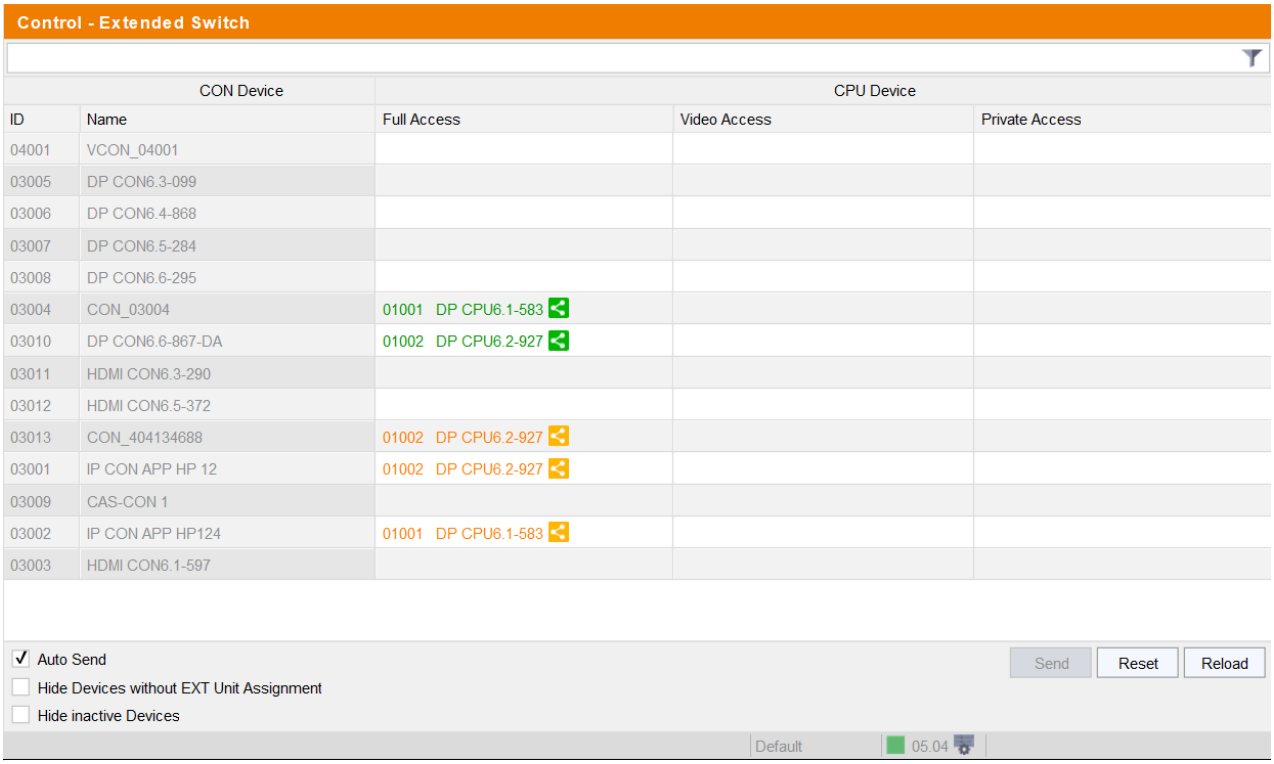


*Fig. 176 Menu **Control - Extended Switch***

Button/checkbox	Function
Send	Sends effected switching operations to the matrix after user confirmation. This button is disabled when the checkbox **Auto Send** is ticked.
Reset	Disconnects all existing connections within the matrix.
Reload	Reloads switching status.
Auto Send	If ticked, the switching operations will be performed immediately without user confirmation. The button **Send** is disabled.
Hide Devices without EXT Unit Assignment	If ticked, only CON Devices and CPU Devices that are assigned to EXT units are shown.
Hide inactive Devices	If ticked, only active CON Devices and CPU Devices are shown.

If the **Auto Send** checkbox is ticked, the switching operation will be performed immediately without user confirmation.

To perform a switching operation, proceed as follows:

- To set a full **KVM connection** between a CON Device and a CPU Device, double-click on the corresponding selection box within the **Full Access** column and select the requested CPU Device.
- To set a **Video-only connection** between a CON Device and a CPU Device, double-click on the corresponding selection box within the **Video Access** column and select the requested CPU Device.
- To set a **Private Mode connection** between a CON Device and a CPU Device, double-click on the corresponding selection box within the **Private Access** column and select the requested CPU Device.

If a CON Device does not have access rights for a CPU Device, it will not appear in the list.

Possibility 2

1. Click **View > Matrix** in the task area or select **View > Port** when using a matrix grid.

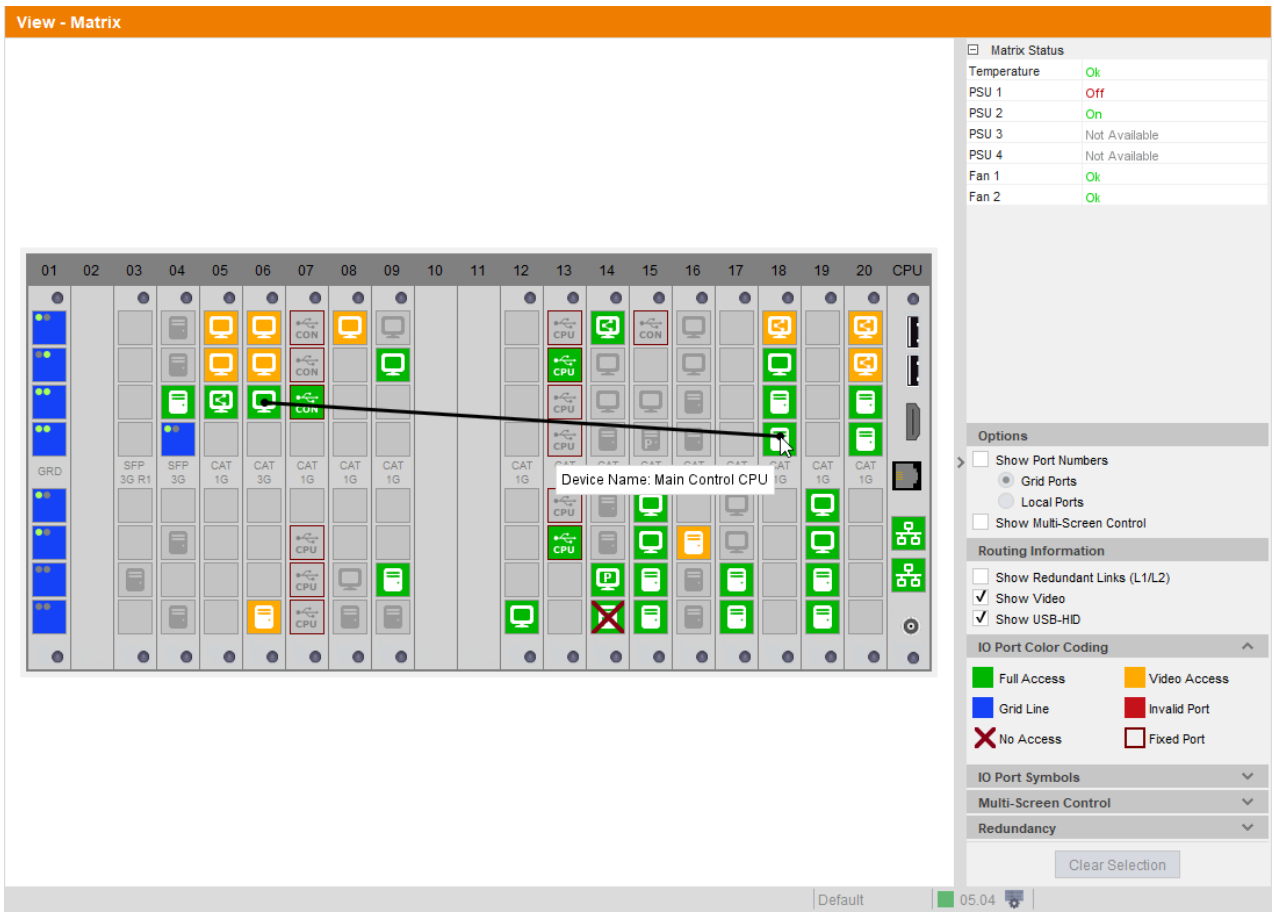


*Fig. 177 Menu **View - Matrix***

The following symbols may be shown in the connection overview:

Symbol	Description
	CON Device is connected via **Shared Access** with at least one further CON Device to the same CPU Device. The CON Device has Full Access at the moment.
	CON Device is connected via **Shared Access** with at least one further CON Device to the same CPU Device. The CON Device has a Video Access connection at the moment.

To perform switching operations between CON and CPU Devices proceed as follows:

2. Move the mouse cursor to the port that has to be switched.
3. Hold down the left mouse button and move the cursor to the port that has to be connected to the initial port. The current cursor movement will be displayed by a black auxiliary line.
4. Release the left mouse button.

   A selection menu to select the available switching type (**Full Access**, **Video Access** or **Private Mode**) will be opened. Private Mode will only be shown if the option “Allow Private” is enabled for the selected CPU Device.
5. Select the desired switching type.

   The switching operation will be immediately executed. At the same time all EXT Units that are assigned to the involved Devices will be switched.

If a port is shown with a red cross on **Matrix View**, the CON Device does not have access rights to the CPU Device connected to that port.

To disconnect the existing connection between CON Device and CPU Device, proceed as follows:

1. Click with the right mouse button on the port that is to be disconnected.
2. Click the **Disconnect** function in the context menu.

   The connected ports will be immediately disconnected. At the same time all further connections of the extender modules assigned to the involved Devices will be disconnected.

Possibility 3

1. Click **Control > Presets** in the task area.
2. Select the switch preset in the right column of the working area that has to be loaded.
3. Click **Send** on the lower right of the working area to activate the selected switch preset.
   The preset is sent to the matrix and executed.

A switch preset can only be activated in online mode.

How switch presets are defined is described in section 7.1.3 on the next page.

7.1.2 USB 2.0 Switching

Switching of USB 2.0 extender modules basically works like switching of KVM extender modules. The following scenarios to switch USB 2.0 extender modules are possible.

1. An EXT Unit with USB 2.0 will be created and assigned to an already existing Device with existing KVM EXT Units (see section 6.8.3, page 108 or section 6.9.3, page 123).
2. A separate Device for the EXT Unit with USB 2.0 will be created without assigning a KVM EXT Unit to that Device. This possibility offers a separate switching of the USB 2.0 signal (see section 6.8.1, page 108 or section 6.9.1, page 122).

Switching of USB 2.0 signals uses Extended Switching functionality (see section 7.1.1, page 178).
When using parallel operation within the matrix, set the **Release Time** in the **System Settings > Switch** menu to 10 s or more (see section 6.5.6, page 48). Otherwise, the connection of the USB 2.0 extender module will not be established due to security and stability reasons.

7.1.3 Defining Switch Presets

Switch presets to switch the matrix without loading a new configuration can be created and activated in this menu. This is a function of the Tera Tool software, not of the matrix. The presets are locally saved on your computer.

1. Click **Control > Presets** in the task area.
2. Click (**New)** in the right column of the working area to open a new switch preset.
3. You are asked if the existing connections should be taken over for the new switch preset. When you click **Yes**, the table contains the existing connections as shown in Fig. 178. When you click **No**, the CPU Device columns are empty.

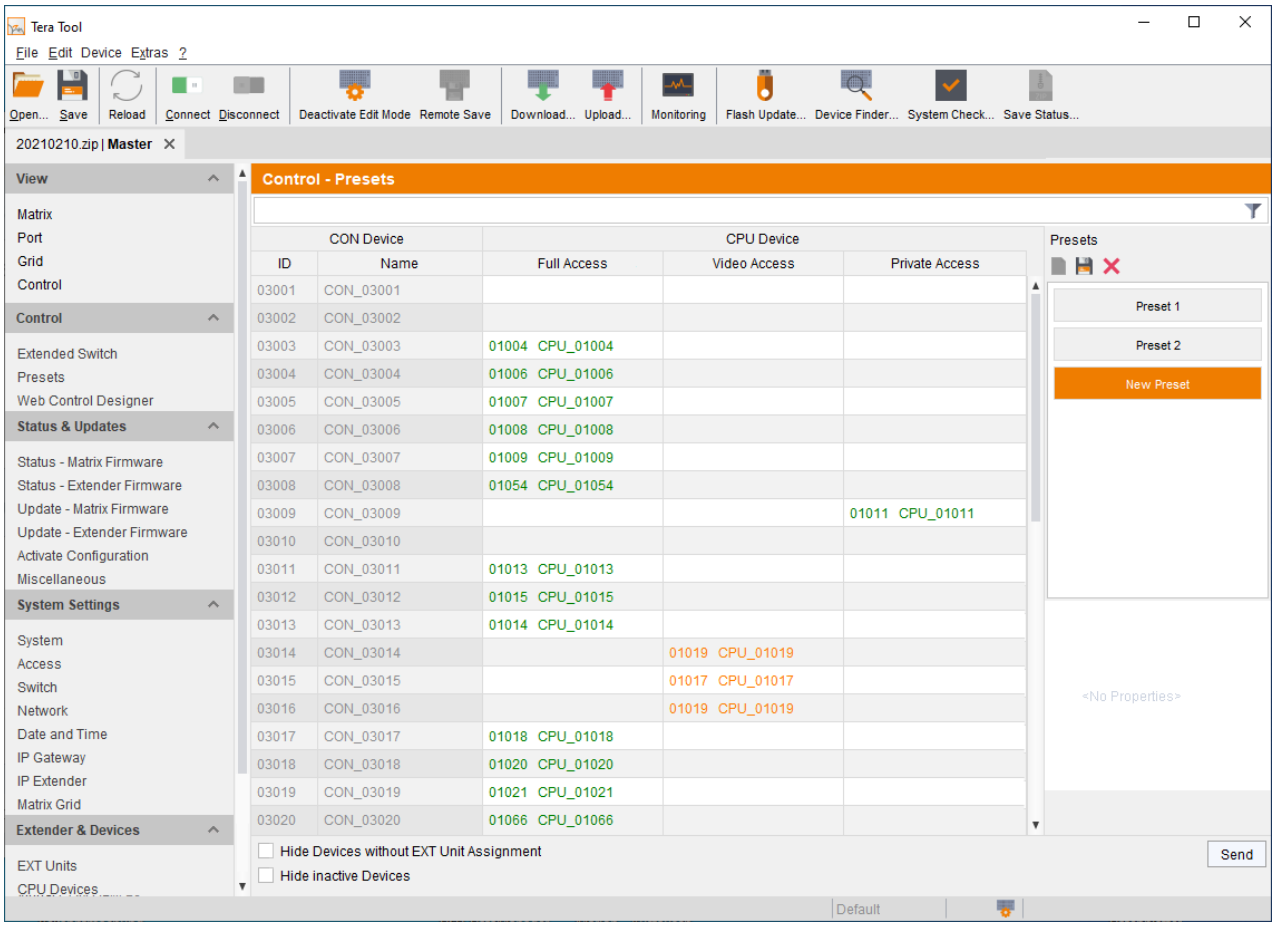


*Fig. 178 Menu **Control - Presets - New switch preset opened***

4. To set a connection for a CON Device, click in the line of the CON Device in the column of the desired connection type (**Full Access**, **Video Only** or **Private Mode**). The drop-down menu that appears contains all possible CPU Devices and the entry **Disconnect CPU**.
5. Click on the desired CPU Device to set the connection type or on **Disconnect CPU** to disconnect the CON Device.

☑ When you leave a line empty, the connection of the corresponding CON Device remains unchanged upon executing the preset.

6. Click (**Save)** in the right column of the working area to save the created switch preset.

   A save dialog appears.
7. Enter a name for the new switch preset.
8. Click **Ok** in the save dialog to confirm the new preset.

   The new switch preset is listed in the right column. The bottom of this column contains information about the preset and the current configuration of the matrix.

Copying a Switch Preset

1. Click **Control > Presets** in the task area.
2. Right-click on a switch preset in the right column and click the **Save as...** option in the context menu.
3. Enter a name for the copied switch preset and click **OK**.

Deleting a Switch Preset

1. Click **Control > Presets** in the task area.
2. Select the switch preset to be deleted.
3. Click ❌ (**Delete)** in the toolbar to the column **Presets** to delete the current switch preset or right-click the switch preset and click the **Delete...** option in the context menu.
4. Confirm the deletion.

7.2 Restarting and Powering down Functions via Tera Tool Software

NOTICE

Possible damage of boards or the matrix

The file system check phase when the matrix is restarted (indicated with 2x white LEDs) is a very sensitive process.

If the matrix is switched off while restarting, the respective boards may be damaged in its function.

➡ Do NOT power off the matrix while the file system is being checked.

NOTICE

Possible loss of the current configuration

If the matrix is restarted or shut down (indicated with 1x off/1x yellow LEDs), the current configuration is saved.

If the matrix is powered off while shutting down or restarting, the matrix may restart with factory settings.

➡ Do NOT power off the matrix while shutting down or restarting.

7.2.1 Restarting the Matrix or Matrix Grid

To perform a restart of the matrix, proceed as follows:

1. Click **Device > Advanced Service > Restart Matrix** in the menu bar.

   An access window appears.

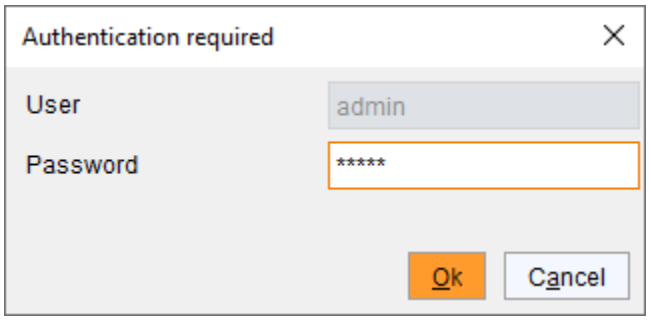


*Fig. 179 Dialog **Log in administrator***

2. Enter the username and password of an administrator.
3. Click **Ok**.

   A query to restart the matrix appears.

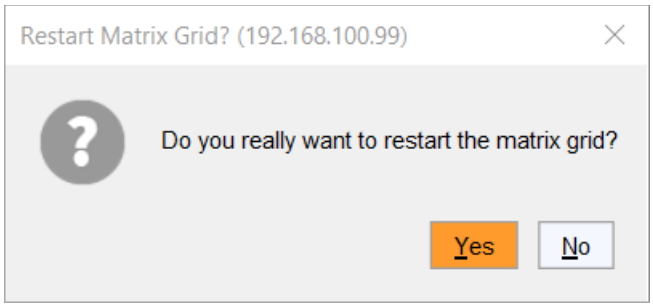


*Fig. 180 Dialog **Restart Matrix***

4. Click **Yes** to restart the matrix.

   The current configuration is saved in the permanent memory of the matrix, and the matrix will be restarted.

If using this function in a matrix grid, the complete matrix grid will only be restarted when the master matrix is restarted. In the case of redundant controller boards, both controller boards will restart.

7.2.2 Restarting the Controller Board

To perform a restart of the controller board, proceed as follows:

1. Click **View > Matrix** in the task area.
2. Click with the right mouse button on the symbol of a network port of the controller board to be restarted.

   A context menu appears.
3. Click the **Restart Controller Board** function in the context menu.

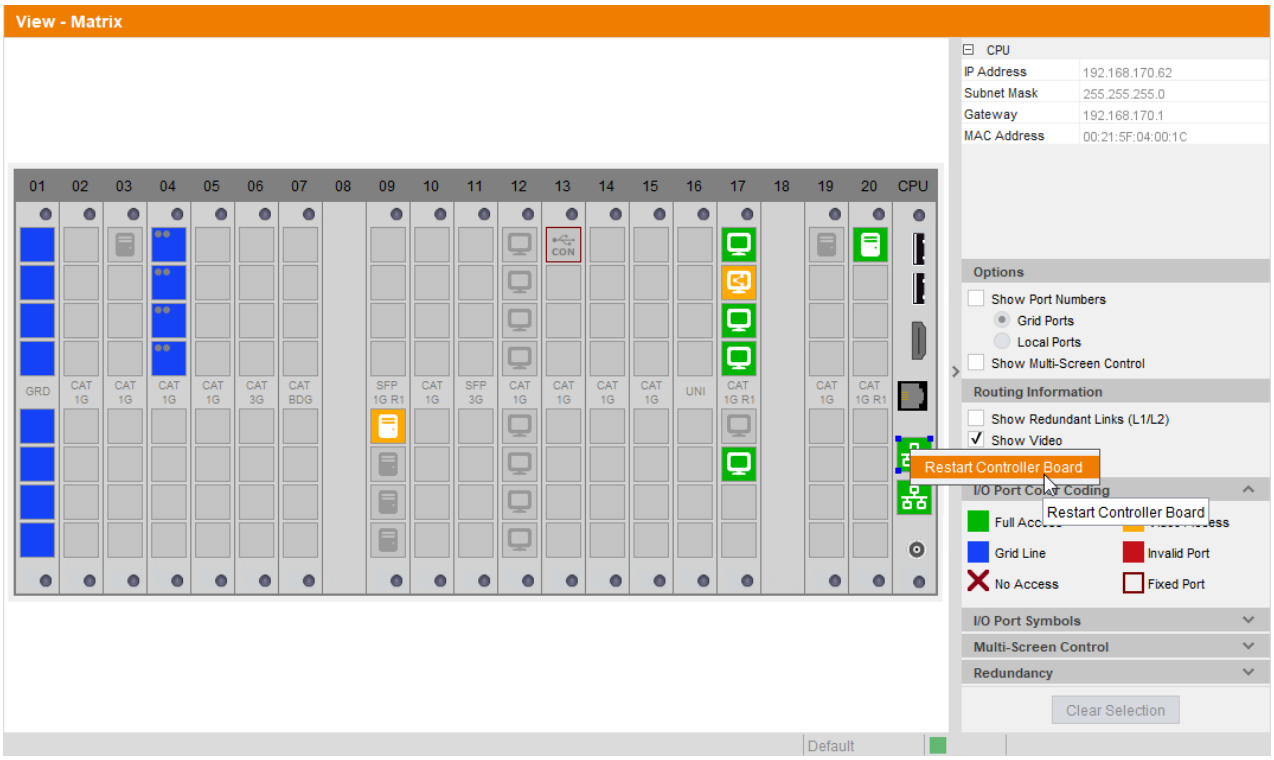


*Fig. 181 Menu **View - Matrix - Restart Controller Board***

An access window appears.

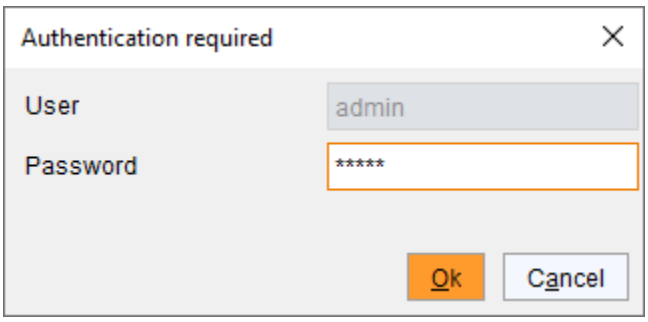


*Fig. 182 Dialog **Log in administrator***

4. Enter the username and password of an administrator.
5. Click **Ok**.

   The controller board is restarted, and the symbols of the network ports are red for a short time in the overview. When the symbols of the network ports are green again, the restart of the controller board was successful.

7.2.3 Restarting an I/O Board

1. Click **View > Matrix** or **View > Port** in the task area.
2. Click with the right mouse button on the symbol of any port of the I/O board to be restarted.

   A context menu appears.

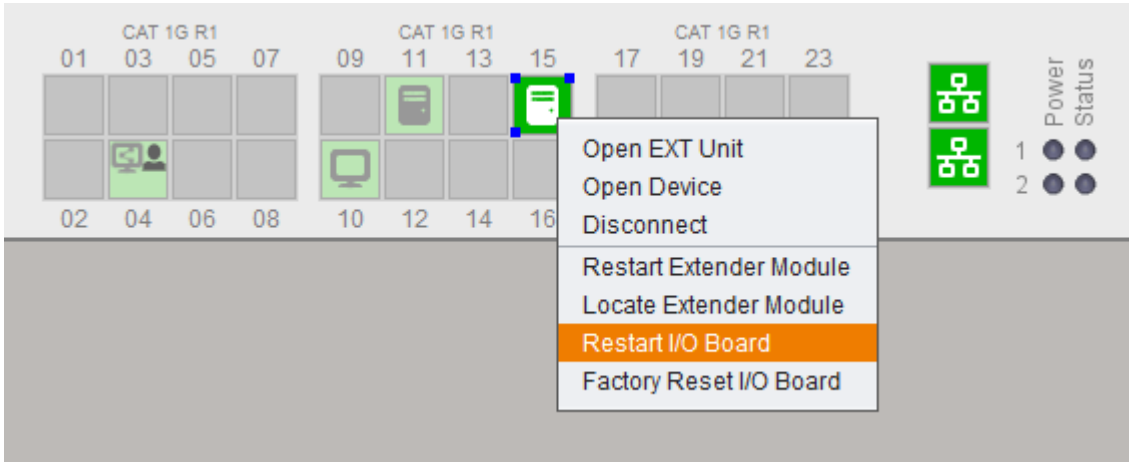


*Fig. 183 Menu **View - Matrix - Restart I/O Board***

3. Click the **Restart I/O Board** function in the context menu.

   A query to restart the I/O board appears.

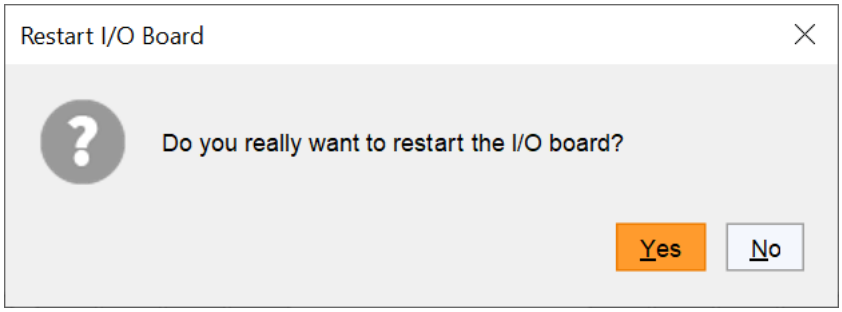


*Fig. 184 Dialog **Restart I/O Board***

4. Click **Yes** to restart the selected I/O board.

   The I/O board is restarted, and the I/O board will disappear for a short time in the overview. When the I/O board and the extender modules are visible again, the restart of the I/O board was successful.

7.2.4 Restarting an Extender Module

There are two possibilities to restart an extender module.

Possibility 1

1. Select **View > Matrix** or **View > Port** in the task area.
2. Click with the right mouse button on the symbol of the extender to be restarted.

   A context menu appears.

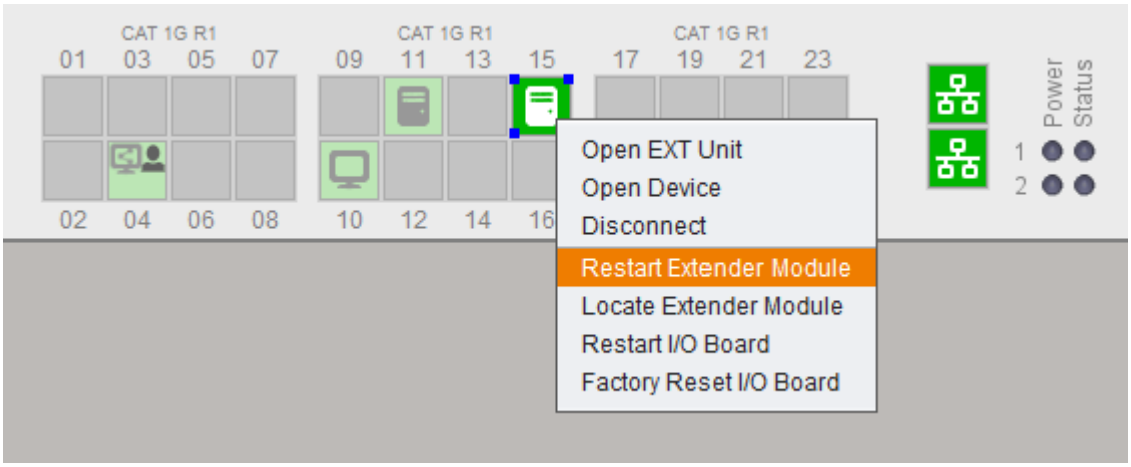


*Fig. 185 Menu **View - Matrix - Restart Extender***

3. Select the **Restart Extender** function in the context menu.

Note: The extender module will be restarted immediately without user confirmation. The extender module symbol will disappear for a short time in the overview. When the symbol is visible again, the restart was successful.

Possibility 2

1. Select **Extender & Devices > EXT Units** in the task area.
2. Click **Activate Edit Mode** in the toolbar.

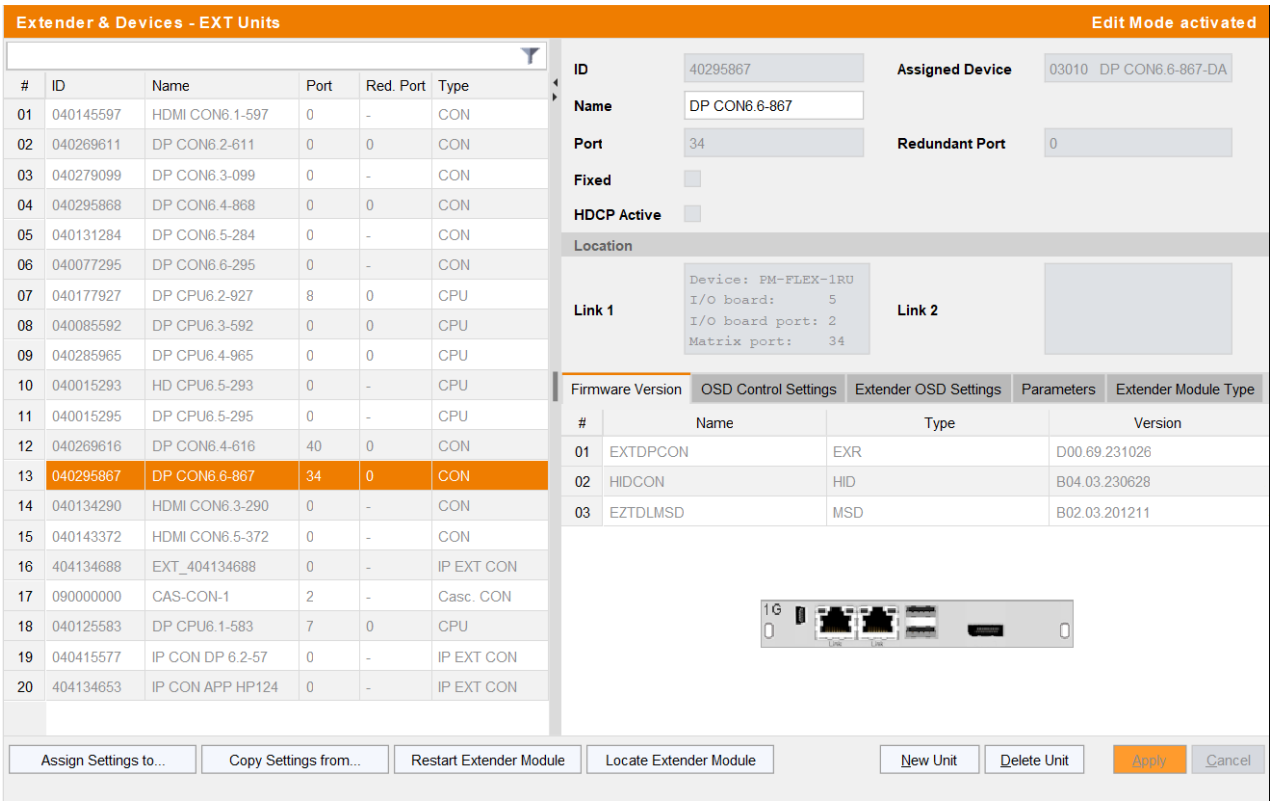


*Fig. 186 Menu **Extender & Devices - EXT Units***

3. Select the EXT Unit in the EXT Units list whose extender module has to be restarted.
4. Click **Restart Extender Module** in the lower part of the working area.
   A query for the restart appears.

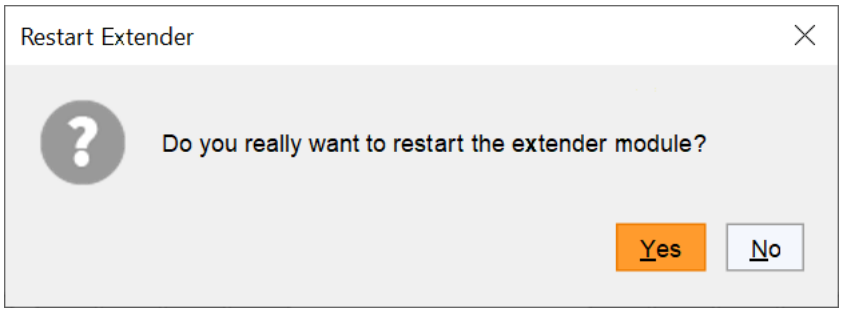


*Fig. 187 Dialog **Extender & Devices - Restart Extender***

5. Click **Yes** to restart the extender module.
   The port number of the EXT Unit will show 0 for a short time. When the correct port number appears again, the restart of the extender module was successful.
6. Click **Deactivate Edit Mode** in the toolbar.

7.2.5 Powering Down the Matrix

In a matrix grid, all matrices shut down when you shut down the master matrix.

To shut down a matrix, proceed as follows:

1. Select **Device > Advanced Service > Shut down Matrix** in the menu bar.

   An access window appears.

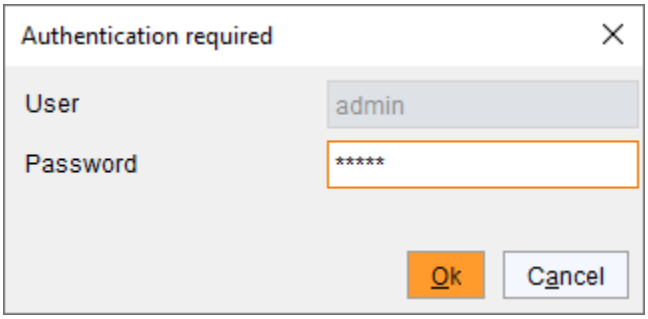


*Fig. 188 Dialog **Log in administrator***

2. Enter the username and password of an administrator.
3. Click **Ok**.

   A query to shut down the matrix appears.

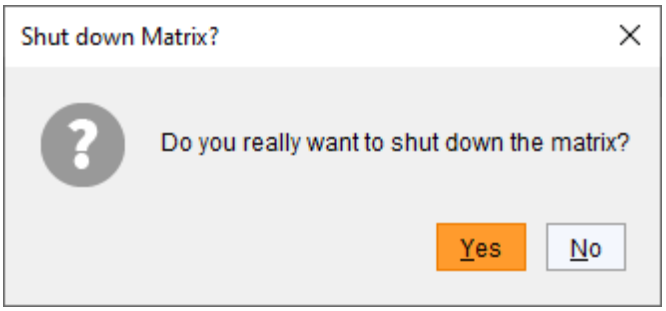


*Fig. 189 Dialog **Shut down Matrix***

4. Click **Yes** to start the shutdown.

   The current configuration is saved in the permanent memory of the matrix, and the matrix will be shut down.

   After shutting down, a notification to power off the matrix appears.

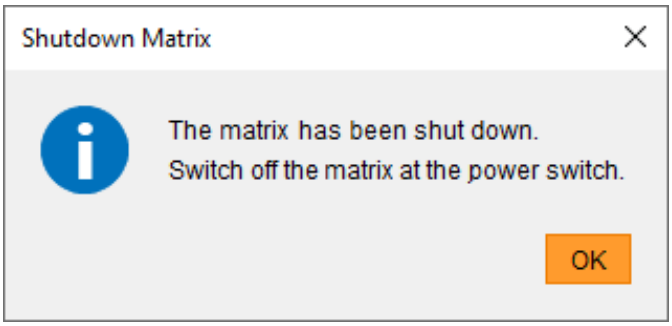


*Fig. 190 Notification **Switch off Matrix***

5. Click **OK** and switch off the matrix using the power switch at the rear panel.

NOTICE
When the matrix has been shut down but not switched off, the fans run uncontrolled with maximum speed and noise. ➡ Do not forget to switch off the matrix using the power switch at the rear panel.

8 Tera Web Control

Tera Web Control is a possibility to switch KVM signals within a Draco tera matrix system via web browser.

8.1 Preconditions and Requirements

Hardware

All components of the matrix (controller board, I/O boards) have to be of the new generation, that means:

- All Draco tera flex devices are supported.
- Only Draco tera enterprise devices with new components are supported.
- Draco tera compact devices are not supported at all.
- Only one matrix is supported so far.

Firmware

- Matrix firmware version F05.04 or higher is required (firmware parts: MAT**L**CPU, MAT**L**IO8).
- Matrix firmware part WEBCTL is required (minimum version: 01.02)

License

- To use Tera Web Control at least 1 license is required.

Configuration

- Tera Web Control function is an option and has to be activated manually.

8.1.1 How to Check Firmware and License

1. Start the Tera Tool software and connect to the matrix.
2. Click **Status & Updates > Status Matrix Firmware** in the task area.

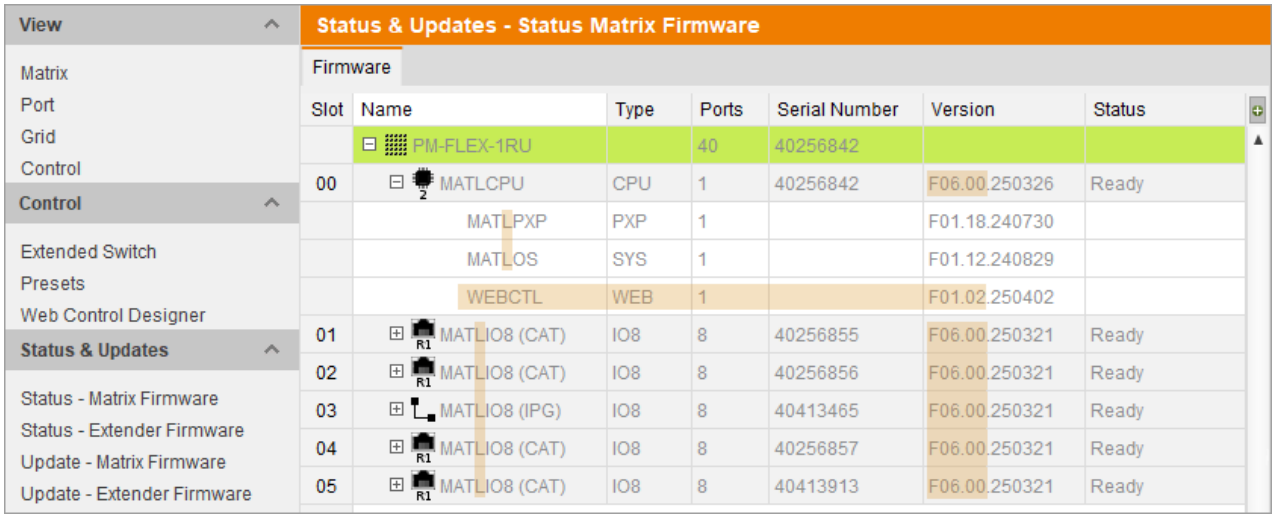


*Fig. 191 Menu **Status & Updates - Status Matrix Firmware***

3. Click **Status & Updates > Miscellaneous** in the task area.
4. Click the **License Management** tab.

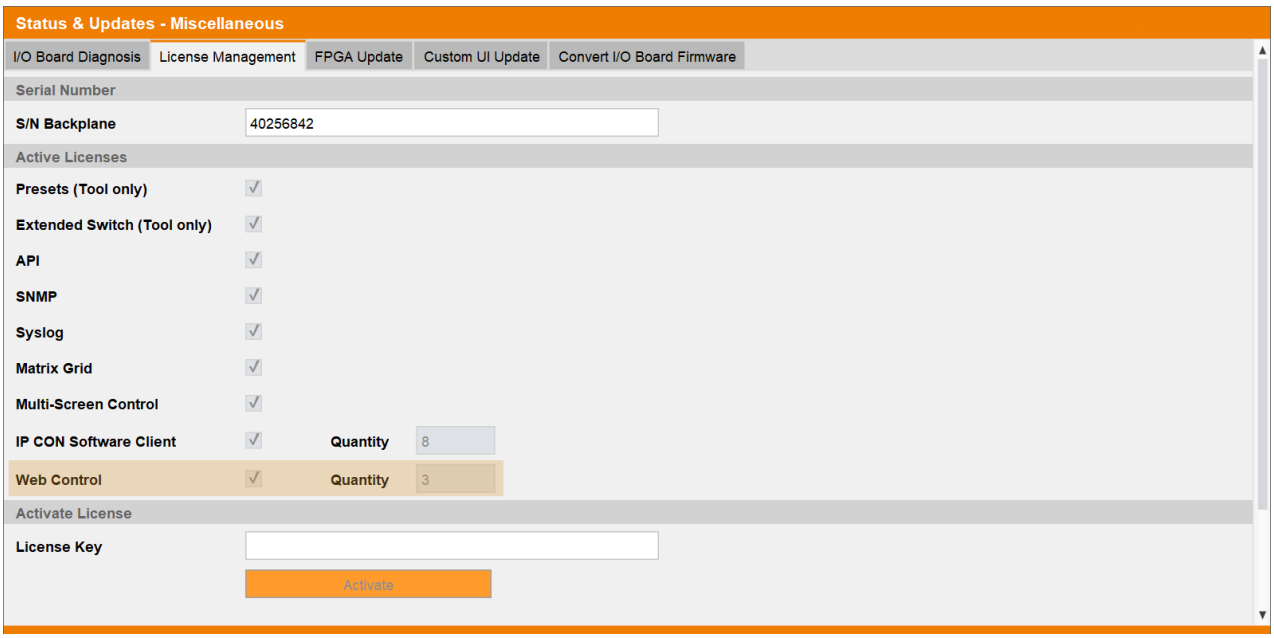


*Fig. 192 Menu **Status & Updates - Miscellaneous - License Management***

8.1.2 Activating Tera Web Control

5. Click **Activate Edit Mode** in the toolbar.
6. Click **System Settings > Network** in the task area.

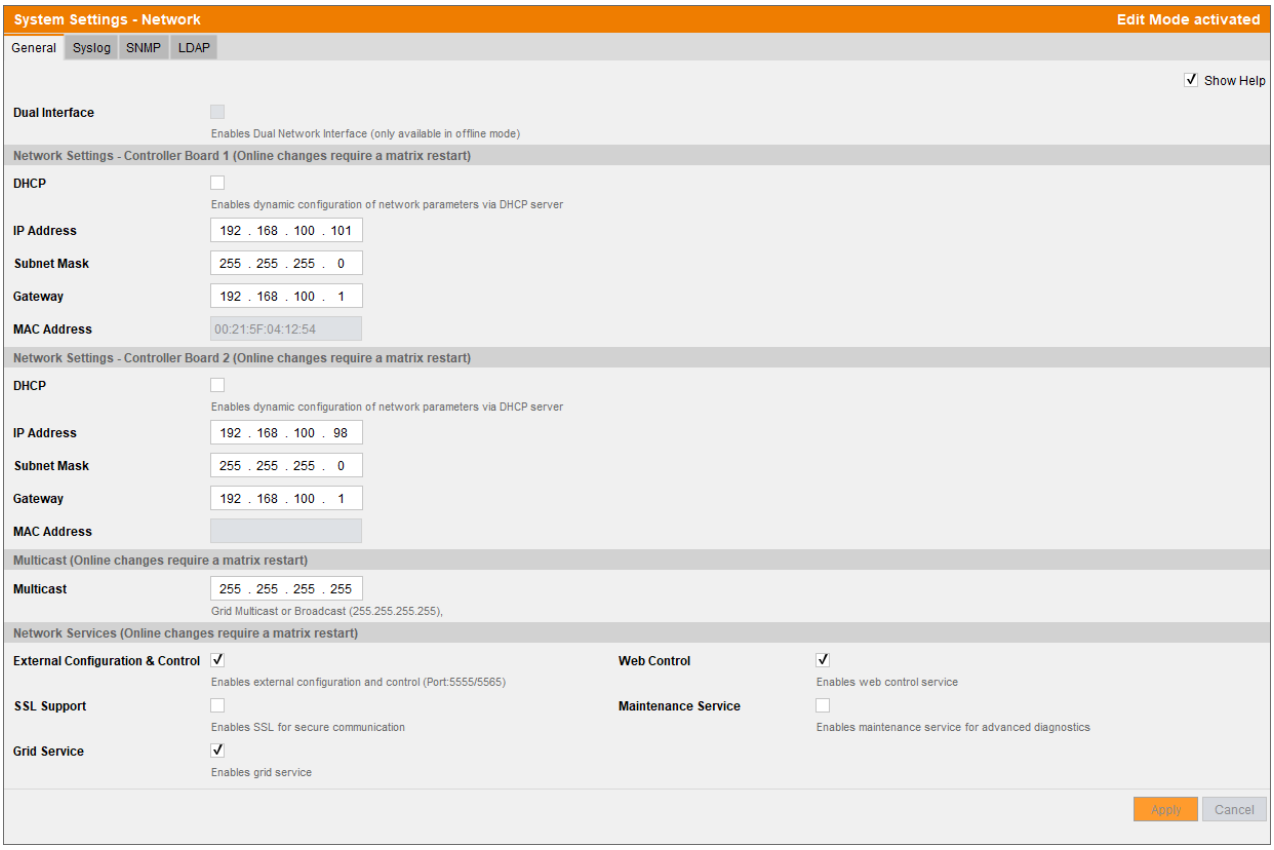


*Fig. 193 Menu **System Settings - Network***

7. Under the heading **Network Services** in the lower part of the window, tick the checkbox **Web Control**.
8. Restart the controller board (see section 7.2.2, page 185); it is not necessary to restart the matrix.

8.2 Opening and Closing a Connection

1. Connect a laptop or touch panel to the controller board of the matrix using a Cat X cable or use a WiFi connection.
2. Open a browser and type in the IP address of the controller board of the matrix.

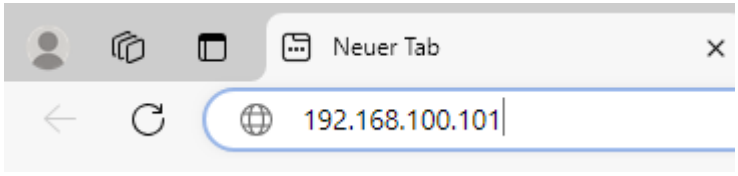


Fig. 194 Connecting to the matrix

3. Press the Enter key.
   The following input mask appears.

*Fig. 195 **Login** to Tera Web Control*

4. Enter username and password. It is also possible to enter only a username that has no password assigned to.
5. Click on the button **Login**. The following window appears.

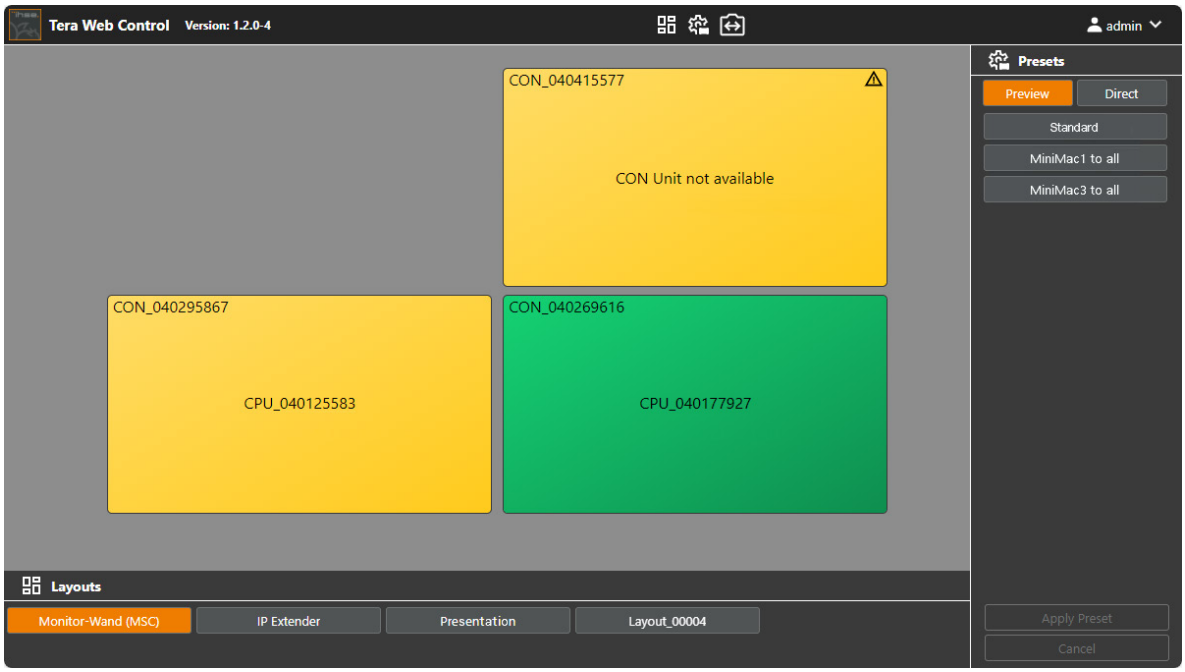


*Fig. 196 Tera Web Control - **Landing page***

The access rights are automatically adopted from the matrix and cannot be changed. Super, power and standard users without assigned layouts cannot log in (only administrators can).

6. To close Tera Web Control, click on the **arrow down head** in the upper right-hand corner and then on **Logout**.

If you close the browser without logging out, it can take up to 2 minutes until the license/connection is released.

8.3 Configuration of Tera Web Control

8.3.1 General Settings

1. Move the mouse pointer over the arrow down in the upper right-hand corner.
2. In the pop-up menu click **Settings**.

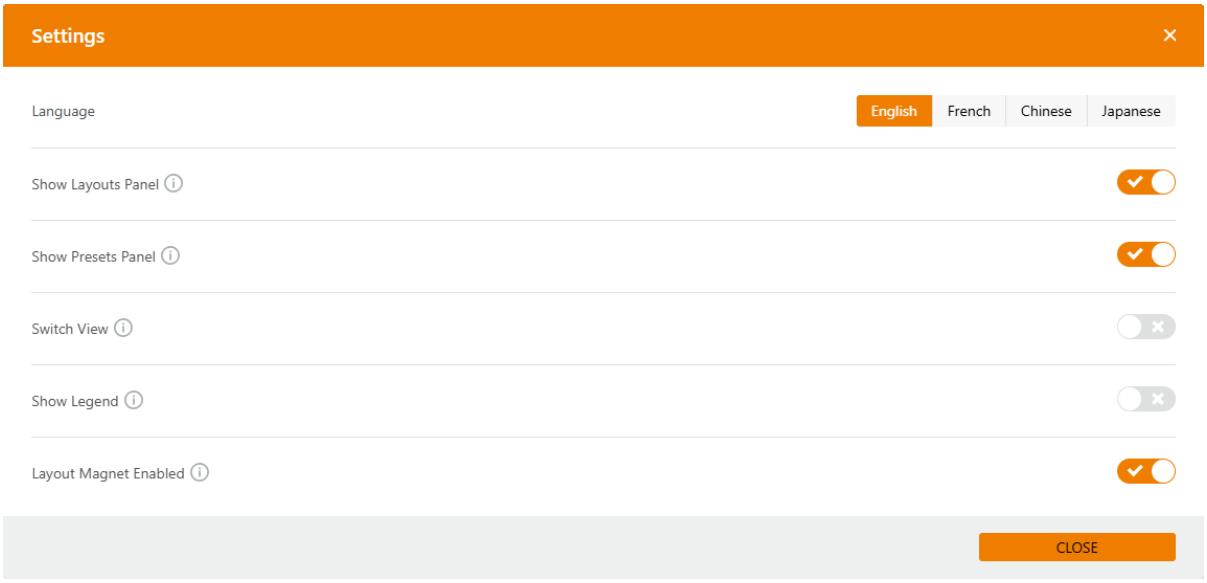


*Fig. 197 Tera Web Control - **Setting options***

The following options are available:

Option	Entry	Description
Language	Button	Selection of a language, a change here will be immediately executed.
Show Layouts Panel	Activated	Displays the layout names at the bottom of the Tera Web Control window.
	Deactivated	Function not active.
Show Presets Panel	Activated	Displays the presets panel on the right-hand side of the Tera Web Control window (when **Switch View** is deactivated).
	Deactivated	Function not active.
Switch View	Activated	Displays the presets panel on the left-hand side of the Tera Web Control window (and the CPU selection list on the right-hand side).
	Deactivated	Function not active.
Show Legend	Activated	Displays a legend of colors and symbols for screens at the bottom of the left column.
	Deactivated	Function not active.
Layout Magnet Enabled	Activated	Enables magnetic function between screens in the layout editor.
	Deactivated	Function not active.

3. Choose the desired language and activate the desired options.
4. Click the button **Close**.

You can at any time activate/deactivate the following options with buttons in the uppermost line:

Button	Option
	Show Layouts Panel
	Show Presets Panel
	Switch View

8.3.2 Creating Layouts

1. Move the mouse pointer over the arrow down in the upper right-hand corner.
2. In the pop-up menu click **Layout Designer**.

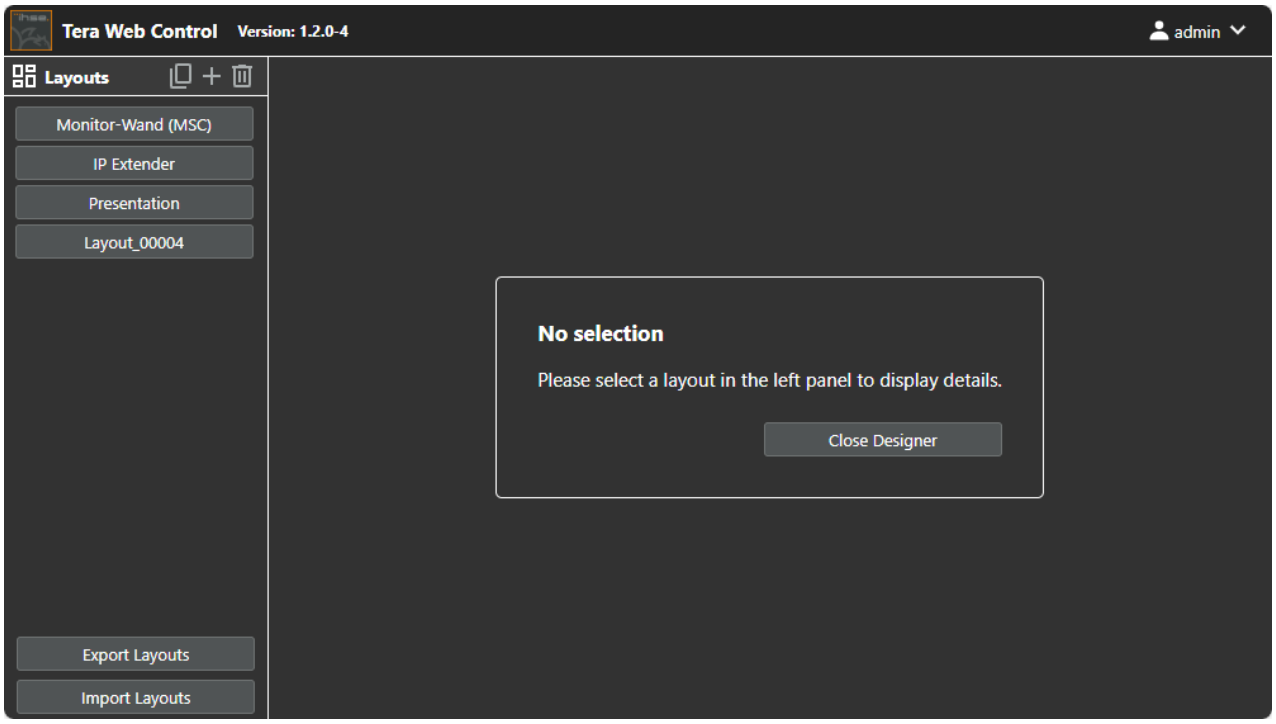


*Fig. 198 Tera Web Control - **Layout Designer, no layout selected***

The symbols in the uppermost line of the column on the left side have the following meanings:

Symbol	Description
	Copies the selected layout.
	Creates a new empty layout.
	Deletes the selected layout after confirmation.

There are two ways to create a new layout:

- Creating a new, completely empty layout.
- Copying an existing one and changing the name.

➡ Click the symbol above the list of layouts to create a new, empty layout.

or

➡ Click on an existing layout in the **Layouts** list to select it and click the symbol to copy it.

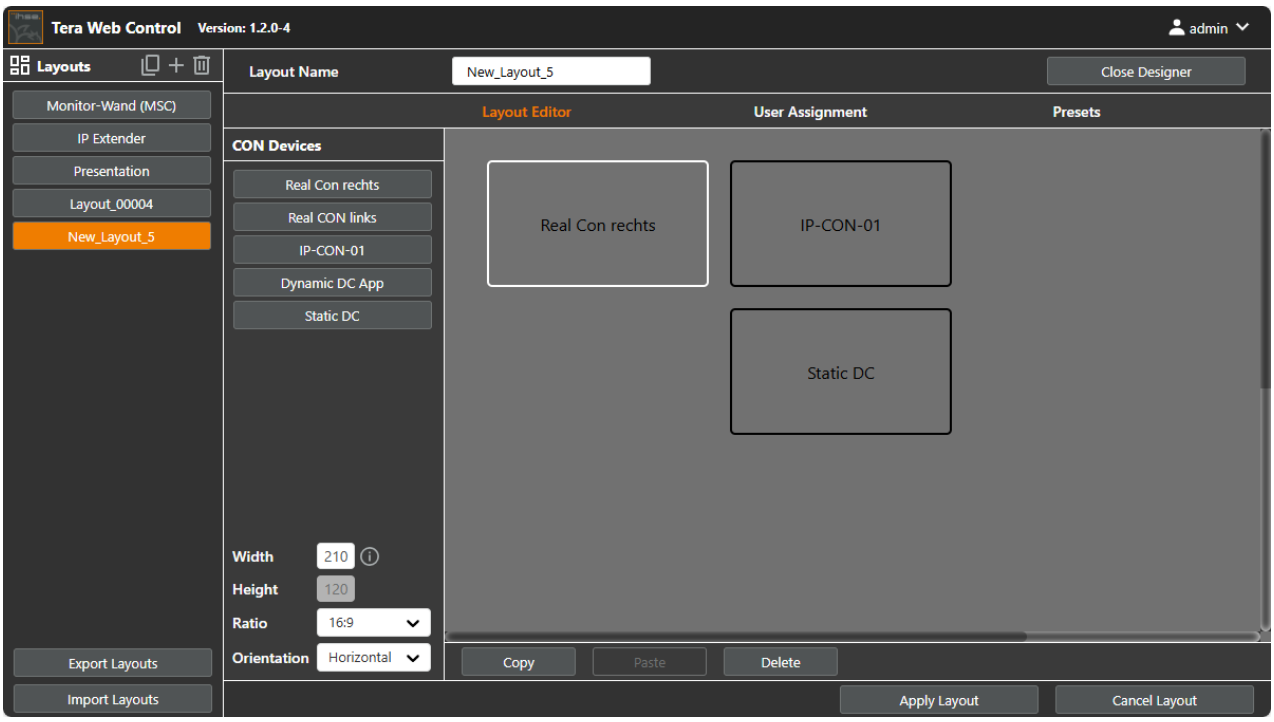


*Fig. 199 Tera Web Control - **Layout Designer, new layout created***

1. Enter a name for the new layout in the field **Layout Name**.
2. Set **Ratio** and **Orientation** for the screens. The selected values remain until you change them.
3. Enter a value for **Width**; the **Height** is automatically set according to the ratio.

The width of a screen must be at least 36 pixels. Screens smaller than this size cannot be processed.

4. Select CON Devices in the list and drag and drop them to the grey area. You can arrange them freely as you like.

The size of the screens in relation to the overall grey area is insignificant since the display later in the browser is automatically adapted to the window (automatic zoom).

5. Click the button **Copy** in the line below the grey area to copy the selected screen and **Paste** to paste it into the grey area.
6. Click the button **Delete** to delete the selected screen.
7. Save the layout by clicking **Apply Layout** in the bottom right-hand corner.

8.3.3 Assigning a User to a Layout

At least one user has to be assigned to a layout. Different user types have different rights as stated in the following table.

	Administrator	Super User	Power User	Normal User
Can use *Layouts and Presets*	✓	✓	✓	✓
Can switch in *Private Mode*	✓	✓	-	-
Can disconnect a *Private Mode* connection	✓	✓	-	-
Can log in without an assigned L*ayout*	✓	-	-	-
Can restart the *Web Control* service	✓	-	-	-
Can manage TLS Certificate	✓	-	-	-
User ACL can be limited	-	-	✓	✓
ACL can be limited by *Login Lock* option	-	-	✓	✓
Limited switching options if *user ACL* are active (requires login at CON unit)	-	-	-	✓

1. Click **User Assignment** in the menu line.

   The settings here are only taken into account if the global user ACL is not active and the **Allow User ACL** option is active on the CON device.

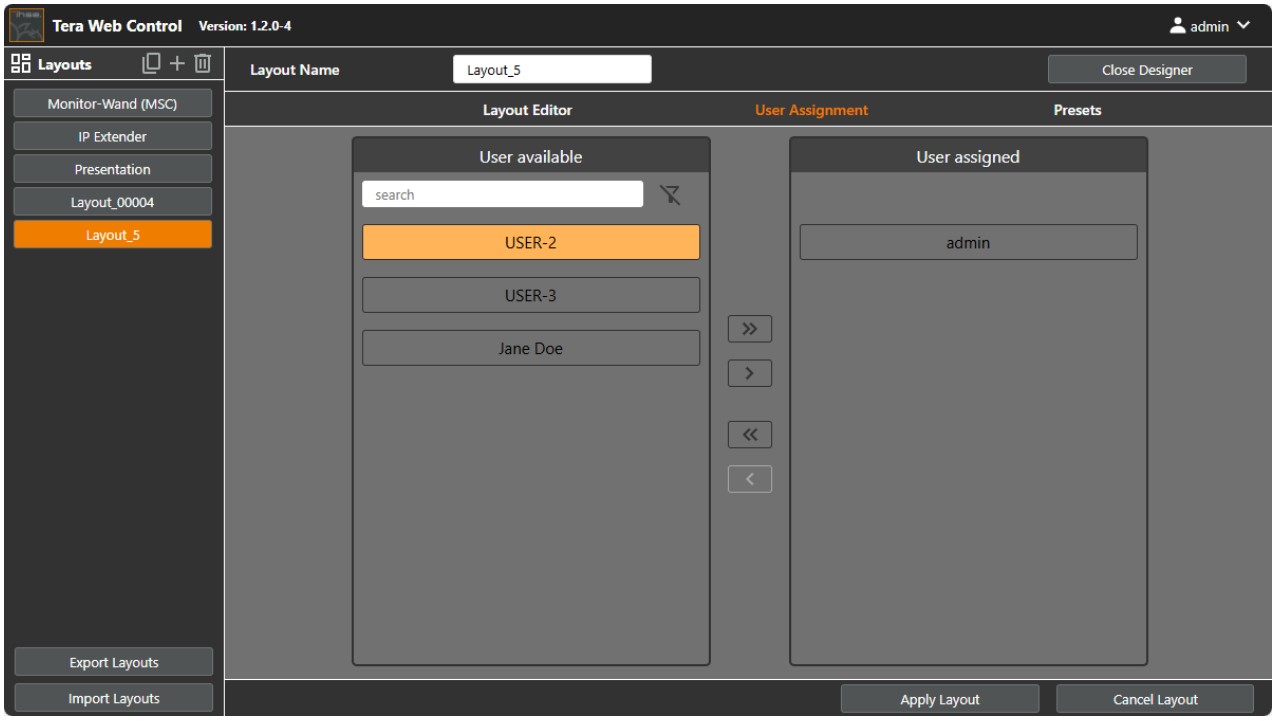


*Fig. 200 Tera Web Control - **User Assignment***

2. Select a User in the **User available** list that you wish to assign to the layout. By pressing and holding down Ctrl at the same time, more than one user can be highlighted.
3. Click ▶ to move the highlighted users to the **User assigned list**. By clicking ▶▶, all users from the **User available** list will be moved.

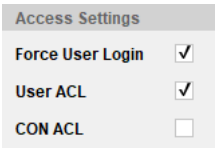
The **User available** list features a filter function (see section 5.6, page 28).

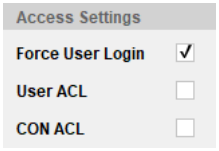
4. Click **Apply Layout** to confirm the settings or continue to create presets for the layout.

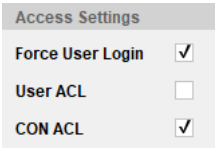
Some information on access rights – User ACL versus CON ACL

- You can use either User ACL **or** CON ACL. A combination of both is not possible.
- CON ACL or User ACL has to be activated globally (via **System Settings > Access**).
- Options for access rights:

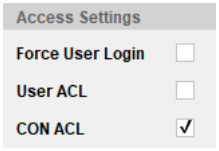
a) If **User ACL** or **Force User Login** is active, access rights and favorites of the logged in user are valid (user who is logged in at Tera Web Control).



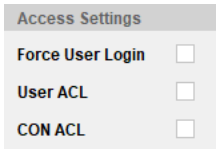




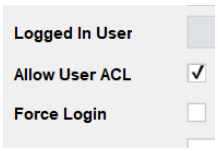
b) If **User ACL <u>and</u> Force User Login** are deactivated and **CON ACL** is active, access rights and favorites of the CON you want to switch are valid.



c) If **CON ACL**, **User ACL** and **Force User Login** are deactivated, access rights will be ignored and favorites of the CON you want to switch are valid.



d) If at the CON Device the option **Allow User ACL** is active, a standard user has to log in at the CON unit. Power users do not have to log in and their user access rights are valid.



8.3.4 Creating Presets for a Layout

1. Click **Presets** in the menu line.

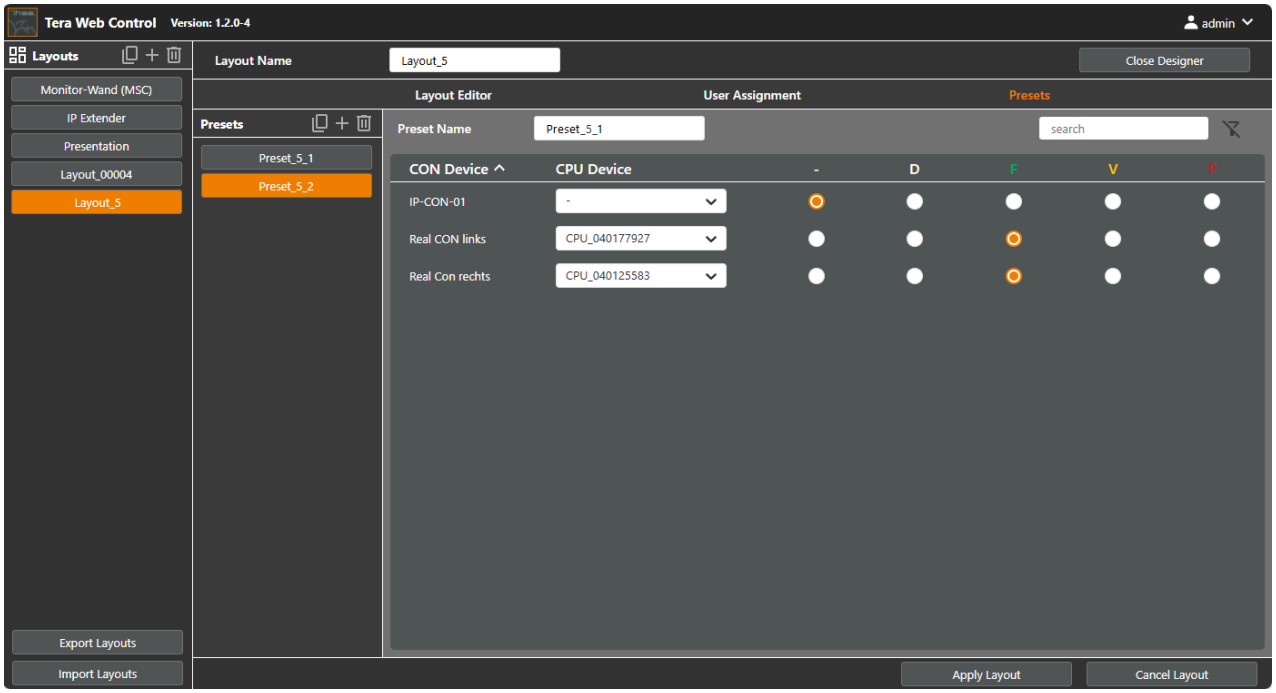


*Fig. 201 Tera Web Control – **Creating a Preset***

Symbol/Character	Description
	Creates a copy of the selected preset.
	Creates a new preset
	Deletes the selected preset.
-	Nothing happens; the CON Device remains in its current state.
D	The CON Device is disconnected from the CPU Device.
F	The CON Device is switched in Full Access mode to the selected CPU Device.
V	The CON Device is switched ín Video only mode to the selected CPU Device.
P	The CON Device is switched in Private mode to the selected CPU Device.

2. Click on the symbol  to create a new preset.
3. Enter a name for the preset in the corresponding field.
4. Click the arrow down in the selection field in the column **CPU Device** of a CON Device. A list with suitable CPU Devices appears.
5. Select the desired CPU Device. The radio button **F (**Full Access) is automatically selected. Click **V** (Video Only) or **P (**Private) if possible, to change the connection mode.
6. You can disconnect a CON Device by selecting the radio button in column **D**. By selecting **-**, the CON Device remains in its current state when the preset is executed.
7. After having created all the presets, click on **Apply Layout**.

The creation of one layout is finished. You can create as many layouts as you like.

8.3.5 Importing/Exporting Layouts

1. Click the button **Export Layouts** in the bottom left-hand corner.
   All layouts are downloaded onto your computer in one file named `default.wcl`.

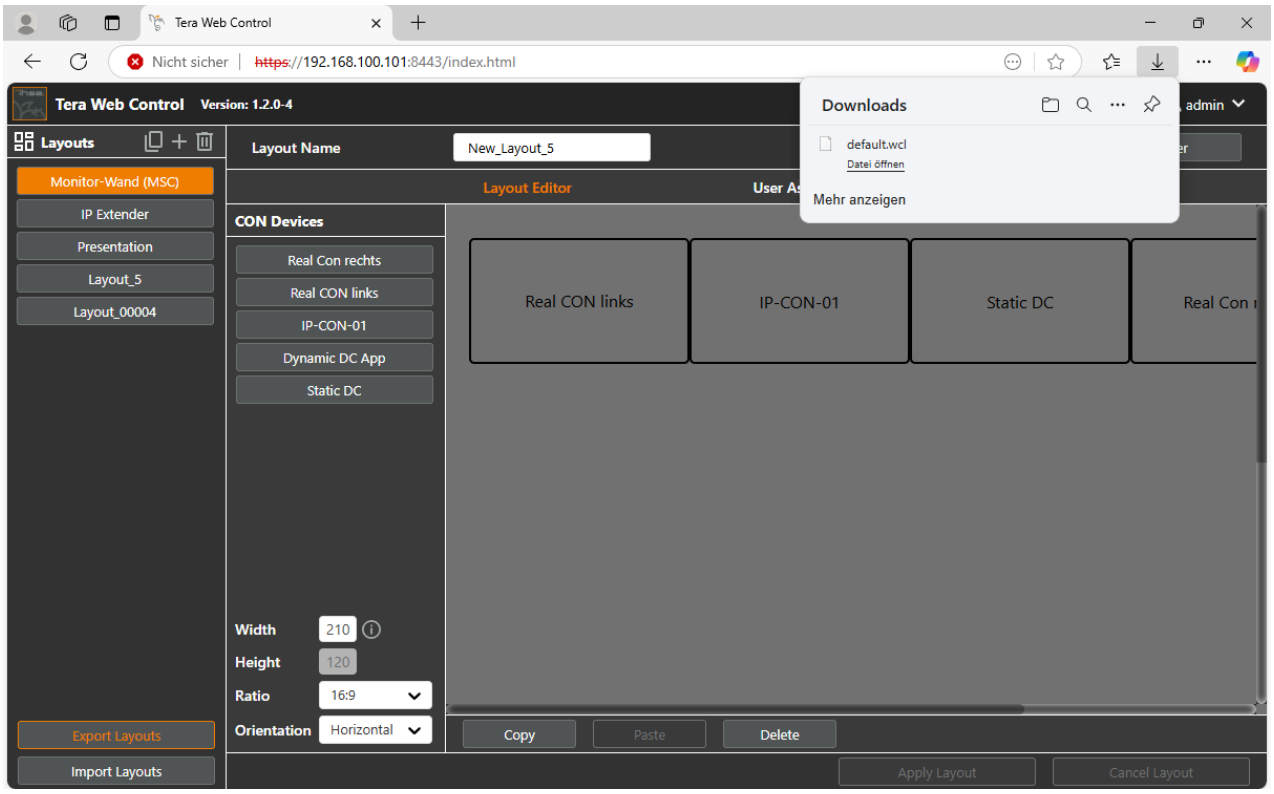


*Fig. 202 Tera Web Control – **Export of layouts***

2. Click the button **Import Layouts**.
   The Open Dialog appears.
3. Go to the location of an export file (*.`wcl`).
4. Select the desired *.`wcl` file and click **Open** in the dialog.
   A message appears.

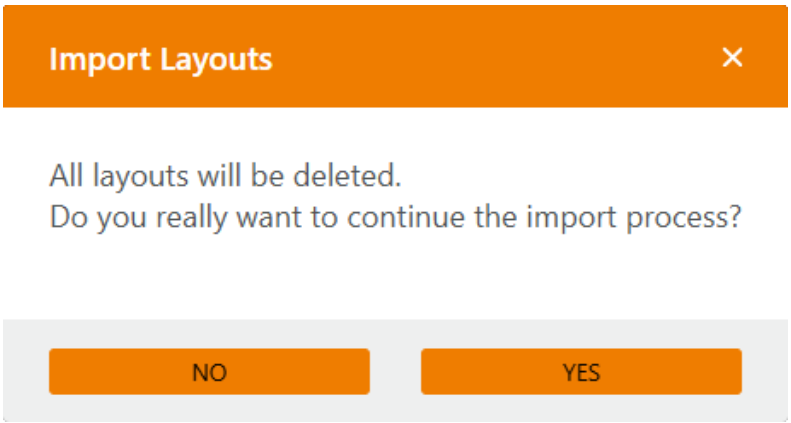


*Fig. 203 Tera Web Control – **Import of layouts***

5. Click **Yes** if you really want to import the layouts. All existing layouts will be deleted.
6. Click **No** when you want to keep the existing layouts and abort the import process.

8.4 Operation using Tera Web Control

8.4.1 Selecting a Layout

The layouts for any user are predefined by an administrator and cannot be changed. The button  in the uppermost line switches the display of layout buttons on and off. They appear in a row at the bottom of the display. The first one is highlighted and displayed in the main area.

1. Click the desired layout button.

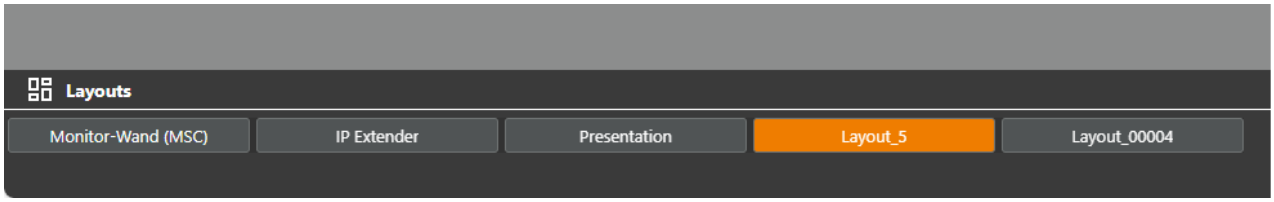


*Fig. 204 Tera Web Control - **Layout buttons***

8.4.2 Switching an Individual CON Device

1. Click on the screen of the CON Device in the layout you want to switch.

   A list with available CPU Devices opens on the left-hand side. With the button  in the uppermost line, the location of the CPU list can be toggled between left and right.

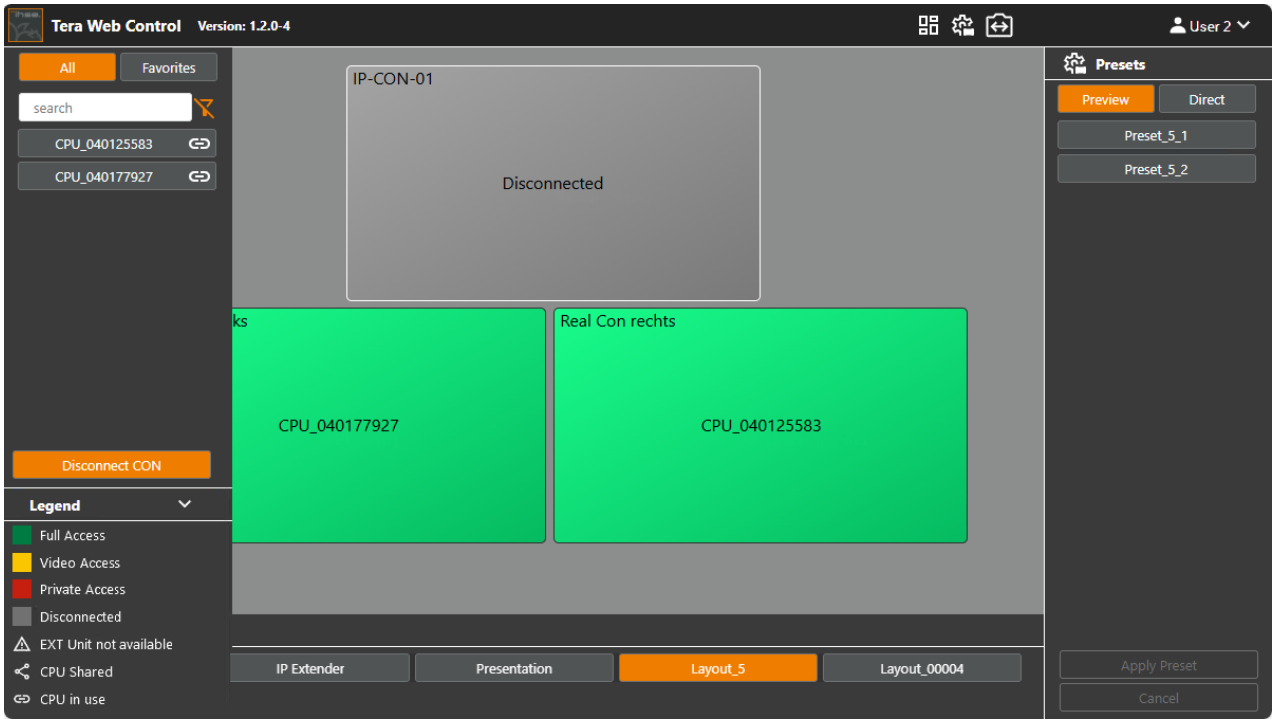


*Fig. 205 Tera Web Control - **Switching of CON Device to CPU Device***

2. Filter the CPU list if necessary.
   2.1. Enter a search name (is remembered for further switching).
   2.2. Switch between **All** (CPUs) and **Favorites** (is remembered for further switching) by clicking on the respective button.
3. Click a CPU Device in the list or the button **Disconnect CON**. When you click a CPU Device, a popup window with switching options appears.

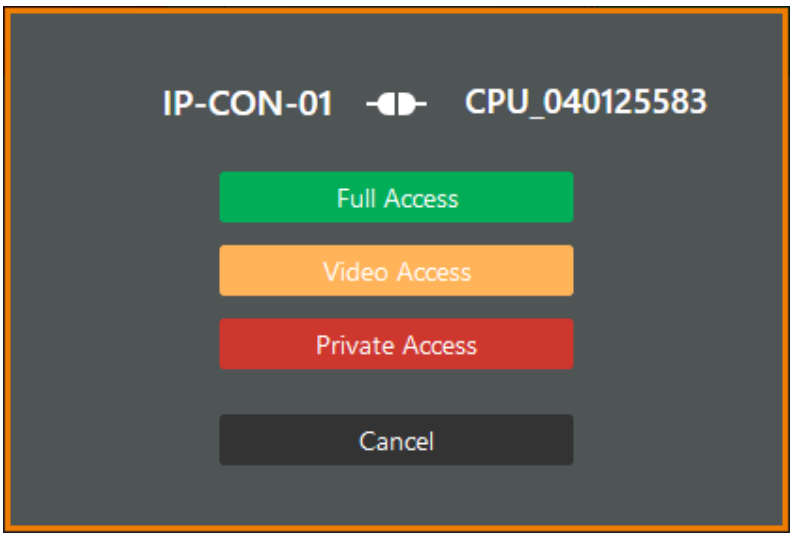


*Fig. 206 Tera Web Control - **Switching Options***

Only administrators and super users can switch to a CPU Device in Private Mode. For power and standard users, the button **Private Access** is not visible.

4. Click on one of the available options.

   The switching is executed directly, and a message appears for a few seconds in the lower part of the display.

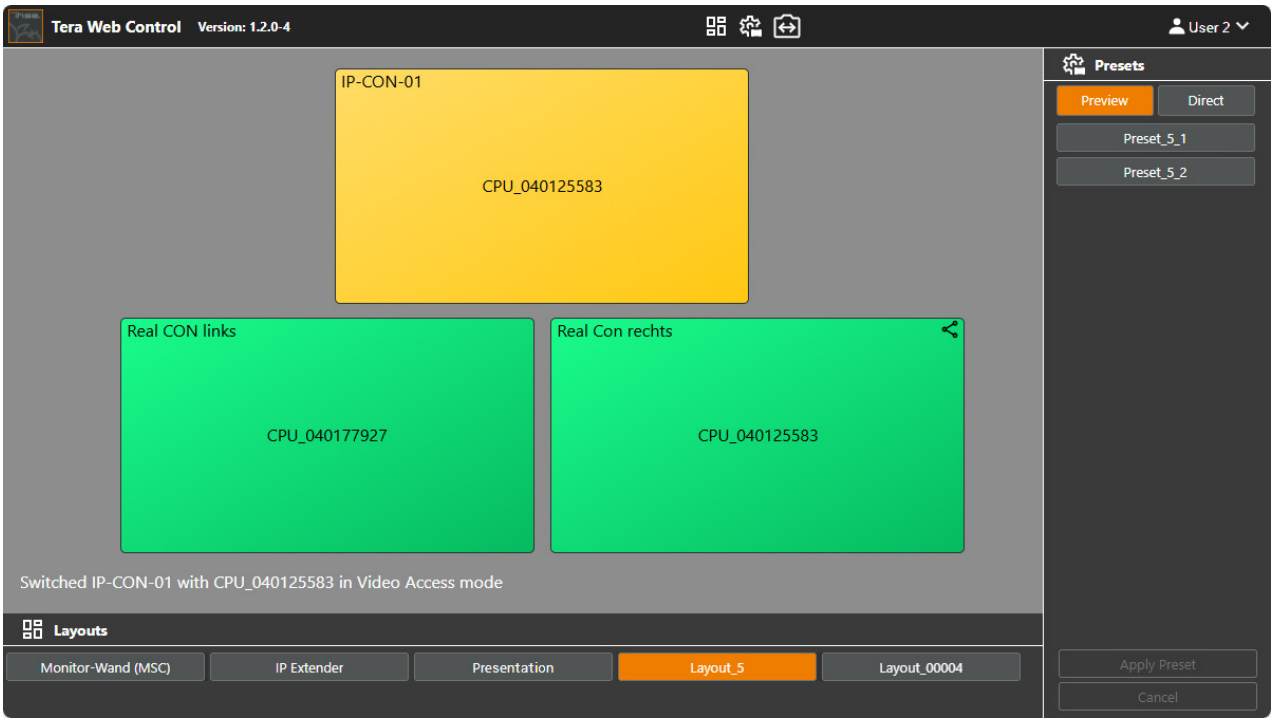


*Fig. 207 Tera Web Control - **Switching executed***

8.4.3 Switching via Preset

The Presets are predefined by an administrator and cannot be changed. They are listed on the right-hand side. If not, click the button  in the uppermost line. With the button  the location of the Presets list can be toggled between left and right.

1. Click a Preset.
   When **Preview** is active (default setting), the status is displayed in the main area as if the Preset were executed and the buttons in the lower right-hand corner are enabled.

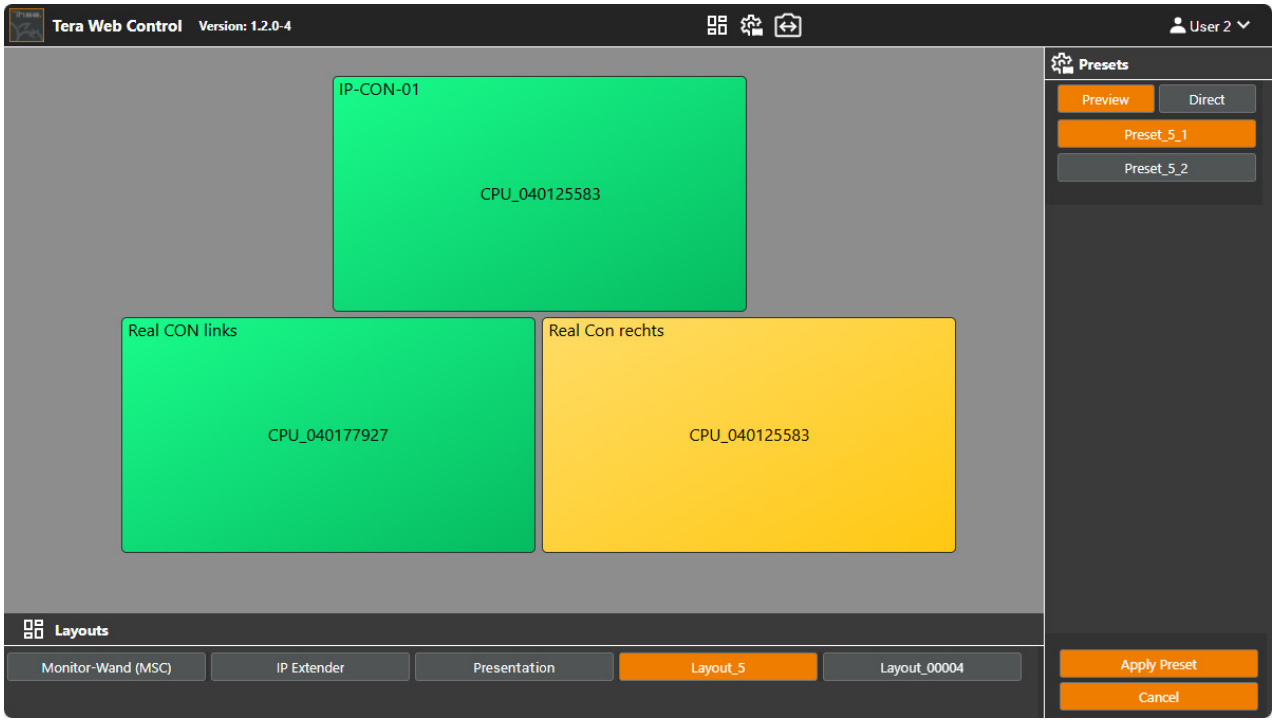


*Fig. 208 Tera Web Control - **Preview of selected Preset***

2. To execute the Preset, click the button **Apply Preset**.
3. Click the button **Cancel** to go back to the original display.

When **Direct** is active instead of **Preview**, a Preset will immediately be executed after clicking it without further prompting.

9 Maintenance via Tera Tool Software

9.1 Sending an OSD Message to CON Devices

In case a maintenance for a CPU/CON Device is required in operation mode, the respective user can be informed by an OSD message on the monitor of its CON Device. Sending a message is described using a CON Device selection as an example

1. Click **Extender & Devices > CON Devices** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Click **Send OSD Message to…** below the CON Devices list

   A dialog to create a message appears.

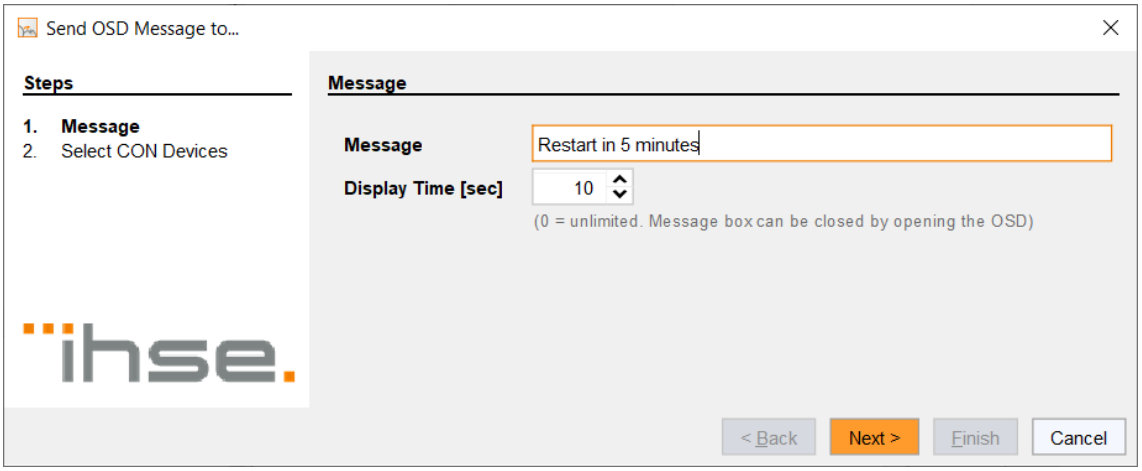


*Fig. 209 Menu **Extender & Devices - CON Devices - Send OSD Message to… - Message***

4. Enter your message in the **Message** field (maximum 62 characters).
5. Select the value in **Display Time [sec]** to set the display time of the message.
6. Click **Next >**.

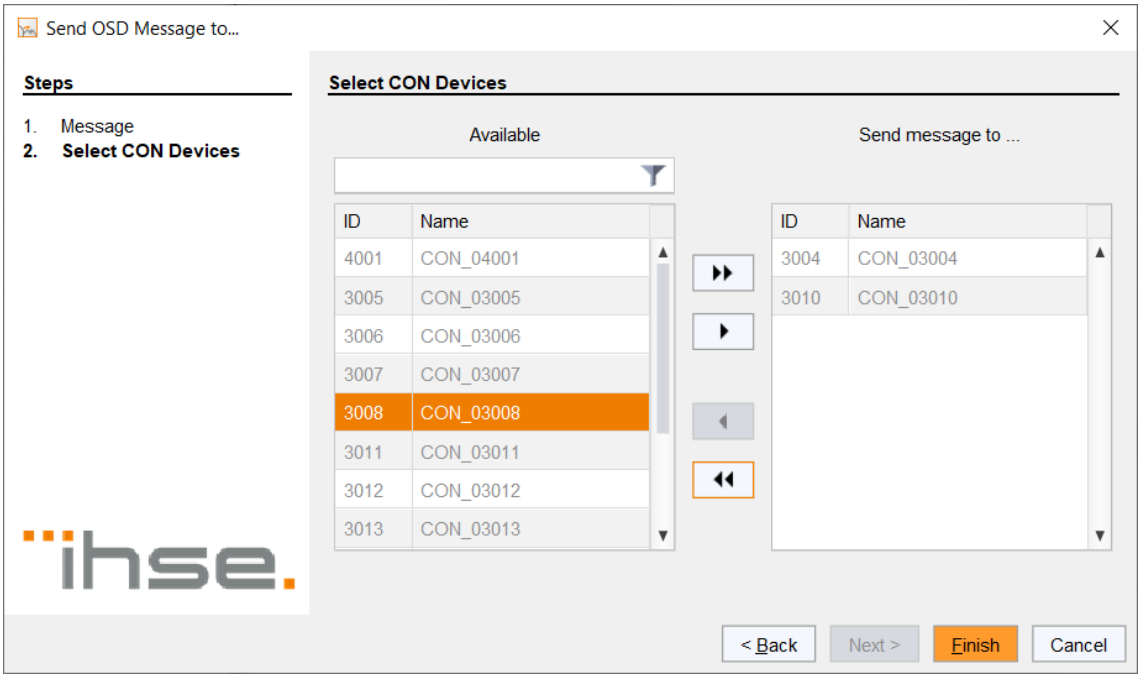


*Fig. 210 Menu **Extender & Devices - CON Devices - Send OSD Message to… - Select CON Devices***

7. In the **Available** list, select the CON Device which should receive the message. By pressing and holding down Ctrl at the same time, more than one CON Device can be highlighted.

8. Click ▶ to move the highlighted CON Device(s) to the **Send message to…** list. By clicking ▶▶, all CON Devices will be moved to the **Send message to…** list.
9. To remove highlighted CON Device(s) from the **Send message to…** list, click ◀. By clicking ◀◀, all CON Device(s) will be removed from the **Send message to…** list.
10. Click **Finish**.

    The message is immediately sent to all selected CON Device(s).
11. Click **Deactivate Edit Mode** in the toolbar.

9.2 Replacing Extender Modules

☑ The physical replacement has to be performed before unassigning an extender module and assigning another extender module. We recommend deactivating the function **Auto Config** before starting to replace the module.

The replacement of extender modules for CON/CPU Devices is described using a CPU Device as an example.

1. Click **System Settings > System** in the task area.
2. Click **Activate Edit Mode** in the toolbar.
3. Deactivate the function **Auto Config** if necessary.
4. Disconnect the old extender module from the matrix and connect the new one to the same port.
5. Click **Extender & Devices > CPU Devices** in the task area.
6. Select the CPU Device whose assigned extender module (EXT unit) was replaced.
7. Click **Extender Replacement** below the CPU Device list. An unassign/assign dialog appears.

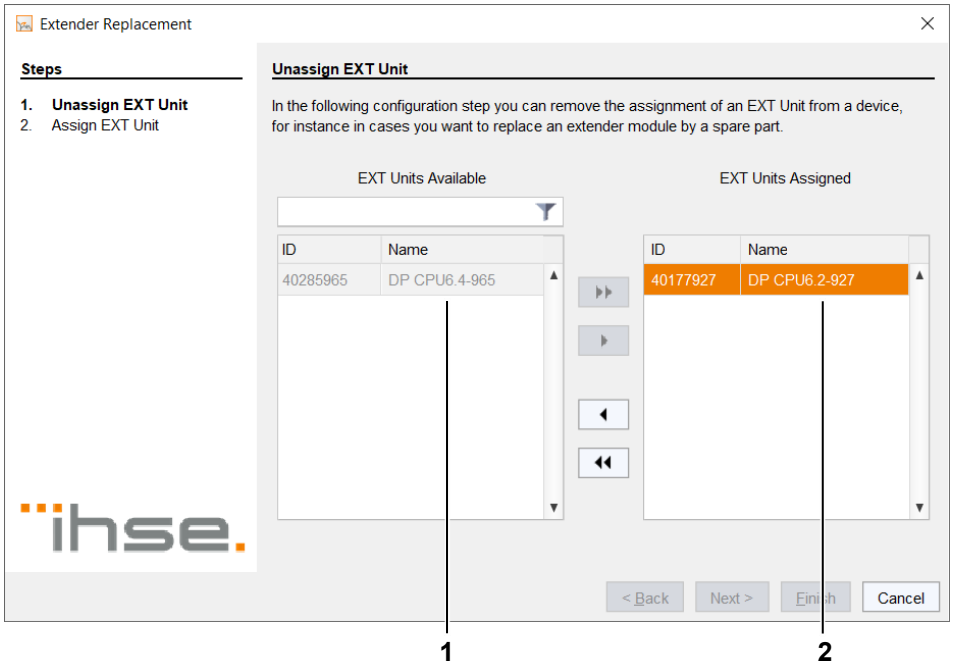


*Fig. 211 Menu **Extender & Devices - CPU Devices - Extender Replacement - Unassign EXT Unit***

1 EXT Unit of new extender (not assigned to a device because **Auto Config** is not active)
2 EXT Unit of disconnected extender

8. Select the EXT Unit of the disconnected extender module in the **EXT Units Assigned** list.
9. To remove the highlighted extender module from the **EXT Units Assigned** list, click ◀.
10. Click **Next >**. Step 2 appears.

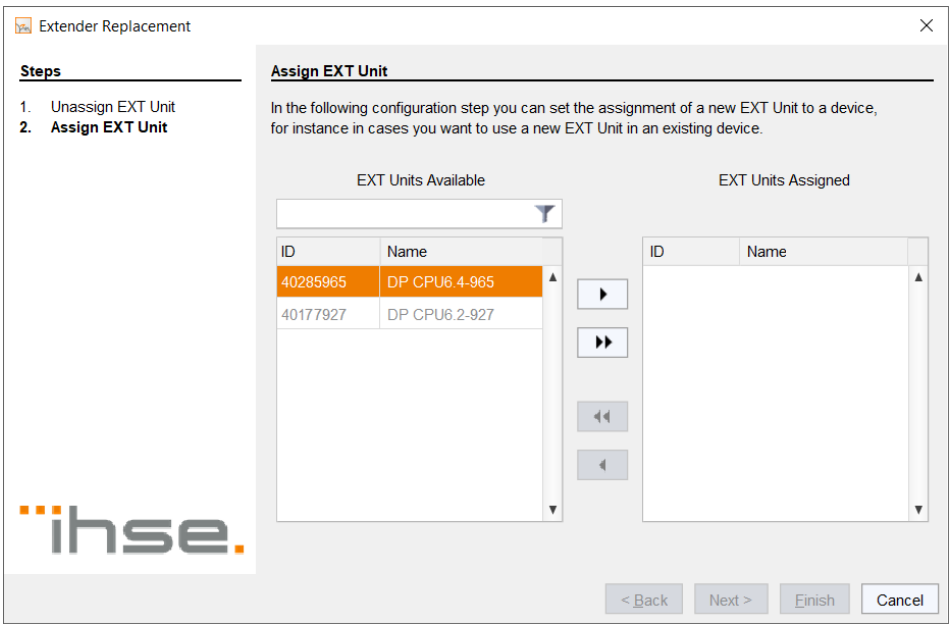


*Fig. 212 Menu **Extender & Devices - CPU Devices - Extender Replacement - Assign EXT Unit***

11. Select the EXT Unit of the new extender module from the **EXT Units Available**.
12. Click ▶ to move the highlighted EXT Unit to the **EXT Units Assigned** list.
13. Click **Finish**.

    The new extender module is assigned to the CPU Device.
14. Click **Deactivate Edit Mode** in the toolbar.

9.3 Querying a Status via Tera Tool Software

9.3.1 Device Status

The connections to the matrix are displayed in this menu.

➡ Click **View > Matrix** in the task area to display the current connections.

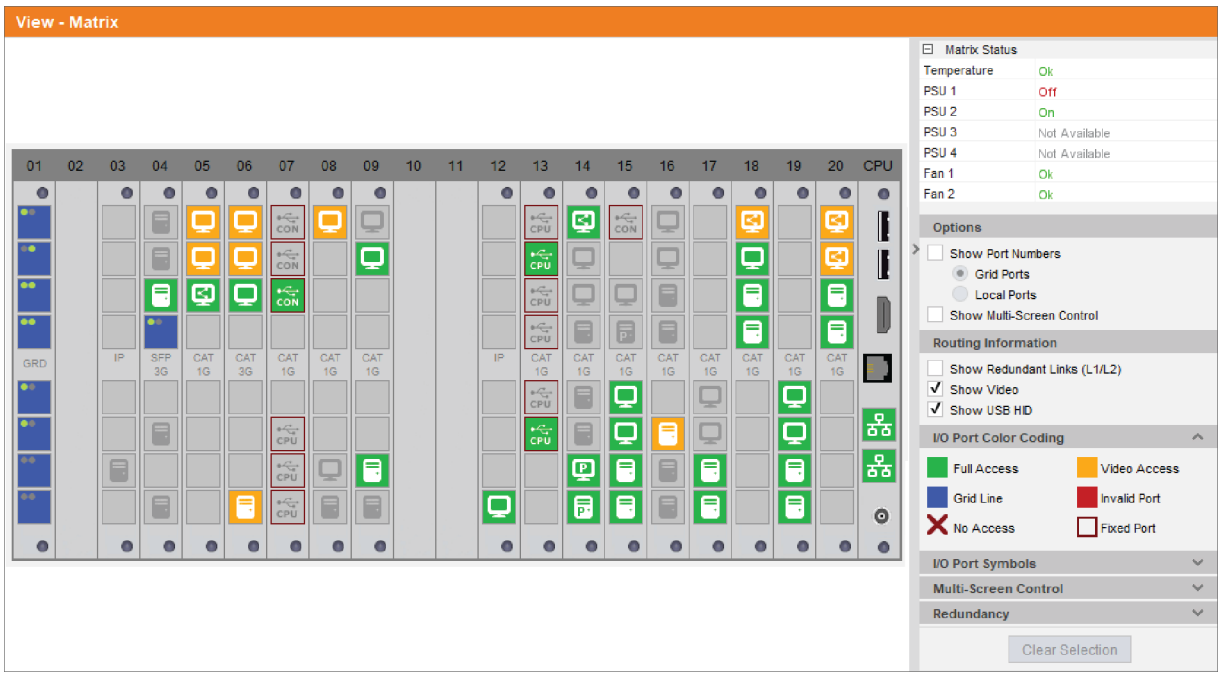


*Fig. 213 Menu **View - Matrix***

If a port is currently selected, the port is shown with four static blue squares. All other ports are greyed out, except those connected to the currently selected port.
A selection can be cleared by clicking **Clear Selection** in the lower part of the panel on the right side of the working area or by clicking in any empty area.

9.3.2 Port Status Matrix Grid

In this menu the connections and the switching status between the various CON and CPU Devices are shown within the matrix grid.

The port view is divided into different grid matrices. As a result, each matrix is displayed in an optimized view of 24 ports per line to be able to also show a larger number of ports.

➡ Click **View > Port** in the task area to display the current connections.

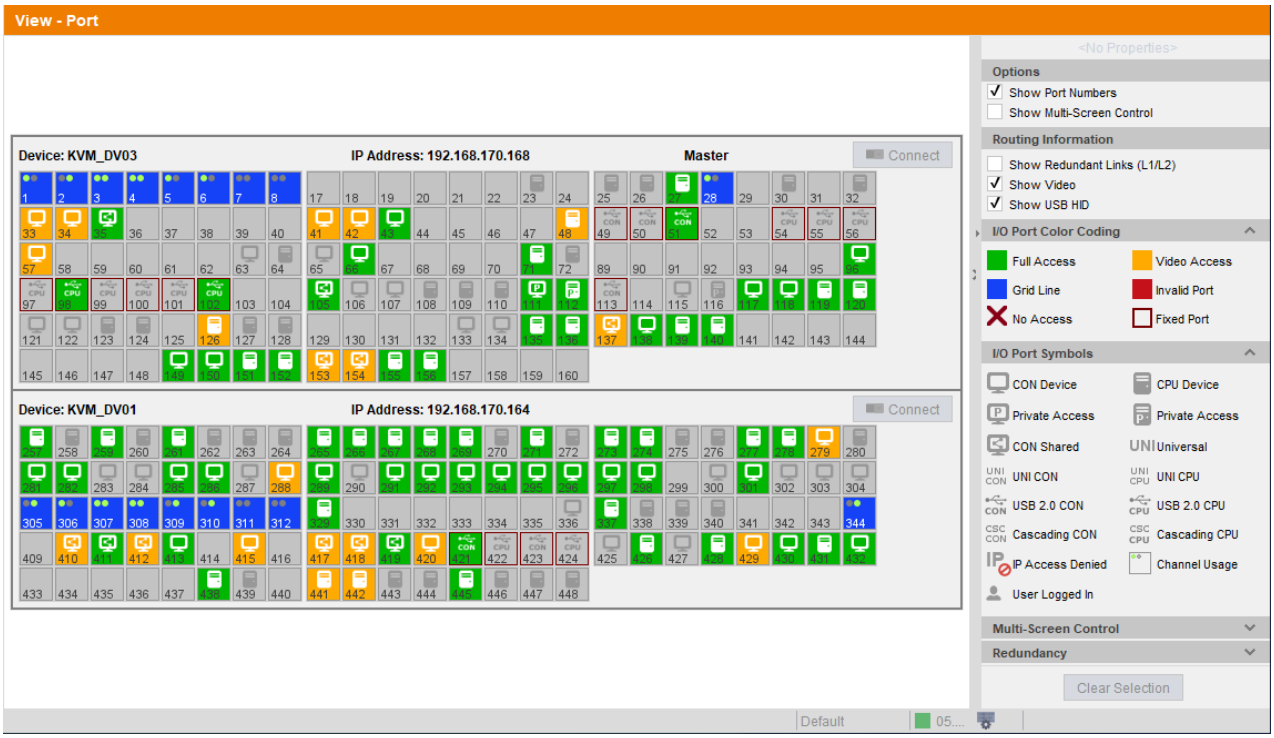


*Fig. 214 Menu **View - Matrix***

Another possibility is to click **View > Grid** which shows an overall view of the complete matrix grid.

Functions, colors, and symbols used in the Port or Grid View are identical to those in the port status of the Matrix View see section 5.1.2, page 23.

9.3.3 Network Status

➡ Put the mouse pointer over a network port of the controller board without clicking.
The corresponding network status will be displayed in a small box or

➡ Click on a network port of the controller board.
The network status will be displayed in the upper right-hand corner permanently.

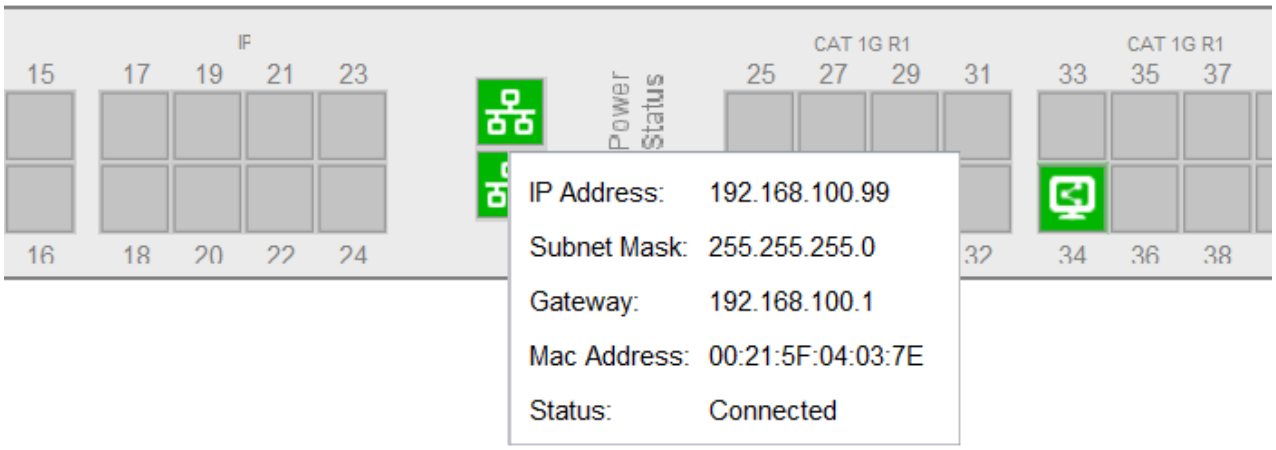


*Fig. 215 Menu **View - Matrix - Network Information Box***

The following information is available:

Entry	Description
IP Address	IP address if DHCP is not active.
Subnet Mask	Subnet mask if DHCP is not active.
Gateway	Gateway address if DHCP is not active.
MAC Address	MAC address.
Status	Connected when shown in green, not connected when shown in red.

9.3.4 Matrix Firmware Status

The firmware status of the components of the matrix is displayed in this menu.

➡ Click **Status & Updates > Status - Matrix Firmware** in the task area to query the current firmware status.

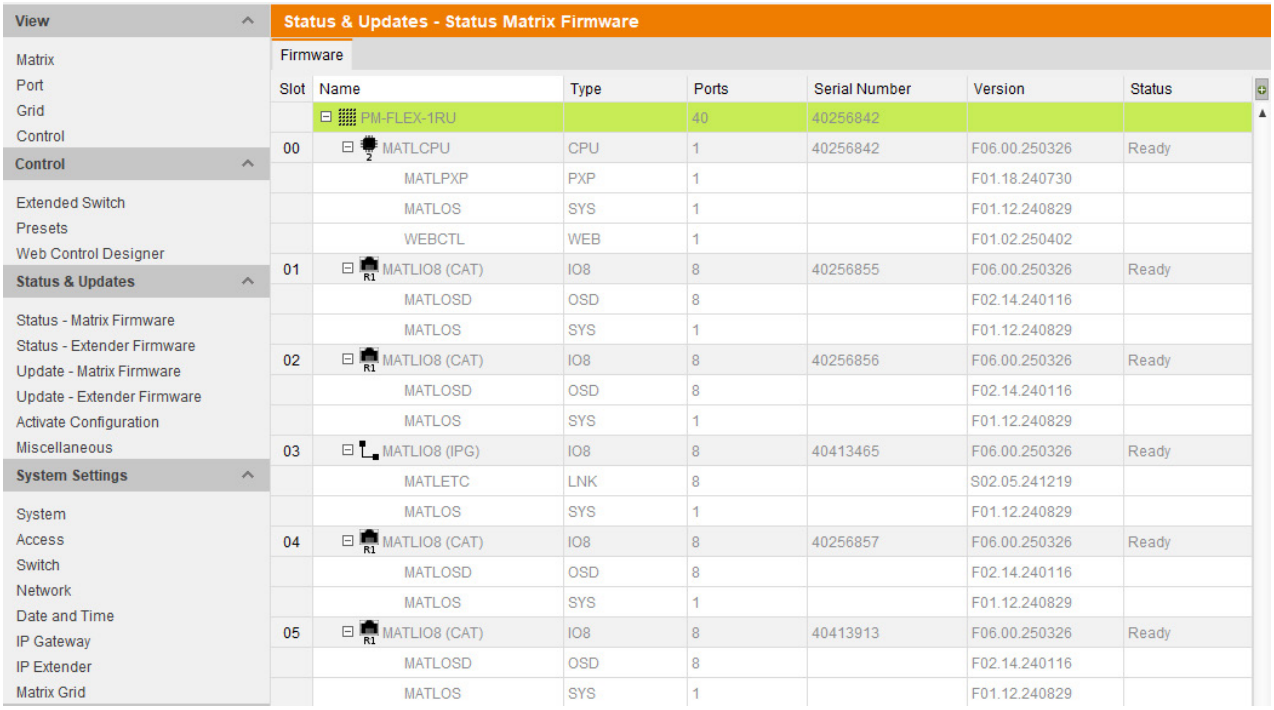


*Fig. 216 Menu **Status & Updates - Status - Matrix Firmware***

The following items are displayed:

Column	Description
Slot	Slot number of the I/O board or controller board
Name	• Name of the matrix or I/O board. • Name of the chassis firmware or I/O board firmware.
Type	Type of the firmware
Ports	Number of ports.
Serial Number	Serial number of the I/O board or controller board
Version	Installed firmware version.
Status	Status of the chassis or I/O board.

The tree view can be expanded and collapsed by clicking with the left mouse button once on the **+** and **-** symbols in the **Name** column to show and hide detailed information.
By clicking with the left mouse button once on the **+** and **-** symbol in the upper right corner of the working area, you can expand and collapse all information in the tree view.

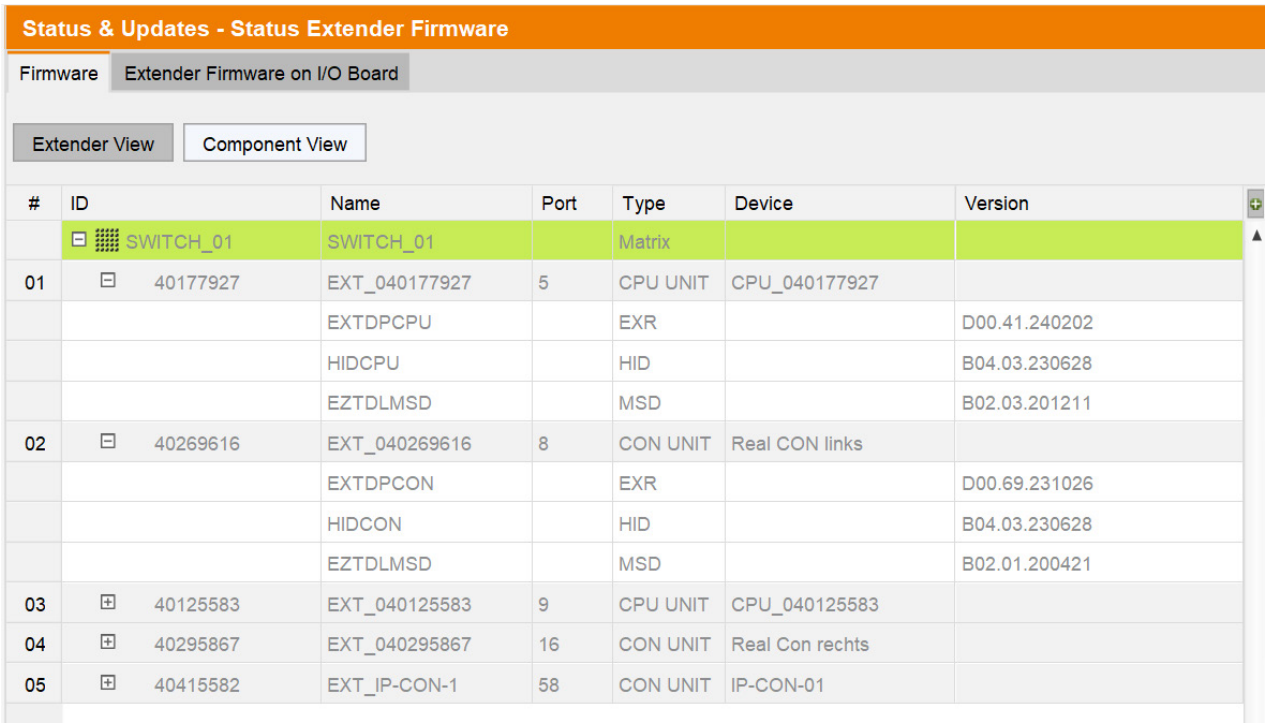
9.3.5 Extender Module Firmware Status

Information about extender modules and their firmware versions are contained in this menu.

1. Click **Status & Updates > Status - Extender Firmware** in the task area.
   The **Extender View** is displayed.

The tree view can be expanded and collapsed by clicking with the left mouse button once on the **+** and **-** symbols in the **ID** column to show and hide detailed information.

By clicking with the left mouse button once on the **+** and **-** symbol in the upper right corner of the working area, you can expand and collapse all information in the tree view.



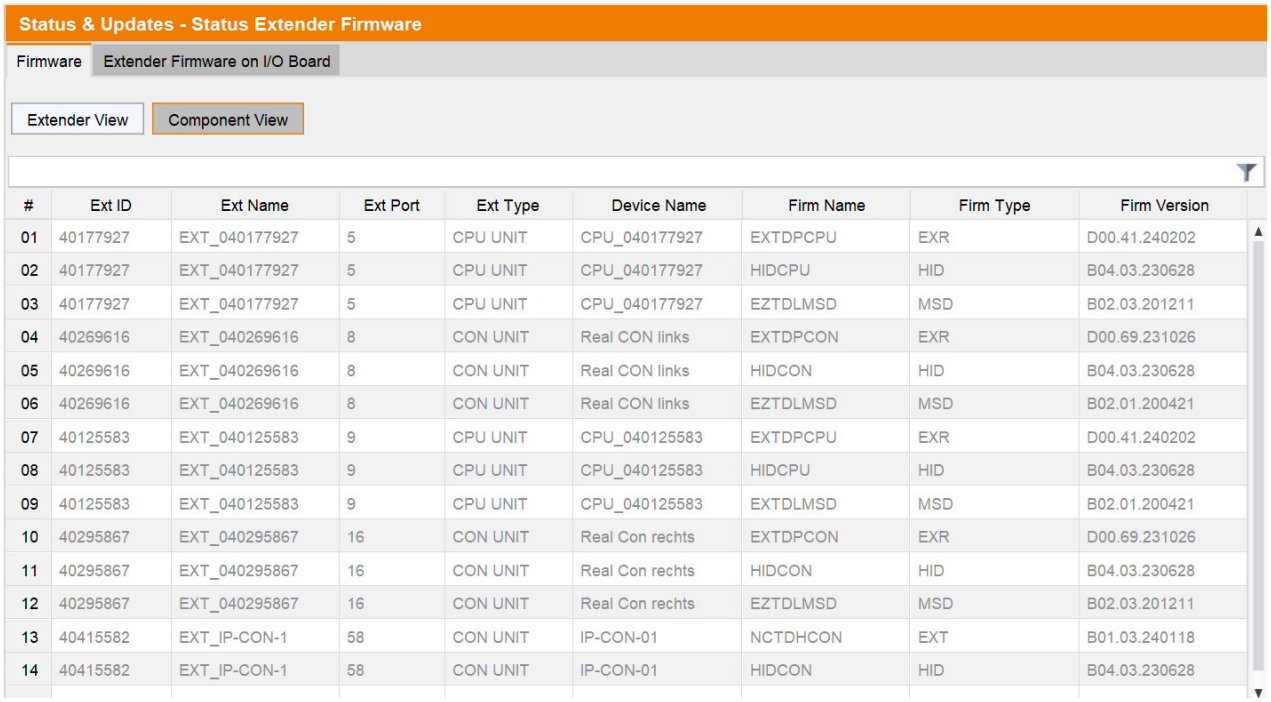
#	ID	Name	Port	Type	Device	Version
	SWITCH_01	SWITCH_01		Matrix		
01	40177927	EXT_040177927	5	CPU UNIT	CPU_040177927	
		EXTDPCPU		EXR		D00.41.240202
		HIDCPU		HID		B04.03.230628
		EZTDLMSD		MSD		B02.03.201211
02	40269616	EXT_040269616	8	CON UNIT	Real CON links	
		EXTDPCON		EXR		D00.69.231026
		HIDCON		HID		B04.03.230628
		EZTDLMSD		MSD		B02.01.200421
03	40125583	EXT_040125583	9	CPU UNIT	CPU_040125583	
04	40295867	EXT_040295867	16	CON UNIT	Real Con rechts	
05	40415582	EXT_IP-CON-1	58	CON UNIT	IP-CON-01	

*Fig. 217 Menu **Status & Updates - Status Extender Firmware - Extender View***

The following information about the extenders is displayed:

Column	Description
ID	Serial number of the extender module
Name	Name of the EXT Unit
Port	Port number of the matrix the extender module is physically connected to.
Type	Type of extender module (CON or CPU Unit)
Device	Name of the CON Device/CPU Device the EXT Unit is assigned to.
Version	Installed firmware version of each component

2. Click on the button **Component View** to display the firmware versions of the different components in another way (see figure on next page).
3. Click the button **Extender View** to go back to the display as illustrated in the figure above.



#	Ext ID	Ext Name	Ext Port	Ext Type	Device Name	Firm Name	Firm Type	Firm Version
01	40177927	EXT_040177927	5	CPU UNIT	CPU_040177927	EXTDPCPU	EXR	D00.41.240202
02	40177927	EXT_040177927	5	CPU UNIT	CPU_040177927	HIDCPU	HID	B04.03.230628
03	40177927	EXT_040177927	5	CPU UNIT	CPU_040177927	EZTDLMSD	MSD	B02.03.201211
04	40269616	EXT_040269616	8	CON UNIT	Real CON links	EXTDPCON	EXR	D00.69.231026
05	40269616	EXT_040269616	8	CON UNIT	Real CON links	HIDCON	HID	B04.03.230628
06	40269616	EXT_040269616	8	CON UNIT	Real CON links	EZTDLMSD	MSD	B02.01.200421
07	40125583	EXT_040125583	9	CPU UNIT	CPU_040125583	EXTDPCPU	EXR	D00.41.240202
08	40125583	EXT_040125583	9	CPU UNIT	CPU_040125583	HIDCPU	HID	B04.03.230628
09	40125583	EXT_040125583	9	CPU UNIT	CPU_040125583	EXTDLMSD	MSD	B02.01.200421
10	40295867	EXT_040295867	16	CON UNIT	Real Con rechts	EXTDPCON	EXR	D00.69.231026
11	40295867	EXT_040295867	16	CON UNIT	Real Con rechts	HIDCON	HID	B04.03.230628
12	40295867	EXT_040295867	16	CON UNIT	Real Con rechts	EZTDLMSD	MSD	B02.03.201211
13	40415582	EXT_IP-CON-1	58	CON UNIT	IP-CON-01	NCTDHCON	EXT	B01.03.240118
14	40415582	EXT_IP-CON-1	58	CON UNIT	IP-CON-01	HIDCON	HID	B04.03.230628

*Fig. 218 Menu **Status & Updates - Status Extender Firmware - Component View***

9.3.6 Extender Module Firmware Status on I/O Board

The extender modules firmware currently stored in the memory on the I/O board via extender module firmware update in Parallel Mode is displayed with its name, type, and version in this menu. The firmware can be passed to the extender modules if necessary, using the update step 2 of the Parallel Mode (see page 226).

1. Click **Status & Updates > Status - Extender Firmware** in the task area.
2. Click the **Extender Firmware Status on I/O Board** tab in the working area.

The tree view can be expanded and collapsed by clicking with the left mouse button once on the **+** and **-** symbols in the **Name** column to show and hide detailed information.

By clicking with the left mouse button once on the **+** and **-** symbol in the upper right corner of the working area, you can expand and collapse all information in the tree view.

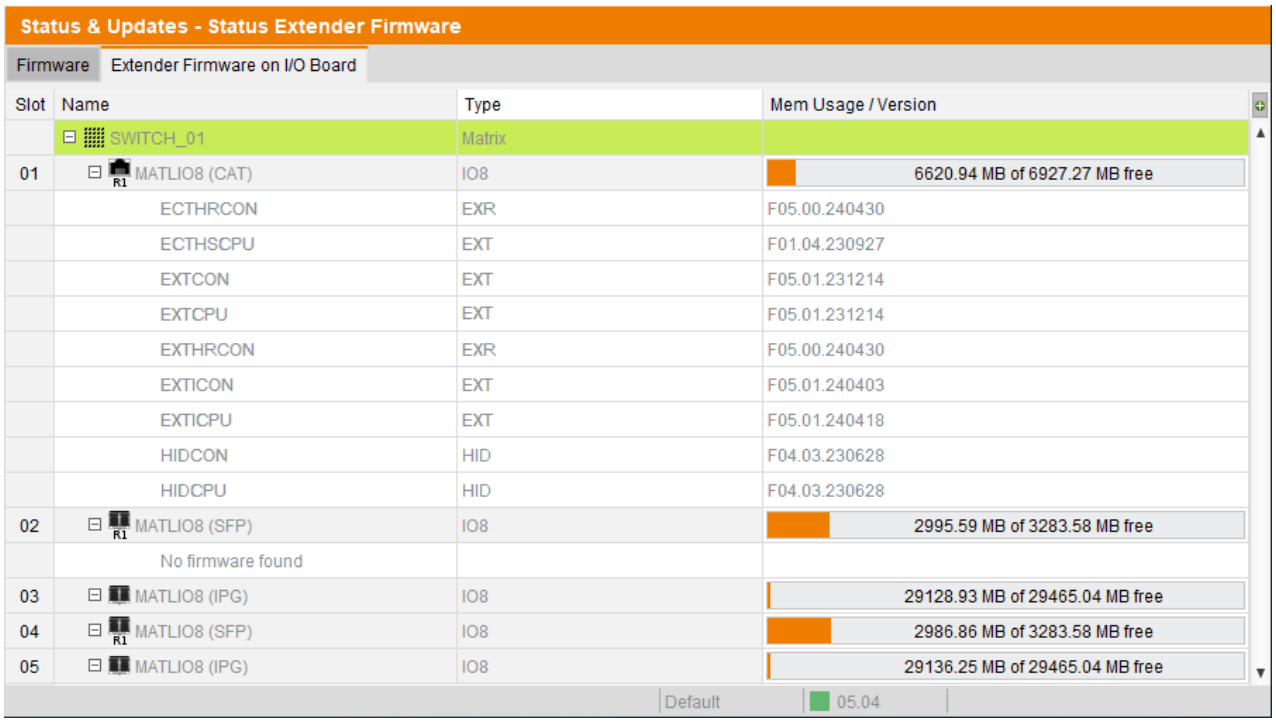


*Fig. 219 Menu **Status & Updates - Status Extender Firmware - Extender Firmware on I/O Board***

The following information is displayed:

Column	Description
Slot	Slot number of the I/O board
Name	Name of the I/O board and the extender module firmware
Type	Type of the I/O board and the extender module firmware
Mem Usage/Version	• Free memory on the I/O board (in MB) • Version of stored extender firmware

9.3.7 Syslog Monitoring

The Syslog function can be used to log device (matrix, MV42, SIRA-CPU, SNMP boards) activities, switching operations and surveillance of the function of critical components like fans or power supply units according to the settings. During logging the activities are written continuously into log files and stored locally.

Logging of system activities depends on the settings. With enabled option, the logging starts by default when the **Monitoring** tab is opened. Logging remains active as long as the tab is open but ends when the Tera Tool software is closed.

NOTICE
Syslog messages are transmitted via UDP. Therefore, the port used for Syslog messages within the network used should not be blocked, e.g., by a firewall.

The procedure for activating the Syslog function is described in section 6.5.9, page 54.

To open the Syslog monitoring, proceed as follows:

➡ Click **Monitoring** in the toolbar.

The logged Syslog messages are displayed in the working area and are continuously recorded into a logfile.

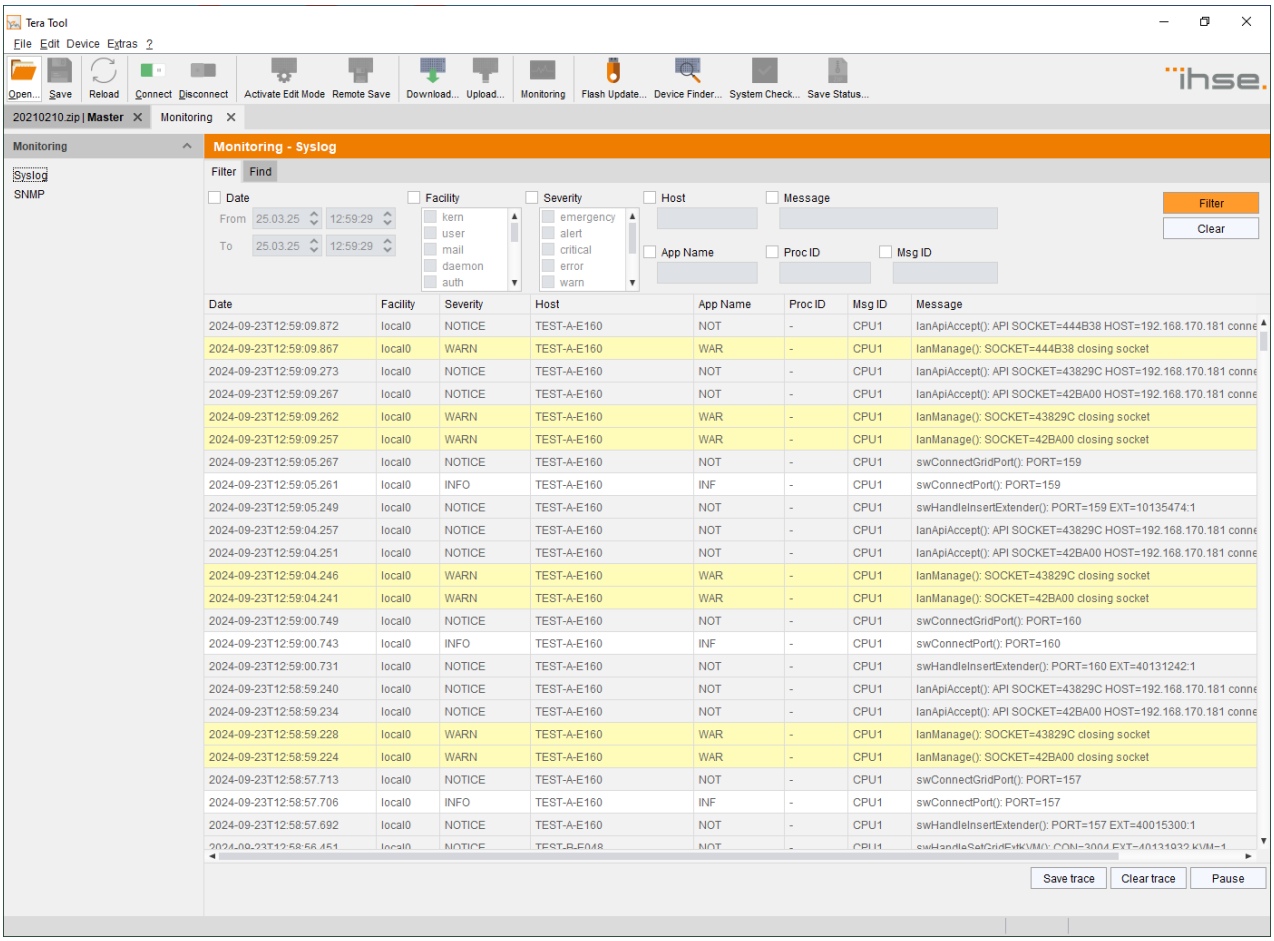


*Fig. 220 Menu **Monitoring - Syslog***

Filter Function

To filter relevant messages from the multitude of logged activities of the matrix, the extender modules and the chassis, the Syslog monitoring offers several filter options.

To set and activate a filter, proceed as follows:

1. Tick the respective checkbox(es) to set the desired filter option(s).
2. Click **Filter** to apply the filter settings.
3. Click **Clear** to reset the filter settings.

The following filter options are available:

Option	Description
Date	Messages for a defined date range will be filtered.
Facility	Messages for a defined facility will be filtered.
Severity	Messages for a defined severity will be filtered.
Host	Messages for a defined host will be filtered.
Message	Messages with defined text parts will be filtered.
App Name	Messages of a defined app will be filtered.
Proc ID	Messages of a defined Proc ID will be filtered.
Msg ID	Messages of a defined Msg ID will be filtered.

Filter options are not valid within the locally stored log files.

Recording Function

Several options are available for the messages displayed in the Syslog file.

➡ To save the displayed messages (filtered or unfiltered), click **Save trace**.
The messages are saved in a Syslog file (file extension: *.`csv`).

➡ To clear the view with the displayed messages, click **Clear trace**.
The recorded messages will be kept.

➡ To pause the display of messages, click **Pause**.
During the pause, the messages will be recorded continuously.

➡ To display the messages recorded in the background during the pause, click **Pause** again.
All messages recorded in the background will be displayed immediately.

Find Function

The find function can be used to find specific Syslog messages from a variety of logged activities and relevant messages from the matrix, extender modules, and chassis.

To find specific Syslog messages, proceed as follows:

1. Click **Monitoring** in the toolbar.
2. Click the **Find** tab in the working area.

   The filtered Syslog messages are displayed in the working area.

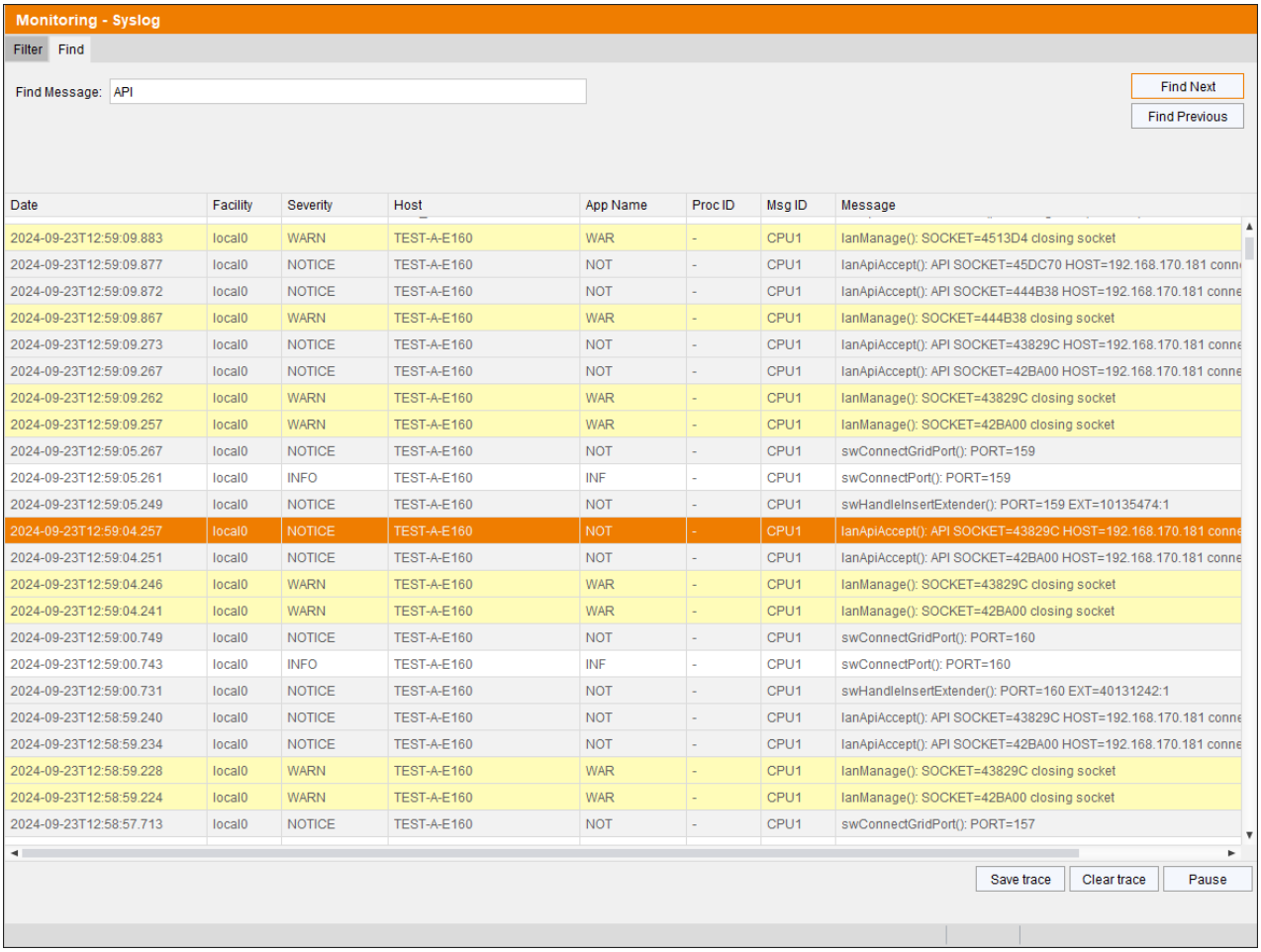


*Fig. 221 Menu **Monitoring - Syslog - Example for search result***

3. Enter a search term in the **Find Message** search field.
4. Click **Find Next**.

   The first message with the entered search term is highlighted.
5. Click **Find Next** again to find another message with this search term.

   The next message with the entered search term is highlighted.
6. To go back to the previous search result, click **Find Previous**.

☑ Possible search terms would be, e.g., the port ID (e.g., Port=160), API, etc. **Find Next** and **Find Previous** will be swapped when the end is reached.

9.3.8 SNMP Monitoring

The SNMP function allows all function-critical and safety-critical elements of the matrix, the extender modules, and the chassis to be monitored and queried. This function complies with the RFC 1157 conformal standard.

NOTICE

When using SNMP monitoring, for reasons of access security, the use of a dedicated network according to the IT-Grundschutz-Kompendium (IT Baseline Protection) is recommended. The default read only community for the MIB file is **kvm**. This can be changed.

The procedure for activating the SNMP agent or configuring an SNMP server is described in section 6.5.10, page 57.

To open the SNMP monitoring, proceed as follows:

1. Click **Monitoring** in the toolbar.
2. Click **SNMP** in the task area.

   The logged SNMP messages are displayed in the working area and are simultaneously recorded into a logfile.

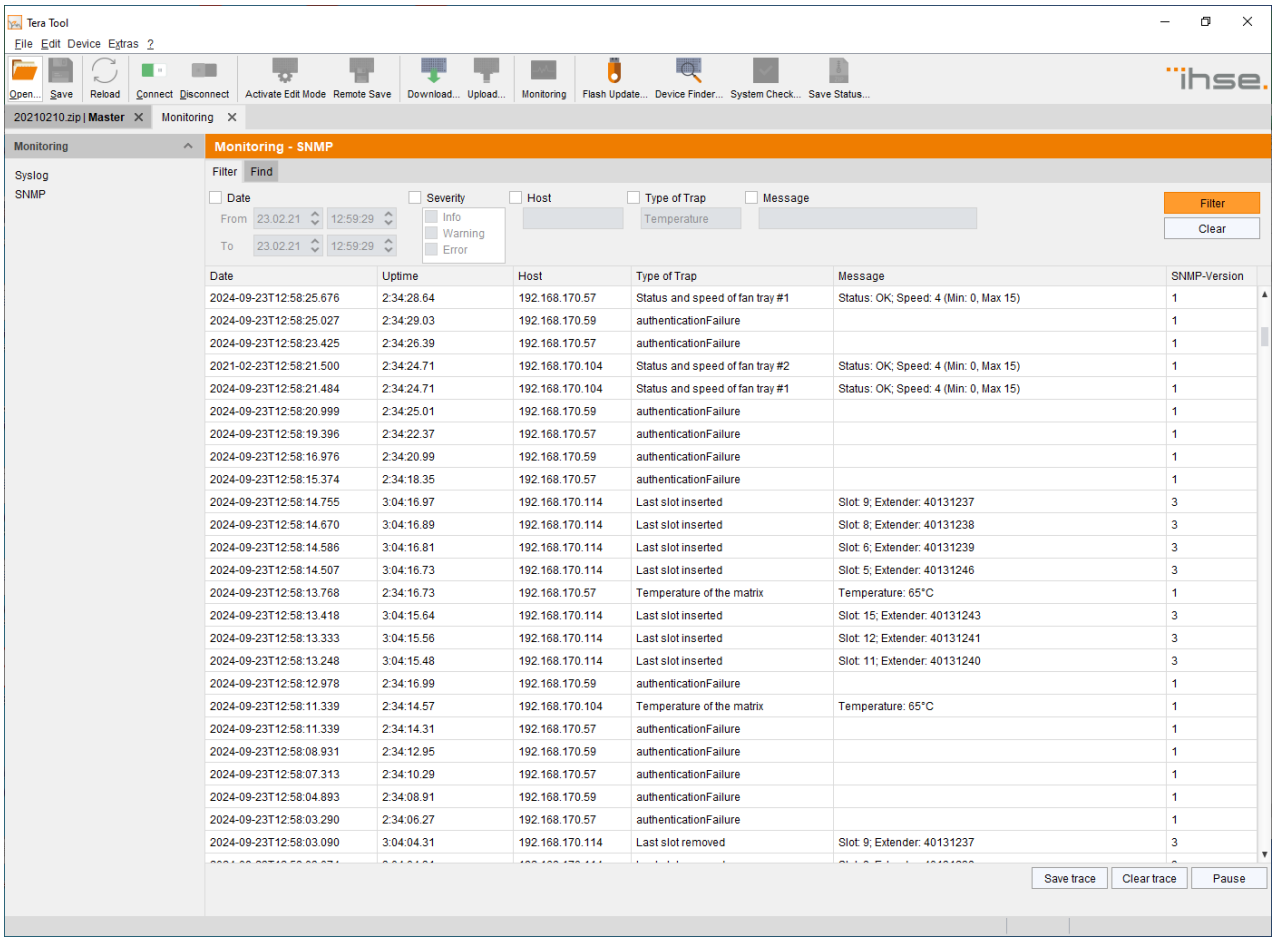


*Fig. 222 Menu **Monitoring - SNMP***

Filter Function

To filter relevant messages from the multitude of logged activities of the matrix, the extender modules and the chassis, the SNMP monitoring offers several filter options.

To set and activate a filter, proceed as follows:

1. Tick the respective checkbox(es) to set the desired filter option(s).
2. Click **Filter** to apply the filter settings.
3. Click **Clear** to reset the filter settings.

The following filter options are available:

Option	Description
Date	Messages for a defined date range will be filtered.
Severity	Messages for a defined severity will be filtered.
Host	Messages for a defined host will be filtered.
Type of Trap	Messages for a defined trap will be filtered.
Message	Messages with defined text parts will be filtered.

Filter options are not valid within the locally stored log files.

Recording Function

Several options are available for the messages displayed in the SNMP log.

➡ To save the displayed messages (filtered or unfiltered), click **Save trace**.
The messages are saved in a SNMP file (file extension: *.`csv`).

➡ To clear the view with the displayed messages, click **Clear trace**.
The recorded messages will be kept.

➡ To pause the display of messages, click **Pause**.
During the pause, the messages will be recorded continuously.

➡ To display the messages recorded in the background during the pause, click **Pause** again.
All messages recorded in the background will be displayed immediately.

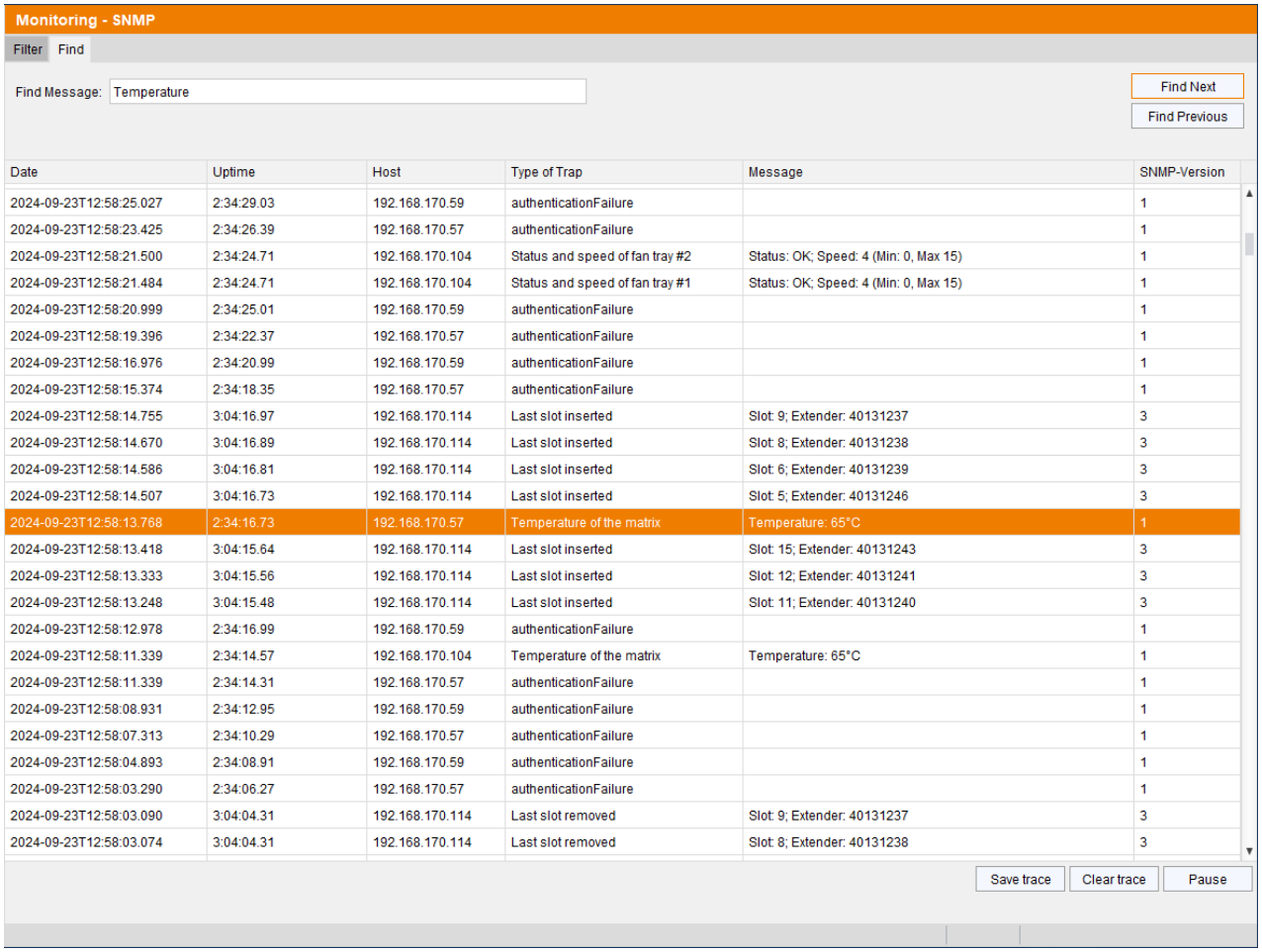
Find Function

The find function can be used to find specific SNMP messages from a variety of logged activities and relevant messages from the matrix, extender modules, and chassis.

To find specific SNMP messages, proceed as follows:

1. Click **Monitoring** in the toolbar.
2. Click **SNMP** in the task area.
3. Click the **Find** tab.

   The recorded SNMP messages are displayed in the working area.



Date	Uptime	Host	Type of Trap	Message	SNMP-Version
2024-09-23T12:58:25.027	2:34:29.03	192.168.170.59	authenticationFailure		1
2024-09-23T12:58:23.425	2:34:26.39	192.168.170.57	authenticationFailure		1
2024-09-23T12:58:21.500	2:34:24.71	192.168.170.104	Status and speed of fan tray #2	Status: OK; Speed: 4 (Min: 0, Max 15)	1
2024-09-23T12:58:21.484	2:34:24.71	192.168.170.104	Status and speed of fan tray #1	Status: OK; Speed: 4 (Min: 0, Max 15)	1
2024-09-23T12:58:20.999	2:34:25.01	192.168.170.59	authenticationFailure		1
2024-09-23T12:58:19.396	2:34:22.37	192.168.170.57	authenticationFailure		1
2024-09-23T12:58:16.976	2:34:20.99	192.168.170.59	authenticationFailure		1
2024-09-23T12:58:15.374	2:34:18.35	192.168.170.57	authenticationFailure		1
2024-09-23T12:58:14.755	3:04:16.97	192.168.170.114	Last slot inserted	Slot: 9; Extender: 40131237	3
2024-09-23T12:58:14.670	3:04:16.89	192.168.170.114	Last slot inserted	Slot: 8; Extender: 40131238	3
2024-09-23T12:58:14.586	3:04:16.81	192.168.170.114	Last slot inserted	Slot: 6; Extender: 40131239	3
2024-09-23T12:58:14.507	3:04:16.73	192.168.170.114	Last slot inserted	Slot: 5; Extender: 40131246	3
2024-09-23T12:58:13.768	2:34:16.73	192.168.170.57	Temperature of the matrix	Temperature: 65°C	1
2024-09-23T12:58:13.418	3:04:15.64	192.168.170.114	Last slot inserted	Slot: 15; Extender: 40131243	3
2024-09-23T12:58:13.333	3:04:15.56	192.168.170.114	Last slot inserted	Slot: 12; Extender: 40131241	3
2024-09-23T12:58:13.248	3:04:15.48	192.168.170.114	Last slot inserted	Slot: 11; Extender: 40131240	3
2024-09-23T12:58:12.978	2:34:16.99	192.168.170.59	authenticationFailure		1
2024-09-23T12:58:11.339	2:34:14.57	192.168.170.104	Temperature of the matrix	Temperature: 65°C	1
2024-09-23T12:58:11.339	2:34:14.31	192.168.170.57	authenticationFailure		1
2024-09-23T12:58:08.931	2:34:12.95	192.168.170.59	authenticationFailure		1
2024-09-23T12:58:07.313	2:34:10.29	192.168.170.57	authenticationFailure		1
2024-09-23T12:58:04.893	2:34:08.91	192.168.170.59	authenticationFailure		1
2024-09-23T12:58:03.290	2:34:06.27	192.168.170.57	authenticationFailure		1
2024-09-23T12:58:03.090	3:04:04.31	192.168.170.114	Last slot removed	Slot: 9; Extender: 40131237	3
2024-09-23T12:58:03.074	3:04:04.31	192.168.170.114	Last slot removed	Slot: 8; Extender: 40131238	3

*Fig. 223 Menu **Monitoring - SNMP - Example for search result***

4. Enter a search term in the **Find Message** search field.
5. Click **Find Next**.

   The first message with the entered search term is highlighted.
6. Click **Find Next** again to find another message with this search term.

   The next message with the entered search term is highlighted.
7. To go back to the previous search result, click **Find Previous**.

☑ Possible search terms would be, e.g., temperature, fan, or the serial number of an extender module (e.g., 40131237). **Find Next** and **Find Previous** will wrap around when the end is reached.

9.3.9 Redundancy Function

Extender modules with redundant ports for interconnection cables can be simultaneously operated with both ports at a single matrix or a matrix grid (from firmware version V03.01).

The ports labeled with **Link 1** at the extender modules is meant for the primary interconnection. If the interconnection on CON Unit or CPU Unit side is interrupted due to any problem, the interconnection will be automatically re-established through the second port labeled with **Link 2**.

For this kind of redundancy function, there is no need for any configuration of the matrix or the extender modules.

By default, the matrix switches automatically between both links when this function is active. Manual switching is not possible. For manual switching by key command or API command, the redundancy function must be deactivated.

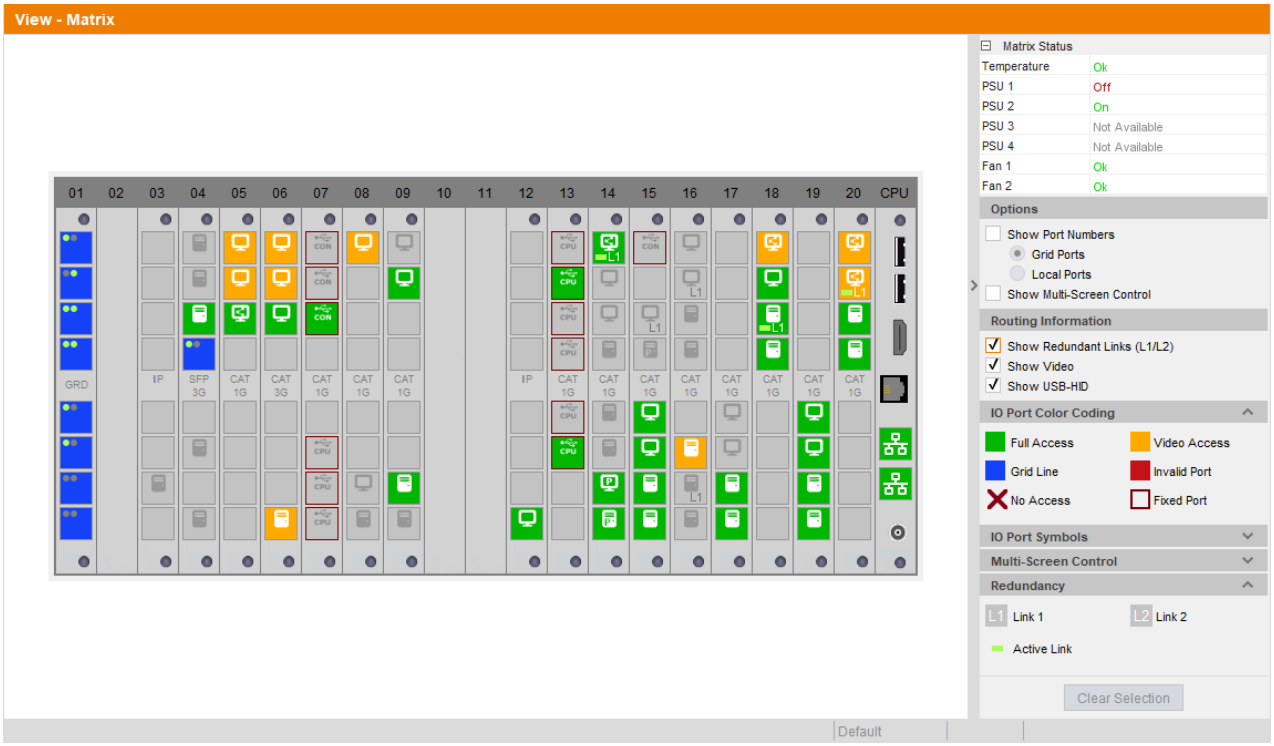


*Fig. 224 Menu **View - Matrix***

To check the connection status of the redundant extender modules, proceed as follows:

1. Click **View > Matrix** in the task area.
2. Tick the **Show Redundant Links (L1/L2)** checkbox under **Routing Information** on the right side of the working area.
3. Expand the **Redundancy** menu in the panel on the right side of the working area to receive the respective legend information.

   Redundant ports are highlighted in the matrix view with L1 and L2. The respectively active link is highlighted with a light green label.

9.3.10 System Check

The system check offers a diagnostic function for checking the device configuration. The feature indicates non-optimal as well as incorrect settings and displays issues instructions. The system check is only used to check plausibility and does not make any active configuration changes.

The following configuration parts are checked:

- Matrix Firmware
- Extender Module Firmware
- Multi-Screen Control
- EXT Units
- CPU Devices
- CON Devices
- Users
- Macros
- System Configuration
- Matrix Grid

The following notification levels can be shown:

Level	Description
Info	Information about system parts.
Ok	System checks completed without any abnormalities.
Warning	System checks revealed abnormalities in the configuration that point to incomplete parts of the configuration, firmware differences, duplications, or unconnected extender modules but without being system critical.
Error	System checks reveal errors in the configuration that can have both functional and system-critical influences on the system.

NOTICE

If the messages **Warning** or **Error** are generated by the system check function, the respective problem will be described, and an issue instruction will be provided.

NOTICE

The system check of the matrix may take several minutes. The KVM system and the Tera Tool software can be used without restrictions during this time.

To start the system check, proceed as follows:

1. Click **System Check** in the tool bar.
   A query appears to check the system.

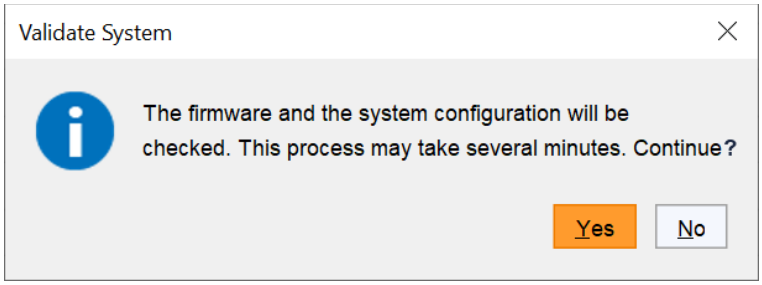


*Fig. 225 Dialog **Validate System***

2. Click **Yes** to start the system check.
   A report is displayed after the system check.

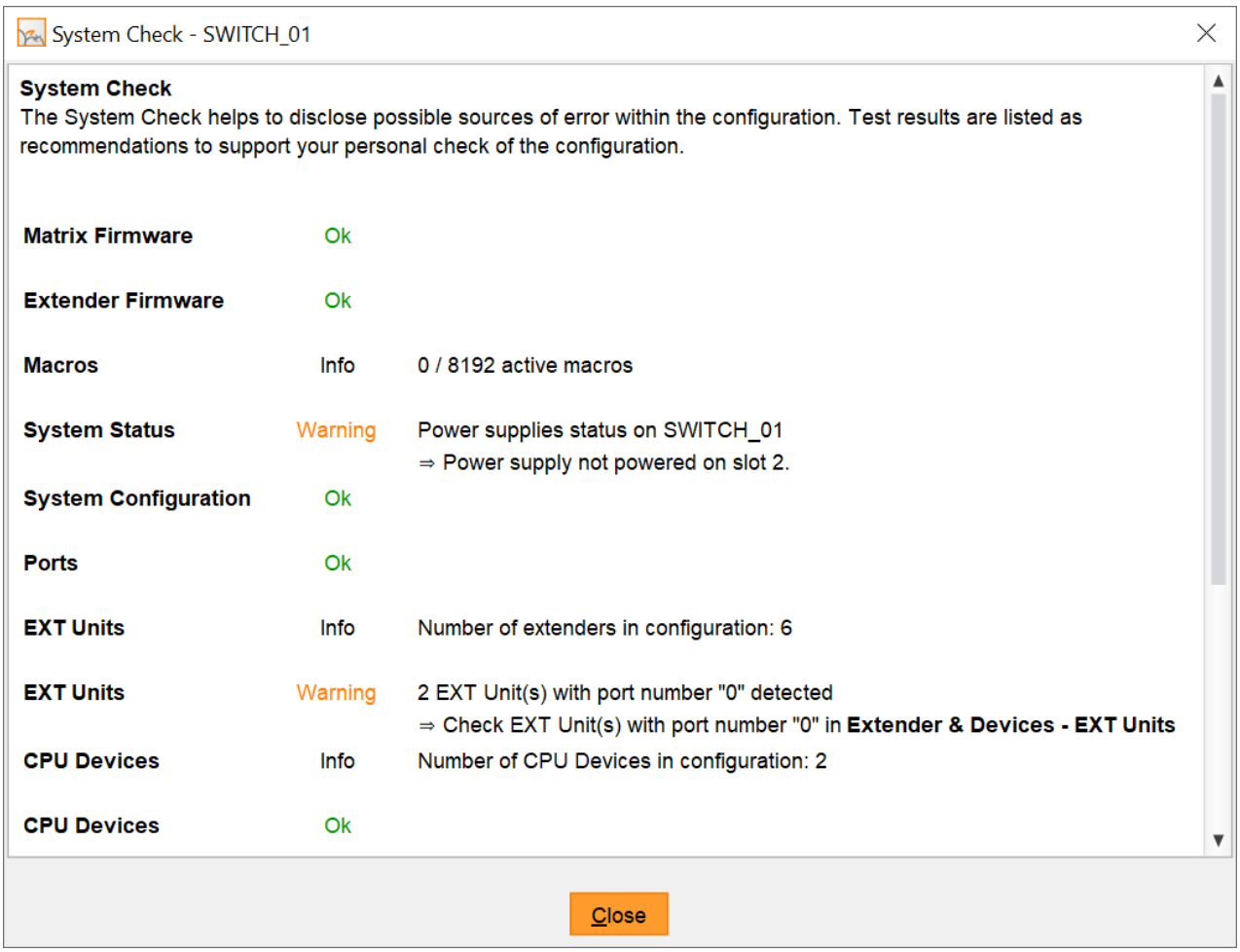


*Fig. 226 Report **System Check***

9.3.11 Network Check

The network check checks the availability of the ports available in the network.

NOTICE
Available ports are shown in green. If a port is not available, the corresponding entry appears in red, and instructions are displayed.

To start the network check, proceed as follows:

1. Click **Extras > Network Check** in the menu bar.
   A query appears with an input field for the IP address of the matrix to be queried.
2. Enter the IP address of the matrix.
3. Click **Start network check** to start the network check.
   The availability of the ports is shown after a short moment.

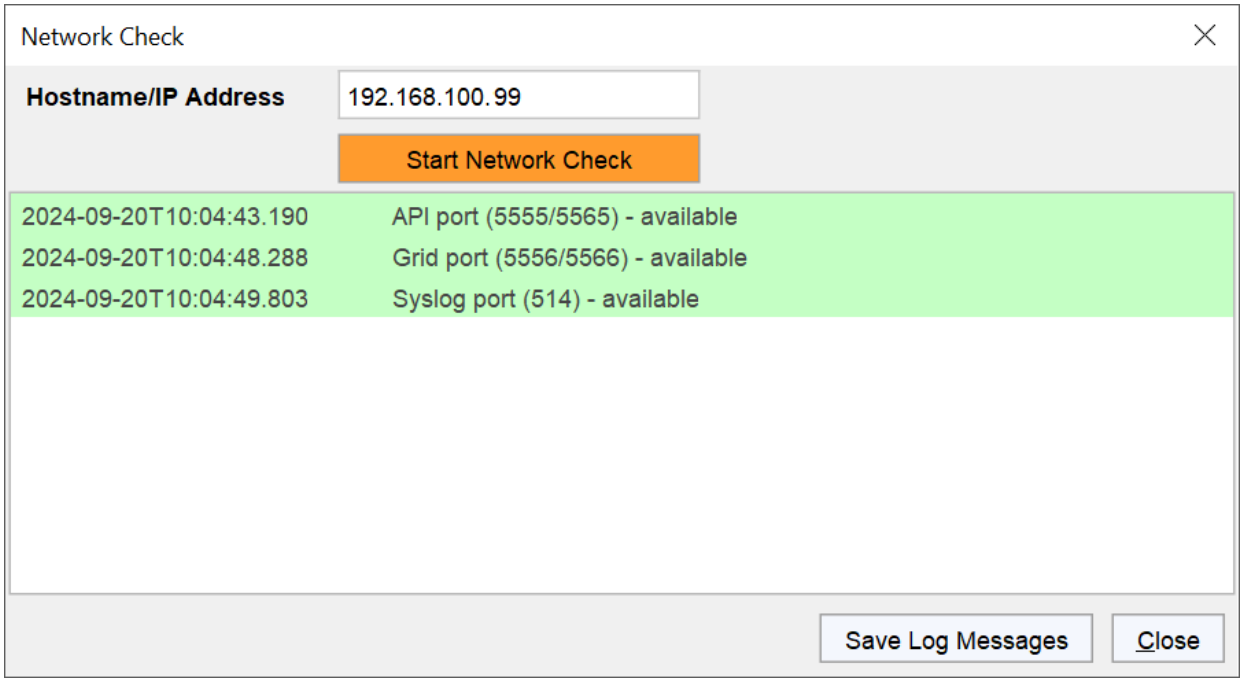


*Fig. 227 Dialog **Network Check - Available ports***

☑ Reasons for unavailability of network ports are often:
- The firewall blocks the connection.
- The service is not activated in the matrix network configuration (see section 6.5.7, page 50).

9.4 Updating the Matrix Firmware

NOTICE

To process successful firmware updates and avoid failures:

➡ Only use computers to update the matrices that are not integrated into the KVM system.

➡ Ensure that the computer used for the update is not set into standby mode or sleep mode during the update.

➡ Save your configuration locally before starting the update.

➡ Proceed an update via wired LAN connection for reasons of network stability.

NOTICE

Ensure that all USB 2.0 extender modules are only connected to the provided ports (fixed ports) before you start the matrix update. Non-compliance may affect the stability of the update.

NOTICE

Possible firmware update interrupt with IP gateway boards or IP gateway modules:

If disconnecting/connecting a plug from/to the IP gateway port during the firmware update of this board or module, the update process is disrupted.

Do not disconnect/connect the IP gateway while updating the firmware of the IP gateway board/module.

The firmware update of MATLOS.tfw has to be performed step by step. After each firmware update, the matrix has to be restarted, e.g., if you want to update your current firmware MATLOS version F01.05 to F01.08, proceed as follows:

➡ Update with version F01.06 and restart the matrix.

➡ Then update with version F01.07 and restart the matrix.

➡ Then update with version F01.08 and restart the matrix.

If required, the update files can be requested from the TechSupport department.

The firmware of the matrix can be updated in this menu.

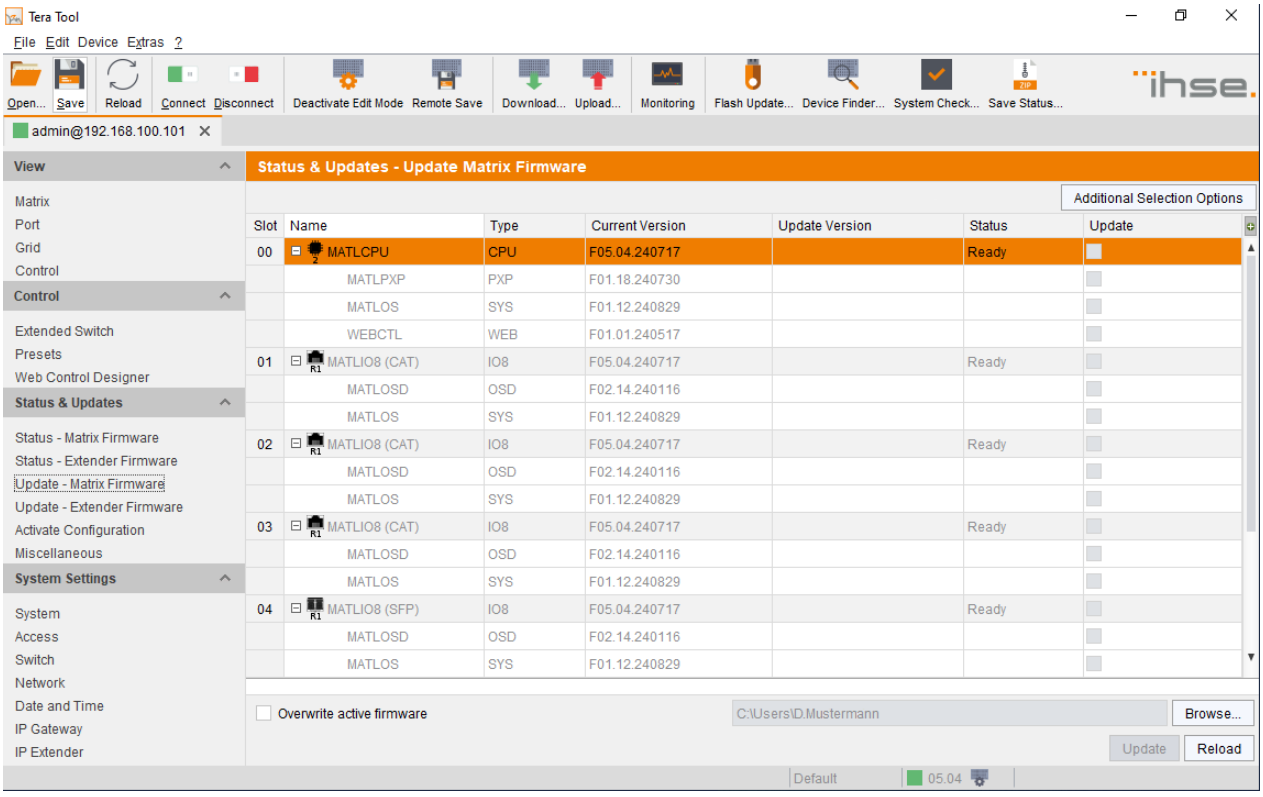


*Fig. 228 Menu **Status & Updates - Update Matrix Firmware***

The following information is displayed in the working area:

Option	Description
Name	• Name of the chassis or I/O board. • Name of the chassis firmware or I/O board firmware.
Type	Type of the chassis firmware or I/O board firmware
Current Version	Installed firmware version
Update Version	Firmware version available for the update
Status	Module availability
Update	Selected/deselected for firmware update

The following options are available in the **Additional selection options** drop-down menu on the right upper side in the working area:

Option	Description
Expand Tree View	Expand the tree view to show detailed information. This allows you to select or deselect individual firmware to be updated.
Collapse Tree View	Collapse the tree view to hide detailed information. An individual selection of firmware to be updated is not possible.
Select All	Select all available firmware to be updated.
Deselect All	Deselect all selected firmware.

ℹ When a firmware file is loaded, an additional entry appears for each suitable type of firmware, e.g., Select MATLOSD.

Preparation

✅ If the Syslog function has not been set yet, we recommend activating the Syslog function (see section 6.5.8, page 52) before updating the firmware to log the update in case of update errors.

✅ We recommend using a central location for firmware files, e.g., by using the Tera Tool software's option menu under **Extras > Options > Default Settings > Firmware Directory**.

Performing the Update

NOTICE

Possible damage of boards or the matrix

A running update process (indicated with 2x white LEDs) is a very sensitive process.

If the matrix is switched off while an update process is running, the respective boards and the matrix will be damaged in their function.

➥ **DO NOT** power off the matrix while an update process is running.

To update the matrix firmware, proceed as follows:

1. Click **Status & Updates > Update - Matrix Firmware** in the task area.
2. Click the button **Browse** to select a firmware file.

   All updateable components of the matrix will be automatically selected and highlighted in green.
3. Click **Update** in the lower part of the working area to start the update.

A query to save the matrix status appears.

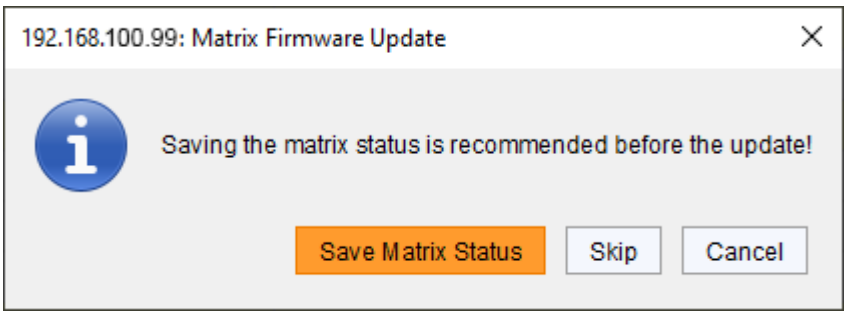


*Fig. 229 Dialog **Save matrix status***

Depending on the firmware type to be updated, the matrix may not be available during the update process.

4. Click **Save Matrix Status** to save the matrix status locally or click **Skip** if the status is already saved.
5. The progress of the update is displayed in the working area.

   After the update, a query to restart the matrix appears.

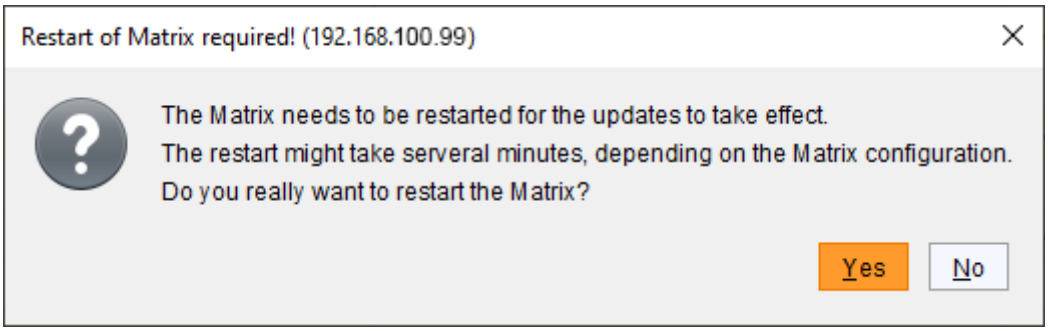


*Fig. 230 Dialog **Restart matrix***

6. Click **Yes** to restart the matrix.

   Restarting the matrix may take several minutes, and the matrix is not available during the restart. The updated firmware is displayed in the working area.

Updating Matrices in a Matrix Grid

We strongly recommend the following procedure:

1. Update all sub matrices without restarting them.
2. Update the master matrix and restart it. All submatrices will also be restarted.

NOTICE
If any error messages appear during the update process, the matrix and the entire grid should under no circumstances be restarted. Repeat the update step and if an error appears again, contact the manufacturer’s technical support.

9.5 Updating the Extender Module Firmware

9.5.1 Updating the Extender Module Firmware via Matrix

To update connected extender modules via matrix, the extender modules have to be connected to the matrix with interconnection port 1. Most firmware parts of the extender modules can be updated via matrix, except for the xxxMSD firmware type that has to be updated via Mini-USB service port if necessary.

An update of the xxxMSD firmware is usually not necessary. In rare cases, an update may be necessary to expand the functionality of certain extender modules for specific requirements. In this case, please contact the manufacturer's technical support in advance.

If required, the update files can be requested from the manufacturer's technical support.

Please refer to the user manual of the respective extender module if a manual firmware update of extender modules has to be performed.

Preparation

If the Syslog function has not been set yet, we recommend activating the Syslog function (see section 6.5.8, page 52) before updating the firmware to log the update in case of update errors.

We recommend using a central location for firmware files, e.g., by using the Tera Tool software's option menu under **Extras > Options > Default Settings > Firmware Directory**.

NOTICE

Possible failures when updating the extender module firmware

In case the xxxMSD firmware part of one or more extender modules require an update, there may be dependencies between the new contents of xxxMSD firmware files and other extender module firmware files. In this case, installing other firmware files before updating xxxMSD firmware files could lead to failed updates.

To process successful firmware updates:

➡ Please check the release notes of the firmware package for dependencies between the extender module firmware files.

➡ If you got information from the manufacturer's technical support that an update of xxxMSD firmware files of certain extender modules is required, please update these firmware files via Mini-USB service port of the respective extender module (see next section 9.5.2).

There are two possibilities to update the extender modules via matrix:

- **Parallel Mode:**
  By default, used for parallel updates of several extender modules.
  The extender modules of all selected I/O boards are updated in parallel.
  Advantage: The Parallel Mode offers the fastest method for updating the extender modules.
- **Sequential Mode:**
  Option to update extender modules sequentially, extender module by extender module, after the update of the previous extender module is completed.
  Advantage: The Sequential Mode offers the possibility to update individual extender modules and individual firmware parts of an extender module. This is useful for e.g. testing specific extender modules to verify whether the new firmware meets the requirements before installing it on all extender modules.

We recommend updating the firmware of the extender modules via Parallel Mode.

Performing the Update in Parallel Mode (Standard Update)

Before the actual update process, all firmware files have to be uploaded to the respective I/O boards to which the extender modules to be updated are connected.

Step 1: Uploading the new Extender Module Firmware to the Memory on the I/O Board

Proceed as follows:

1. Click **Status & Updates > Update - Extender Firmware** in the task area.

   The **Parallel Mode** for the standard update will be selected by default and the **Upload Firmware** tab will be opened.

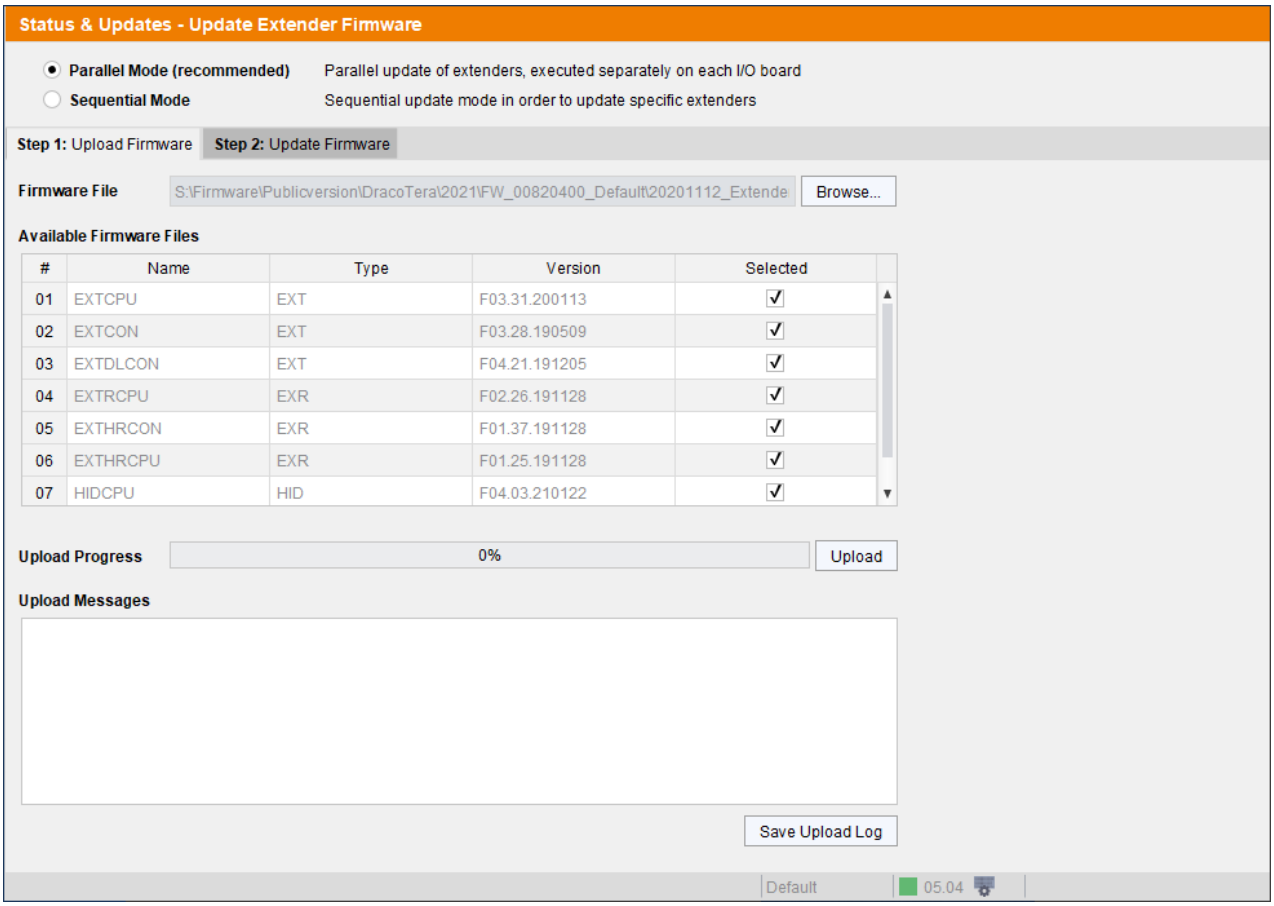


*Fig. 231 Menu **Status & Updates - Update Extender Firmware - Parallel Mode - Upload***

2. Click **Browse** to select and open the firmware file.

   If newer firmware is available, appropriate firmware parts will be automatically selected for the upload in the **Selected** column.

3. Click **Upload** to start the upload and distribution of the update files.

By performing the upload process, no update files will be installed. The update process can be performed later.

A query appears to update the extender module firmware upon finishing the upload process successfully.

4. Click **Yes**.

   The **Update Firmware** tab will open immediately.

Step 2: Updating the Extender Module Firmware by passing the Extender Module Firmware from the Memory of the I/O Board on to the Extender Modules

When updating an identical or an older firmware version than the version currently installed, the **Enable Downgrade** checkbox in the upper part of the working area must be ticked.

To update the extender module firmware via standard update, proceed as follows:

1. Click **Update** to start the update.

Just before the update process, all I/O boards will be set into **Service Mode** and retrieved gradually after finishing the respective updates. During Service Mode, all matrix functions are disabled on the I/O boards on which an update is currently performed. An OSD picture indicates the activation of the Service Mode and is displayed on all monitors connected to those CON Units that are connected to the matrix.

2. The progress of the update is displayed in the working area.
3. Check the update messages in the message field after the update process to see if the updates for all extender modules have been installed correctly.

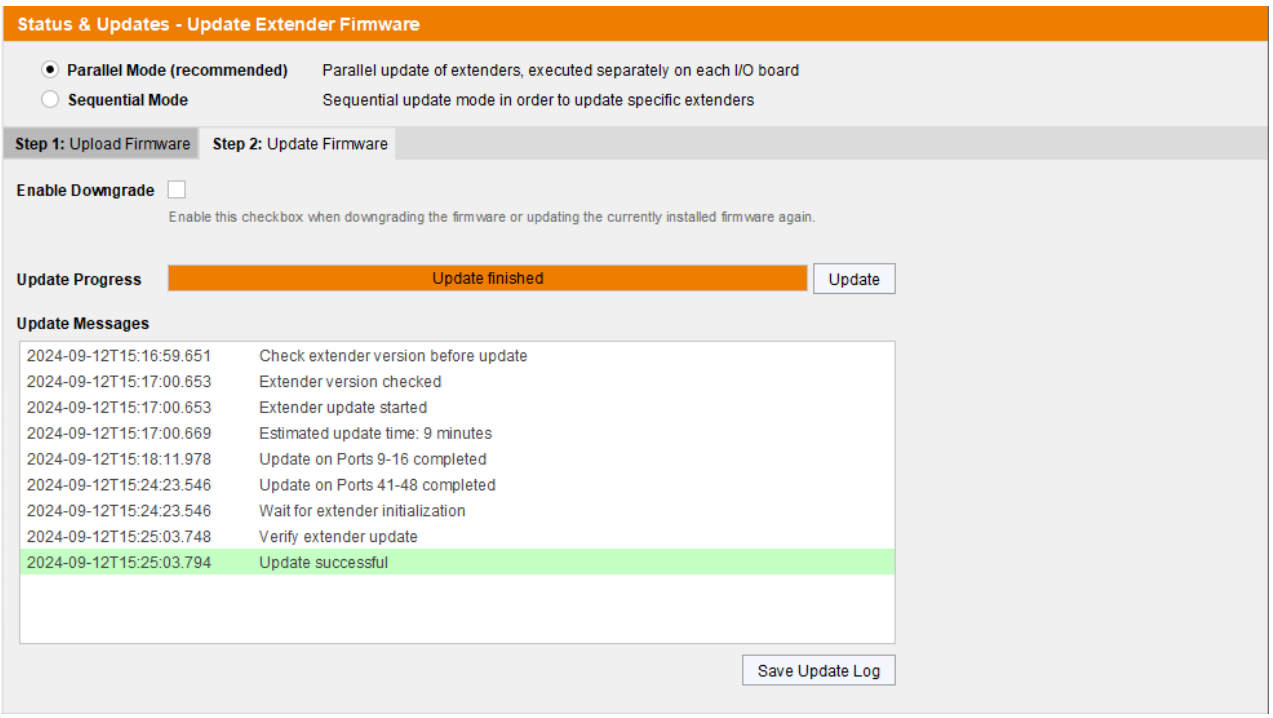


*Fig. 232 Menu **Status & Updates - Update Extender Firmware - Parallel Mode - Update***

Performing the Update in Sequential Mode (Expert Update)

In Sequential Mode, individual firmware to be updated can be selected/deselected in this menu.

1. Click **Status & Updates > Update Extender Firmware** in the task area.
2. Select the **Sequential Mode** option in the upper part of the working area.
3. Click **Browse** and select and open a firmware file.

   All updateable firmware will be automatically selected and highlighted in green.

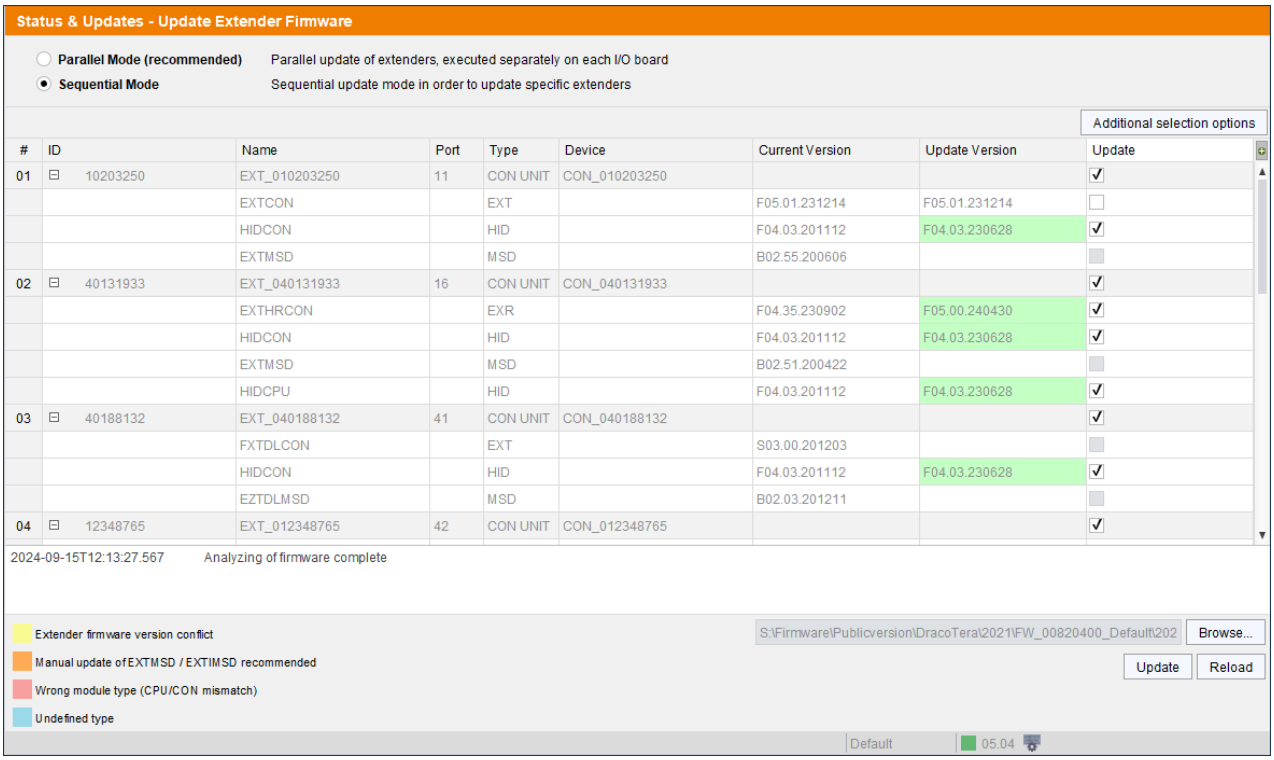


*Fig. 233 Menu **Status & Updates - Update Extender Firmware - Sequential Mode***

The following information is displayed in the working area:

Option	Description
ID	Serial number of the extender module
Name	Name of the EXT Unit and the extender module firmware
Port	Port number of the matrix the extender module is physically connected to
Type	Type of the CON/CPU Unit and firmware type
Device	Name of the CON Device/CPU Device the EXT Unit is assigned to
Current Version	Installed firmware version
Update Version	Firmware version available for the update
Update	Select/deselect for firmware update

Firmware types to be updated or firmware conflicts are highlighted in color:
- Extender firmware version conflict
- Manual update of EXTMSD/EXTIMSD recommended*
- Wrong module (CPU/CON mismatch)
- Undefined type

* Only for firmware versions older than V2.25 (EXTMSD) and V1.13 (EXTIMSD) and only if instructed by the manufacturer's technical support or if the release notes indicate dependencies between extender module firmware files. EXT*MSD requires manual update via the Mini-USB service port at the extender modules

The following options are available in the **Additional selection options** drop-down menu in the upper right-hand corner of the working area:

Option	Description
Expand Tree View	Expand the tree view to show detailed information. This allows you to select or deselect individual firmware to be updated.
Collapse Tree View	Collapse the tree view to hide detailed information. An individual selection of firmware to be updated is not possible.
Select All	Select all available firmware to be updated.
Deselect All	Deselect all selected firmware.

4. Click **Update** in the lower part of the working area to start the update.

In **Sequential Mode** the extender module that is being updated is set into Service Mode, all others continue to run and can be used. The I/O boards are not affected and continue to run. An OSD picture indicates the activation of the Service Mode and is displayed on the monitor connected to the CON Unit that is currently updated. This is a rather new function. With older matrix firmware, the complete I/O board with all connected extenders is set into Service Mode.

After the update of the respective extender module is completed, the Service Mode of the extender module or of all extender modules will be quit.

5. After the update, check the messages in the message box to ensure that the updates for all extender modules were installed correctly.

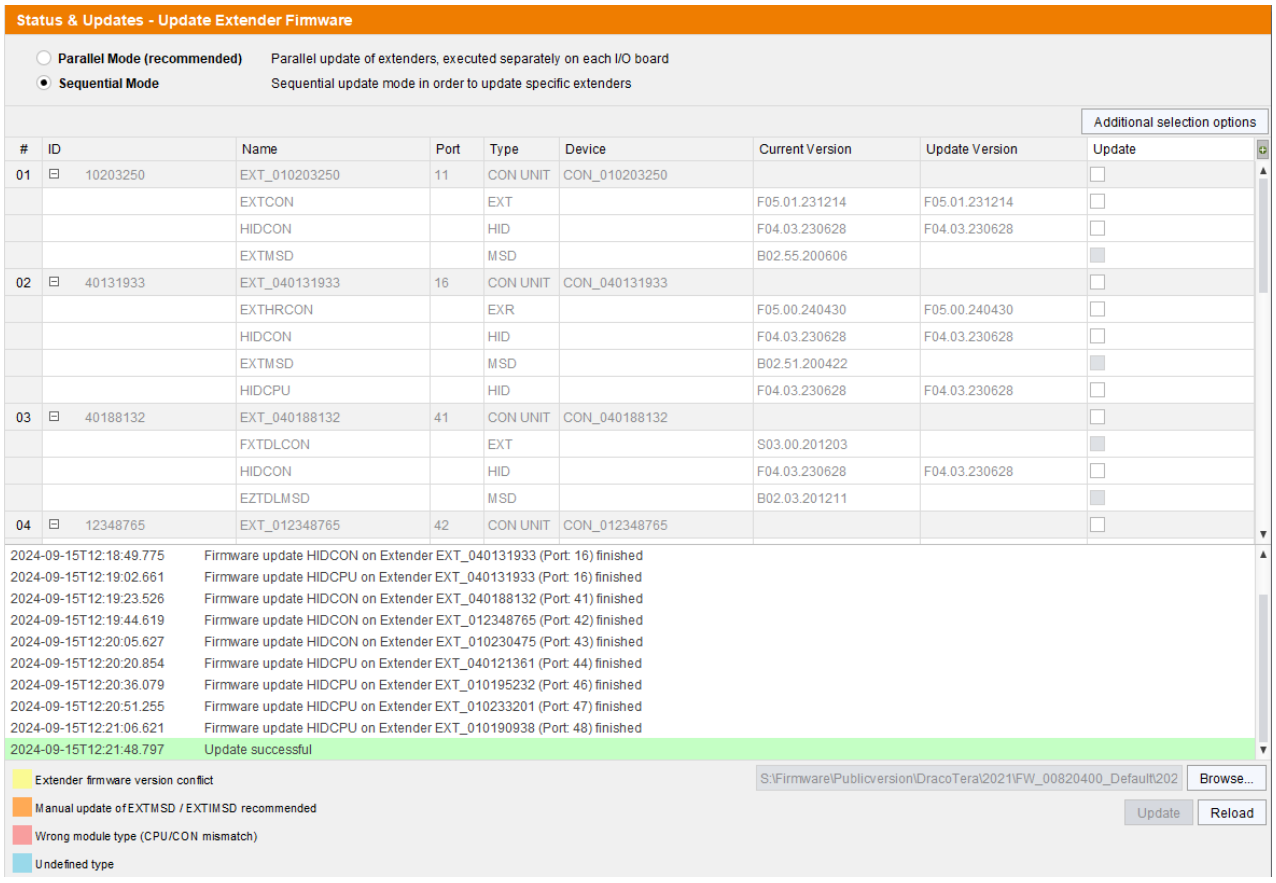


*Fig. 234 Menu **Status & Updates - Update Extender Firmware - Sequential Mode***

9.5.2 Updating the Extender Module Firmware via Mini-USB Service Port

To perform a firmware update of extender modules using the Tera Tool software, proceed as follows.

1. Run the Tera Tool software.
2. Click **Flash Update** in the toolbar.

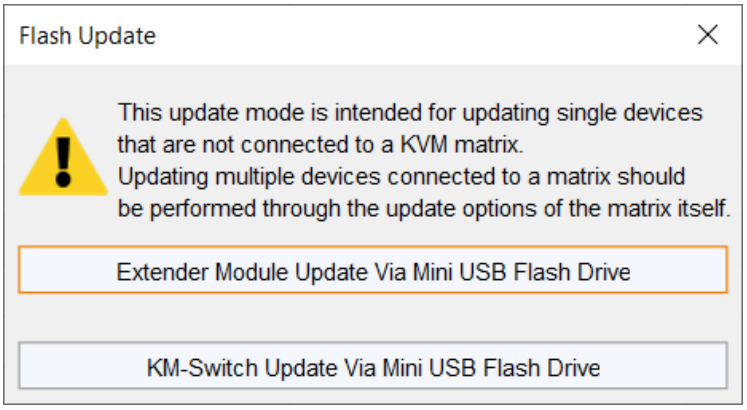


*Fig. 235 Flash Update - **Start***

3. Click **Extender Module Update via Mini-USB flash drive**.
   The update dialog appears.

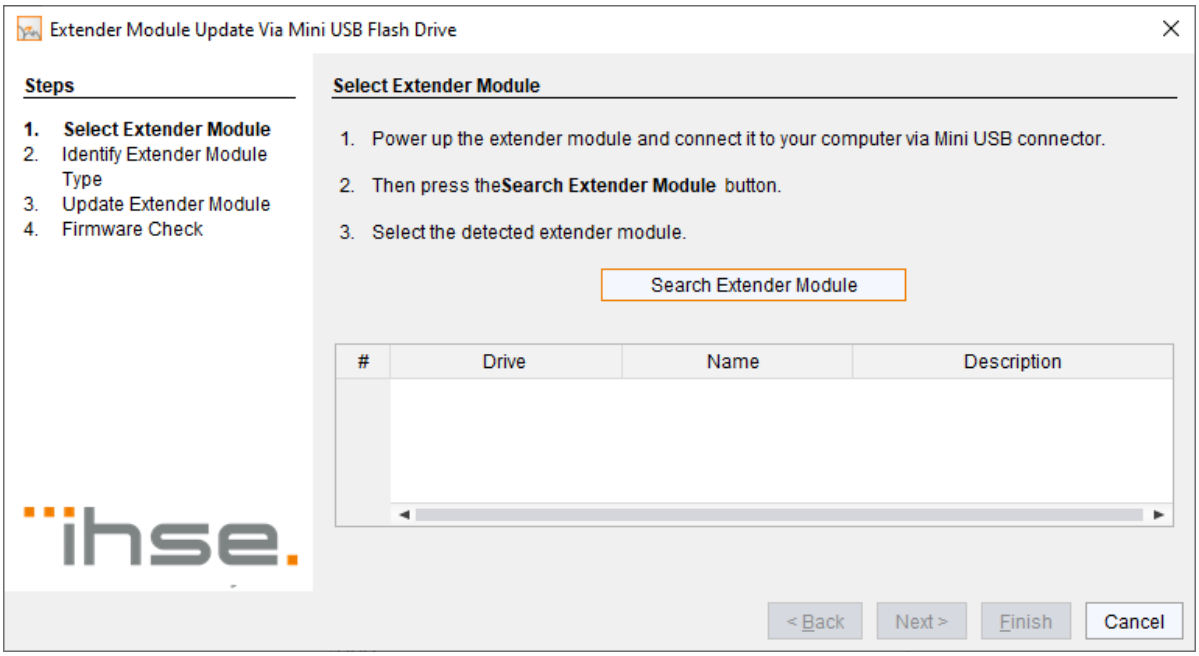


*Fig. 236 Flash Update - **Search Extender Module***

4. Power up the extender module.
5. Connect the extender module to the computer running the Tera Tool software using a Mini-USB cable.
6. Click **Search Extender Module**.
   The flash drive of the connected extender module is displayed in the drive overview.

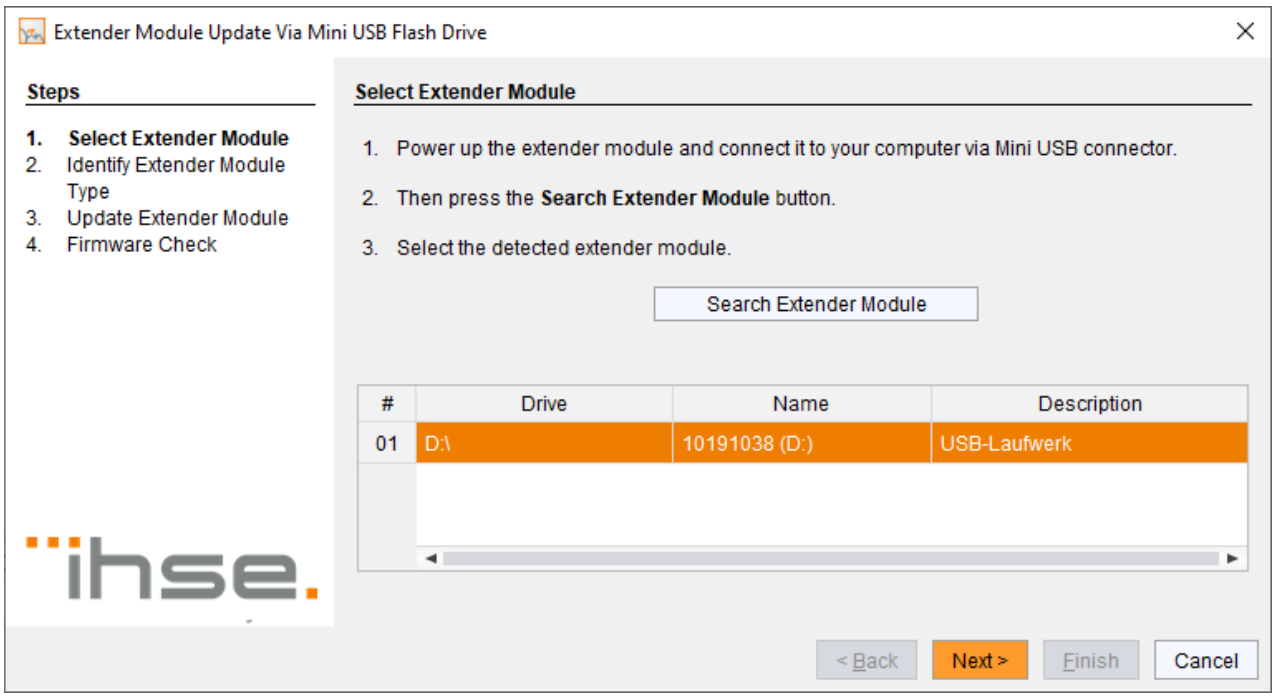


*Fig. 237 Flash Update - **Select Flash Drive***

7. Select the flash drive of the extender module.
8. Click **Next >**.

   The identification of the extender module type automatically starts.

   After successful identification, the extender module specific firmware is displayed in the **Status Log** area.

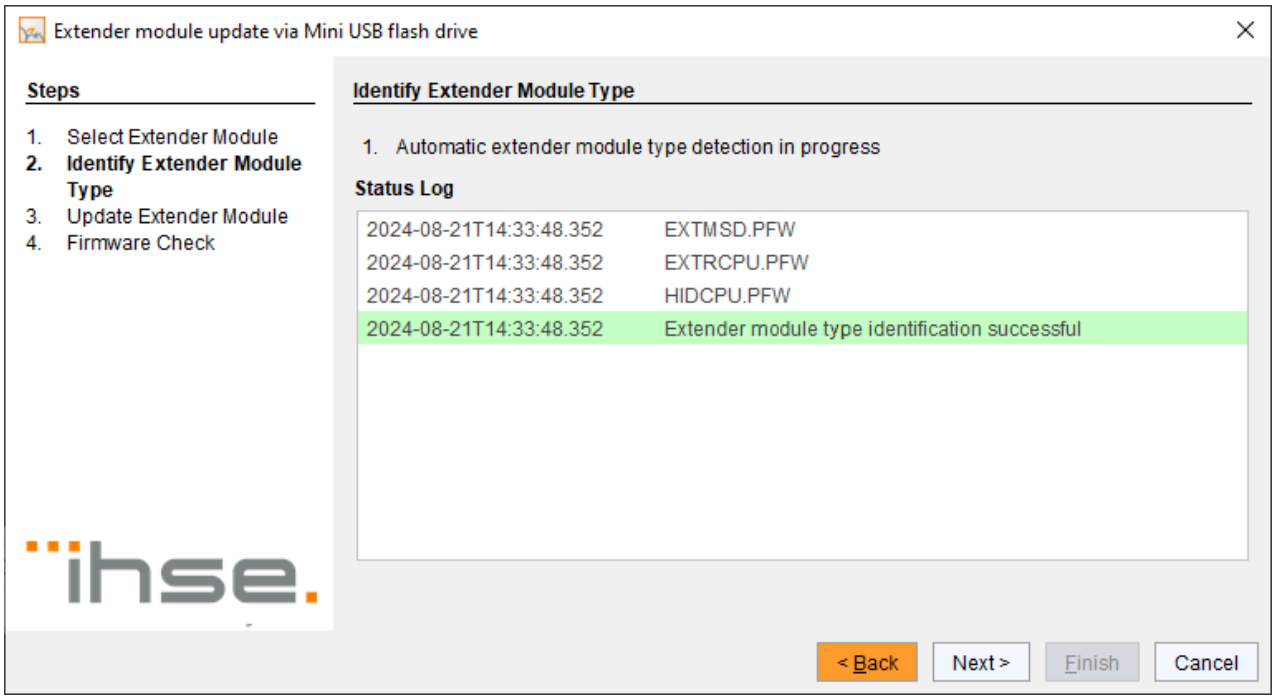


*Fig. 238 Flash Update - **Identification of Extender Module Type***

9. Click **Next >** after successful identification.

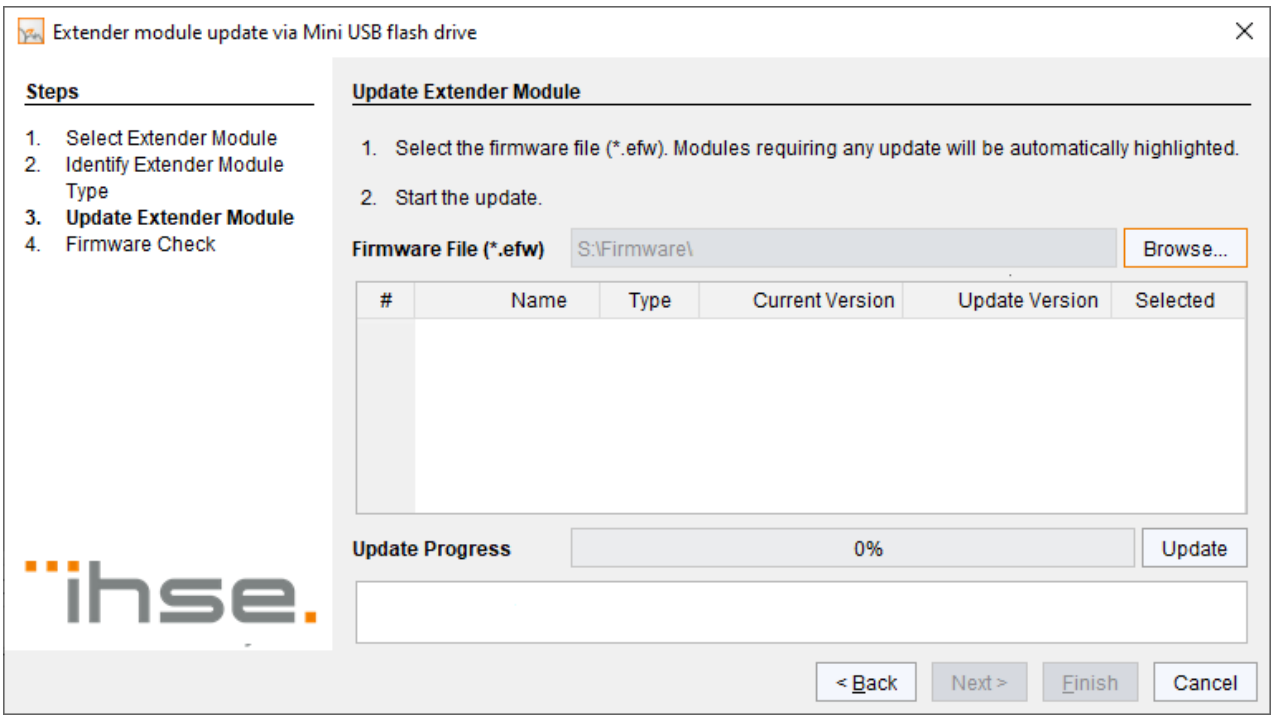


*Fig. 239 Flash Update - **Update Extender Module - Select files***

10. Click **Browse…** to go to the location where the update files are stored.
11. Select the desired update file and click **Select** in the selection dialog.

    The firmware available for the extender module is displayed.

    Firmware requiring any update will be automatically highlighted.

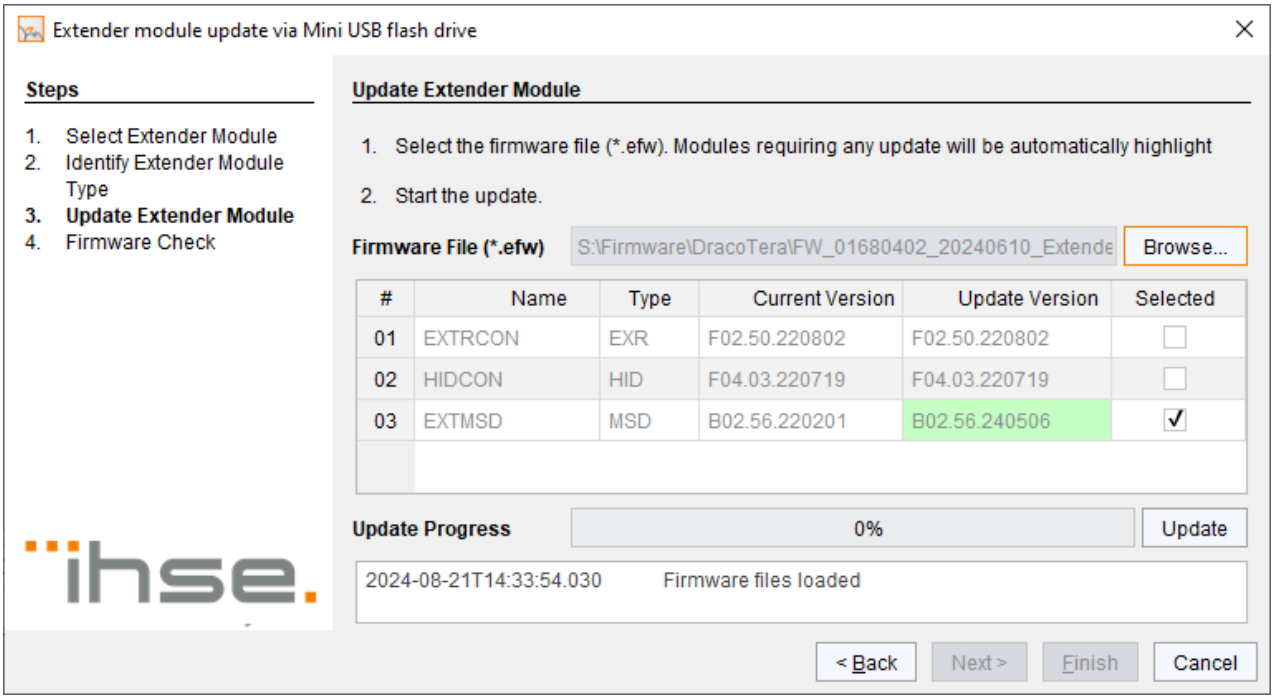


*Fig. 240 Flash Update - **Update Extender Module - Load files***

12. Click **Update** to start the update process.

After the update of an MSD firmware, the extender module will automatically be restarted.

A green highlighted message appears when the firmware update has been completed.

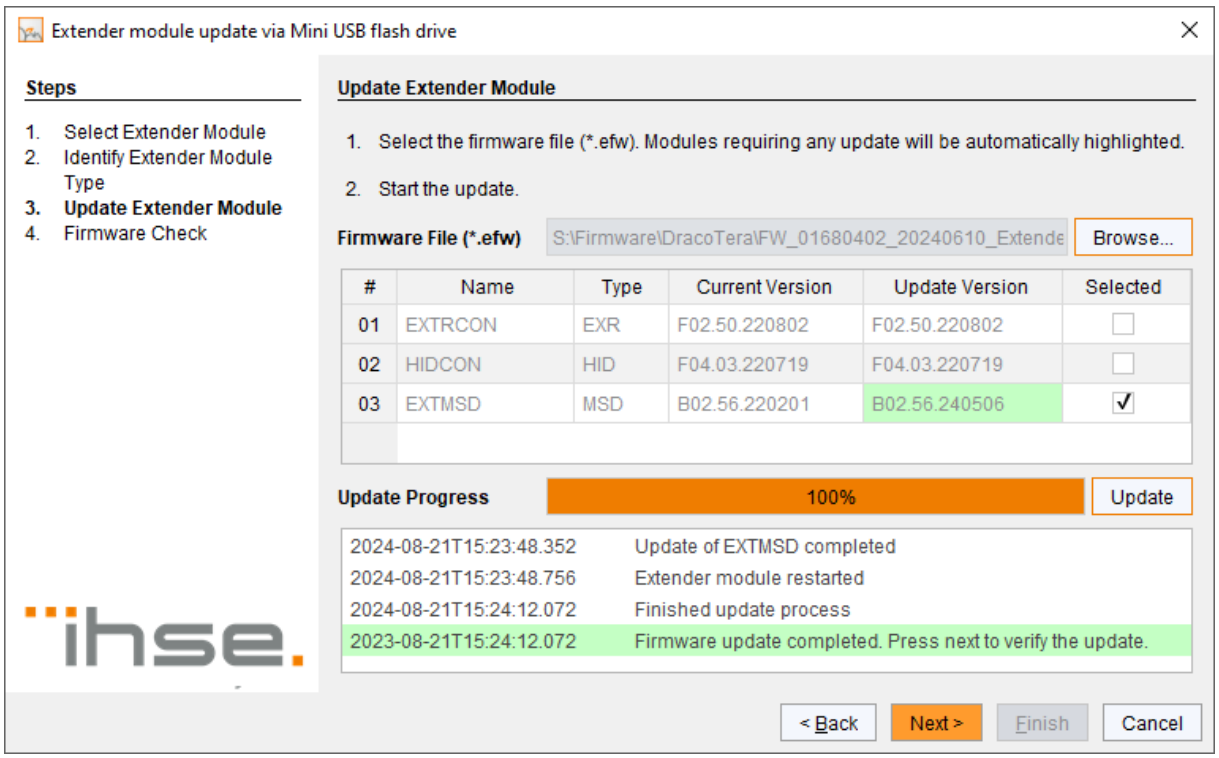


*Fig. 241 Flash Update - **Update Extender Module - Firmware update completed***

13. Click **Next >** to verify the update.
14. Manually power off the extender module and power it on again.

    The extender module restarts, and validation begins automatically. The completion of the validation is displayed in the **Status Log** area.

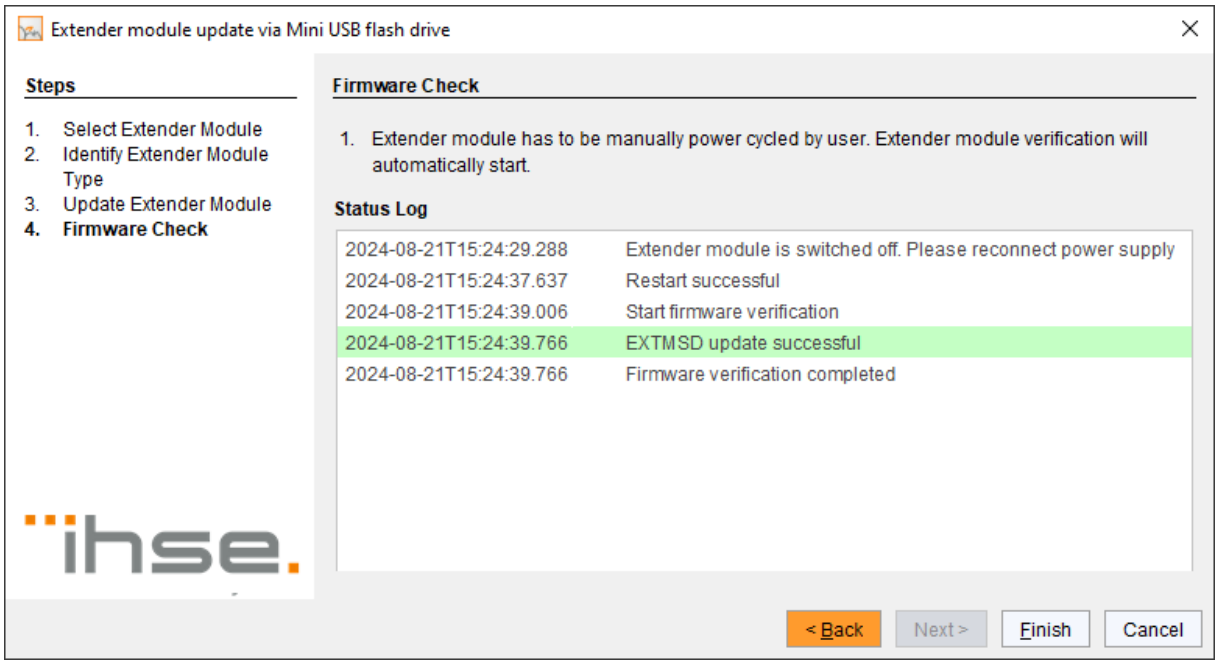


*Fig. 242 Flash Update - **Firmware Check - Firmware verification completed***

15. Click **Finish**.

    The firmware update of the extender module is completed.

    A dialog appears offering to update another extender module.
16. Click **Yes** to update another extender module or click **No** and **Finish** to quit the Update dialog.

9.6 Resetting the Matrix and the I/O Boards

9.6.1 Resetting the Matrix to the Factory Settings

NOTICE
If you perform a factory reset, all current settings and all configurations stored in the matrix will be lost. This also applies to the network parameters (reset to default IP address) and the admin password (default password: admin).

NOTICE
If a firmware update has been carried out since the delivery, the latest installed firmware version is retained.

To perform a reset of the matrix, proceed as follows:

1. Select **Device > Advanced Service > Factory Reset > Factory Reset** in the menu bar.

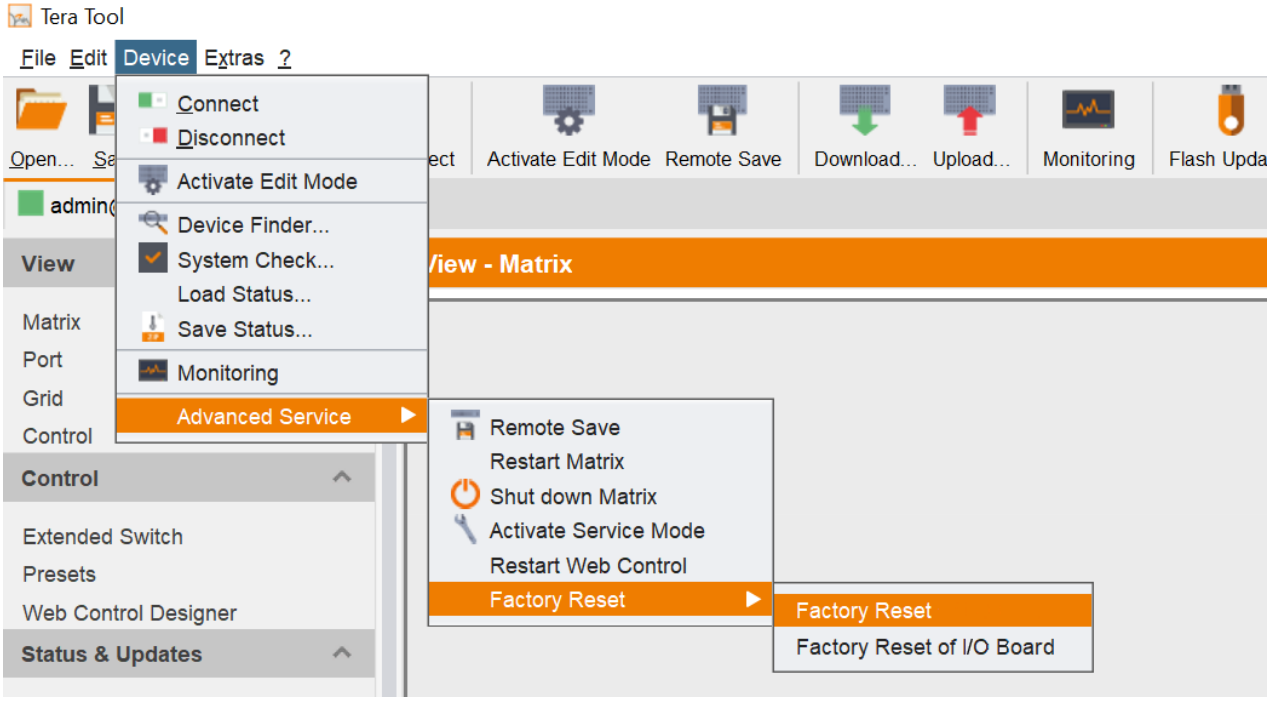


Fig. 243 ***Device submenus***

An access window appears.

2. Enter the username and password of an administrator.
3. Click **Ok**.

   A query to reset the matrix appears.
4. Click **Yes** to reset the device.

   The matrix restarts and is reset to factory settings.

9.6.2 Resetting a specified or all I/O Board(s) to the Factory Settings

NOTICE
If a firmware update has been carried out since the delivery, the latest installed firmware version is retained.

To perform the reset of an I/O board, there are two possibilities:

- Resetting a specified I/O board
- Resetting all I/O boards

Resetting a single I/O Board

1. Select **View > Matrix** in the task area.
2. Click with the right mouse button on any port of the I/O board to be reset.
   A context menu appears.

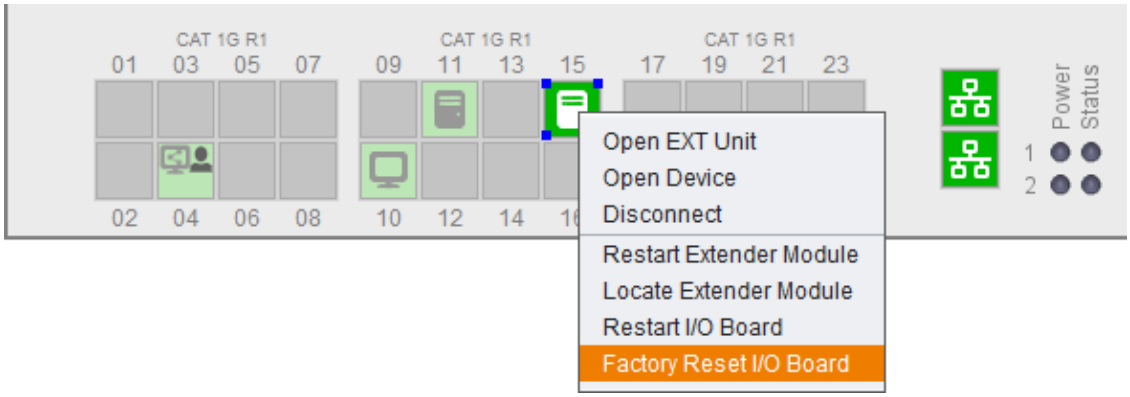


*Fig. 244 **View - Matrix - Context menu***

3. Select the **Factory Reset I/O Board** function in the context menu.
   A query to reset the I/O board appears.

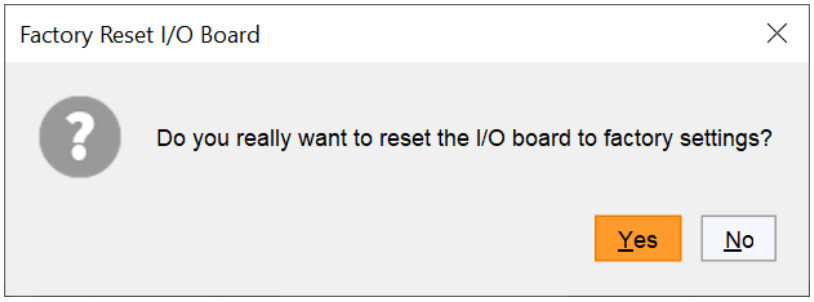


*Fig. 245 Dialog **Factory Reset of one I/O Board***

4. Click **Yes** to reset the I/O board.
   The I/O board is reset to factory settings.

Note: The I/O board will disappear for a short time in the overview. When the I/O board and the extender modules are visible again, the reset of the I/O board was successful.

Resetting all I/O Boards

1. Select **Device > Advanced Service > Factory Reset > Factory Reset of I/O Boards** in the menu bar.

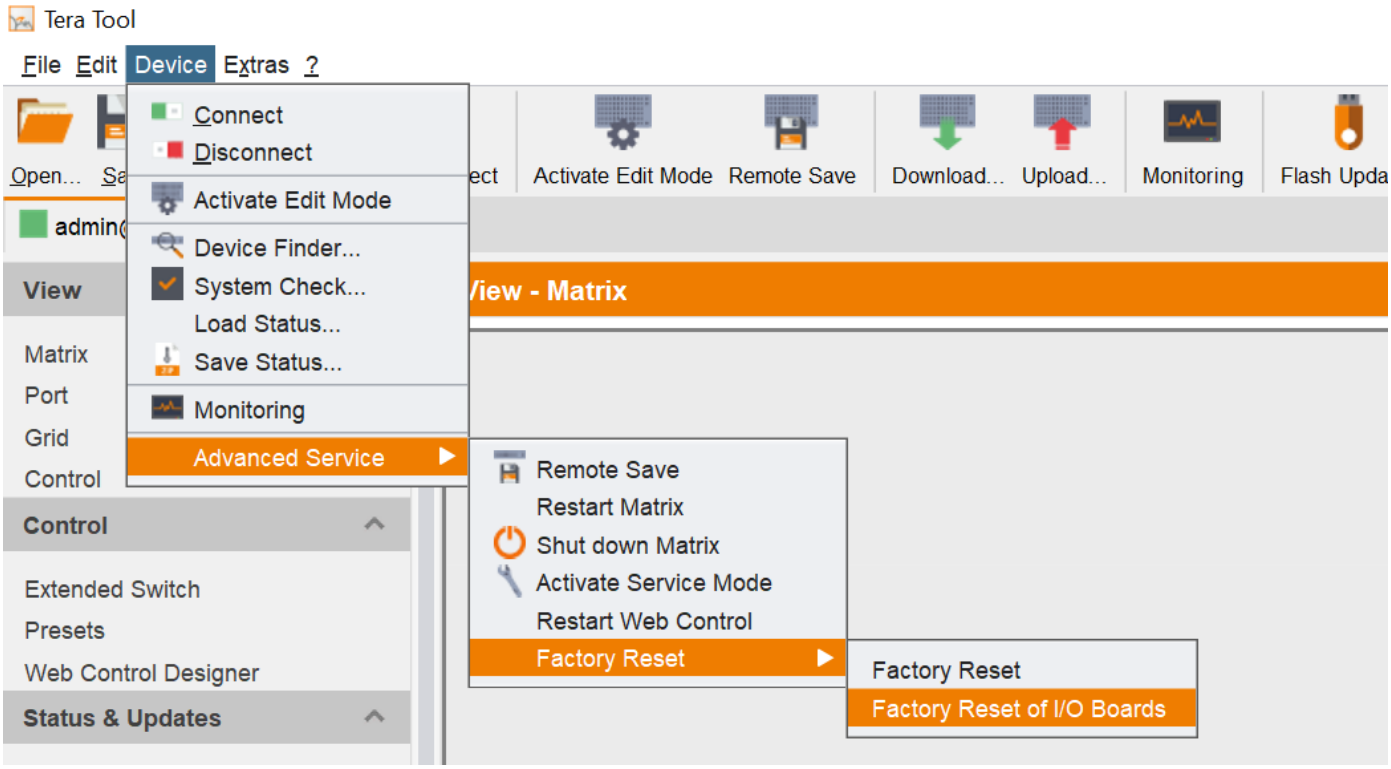


Fig. 246 ***Device Submenus***

An access window appears.

2. Enter the username and password of an administrator.
3. Click **Ok**.

A query to reset all I/O boards appears.

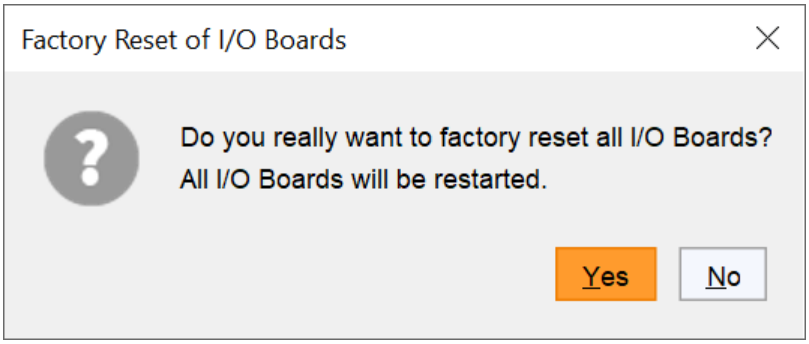


Fig. 247 *Dialog* ***Factory Reset of all I/O Boards***

4. Click **Yes** to reset all I/O boards.

All I/O boards are reset to factory settings.

10 Glossary

The following terms are commonly used in this manual or in video and KVM technology.

Term	Description
Auto Disconnect	Matrix function that allows an automatic disconnect between a CON Device and a CPU Device if the OSD is opened via this CON Device.
Auto Logout	Matrix function that describes the duration of keyboard and mouse inactivity after the user has been logged out from the OSD at this CON Device and disconnected from the CPU Device.
Cat X	Interface to connect any Cat 5e (Cat 6, Cat 7) cable.
CON Device	Logical object that summarizes several EXT Units of physical extender modules (CON Units) to switch more complex sink systems via matrix.
CON Timeout	Matrix function that allows an automatic disconnect of the own CON Device from the connected CPU Device after a predefined time.
CON Unit	Decoder extender module to connect to the console (monitor(s), keyboard, and mouse; optionally also with USB 2.0 devices).
Console	Monitor, keyboard, mouse, media control, external switching solution, etc.
CON ACL	Console Access Control List is a list that shows the respective switching rights for the various CON Devices.
CPU Auto Connect	Matrix function that allows an automatic connection establishment between the own CON Device and a random CPU Device that is available.
CPU Device	Logical object that summarizes several EXT Units of physical extender modules (CPU Units) to switch more complex source systems via matrix.
CPU Timeout	Matrix function that allows the user to disconnect after a predefined period of inactivity from the respective CPU Device.
CPU Unit	Encoder extender module to connect to a source.
DDC	Display Data Channel (DDC) is a serial communication interface between monitor and source. It allows data exchange via monitor cable and an automatic installation and configuration of a monitor driver by the operating system.
Dual Access	A system to operate a source from two sinks (consoles).
Dual Head	A system with two video connections
EXT Unit	Logical object for representing and managing an extender module physically connected directly to the matrix. Add-on modules, if applicable, are included in the EXT Unit of the respective extender module. Dual head extender modules will be managed as two independent EXT Units.
Fiber	Interface to connect single-mode or multi-mode fiber cables.
Force Connect	Matrix function that allows you to switch with the own CON Device to a CPU Device that is already used and in doing so taking keyboard and mouse control. The connected CON Device so far loses K/M control but keeps video control.
Force Disconnect	Matrix function that allows you to switch with the own CON Device to a CPU Device that is already used and in doing so to take KVM control. The connected CON Device so far loses complete KVM control.
HDMI	An interface for all-digital transmission of audio and video data.
KVM	Keyboard, video and mouse
Keyboard Connect	Matrix function that allows taking over the keyboard control of an inactive CON Device.
Macro Keys	Programmable keys that can execute a stringing together of commands to the matrix.
Mouse Connect	Matrix function that allows taking the mouse control of an inactive CON Device.
MTBF	Mean Time Between Failure (MTBF) is measured in power-on hours.

Term	Description
Multi-mode	50 µm multi-mode fiber cable.
MSC	Control of USB-HID of up to eight sources at one sink with only one connected mouse or keyboard. The sink can consist of up to eight monitors, or up to sixteen monitors when operating dual head sources. In a matrix system, Multi-Screen Control (MSC) can be set up at multiple sinks.
Non-Blocking Access	Matrix configuration where no user can be disturbed by the activity of another user.
OSD	The On-Screen Display is used to display information or to operate a device.
OSD Timeout	Matrix function that closes the OSD automatically after a predefined period of inactivity.
POH	Power-on hours correspond to the average operating time
Quad-Head	A system with four video connections
Release Time	Matrix function that allows a CON Device that is connected with the same CPU Device to release the K/M control after a predefined time.
Service Mode	Defined maintenance condition that allows updating of extender modules that are connected to the matrix.
SFP	SFPs (Small Form Factor Pluggable) are pluggable interface modules for Gigabit connections. SFP modules are available for Cat X and fiber interconnect cables.
Single Head	A system with one video connection
Single-mode	9 µm single-mode fiber cable
Tie Line	Communication connection in a cascading system of two matrices.
USB-HID	USB-HID devices (Human Interface Device) allow for data input. Typical USB-HID devices include keyboards, mice, graphics tablets and touch screens. Storage, video, and audio devices are **not** HID.
User ACL	User Access Control List is a list that shows the respective switching rights for the various users.
Video Sharing	Matrix function that allows switching from the user's CON Device to any CPU Device with video.

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13 Change Log

This table offers an overview of the most important changes available through firmware updates, such as new functions, changed configuration or operation.

Edition	Date	Software version	Chapter	New functions/changes
Rev 0	2025-06-06	V 6.0.1.0 2025-04-02 Web Control 1.2.0	-	Initial user manual, extracted from the matrix user manual, completely reworked, see Release Notes