

USER GUIDE

ACXC SERIES

DKM COMPACT II SWITCHES

24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT BLACKBOX.COM

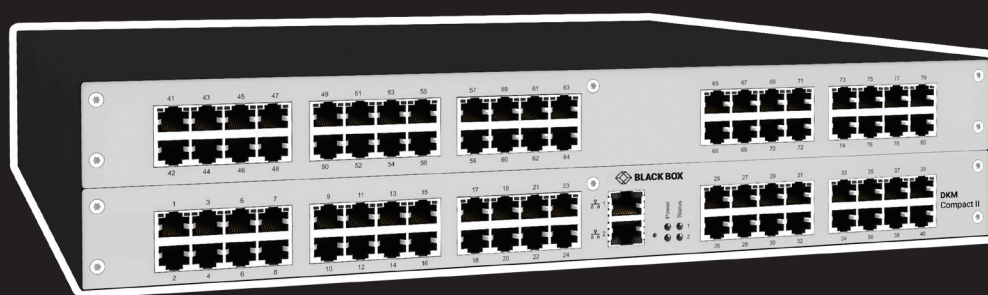


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CHAPTER 1: SPECIFICATIONS

1.1 SPECIFICATIONS

TABLE 1-1. SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Fiber Optic Switch Connectors	Console Ports: (16 - 160) LC duplex fiber optic ports (2) Network ports (2) Power supply (1) Grounding
Cat-X Switch Connectors	Console Ports: (16 - 160) Cat-X ports (2) Network ports (2) Power supply (1) Grounding
LED interface	1. To show PC port selection status 2. To show PC port connection status
Storage Temperature	-25 to 60 °C (-13 to 140 °F)
Operating Temperature	5 to 45 °C (41 to 113 °F)
Max Operating Humidity	Max. 80% non-condensing
Heat Dissipation	Corresponds to power consumption in Watt (W)
Power	Input: 100-240 VAC, 3A, 50/60Hz Output: 12V, 12.5A
Dimensions 1RU chassis	442 x 449 x 44 mm (17.4" x 17.7" x 1.7")
Dimensions 2RU chassis	442 x 449 x 90 mm (17.4" x 17.7" x 3.5")
Dimensions 4RU chassis	442 x 449 x 177 mm (17.4" x 17.7" x 7.0")
Weight 1 RU Chassis	7.7 kg (17 lb)
Weight 2 RU Chassis	11 kg (24.3 lb)
Weight 4 RU Chassis	19 kg (41.9 lb)
Certifications	FCC Class A, CE



2.1 INTRODUCTION

The DKM Compact II KVM Matrix Switches come in sizes of 1, 2, and 4 RU with the intended use to establish connections from consoles (monitor, keyboard, mouse, and other peripheral devices) to various sources (computer, CPU). These switches support the capability to facilitate 1G and 3G technology within a single frame, they support modern applications with a combination of HD and 4K video resolutions in a very economical way. Their custom-design chassis allows for future field upgradability, so you can scale your system from 40 ports to 80 ports or even up to 160 ports to meet your business needs. CATx DKM Switches enable you to extend KVM signals up to 140 meters (459 feet) over standard CATx cable. If you're using CATx 3G, you can extend signals up to 100 meters (328 feet). Fiber DKM Switches enable you to extend KVM signals up to 400 meters (1312 feet) over standard multimode fiber or even 10 kilometers (6.2 miles) over single mode fiber. Hybrid DKM Switches enable you to extend KVM signals up to 10 kilometers (6.2 miles) over singlemode fiber or 400 meters (1312 feet) over multimode fiber. They also allow you to extend KVM signals up to 140 meters (459 feet) over standard CATx cable. If you're using CATx 3G, you can extend signals up to 100 meters (328 feet). If one of these standard switches don't meet your requirements, we can create custom versions specific to your application.

2.2 FEATURES

- ♦ Choose catx, fiber, or mixed configurations for 1g or 3g
- ♦ Maximum configuration of up to 160 independent ports that can be defined and switched either as a console or cpu
- ♦ Compatible with upcoming 1g/3g, ipv6
- ♦ Modular design is easy to scale and maintain
- ♦ Compatible with all Black Box DKM kvm extenders
- ♦ Has redundant power supply unit and network interface connections
- ♦ Versatility: with only 3 types of chassis and only 5 types of i/o modules, an almost endless number of customer specific Black Box matrix switches are possible

2.3 WHAT'S INCLUDED

Your package should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com

- ♦ (1) 1,2, or 4 RU DKM Compact II Matrix Switch
- ♦ (2) IEC 320, C13 to 3 Prong, Power Cords w/ Locking mechanism (6.5 feet)
- ♦ (1) Pair of mounting ears
- ♦ (1) 4-Pack of rubber feet (1) DB9-F to RJ45 adapter

2.4 INSTALLATION EXAMPLES

SingleHead Installation.

The following section shows common installation configurations of the DKM.

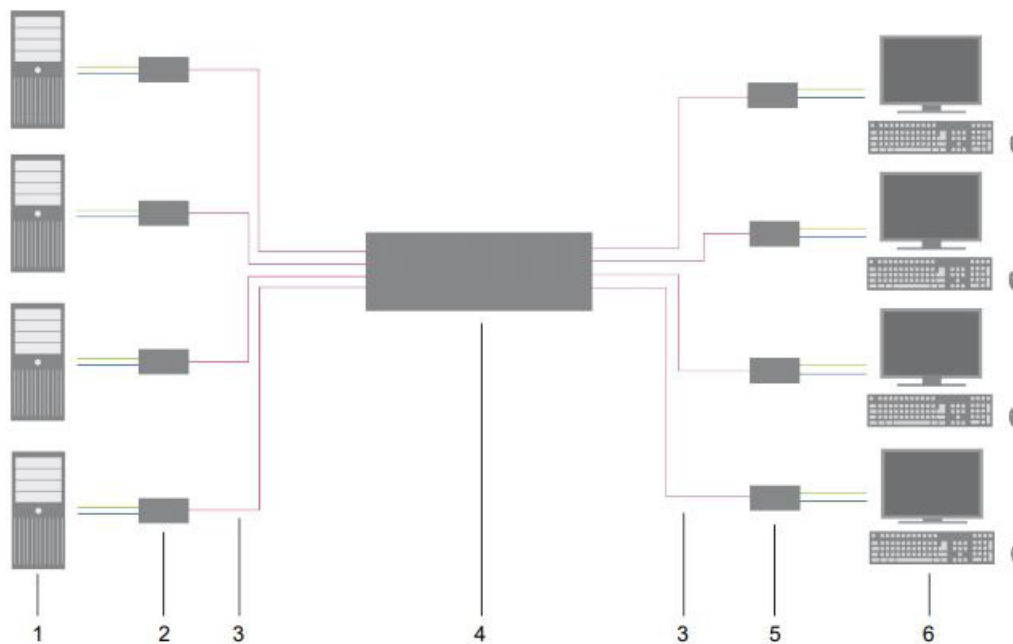


Figure 2-4.1 Installation Example (example Single-head installation)

TABLE 2-4.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Source (computer, CPU)	Source machine examples: computer, CPU
2	CPU Units	CPU Units
3	Interconnected cable	Interconnected cable to connect devices to switch
4	DKM Compact II KVM Matrix Switch	DKM Compact II KVM Matrix Switch
5	CON Units	Console Units
6	Console (monitor, keyboard, mouse)	Console units examples: monitor, keyboard, mouse

Single-Head Installation with Multi-Screen Control

When using Multi-Screen Control, switching control between up to eight connected sources (computers, CPUs) can be performed at one sink with only one connected mouse or keyboard. In a Single-Head installation, the sink can consist of up to eight monitors. In a matrix system, Multi-Screen Control can be set up at multiple sinks.

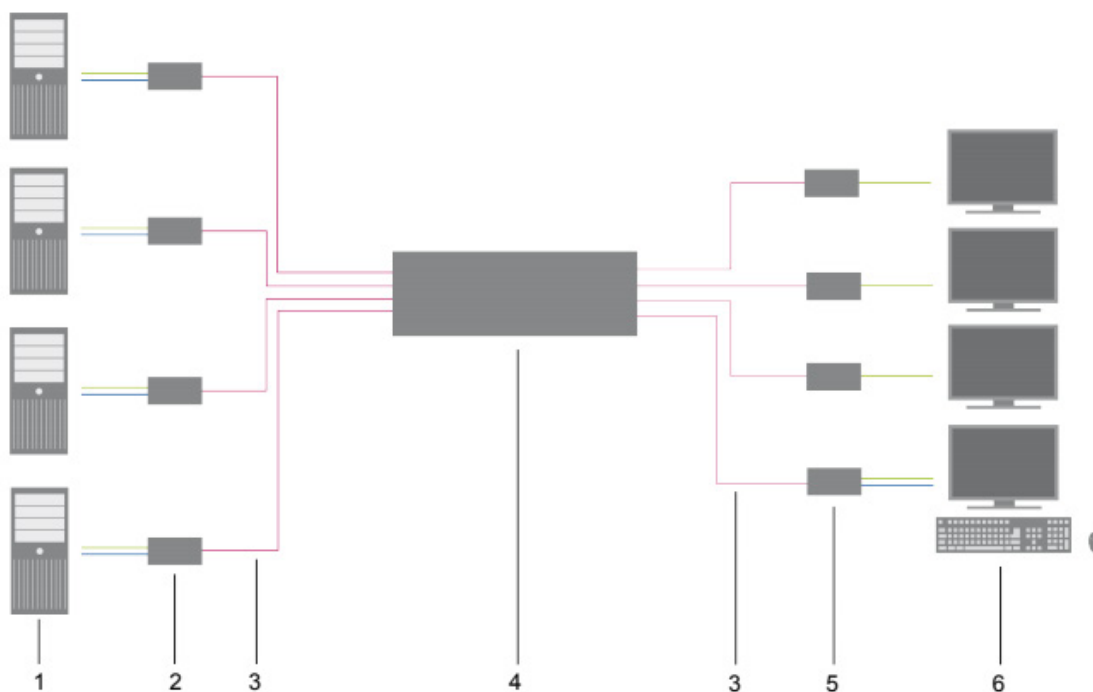


Figure 2-4.2 Installation Example (example Single-head installation)

TABLE 2-4.2. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Source (computer, CPU)	Source machine examples: computer, CPU
2	CPU Units	CPU Units
3	Interconnected cable	Interconnected cable to connect devices to switch
4	DKM Compact II KVM Matrix Switch	DKM Compact II KVM Matrix Switch
5	CON Units	Console Units
6	Console (monitor, keyboard, mouse)	Console units examples: monitor, keyboard, mouse

CHAPTER 2: OVERVIEW

When using Multi-Screen Control, switching control between up to eight connected sources (computers, CPUs) can be performed at one sink with only one connected mouse or keyboard. In a Dual-Head installation, the sink can consist of up to sixteen monitors when operating Dual-Head Sources. In a matrix system, Multi-Screen Control can be set up at multiple sinks.

Dual-Head Installation with Multi-Screen Control

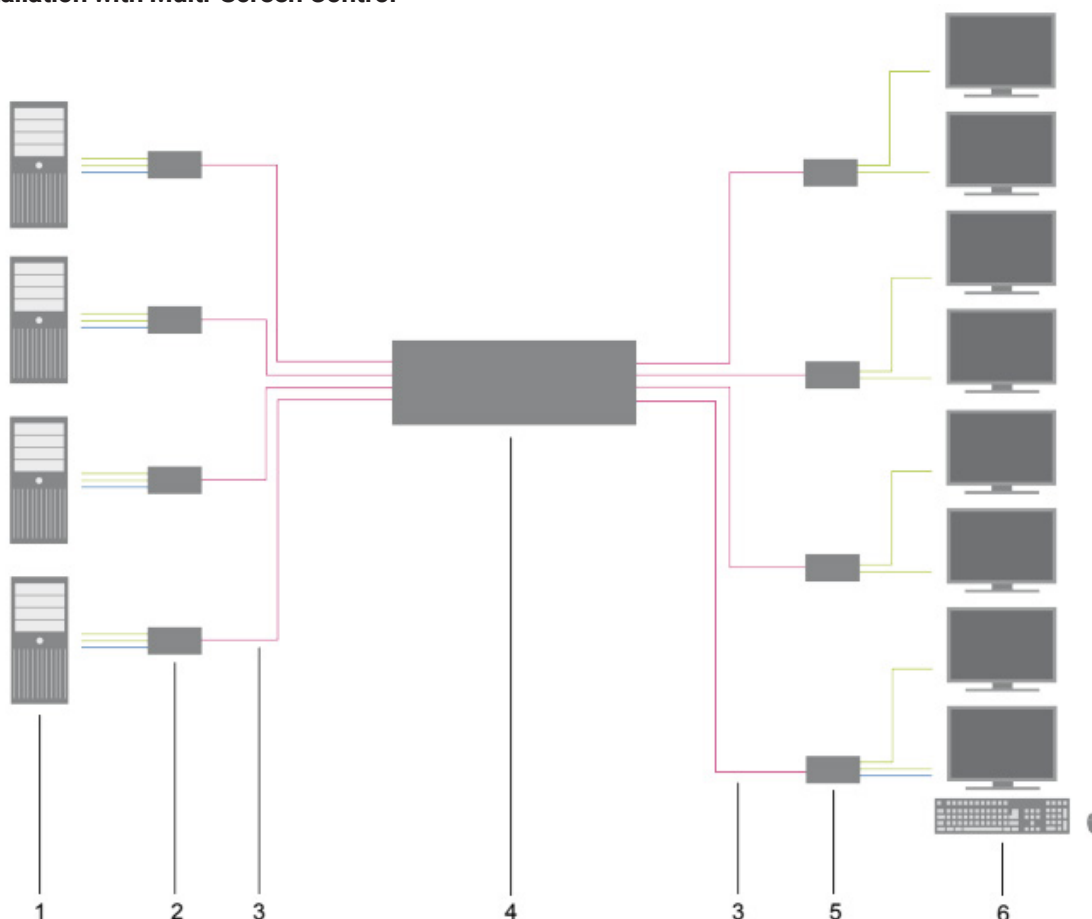


Figure 2-4.3 Installation Example (example Single-head installation)

TABLE 2-4.3. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Source (computer, CPU)	Source machine examples: computer, CPU
2	CPU Units	CPU Units
3	Interconnected cable	Interconnected cable to connect devices to switch
4	DKM Compact II KVM Matrix Switch	DKM Compact II KVM Matrix Switch
5	CON Units	Console Units
6	Console (monitor, keyboard, mouse)	Console units examples: monitor, keyboard, mouse

Keep in mind that any signal source can be switched to any number of monitors that will show the video signal at the same time. If required, audio can be switched as well.

CHAPTER 2: OVERVIEW

2.5 PRODUCT RANGE - STANDARD SYSTEM

2.5.1 DKM COMPACT II KVM MATRIX FLEX FIBER 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC16F-1G	DKM COMPACT II SWITCH 16-PORT, FIBER 1G	1 RU
ACXC24F-1G	DKM COMPACT II SWITCH 24-PORT, FIBER 1G	1 RU
ACXC32F-1G	DKM COMPACT II SWITCH 32-PORT, FIBER 1G	1 RU
ACXC40F-1G	DKM COMPACT II SWITCH 40-PORT, FIBER 1G	1 RU
ACXC48F-1G	DKM COMPACT II SWITCH 48-PORT, FIBER 1G	2 RU
ACXC64F-1G	DKM COMPACT II SWITCH 64-PORT, FIBER 1G	2 RU
ACXC80F-1G	DKM COMPACT II SWITCH 80-PORT, FIBER 1G	2 RU
ACXC120F-1G	DKM COMPACT II SWITCH 120-PORT, FIBER 1G	4 RU
ACXC128F-1G	DKM COMPACT II SWITCH 128-PORT, FIBER 1G	4 RU
ACXC144F-1G	DKM COMPACT II SWITCH 144-PORT, FIBER 1G	4 RU
ACXC160F-1G	DKM COMPACT II SWITCH 160-PORT, FIBER 1G	4 RU

2.5.2 DKM COMPACT II KVM MATRIX FLEX FIBER 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC16F-3G	DKM COMPACT II SWITCH 16-PORT, FIBER 3G	1 RU
ACXC24F-3G	DKM COMPACT II SWITCH 24-PORT, FIBER 3G	1 RU
ACXC32F-3G	DKM COMPACT II SWITCH 32-PORT, FIBER 3G	1 RU
ACXC40F-3G	DKM COMPACT II SWITCH 40-PORT, FIBER 3G	1 RU
ACXC48F-3G	DKM COMPACT II SWITCH 48-PORT, FIBER 3G	2 RU
ACXC64F-3G	DKM COMPACT II SWITCH 64-PORT, FIBER 3G	2 RU
ACXC80F-3G	DKM COMPACT II SWITCH 80-PORT, FIBER 3G	2 RU
ACXC120F-3G	DKM COMPACT II SWITCH 120-PORT, FIBER 3G	4 RU
ACXC128F-3G	DKM COMPACT II SWITCH 128-PORT, FIBER 3G	4 RU
ACXC144F-3G	DKM COMPACT II SWITCH 144-PORT, FIBER 3G	4 RU
ACXC160F-3G	DKM COMPACT II SWITCH 160-PORT, FIBER 3G	4 RU



2.5.3 DKM COMPACT II KVM MATRIX FLEX HYBRID 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC24FH16-1G	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G	1 RU
ACXC24FH40-1G	DKM COMPACT II SWITCH 64-PORT, HYBRID 1G	2 RU
ACXC40FH24-1G	DKM COMPACT II SWITCH 64-PORT, HYBRID 1G	2 RU
ACXC40FH40-1G	DKM COMPACT II SWITCH 80-PORT, HYBRID 1G	2 RU
ACXC80FH40-1G	DKM COMPACT II SWITCH 120-PORT, HYBRID 1G	2 RU
ACXC80FH80-1G	DKM COMPACT II SWITCH 160-PORT, HYBRID 1G	4 RU
ACXC120FH40-1G	DKM COMPACT II SWITCH 160-PORT, HYBRID 1G	4 RU

2.5.4 DKM COMPACT II KVM MATRIX FLEX HYBRID 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC24FH16-3G	KVM Matrix 40-Port, Hybrid 3G	1 RU
ACXC24FH40-3G	KVM Matrix 64-Port, Hybrid 3G	2 RU
ACXC40FH24-3G	KVM Matrix 64-Port, Hybrid 3G	2 RU
ACXC40FH40-3G	KVM Matrix 80-Port, Hybrid 3G	2 RU
ACXC80FH40-3G	KVM Matrix 120-Port, Hybrid 3G	2 RU
ACXC80FH80-3G	KVM Matrix 160-Port, Hybrid 3G	4 RU
ACXC120FH40-3G	KVM Matrix 160-Port, Hybrid 3G	4 RU

2.5.5 DKM COMPACT II KVM MATRIX FLEX GRID CAT X 1G AND FIBER 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC40-1G-2RU	DKM COMPACT II SWITCH 40-PORT, CAT X 1G, CUSTOM DESIGN, 2 RU	2 RU
ACXC40-1G-4RU	DKM COMPACT II SWITCH 40-PORT, CAT X 1G, CUSTOM DESIGN, 4 RU	4 RU
ACXC40F-1G-2RU	DKM COMPACT II SWITCH 40-PORT, FIBER 1G, CUSTOM DESIGN, 2 RU	2 RU
ACXC40F-1G-4RU	DKM COMPACT II SWITCH 40-PORT, FIBER 1G, CUSTOM DESIGN, 4 RU	4 RU
ACXC24F16-1G-2RU	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G, CUSTOM DESIGN 2 RU	2 RU
ACXC24F16-1G-4RU	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G, CUSTOM DESIGN 4 RU	4 RU

CHAPTER 2: OVERVIEW

2.5.6 DKM COMPACT II KVM MATRIX FLEX HYBRID 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC24FH16-1G	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G	1 RU
ACXC24FH40-1G	DKM COMPACT II SWITCH 64-PORT, HYBRID 1G	2 RU
ACXC40FH24-1G	DKM COMPACT II SWITCH 64-PORT, HYBRID 1G	2 RU
ACXC40FH40-1G	DKM COMPACT II SWITCH 80-PORT, HYBRID 1G	2 RU
ACXC80FH40-1G	DKM COMPACT II SWITCH 120-PORT, HYBRID 1G	2 RU
ACXC80FH80-1G	DKM COMPACT II SWITCH 160-PORT, HYBRID 1G	4 RU
ACXC120FH40-1G	DKM COMPACT II SWITCH 160-PORT, HYBRID 1G	4 RU

2.5.7 DKM COMPACT II KVM MATRIX FLEX HYBRID 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC24FH16-3G	KVM Matrix 40-Port, Hybrid 3G	1 RU
ACXC24FH40-3G	KVM Matrix 64-Port, Hybrid 3G	2 RU
ACXC40FH24-3G	KVM Matrix 64-Port, Hybrid 3G	2 RU
ACXC40FH40-3G	KVM Matrix 80-Port, Hybrid 3G	2 RU
ACXC80FH40-3G	KVM Matrix 120-Port, Hybrid 3G	2 RU
ACXC80FH80-3G	KVM Matrix 160-Port, Hybrid 3G	4 RU
ACXC120FH40-3G	KVM Matrix 160-Port, Hybrid 3G	4 RU

2.5.8 DKM COMPACT II KVM MATRIX FLEX HYBRID 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC40-1G-2RU	DKM COMPACT II SWITCH 40-PORT, CAT X 1G, CUSTOM DESIGN, 2 RU	
ACXC40-1G-4RU	DKM COMPACT II SWITCH 40-PORT, CAT X 1G, CUSTOM DESIGN, 4 RU	
ACXC40F-1G-2RU	DKM COMPACT II SWITCH 40-PORT, FIBER 1G, CUSTOM DESIGN, 2 RU	
ACXC40F-1G-4RU	DKM COMPACT II SWITCH 40-PORT, FIBER 1G, CUSTOM DESIGN, 4 RU	
ACXC24F16-1G-2RU	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G, CUSTOM DESIGN 2 RU	
ACXC24F16-1G-4RU	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G, CUSTOM DESIGN 4 RU	

2.5.9 DKM COMPACT II KVM MATRIX FLEX FIBER 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC16F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC24F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC32F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC40F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC48F-1G	KVM Matrix 16-Port, Fiber 1G	2 RU
ACXC64F-1G	KVM Matrix 16-Port, Fiber 1G	2 RU
ACXC80F-1G	KVM Matrix 16-Port, Fiber 1G	2 RU
ACXC120F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU
ACXC128F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU
ACXC144F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU
ACXC160F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU

2.5.10 DKM COMPACT II KVM MATRIX FLEX FIBER 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC16F-3G	KVM Matrix 16-Port, Cat X 1G	1 RU
ACXC24F-3G	KVM Matrix 24-Port, Cat X 1G	1 RU
ACXC32F-3G	KVM Matrix 32-Port, Cat X 1G	1 RU
ACXC40F-3G	KVM Matrix 40-Port, Cat X 1G	1 RU
ACXC48F-3G	KVM Matrix 48-Port, Cat X 1G	2 RU
ACXC64F-3G	KVM Matrix 64-Port, Cat X 1G	2 RU
ACXC80F-3G	KVM Matrix 80-Port, Cat X 1G	2 RU
ACXC120F-3G	KVM Matrix 120-Port, Cat X 1G	4 RU
ACXC128F-3G	KVM Matrix 128-Port, Cat X 1G	4 RU
ACXC144F-3G	KVM Matrix 144-Port, Cat X 1G	4 RU
ACXC160F-3G	KVM Matrix 160-Port, Cat X 1G	4 RU

CHAPTER 2: OVERVIEW

2.5.11 2.5.1 DKM COMPACT II KVM MATRIX FLEX HYBRID 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC24FH16-1G	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G	1 RU
ACXC24FH40-1G	DKM COMPACT II SWITCH 64-PORT, HYBRID 1G	2 RU
ACXC40FH24-1G	DKM COMPACT II SWITCH 64-PORT, HYBRID 1G	2 RU
ACXC40FH40-1G	DKM COMPACT II SWITCH 80-PORT, HYBRID 1G	2 RU
ACXC80FH40-1G	DKM COMPACT II SWITCH 120-PORT, HYBRID 1G	2 RU
ACXC80FH80-1G	DKM COMPACT II SWITCH 160-PORT, HYBRID 1G	4 RU
ACXC120FH40-1G	DKM COMPACT II SWITCH 160-PORT, HYBRID 1G	4 RU

2.5.12 2.5.2 DKM COMPACT II KVM MATRIX FLEX HYBRID 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC24FH16-3G	KVM Matrix 40-Port, Hybrid 3G	1 RU
ACXC24FH40-3G	KVM Matrix 64-Port, Hybrid 3G	2 RU
ACXC40FH24-3G	KVM Matrix 64-Port, Hybrid 3G	2 RU
ACXC40FH40-3G	KVM Matrix 80-Port, Hybrid 3G	2 RU
ACXC80FH40-3G	KVM Matrix 120-Port, Hybrid 3G	2 RU
ACXC80FH80-3G	KVM Matrix 160-Port, Hybrid 3G	4 RU
ACXC120FH40-3G	KVM Matrix 160-Port, Hybrid 3G	4 RU

2.5.13 2.5.2 DKM COMPACT II KVM MATRIX FLEX HYBRID 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC40-1G-2RU	DKM COMPACT II SWITCH 40-PORT, CAT X 1G, CUSTOM DESIGN, 2 RU	
ACXC40-1G-4RU	DKM COMPACT II SWITCH 40-PORT, CAT X 1G, CUSTOM DESIGN, 4 RU	
ACXC40F-1G-2RU	DKM COMPACT II SWITCH 40-PORT, FIBER 1G, CUSTOM DESIGN, 2 RU	
ACXC40F-1G-4RU	DKM COMPACT II SWITCH 40-PORT, FIBER 1G, CUSTOM DESIGN, 4 RU	
ACXC24F16-1G-2RU	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G, CUSTOM DESIGN 2 RU	
ACXC24F16-1G-4RU	DKM COMPACT II SWITCH 40-PORT, HYBRID 1G, CUSTOM DESIGN 4 RU	



2.5.14 DKM COMPACT II KVM MATRIX FLEX FIBER 1G

PART NO.	DESCRIPTION	RACK UNIT
ACXC16F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC24F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC32F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC40F-1G	KVM Matrix 16-Port, Fiber 1G	1 RU
ACXC48F-1G	KVM Matrix 16-Port, Fiber 1G	2 RU
ACXC64F-1G	KVM Matrix 16-Port, Fiber 1G	2 RU
ACXC80F-1G	KVM Matrix 16-Port, Fiber 1G	2 RU
ACXC120F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU
ACXC128F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU
ACXC144F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU
ACXC160F-1G	KVM Matrix 16-Port, Fiber 1G	4 RU

2.5.15 DKM COMPACT II KVM MATRIX FLEX FIBER 3G

PART NO.	DESCRIPTION	RACK UNIT
ACXC16F-3G	KVM Matrix 16-Port, Cat X 1G	1 RU
ACXC24F-3G	KVM Matrix 24-Port, Cat X 1G	1 RU
ACXC32F-3G	KVM Matrix 32-Port, Cat X 1G	1 RU
ACXC40F-3G	KVM Matrix 40-Port, Cat X 1G	1 RU
ACXC48F-3G	KVM Matrix 48-Port, Cat X 1G	2 RU
ACXC64F-3G	KVM Matrix 64-Port, Cat X 1G	2 RU
ACXC80F-3G	KVM Matrix 80-Port, Cat X 1G	2 RU
ACXC120F-3G	KVM Matrix 120-Port, Cat X 1G	4 RU
ACXC128F-3G	KVM Matrix 128-Port, Cat X 1G	4 RU
ACXC144F-3G	KVM Matrix 144-Port, Cat X 1G	4 RU
ACXC160F-3G	KVM Matrix 160-Port, Cat X 1G	4 RU

2.6 DEVICE VIEWS

2.6.1 OVERVIEW 16-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.1 shows the front panel of the 1RU 16-Port DKM Compact Matrix Switch supporting fiber optic. Figure 2-6.1.1 shows the front panel of the 1RU 16-Port DKM Compact Matrix Switch supporting Cat-X connection. Figure 2-6.1.2 shows the back panel. Tables 2-6.1 and 2-6.1.1 describe the components.

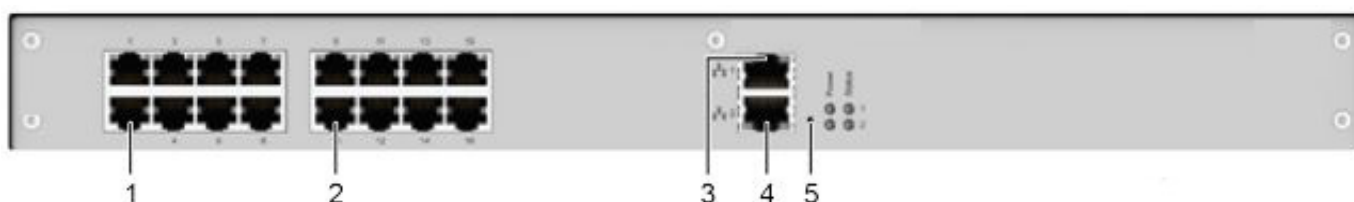


FIGURE 2-6.1. FRONT PANEL - ACXC16-1G & ACXC16-3G

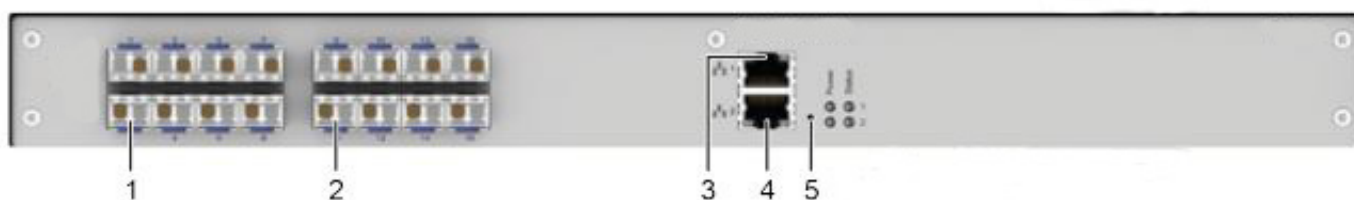


FIGURE 2-6.1.1. FRONT PANEL - ACXC16F-1G & ACXC16F-3G

TABLE 2-6.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
3	(1) Network port 1 (RJ45)	Network port
4	(1) Network port 2 (RJ45)	Network port
5	(1) Reset button	Switch Reset



FIGURE 2-6.1.2. BACK PANEL 16-PORT

TABLE 2-6.1.1. BACK PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.2 OVERVIEW 24-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.2 shows the front panel of the 1RU 24-Port DKM Compact Matrix Switch supporting fiber optic. Figure 2-6.2.1 shows the front panel of the 1RU 24-Port DKM Compact Matrix Switch supporting Cat-X connection. Figure 2-6.2.2 shows the back panel. Tables 2-6.2 and 2-6.2.1 describe the components.

TABLE 2-6.2. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
3	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
4	(1) Network port 1 (RJ45)	Network port
5	(1) Network port 2 (RJ45)	Network port
6	(1) Reset button	Switch Reset

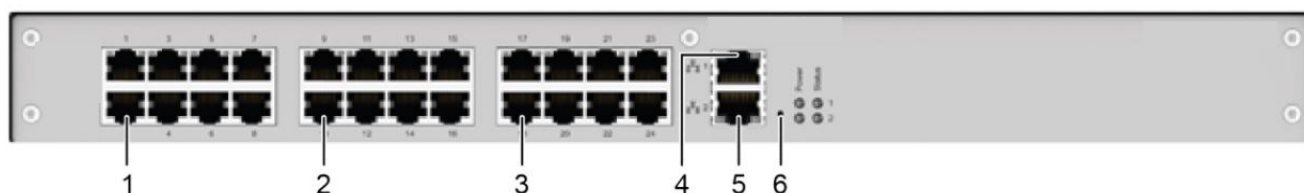


FIGURE 2-6.2. FRONT PANEL - ACXC24-1G & ACXC24-3G

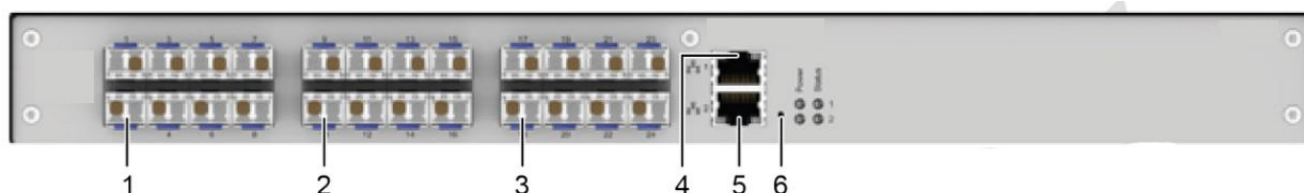


FIGURE 2-6.2.1. FRONT PANEL - ACXC24F-1G & ACXC24F-3G



FIGURE 2-6.2.2 BACK PANEL 24-PORT

TABLE 2-6.2.1. BACK PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.3 OVERVIEW 32-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.3 shows the front panel of the 1RU 32-Port DKM Compact Matrix Switch supporting fiber optic. Figure 2-6.3.1 shows the front panel of the 1RU 32-Port DKM Compact Matrix Switch supporting Cat-X connection. Figure 2-6.3.2 shows the back panel. Tables 2-6.3 and 2-6.3.1 describe the components.

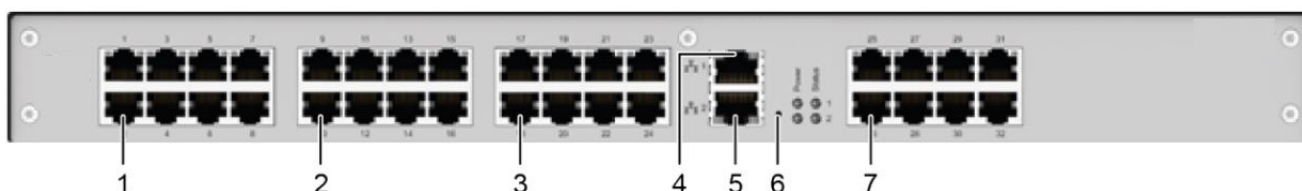


FIGURE 2-6.3. FRONT PANEL - ACXC32-1G & ACXC32-3G

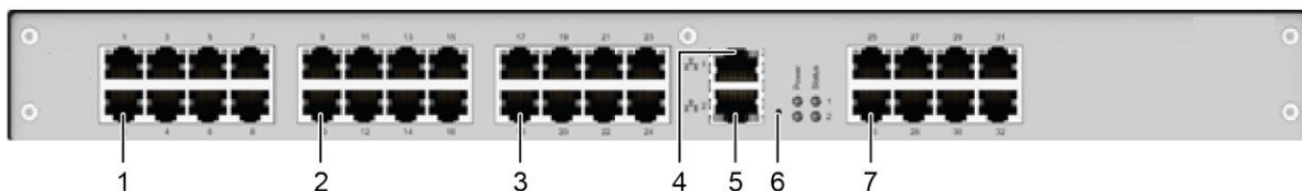


FIGURE 2-6.3.1. FRONT PANEL - ACXC32F-1G & ACXC32F-3G

TABLE 2-6.3. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
3	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
4	(1) Network port 1 (RJ45)	Network port
5	(1) Network port (RJ45)	Network port
6	(1) Reset button	Switch Reset
7	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices

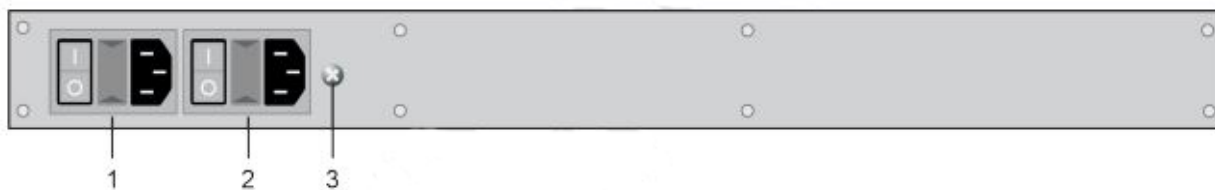


FIGURE 2-6.3.2 BACK PANEL 32-PORT

TABLE 2-6.3.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.4 OVERVIEW 32-PORT DKM COMPACT MATRIX SWITCH WITH GRID

Figure 2-6.4 shows the front panel of the 1RU 32-Port DKM Compact Matrix Switch supporting fiber optic with grid. Figure 2-6.4.1 shows the front panel of the 1RU 32-Port DKM Compact Matrix Switch supporting Cat-X connection with grid. Figure 2-6.4.2 shows the back panel. Tables 2-6.4 and 2-6.4.1 describe the components.

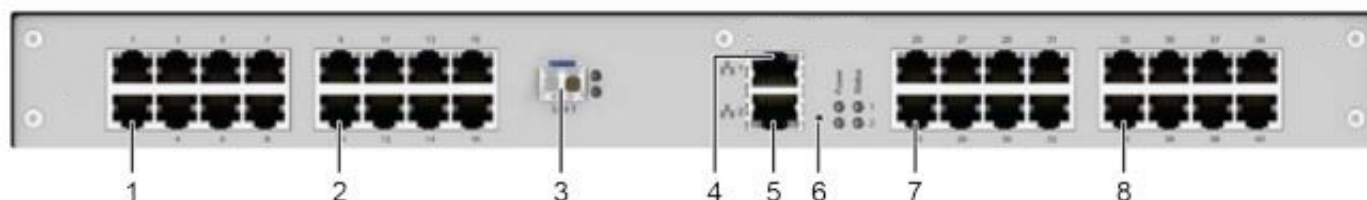


FIGURE 2-6.4. FRONT PANEL - ACXC32-1G-GRID

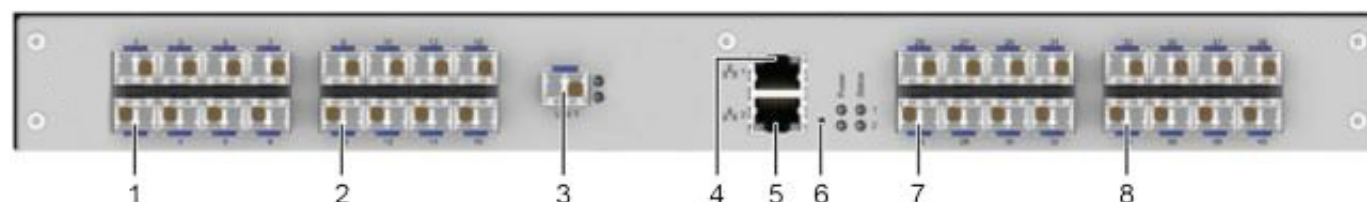


FIGURE 2-6.4.1. FRONT PANEL - ACXC32F-1G-GRID

TABLE 2-6.4. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
3	(1) Grid port 1	Grid port 1
4	(1) Network port 1 (RJ45)	Network port
5	(1) Network port 2 (RJ45)	Network port
6	(1) Reset button	Switch Reset
7	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
8	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices

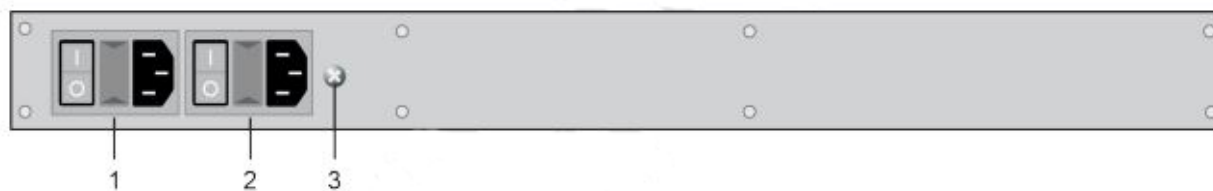


FIGURE 2-6.4.2 BACK PANEL 32-PORT WITH GRID

TABLE 2-6.4.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.5 OVERVIEW 40-PORT DKM COMPACT MATRIX SWITCH

Figure 2-5 shows the front panel of the 1RU 40-Port DKM Compact Matrix Switch supporting fiber optic. Figure 2-6.5.1 shows the front panel of the 1RU 40-Port DKM Compact Matrix Switch supporting Cat-X connection. Figure 2-6.5.2 shows the front panel of the 1RU 40-Port DKM Compact Matrix Switch supporting mixed fiber optic and Cat-X connection ports. Figure 2-6.5.3 shows the back panel. Tables 2-6.5 and 2-6.5.1 describe the components.

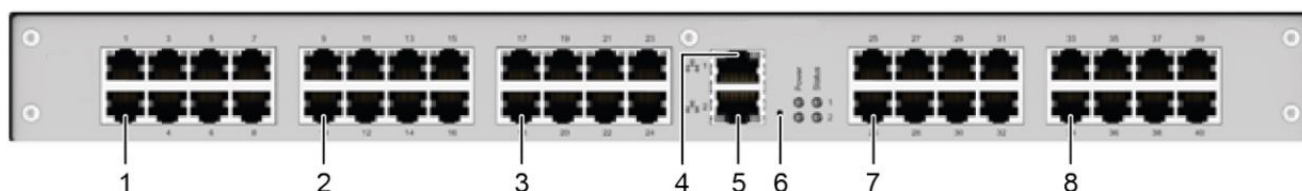


FIGURE 2-6.5. FRONT PANEL - ACXC40-1G & ACXC40-3G

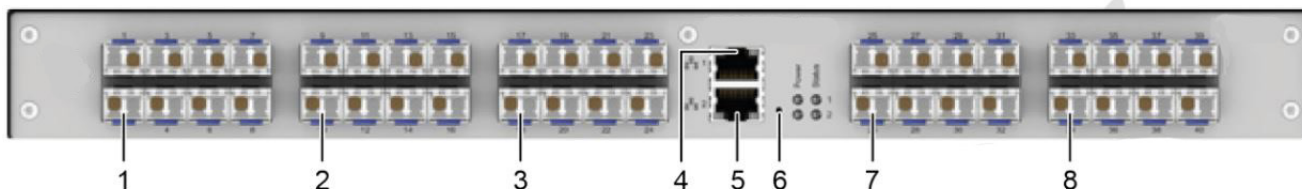


FIGURE 2-6.5.1. FRONT PANEL - ACXC40F-1G & ACXC40F-3G

TABLE 2-6.5. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
3	(1) Grid port 17 to 24	Grid port 1
4	(1) Network port 1 (RJ45)	Network port
5	(1) Network port 2 (RJ45)	Network port
6	(1) Reset button	Switch Reset
7	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
8	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices

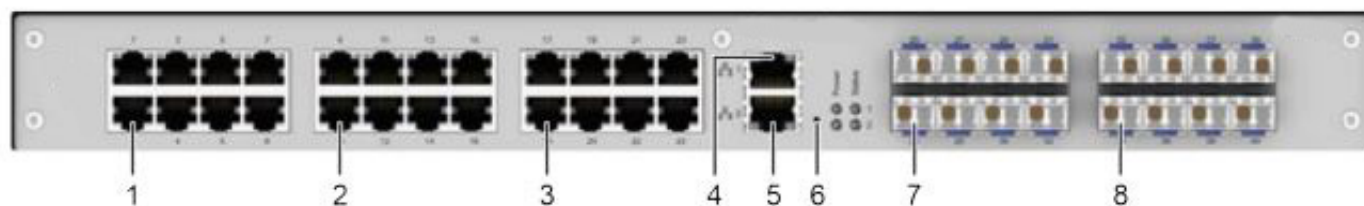


FIGURE 2-6.5.2. FRONT PANEL - ACXC24F16-1G

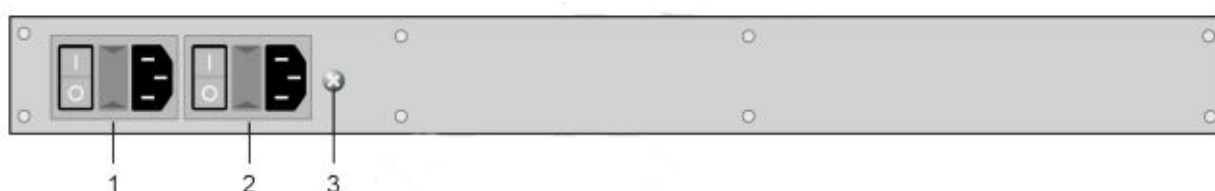


FIGURE 2-6.5.3 BACK PANEL 40-PORT

TABLE 2-6.5.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

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2.6.6 OVERVIEW 48-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.6 shows the front panel of the 2RU 48-Port DKM Compact Matrix Switch supporting fiber optic. Figure 2-6.6.1 shows the front panel of the 2RU 48-Port DKM Compact Matrix Switch supporting Cat-X connection. Figure 2-6.6.2 shows the back panel. Tables 2-6.6 and 2-6.6.1 describe the components.

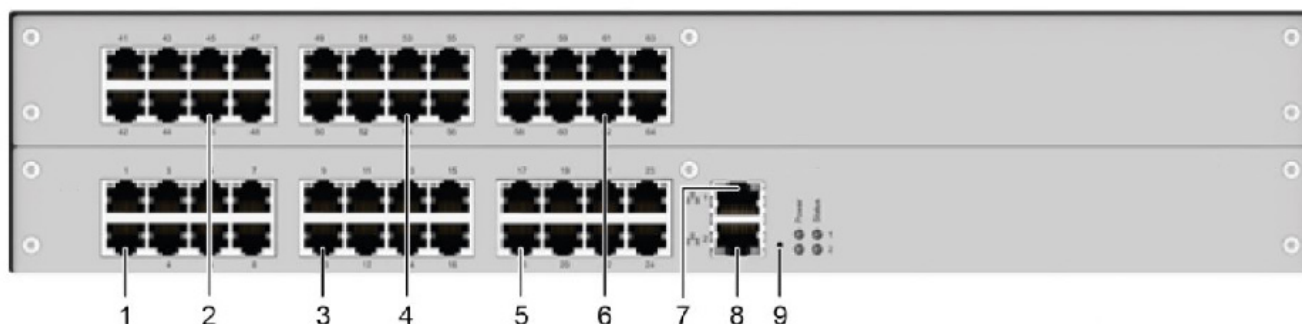


FIGURE 2-6.6. FRONT PANEL - ACXC48-1G & ACXC48-3G

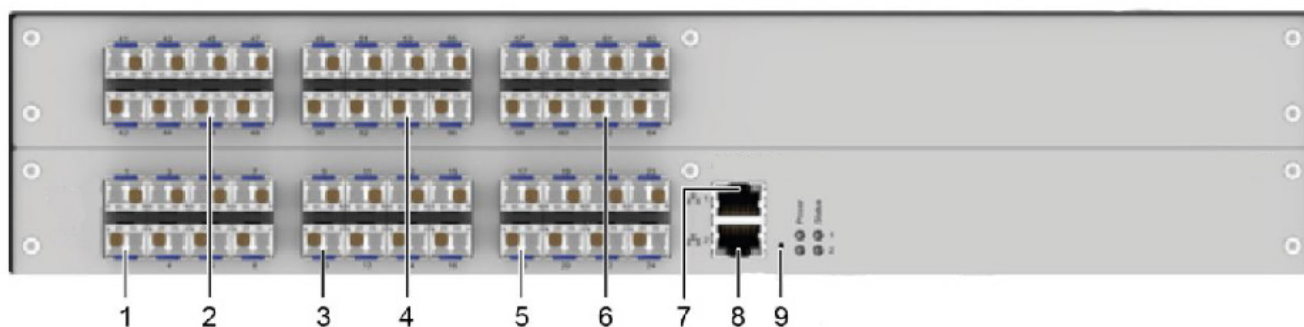


FIGURE 2-6.6.1. FRONT PANEL - ACXC48F-1G & ACXC48F-3G

TABLE 2-6.6. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) Grid port 9 to 16	I/O-Ports for connecting devices
4	(1) Grid port 49 to 56	I/O-Ports for connecting devices
5	(1) Grid port 17 to 24	I/O-Ports for connecting devices
6	(1) Grid port 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 2 (RJ45)	Network port
9	(1) Reset button	Switch Reset

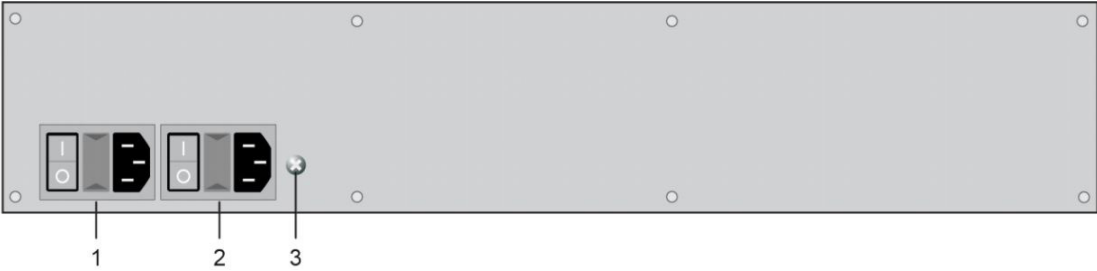


FIGURE 2-6.6.2 BACK PANEL 48-PORT

TABLE 2-6.6.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.7 OVERVIEW 64-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.7 shows the front panel of the 2RU 64-Port DKM Compact Matrix Switch supporting fiber optic ports. Figure 2-6.7.1 shows the front panel of the 2RU 64-Port DKM Compact Matrix Switch supporting Cat-X connection ports. Figure 2-6.7.2 and 2-6.7.3 show the front panel of the 2RU 64-Port DKM Compact Matrix Switch supporting mixed fiber optic and Cat-X connection ports. Figure 2-7.4 shows the back panel. Tables 2-6.7 and 2-6.7.1 describe the components.

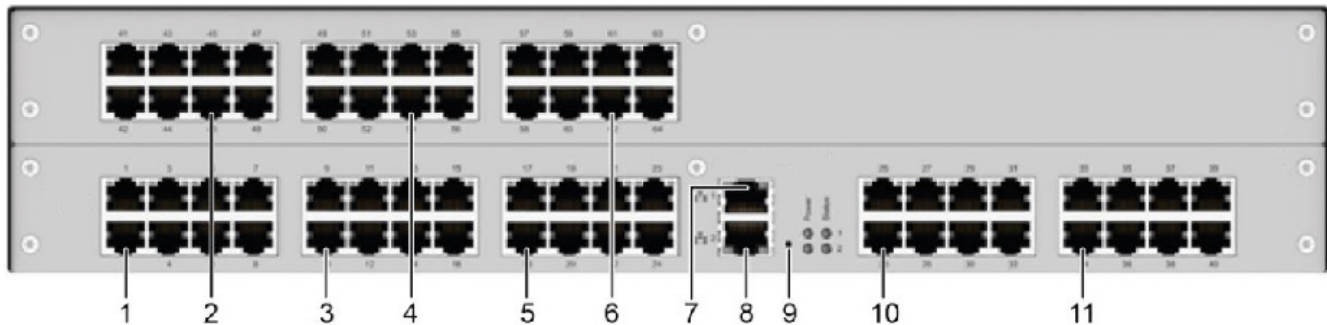


FIGURE 2-6.7 FRONT PANEL - ACXC64-1G & ACXC64-3G

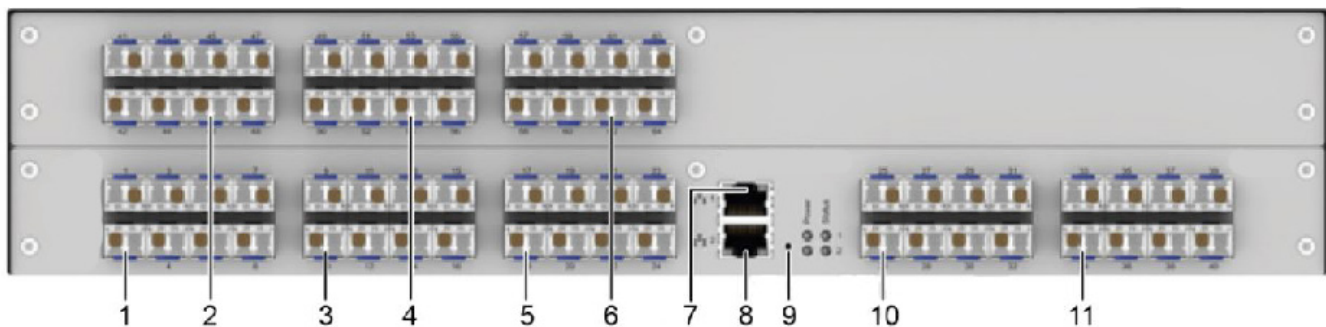


FIGURE 2-6.7.1. FRONT PANEL - ACXC64F-1G & ACXC64F-3G

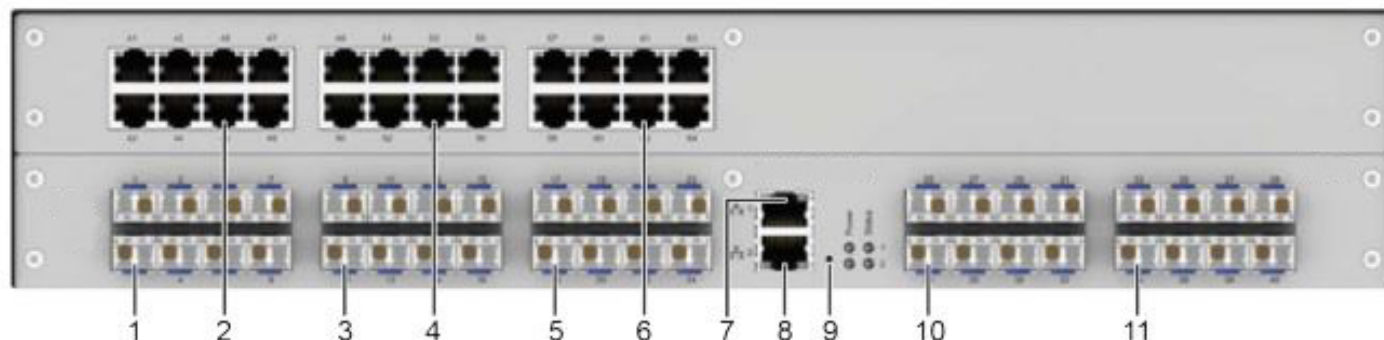


FIGURE 2-6.7.2. FRONT PANEL - ACXC24F40-1G & ACXC24F40-3G

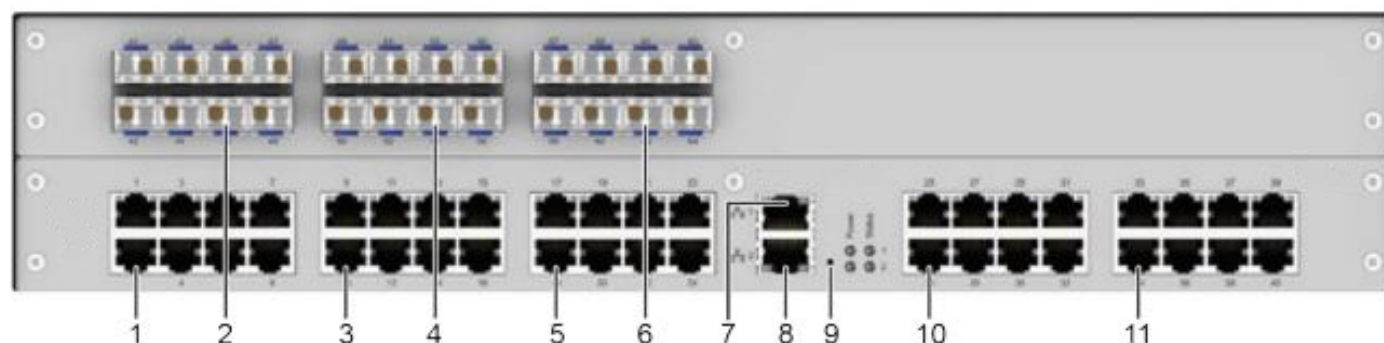


FIGURE 2-6.7.3. FRONT PANEL - CXC40F24-1G & CXC40F24-3G

TABLE 2-6.7. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
4	(1) I/O-Ports 49 to 56	I/O-Ports for connecting devices
5	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
6	(1) I/O-Ports 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 1 (RJ45)	Network port
9	(1) Reset button	Switch Reset
10	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
11	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices

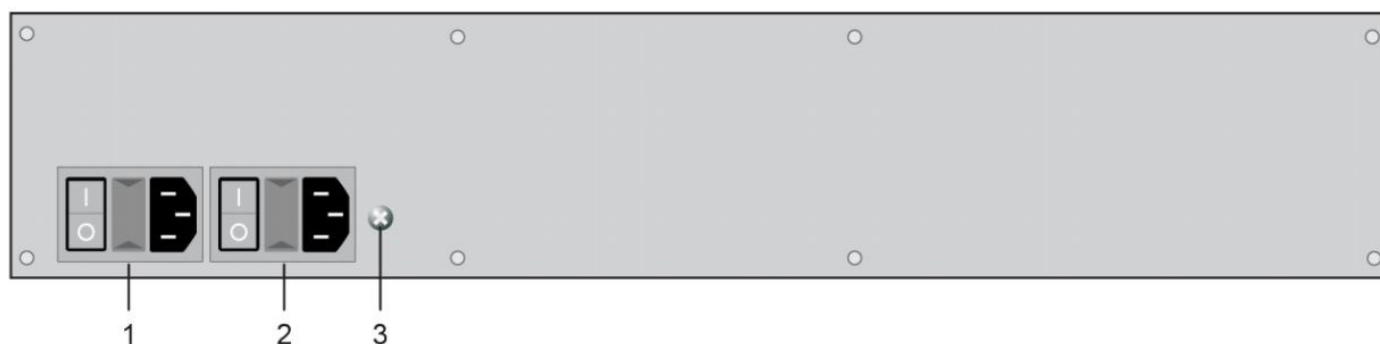


FIGURE 2-6.7.4 BACK PANEL 64-PORT

TABLE 2-6.7.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.8 OVERVIEW 80-PORT DKM COMPACT MATRIX SWITCH

Figure 2-8 shows the front panel of the 2RU 80-Port DKM Compact Matrix Switch supporting fiber optic ports. Figure 2-8.1 shows the front panel of the 2RU 80-Port DKM Compact Matrix Switch supporting Cat-X connection ports. Figure 2-8.2 shows the front panel of the 2RU 80-Port DKM Compact Matrix Switch supporting mixed fiber optic and Cat-X connection ports. Figure 2-8.3 shows the back panel. Tables 2-8 and 2-8.1 describe the components.

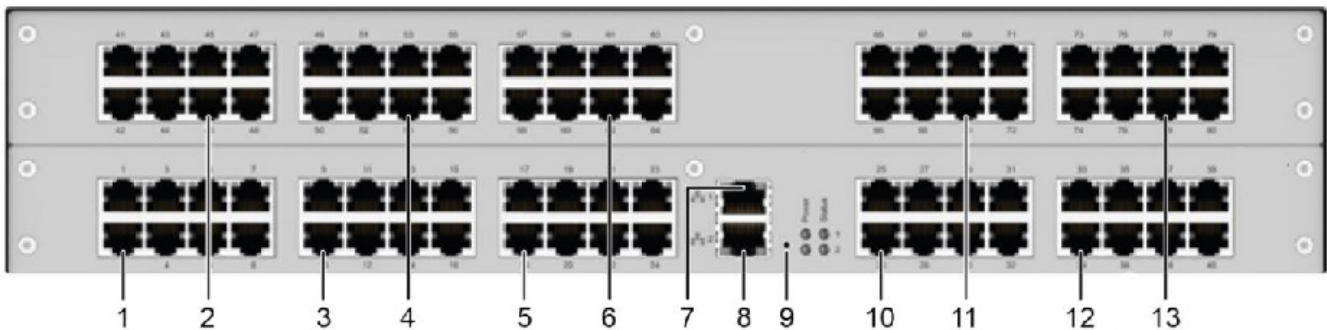


FIGURE 2-6.8. FRONT PANEL -ACXC80-1G & ACXC80-3G

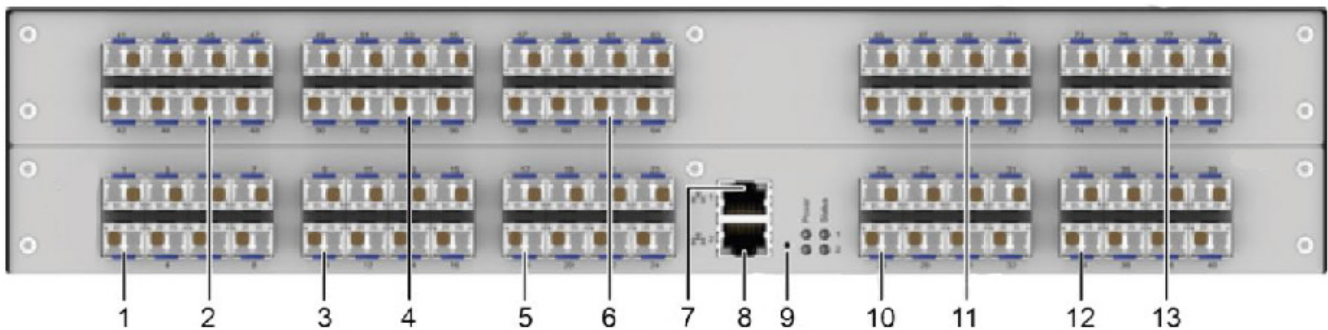


FIGURE 2-6.8.1. FRONT PANEL -ACXCF80-1G & ACXCF80-3G

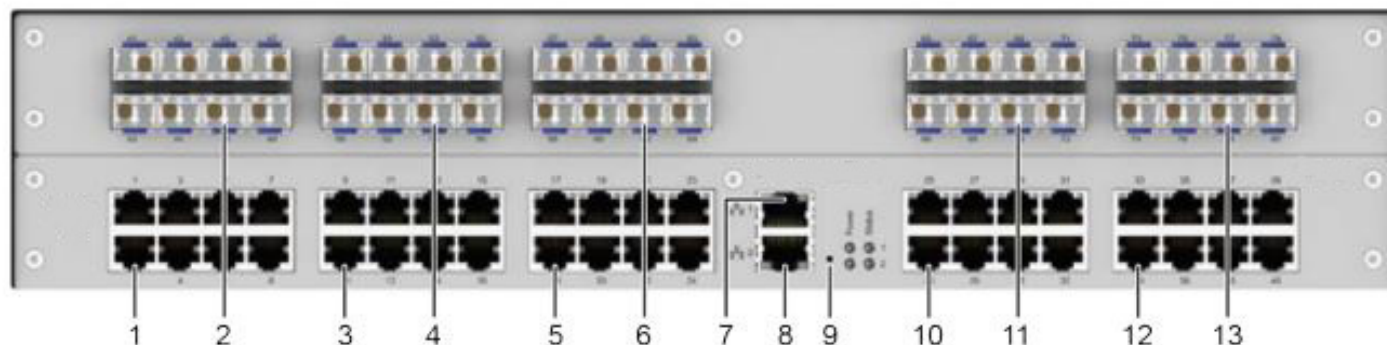


FIGURE 2-6.8.2. FRONT PANEL -ACXC40F40-1G & ACXC40F40-3G

TABLE 2-6.8. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
4	(1) I/O-Ports 49 to 56	I/O-Ports for connecting devices
5	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
6	(1) I/O-Ports 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 2 (RJ45)	Network port
9	(1) Reset button	Switch Reset
10	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
11	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
12	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices
13	(1) I/O-Ports 73 to 80	I/O-Ports for connecting devices

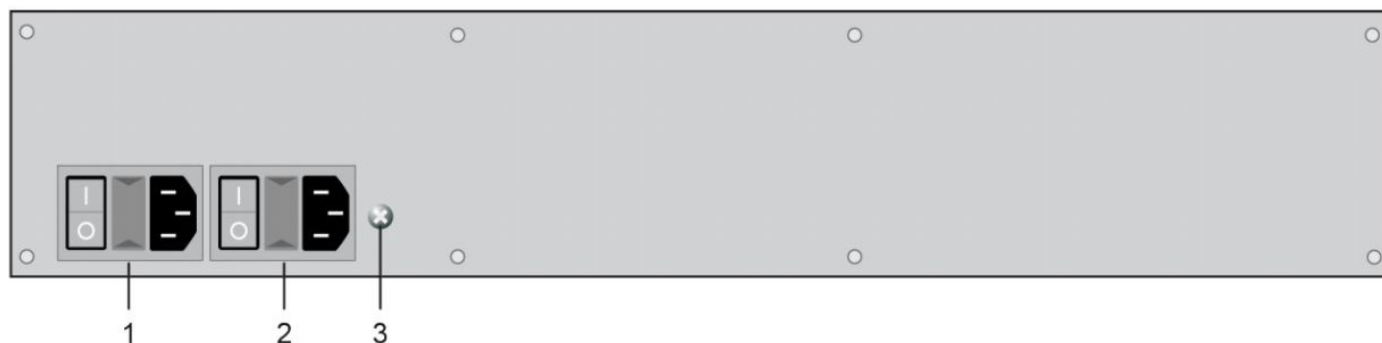


FIGURE 2-6.8.3 BACK PANEL 80-PORT

TABLE 2-6.8.1 FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

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2.6.9 OVERVIEW 120-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.9 shows the front panel of the 2RU 120-Port DKM Compact Matrix Switch supporting fiber optic ports. Figure 2-9.1 shows the front panel of the 2RU 64-Port DKM Compact Matrix Switch supporting Cat-X connection ports. Figure 2-9.2 show the front panel of the 2RU 64-Port DKM Compact Matrix Switch supporting mixed fiber optic and Cat-X connection ports. Figure 2-9.3 shows the back panel. Tables 2-9 and 2-9.1 describe the components.

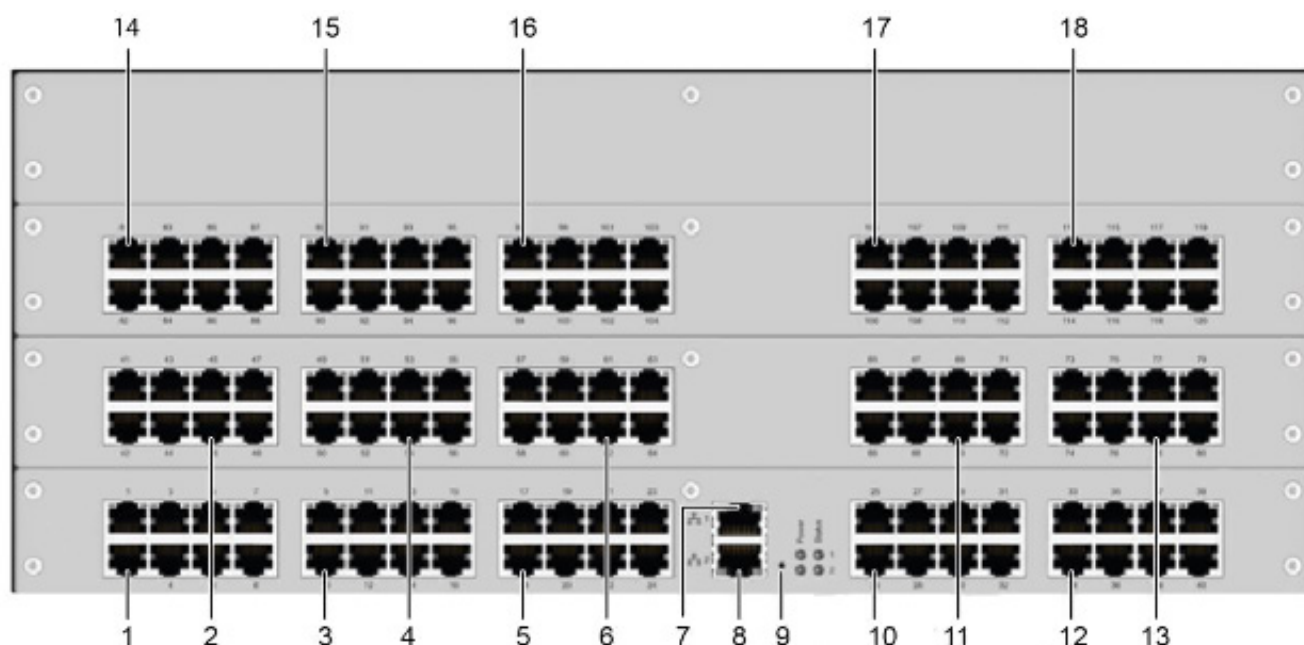


FIGURE 2-6.9. FRONT PANEL -ACXC40F40-1G & ACXC40F40-3G

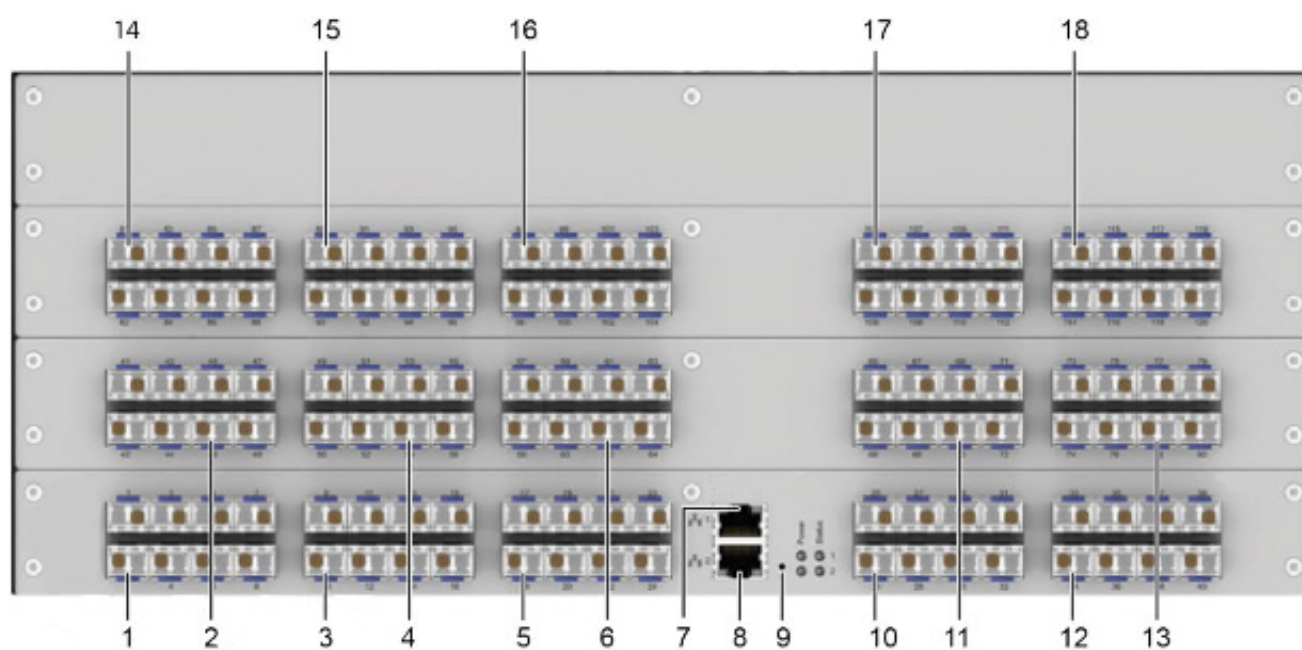


FIGURE 2-6.9.1. FRONT PANEL -ACXC40F40-1G & ACXC40F40-3G

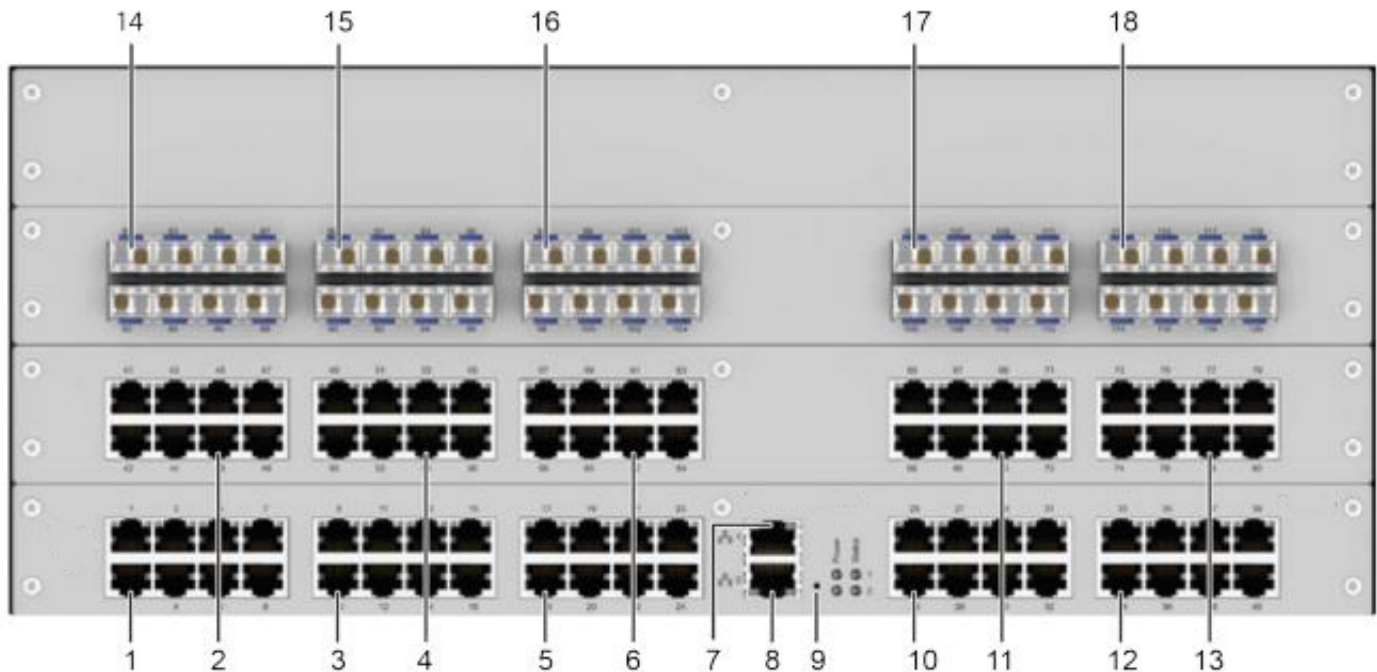


FIGURE 2-9.2. FRONT PANEL -ACXC40F40-1G & ACXC40F40-3G

TABLE 2-6.9. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
4	(1) I/O-Ports 49 to 56	I/O-Ports for connecting devices
5	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
6	(1) I/O-Ports 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 2 (RJ45)	Network port
9	(1) Reset button	Switch Reset
10	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
11	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
12	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices
13	(1) I/O-Ports 73 to 80	I/O-Ports for connecting devices
14	(1) I/O-Ports 81 to 88	I/O-Ports for connecting devices
15	(1) I/O-Ports 89 to 96	I/O-Ports for connecting devices
16	(1) I/O-Ports 97 to 104	I/O-Ports for connecting devices
17	(1) I/O-Ports 105 to 112	I/O-Ports for connecting devices
18	(1) I/O-Ports 113 to 120	I/O-Ports for connecting devices



FIGURE 2-6.9.3 BACK PANEL 120-PORT

TABLE 2-6.9.1 FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding

2.6.10 OVERVIEW 128-PORT DKM COMPACT MATRIX SWITCH

Figure 2-10 shows the front panel of the 2RU 128-Port DKM Compact Matrix Switch supporting fiber optic ports. Figure 2-10.1 shows the front panel of the 2RU 64-Port DKM Compact Matrix Switch supporting Cat-X connection ports. Figure 2-10.2 shows the back panel. Tables 2-10 and 2-10.1 describe the components.

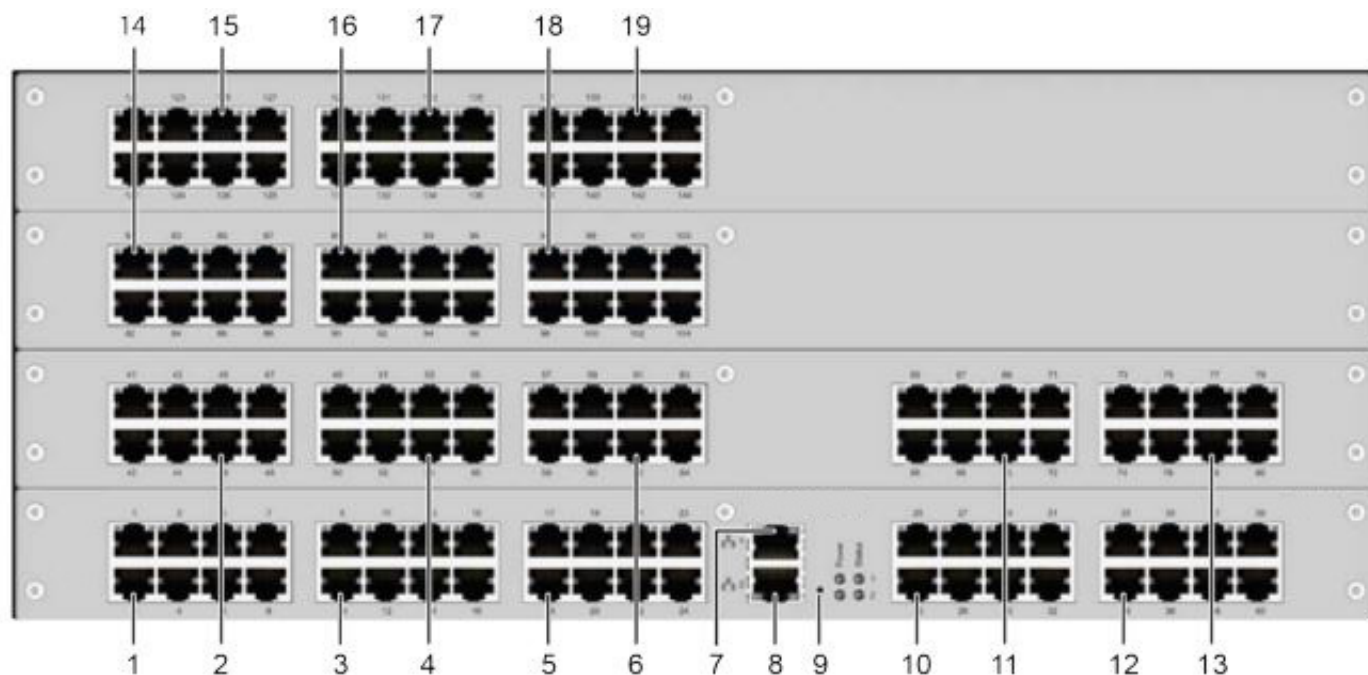


FIGURE 2-6.10 FRONT PANEL - ACXC128-1G & ACXC128-3G

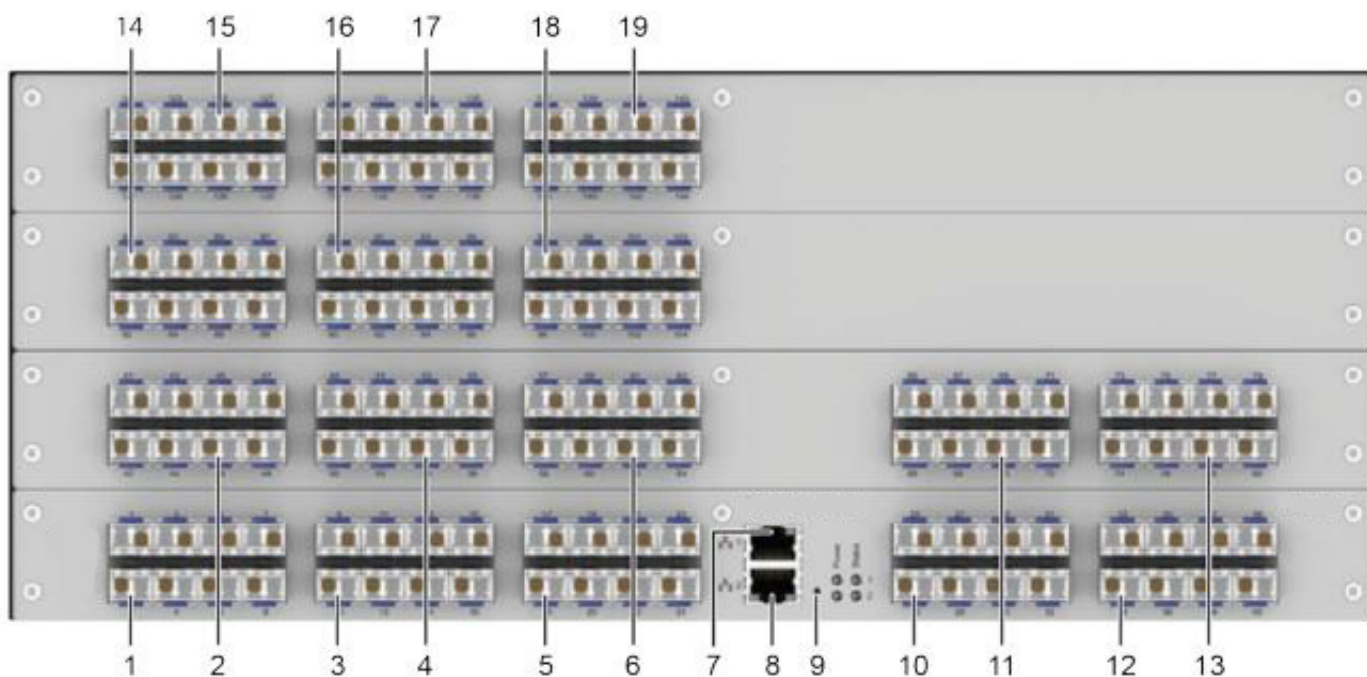


FIGURE 2-6.10.1 FRONT PANEL - ACXC128-1G & ACXC128-3G

TABLE 2-6.10. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
4	(1) I/O-Ports 49 to 56	I/O-Ports for connecting devices
5	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
6	(1) I/O-Ports 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 2 (RJ45)	Network port
9	(1) Reset button	Switch Reset
10	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
11	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
12	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
13	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
14	(1) I/O-Ports 81 to 88	I/O-Ports for connecting devices
15	(1) I/O-Ports 121 to 128	I/O-Ports for connecting devices
16	(1) I/O-Ports 89 to 96	I/O-Ports for connecting devices
17	(1) I/O-Ports 129 to 136	I/O-Ports for connecting devices
18	(1) I/O-Ports 97 to 104	I/O-Ports for connecting devices
19	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices

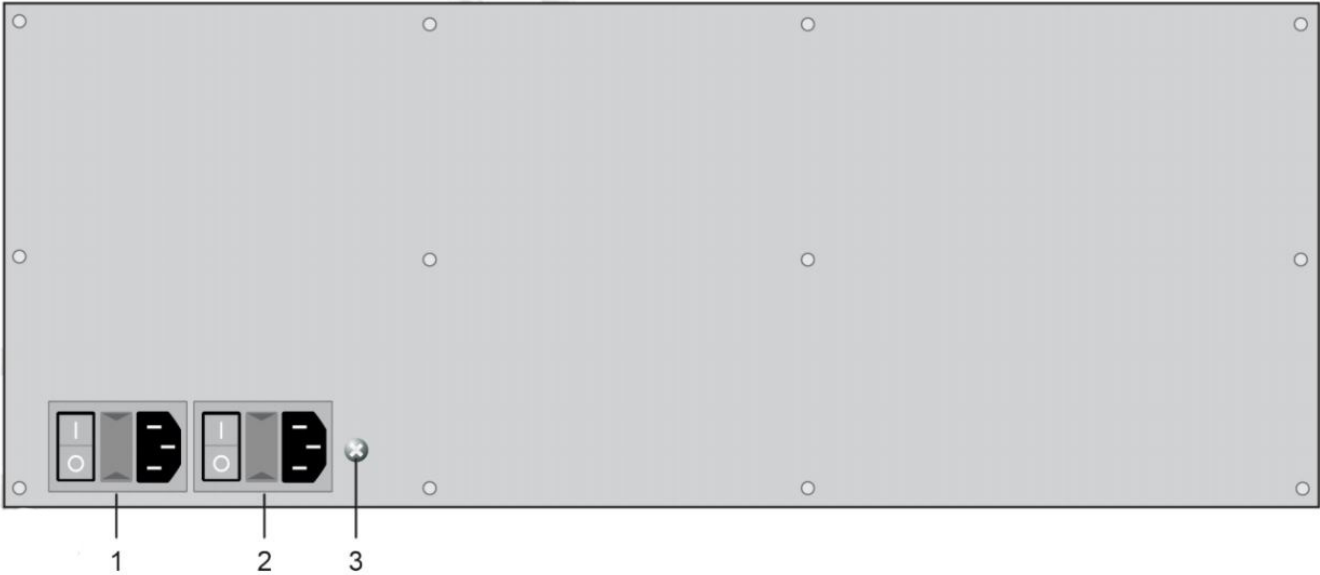


FIGURE 2-6.10.2 BACK PANEL 128-PORT

TABLE 2-6.10.1. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding



2.6.11 OVERVIEW 144-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.11 shows the front panel of the 4RU 144-Port DKM Compact Matrix Switch supporting fiber optic ports. Figure 2-6.11.1 shows the front panel of the 4RU 144-Port DKM Compact Matrix Switch supporting Cat-X connection ports. Figure 2-6.11.2 shows the back panel. Tables 2-6.11 and 2-6.11.1 describe the component.

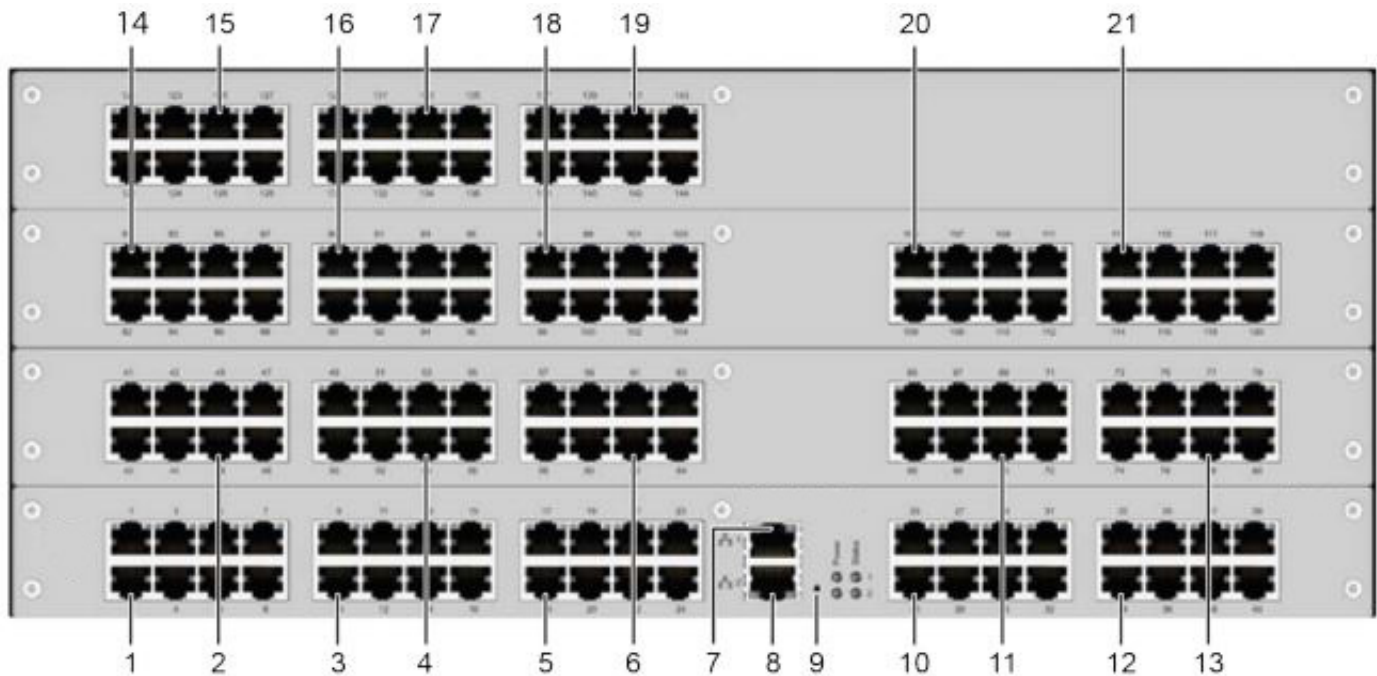


FIGURE 2-6.11. FRONT PANEL - ACXC80F80-1G & ACXC80F80-3G

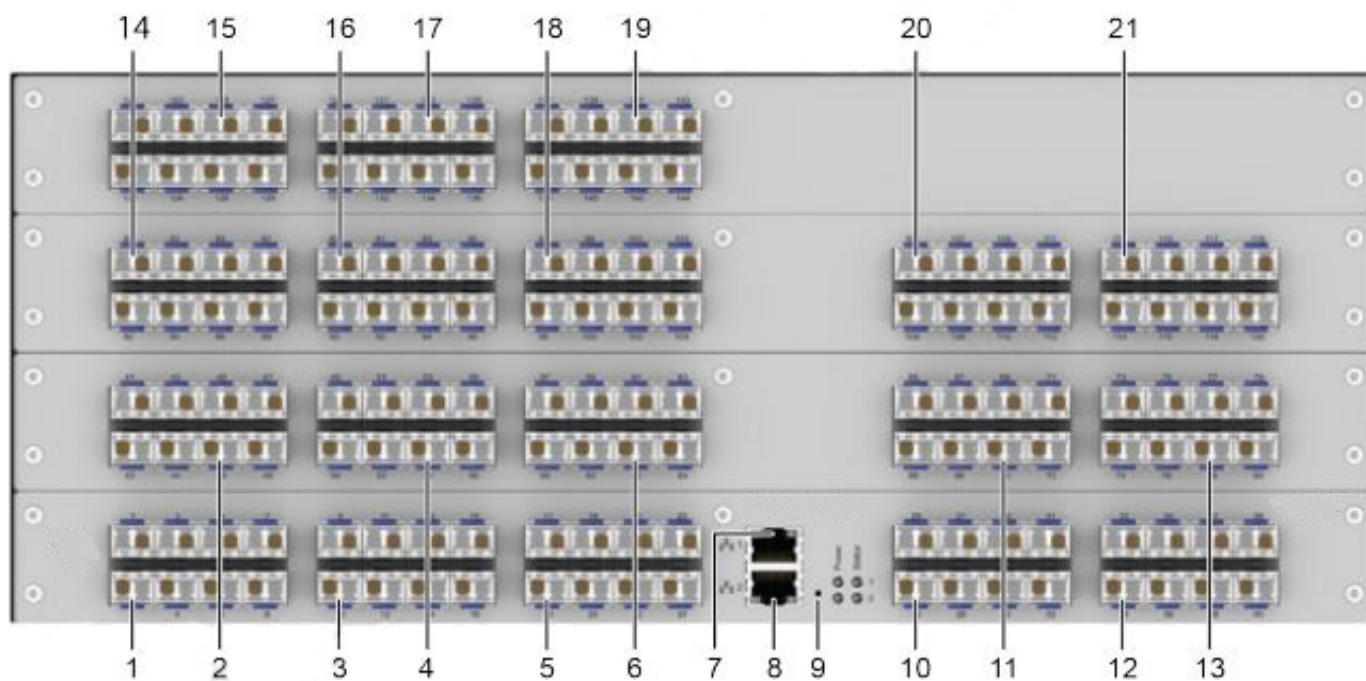


FIGURE 2-6.11.1. FRONT PANEL - ACXC144F-1G & ACXC144F-3G

TABLE 2-6.11. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
4	(1) I/O-Ports 49 to 56	I/O-Ports for connecting devices
5	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
6	(1) I/O-Ports 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 1 (RJ45)	Network port
9	(1) Reset button	Switch Reset
10	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
11	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
12	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices
13	(1) I/O-Ports 73 to 80	I/O-Ports for connecting devices
14	(1) I/O-Ports 81 to 88	I/O-Ports for connecting devices
15	(1) I/O-Ports 121 to 128	I/O-Ports for connecting devices
16	(1) I/O-Ports 89 to 96	I/O-Ports for connecting devices
17	(1) I/O-Ports 129 to 136	I/O-Ports for connecting devices
18	(1) I/O-Ports 97 to 104	I/O-Ports for connecting devices
19	(1) I/O-Ports 137 to 144	I/O-Ports for connecting devices
20	(1) I/O-Ports 105 to 112	I/O-Ports for connecting devices
21	(1) I/O-Ports 113 to 120	I/O-Ports for connecting devices



FIGURE 2-6.11.2 BACK PANEL 144-POR

2.6.12 OVERVIEW 160-PORT DKM COMPACT MATRIX SWITCH

Figure 2-6.12 shows the front panel of the 4RU 160-Port DKM Compact Matrix Switch supporting fiber optic ports. Figure 2-6.12.1 shows the front panel of the 4RU 64-Port DKM Compact Matrix Switch supporting Cat-X connection ports. Figure 2-6.12.2 and 2-6.12.3 show the front panel of the 4RU 64-Port DKM Compact Matrix Switch supporting mixed fiber optic and Cat-X connection ports. Figure 2-6.12.4 shows the back panel. Tables 2-6.12 and 2-6.12.1 describe the components.

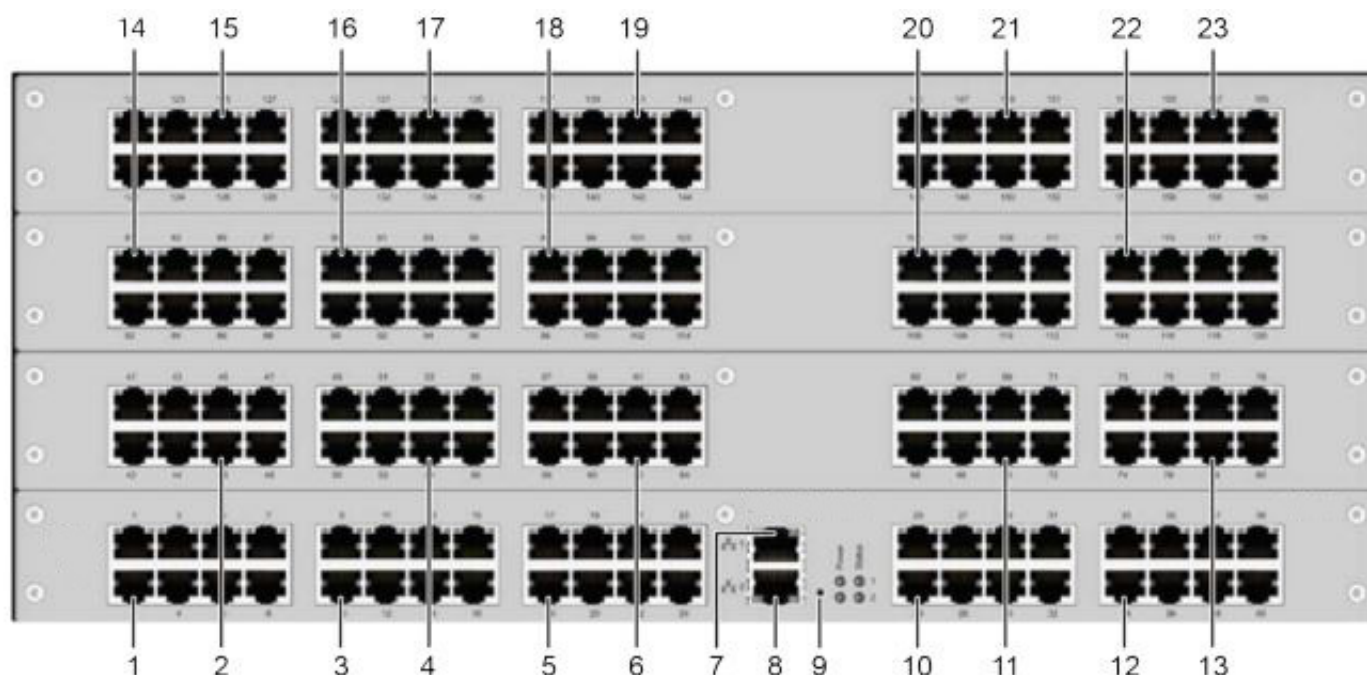


FIGURE 2-6.12. FRONT PANEL - ACXC160-1G & ACXC160-3G

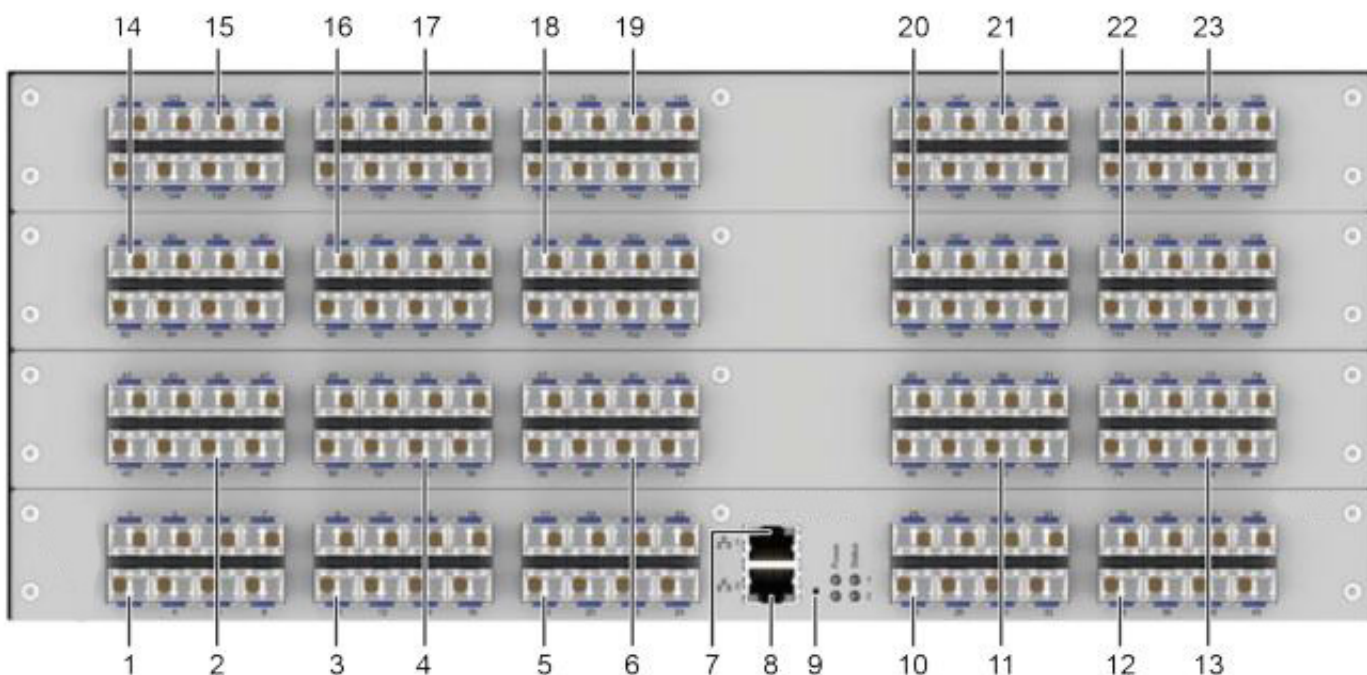


FIGURE 2-6.12.1. FRONT PANEL - ACXC160F-1G & ACXC160F-3G

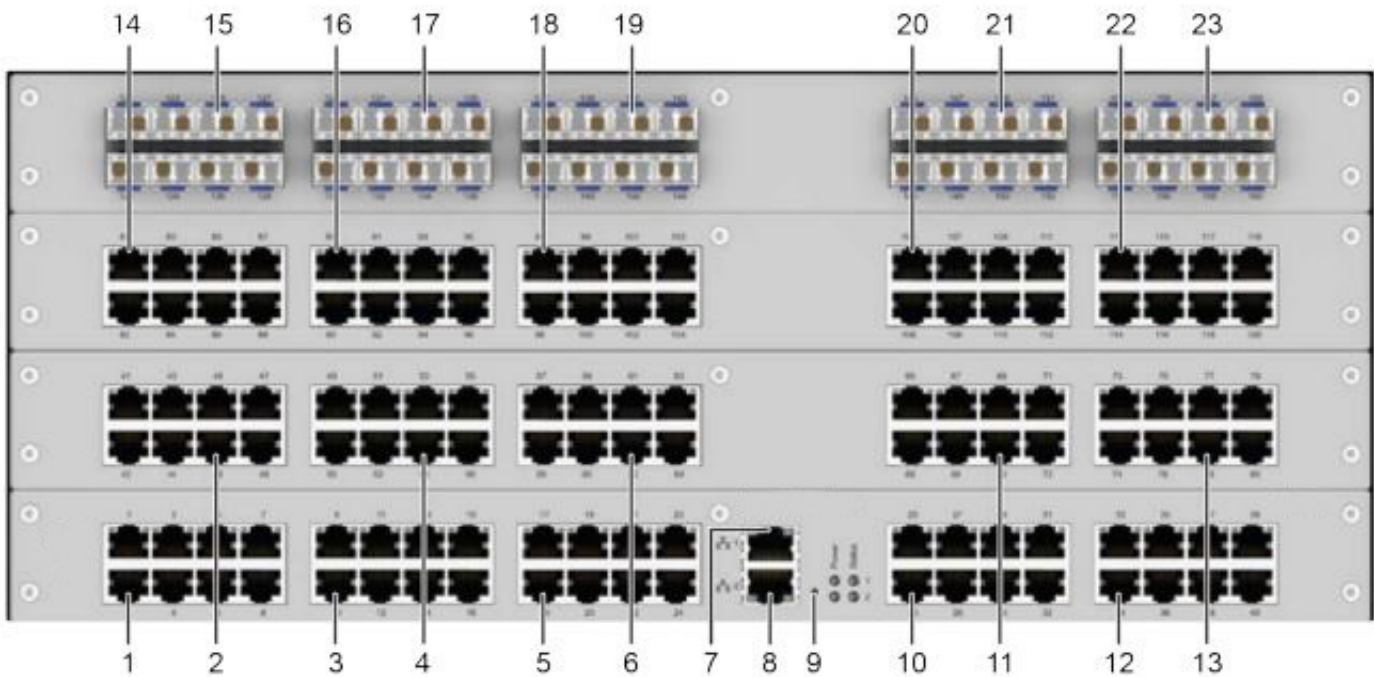


FIGURE 2-6.12.2 FRONT PANEL - ACXC120F40-1G & ACXC120F40-3G

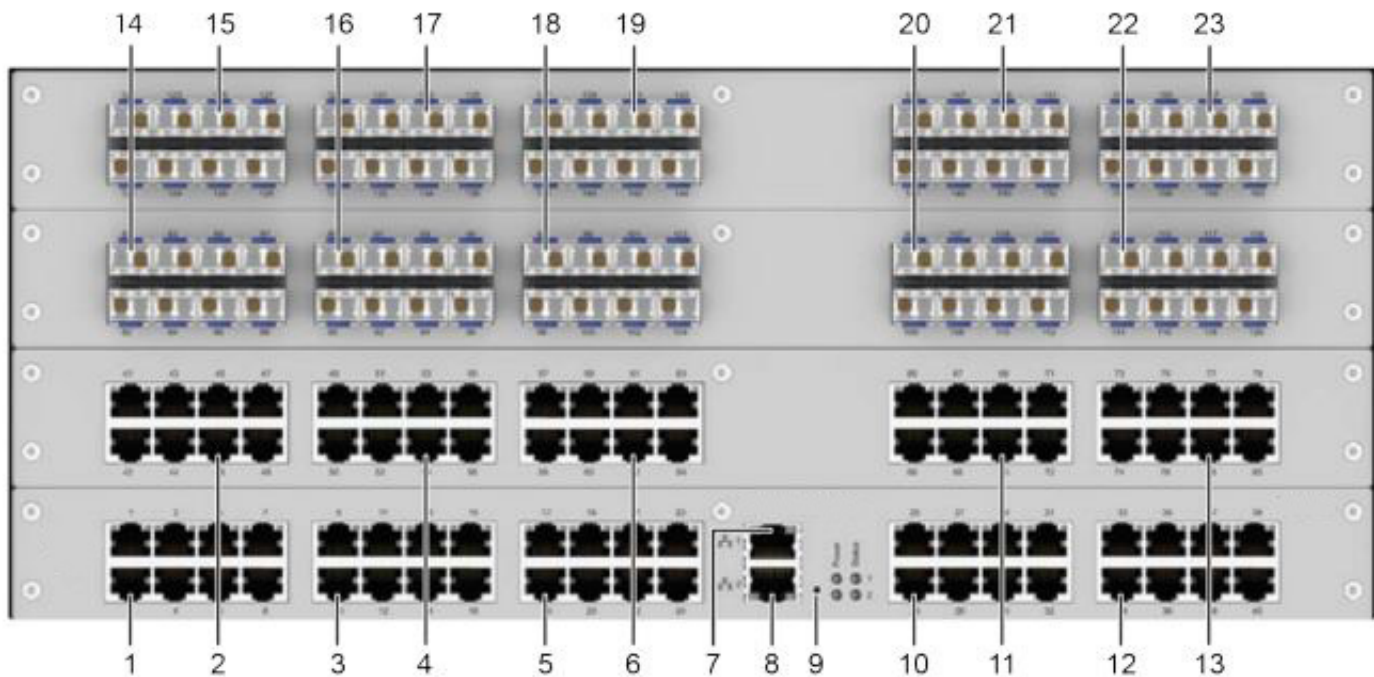


FIGURE 2-6.12.3 FRONT PANEL - ACXC80F80-1G & ACXC80F80-3G

TABLE 2-6.12. FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) I/O-Ports 1 to 8	I/O-Ports for connecting devices
2	(1) I/O-Ports 41 to 48	I/O-Ports for connecting devices
3	(1) I/O-Ports 9 to 16	I/O-Ports for connecting devices
4	(1) I/O-Ports 49 to 56	I/O-Ports for connecting devices
5	(1) I/O-Ports 17 to 24	I/O-Ports for connecting devices
6	(1) I/O-Ports 57 to 64	I/O-Ports for connecting devices
7	(1) Network port 1 (RJ45)	Network port
8	(1) Network port 2 (RJ45)	Network port
9	(1) Reset button	Switch Reset
10	(1) I/O-Ports 25 to 32	I/O-Ports for connecting devices
11	(1) I/O-Ports 65 to 72	I/O-Ports for connecting devices
12	(1) I/O-Ports 33 to 40	I/O-Ports for connecting devices
13	(1) I/O-Ports 73 to 80	I/O-Ports for connecting devices
14	(1) I/O-Ports 81 to 88	I/O-Ports for connecting devices
15	(1) I/O-Ports 121 to 128	I/O-Ports for connecting devices
16	(1) I/O-Ports 89 to 96	I/O-Ports for connecting devices
17	(1) I/O-Ports 129 to 136	I/O-Ports for connecting devices
18	(1) I/O-Ports 97 to 104	I/O-Ports for connecting devices
19	(1) I/O-Ports 137 to 144	I/O-Ports for connecting devices
20	(1) I/O-Ports 105 to 112	I/O-Ports for connecting devices
21	(1) I/O-Ports 145 to 152	I/O-Ports for connecting devices
22	(1) I/O-Ports 113 to 120	I/O-Ports for connecting devices
23	(1) I/O-Ports 153 to 160	I/O-Ports for connecting devices

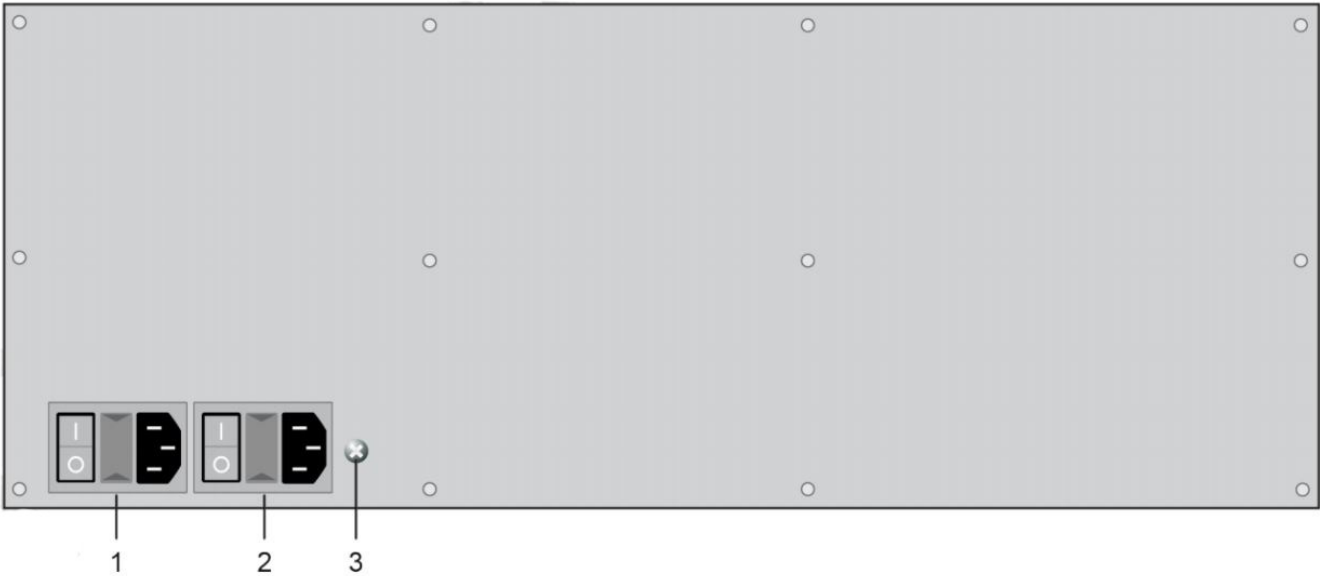


FIGURE 2-6.12.4 BACK PANEL 160-PORT

TABLE 2-6.12.1 FRONT PANEL SWITCH COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	Power supply (standard)	Power supply
2	Power supply (redundancy)	Power supply
3	Grounding	Power grounding



2.7 STATUS INDICATIONS AT THE DEVICE

2.7.1 STATUS LEDS FOR DEVICE STATUS

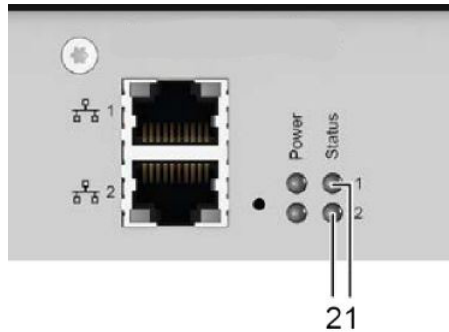


FIGURE 2-7.1 FRONT SIDE LEDS FOR DEVICE STATUS

TABLE 2-7.1 FRONT PANEL LEDS FOR DEVICE STATUS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	LED 1	Power Supply 1 Status
2	LED 2	LPower Supply 2 Status

2.7.2 STATUS LEDS FOR LINK CONNECTION, 1G CAT X

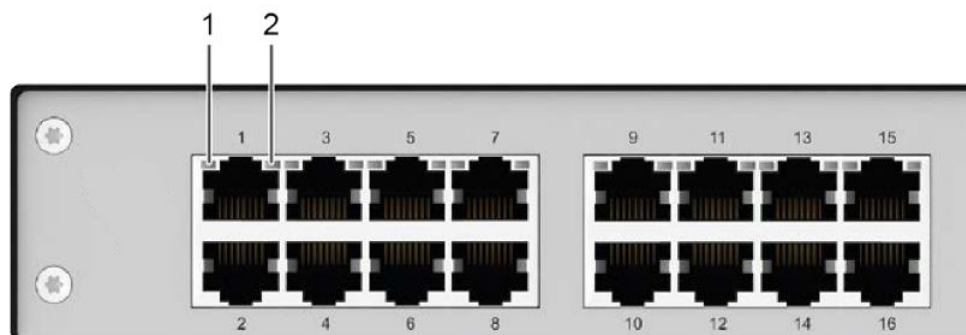


FIGURE 2-7.2 FRONT SIDE LEDS FOR DEVICE STATUS

TABLE 2-7.2 FRONT PANEL LEDS FOR DEVICE STATUS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	LED 1	Link status LED for upper port
2	LED 2	Link status LED for upper port

Status LEDs at the I/O Ports, 1G Cat XDevice Status (CPU Module)

When an interconnection is established, the LEDs light up in the following sequence:

LED 1 / 2	DESCRIPTION
Off	No connection detected
Orange	Connection via interconnection cable ok, extender detection is running
Red	Invalid device / Error detecting device
Green / None	The extender is having issues being detected or a non compatible device is connected

*An interconnection failure is indicate as follows:

LED 1 / 2	DESCRIPTION
Flashing Orange	Extender is not detected

2.7.3 STATUS LEDS FOR LINK CONNECTION, 3G CAT X

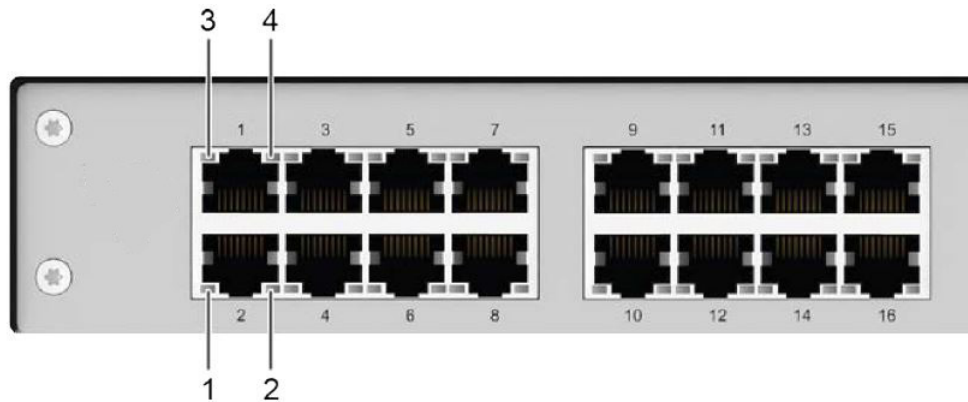


FIGURE 2-7.3 FRONT SIDE LEDS FOR DEVICE STATUS

TABLE 2-7.1 FRONT PANEL LEDS FOR DEVICE STATUS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	LED 1	Link status LED 1 for lower port
2	LED 2	Link status LED 2 for lower port
3	LED 3	Link status LED 1 for upper port
4	LED 4	Link status LED 2 for upper port

Status LEDs at the I/O Ports, 3G Cat X

When an interconnection is established, the LEDs light up in the following sequence:

LED 1 / 3	LED 2 / 4	DESCRIPTION
Off	Green	No connection detected
Orange	Green	Connection via interconnection cable ok, extender detection is running
Red	Green	Invalid device / Error detecting device
Green / None	Green	The extender is having issues being detected or a non compatible device is connected

*An interconnection failure is indicate as follows:

LED 1 / 2	LED 1 / 2	DESCRIPTION
Flashing Orange	Off	Extender is not detected

2.7.4 STATUS LEDS FOR LINK CONNECTION, FIBER

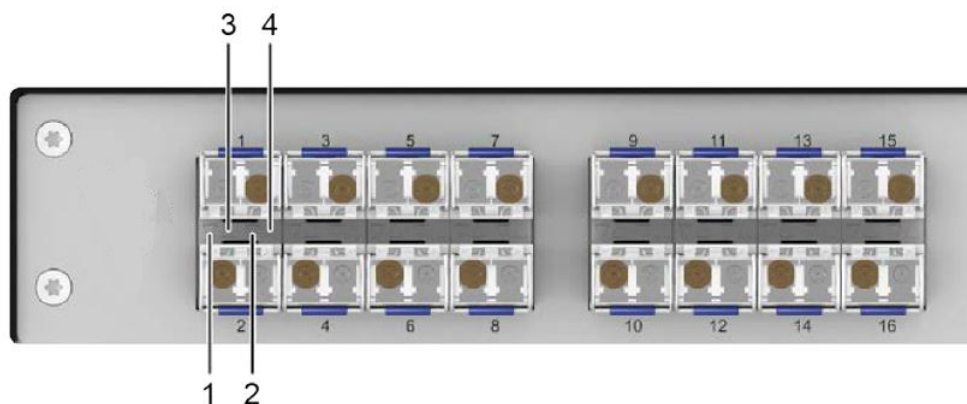


FIGURE 2-7.4 FRONT SIDE LEDS FOR DEVICE STATUS

TABLE 2-7.4. FRONT SIDE - STATUS LEDS FOR NETWORK CONNECTION

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	LED 1	Link status LED 1 for lower port
2	LED 2	Link status LED 2 for lower port
3	LED 3	Link status LED 1 for upper port
4	LED 4	Link status LED 2 for upper port

Status LEDs at the I/O Ports. Fiber

When an interconnection is established, the LEDs light up in the following sequence:

LED 1 / 3	LED 2 / 4	DESCRIPTION
Off	Green	No connection detected
Orange	Green	Connection via interconnection cable ok, extender detection is running
Red	Green	Invalid device / Error detecting device
Green / None	Green	The extender is having issues being detected or a non compatible device is connected

*An interconnection failure is indicate as follows:

LED 1 / 2	DESCRIPTION
Flashing Orange	Extender is not detected

2.7.5 STATUS LEDs FOR NETWORK CONNECTION

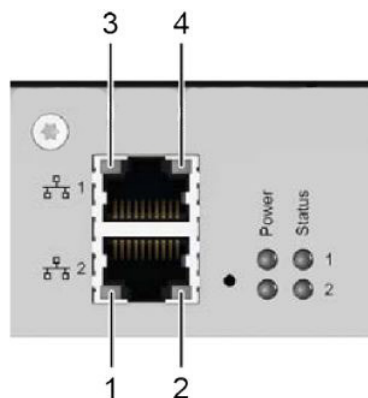


FIGURE 2-7.5 FRONT SIDE LEDs FOR DEVICE STATUS

TABLE 2-7.5. FRONT SIDE - STATUS LEDs FOR NETWORK CONNECTION

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	LED 1	Activity status LED network connection 2
2	LED 2	Link status LED network connection 2
3	LED 3	Activity status LED network connection 1
4	LED 4	Link status LED network connection 1

Status LEDs at the I/O Ports, 1G Cat XDevice Status (CPU Module)

When an interconnection is established, the LEDs light up in the following sequence:

POS.	LED	LED 1 / 2	DESCRIPTION
1/3	Activity Status (orange)	Off	No network connection available or data traffic not active
		On	Network connection available, data traffic active
2/4	Link Status (green)	Off	No network connection available
		On	network connection available

2.7.6 STATUS LEDS FOR POWER SUPPLY

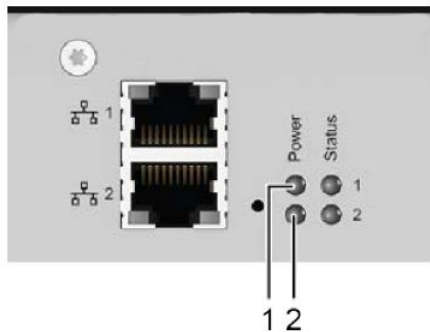


FIGURE 2-7.6 FRONT SIDE LEDS FOR DEVICE STATUS

TABLE 2-7.1. FRONT SIDE - STATUS LEDS FOR NETWORK CONNECTION

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	LED 1	Power Supply 1 is deted and getting power
2	LED 2	Power Supply 2 is deted and getting power

LEDs for Power Supply

POS.	LED	LED 1 / 2	DESCRIPTION
1	AC Input 1	On	Power supply available
		Off	No power supply available
2	AC Input 1	On	Power supply available
		Off	No power supply available



3.1 ACCESS OPTIONS

The following options are available to configure and operate the DKM Compact Matrix Switch:

ACCESS OPTIONS	DESCRIPTION
OSD	Via OSD (On-Screen-Display) you can configure the basic settings of the matrix operating system, query several states, and control several functions by keyboard commands during normal use.
On	<p>The DKM Java Utility (below referred to as “management software”) is available as a single executable program file (desktop) does not require installation. The management software can be downloaded from the link http://www.blackbox.com</p> <p>Advanced settings can be configured on the DKM operating system using the management software:</p> <ul style="list-style-type: none">• Advanced configuration• Extended monitoring options• System update (firmware update)<ul style="list-style-type: none">• Local backup option• Documentation

CHAPTER 3: DESCRIPTION

3.2 ACCESS OPTIONS

3.2.1 COMMAND MODE

The extender modules include a command mode that allows access to the matrix and to control several functions by keyboard commands during normal use.

To access the command mode, use a keyboard sequence (Hot Key) at the keyboard of a CON Unit plugged in the matrix.

To quit the command mode, press the <Esc> key to exit the command mode.

NOTICE

While in command mode,
the **Caps Lock** and **Scroll Lock** LEDs on the keyboard are flashing,
the USB-HID devices are not operable, mouse and keyboard functions are deactivated,
only selected keyboard commands are available.

The command mode will be deactivated automatically if there is no keyboard command executed within 10 seconds

The following spellings are used for keyboard commands:

ACCESS OPTIONS	DESCRIPTION
<key>	Description of a 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)



CHAPTER 3: DESCRIPTION

To enter and exit the command mode and additionally change the hot key, the following keyboard commands are available.

ACCESS OPTIONS	DESCRIPTION
Enter command mode (default)	2x <Left Shift> (Hot Key)
Exit command mode	<Esc>
Change Hot Key	, , <0>, , <c>, <new Hot Key code>, <Enter>

The Hot Key to enter the command mode can be changed. The following table lists the Hot Key codes for the available Hot Keys.

HOT KEY CODE	HOT KEY
0	Freely Selectable
2	2x <Scroll>
3	2x <Left Shift>
4	2x <Left Ctrl>
5	2x <Left Alt>
6	2x <Right Shift>
7	2x <Right Ctrl>
8	2x <Right Alt>

CHAPTER 3: DESCRIPTION

NOTICE

In a combined KVM matrix/TC Switch (ACX1004 / ACX1008...) configuration, select different Hot Keys for extender modules connected to the KVM matrix (e.g., 2x <Left Shift>) and the U-Switch (e.g., 2x <Right Shift>).

Set freely selectable Hot Key (exemplary)

To set a freely selectable Hot Key (e.g., 2x <Space>), use the following keyboard sequence:

<current Hot Key>, <c>, <0>, <Space>, <Enter>

Set Hot Key for direct OSD access

Next to the Hot Key for standard functions, a second Hot Key can be exclusively set for opening the OSD directly.

To select a Hot Key from the Hot Key table for a direct opening of the OSD, use the following keyboard sequence:

<current Hot Key>, <f>, <Hot Key Code>, <Enter>

To select a freely selectable Hot Key (e.g., <Space>) for opening OSD directly, use the following keyboard sequence:

<current Hot Key>, <f>, <0>, <Space>, <Enter>

Delete Hot Key for direct OSD access

To delete the Hot Key for direct OSD access, use the following keyboard sequence.

<current Hot Key>, <f>, <0>, , <Enter>

Reset Hot Key

To set a Hot Key back to default settings, press the key combination <Right Shift> + within 5 s after plugging in a keyboard.

3.2.2 OSD KEYBOARD CONTROL

Via OSD (On-Screen-Display) you set the basic configuration of the matrix operating system, query several states, and control several functions by keyboard commands during normal use.

To enter the OSD of the matrix, connect a keyboard to a CON Unit of an extender.

ACCESS OPTIONS	DESCRIPTION
<Hot Key>, <o>	Open OSD
<ESC>	Exit OSD (in the main menu)
<Left Shift> + <ESC>	Exit Sub OSD (within the menus)

CHAPTER 3: DESCRIPTION

NOTICE

If the OSD is closed with one of the keyboard commands mentioned above, possible changes are not saved. For information on saving changes, see configuration descriptions from chapter 7.10, from page 129.

Entering the OSD and the Main Menu

1. Start the command mode with the Hot Key (see chapter 3.2.4, page 60).
2. Press the <O> key to open the OSD. You will see a list of all available CPUs as a start menu.
3. Press the <Esc> key to enter the main menu.

*If the Enable **CPU Selection option** is enabled in the **Configuration** menu, the selection list for switching CPU devices will be opened initially. This list can be skipped by pressing the <F7> **key**.

Leaving the OSD

Press the <Esc> key in the main menu or simultaneously <Left Shift> + <Esc> anywhere within the OSD.

The OSD will be closed without any further changes and the currently active CPU connection will be displayed.

3.2.3 OSD KEYBOARD CONTROL

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

KEYBOARD COMMANDS	FUNCTION
<Cursor Left>	Input field: cursor left
	In menus: next input field
<Cursor Right>	Input field: cursor right
	In menus: previous input field
<Cursor Up>	In input fields: line up (with wrap around)
	In menus: line up (without wrap around)
<Cursor Down>	In input fields: line down (with wrap around)
	In menus: line down (without wrap around)
<Page Up>	Previous page in menus with more than one page
	Next page in menus with more than one page

CHAPTER 3: DESCRIPTION

KEYBOARD COMMANDS	FUNCTION
<Page Down>	Next page in menus with more than one page
<Tab>	In menus with input fields: next input field
<Left Shift> + <Tab>	In menus with input fields: previous input field
<+>	Next option in selection fields
	In the CPU selection list with cursor on a CPU Group: expand members of a group
<->	Previous option in selection fields
	In the CPU selection list with cursor on a CPU Group: collapse members of a group
<Cursor Down>	Switching in selection fields between two conditions, e.g., between ON / OFF or Y (Yes) / N (No)
	In menus: line down (without wrap around)
<Space>	Switching in selection fields between two conditions, e.g., between ON / OFF or Y (Yes) / N (No)
<Enter>	In menus with input fields: save data
	In menus: select menu item
	With buttons: confirm selected button
<Esc>	In menus with input fields: cancel data input without saving
	In menus with selection fields: go back to the superior menu

3.2.4 OSD MENU STRUCTURE

The general layout of the OSD is structured into three areas:

- upper status area (topmost two text lines)
- working area
- lower status area (lowest two text lines)



CHAPTER 3: DESCRIPTION



FIGURE 3-2.4. OSD MAIN MENU

The following functions are available in most of the menus:

BUTTON	FUNCTION
Cancel	Reject changes
Okay	Apply changes (temporary storage of the active configuration in the volatile memory of the matrix).

NOTICE

Possible loss of configuration changes

By clicking the **Okay** button, 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 (**Save**, see chapter 5.10.1, page 134), save a predefined configuration (**Save as...**, from chapter 5.10.1 page 135, or perform a restart (see chapter 7.10 page 315).

CHAPTER 3: DESCRIPTION

3.2.5 OSD SORT FUNCTION

Lists and tables in the OSD offer a sorting function for fast and smooth search.
The following sorting functions are available:

KEYBOARD COMMANDS	FUNCTION
<F1>	Sort ID numbers in descending order by pressing the keyboard command once. Sort ID numbers in ascending order by pressing the keyboard command twice (ID).
<F2>	Sort ID names in descending order by pressing the keyboard command once. Sort ID names in ascending order by pressing the keyboard command twice (Name).
<F3>	Go to the next result in the list of results of the search field (Next).
<F4>	Go to the previous result in the list of results of the search field (Previous).
<F5>	Refresh the currently shown list (Refresh).
<F6>	Jump between the search field and the list of results (Find).
<F8>	Show unavailable CPUs
<F9>	Activate search function from the beginning of the name (Compare).

3.3 CONTROL OPTIONS VIA MANAGEMENT SOFTWARE

3.3.1 MANAGEMENT SOFTWARE TOOLBAR

The menu structure of the management software is subdivided into various sections:

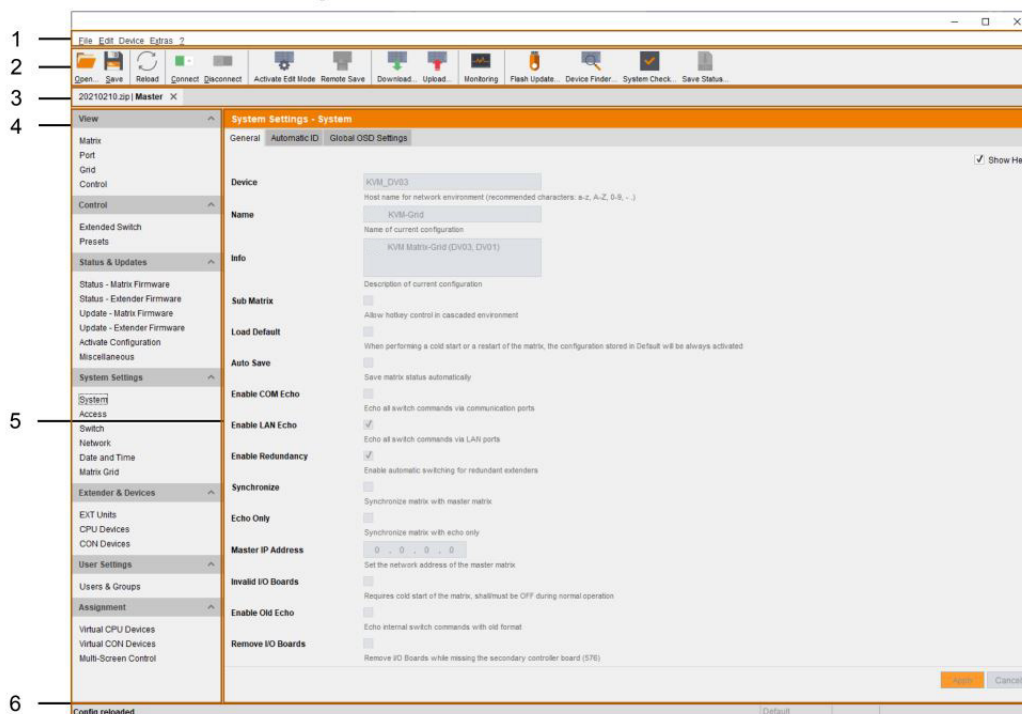


FIGURE 3-3.1 MANAGEMENT SOFTWARE MENU STRUCTURE

CHAPTER 3: DESCRIPTION

TABLE 2-14. FRONT SIDE - STATUS LEDS FOR NETWORK CONNECTION

NUMBER IN FIGURE 2-2	DESCRIPTION
1	Menu Bar (top line)
2	Toolbar (second line)
3	Tab bar (third line)
4	Task area (left menu section)
5	Working area (right menu section)
6	Status bar (bottom line)

BUTTON	FUNCTION
Apply	Confirm changes (temporary storage of the active configuration in the volatile memory of the matrix)
Cancel	Reject changes

NOTICE
<p>Possible loss of configuration changes</p> <p>By clicking the Apply button 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:</p> <p>Save the configuration changes into the active configuration (Remote Save, see chapter 5.10.1 page 135), save a predefined configuration (Save as...) (see from chapter 5.10.1, page 136), or perform a restart (see from chapter 7.10 page 315).</p>

Information for Operating and for Support Functions

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

• Help texts:

The management software contains its own support function. The integrated help texts in the working area of the management software can be activated or deactivated by clicking the checkbox in the upper right corner. Auxiliary names (tooltips) for the menu items can be activated in the options.

• Online help:

After calling up a function from the task area, a menu opens in the work area of the management software, sometimes with several sub-pages (tabs). An online help is available for these functions, which can be called up by pressing the F1 key on the keyboard. An internet connection and a browser are required for opening the online help (PDF file).

CHAPTER 3: DESCRIPTION

3.3.2 MANAGEMENT SOFTWARE MENU STRUCTURE

The menu structure of the management software is subdivided into various sections:

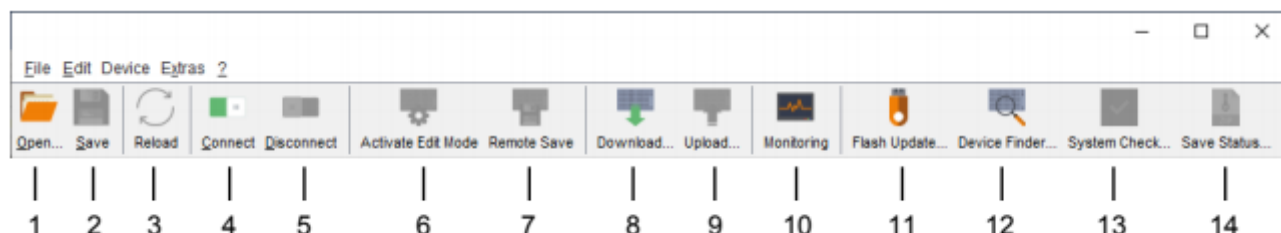


FIGURE 3-3.2. MANAGEMENT SOFTWARE TOOLBAR

TABLE 2-14. FRONT SIDE - STATUS LEDS FOR NETWORK CONNECTION

NUMBER IN FIGURE 2-2	DESCRIPTION
1	Load locally saved configuration
2	Save configuration locally
3	Update configuration
4	Connect to the matrix
5	Disconnect from the matrix
6	Activate/deactivate the edit mode
7	Save active configuration (online mode)
8	Show predefined configuration saved on the matrix (online mode)
9	Save predefined configuration on the matrix (online mode)
10	Monitoring (online)
11	Flash update for single devices
12	Overview of devices in the subnet (online mode)
13	System check
14	Save status locally

CHAPTER 3: DESCRIPTION

3.3.3 MANAGEMENT SOFTWARE MOUSE CONTROL

The following mouse commands are selectable for menu functions:

MOUSE CONTROL	FUNCTION
Priliminary mouse click	Menu selection, marking
Double-click priliminary mouse button	Open function specific selection menus
Secondary mouse button	Open context specific selection menus

3.3.4 MANAGEMENT SOFTWARE KEYBOARD CONTROL

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

KEYBOARD COMMANDS	FUNCTION
<Cursor Left>	Cursor to the left
<Cursor Right>	Cursor to the right
<Cursor Up>	Line up
<Cursor Down>	Line down
<Cursor 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
<Page Tab>	In input menus: next field
<Left Shift> + <Tab>	In input menus: previous field
<Space>	<ul style="list-style-type: none"> • Switch in selection fields between two conditions (checkmark or not). • Open already highlighted fields with editing or selecting possibility.
<Enter>	<ul style="list-style-type: none"> • Select menu item • In menus: Save data
<Ctrl> + <Tab>	<ul style="list-style-type: none"> • Leave tables • Jump from tables into the next field
<Ctrl> + <Left Shift> + <Tab>	<ul style="list-style-type: none"> • Leave tables • Jump from tables into the previous field

*Various 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.

CHAPTER 3: DESCRIPTION

3.3.5 MANAGEMENT SOFTWARE RELOAD OPTIONS

The information shown in the management software can be reloaded in different ways:

- Press the <F5> key on the used keyboard.
- Click the **Reload** menu item in the toolbar.
- Click Edit >Reload in the drop-down menu of the menu bar.
- Activate the Automatic Reload option by clicking the **Automatic Reload** checkbox in the right panel of the **View >Matrix** menu under **Options**.

3.3.6 MANAGEMENT SOFTWARE CONTEXT FUNCTION

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

CONTEXT FUNCTION	ACTION	RESULTS
Execute context function	Click with the right mouse button on a field.	A context menu opens and displays functions available for the corresponding field (if existing).
	Click with the left mouse button on the desired function.	The desired function is executed.

3.3.7 MANAGEMENT SOFTWARE SORT FUNCTION

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

SORT FUNCTION	ACTION	RESULTS
Ascending sort	Click with the left mouse button once on the header of the column to be sorted.	<ul style="list-style-type: none"> • The column is sorted in ascending order. • The sort 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.	<ul style="list-style-type: none"> • The column is sorted in descending order. • The sort 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 displayed disappears.

CHAPTER 3: DESCRIPTION

3.3.8 MANAGEMENT SOFTWARE FILTER FUNCTION

Lists and tables in the management 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 filter symbol in the filter entry field.

FILTER FUNCTION	ACTION	RESULTS
Active filter	Click with the left mouse button in the filter entry field above the header. Write the word or part of a word to be filtered.	<ul style="list-style-type: none"> • The filter results are shown immediately. • The filter symbol is displayed in green.
Cancel filter	Delete the text in the filter entry field.	<ul style="list-style-type: none"> • The list or table shows the complete content. • The filter symbol is displayed in gray.

3.3.9 MANAGEMENT SOFTWARE FILTER FUNCTION

The management 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 management software.

To create a report, proceed as follows:

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

1. A selection dialog appears.

2. Select contents that should be included in the report (**Matrix View, EXT Units, CPU Devices, CON Devices and Users**).

3. Click the **Next >** button to confirm the selection.

CHAPTER 3: DESCRIPTION

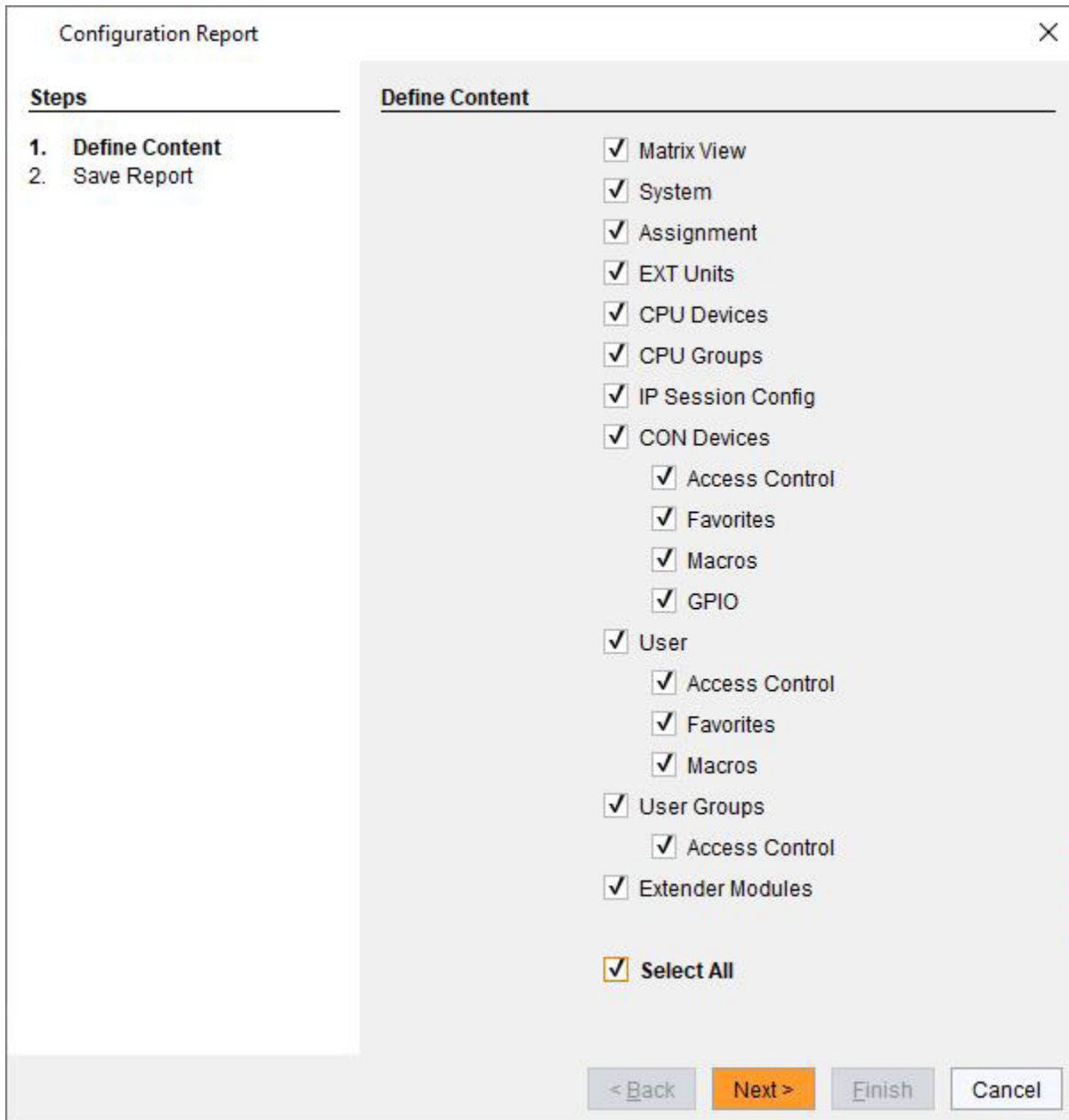


FIGURE 3-3.9. MANAGEMENT SOFTWARE FILE - REPORT - DEFINE CONTENT

4. Navigate to the preferred location for storage of the report.

5. Click the **Finish** button to confirm the report.
The report will be created as a PDF file.

CHAPTER 3: DESCRIPTION

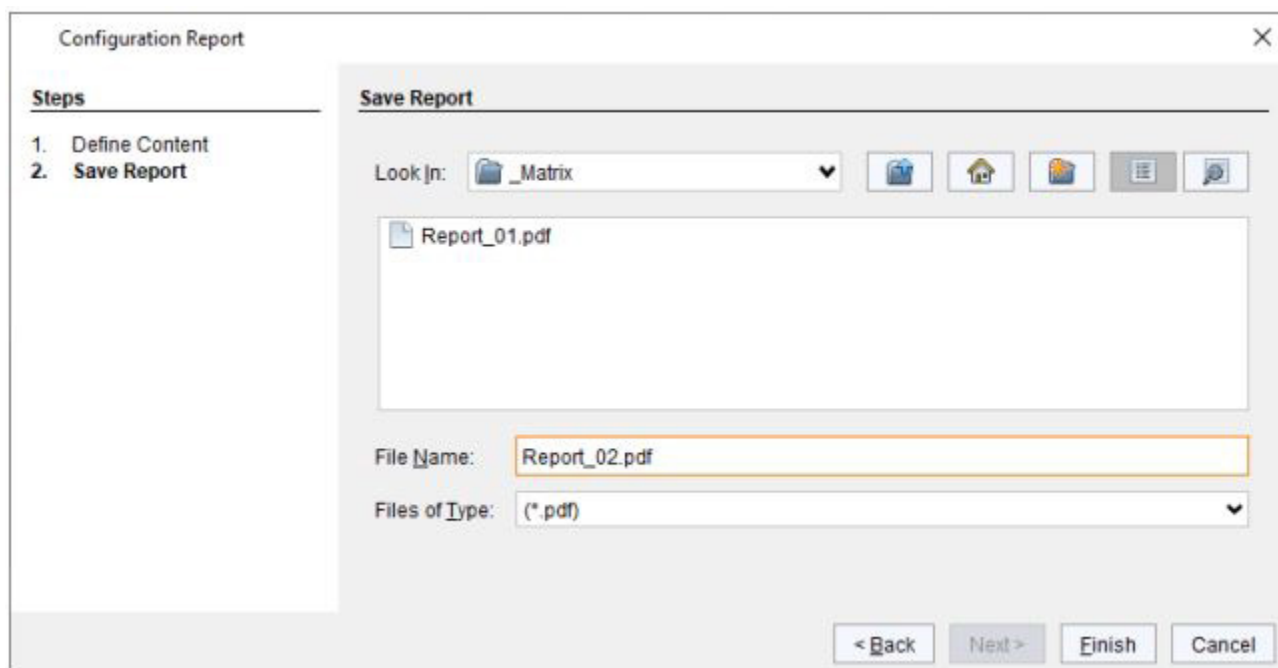


FIGURE 3-3.10. MANAGEMENT SOFTWARE FILE - REPORT -SAVE REPORT

4.1 INSTALLATION

NOTICE

Please verify that interconnect cables, interfaces, and handling of the devices comply with the requirements (see chapter 10, page 314).

* First-time users are recommended to set up the system in a test environment that is limited to a single room. This makes it easier to identify and solve any cabling problems, and experiment with your system more conveniently.

CHAPTER 4: INSTALLATION

4.2 PREPARING THE MATRIX FOR RACK MOUNTING

NOTICE

Due to the construction of a matrix with 16, 32 and 40 ports into a 19" rack, it is recommended to use an additional subfloor below the matrix. It should be used in addition to the provided mounting brackets.

The supplied mounting brackets are required for mounting the KVM matrix switch.

1. For front rack mounting, remove the front and middle screws on both sides of the cover.
2. For rear rack mount, remove the rear and middle screws on both sides of the cover.
3. Mount the mounting bracket in the desired position using the screws on the cover/chassis.



CHAPTER 4: INSTALLATION

4.3 SETTING UP THE MATRIX

4.3.1 PREREQUISITES FOR FAILURE-FREE INSTALLATION OF A MATRIX SETUP

* To achieve the best possible performance and results with the matrix system, we recommend using the supplied cables. If you need a replacement, please use the spare parts specified for this device, which can be requested from the manufacturer if required.

*To achieve a failure-free installation of a matrix system, we recommend to first establish a point-to-point connection between a CPU Unit and a CON Unit before connecting to the matrix as follows:
Source (computer, CPU) - CPU Unit - Link - CON Unit - console (monitor, keyboard, mouse)
Ensure that this most simplistic setup works.
Then continue as follows.

1. First connect the CPU Unit to the source (computer, CPU) by using the provided connection cables.
2. Connect the CPU Unit to the CON Unit by using the interconnect cables (Cat X or fiber).
3. Connect the monitor, keyboard, and mouse to the CON Unit.
4. Connect the power supply units to the CPU Unit and CON Unit.
5. Power up the CPU Unit and CON Unit.
6. Boot the source (computer, CPU) and check that everything works correctly.

4.3.2 INITIAL COMMISSIONING OF THE MATRIX

1. Connect the monitor, keyboard, and mouse to a functionally tested CON Unit.
2. Connect the CON Unit to an I/O port of the matrix by using the interconnect cables (Cat X or fiber).
3. Connect the matrix and the CON Unit to the power supply.
4. Power up the matrix and wait until the boot process is finished (status LED flashes green).
5. Open the OSD via keyboard command 2x <Left Shift>, <o>. The **Caps Lock** and **Scroll Lock** LEDs on the keyboard are flashing, and the OSD is opened on the display showing the KVM List view.
6. Press the <ESC> key to enter the advanced menus. The OSD can be operated via keyboard and mouse.
7. Select **Configuration** in the main menu.
8. Login with administrator rights (see chapter 5.5, page 98).
9. Configure initially as requested (see from chapter 5.5, from page 99).

Optional: Establish a network connection between the matrix and the management software to set an extended configuration (from chapter 5.6, page 106).

The default IP address is 192.168.100.99 and DHCP is deactivated.

*After the configuration of the system it is recommended to save the configuration by selecting Configuration > Save (see chapter 7.10.1, page 129) and restart the matrix by selecting Restart Matrix (see chapter 7.10 page 315).

*When installing several matrices at the same time, it is strongly recommended to install them in sequence and to assign unique IP addresses to avoid IP address conflicts

CHAPTER 4: INSTALLATION

4.4 CONNECTING THE MATRIX TO THE SINK (CONSOLE) AND THE SOURCES (COMPUTER, CPUS)

4.4.1 CONNECTING THE SINK (CONSOLE) TO THE MATRIX

1. Connect the monitor, keyboard, and mouse to the CON Unit.
2. Connect the CON Unit to an I/O port of the matrix by using the interconnect cables (Cat X or fiber).
3. Connect the matrix and the CON Unit to the power supply.
4. Connect the power supply units to the CON Unit.
5. Establish the power supply to the CON Unit.
6. Check the basic function of the CON Unit by opening the OSD via keyboard command <Hot Key>, <O>.

4.4.2 CONNECTING THE SOURCES (COMPUTER, CPU) TO THE MATRIX

1. Connect the source (computer, CPU) to the CPU Unit by using the provided connection cables.
2. Connect the CPU Unit to the matrix using the interconnect cables (Cat X or fiber).
3. Connect the power supply units to the CPU Unit.
4. Establish the power supply to the CPU Unit.

4.5 CONNECTING THE MATRIX VIA MANAGEMENT SOFTWARE

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 management software in a locally available directory.

The management software is available as a single executable program file (desktop) that does not require installation.

Save the management software in a locally available directory.



CHAPTER 4: INSTALLATION

Requirements

If you want to use the management software on Windows operating systems with integrated Java Runtime, the following requirements must be fulfilled:

COMPUTER / SOFTWARE / NETWORK		RESULTS
Free memory	RAM	Recommended: 512 MB
Operating system	Microsoft	Windows 8, Windows 8.1, Windows 10
Management software with integrated Java Runtime	DKM Java Utility	Downloaded from http://www.blackbox.com
Network connection	-	Available between computer and matrix

If you want to use the management software without integrated Java Runtime, the following requirements must be fulfilled:

COMPUTER / SOFTWARE / NETWORK		RESULTS
Free memory	RAM	Recommended: 512 MB
Operating system	Microsoft	Windows 8, Windows 8.1, Windows 10
	DKM Java Utility	Downloaded from http://www.blackbox.com
Specification	Java	Installed: Oracle Java Runtime Environment (JRE) 1.8.x or higher Strongly recommended: Oracle Java 1.8 update 152, or higher. (https://adoptopenjdk.net , https://github.com/ojdkbuild/ojdkbuild)
Management software	DKM Java Utility	Downloaded from http://www.blackbox.com
Network connection	-	Available between computer and matrix

* Contact your system administrator concerning JRE and network connection.

4.5.1 SETTING UP NETWORK AND FIREWALL RELEASES

Releasing Netowkr 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 (5576 for SSL)

Releasing Java Application in the Firewall

If using the management software, the Java application (file javaw.exe) has to be released in the firewall settings to use the management software. Contact your administrator to configure the firewall settings accordingly.

Using the management software with integrated Java Runtime, no firewall modification is necessary.

4.5.2 CONNECTING THE COMPUTER TO THE MATRIX

NOTICE

For a connection between computer and matrix via switch or hub, parallely 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.

Connect the network cable to the RJ45 ports of computer and matrix.

CHAPTER 4: INSTALLATION

4.5.3 STARTING THE MANAGEMENT SOFTWARE

Open the management software by a double-click on the program icon on the desktop or the file in the directory.

The management software starts in offline mode.

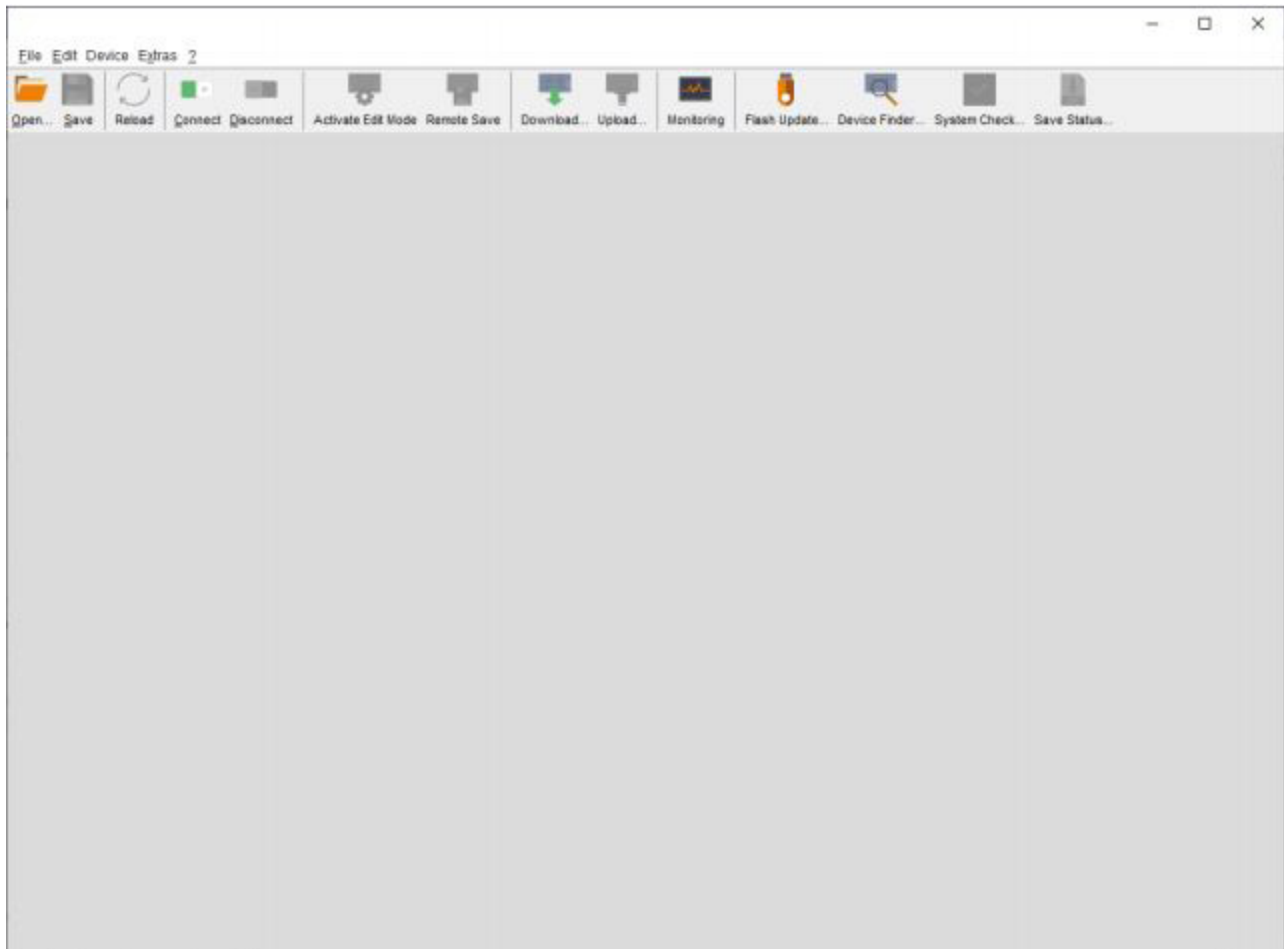


FIGURE 4-5.3 MANAGEMENT SOFTWARE OFFLINE MODE

There are two options to connect to a matrix.

- Via a known IP address
- Via Device Finder

4.5.4 CONNECTING TO THE MATRIX WITH KNOWN IP ADDRESS

Open the management software by a double-click on the program icon on the desktop or the file in the directory.

The management software starts in offline mode.

* At least FTP rights are required.

*Up to twelve connections between the matrix and the management software can be established at the same time due to a limitation of available sockets.

To connect to a matrix when the IP address is known, proceed as follows:

1. Open the management software.
2. Click the Connect menu item in the tool bar. An access window appears.
3. Enter the IP address according to the network configuration of the matrix (see chapter 6.4.6, page 163). By default, the IP address of the matrix is 192.168.100.99 and DHCP is deactivated.
4. Enter the username and password of the administrator (see chapter 6.5, page 177). By default, the username is admin, and the password of the administrator is admin.
5. Click the Login button to confirm your entries.



FIGURE 4-5.4.1 MANAGEMENT SOFTWARE DIALOG CONNECT

*The data must be entered each time the network connection is re-established.
Alternately, the data can be entered and stored in the management software under Extras > Options (see chapter 6.3.1, page 150).

4.5.5 CONNECTING TO THE MATRIX VIA DEVICE FINDER

* At least FTP rights are required.

*Up to twelve connections between the matrix and the management 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 that are in the same subnet. This is useful, for example if the IP address of a specific matrix is unknown and should be accessed via IP.

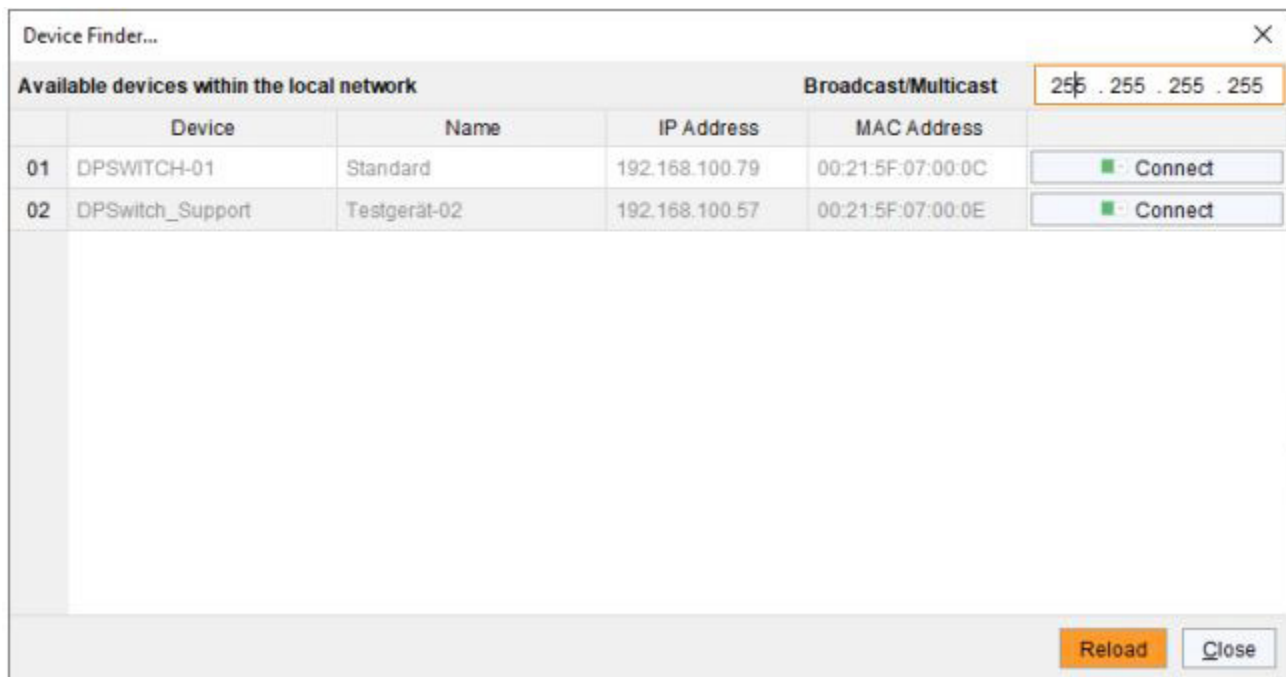


FIGURE 4-5.5.1 MANAGEMENT SOFTWARE MENU DEVICE FINDER

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 (chapter 6.4.6, page 163)
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
Type	Type of the device

CHAPTER 4: INSTALLATION

* The last column of the Device Finder can be used to access the respective matrix directly clicking the Connect button.

*Up to twelve connections between the matrix and the management software can be established at the same time due to a limitation of available sockets.

To find and access a device, proceed as follows:

1. Click the menu item Device Finder in the tool bar.
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 the Connect button in the last column of the Device Finder to establish direct access to the respective device within the same subnet.
4. Enter the username and password of the administrator (see chapter 6.5, page 177). By default, the username is admin, and the password of the administrator is admin.
5. Click the Login button to confirm your entries.

5.1 CONFIGURATION VIA OSD

NOTICE

Possible loss of configuration changes

By clicking the **Okay** button, 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 (**Save**, see chapter 5.10.1, page 134), save a predefined configuration (**Save as...**, from chapter 5.10.2, page 135), or perform a restart (see chapter 7.10.1, page 315).

NOTICE

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

CHAPTER 5: OSD CONFIGURATION

5.2 PASSWORD RESET

All configuration or assignment settings can only be configured with administrator rights. The following login data is saved in the factory settings:

FILED	ENTRY
User	admin
Password	admin

To access the configuration menu, proceed as follows:

1. Press the <F10> key in the main menu of the OSD. The login mask appears.
2. Enter the login data of the administrator* To log out a user, press the <F10> key again.
When leaving the configuration or assignment menu, the administrator is logged out automatically.

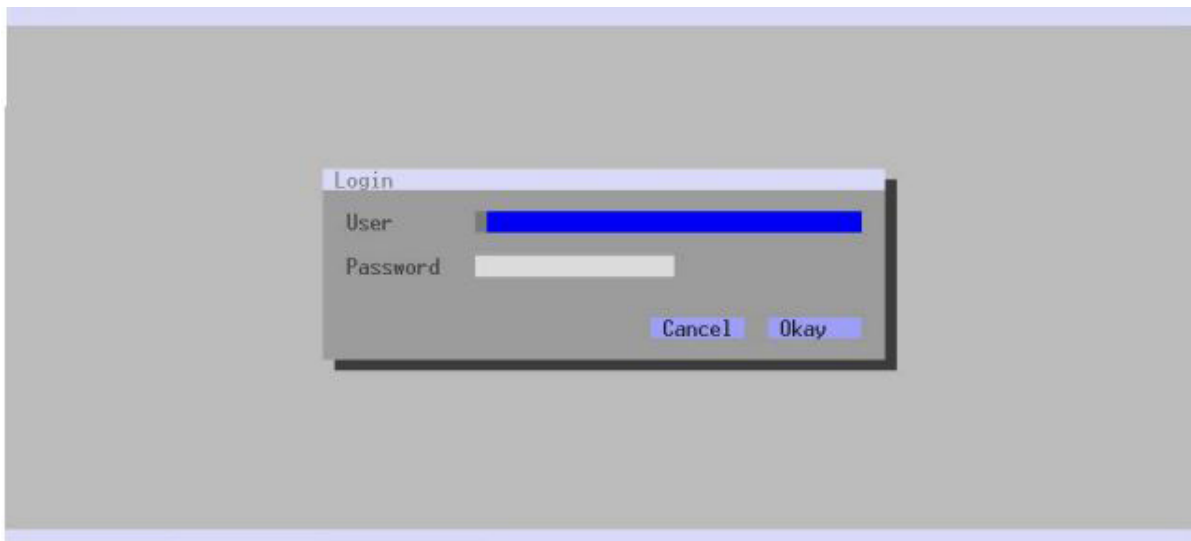


FIGURE 5-2.1.1 MANAGEMENT SOFTWARE MENU DEVICE FINDER

NOTICE

For security reasons, please change the administrator password as soon as possible (see chapter 5.4.1, page 80).

5.3 OVERVIEW CONFIGURATION MENU

Various system functions and options are available in the configuration menu. In addition, the following functions can be called up here: save (as active or predefined configuration) and shutdown, restart, or reset to factory settings.

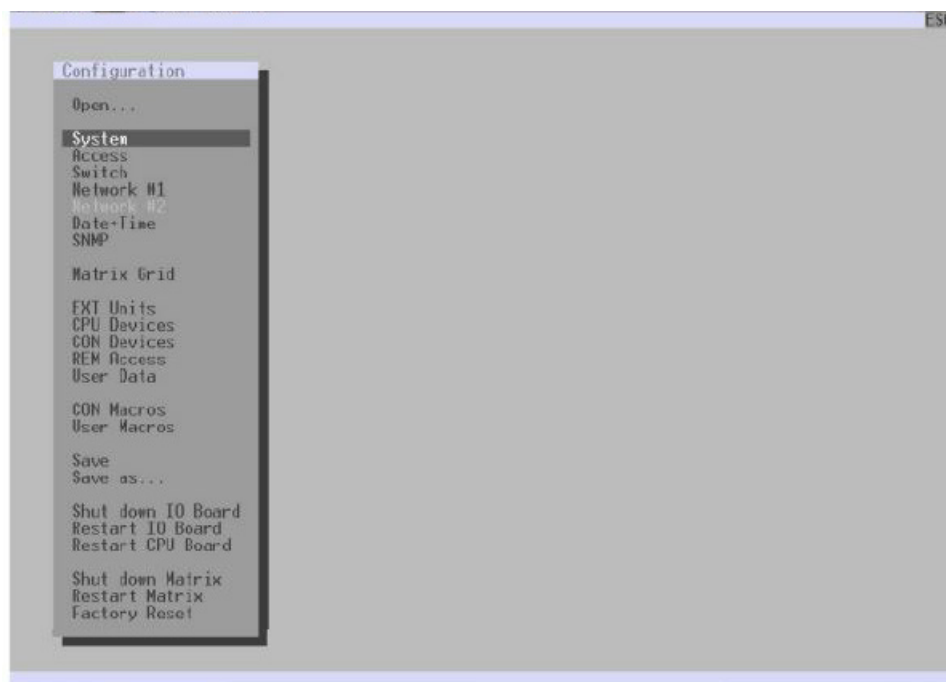


FIGURE 5-3.1.1 OSD MENU CONFIGURATION

5.4 SYSTEM SETTINGS

5.4.1 SETTING SYSTEM CONFIGURATION

The parameters for the system configuration are set in this menu:

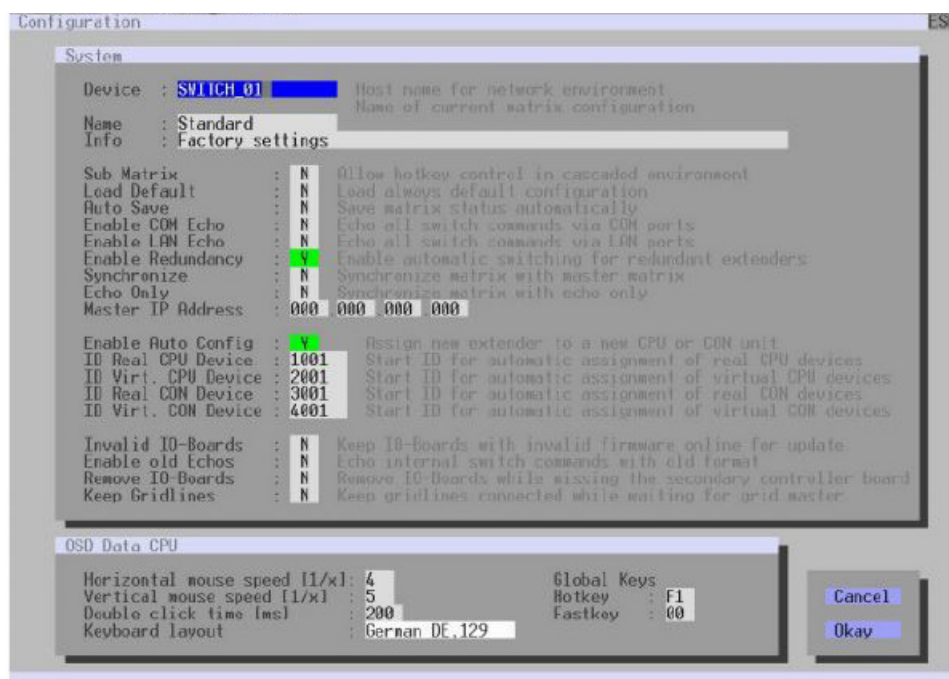


FIGURE 5-4.1.1. OSD MENU CONFIGURATION - SYSTEM

CHAPTER 5: OSD CONFIGURATION

COMPUTER / SOFTWARE / NETWORK		RESULTS
Device	Text	Enter the device name of the matrix (default: SWITCH_01)
Name	Text	Enter the name of the configuration that is used to save the current settings (default: Standard)
Info	Text	Additional text field to describe the configuration (default: Factory settings)
Sub Matrix	Y	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.
	N	Function not active (default)
Load Default	Y	Starting the matrix after a restart or a switch-on with the default configuration.
	N	Starting the matrix after a restart or a switch-on with the last saved configuration (default).
Auto Save	Y	Save the current configuration of the matrix in the flash memory periodically. Note: During the save operation, the matrix will not react to commands. Saving takes place every 600 seconds if changes of the configuration or switching operations have been executed in the meantime.
	N	Function not active (default)
Enable COM Echo	Y	Send 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.
	N	Function not active (default)
Enable LAN Echo	Y	Send 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 using stacking with two or more matrices.
	N	Function not active (default)
Enable Redundancy	Y	Automatically switch 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.
	N	Function not active
Synchronize	Y	Synchronize the sub matrix to the switch status of the master matrix.
	N	Function not active (default)

FIGURE 5-2.1. OSD MENU CONFIGURATION

COMPUTER / SOFTWARE / NETWORK		RESULTS
Echo Only	Y	Synchronize 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.
	N	Function not active (default)
Master IP Address	Y	Set the network address of the master matrix (default: 000.000.000.000)
Invalid IO-Boards	Y	Keep 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.
	N	Shut down I/O boards with incorrect or invalid firmware automatically (default).
Enable old Echos	Y	Translate current switching command (implemented since V02.09) internally into the old, already known switching commands and send them as echo.
	N	Function not active (default)
Remove IO-Boards	Y	Note: Only for DKM enterprise 576: Shut down of I/O boards if the second controller board is not available. Connection will be disconnected.
Keep Gridlines	Y	Function not available in the firmware described in this manual
	N	Function not active

OSD Data CPU

COMPUTER / SOFTWARE / NETWORK		RESULTS
Horizontal Mouse Speed [1/x]	1 to 9	Adjust the horizontal mouse speed, 1 = slow, 9 = fast (default: 4)
Vertical Mouse Speed [1/x]	1 to 9	Adjust the vertical mouse speed, 1 = slow, 9 = fast (default: 5)
Double-click Time [ms]	Text	Adjust the time slot for a double-click (default: 200)
Keyboard Layout	100 to 800	Set the OSD keyboard layout according to the keyboard used (default: German (DE))
Hot Key	Region	Set the OSD keyboard layout according to the keyboard used (default: German (DE))
Load Default	Keyboard command	Call the command mode via keyboard sequence (default: 00)
Fast Key	Keyboard command	Open 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

Settings for Global Hot Key and Fast Key

FIELD	ENTRY	DESCRIPTION
Hot Key / Fast Key	00	No global Hot Key / Fast Key defined, no modification of the extender module.
	01 to FE	Overwrite the Hot Key / Fast Key of the extender module with the entered value of the global Hot Key / Fast Key.
	FF	Deactivate the Hot Key / Fast Key of the extender module

Valid values for the Hot Key and the Fast Key are USB-HID keyboard scan codes according to US keyboard layout.
To set modifier keys for the Hot Key and the Fast Key use the following values:

ENTRY	MODIFIER KEY
F0	Left CTRL
F1	Left SHIFT
F2	Left ALT
F4	Right CTRL
F5	Right SHIFT
F6	Right ALT

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

To set the parameters for the system configuration, proceed as follows:

1. Select **Configuration > System** in the main menu.
2. Modify the desired settings.
3. Click the **Okay** button to confirm your entries

FIGURE 5-3.1. OSD MENU CONFIGURATION

CHAPTER 5: OSD CONFIGURATION

5.4.2 ENABLING AUTOMATIC CREATION OF CPU AND CON DEVICES

Settings for automatic creation of CPU and CON Devices when a new CON extender module or CPU extender module is connected are set in this menu.

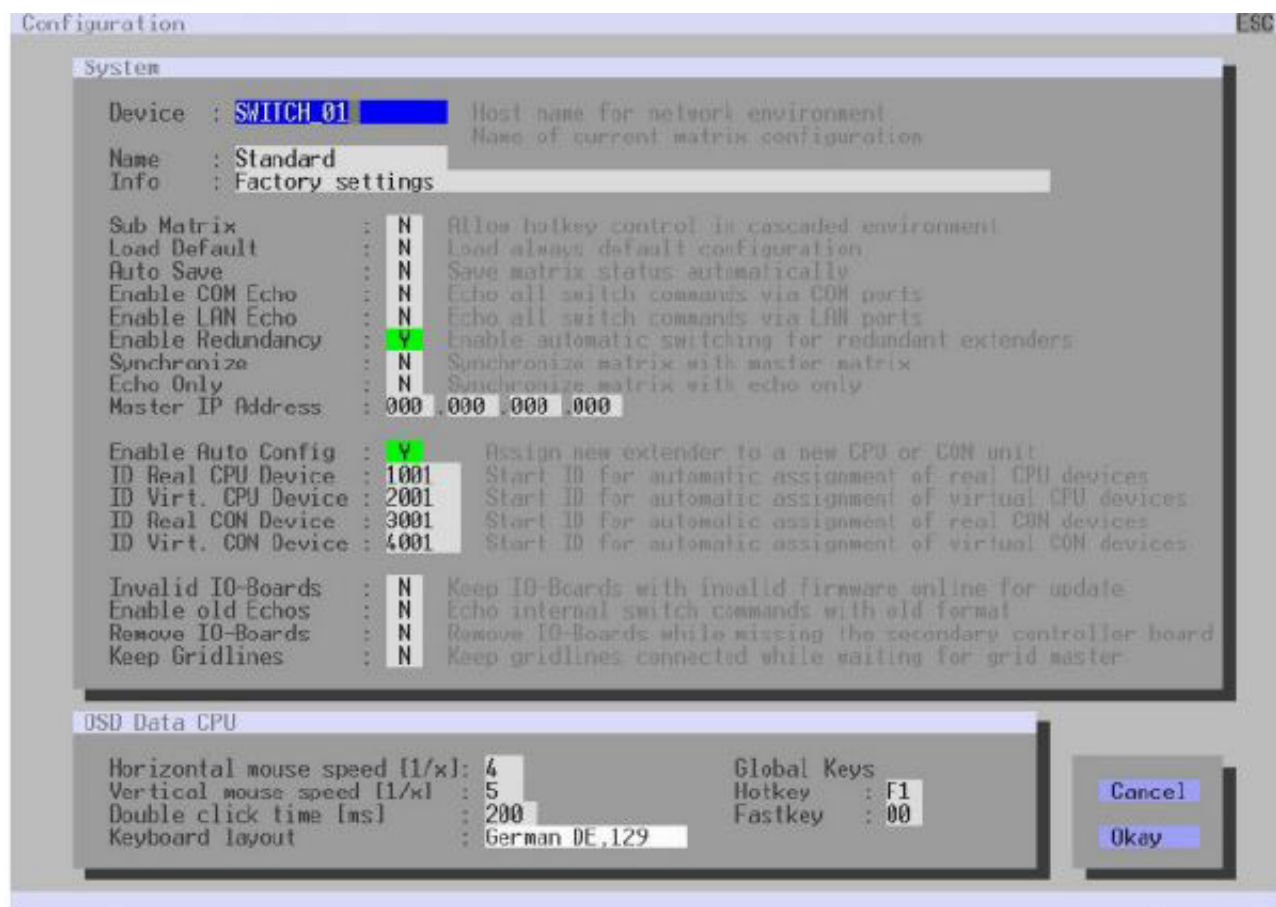


FIGURE 5-4.2.1 OSD MENU CONFIGURATION -SYSTEM - AUTOMATIC ID

The following parameters can be configured:

COMPUTER / SOFTWARE / NETWORK		RESULTS
Enable Auto Config	Y	Automatic creation of a new CPU or CON Device if new extender modules are connected (default)
	N	Function not active
ID Real CPU Device	Text	Initial value of the automatic ID for real CPUs (default: 1000)
ID Virtual CPU Device	100 to 800	Initial value of the automatic ID for virtual CPUs (default: 2000)
ID Real CON Device	Region	Initial value of the automatic ID for real CONs (default: 3000)
ID Virtual CON Device	Numerical	Initial value of the automatic ID for virtual CONs (default: 4000)

To set the parameters for the system configuration, proceed as follows:

1. Select **Configuration > System** in the main menu.
2. Modify the desired settings.
3. Click the **Okay** button to confirm your entries.

5.4.3 SETTING ACCESS CONFIGURATION

The access configuration is set in this menu.

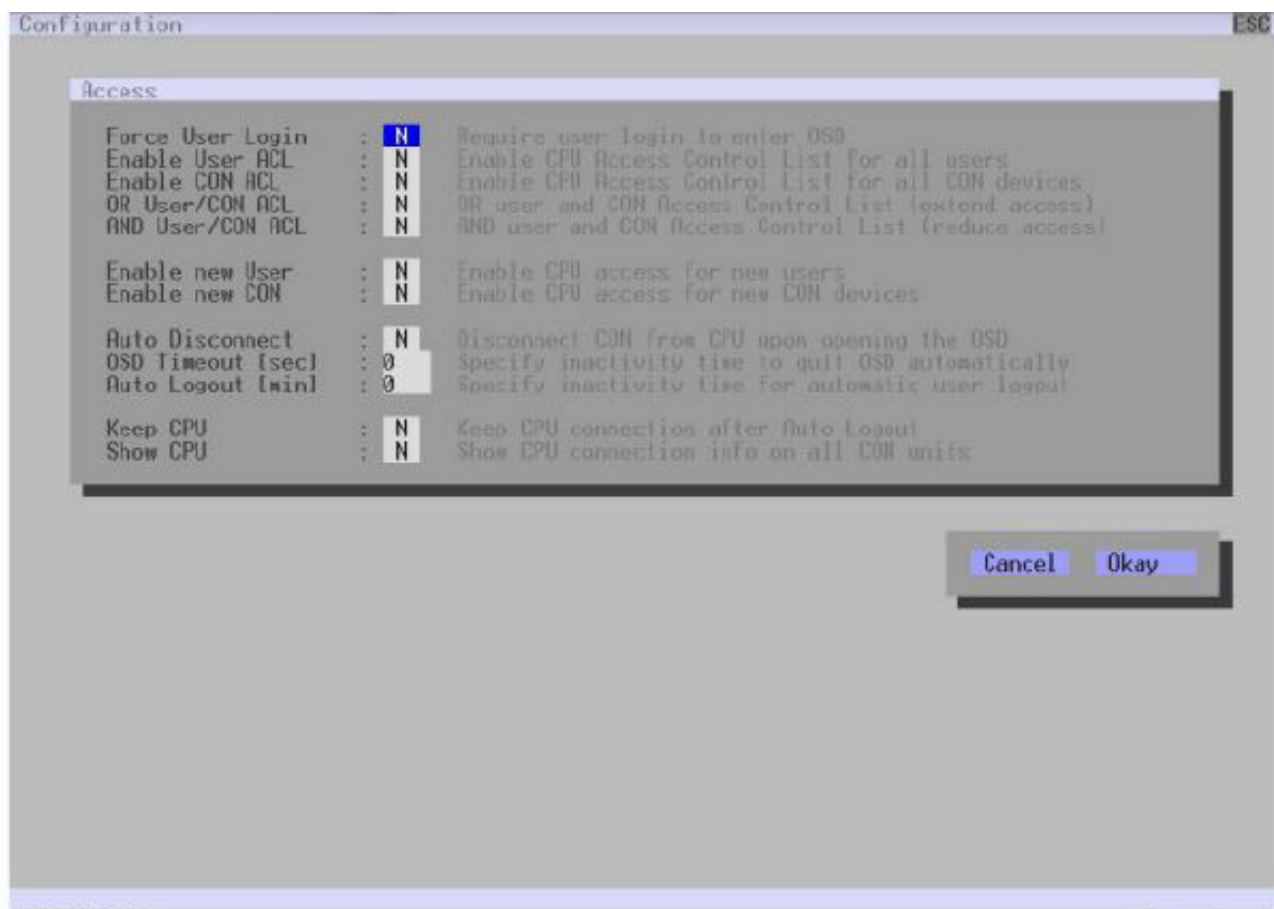


FIGURE 5-4.3.1 OSD MENU CONFIGURATION - ACCESS

The following parameters can be configured:

COMPUTER / SOFTWARE / NETWORK		RESULTS
Force User Login	Y	The user has to login with a username and a password once to enter OSD. Thereafter the user remains logged in until he explicitly logs out or an auto logout is affected. Note: When the Force User Login function is activated and a user is logged in, only the user favorites are available. The CON favorites are not accessible.
	N	Function not active (default)
Enable User ACL	Y	CPU Device access is restricted according to the permissions in the ACL (Access Control List). • User login is required. • Switching by keyboard Hot Keys requires a prior login.
	N	Function not active (default)
Enable CON ACL	Y	CPU Device access is restricted according to the permissions in the respective CON Device ACL (Access Control List). No login required
	N	Function not active (default)
OR User/CON ACL	Y	The user obtains the sum of access rights from the CON Device and his personal access rights after logging in (extended access)
	N	Function not active (default)
AND User/CON ACL	Y	The user obtains the common divisor of access rights from the CON Device and his personal access rights after logging in (reduced access)
	N	Function not active (default)
Enable new User	Y	Newly created users automatically receive access to all CPUs
	N	Function not active (default)
Enable new CON	Y	Newly created CON Devices automatically receive access to all CPU Devices
	N	Function not active (default)
Auto Disconnect	Y	Upon opening the OSD, the console will be automatically disconnected from the current CPU Device.
	N	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 seconds	Period of inactivity of a logged-in user at a CON Device after which he 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).

CHAPTER 5: OSD CONFIGURATION

COMPUTER / SOFTWARE / NETWORK		RESULTS
Keep CPU	Y	Keep 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.
	N	Function not active (default)
Show CPU	Y	Permanently show the name of the currently connected CPU Device in the Connection Info box.
	N	Function not active (default)

To set the parameters for the system configuration, proceed as follows:

1. Select **Configuration > System** in the main menu.
2. Modify the desired settings.
3. Click the **Okay** button to confirm your entries.

5.4.4 SETTING SWITCH CONFIGURATION

This menu enables shared operation of a CPU Device by two or more CON Devices. A CPU Device can be controlled by only one CON Device at a time but can be taken over successively by other CON Devices. Control of a CPU Unit by a CON Unit is relinquished after the expiration of an inactivity timer associated with the controlling CON Device. The mouse or keyboard may also be used to take over 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 chapter 6.8.1, page 204). When taking over control within 10 s, any assigned USB 2.0 extender modules 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.

The switching parameters are set in this menu.

The switching parameters are set in this menu.

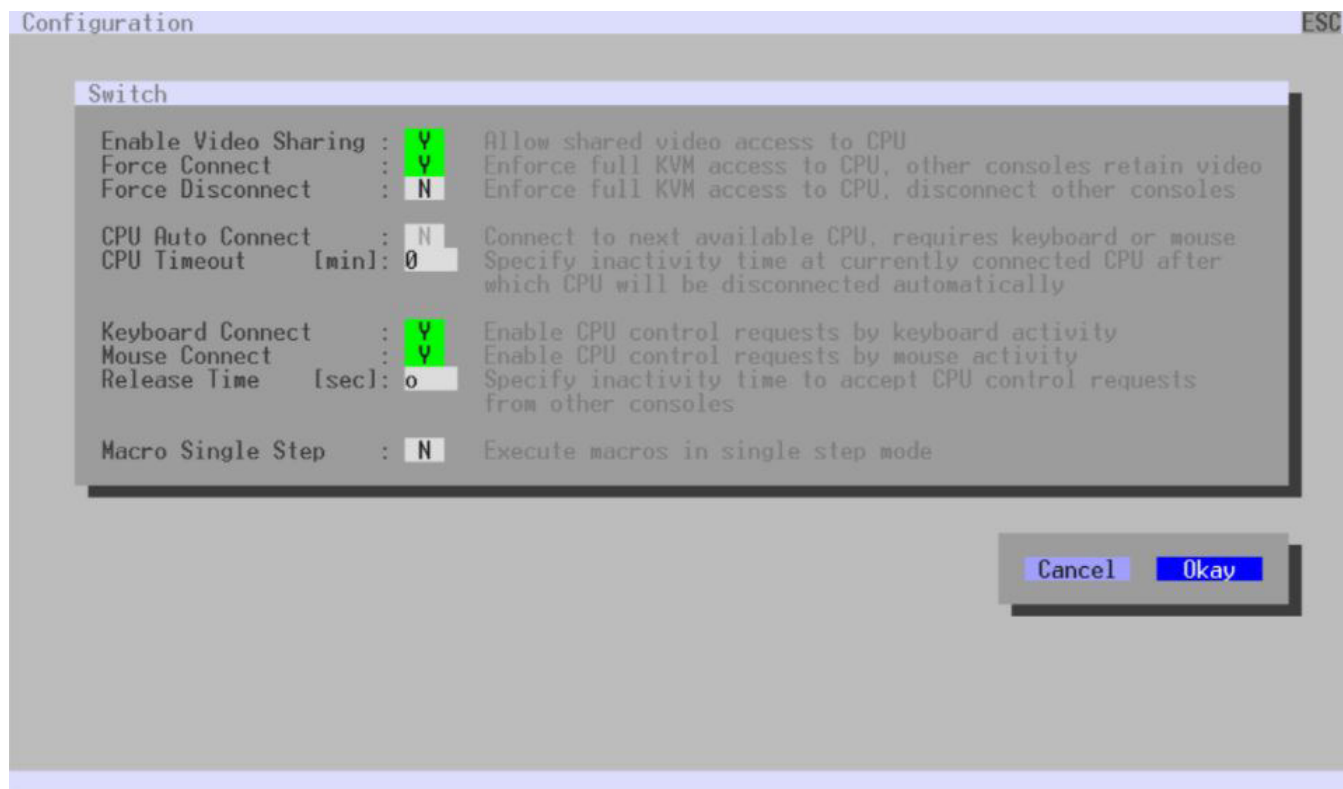


FIGURE 5-4.4.1. OSD MENU CONFIGURATION - SWITCH

The following parameters can be configured:

COMPUTER / SOFTWARE / NETWORK		RESULTS
Enable Video Sharing	Y	The user can switch to any CPU Device as an observer, including ones that are already assigned to another user (observer without keyboard/mouse access). Note: Switching with the <Space> key, not with the <Enter> key. 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.
	N	Function not active (default)
Force Connect	Y	Extension of Force Connect: If the user connects as an operator to a CPU Device already related to another user, the previous user will be disconnected. Note: To share K/M control Force Disconnect has to be deactivated and Enable Video Sharing has to be activated.
	N	Function not active (default)
Force Disconnect	Y	If a CON Device is not connected to a CPU Device, you can establish an automatic connection to the next available CPU Device by hitting any key or mouse button.
	N	Function not active (default)

COMPUTER / SOFTWARE / NETWORK		RESULTS
CPU Auto Connect	Y	If a CON Device is not connected to a CPU Device, you can establish an automatic connection to the next available CPU Device by hitting any key or mouse button.
	N	Function not active (default)
CPU Timeout [min]	0 to 999 minutes	Period of inactivity after which a CON Device will be automatically disconnected from its current CPU Device (default: 0 minutes)
Keyboard Connect	Y	Activate request of K/M control by keyboard event (key will be lost)
	N	Function not active (default)
Mouse Connect	Y	Activate request of K/M control by mouse event
	N	Function not active (default)
Release Time [sec]	0 to 999 seconds	Period of inactivity of a connected console after which K/M control can be requested by other consoles connected to the CPU Device. Note: Set 0 for an immediate transfer in real-time. Only one console can have keyboard and mouse control at a time. The other consoles that are connected to the same CPU Device have a Video Only status (default: 10 seconds)
Macro Single Step	Y	Execute macro commands sequentially
	N	Function not active (default)

To configure shared operation, proceed as follows:

1. Select **Configuration > Switch** in the main menu.
2. Activate the **Enable Video Sharing** function.
3. Activate the **Force Connect** function.
4. Activate the **Keyboard Connect** function if taking over control by a keyboard event should be possible.
5. Activate the **Mouse Connect** function if taking over control by a mouse movement should be possible.
6. Define a **Release Time** of inactivity (0 to 999 seconds) after which KVM control can be taken over.
7. Click the **Okay** button to confirm your settings.

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.

5.4.5 SETTING NETWORK CONFIGURATION

NOTICE

To initialize system-relevant configuration changes, the matrix must be restarted. Restarting the matrix can take several minutes and the matrix is not available during the restart.

NOTICE

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

NOTICE

The Syslog function starts logging after the matrix or controller card is restarted if the Syslog function has been activated in this menu.

To configure shared operation, proceed as follows:

Configuration ESC

Network Interface #1

Dual Interface : ☐ Disable redundant network interface mode
DHCP : ☒ Primary CPU Secondary CPU
IP Address : 192.168.100.099 192.168.100.098
Subnet Mask : 255.255.255.000 255.255.255.000
Gateway : 192.168.100.001 192.168.100.001
Multicast : 255.255.255.255 Grid Multicast or Broadcast (255.255.255.255)

Network Services

API Service #1 : ☒ Enable API Service port (5555/5565)
Grid Service #1 : ☒ Enable Grid Service port (5557/5567)
SSL Services #1 : ☐ Enable SSL for API and Grid communication

Syslog #1 : ☐ Enable Syslog Server #1
Syslog Server : 000.000.000.000 :514

Syslog #2 : ☐ Enable Syslog Server #2
Syslog Server : 000.000.000.000 :514

LDAP : ☐ Enable authentication with Active Directory Server
LDAP TLS/SSL : ☐ Enable Transport Layer Security for Active Directory access
LDAP Server : 000.000.000.000 :389
LDAP Base DN :

Log Levels

Trace : DEB ☐ INF ☐ NOT ☒ WAR ☒ ERR ☒
Syslog #1 : DEB ☐ INF ☐ NOT ☒ WAR ☒ ERR ☒
Syslog #2 : DEB ☐ INF ☐ NOT ☒ WAR ☒ ERR ☒

Cancel
Okay

FIGURE 5-4.5. OSD MENU CONFIGURATION - NETWORK

The following parameters can be configured:

Network Interface #1

COMPUTER / SOFTWARE / NETWORK		RESULTS
Dual Interface	Y	Redundant network connection is deactivated
	N	Redundant network connection is activated (default)
CPU Timeout [min]	Y	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.
	N	Function not active (default)
IP Address	Byte	Input of the IP address if DHCP is not active (default: 192.168.100.99)
Subnet Mask	Byte	Input of the subnet mask in the form "255.255.255.0" if DHCP is not active (default: 255.255.255.0)
Gateway	Byte	Input of the subnet mask in the form "192.168.1.1" if DHCP is not active
MAC Address	Byte	Cannot be changed, is retrieved automatically
Multicast	Byte	Input of the Multicast address if there is a Matrix Grid in use within a Multicast group (default: 255.255.255.255)

Network Services

COMPUTER / SOFTWARE / NETWORK		RESULTS
API Service #1	Y	LAN interface at the matrix activated for access via management software (default, API service port 5555/5565)
	N	Function not active
Grid Service #1	Y	Activate Grid interface at the matrix for access via management software (Grid Service Port 5557/5567).
	N	Function not active (default)
SSL Services #1	Y	Activate SSL encryption for API, management software (API), and Matrix Grid communication.
	N	Function not active (default)

The following parameters can be configured:

Network Interface #1

COMPUTER / SOFTWARE / NETWORK		RESULTS
Syslog #1/#2	Y	Syslog server for status request is active
	N	Function not active (default)
Syslog Server #1/#2	Byte	Input of the IP address of the Syslog servers in the form "192.168.1.1" and of the Syslog port (default: 514)

* The LDAP settings are explained in the chapter 7.3.6, page 79.

Log Levels

COMPUTER / SOFTWARE / NETWORK		RESULTS
Trace	DEB	LAN interface at the matrix activated for access via management software (default, API service port 5555/5565)
	INF	Function not active
	NOT	Activate Grid interface at the matrix for access via management software (Grid Service Port 5557/5567).
	WAR	Function not active (default)
	ERR	Activate SSL encryption for API, management software (API), and Matrix Grid communication.
Syslog #1/#2	DEB	Activate debug messages in Syslog (default: N) Note: The debug messages are exclusively for matrix diagnostics. They only should be activated after consultation with the manufacturer. Otherwise, an increased traffic of data might limit the performance of the controller board.
	INF	Activate information messages in Syslog (default: N)
	NOT	Activate notification messages in Syslog (default: Y)
	WAR	Activate warning messages in Syslog (default: Y)
	ERR	Activate error messages in Syslog (default: Y)

To set parameters for the network configuration, proceed as follows:

1. Select Configuration > Network in the task area.
2. Modify the desired settings.
3. Click the Okay button to confirm your entries.

5.4.6 SETTING 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 conformance standard. Two SNMP servers can be used at the same time. Enabling the SNMP function, the unencrypted SNMP monitoring (SNMPv2) is activated.

An SNMPv3 User for encrypted SNMP monitoring (SNMPv3) can be set in the user settings (see chapter 6.4.8 page 167) and the login data for an SNMPv3 User at the SNMP server can be set in the default settings.

NOTICE

When using SNMP monitoring, for reasons of access security, the use of a dedicated network according to the IT-Grundschutz catalog is recommended. The read only community for the MIB file is DKM.

NOTICE

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

The settings for the SNMP monitoring are set in this menu:

The screenshot shows the 'Configuration' menu with the 'SNMP Agent' and 'SNMP Server' sections. The 'SNMP Agent' section has 'Enable' set to 'N' and 'Read Community' set to 'DKM'. The 'SNMP Server' section has two columns for 'Server #1' and 'Server #2'. Both servers have 'Enable Traps' set to 'N' and 'Server Address' set to '000.000.000.000:162'. Other settings like 'Status', 'Temperature', 'Insert Board', 'Remove Board', 'Invalid Board', 'Insert Extender', 'Remove Extender', 'Switch Command', 'Fan Tray #1', 'Fan Tray #2', 'Power Supply #1', 'Power Supply #2', 'Power Supply #3', and 'Power Supply #4' are all set to 'N'. At the bottom right, there are 'Cancel' and 'Okay' buttons.

SNMP Agent	
Enable	: N Activate the SNMP agent for GET requests and traps
Read Community	: DKM

SNMP Server	
Enable Traps	: N Server #1 N Server #2
Server Address	: 000.000.000.000:162 000.000.000.000:162
Status	: N N
Temperature	: N N
Insert Board	: N N
Remove Board	: N N
Invalid Board	: N N
Insert Extender	: N N
Remove Extender	: N N
Switch Command	: N N
Fan Tray #1	: N N
Fan Tray #2	: N N
Power Supply #1	: N N
Power Supply #2	: N N
Power Supply #3	: N N
Power Supply #4	: N N

Cancel Okay

FIGURE 5-4.6.1 OSD MENU CONFIGURATION - SNMP

The following parameters can be configured:

SNMP Agent

COMPUTER / SOFTWARE / NETWORK		RESULTS
Enable	Y	Permission for an active query of the SNMP agent for traps is granted. This activation is a prerequisite for using the SNMP server.
Read Community	N	The read only community for the MIB file is DKM.

SNMP Server

* A matrix configuration should only include one LDAP user and one LDAP

TRAPS	DESCRIPTION
Enable Traps	Activates the active sending of trap messages from the SNMP agent to the SNMP server
Server Address	Input of the IP address of the SNMP server in the form "192.168.1.1" and of the SNMP port (default: 162)
Status	Notification about matrix status
Temperature	Notification about temperature within the matrix
Insert Board*	Notification about insertion of a new I/O board into a slot
Remove Board*	Notification about removal of an I/O board out of a slot
Invalid Board*	Notification about a faulty I/O board
Insert Extender	<ul style="list-style-type: none"> • Notification about a newly connected extender to the matrix, notification about a switched-on extender • Notification about a newly established link between extender and matrix
Remove Extender	<ul style="list-style-type: none"> • Notification about a removed extender from the matrix • Notification about a switched off extender • Notification about an interrupted link between extender and matrix
Fan Tray #1	Notification about the fan status on the left side of the matrix (interface view)
Fan Tray #2	Notification about the fan status on the right side of the matrix (interface view)
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

5.4.7 SETTING SNMP FUNCTION

Activating the SNMP Agent

To activate the SNMP agent, proceed as follows:

1. **Select Configuration > SNMP** in the main menu.
2. Set the **Enable** option to **Y** (Yes) within **SNMP Agent**. By activating this option, the permission for an active query of the SNMP agent is granted.
3. Click the **Okay** button to confirm your changes.

Activate SNMP Traps

To activate active reporting of the SNMP traps, proceed as follows:

1. **Select Configuration > SNMP** in the main menu.

This function allows an active transmission of trap messages from the SNMP agent to the SNMP server.

2. Set the IP address of the SNMP server within **Server Address**.
3. Activate the requested traps by enabling them to **Y** (Yes).
4. Click the **Okay** button to confirm your changes.

FIGURE 5-3.6. OSD MENU CONFIGURATION - NETWORK

5.4.8 DATE AND TIME

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

The screenshot shows a terminal window titled "Configuration" with an "ESC" key indicator in the top right. It contains two main sections: "Time Server" and "Real Time Clock".

Time Server

- SNTP Client** : **N** Enable the synchronisation with a network time server.
- SNTP Server** : 000.000.000.000
- Time Zone** : GMT+00 Select your time zone

Real Time Clock

- Date** : 01 / 01 / 00 Enter the date with format MM/DD/YY
MM = month (1..12) DD = day (1..31) YY = year (0..99)
- Day** : 01 Enter the day of the week
1 = Monday 2 = Tuesday ... 7 = Sunday
- Time** : 00 : 00 : 00 Enter the time with format hh:mm:ss
hh = hours (0..23) mm = minutes (0..59) ss = seconds (0..59)

At the bottom right, there are three buttons: "Set RTC", "Cancel", and "Okay".

FIGURE 5-4.8.1 OSD MENU CONFIGURATION - DATE + TIME

The following parameters can be configured:

TRAPS		DESCRIPTION
SNTP Client	Y	Enable network time server synchronization
	N	Function not active (default)
SNTP Server	Byte	Input of the SNTP server IP address (default: 000.000.000.000)
Time Zone	Region	Set your specific time zone

FIELD		ENTRY	DESCRIPTION
Date*	MM	1 to 12	Enter month
	DD	1 to 12	Enter Date
	YY	1 to 12	Enter Year
Day		1 to 7	Enter day of the week
Time	hh	0 to 23	Enter hour
	mm	0 to 59	Enter minute
	dd	0 to 59	enter second
* Date format according to the English notation.			

Configuring the Time Server

To configure a time server, proceed as follows:

1. Select **Configuration > Date+Time** in the main menu.
2. Set the SNTP Client option to **Y** (Yes).
3. Enter the IP address of your SNTP server into the **SNTP Server** field.
4. Select your time zone in the **Time Zone** field.
5. Click the **Okay** button to confirm your settings.
6. Restart the matrix.

The system time will now be provided by the SNTP server.

Configuring the Real Time Clock without Time Server

To set the real time clock without using SNTP, proceed as follows:

1. Select **Configuration > Date+Time** in the main menu.
2. Set the current date in the **Date** field.
3. Set the current Day in the **Day** field.
4. Set the current time in the **Time** field.
5. Click the **RTC** button to confirm your settings.

The real time clock is now provided.

FIGURE 5-3.7 OSD MENU CONFIGURATION - SNMP

5.5 USER SETTINGS

You have the option to configure the following user settings:

5.5.1 USER SETTINGS

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

The screenshot displays the OSD Configuration menu with the following sections:

- Configuration** (Top bar with function keys: F1:ID, F2:Name, F3:Next, F4:Previous, F5:Refresh, F6:Find, F9:Compare, ESC)
- User List** (Left panel showing a list of users, with 'admin' selected)
- User Data** (Right panel showing configuration for the selected user):
 - ID/Priority : 1 / 999
 - Group : N
 - LDAP User/Group : N
 - AD Synchronized : N
 - Name : admin
 - Full Name :
 - Password : ****
 - Repeat Password : ****
 - Member of Group : not assigned
 - AD group locked : N
 - Administrator : Y
 - Super User : Y
 - Power User : Y
 - SNMP User : N
 - Auto Connect : N
 - LDAP/AD Info
- CPU Access Control List** (Bottom left panel):
 - Full access: 01001 CPU_010190037
 - Video access:
 - No access:
- Buttons** (Bottom right panel):
 - New U.
 - New G.
 - New LU
 - New LG
 - Edit
 - Delete
 - Cancel
 - Ok
- Footer** (Bottom bar): Enter a name to find an item

FIGURE 5-5.5.1 OSD MENU CONFIGURATION - USER DATA

The following functions are available:

	DESCRIPTION
New U.	Create a new user
Edit	Edit an existing user
Delete	Delete an existing user
Cancel	Reject changes
Okay	Confirm the changes of an existing user or the creation of a new user account

The following keyboard commands are available:

	DESCRIPTION
<F>	Add highlighted CPU to list Full Access
<V>	Add highlighted CPU to list Video Access
<N>	Add highlighted CPU to list No Access

The following parameters can be configured:

		DESCRIPTION
ID/ Priority	Numerical	User ID / User priority
Name	Text	Username (case sensitive) Note: A username can consist of up to 32 characters.
Full Name	Text	Optional: personal username (case sensitive, up to 32 characters)
Password	Text	User password (case sensitive, input of minimum 8 characters up to 16 characters)
Repeat Password	Text	Repeat user password (case sensitive)
Member of Group	Selection	Define the assignment to a user group
Administrator	Y	<ul style="list-style-type: none"> • Permission for system configuration and all switching operations • User has administrator rights
	N	Function not active
Super User	Y	Permission to switch any CON Device to any CPU Device in Extended Switching
	N	Function not active
Power User	Y	<ul style="list-style-type: none"> • User has user rights • Permission to switch CON Devices to CPU Devices in Extended Switching according to the CON or User ACL, but not in Private Mode.
	N	Function not active
SNMP User	Y	Permission to use SNMPv3 (encrypted)
	N	Function not active
Auto Connect	Y	Re-establish the previous user connection after login
	N	Function not active
AD group locked	Y	Lock synchronization of group attribute for an Active Directory user. This setting is required for a manual change of user groups for a specific Active Directory user.
	N	Function not active (default)

1. Select **Configuration > User Data** in the main menu.
2. Modify the desired settings.
3. Click the **Okay** button to confirm your entries.

5.5.2 USER FAVORITE LIST

Individual favorite lists of CPUs 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 commands (see chapter 7.2.1, page 274).

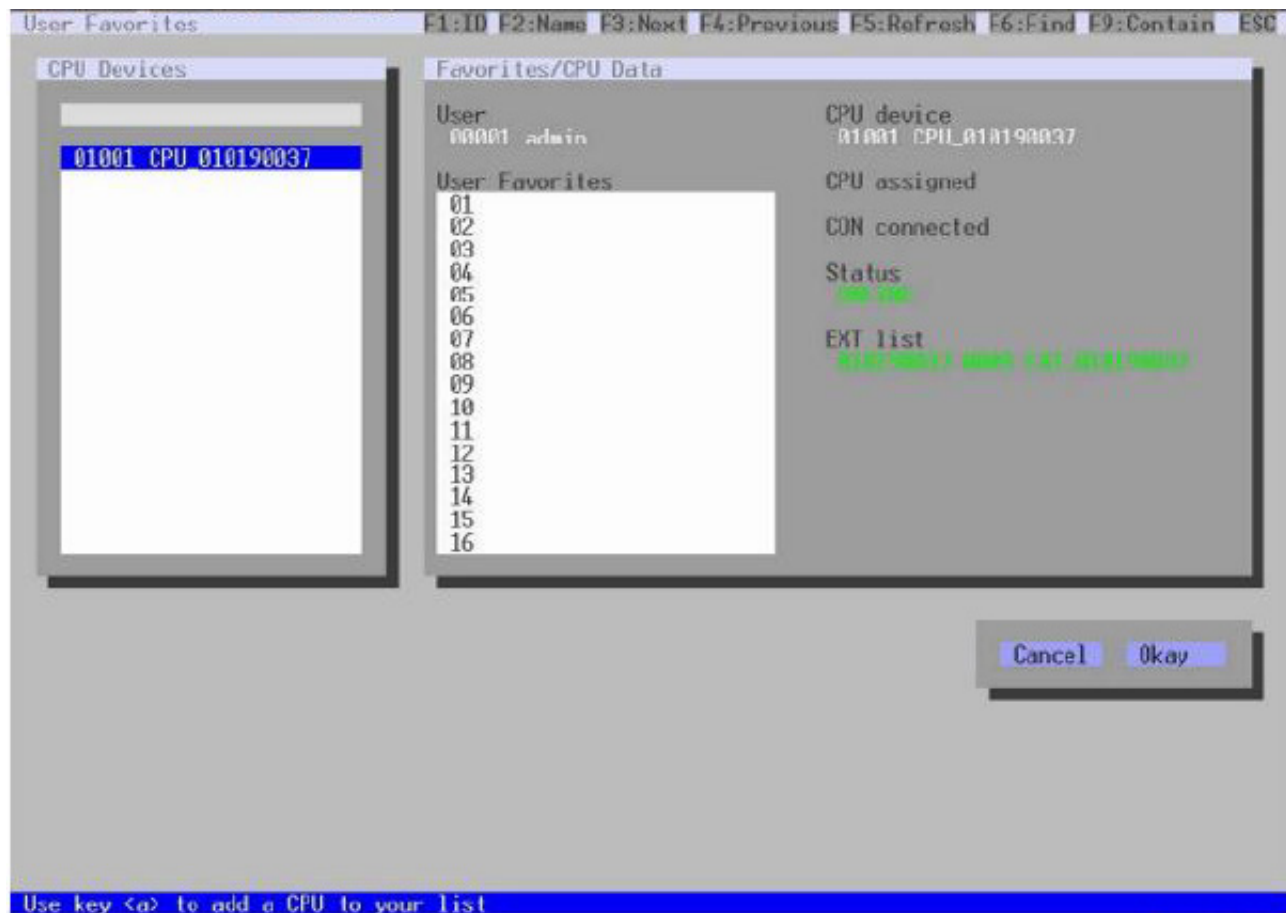


FIGURE 5-5.2.1 OSD MENU CONFIGURATION - USER FAVORITES

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

1. Select **Assignments > User Favorites** in the main menu.
 2. Select a CPU Device to be moved to the favorites list on the **User Favorites** list.
 3. Press the <a> key to move a CPU Device to the favorites list.
- To remove a CPU Device from the favorite list, press the <r> key.
4. Optional: press the <+> or <-> key to change the order of the CPU Devices within the favorites list.
 5. Click the **Okay** button to confirm the settings.

5.5.3 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 switching commands successively.

The execution of the macros is done via Hot Key and the <F1> to <F16> function keys (see chapter 7.2.2, page 275).

* To execute user macros the user has to be logged in to the matrix.

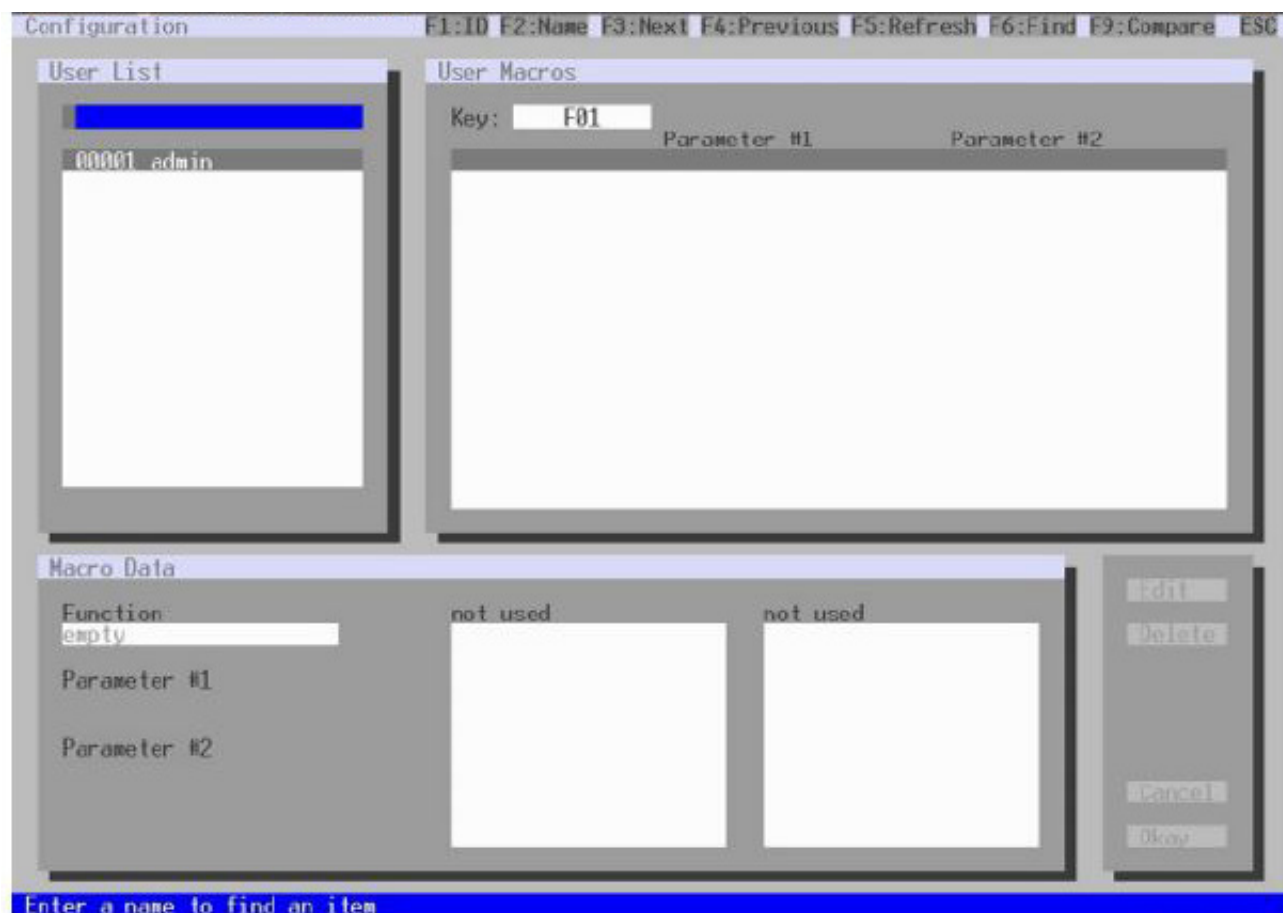


FIGURE 5-5.2.1 OSD MENU CONFIGURATION - USER MACROS

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The following parameters can be configured:

FIELD	SELECTION	DESCRIPTION
Function (01 to 16)	Connect (P1=CON, P2=CPU)	Set a bidirectional connection from CON Device P1 to CPU Device P2
	Connect Video (P1=CON, P2=CPU)	Set a Video Only connection from CON Device P1 to CPU Device P2
	Disconnect (P1=CON)	Disconnect the CON Device P1
	Logout User	Logout the current user
	Assign CPU (P1=VCPU, P2=RCPU)	Assign a Virtual CPU Device to a Real CPU Device
	Assign CON (P1=RCON, P2=VCON)	Assign a Real CON Device to a Virtual CON Device
	Push (P1=CON)	The user's Full Access connection is forwarded to CON Device P1 and is changed into a Video Only connection.
	Push Video (P1=CON)	The video signal of the current connection (Full Access or Video Only) is forwarded 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 console P2	Login a certain user P1 at CON Device P2
P1	CON or CPU Device	Name of CON Device or CPU Device
P2	CON or CON Device	Name of CON Device or CPU Device

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

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

1. Select via **Configuration > User Macros** in the main menu the user for which a user macro has to be created.
2. Select in the **Key** field the function key for which a macro has to be created.
3. Select the position in the **Key** list where a macro command is to be inserted.
4. Select a macro command in the **Macro Data** field.
5. Set the necessary parameters **P1** and **P2** (e.g., CON Devices or CPU Devices) for the selected macro command.
6. Click the **Okay** button to confirm your selection.
7. Repeat the process for further macro commands if necessary.



5.5.4 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 times increases the clarity of the configuration.

* To execute user macros the user has to be logged in to the matrix.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

User List

00001 admin

User Data

ID/Priority : 1 /999 Group : N
 LDAP User/Group : N
 AD Synchronized : N

Name : admin
 Full Name :
 Password : *****
 Repeat Password : *****

Member of Group : not assigned AD group locked : N

Administrator : Y
 Super User : Y
 Power User : Y
 SNMP User : N LDAP/AD Info

Auto Connect : N

CPU Access Control List

Full access Video access No access

01001 CPU_010190037

New U.
 New G.
 New LU
 New LG
 Edit
 Delete
 Cancel
 Okay

Enter a name to find an item

FIGURE 5-4.4.1 OSD MENU ASSIGNMENTS - USER DATA

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BUTTON	DESCRIPTION
New G.	Create a new group
Edit	Edit an existing user
Delete	Delete an existing user
Cancel	Reject changes
Okay	Apply changes

BUTTON	DESCRIPTION
<F>	Add highlighted CPU to list Full Access
<V>	Add highlighted CPU to list Video Access
<N>	Add highlighted CPU to list No Access

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

1. Select **Configuration > User Data** in the main menu.
2. Click the **New G.** button.
3. Enter a group name into the field **Name**.
4. Click the **Okay** button to confirm the group creation.

To assign a user to a group, proceed as follows:

1. Select **Configuration > User Data** in the main menu.
2. Select the user to be assign to a User Group.
3. Select the User Group for the assignment in the field **Member of Group** using the cursor up and down keys.
4. Click the **Okay** button to confirm the group creation.



CHAPTER 5: OSD CONFIGURATION

5.6 EXTENDER SETTINGS

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. This is the Flex Port function of the matrix. Dual-Head extender modules will be recognized as two independent EXT Units.

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 creation of new EXT Units and the deletion of existing EXT Units.

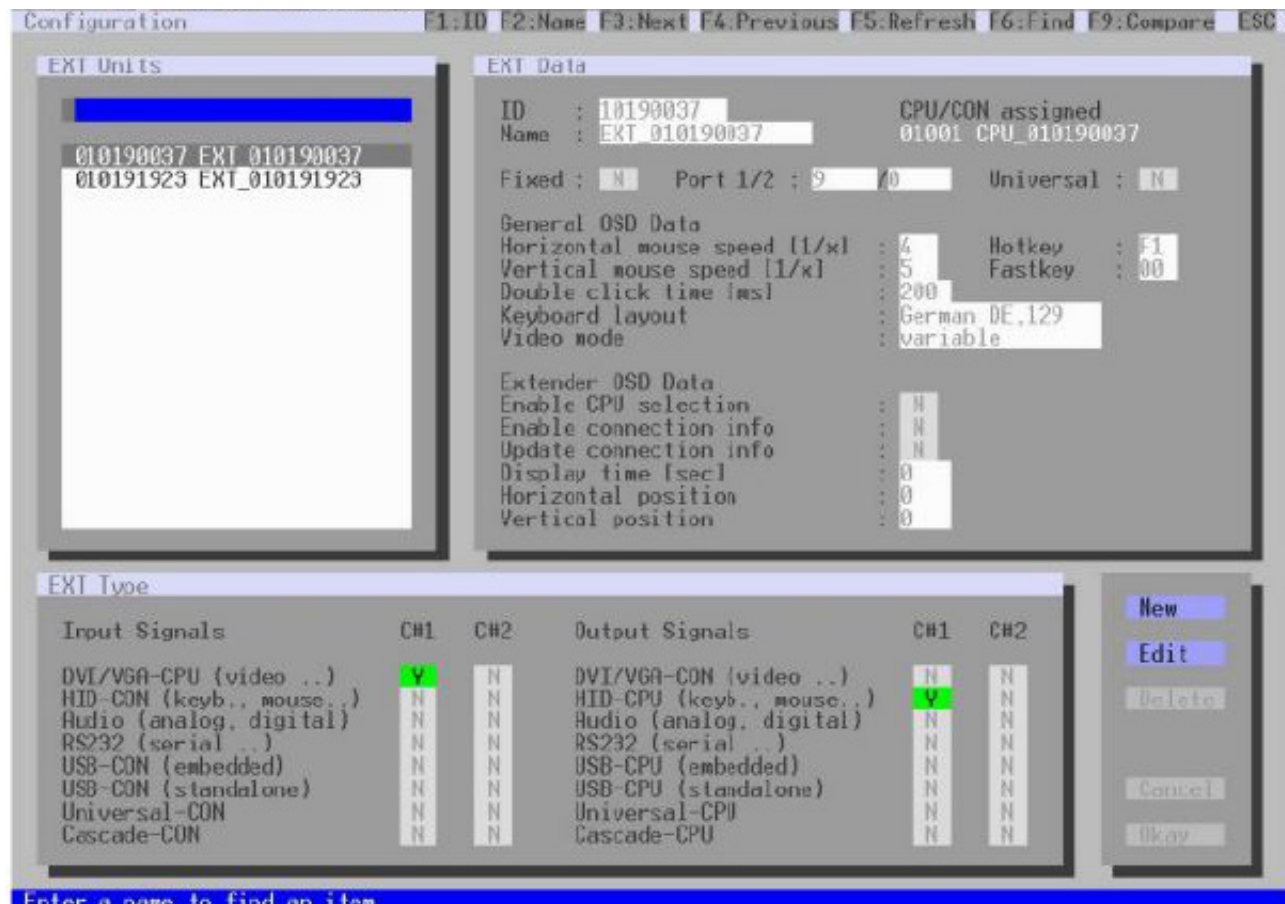


FIGURE 5-6.1. OSD MENU CONFIGURATION - EXT UNITS

The following functions are available

BUTTON	FUNCTION
New	Create a new EXT Unit
Edit	Edit an existing EXT Unit
Delete	Delete an existing EXT Unit
Cancel	Reject changes
Okay	Apply changes

BUTTON		FUNCTION
ID	-	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
Fixed	Y	Create an EXT Unit with a fixed port assignment (default)
	N	Function not active (default)
Port 1/2	1 to 160 (depending on the matrix)	<ul style="list-style-type: none"> Port 1: port number of the matrix the extender module is currently connected Port 2: redundant port number of the matrix the extender module is currently connected

*The settings for the General OSD Data are described in chapter 5.8.2, page 111.

5.7 CONFIGURING AN USB 2.0 EXTENDER

This chapter helps you to configure and use your USB 2.0 EXT Units. USB 2.0 EXT Units can be configured for independent switching or can be assigned to already existing CON Devices or CPU Devices

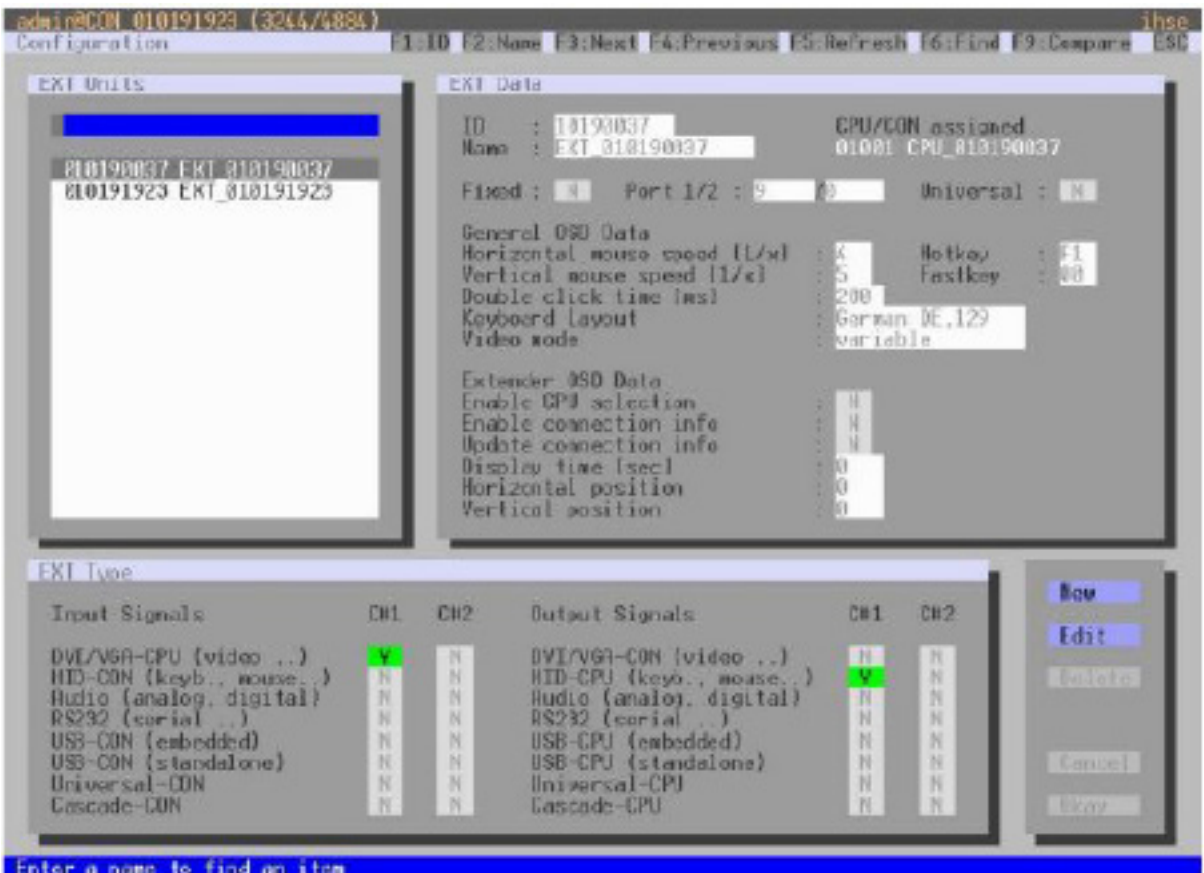


FIGURE 5-7.1. OSD MENU CONFIGURATION -CPU DEVICES

NOTICE

The connection of a fixed port extender module (e.g., USB 2.0) to a Flex Port can cause unintended results. EXT Units for USB 2.0 extender modules have to be created manually (see chapter 5.6, page 106).

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To configure a USB 2.0 EXT Unit, proceed as follows:

1. Select **Configuration > EXT** Units in the main menu.

2. Click the **New** button.

An EXT Unit with an eight-digit ID will be created, starting with digit **9**.

3. Enter an appropriate name for the EXT Unit in the **Name** field.

4. Enter the port number of the matrix the USB 2.0 extender module is currently connected into the **Port** field.

5. To configure the created extender as a CON Unit:

5.1. Set the **USB-CON (standalone)** option to **Y (C#1** in the **Input Signals** column).

5.2. Click the **Okay** button to confirm the setting.

6. To configure the created extender as a CPU Unit:

6.1. Set the **USB-CPU (standalone)** option to **Y (C#1** in the **Output Signals** column).

6.2. Click the **Okay** button to confirm the setting.

7. Click the **Okay** button to confirm the settings.

8. Restart the I/O board to activate the USB fixed port for the new EXT Unit.

After restart of the I/O board, the parameters and settings of the USB 2.0 extender module are shown in the respective EXT Unit.

9. The USB 2.0 CPU/CON EXT Unit has to now 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 chapter 5.8.1, page 111,

- for a **CON Device** see chapter 5.9.3, page 122

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 chapter 6.4.5, page 162).

11. Restart all I/O boards on which USB 2.0 EXT Units have been configured or alternatively restart the matrix.

The USB 2.0 EXT Units are 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.



5.8 CONFIGURING CPU SETTINGS

5.8.1 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.

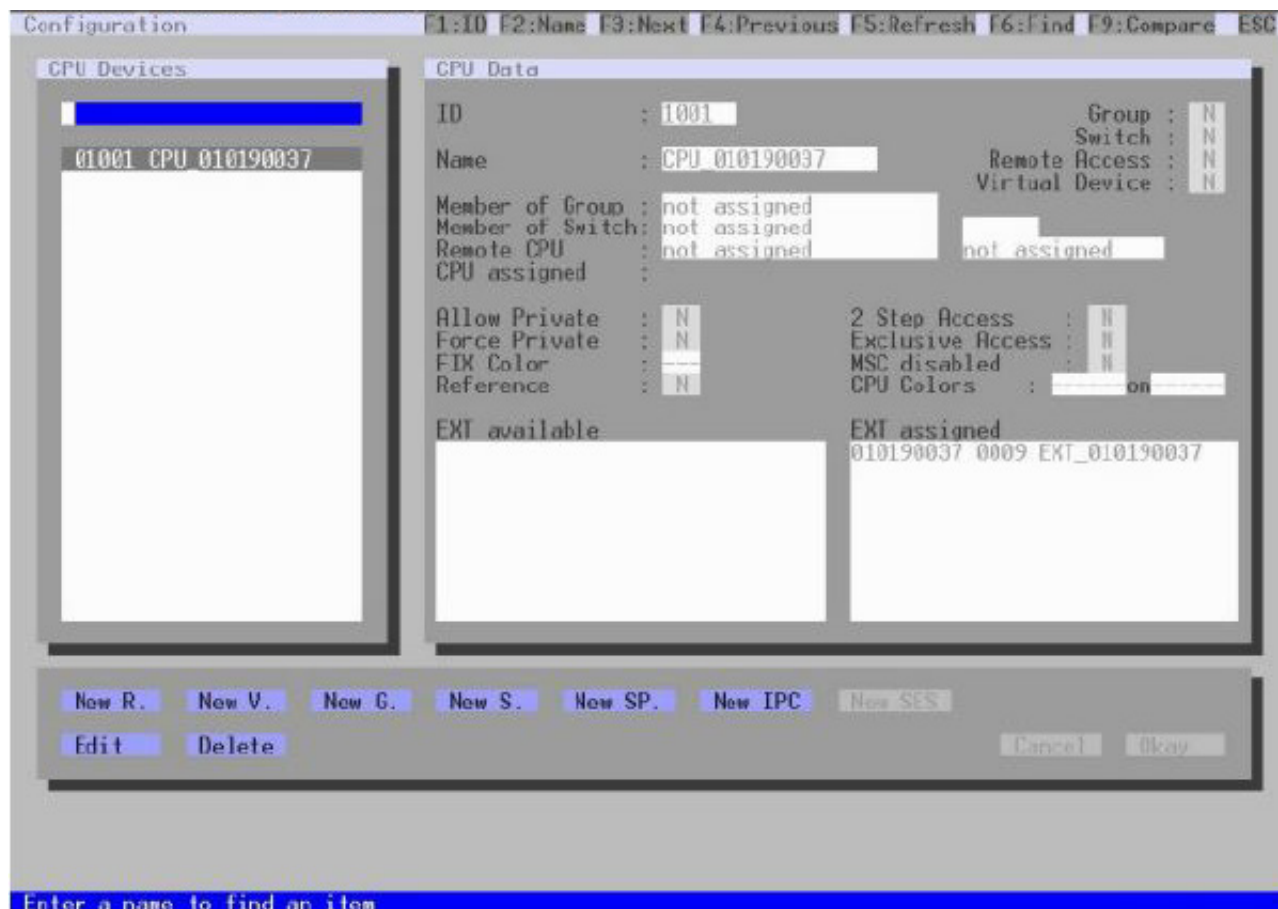


FIGURE 5-8.1.1 OSD MENU CONFIGURATION - CPU DEVICES

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The following parameters can be configured:

FIELD	ENTRY	FUNCTION
ID	Text	Create a new real CPU Device
Name	Text	Edit an existing CPU Device
Member of Group	Selection	Assign the CPU Device to a group
Member of Switch	Selection	Assign the CPU input to the respective CPU Switch
Remote CPU	Selection	Assign an IP CPU Device to the respective IP CPU extender unit
CPU assigned	-	ID and name of the assigned Virtual CPU Device, cannot be changed, is retrieved automatically
Group	Y	Automatically set if the CPU Device is assigned to a CPU Group
	N	Function not active (default)
Remote CPU CPU assigned	Y	Automatically set for a CPU Switch (484 Series)
	N	Function not active (default)
Remote Access	Y	Automatically set for an IP CPU Device
	N	Function not active (default)
Virtual Device	Y	Automatically set for a Virtual CPU Device
	N	Function not active (default)
Allow Private	Y	Allow switching to the respective CPU Device in Private Mode
	N	Function not active (default)
Force Private	Y	Force switching to the respective CPU only in Private Mode
	N	Function not active (default)
Fix Color	Y	Force showing a colored frame when switching to the respective CPU. You can select between 7 colors.
Reference	Y	Activate a reference CPU Device that inherits both Device and extender settings to any CPU Unit that is connected to the matrix for the first time. Note: It is recommended to activate the reference setting for one single CPU Device only.
	N	Function not active (default)
2 Step Access	Y	Open a pop-up window after switching to the particular CPU Device. In the background a Video Only connection will be established. A confirmation in the pop-up window is required to establish a Full Access connection to the CPU Device.
	N	Function not active (default)

FIELD	ENTRY	FUNCTION
Exclusive Access	Y	Activate 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.
	N	Function not active (default)
MSC disabled	Y	Assign the CPU Device to a group
	N	Activate Multi-Screen Control function
CPU Colors	Selection list	The CPU Device name will be highlighted according to the color setting for text and background. You can select between 16 colors.

To create a CPU Device, proceed as follows:

1. Select **Configuration > CPU Devices** in the main menu.
2. Click the **New R.** button to create a new real CPU Device or click the **New V.** button to create a new virtual CPU Device.
3. Enter a CPU Device name into the field **Name.**
4. Click the **Okay** button.

The CPU Device is created now.

To assign an extender unit to a CPU Device, proceed as follows:

1. Select **Configuration > CPU Devices** in the main menu.
2. Select the CPU Device you want to assign an extender unit.
3. Select the extender unit for the assignment in the **EXT available** list.
4. Click the **Okay** button.

The CPU Device is assigned to the CPU Device now.

BUTTON	FUNCTION
New R	Create a new real CPU Device
Edit	Edit an existing CPU Device
Delete	Delete an existing CPU Device
Cancel	Reject changes

5.8.2 SETTING CPU GROUPS

The KVM matrix allows 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 in a matrix grid. The configuration of CPU groups at the same times increases the clarity of the configuration.

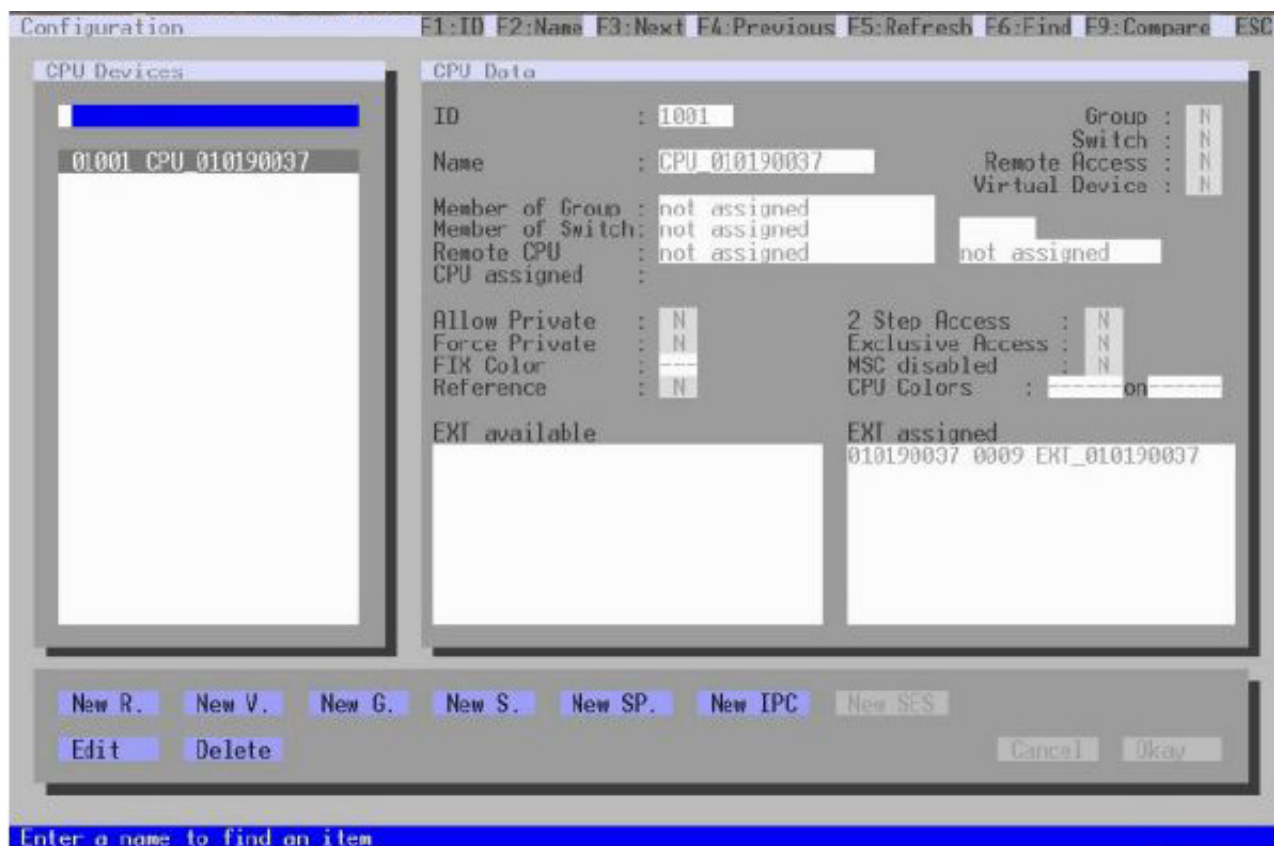


FIGURE 5-8.2.1 OSD MENU CONFIGURATION - CPU DEVICES

The following functions are available:

BUTTON	DESCRIPTION
New G.	Create a new CPU group
Edit	Edit an existing CPU Group
Delete	Delete an existing CPU Group
Cancel	Reject changes
Okay	Apply changes

BUTTON		FUNCTION
ID	Text	Ident number of the CPU Group
Name	Text	Name of the CPU Group
Member of Group	Selection	Assign the CPU Device to a group
Group	Y	Function not active (default)
	N	<ul style="list-style-type: none"> Port 1: port number of the matrix the extender module is currently connected Port 2: redundant port number of the matrix the extender module is currently connected

To create a CPU Group, proceed as follows:

1. Select **Configuration > CPU Devices** in the main menu.
2. Click the **New G.** button.
3. Enter a CPU Group name into the field **Name**.
4. Click the **Okay** button.

The CPU Group is created now.

To assign a CPU Device to a group, proceed as follows:

1. Select **Configuration > CPU Devices** in the main menu.
2. Select the CPU Device you want to assign to a CPU group.
3. Select the CPU Group for the assignment in the field **Member of Group** using the cursor up and down keys.
4. Click the **Okay** button.

The CPU Device is assigned to the CPU Group now.

5.8.3 CONFIGURATION CPU SWITCH

The CPU Switch (484 Series) is an 8:1 port concentrator for up to eight sources (computer, CPU) attached via VGA and USB-HID (K/M). This CPU Switch can be specifically configured for a use with a KVM matrix. The configuration allows to individually switch the up to eight input signals via OSD.

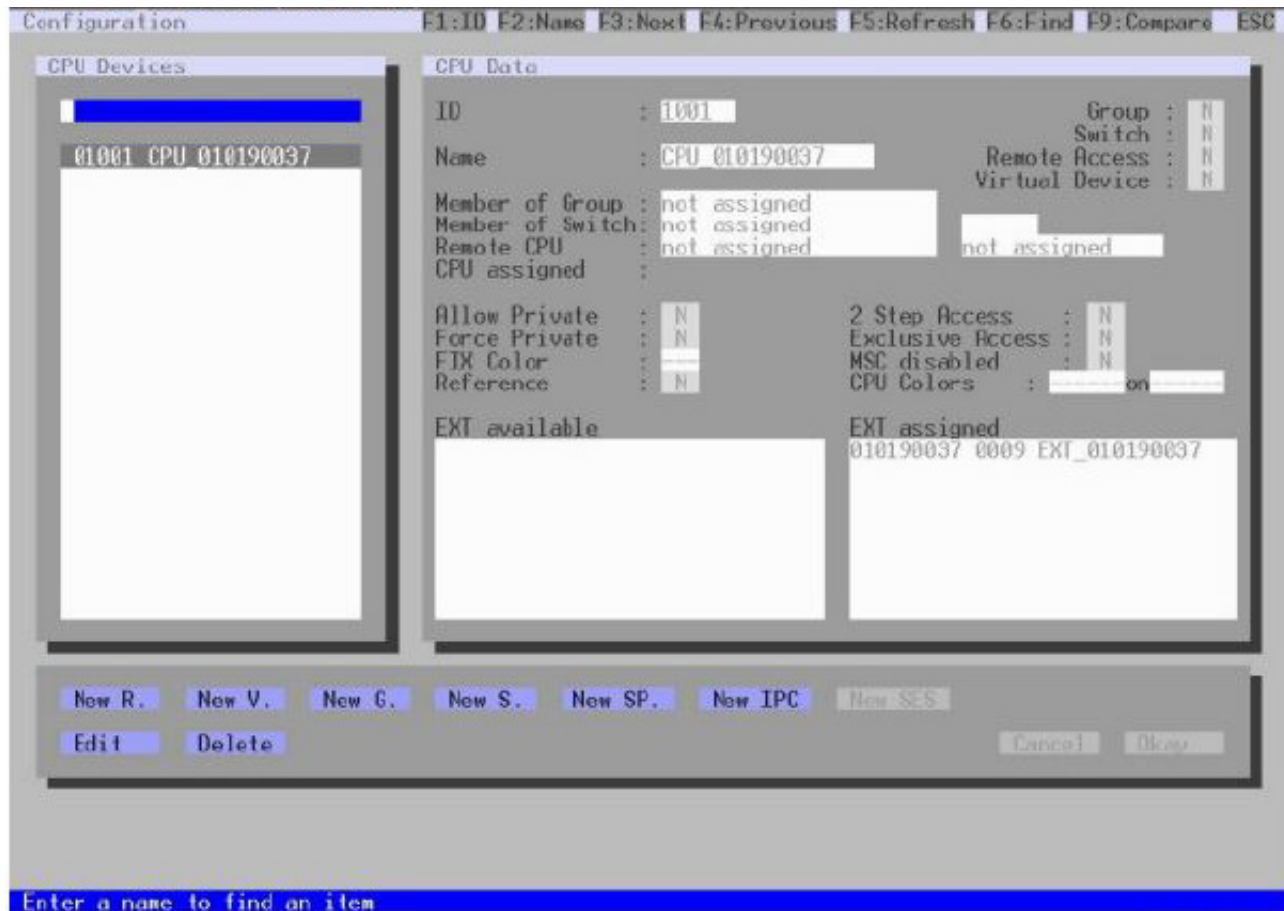


FIGURE 5-8.3.1 OSD MENU CONFIGURATION - CPU DEVICES

BUTTON	DESCRIPTION
New S.	Create a new CPU Switch (484 series)
New SP.	Create a CPU extender unit for a CPU Switch
Edit	Edit an existing CPU Device
Delete	Delete an existing CPU Group
Cancel	Reject changes
Okay	Apply changes

The following parameters can be configured:

FIELD	ENTRY	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
Member of Switch	Selection	Assign the CPU input to the respective CPU Switch
Switch	Y	Automatically set for a CPU Switch (484 Series)
	N	Function not active (default)

Further parameters are described in chapter 5.8.1, page 110.

To create a CPU Group, proceed as follows:

1. Select **Configuration > CPU Devices** in the main menu.
2. Click the **New S.** button.

A new CPU Switch will be created.

3. Enter a CPU Switch name into the field **Name**.
4. Assign an extender unit to the CPU Switch into the field **EXT assigned**.
5. Click the **New SP.** button.

A new CPU (input) for a CPU Switch will be created (Port 1).

6. Assign the created CPU input to a CPU switch in the field **Member of Switch**.
7. Repeat the steps 5. and 6. for each input port in use at the CPU Switch.
8. Click the **Okay** button.

The CPU Switch is now configured and can be individually switched via OSD.

5.8.4 VIRTUAL CPU DEVICE

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 consoles will receive the video signal of the new Real CPU Device.

*One Real CPU Device can be assigned to several Virtual CPU Devices.

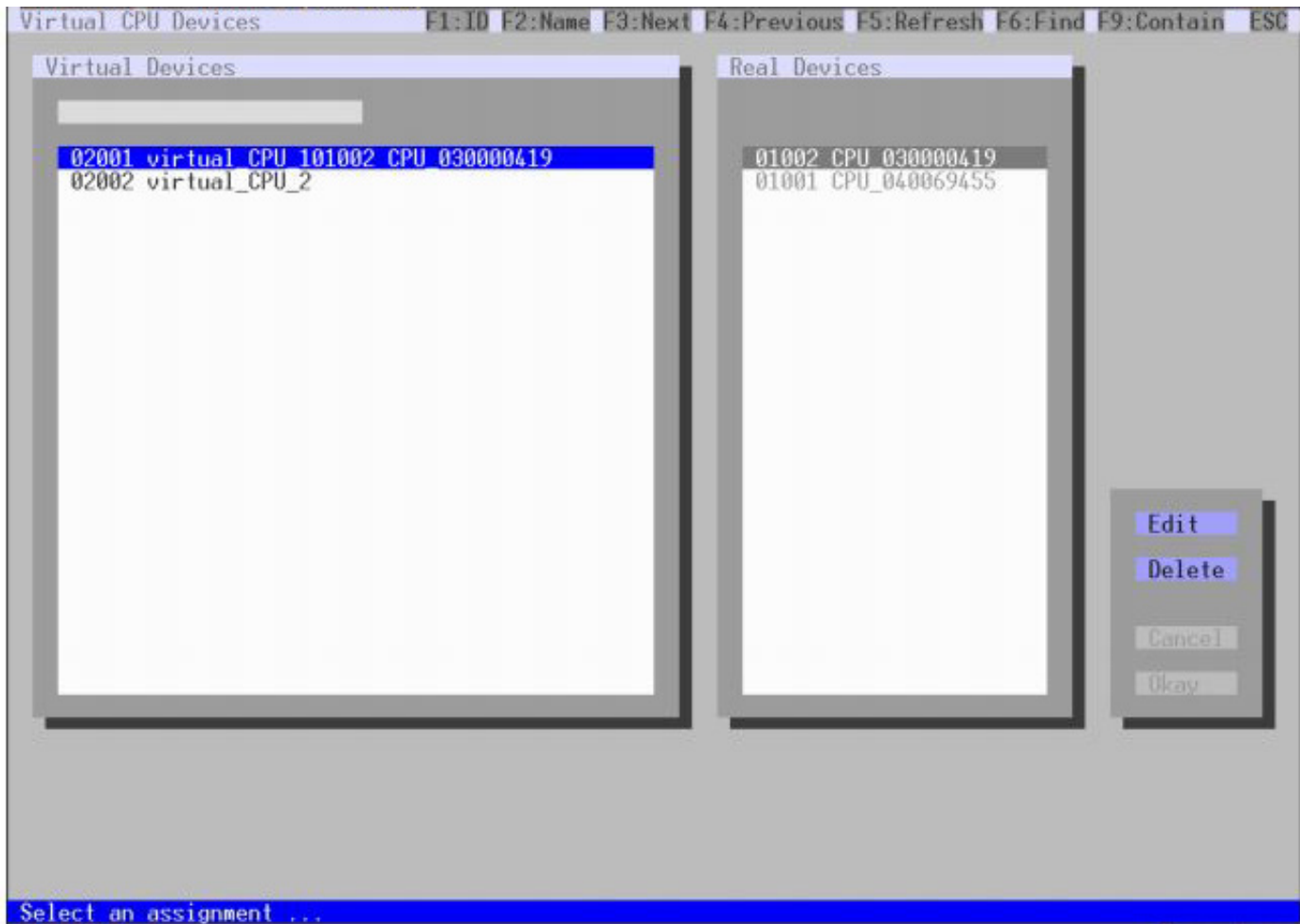


FIGURE 5-8.4.1 OSD MENU CONFIGURATION - VIRTUAL CPU DEVICES

CHAPTER 5: OSD CONFIGURATION

The following functions are available:

BUTTON	DESCRIPTION
New V.	Create a new virtual CPU Device
Edit	Edit an existing CPU Device
Delete	Edit an existing CPU Device
Cancel	Reject changes
Okay	Apply changes

For an assignment of Virtual CPU Devices to Real CPU Devices, proceed as follows:

1. Select **Assignments > Virtual CPU** Devices in the main menu.
2. Select the Virtual CPU Device in the **Virtual Devices** list that has to be assigned to a Real CPU Device.
3. Click the **Edit** button.
4. Select the Real CPU Device in the **Real Devices** list that has to be assigned to the selected Virtual CPU Device.
5. Click the **Okay** button to confirm the assignment.

The selected Virtual CPU Device is assigned to the Real CPU Device.

CHAPTER 5: OSD CONFIGURATION

5.9 CONFIGURING CONSOLE SETTINGS

Connecting a CON Unit to the matrix creates an EXT Unit in the matrix, reading the serial number of the CON Unit. An 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 chapter. Several Real CON Devices can be assigned to a Virtual CON Device to reduce operation efforts (see chapter 5.8.6, page 106).

5.9.1 OSD CONFIGURATION FOR MOUSE AND KEYBOARD

The OSD configuration for mouse and keyboard is made in this menu. The settings for mouse and keyboard are console-specific and can be set separately for each console.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

EXT Units

010190037 EXT_010190037
010191923 EXT_010191923

EXT Data

ID : 10190037 CPU/CON assigned
Name : EXT_010190037 01001 CPU_010190037

Fixed : N Port 1/2 : 9 / 0 Universal : N

General OSD Data

Horizontal mouse speed [1/x] : 4 Hotkey : F1
Vertical mouse speed [1/x] : 5 Fastkey : 00
Double click time [ms] : 200
Keyboard layout : German DE,129
Video mode : variable

Extender OSD Data

Enable CPU selection : N
Enable connection info : N
Update connection info : N
Display time [sec] : 0
Horizontal position : 0
Vertical position : 0

EXT Type

Input Signals	C#1	C#2	Output Signals	C#1	C#2
DVI/VGA-CPU (video ..)	Y	N	DVI/VGA-CON (video ..)	N	N
HID-CON (keyb., mouse..)	N	N	HID-CPU (keyb., mouse..)	Y	N
Audio (analog, digital)	N	N	Audio (analog, digital)	N	N
RS232 (serial ..)	N	N	RS232 (serial ..)	N	N
USB-CON (embedded)	N	N	USB-CPU (embedded)	N	N
USB-CON (standalone)	N	N	USB-CPU (standalone)	N	N
Universal-CON	N	N	Universal-CPU	N	N
Cascade-CON	N	N	Cascade-CPU	N	N

New
Edit
Delete
Cancel
Okay

Enter a name to find an item

FIGURE 5-9.1.1 OSD MENU CONFIGURATION - EXT UNITS

The following parameters can be configured:

FIELD	ENTRY	FUNCTION
Hor. Speed 1/x	1 to 9	Adjustment of the horizontal mouse speed, 1 = slow, 9 = fast (default: 4)
Ver. Speed 1/x	1 to 9	Adjustment of the vertical mouse speed, 1 = slow, 9 = fast (default: 5)
Double-click	100 to 800	Adjustment of the time slot for a double-click (default: 200 ms)
Keyboard layout	Region	Set the OSD keyboard layout according to the used keyboard (default: German (DE))
Video Mode	Variable or specific resolution	Resolution that is used when opening OSD

To change the settings for mouse and keyboard, proceed as follows:

1. Select **Configuration > EXT Units** in the main menu.
2. Select the console extender in the **EXT Units** list whose Extender OSD settings has to be adjusted.
3. Click the **Edit** button or press the <Enter> key to confirm the selection.
4. Modify the desired settings.
5. Click the **Okay** button to confirm your changes.

5.9.2 SETTING EXTENDER OSD

In this menu the parameters for the Extender OSD can be set. The settings for mouse and keyboard are console-specific and can be set separately for each console.

*When setting the horizontal OSD position, a prefixed minus describes the orientation to the right edge of the monitor, e.g., -2 means 2 x 10 = 20 pixels to this edge. When setting a vertical position, a prefixed minus describes the orientation to the bottom edge of the monitor.
If the Update connection info function is deactivated, the Extender OSD only appears when switching via OSD.

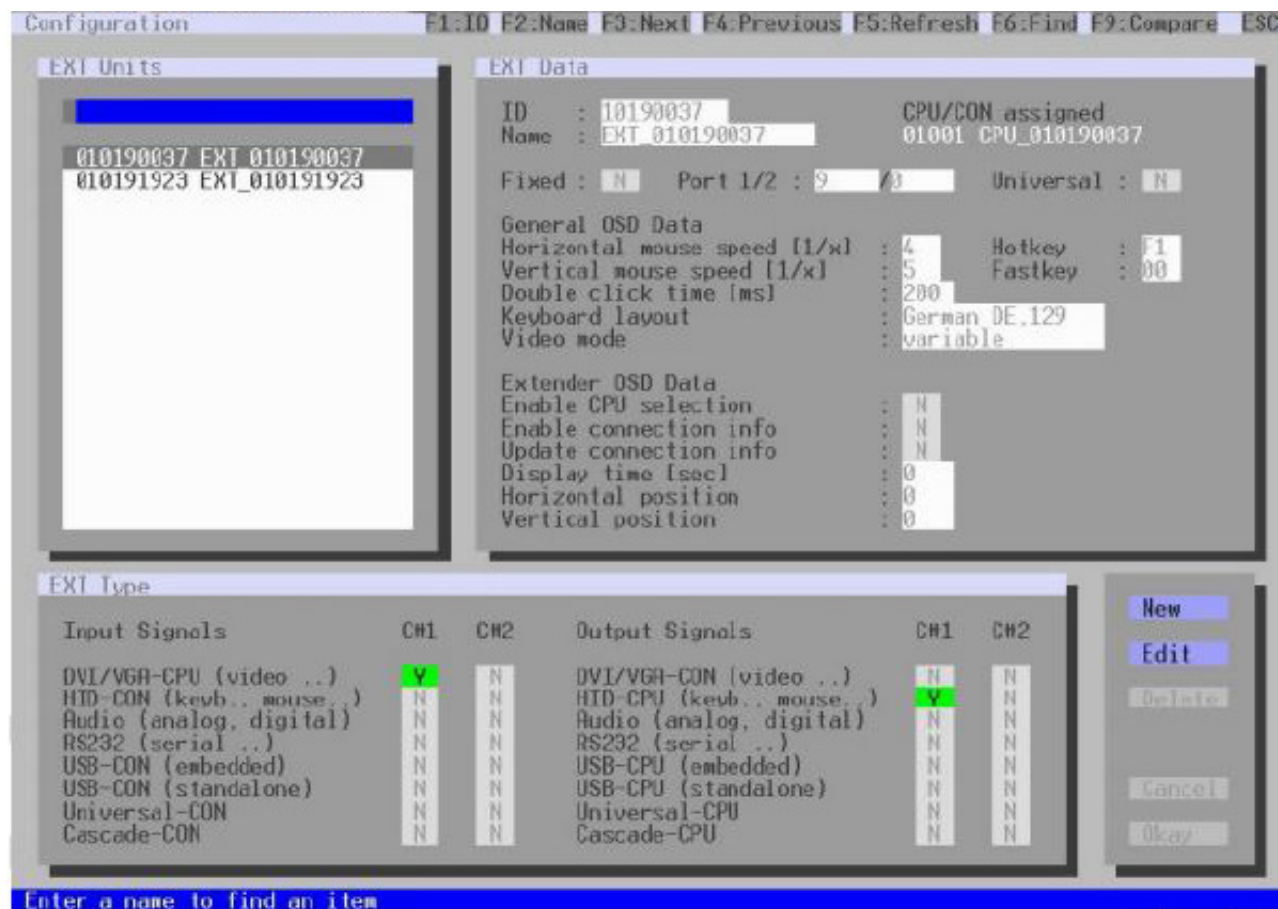


FIGURE 5-9.2.1 OSD MENU CONFIGURATION - EXT UNITS

The following parameters can be configured:

FIELD	ENTRY	FUNCTION
Enable CPU selection	Y	When executing the key sequence for opening the OSD, a selection list for switching CPU Devices will be displayed in the center of the monitor. Pressing the <F7> key within the selection list opens the standard OSD.
	N	Function not active (default)
Enable connection	Y	Enable Extender OSD (default: Y)
	N	Function not active
Update connection info	Y	Update connection changes during fade-in of Extender OSD (default: Y)
	N	Function not active
Display Time [sec]	0 to 999 seconds	Automatically set if the CPU Device is assigned to a CPU Group
Horizontal position	10 Pixels	Horizontal OSD position (default: -2)
Vertical position	10 Pixels	Vertical OSD position (default: 2)

CHAPTER 5: OSD CONFIGURATION

To change the Extender OSD settings, proceed as follows:

1. Select **Configuration > EXT** Units in the main menu.
2. Select the console extender in the **EXT Units** list whose Extender OSD settings has to be adjusted.
3. Click the **Edit** button or press the <Enter> key to confirm the selection.
4. Modify the desired settings.
5. Click the **Okay** button to confirm your changes.

5.9.3 SETTING CON DEVICES

New CON Devices are created in this menu including access rights and assignment to extenders.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

CON Devices

- 03001 CON_010191923
- 03002 CON_040062140
- 03003 CON_040112302
- 03001 CON_040212434

CON Data

ID/Priority : 3004 00

Name : CON_010191923

Show Macro List : N

Allow User ACL : N

Force Login : N

LOS Frame : N

Disable OSD : N

CPU Colors : on

Virtual Device : N

Allow CPU Scan : N

Force CPU Scan : N

Scan Time (sec) : 0

Port Mode : N

Redundancy Off : N

Reference : N

Fix Color : N

EXT available

EXT assigned

010191923 0001 EXT_010191923

CPU Access Control List

Full access

Video access

No access

01001 CPU_020190418

New R.

New V.

Edit

Delete

Cancel

Okay

Enter a name to find an item

FIGURE 5-9.3.1 OSD MENU CONFIGURATION - CON DEVICES

The following functions are available:

BUTTON	DESCRIPTION
New R.	Create a real console
New V.	Create a virtual console
Edit	Edit an existing console
Delete	Delete an existing console
Cancel	Reject changes
Okay	Apply changes

The following parameters can be configured:

FIELD	ENTRY	FUNCTION
ID	Text	ID of the CON extender unit
Priority	0 to 999	<p>Priority of the CON Device</p> <p>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 only have Video Only access to a CPU Device if a CON Device with a higher priority is already switched to it.</p>
Name	Text	Name of the CON Device
Show Macro List	Y	Show the macro list instead of the CPU selection list
	N	Function not active (default)
Allow User ACL	Y	Allow activation of the User ACL at the local console
	N	Function not active (default)
LOS Frame	Y	<ul style="list-style-type: none"> When the video signal between source (computer, CPU) 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 without video signal, a blank screen will appear surrounded by an orange frame.
	N	Function not active (default)
Disable OSD	Y	Automatically set for a CPU Switch (484 Series)
	N	Function not active (default)
CPU Colors	Y	Automatically set for an IP CPU Device
	N	Function not active (default)

The following parameters can be configured:

FIELD	ENTRY	FUNCTION
Allow CPU Scan	Y	Allow switching to the respective CPU Device in Private Mode
	N	Function not active (default)
Force CPU Scan	Y	Force switching to the respective CPU only in Private Mode
	N	Function not active (default)
Scan Time	0 to 99 seconds	Retention period until switching to the next CPU Device
Port Mode	Y	The favorite list will be replaced by a port list where the ports from 1-999 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 the Port Mode, CON and User favorites will be deactivated.
	N	Function not active (default)
Redundancy Off	Y	Function is not active
	N	Automatically switch to the second link of a connected redundant CON Unit when losing the primary link of a CPU Unit (default).
Reference	Y	Activate a reference CON Device that inherits both Device and extender settings to any CON Unit that is connected to the matrix for the first time. Note: It is recommended to activate the reference setting for one single CON Device only.
	N	Function not active (default)
Fix Color	Selection list	Show a colored frame at the CPU Device. You can select between 7 colors. The colored frame of the CPU device is displayed with priority.

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To create a CON Device, proceed as follows:

1. Select **Configuration > CON Devices** in the main menu.
2. Click the **New R.** button to create a new Real CON Device or click the **New V.** button to create a new Virtual CON Device.
3. Enter a CON Device name into the field **Name**.
4. Click the **Okay** button.

The CON Device is created now.

To assign an extender unit to a CON Device, proceed as follows:

1. Select **Configuration > CON Devices** in the main menu.
2. Select the CON Device you want to assign an extender unit.
3. Select the extender unit for the assignment in the **EXT available** list.
4. Click the **Okay** button.



5.9.4 SETTING CON DEVICE FAVORITES

Individual favorite lists of CPUs to be switched frequently can be created for all consoles 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 Hot Key using the keyboard (see chapter 7.2.1, page 274).

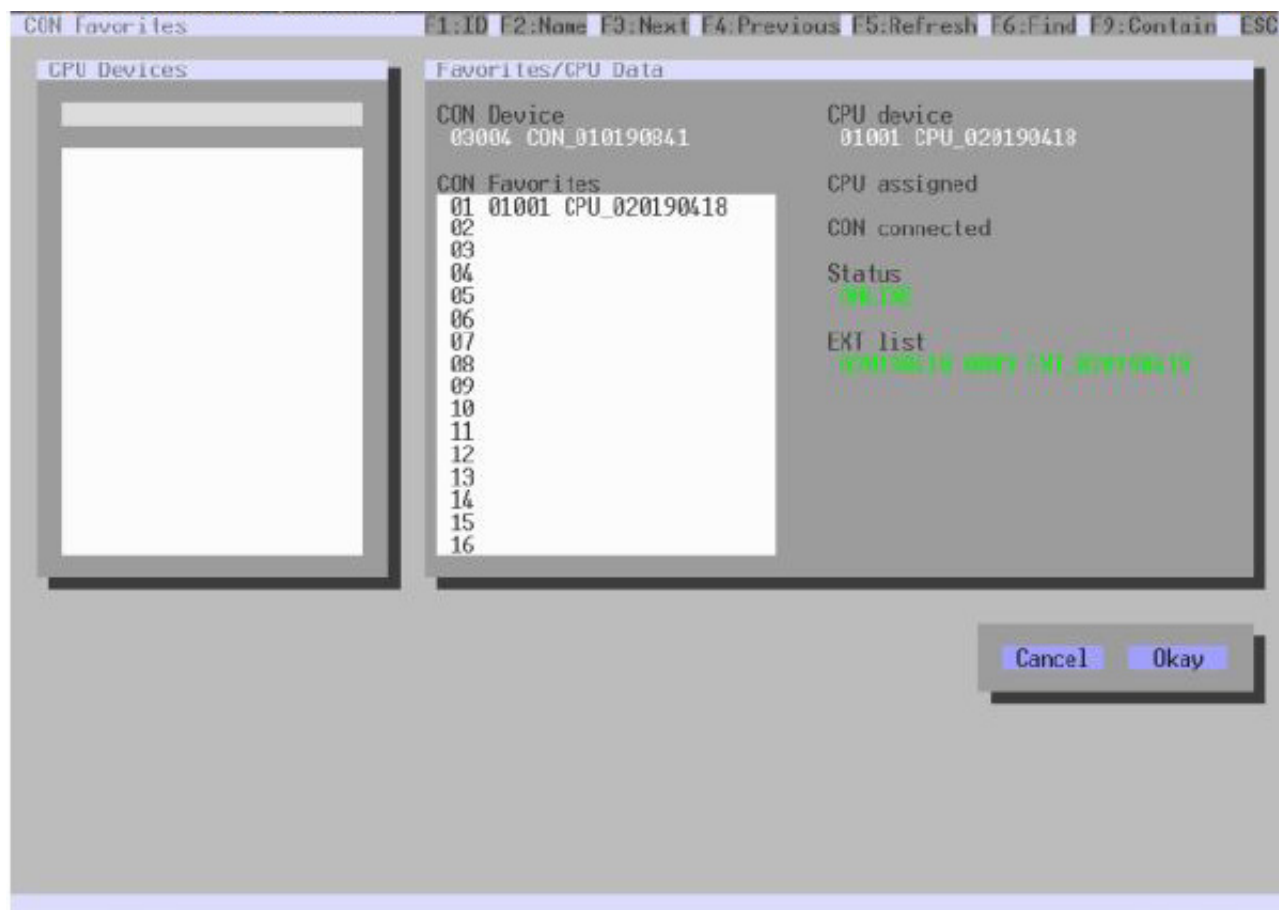


FIGURE 5-9.4.1 OSD MENU CONFIGURATION - CON FAVORITES

5.9.5 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 console separately. Up to 32 macros can be configured per each CON Device.

A macro can execute up to 16 switching commands successively.
The execution of the macros is done via Hot Key and the function keys <F1> to <F16> (see chapter 7.2.2, page 273).

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

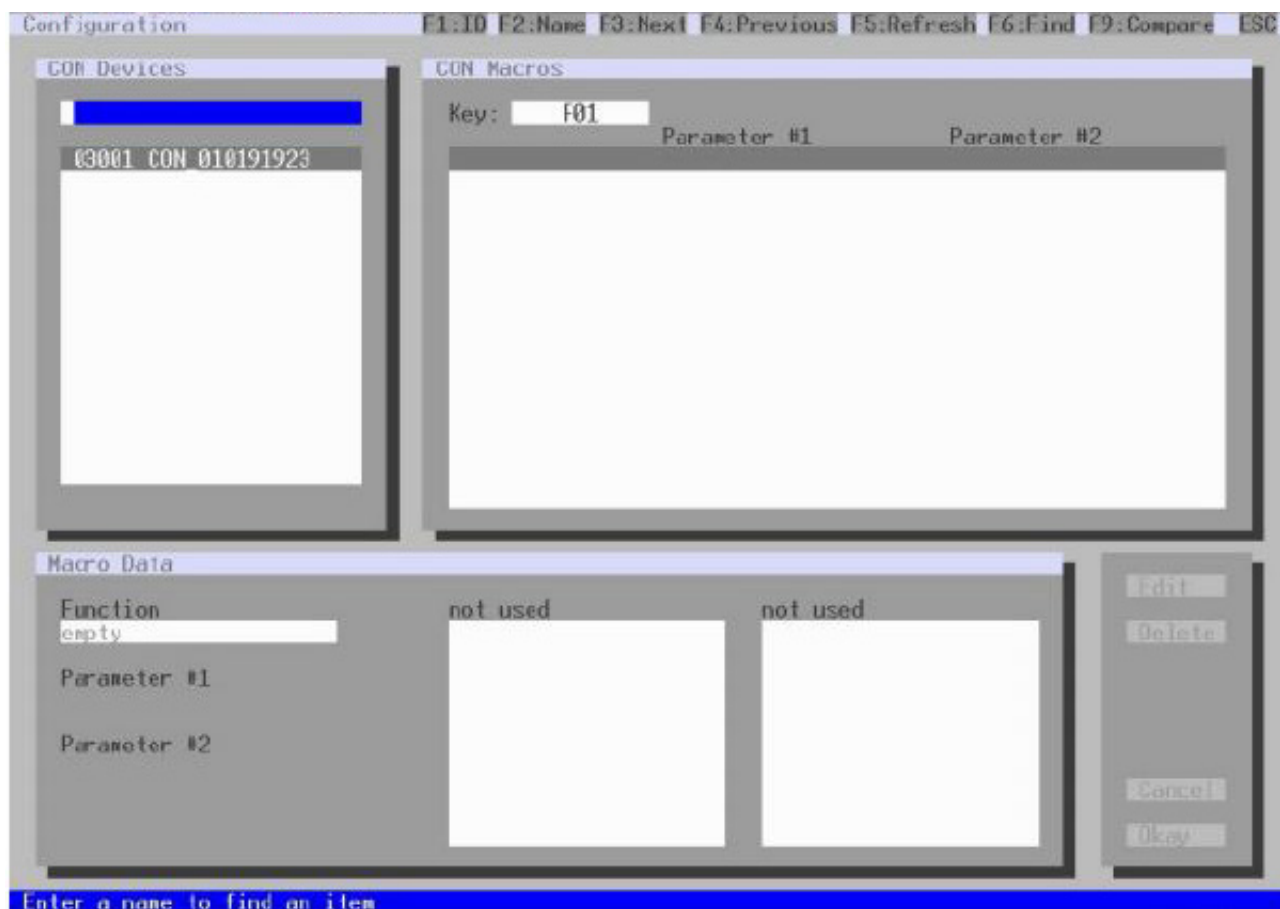


FIGURE 5-9.5.1 OSD MENU ASSIGNMENTS - CON MACROS

FIELD	SELECTION	DESCRIPTION
Function (01 to 16)	Connect (P1=CON, P2=CPU)	Set a bidirectional connection from CON Device P1 to CPU Device P2
	Connect Video (P1=CON, P2=CPU)	Set video connection from CON Device P1 to CPU Device P2
	Disconnect (P1=CON)	Disconnect the CON Device P1
	Logout User	Logout the current user
	Set Real CPU (P1=VCPU, P2=RCPU)	Assign a Virtual CPU Device to a Real CPU Device
	Assign CON (P1=RCON, P2=VCON)	Assign a Real CON Device to a Virtual CON Device
	Push (P1=CON)	The user's Full Access connection is forwarded to CON Device P1 and is changed into a Video Only connection.
	Push Video (P1=CON)	The video signal of the current connection (Full Access or Video Only) is forwarded 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 console P2	Login a certain user P1 at CON Device P2
P1	CON or CPU Device	Name of CON Device or CPU Device
P2	CPU or CPU Device	Name of CON Device or CPU Device

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

1. Select **Configuration > CON Macros** in the main menu.
1. Select the CON Device for which a console macro is to be created.
2. Select in the **Key** field the function key (<F1> to <F32>) for which a macro should be created.
3. Select the respective place on the list (1 to 16) for the key that should be set with a macro key.
4. Select for the highlighted position on the list a macro command in the **Macro Data** field.
5. Set the necessary parameters **P1** and **P2** (e.g., CON Devices or CPU Devices) for the selected macro command.
6. Confirm your inputs by pressing <Enter> and repeat the process for further macro commands if necessary.

5.9.6 CREATING AND ASSIGNING VIRTUAL CON DEVICES

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 Devices that is connected to a CPU Device will receive the video signal. The last-assigned CON Device will also have control of the keyboard and mouse.

* A Virtual CON Device can be assigned to more than one Real CON Devices.

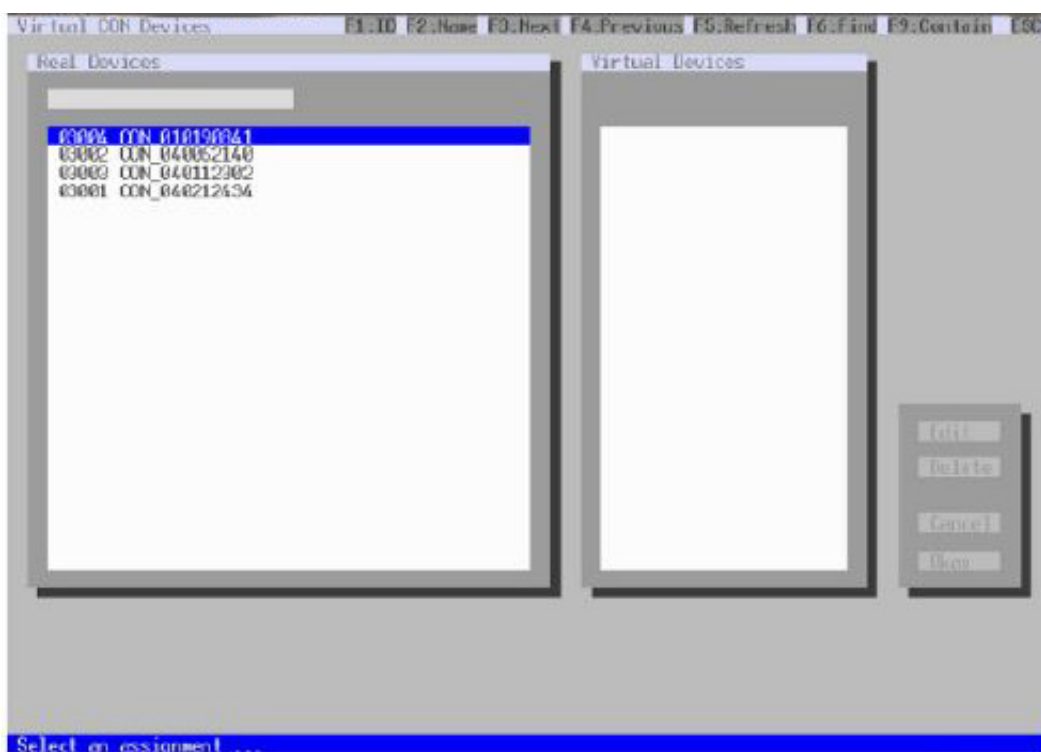


FIGURE 5-9.6.1 OSD MENU ASSIGNMENTS - VIRTUAL CON DEVICES

For an assignment, proceed as follows:

1. Select **Assignments > Virtual CON Devices** in the main menu.
2. Select the Real CON Device in the **Real Devices** list that has to be assigned to a Virtual CON Device.
3. Click the **Edit** button.
4. Select the virtual console in the **Virtual Devices** list that has to be assigned to the selected Real CON Device.
5. Click the **Okay** button to confirm the assignment
The selected Virtual CON Device is assigned to the Real CON Device.

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5.9.7 ENABLING MULTI-SCREEN CONTROL

*Due to limited options via OSD, we recommend configuring the Multi-Screen Control only via management software to carry out the extended configuration options (from firmware V03.08), see chapter 6.9.8, page 238.

When using Multi-Screen Control, switching up to eight connected sources (computers, CPUs) can be performed at one sink with only one connected mouse and/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 extenders modules. In a matrix system, Multi-Screen Control can be set up at multiple sinks. The CON Units of a sink with Multi-Screen Control must all be physically connected to the same block of 8 ports on the I/O board.

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 are referred to the extender modules/Ext Units within the Multi-Screen Control that are connected to keyboard and mouse for operation. If the 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 freely. Alternatively, switching can be performed via keyboard commands according to the ID number in the Multi-Screen Control setup.

NOTICE

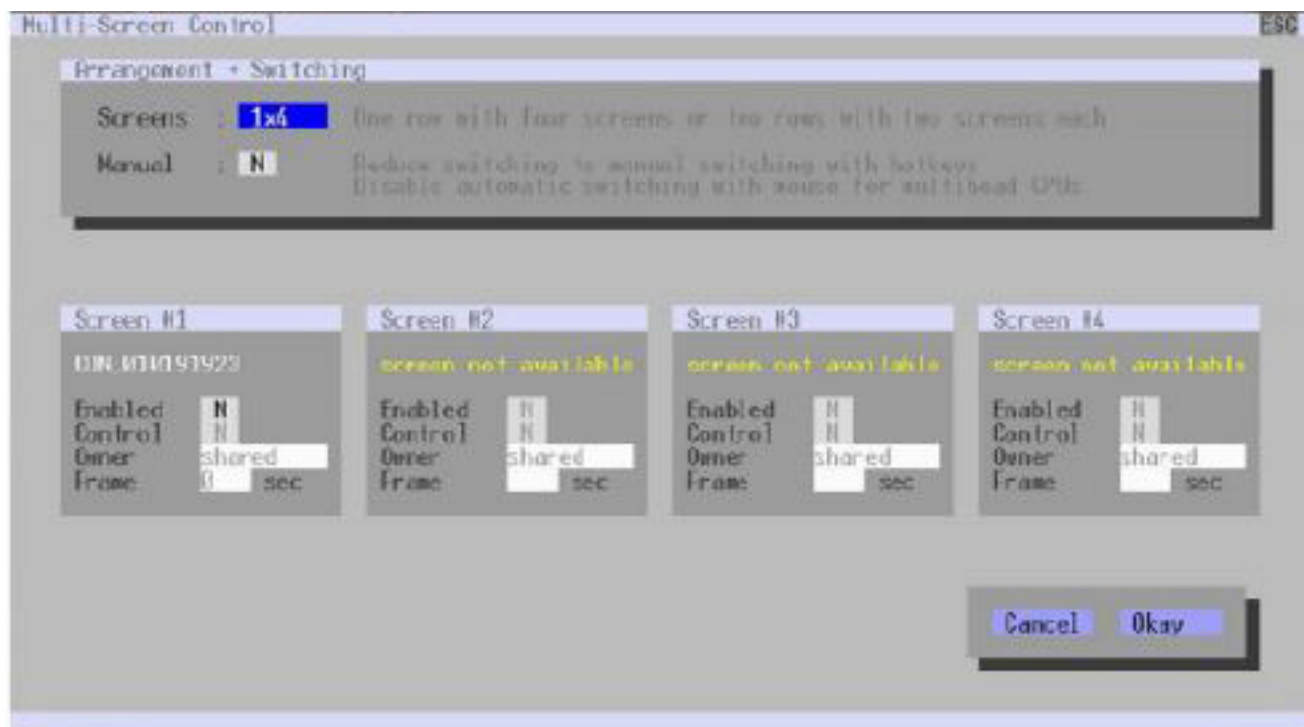
When using CON Units with the possibility to connect a local source (computer, CPU) in a Multi-Screen Control environment, the local switching will be disabled.

*When configuring Multi-Screen Control via OSD, the number of supported displays is limited to four. To configure more than four displays (up to eight with Single-Head and up to sixteen with Dual-Head installation), you have to configure the Multi-Screen Control only via management software.

*The connected sources (computer, PC) need to support absolute mouse mode. Else a specific mouse driver needs to be installed.

*CON Units that have been already configured for Multi-Screen Control can be connected all together to other blocks of 8 ports. In this case any further configuration is not necessary, their functionality will remain as set previously.

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The following parameters can be configured:

FIELD	SELECTION	DESCRIPTION
Enable	Y	Activate the respective display for Multi-Screen Control
	N	Function not active (default)
Control	Y	Enable the CON Device for USB-HID control of other CON Devices if access is permitted
	N	Function not active (default)
Owner	Selection	<ul style="list-style-type: none"> • Shared (default) permits the access from a Control CON Device to all other CON Devices except to another Control CON Device • Name of the own Control CON Device to restrict access to other CON Devices
Frame	0 to 999 seconds	Time for fade in a red frame at the display with current mouse/keyboard control

*Configure the Multi-Screen Control at a CON Device that should be used to control USB-HID in the setup. To change or delete a Multi-Screen Control setup, you have to open the OSD of the defined Control CON Device.

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Configuring Multi-Screen Control

To configure the Multi-Screen Control, proceed as follows:

1. Open the OSD of a CON Unit connected to an I/O board for which the connected CON Units are to be configured for Multi-Screen Control.
2. Select **Assignments > Multi-Screen Control** in the main menu.
Only the CON Ext Units connected to the selected I/O board are visible.
3. In the **Arrangement** field, select the layout for the CON Device you want to configure (**1 x 4 or 2 x 2**).
The fields for the configuration of the individual displays will be arranged accordingly.
4. Activate **Manual** option if the USB-HID switching is to be restricted to keyboard commands (see chapter 7.2.6, page 276). Manual switching allows the use of multi-head consoles.
5. Set the **Enable** option to **Y** on all CON Devices to activate the respective display for Multi-Screen Control.
6. Set the Control function to **Y** on one or more CON Devices to be enabled as Control CON Device.
7. Use the **Frame** function to configure a red frame, that shows the display with current mouse control, for the duration of a specified time by flashing briefly. The frame can be activated individually for each screen by using a timer > 0 seconds.

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

* To configure Multi-Screen Control for further I/O boards via OSD, connect to the I/O board at a CON Device that should be used to control USB-HID in the setup.

Access restriction when using multiple Control CON Devices

Dragging the mouse pointer over the display boundary is only permitted for those displays whose CON Device is enabled for access by the owner of the respective Control CON Device.

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

1. Click in the **Owner** field of a Control CON Device and select the name of the Control CON Device.
2. Click in the **Owner** field of all Control CON Device whose display should be accessible and select the name of the respective Control CON Device.

The mouse can now be used to access those displays whose CON Device is permitted for access by the enabled Control CON Device.

No simultaneous USB HID sharing of multiple Control CON devices.

Example: In a setup of 4 CON Devices, if CON Device 1 and 2 are each Control CON Devices and two other “non-Control CON Devices” are configured, both Control CON Devices can access the displays of CON Device 3 to 4 if they are configured with Owner = Sharing.

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 take over.

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Changing Multi-Screen Control

To change the Multi-Screen Control for a setup of a specific I/O board, proceed as follows:

1. Open the OSD of a Control CON Device of the specific I/O board.
2. Select **Assignments > Multi-Screen Control** in the main menu.
Only the CON Ext Units connected to the selected I/O board are visible.
3. Make any edits at the configuration.
4. Click the **Okay** button to confirm the changes.

Deleting Multi-Screen Control

To delete the Multi-Screen Control for a setup of a specific I/O board, proceed as follows:

1. Open the OSD of a Control CON Device of the specific I/O board.
2. Select **Assignments > Multi-Screen Control** in the main menu.
Only the CON Ext Units connected to the selected I/O board are visible.
3. Set the **Enable** option to **N** on all CON Devices.
The Multi-Screen Control is disabled for all CON Devices of the selected I/O board.
4. Click the **Okay** button to confirm the changes.

5.10 SAVING AND ACTIVATING A CONFIGURATION

NOTICE

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

First starting the DKM, the factory configuration will be copied into the current configuration. You have

2 possibilities to save configuration changes:

- saving the current configuration permanently in the DKM memory (**Save**) or
- saving the configuration in up to 8 predefined storage locations, as well as the default configuration in the memory of the DKM (**Save as...**)



5.10.1 SAVING THE ACTIVE CONFIGURATION

NOTICE

Changing or saving configurations blocks the DKM memory and leads to a freeze of all OSD menus for a few seconds. The switching connections are not affected by this freeze.

* If you select Auto Save within the system settings an additional automatic saving of the configuration will be periodically performed (see chapter 5.4.1, page 81).

To save the current configuration permanently in the DKM storage, proceed as follows:

Select **Configuration > Save** in the main menu.

The current configuration of the DKM is permanently saved to the DKM memory.

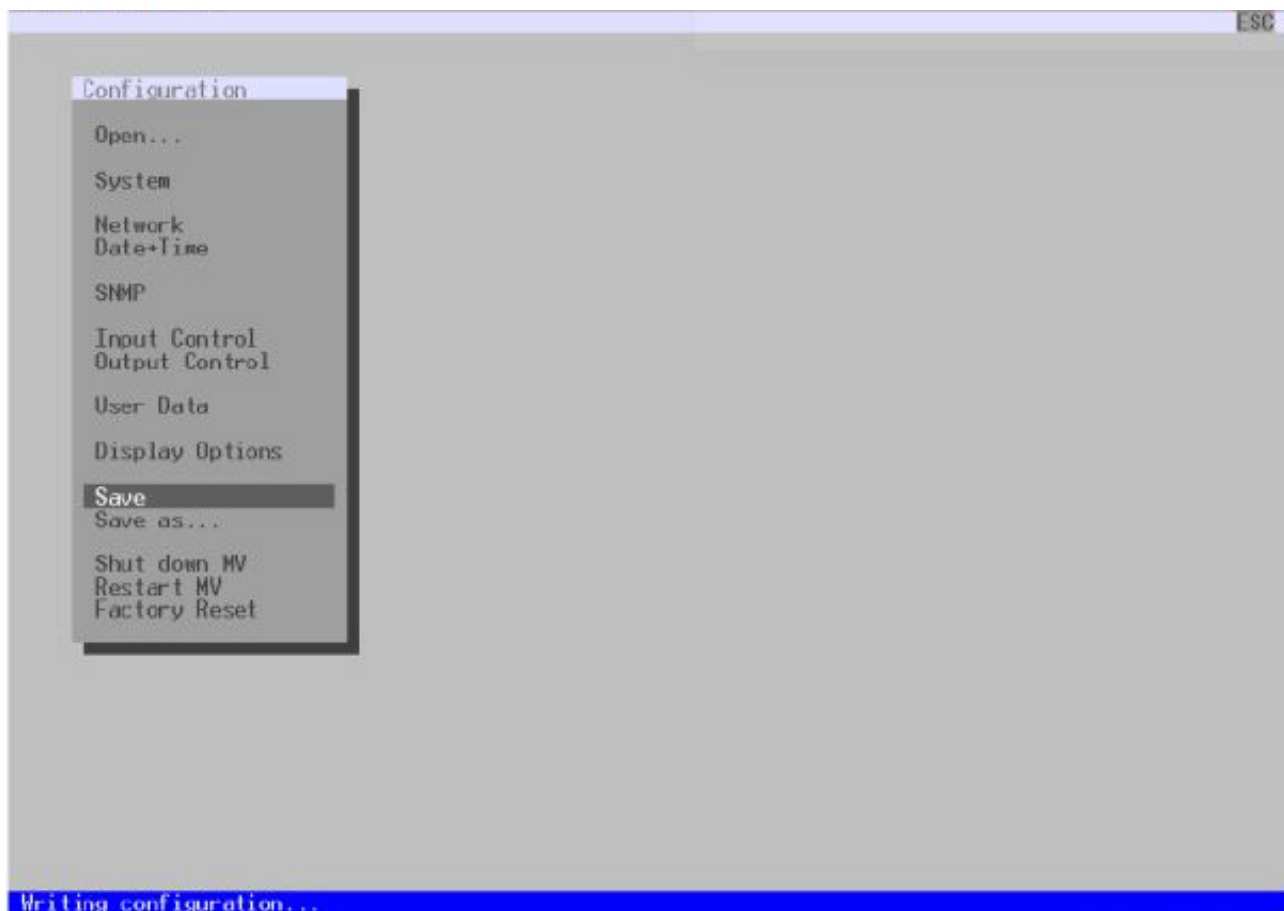


FIGURE5-10.1.1 OSD MENU CONFIGURATION - SAVE

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5.10.2 SAVING A PREDEFINED CONFIGURATION

In this menu the current matrix configuration is saved to predefined storage locations in the permanent memory of the matrix.

You have the possibility to save the created configuration within eight storage locations in the matrix (**File #1 to File #8**). Additionally, a default configuration can be saved that can be loaded as default configuration for each start of the matrix (see chapter 5.4.1, page 81). However, it does not replace the buffering of configuration.

The storage location to be overwritten by the current configuration must be selected explicitly. The current configuration will be saved to this storage location and will be shown immediately in the menu. The previously saved configuration saved to this storage location is overwritten.

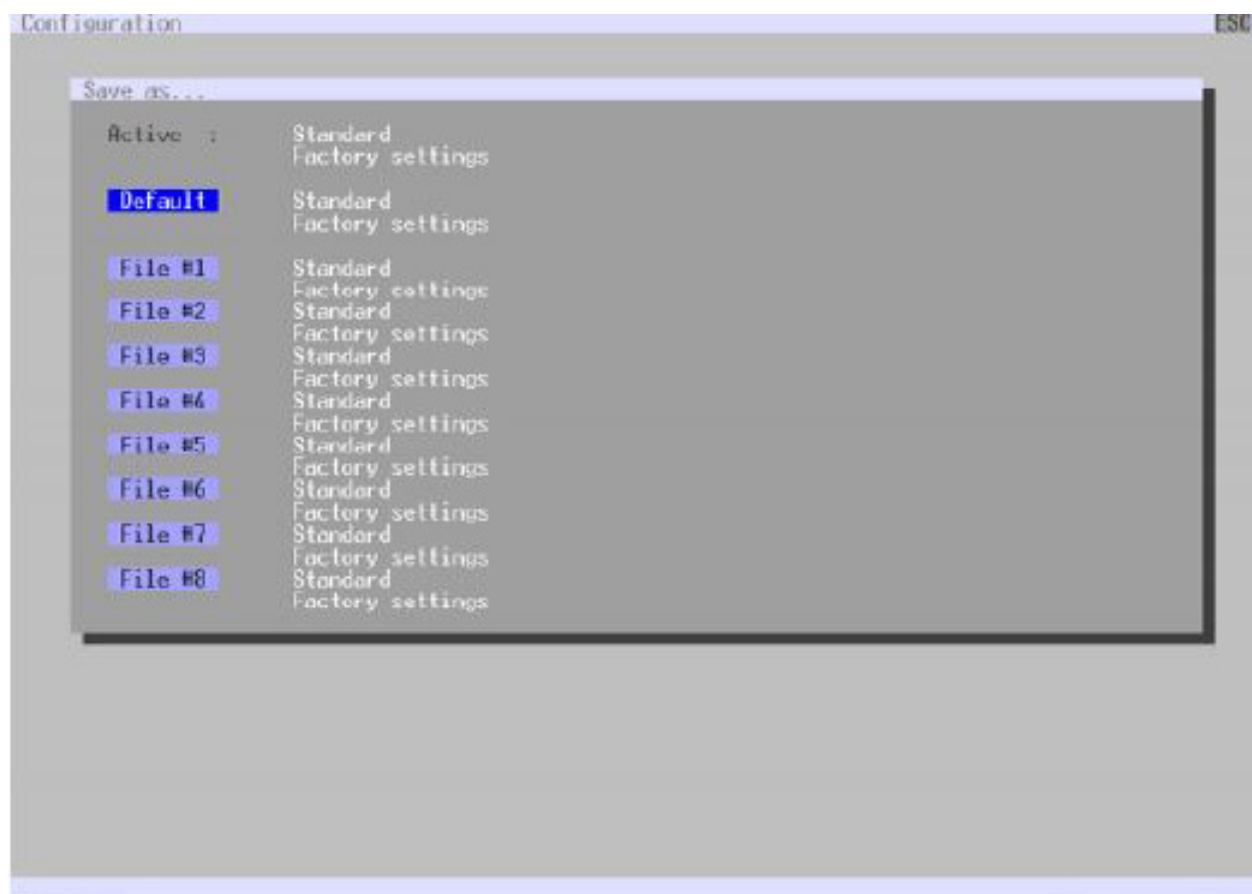


FIGURE5-9.10.2.1 OSD MENU ASSIGNMENTS - SAVE AS..

SAVING POSITION	NAME AND DETAILED INFORMATION
Active	Name and detailed information of the current configuration are shown. This configuration can be saved (function Save, see chapter 5.9.1, page 110).
Default	Name and detailed information of the respective saved configuration are shown. This storage location can be overwritten.
File #1 to File #8	Name and detailed information of the respective saved configuration are shown. These storage locations can be overwritten.

To save the created configuration to a specific memory location, proceed as follows:

1. Select **Configuration > Save As...** in the main menu.
2. Select the required storage location (**File #1 to File #8**) or **Default**.

The current configuration is saved to this storage location and is shown immediately in the menu. The previously saved configuration saved to this storage location is deleted.

5.10.3 ACTIVATING A PREDEFINED CONFIGURATION

Previously saved configurations are displayed in this menu. In **Active**, the currently loaded configuration is displayed. To replace the current configuration by another configuration, in addition to the default configuration (**Default**), one out of eight further, customized configurations (**File #1 to File #8**) can be activated.

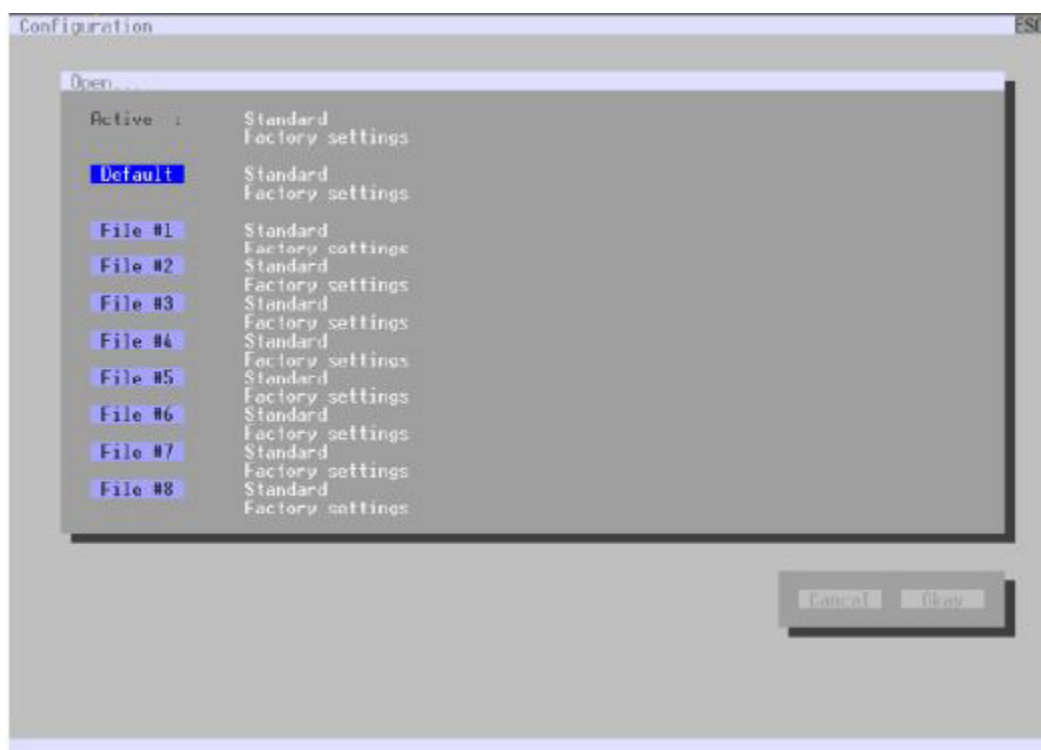


FIGURE5-9.10.3.1 OSD MENU ASSIGNMENTS - OPEN..

To activate a previously saved configuration, proceed as follows:

1. Select **Configuration > Open** in the main menu.
2. Select the desired configuration.
3. Click the **Okay** button to activate the selected configuration.

The selected configuration is immediately loaded and displayed in the menu as **Active**. The previously active configuration is overwritten.

CHAPTER 5: OSD CONFIGURATION

5.11 ACTIVE DIRECTORY

The KVM matrix can be synchronized with the directory service Active Directory with regard to user authentication. This allows the user to login at the KVM 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 KVM matrix and the Active Directory server is established via OpenLDAP and periodically synchronized every 5 minutes.

The search of users to be synchronized and automatically added to the KVM 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 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 member of up to 8 groups.
- In 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 located in sub organizational units will be ignored.

The screenshot displays the 'Configuration' window for the OSD, specifically the 'Network' section. It is divided into three main panels: 'Network Interface #1', 'Network Services', and 'Log Levels'.

Network Interface #1

Setting	Value	Description
Dual Interface	N	Disable redundant network interface mode
DHCP	Y	
IP Address	192.168.100.099	Primary CPU
Subnet Mask	255.255.255.000	Primary CPU
Gateway	192.168.100.001	Primary CPU
Multicast	255.255.255.255	Grid Multicast or Broadcast (255.255.255.255)

Network Services

Setting	Value	Description
API Service #1	Y	Enable API Service port (5555/5565)
Grid Service #1	Y	Enable Grid Service port (5557/5567)
SSL Services #1	N	Enable SSL for API and Grid communication
Syslog #1	N	Enable Syslog Server #1
Syslog Server	000.000.000.000 :514	
Syslog #2	N	Enable Syslog Server #2
Syslog Server	000.000.000.000 :514	
LDAP	N	Enable authentication with Active Directory Server
LDAP TLS/SSL	N	Enable Transport Layer Security for Active Directory access
LDAP Server	000.000.000.000 :389	
LDAP Base DN		

Log Levels

Setting	Trace	Syslog #1	Syslog #2	DEB	INF	NOT	WAR	ERR
Trace	N	N	N	Y	Y	Y	Y	Y
Syslog #1	N	N	N	Y	Y	Y	Y	Y
Syslog #2	N	N	N	Y	Y	Y	Y	Y

Buttons: Cancel, Okay

FIGURE5-9.11.1.1 OSD CONFIGURATION - NETWORK

CHAPTER 5: OSD CONFIGURATION

*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.

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

1. Select **Configuration > Network** in the main menu of the KVM matrix.
2. Activate at least the function **LDAP** and optionally **LDAP TLS/SSL**.
3. Enter the appropriate IP address and the port number in the field **LDAP Server** (default port number: 389).
4. Enter the LDAP Base DN into the appropriate field (e.g., dc=example, dc=com).

*Changes done in step 2 to 4 only come into effect after a restart of the KVM matrix.

5. Select **Configuration > User Data** in the main menu of the KVM matrix.

NOTICE

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

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

Configuration
F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

User List

00001 admin

User Data

ID/Priority : 1 / 999

Name : admin
Full Name :
Password : *****
Repeat Password : *****

Group : N
LDAP User/Group : N
AD Synchronized : N

Member of Group : not assigned

Administrator : Y
Super User : Y
Power User : Y
SNMP User : N

AD group locked : N

LDAP/AD Info

Auto Connect : N

CPU Access Control List

Full access
01001 CPU_010190037

Video access

No access

New U.

New G.

New LU

New LG

Edit

Delete

Cancel

Okay

Enter a name to find an item

FIGURE5-9.11.1.1 OSD CONFIGURATION - USER

CHAPTER 5: OSD CONFIGURATION

6. Click the **New LU** button to create a new LDAP user. This user functions as a bind user.
 7. Enter a name into the field name **Name**.
 8. Enter the Common Name (CN) of the bind user into the field Login **Name**.
 9. Enter the password of the bind user from the Active Directory into the fields **Password** and **Repeat Password**.
 10. Click the **Okay** button to confirm the creation of the user.
 11. Stay in the menu **Configuration > User Data**.
 12. Click the **New LG** button to create a new LDAP group. The group determines which users of the Active Directory server should be synchronized.
 13. Enter a name into the field **Name**.
 14. Enter either the Common Name (CN) of a group or the Common Name (CN) of an organizational unit into the field **LDAP OU=/CN=** as shown below:
 - OU= name of the organizational unit
 - CN= name of the group
- Note:** The field entry must include either OU= or CN=.
15. Click the **Okay** button to confirm the creation of the group.
- The Active Directory synchronization can be used now.

5.12 MATRIX CASCADING

This simple method of cascading allows a switchable connection between two matrices via so called **Tie Lines**. The Matrix Cascading does not require **Bundle 4**.

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 Tie Lines are unidirectional and can only be used in one direction according to their configuration. For a bidirectional use of the cascading, you have to configure opposite Tie Lines. To connect Tie Lines to the matrices, you have to create intended **Cascade CON Devices** and **Cascade CPU Devices** that have to be switched within the cascaded environment.

*Define a Master Matrix. All further matrices will be configured as Sub Matrices in the configuration process. Ensure that the Tie Lines will only be connected after finishing the configuration.

5.12.1 DIRECTING A TIE LINE FROM THE SUB TO THE MASTER

To configure settings for using Matrix Cascading and to direct the Tie Line from the Sub to the Master, proceed as follows:

1. Open the OSD of the Master Matrix. FIGURE 2-14. BACK PANEL
2. Select **Configuration > EXT Units** in the main menu of the Master Matrix.
 - 2.1. Click the **New** button.

A new Extender Unit will be created.



Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

EXT Units

010190037 EXT_010190037
010191923 EXT_010191923

EXT Data

ID : 10190037 CPU/CON assigned
Name : EXT_010190037 01001 CPU_010190037

Fixed : N Port 1/2 : 9 / 8 Universal : N

General OSD Data
Horizontal mouse speed [1/x] : 4 Hotkey : F1
Vertical mouse speed [1/x] : 5 Fastkey : 00
Double click time [ms] : 200
Keyboard layout : German DE,129
Video mode : variable

Extender OSD Data
Enable CPU selection : N
Enable connection info : N
Update connection info : N
Display time [sec] : 0
Horizontal position : 0
Vertical position : 0

EXT Type

Input Signals	CH1	CH2	Output Signals	CH1	CH2
DVI/VGA-CPU (video ..)	Y	N	DVI/VGA-CON (video ..)	N	N
HID-CON (keyb., mouse..)	N	N	HID-CPU (keyb., mouse..)	Y	N
Audio (analog, digital)	N	N	Audio (analog, digital)	N	N
RS232 (serial ..)	N	N	RS232 (serial ..)	N	N
USB-CON (embedded)	N	N	USB-CPU (embedded)	N	N
USB-CON (standalone)	N	N	USB-CPU (standalone)	N	N
Universal-CON	N	N	Universal-CPU	N	N
Cascade-CON	N	N	Cascade-CPU	N	N

New
Edit
Delete
Cancel
Okay

Enter a name to find an item

FIGURE5-9.12.1.1 OSD CONFIGURATION - EXT UNITS

- 2.2. Enter an appropriate name for the Cascading CPU Unit into the **Name** field.
- 2.3. Enter a port number into the **Port** field according to the required connection of the Tie Line.
- 2.4. Set the **Cascade-CPU** option to **Y (C#1)** in the **Output Signals** column.
- 2.5. Click the **Okay** button to confirm the creation of a Cascading CPU Unit.
3. Select **Configuration > CPU Devices** in the main menu of the Master Matrix.
 - 3.1. Click the **New R.** button.

A switchable CPU Device will be created.

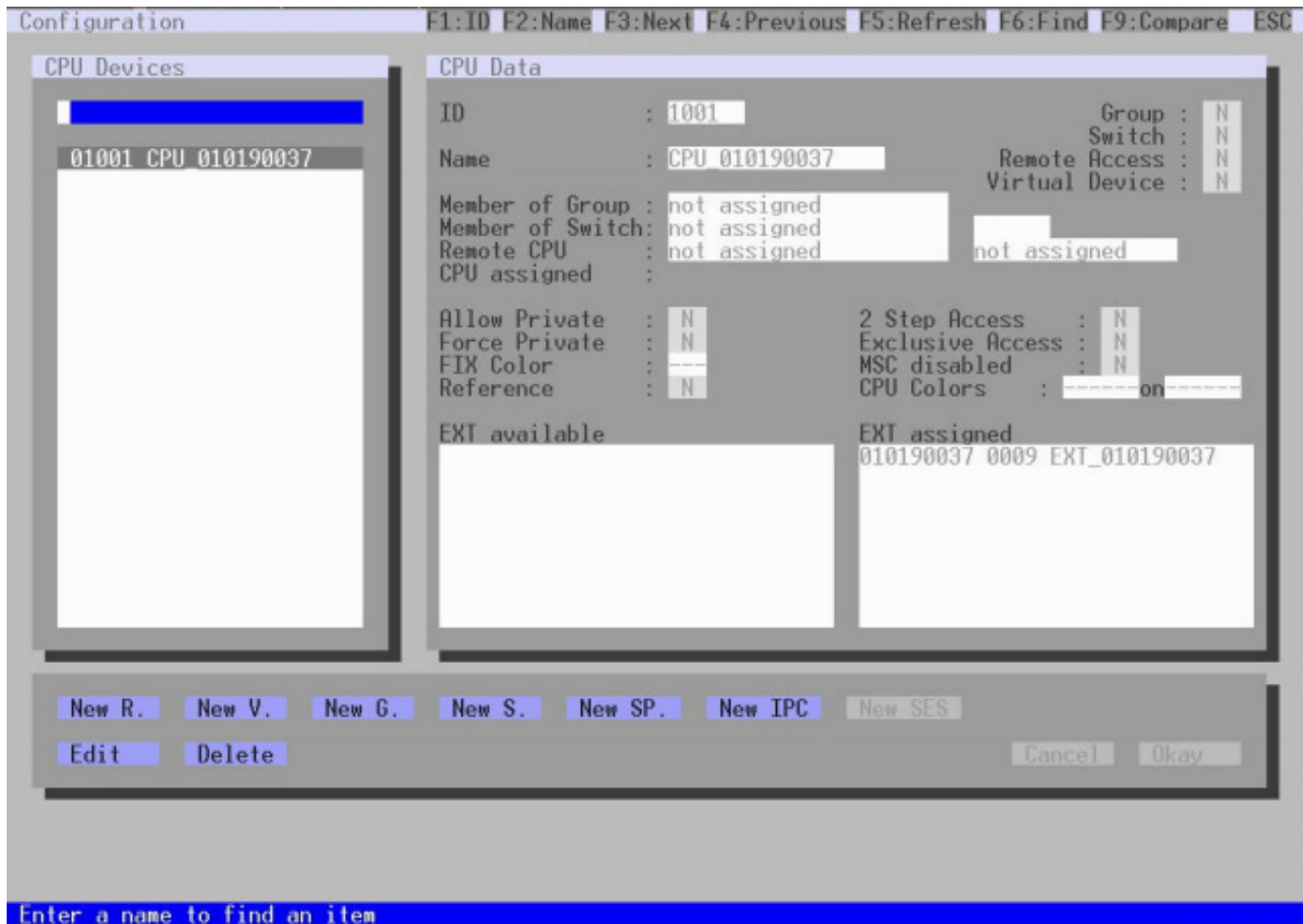


FIGURE5-9.12.1.2 OSD CONFIGURATION - CPU DEVICES

- 3.1. Enter an appropriate Cascading CPU Device into the **Name** field.
- 3.2. Select the previously configured Cascading CPU Unit in the **Extender available** list.
- 3.3. Press the <a> key to move the Cascading CPU Unit to the **EXT assigned** list.

The assignment is displayed in the **Extender assigned** list.

- 3.4. Click the **Okay** button to confirm the assignment.

4. Open the OSD of the Sub Matrix.

5. Select **Configuration > EXT** Units in the main menu of the Sub Matrix.

- 5.1. Click the **New** button.

A new Extender Unit will be created.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

EXT Units

010190037 EXT_010190037
010191923 EXT_010191923

EXT Data

ID : 10190037 CPU/CON assigned
Name : EXT_010190037 01001 CPU_010190037

Fixed : ☐ Port 1/2 : 9 / 0 Universal : ☐

General OSD Data

Horizontal mouse speed [1/x] : 4 Hotkey : F1
Vertical mouse speed [1/x] : 5 Fastkey : 00
Double click time [ms] : 200
Keyboard layout : German DE,129
Video mode : variable

Extender OSD Data

Enable CPU selection : ☐
Enable connection info : ☐
Update connection info : ☐
Display time [sec] : 0
Horizontal position : 0
Vertical position : 0

EXT Type

Input Signals	CH1	CH2	Output Signals	CH1	CH2
DVI/VGA-CPU (video ..)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DVI/VGA-CON (video ..)	<input type="checkbox"/>	<input type="checkbox"/>
HID-CON (keyb., mouse..)	<input type="checkbox"/>	<input type="checkbox"/>	HID-CPU (keyb., mouse..)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Audio (analog, digital)	<input type="checkbox"/>	<input type="checkbox"/>	Audio (analog, digital)	<input type="checkbox"/>	<input type="checkbox"/>
RS232 (serial ..)	<input type="checkbox"/>	<input type="checkbox"/>	RS232 (serial ..)	<input type="checkbox"/>	<input type="checkbox"/>
USB-CON (embedded)	<input type="checkbox"/>	<input type="checkbox"/>	USB-CPU (embedded)	<input type="checkbox"/>	<input type="checkbox"/>
USB-CON (standalone)	<input type="checkbox"/>	<input type="checkbox"/>	USB-CPU (standalone)	<input type="checkbox"/>	<input type="checkbox"/>
Universal-CON	<input type="checkbox"/>	<input type="checkbox"/>	Universal-CPU	<input type="checkbox"/>	<input type="checkbox"/>
Cascade-CON	<input type="checkbox"/>	<input type="checkbox"/>	Cascade-CPU	<input type="checkbox"/>	<input type="checkbox"/>

New

Edit

Delete

Cancel

Okay

Enter a name to find an item

FIGURE5-9.12.1.3 OSD CONFIGURATION - EXT UNITS

- 5.2. Enter an appropriate name for the Cascading CON Unit into the **Name** field.
- 5.3. Enter a port number into the Port field according to the required connection of the Tie Line.
- 5.4. Set the **Cascade-CON** option to **Y (C#1)** in the **Input Signals** column.
- 5.5. Click the **Okay** button to confirm the creation of a Cascading CON Unit.
6. Select **Configuration > CON Devices** in the main menu of the Sub Matrix.
 - 6.1. Click the **New R.** button.

A switchable CON Device will be created.

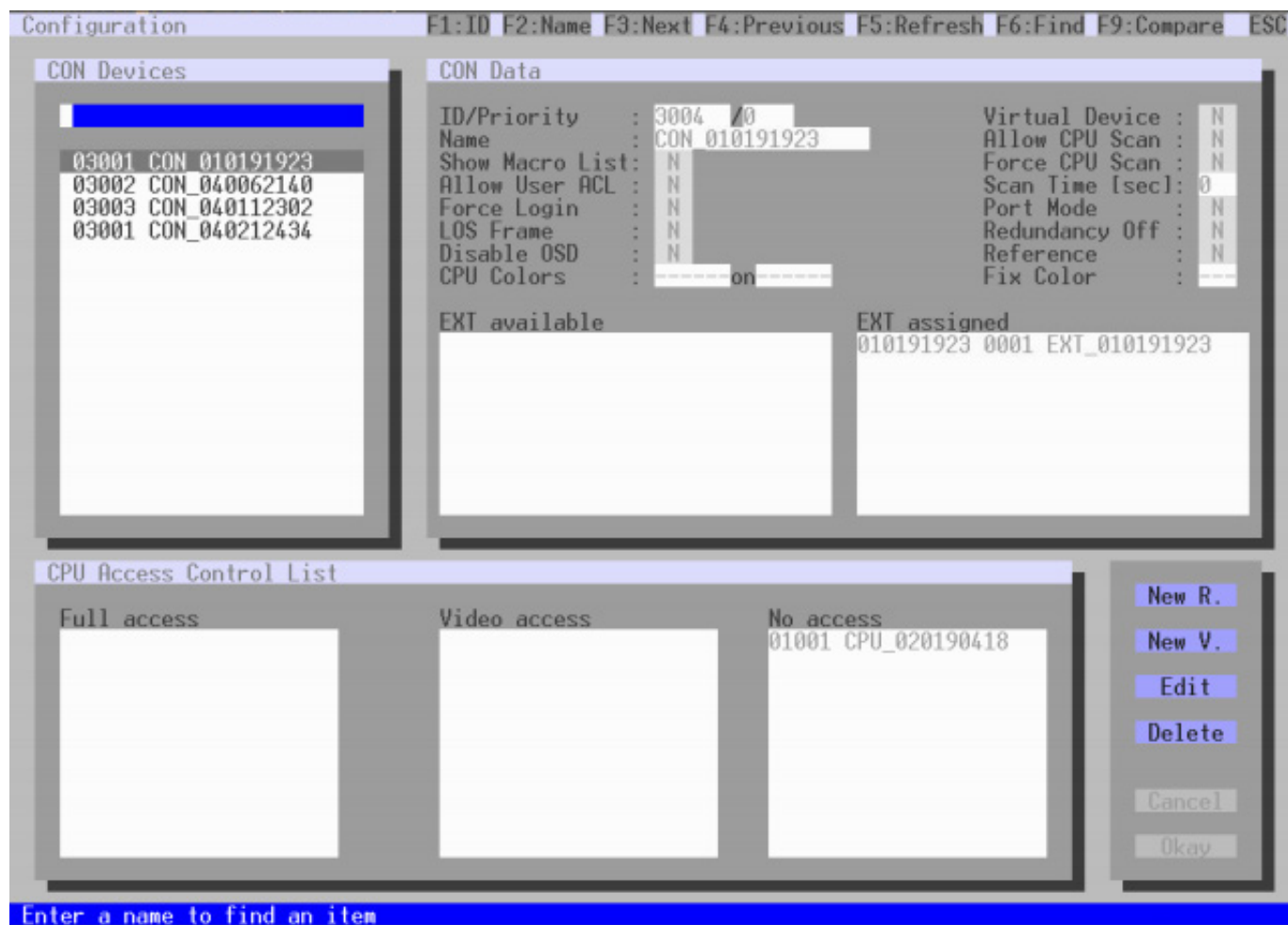


FIGURE5-9.12.1.4 OSD CONFIGURATION - CON DEVICES

- 6.2. Enter an appropriate name for the Cascading CON Device into the **Name** field.
- 6.3. Press the <a> key to move the Cascading CON Unit to the **EXT assigned** list.

The assignment is displayed in the **Extender assigned** list.

- 6.4. Click the **Okay** button to confirm the assignment.

7. Select **Configuration > System** in the main menu of the Sub Matrix.

- 7.1. Set the **Sub Matrix** option to **Y**.

- 7.2. Click the **Okay** button 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>.

8. Restart all I/O boards (see chapter 7.11.3, page 321) on which any Master/Sub CON Units or CPU Units have been configured or alternatively restart the matrix (see chapter 7.11.1, page 320).

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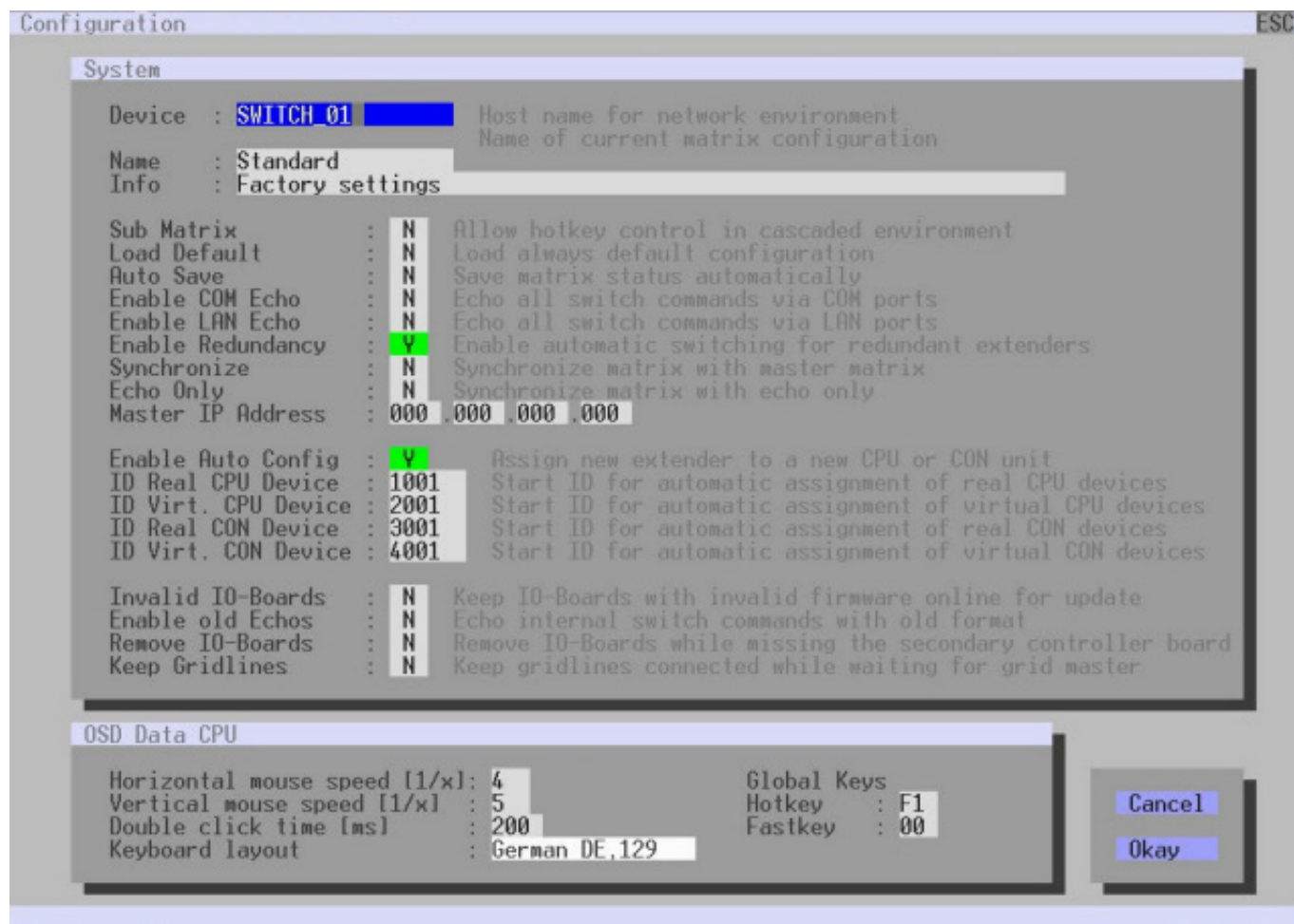


FIGURE5-9.12.1.5 OSD CONFIGURATION - SYSTEM

9. Connect the Tie Lines to the matrices. Ensure that each **Cascade CON Device** on one matrix is connected to **Cascade CPU Device** on the other matrix to achieve switchability between two matrices.

The Matrix Cascading is now configured and can be used.

Additional Tie Lines are configured accordingly. The use of cascading is described in chapter 6.11, page 247.

5.12.2 DIRECTING A TIE LINE FROM THE MASTER TO THE SUB

To configure settings for using Matrix Cascading and to direct the Tie Line from the Sub to the Master, proceed as follows:

1. Open the OSD of the Master Matrix.
2. Select **Configuration > EXT Units** in the main menu of the Master Matrix.

2.1. Click the **New** button.

A new Extender Unit will be created.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

EXT Units

010190037 EXT 010190037

010191923 EXT_010191923

EXT Data

ID : 10190037 CPU/CON assigned

Name : EXT 010190037 01001 CPU_010190037

Fixed : N Port 1/2 : 9 /0 Universal : N

General OSD Data

Horizontal mouse speed [1/x] : 4 Hotkey : F1

Vertical mouse speed [1/x] : 5 Fastkey : 00

Double click time [ms] : 200

Keyboard layout : German DE,129

Video mode : variable

Extender OSD Data

Enable CPU selection : N

Enable connection info : N

Update connection info : N

Display time [sec] : 0

Horizontal position : 0

Vertical position : 0

EXT Type

Input Signals	CH1	CH2	Output Signals	CH1	CH2
DVI/VGA-CPU (video ..)	Y	N	DVI/VGA-CON (video ..)	N	N
HID-CON (keyb., mouse..)	N	N	HID-CPU (keyb., mouse..)	Y	N
Audio (analog, digital)	N	N	Audio (analog, digital)	N	N
RS232 (serial ..)	N	N	RS232 (serial ..)	N	N
USB-CON (embedded)	N	N	USB-CPU (embedded)	N	N
USB-CON (standalone)	N	N	USB-CPU (standalone)	N	N
Universal-CON	N	N	Universal-CPU	N	N
Cascade-CON	N	N	Cascade-CPU	N	N

New

Edit

Delete

Cancel

Okay

Enter a name to find an item

FIGURE5-9.12.2.1 OSD CONFIGURATION - EXT UNITS

- 2.2. Enter an appropriate name for the Cascading CON Unit into the **Name** field.
- 2.3. Enter a port number into the **Port** field according to the required connection of the Tie Line.
- 2.4. Set the **Cascade-CON** option to **Y (C#1)** in the Input **Signals** column.
- 2.5. Click the **Okay** button to confirm the creation of a Cascading CON Unit.
3. Select **Configuration > CON Devices** in the main menu of the Master Matrix.
 - 3.1. Click the **New R.** button.
 A switchable CON Device will be created.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

CON Devices

- 03001 CON_010191923
- 03002 CON_040062140
- 03003 CON_040112302
- 03001 CON_040212434

CON Data

ID/Priority : 3004 / 0
 Name : CON_010191923
 Show Macro List : N
 Allow User ACL : N
 Force Login : N
 LOS Frame : N
 Disable OSD : N
 CPU Colors : on

Virtual Device : N
 Allow CPU Scan : N
 Force CPU Scan : N
 Scan Time [sec] : 0
 Port Mode : N
 Redundancy Off : N
 Reference : N
 Fix Color : N

EXT available
 EXT assigned
 010191923 0001 EXT_010191923

CPU Access Control List

Full access	Video access	No access
		01001 CPU_020190418

New R.
 New V.
 Edit
 Delete
 Cancel
 Okay

Enter a name to find an item

FIGURE5-9.12.2.2 OSD CONFIGURATION - CON DEVICES

- 3.2. Enter an appropriate name for the Cascading CON Device into the **Name** field.
- 3.3. Select the previously configured Cascading CON Unit in the **Extender available** list.
- 3.4. Press the <a> key to move the Cascading CON Unit to the **EXT assigned** list.
The assignment is displayed in the **Extender assigned** list.
- 3.5. Click the **Okay** button to confirm the assignment.

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4. Open the OSD of the Sub Matrix.
5. Select **Configuration > EXT** Units in the main menu of the Sub Matrix.
 - 5.1. Click the **New** button.

A new Extender Unit will be created.
 - 5.2. Enter an appropriate name for the Cascading CPU Unit into the **Name** field.
 - 5.3. Enter a port number into the Port field according to the required connection of the Tie Line.
 - 5.4. Set the **Cascade-CPU** option to **Y (C#1)** in the **Output Signals** column.
 - 5.5. Click the **Okay** button to confirm the creation of a Cascading CPU Unit.

Configuration F1:ID F2:Name F3:Next F4:Previous F5:Refresh F6:Find F9:Compare ESC

CPU Devices

01001 CPU 010190037

CPU Data

ID : 1001 Group : N
 Name : CPU_010190037 Switch : N
 Remote Access : N
 Virtual Device : N
 Member of Group : not assigned
 Member of Switch : not assigned
 Remote CPU : not assigned
 CPU assigned : not assigned
 Allow Private : N 2 Step Access : N
 Force Private : N Exclusive Access : N
 FIX Color : --- MSC disabled : N
 Reference : N CPU Colors : on
 EXT available EXT assigned
 010190037 0009 EXT_010190037

New R. New V. New G. New S. New SP. New IPC New SES
 Edit Delete Cancel Okay

Enter a name to find an item

FIGURE5-9.12.2.3 OSD CONFIGURATION - CPU DEVICES

- 6.1. Enter an appropriate name for the Cascading CPU Device into the **Name** field.
- 6.2. Press the <a> key to move the Cascading CPU Unit to the **EXT assigned** list.

The assignment is displayed in the **Extender assigned** list.
- 6.3. Click the **Okay** button to confirm the assignment.

7. Select **Configuration > System** in the main menu of the Sub Matrix.

7.1. Set the **Sub Matrix** option to **Y**.

7.2. Click the **Okay** button to confirm the Sub Matrix option.

*Define a Master Matrix. All further matrices will be configured as Sub Matrices in the configuration process. Ensure that the Tie Lines will only be connected after finishing the configuration

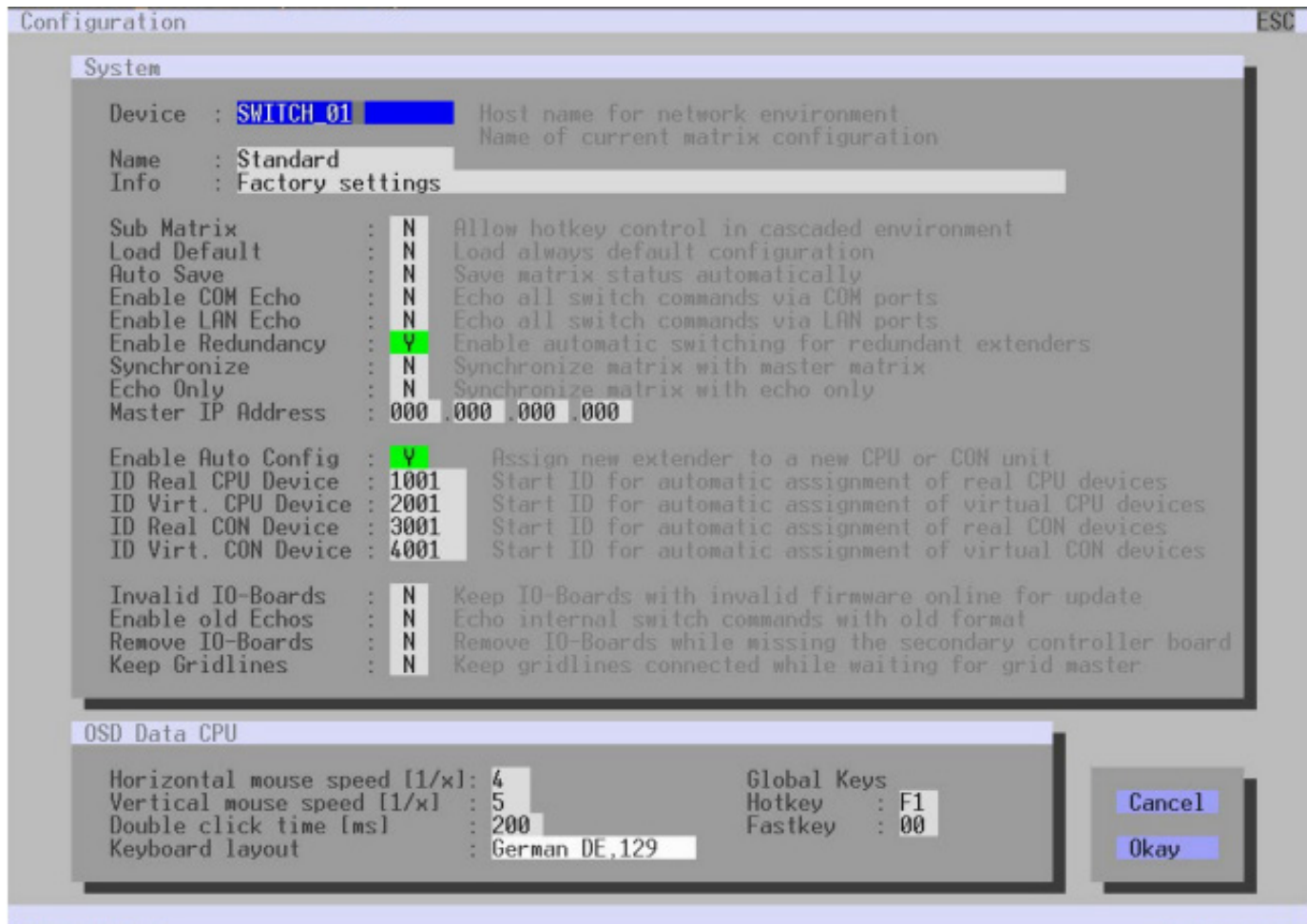


FIGURE5-9.12.2.4 OSD CONFIGURATION - SYSTEM

8. Restart all I/O boards (see chapter 7.11.3, page 321) on which any Master/Sub CON Units or CPU Units have been configured or alternatively restart the matrix (see chapter 7.11.2, page 320).

9. Connect the Tie Lines to the matrices. Ensure that each **Cascade CON Device** on one matrix is connected to **Cascade CPU Device** on the other matrix to achieve switching ability between two matrices.

The Matrix Cascading is now configured and can be used.

Additional Tie Lines are configured accordingly. The use of cascading is described in chapter 6.11, page 247.

NOTICE

Possible loss of configuration changes

By clicking the **Apply** button 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 (**Save**, see chapter 5.10.1, page 134), save a predefined configuration (**Save as...**, from chapter 5.10.1 page 135, or perform a restart (see chapter 7.10 page 315).

NOTICE

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

6.1 CONFIGURING IN ONLINE MODE

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

1. Connect the management software with the matrix.

The manufacturer-specific configuration (Factory Setting) saved on the matrix is loaded into management software.

2. Click the **Activate Edit Mode** menu item in the toolbar.

The edit mode is active. A symbol is shown in the status bar.

3. Make any edits at the configuration and system settings.

4. Click the **Apply** button to confirm the changes.

The changes apply immediately as current configuration in the volatile memory of the matrix.

5. Click the **Deactivate Edit Mode** menu item in the toolbar.

6. Click the **Remote Save** button to save the configuration into the active configuration to the matrix.

7. Restart the system (depending on the settings made).

6.2 CONFIGURING IN OFFLINE MODE

Configuration and system settings via management software can be changed in offline mode without a direct connection between matrix and management software. Afterwards, the configuration must be uploaded to the matrix. Hereby, the following steps are necessary:

1. Connect the management software to the matrix.

The manufacturer-specific configuration (Factory Settings) saved on the matrix is loaded into management software.

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

2. Download the configuration.
3. Close the connection from the management software to the matrix.
4. Click the **Activate Edit Mode** menu item in the toolbar.

The edit mode is active. A symbol is shown in the status bar.

5. Make any edits at the configuration and system settings.
6. Click the **Apply** button to confirm the changes.

The changes apply immediately as current configuration in the volatile memory of the matrix.

7. Click the **Deactivate Edit Mode** menu item in the toolbar.
8. Upload the configuration to the matrix and activate immediately (optional) or later.
9. Optionally: restart the system.

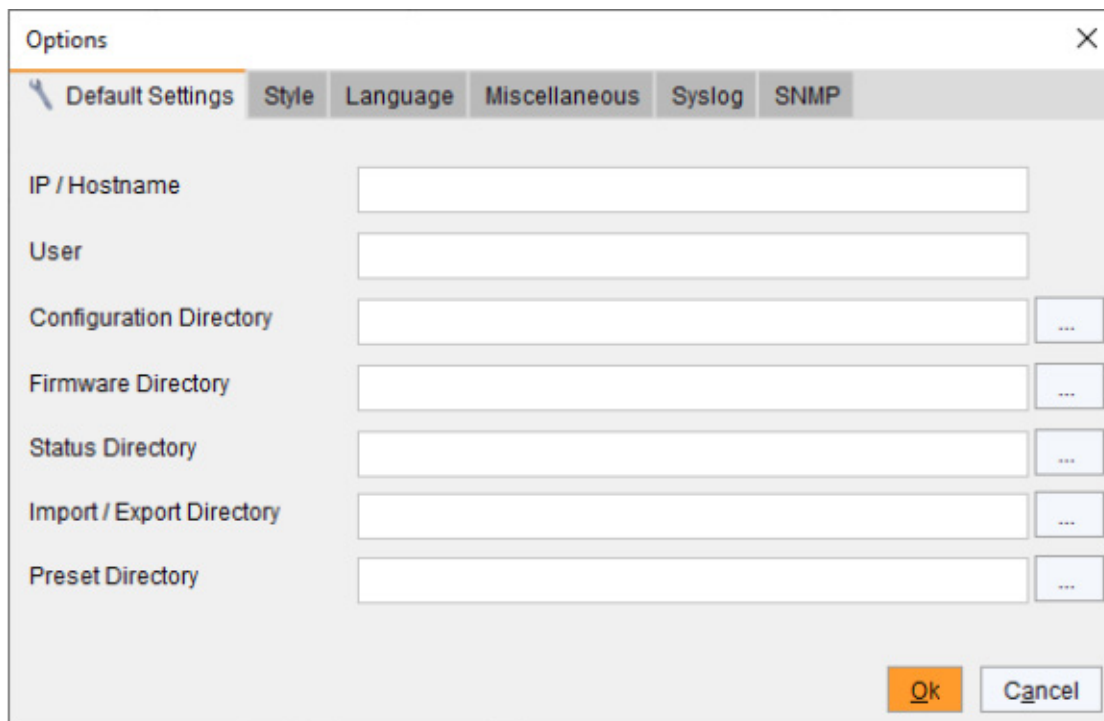
6.3 SETTING MANAGEMENT SOFTWARE OPTIONS

The settings of the management software can be customized and optimized to support you configure your matrix. The settings can be set in the offline mode.

*A restart of the management software is required to activate changes in the options menu.

6.3.1 SETTING PROGRAM DEFAULT SETTINGS

To avoid the repeated entry of data in the management software, this data can be saved in the default settings.



The screenshot shows a window titled 'Options' with a close button (X) in the top right corner. Below the title bar is a tabbed interface with six tabs: 'Default Settings' (selected), 'Style', 'Language', 'Miscellaneous', 'Syslog', and 'SNMP'. The 'Default Settings' tab contains the following fields:

- IP / Hostname**: A text input field.
- User**: A text input field.
- Configuration Directory**: A text input field with a browse button (three dots) to its right.
- Firmware Directory**: A text input field with a browse button (three dots) to its right.
- Status Directory**: A text input field with a browse button (three dots) to its right.
- Import / Export Directory**: A text input field with a browse button (three dots) to its right.
- Preset Directory**: A text input field with a browse button (three dots) to its right.

At the bottom right of the window are two buttons: an orange 'Ok' button and a grey 'Cancel' button.

FIGURE 6-3.1 MANAGEMENT SOFTWARE MENU EXTRAS - OPTIONS - DEFAULT SETTINGS

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

FIELD	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 configuration files
Firmware Directory	Default directory for firmware files
Status Directory	Default directory for status files
Import / Export Directory	Default directory for import and export files
Presets Directory	Default directory for macro files

To activate or set the default settings, proceed as follows:

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

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

2. Enter the appropriate data.
3. Click the **Ok** button to confirm your entries.
4. Close the management software and restart it.

6.3.2 SETTING FONT SIZE, TOOLTIP, AND THEME

The font size can be set in this menu and the display of tooltips for the toolbar can be activated.

1. Select **Extras > Options** in the menu bar and open the **Style** tab.
2. Select the desired font size (**Normal** or **Large**).
3. Click the **Show Toolbar Button** Text checkbox.

A tooltip is displayed when hovering over a menu item in the toolbar.

4. Select the color theme for the management software (**Dark** (default) or **Gray**).
5. Click the **Ok** button to confirm your changes.
6. Close the management software and restart it..

FIGURE 2-14. BACK PANEL

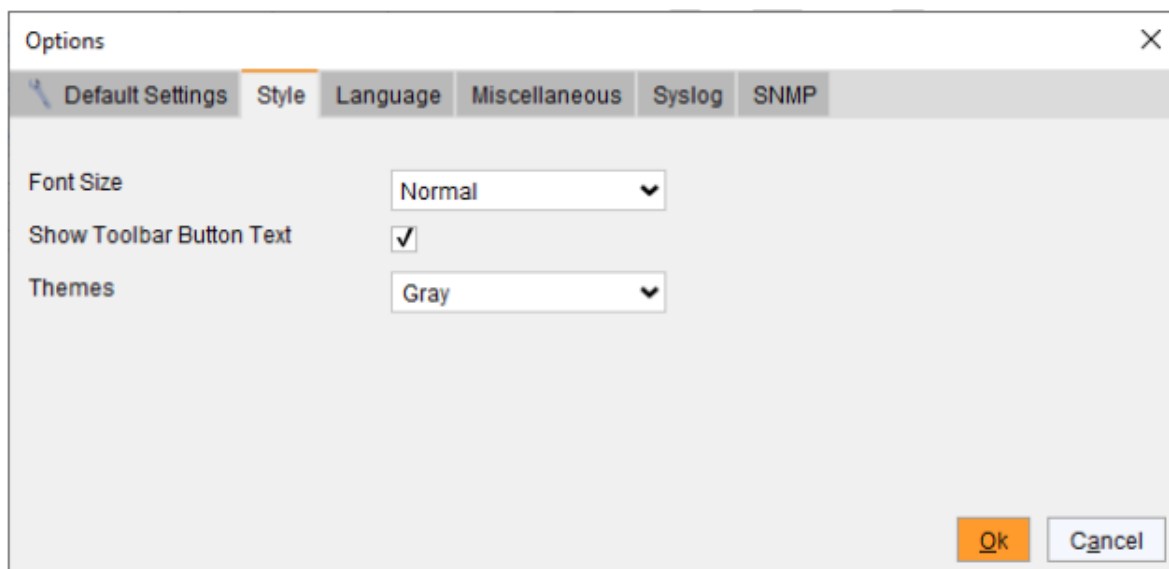


FIGURE 6-3.2.1 MANAGEMENT SOFTWARE MENU EXTRAS - OPTIONS - STYLE

6.3.3 SETTING LANGUAGE OF THE MANAGEMENT SOFTWARE

The font size can be set in this menu and the display of tooltips for the toolbar can be activated.

The language within the management 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 management software and the corresponding charset.
3. Click the **Ok** button to confirm your changes.
4. Close the management software and restart it.

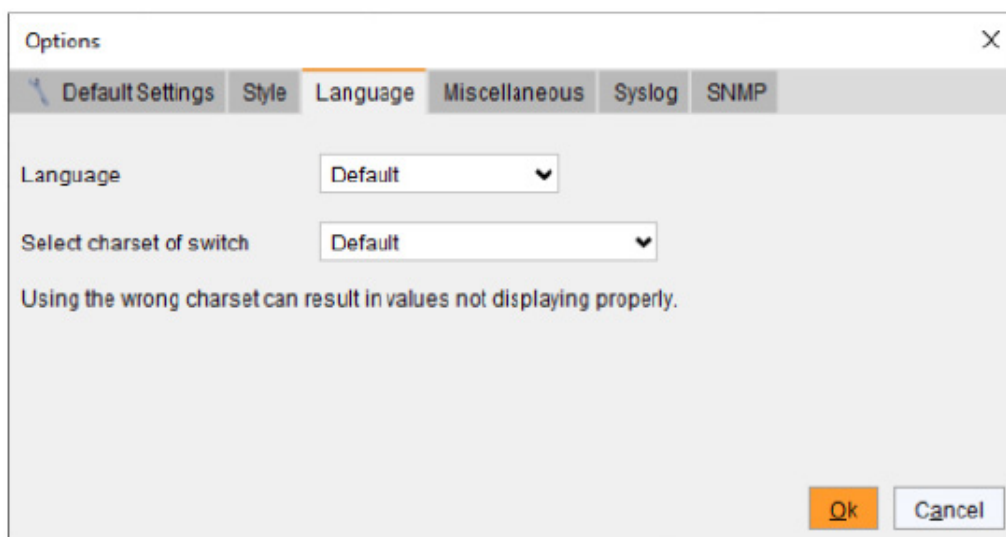


FIGURE 6-3.3.1 MANAGEMENT SOFTWARE MENU EXTRAS - OPTIONS - LANGUAGE

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6.3.4 SETTING AUTOSTART OF THE DEVICE FINDER

Additional options for the matrix can be enabled in this menu.

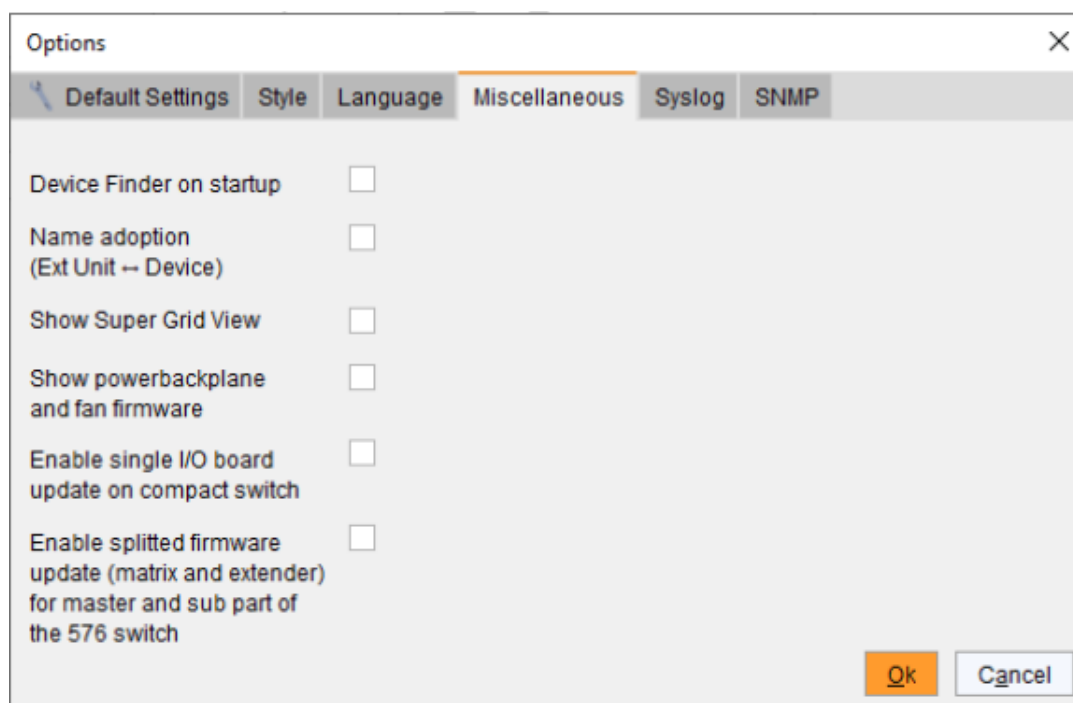


FIGURE 6-3.4.1 MANAGEMENT SOFTWARE MENU EXTRAS - OPTIONS - MISCELLANEOUS

OPTION	DESCRIPTION
Device Finder on startup	Start the Device Finder automatically when starting the management software
Name adoption	Entered name for a device is also applied to the extender and vice versa
Show Super Grid View	Show the Super Grid option in the task area
Show power backplane and fan firmware	Show the firmware of the fans and the power backplane in the menu Status & Updates > Status- Matrix Firmware
Enable single I/O board on compact switch	Option available only for KXM compact:
Enable splitted firmware update (matrix and extender) for master and sub part of the 576 matrix	Option available only for DKM enterprise 576:

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

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

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

6.4 SYSTEM SETTING

6.4.1 SETTING SYSTEM CONFIGURATION

The system configuration is set in this menu.

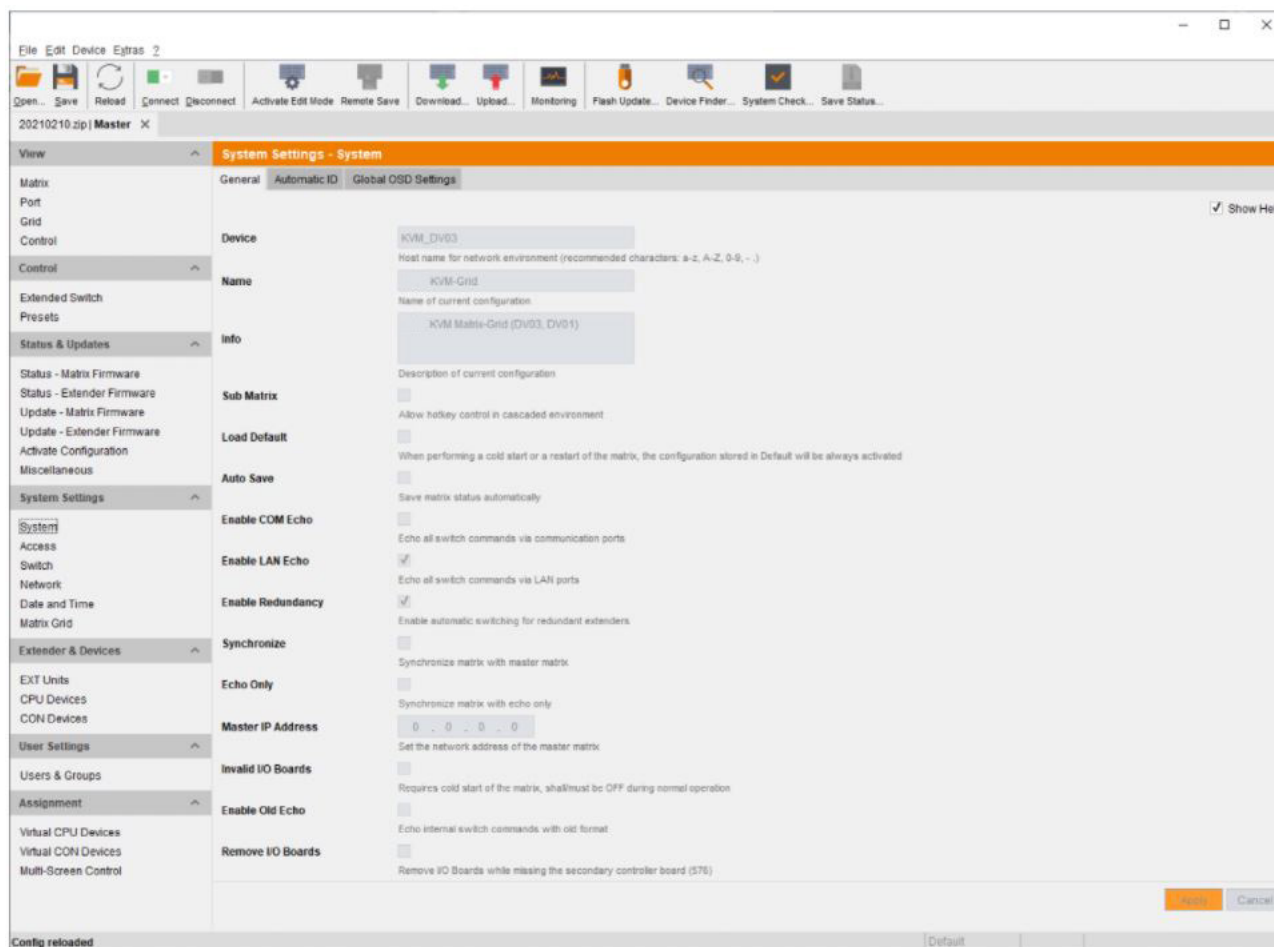


FIGURE 6-4.1.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - GENERAL

OPTION		DESCRIPTION
Device	Text	Enter the device name of the matrix (default: SWITCH_01) The device name is used as the host name in the network.
Name	Text	Enter the name of the configuration that is used to save the current settings (default: Standard)
Info	Text	Additional text field to describe the configuration (default: Factory settings)
Sub Matrix	Activated	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.
	Deactivated	Function not active (default)
Load Default	Activated	Starting the matrix after a restart or a switch-on with the default configuration.
	Deactivated	Starting the matrix after a restart or a switch-on with the last saved configuration (default).
Auto Save	Activated	Save the current configuration of the matrix in the flash memory periodically. Note: During the save operation, the matrix will not be operational. Saving takes place every 600 seconds if changes of the configuration or switching operations have been executed in the meantime.
	Deactivated	Function not active (default)
Enable COM Echo	Activated	Send all switching commands performed in the matrix as an echo via LAN connection. Note: This function should be enabled when using a media control via LAN connection or when using stacking with two or more matrices.
	Deactivated	Function not active (default)
Enable LAN Echo	Activated	Automatically switch 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 both matrices in a fully redundant setup
	Deactivated	Function not active (default)
Enable Redundancy	Activated	Automatically switch 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 both matrices in a fully redundant setup
	Deactivated	Function not active
Synchronize	Activated	Synchronize the sub matrix to the switch status of the master matrix.
	Deactivated	Function not active (default)

OPTION		DESCRIPTION
Echo Only	Activated	Synchronize 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	Byte	Set the network address of the master matrix (default: 000.000.000.000)
Invalid IO-Boards	Activated	Keep 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	Function not active (default)
Enable old Echo	Activated	Translate current switching command (implemented since V02.09) internally into the old, already known switching commands and send them as echo.
	Deactivated	Function not active (default)
Remove IO-Boards	Activated	Note: Only for DKM 576: Shut down of I/O boards if the second CPU board is not available. Connection will be disconnected.
	Deactivated	Function not active (default)

To set parameters for the system configuration, proceed as follows:

1. Select **System Settings > System** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Modify the desired settings.
4. Click the **Apply** button to confirm your entries.
5. Click the **Deactivate Edit Mode** menu item in the toolbar.

6.4.2 ENABLING AUTOMATIC CREATION OF CPU AND CON DEVICES

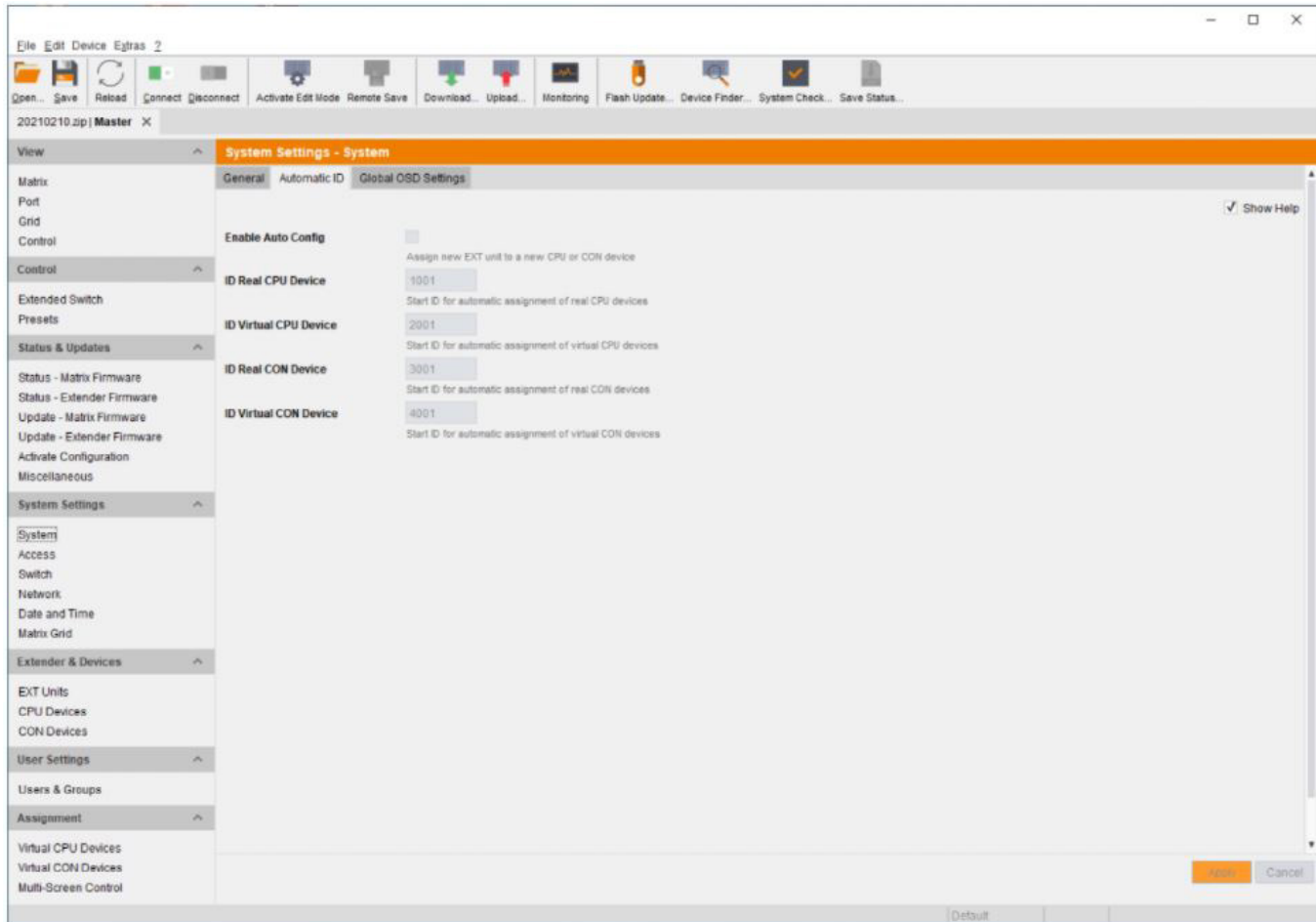


FIGURE 6-4.2.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM -AUTOMATIC ID

Settings for automatic creation of CPU and CON Devices when a new extender unit is connected are set in this menu.

To set up the automatic creation of CPU Devices or CON Devices, proceed as follows:

1. Select **System Settings > System** in the task area.
2. Select the **Automatic ID** tab in the working area.
3. Click the **Activate Edit Mode** menu item in the toolbar.
4. Modify the desired settings.
5. Click the **Apply** button to confirm your entries.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

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6.4.3 CONFIGURING OSD

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

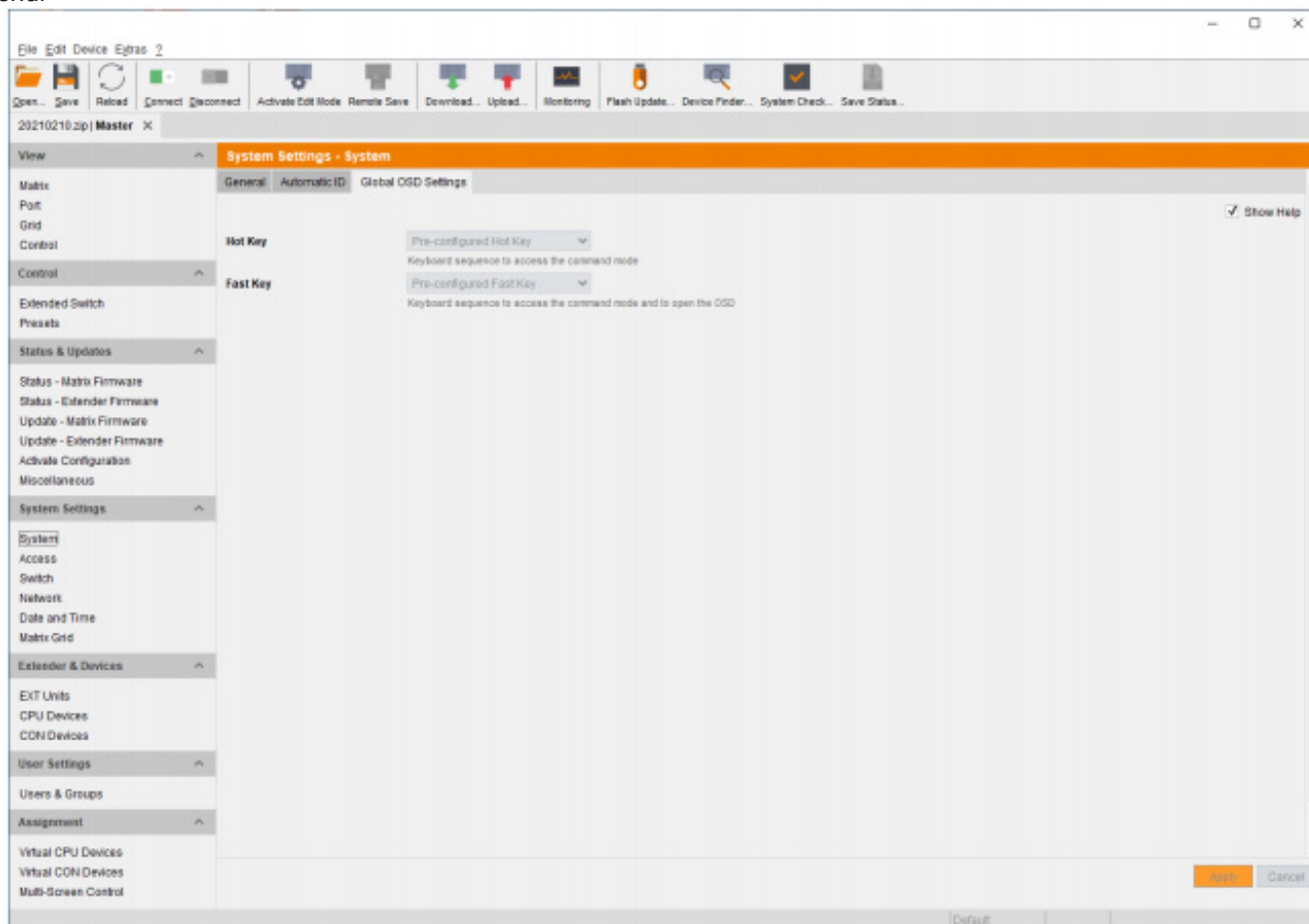


FIGURE 6-4.1.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - GLOBAL OSD SETTINGS

OPTION		DESCRIPTION
Hot Key	Keyboard command	Calling the command mode via keyboard sequence
Fast Key	Keyboard command	Calling the command mode with only one key

To configure global OSD settings, proceed as follows:

1. Select **System Settings > System** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the **Global OSD Settings** tab in the working area.
4. Modify the desired settings.
5. Click the **Apply** button to confirm your entries.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

6.4.4 SETTING ACCESS CONFIGURATION

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

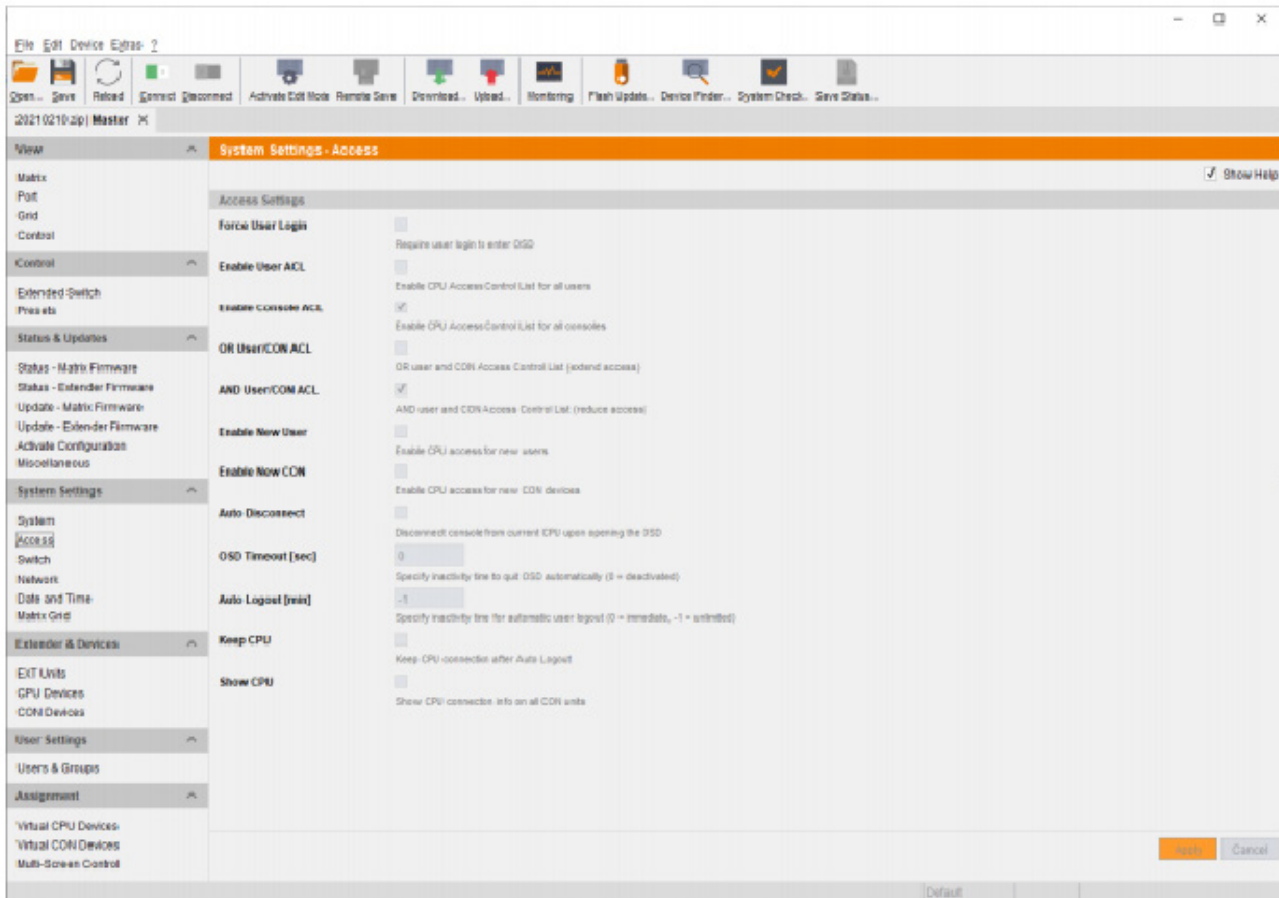


FIGURE 6-4.4.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - ACCESS

OPTION		DESCRIPTION
Force User Login	Activated	The user has to login with a username and a password once to enter OSD. Thereafter the user remains logged in until he explicitly logs out or an auto logout is affected. Note: When using the Force User Login function, both console favorites and console macros still remain active.
	Deactivated	Function not active (default)
Enable User ACL	Activated	CPU access is restricted 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)

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OPTION		DESCRIPTION
Enable CON ACL	Activated	CPU access is restricted according to the permissions in the respective Console ACL (Access Control List). No login required
	Deactivated	Function not active (default)
OR User/CON ACL	Activated	The user obtains the sum of access rights from the console and his personal access rights after logging in (extended access)
	Deactivated	Function not active (default)
And User/CON ACL	Activated	The user obtains the common divisor of access rights from the console and his personal access rights after logging in (reduced access)
	Deactivated	Function not active (default)
Enable new User	Activated	Newly created users automatically receive access to all CPUs
	Deactivated	Function not active (default)
Enable new CON	Activated	Newly created CON Devices automatically receive access to all CPUs
	Deactivated	Function not active (default)
Auto Disconnect	Activated	Upon opening the OSD, the console will be automatically disconnected from the current CPU.
	Deactivated	Function not active
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 console after which he will be automatically logged out. In addition to the logout process, a complete disconnection from the connected CPU 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	Permanently show the name of the currently connected CPU Device in the Connection Info box.
	Deactivated	Function not active (default)

To set the access configuration, proceed as follows:

1. Select **System Settings > Access** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Modify the desired settings.
4. Click the **Apply** button to confirm your entries.
5. Click the **Deactivate Edit Mode** menu item in the toolbar.



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6.4.5 SETTING SWITCH CONFIGURATION

The switching parameters are set in this menu.

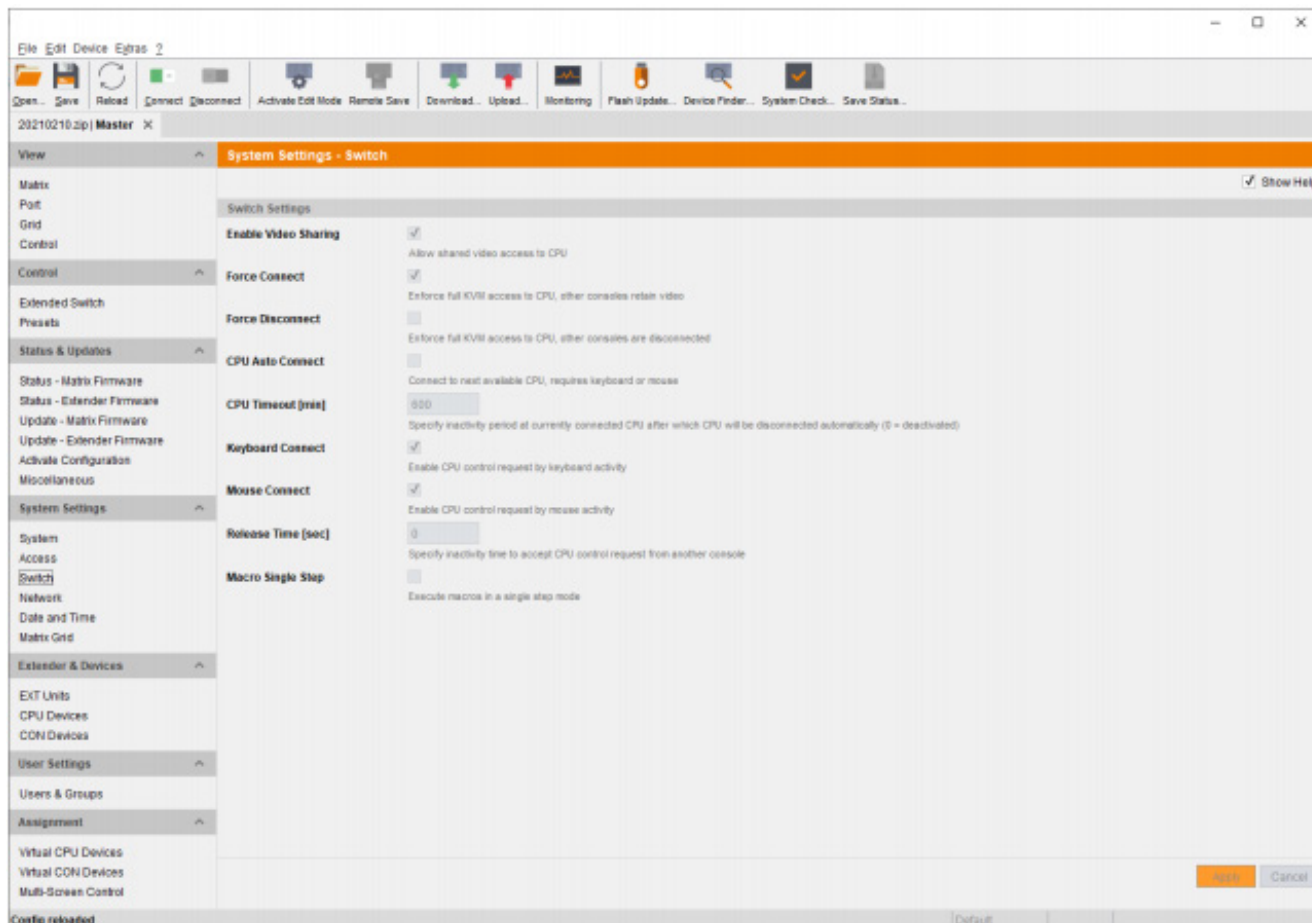


FIGURE 6-4.5.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - SWITCH

The following parameters can be configured:

OPTION		DESCRIPTION
Enable Video Sharing	Activated	The user can switch to any CPU Device as an observer, including ones that are already assigned to another user (observer without keyboard/mouse access). Note: Switching with the <Space> key, not with the <Enter> key. The operator will not be informed if further users connect as an observer to the CPU Device that is connected to his CPU Device.
	Deactivated	Function not active (default)
Force Connect	Activated	The user can connect to every single CPU Device as an operator, including ones that are related to another user. 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 (default)

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OPTION		DESCRIPTION
Force Disconnect	Activated	Extension of Force Connect: If the user connects as an operator to a CPU Device already related to another user, the previous user will be disconnected. Note: To share K/M control Force Disconnect has to be deactivated.
	Deactivated	Function not active (default)
CPU Auto Connect	Activated	If a CON Device is not connected to a CPU Device, you can establish an automatic connection to the next available CPU Device by hitting any key or mouse button.
	Deactivated	Function not active (default)
CPU Timeout [min]	Activated	Period of inactivity after which a console will be automatically disconnected from its current CPU Device (default: 0 minutes)
Keyboard Connect	Activated	Activate request of K/M control by keyboard event (key will be lost)
	Deactivated	Function not active (default)
Mouse Connect	Activated	Activate 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 the same time. The other consoles that are connected to the same CPU Device have a Video Only status (default: 10 seconds)
Macro Single Step	Activated	Execute macro commands sequentially
	Deactivated	Function not active (default)

To set the access configuration, proceed as follows:

1. Select **System Settings > Switch** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Modify the desired settings.
4. Click the **Apply** button to confirm your entries.
5. Click the **Deactivate Edit Mode** menu item 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.



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6.4.6 SETTING NETWORK CONFIGURATION

NOTICE

To initialize system-relevant configuration changes, the matrix must be restarted. Restarting the matrix can take several minutes and the matrix is not available during the restart.

NOTICE

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

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

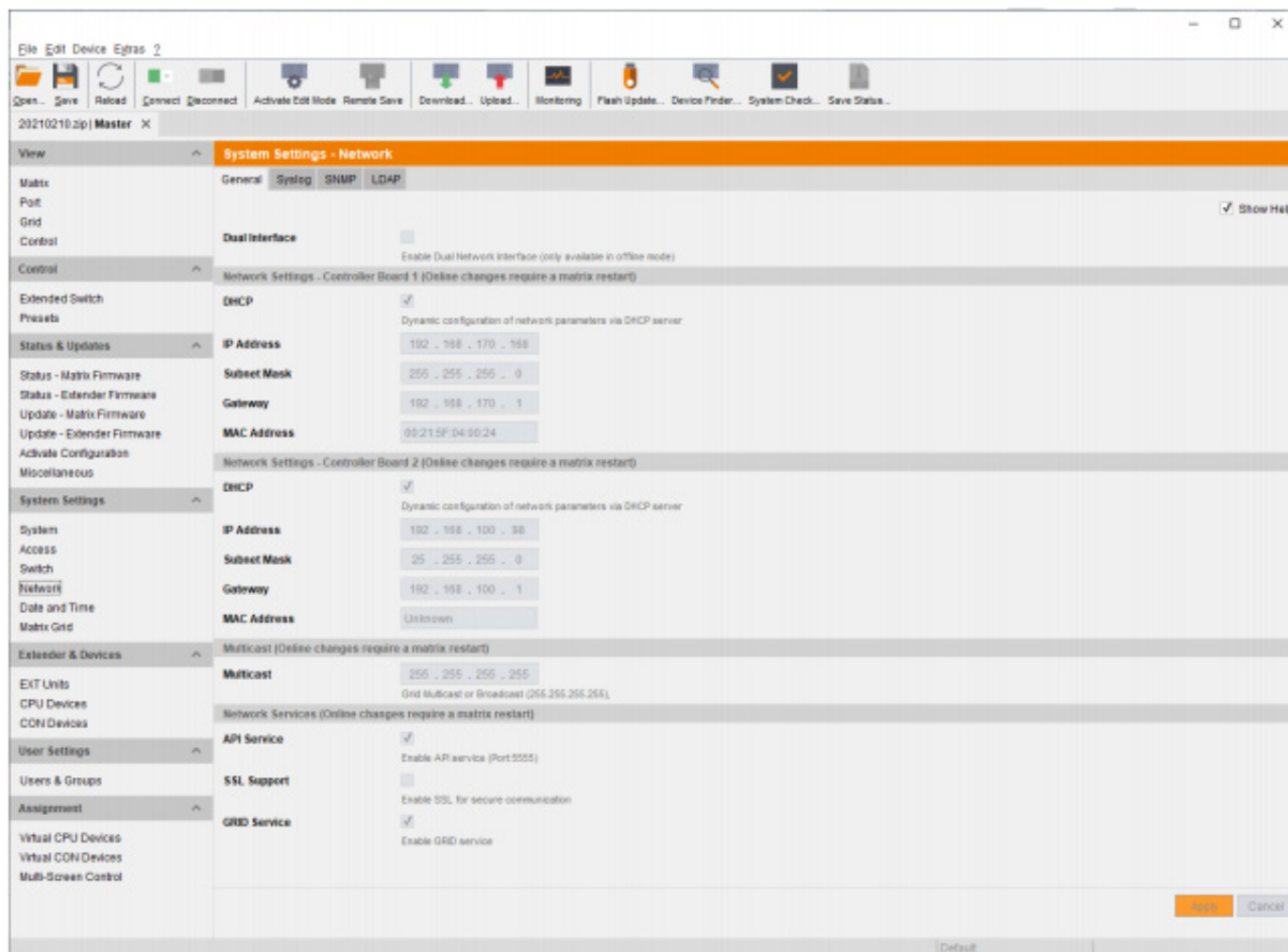


FIGURE 6-4.6.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - NETWORK - GENERAL

The following parameters can be configured:

FIELD	ENTRY	DESCRIPTION
Dual Interface	Activated	Redundant network connection is deactivated
	Deactivated	Function not active (default)

Network Settings - Controller Board

FIELD	ENTRY	DESCRIPTION
DHCP	Activated	The network settings are automatically supplied by a DNS 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	Byte	Input of the IP address if DHCP is not active (default: 192.168.100.95)
Subnet Mask	Byte	Input of the subnet mask in the form "255.255.255.0" if DHCP is not active (default: 255.255.255.0)
Gateway	Byte	Input of the subnet mask in the form "192.168.1.1" if DHCP is not active
MAC Address	Byte	Cannot be changed, is retrieved automatically

Multicast

FIELD	ENTRY	DESCRIPTION
Multicast	Byte	Input of the Multicast address if there is a Matrix Grid in use within a Multicast group (default is broadcast: 255.255.255.255)

Network Services

FIELD	ENTRY	DESCRIPTION
API Service	Activated	LAN interface at the DKM activated for access via management software (API service port 5555)
	Deactivated	Function not active (default)
SSL Support	Activated	Activate SSL encryption for API, management software API, management software and Matrix Grid communication
	Deactivated	Function not active (default)
Grid Service	Activated	Activate Grid interface at the matrix for access via management software (Grid Service Port 5557)
	Deactivated	Function not active (default)

6.4.7 SETTING SYSLOG FUNCTION

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

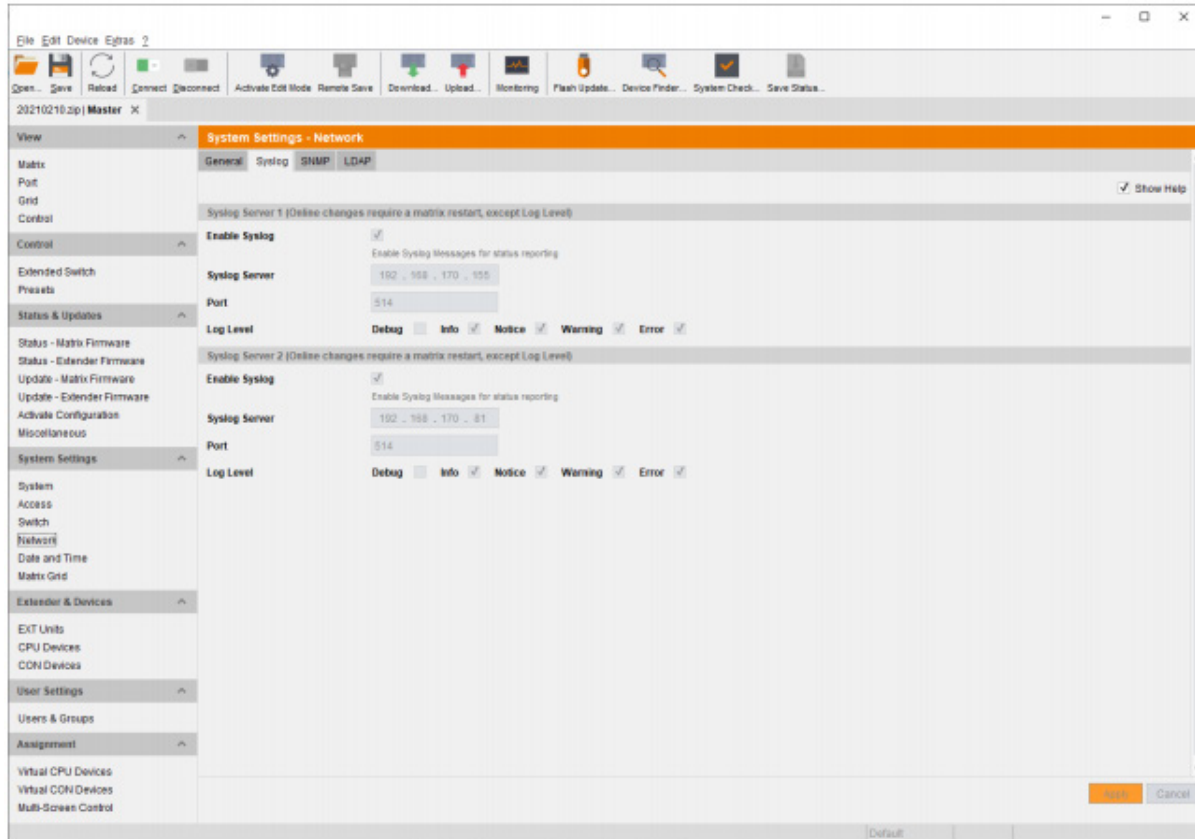


FIGURE 6-4.7.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - NETWORK - SYSLOG

The following parameters can be configured:

FIELD	ENTRY	DESCRIPTION
Enable Syslog	Activated	Syslog server to query status is active
	Deactivated	Function not active (default)
Syslog Server	Byte	Input of the IP address of the syslog servers in the form "192.168.1.1"
Port	Byte	Input of the syslog ports (default: 514)
Log Level	Debug	Activate debug messages in syslog (default: deactivated) Note: The debug messages are exclusively for matrix diagnostics. Use this function only for concrete debug cases as it is not intended for normal operation.
	Info	Activate information messages in syslog (default: deactivated)
	Notice	Activate notification messages in syslog (default: activated)
	Warning	Activate warning messages in syslog (default: activated)
	Error	Activate error messages in syslog (default: activated)

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To set parameters for the syslog function, proceed as follows:

1. Select **System Settings > Network** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the **Syslog** tab in the working area.
4. Modify the desired settings.
5. Click the **Apply** button to confirm your entries.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

Setting the syslog options

To set or activate the presetting, proceed as follows:

1. Select **Extras > Options** in the menu bar and open the Syslog tab.
2. Enter the appropriate data.
3. Click the **Ok** button to confirm your entries.
4. Close the management software and restart it.

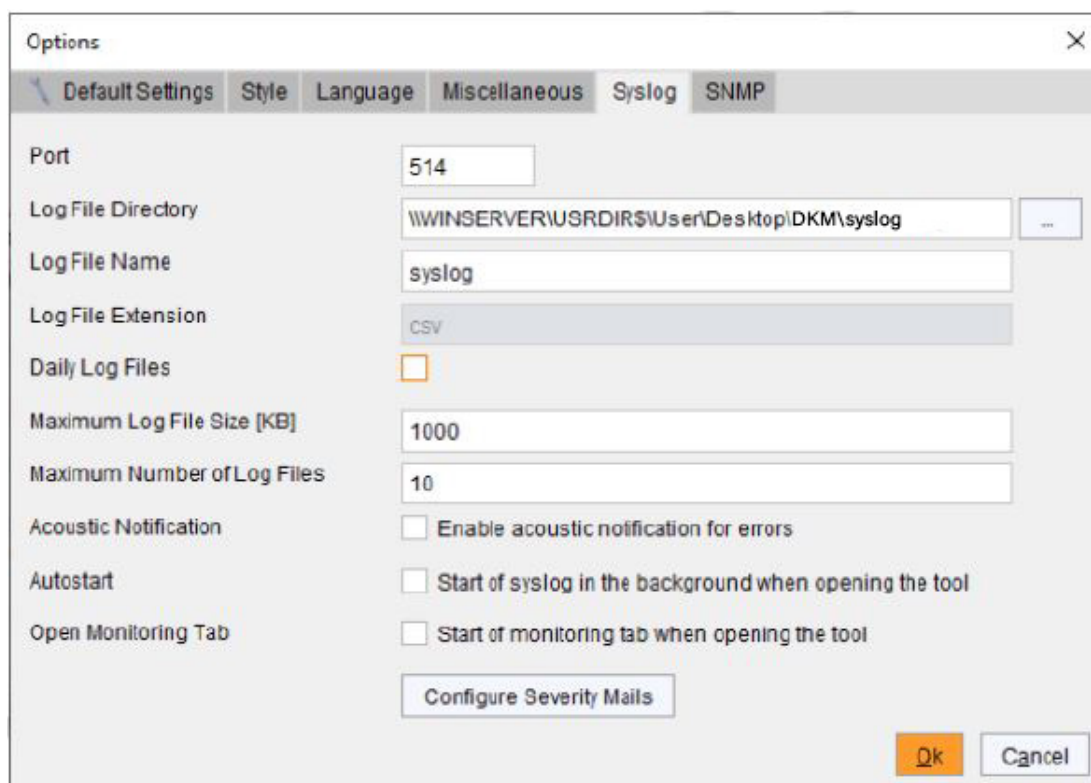


FIGURE 6-4.7.2 MANAGEMENT SYSTEM SETTINGS - SYSTEM - NETWORK - GENERAL

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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
Maximum Number of Log Files	Allowed maximum number of log files
Acoustic Notification	Enables acoustic notification for errors
Autostart	When starting the management software, the syslog function will be started in the background
Open Monitoring Tab	When starting the management software, the monitoring tab will be opened

*When reaching the maximum log file size, a new log file will be created. When reaching the maximum number of log files, the oldest logfile will be overwritten with the new information.

6.4.8 SETTING 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.

NOTICE
For an activation of the SNMP agent function or the SNMP server function, a restart of the matrix is necessary.

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The settings for the SNMP monitoring are set in this menu:

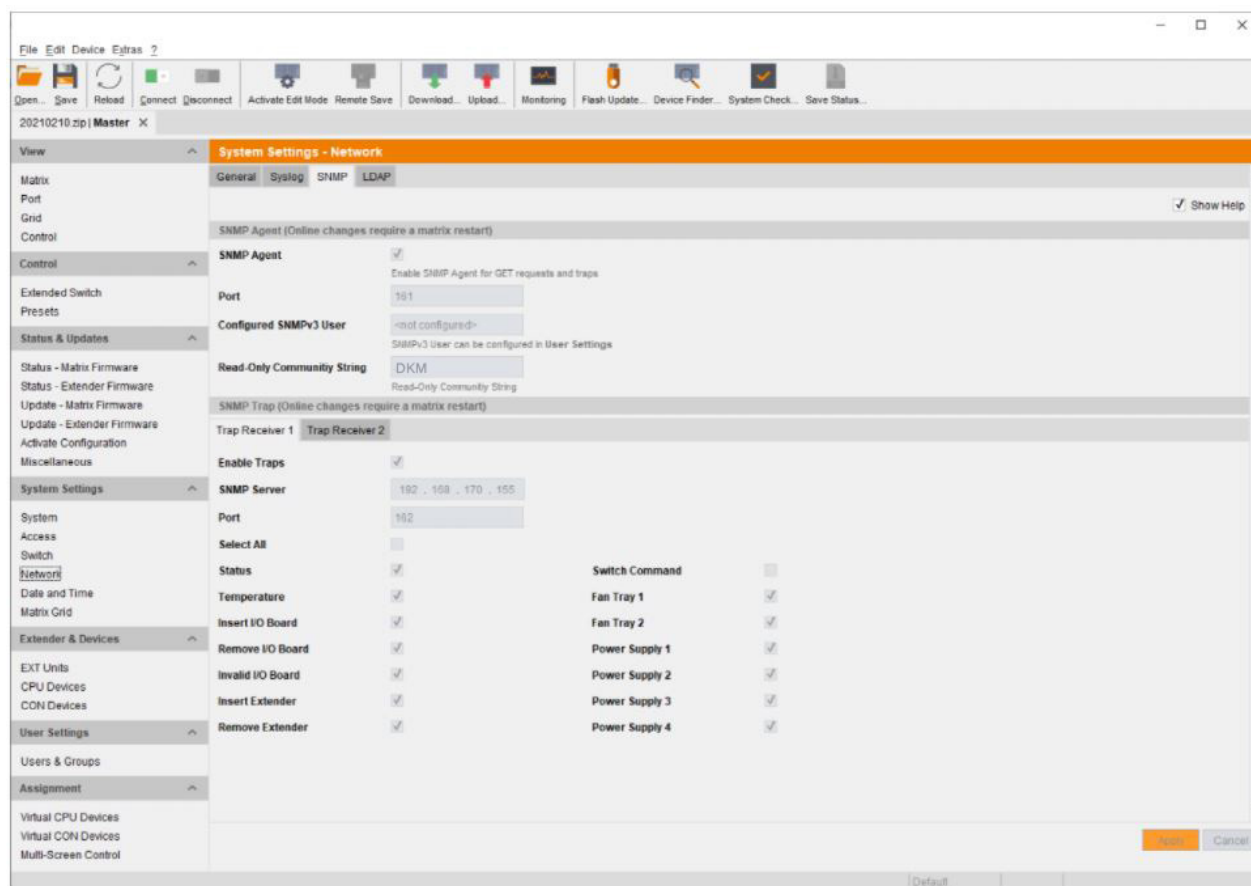


FIGURE 6-4.8.1 MANAGEMENT SYSTEM SETTINGS - SYSTEM - NETWORK - GENERAL

The following parameters can be configured:

SNMP Agent

TRAPS	DESCRIPTION
SNMP Agent	Permission for an active query of the SNMP agent for traps is granted. This activation is a prerequisite for using the SNMP server.
Port	The SNMP port is called up automatically (default: 161).
Configured SNMPv3 User	Name of the SNMP user (default: snmp)
Read-Only Community String	The read-only community string for the MIB file is DKM.

TRAPS	DESCRIPTION
Enable Traps	Activates the active sending of trap messages from the SNMP agent to the SNMP server
SNMP Server	Input of the IP address of the SNMP server in the form "192.168.1.1"
Port	Input of the SNMP port (default: 162)
Select All	Select all traps
Status	Notification about matrix status
Temperature	Notification about temperature within the matrix
Insert I/O Board	Not available*
Remove I/O Board	Not available*
Invalid I/O Board	Notification about a wrong firmware of the I/O board
Insert Extender	<ul style="list-style-type: none"> • Notification about a newly connected extender to the matrix, notification about a switched-on extender • Notification about a newly established link between extender and matrix

SNMP Trap

*The SNMP agent must be activated to activate the SNMP traps.

Remove Extender	<ul style="list-style-type: none">• Notification about a removed extender from the matrix• Notification about a switched off extender• Notification about an interrupted link between extender and matrix
Switch Command	Notification about a performed switching operation at the matrix
Fan Tray #1	Notification about the fan status on the left side of the matrix (interface view)
Fan Tray #2	Notification about the fan status on the right side of the matrix (interface view)
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	Not available*
Power Supply #4	Not available*

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Activating the SNMP agent

To activate the SNMP agent, proceed as follows:

1. Select **System Settings > Network** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the **SNMP** tab in the working area.
4. Click the **SNMP** Agent checkbox within the **SNMP Agent** area.

By activating this option, the permission for an active query of the SNMP agent is granted.

5. Click the **Apply** button to confirm your changes.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

Activating SNMP traps

To activate active reporting of the SNMP traps, proceed as follows:

1. Select **System Settings > Network** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the **SNMP** tab in the working area.
4. Click the **Enable Traps** checkbox within the **SNMP Trap** area.
5. Enter the IP address of the SNMP server under SNMP Server.
6. Click the checkboxes of the desired traps to activate them.
7. Click the **Apply** button to confirm your changes.
8. Click the **Deactivate Edit Mode** menu item in the toolbar.

Setting up SNMP options

Presets for an SNMPv3 user can be set up for the computer on which the management software is operated are set in this menu.

To set or activate the presetting, proceed as follows:

1. Select **Extras > Options** in the menu bar and open the **SNMP** tab.
2. Enter the appropriate data.
3. Click the **Ok** button to confirm your entries.
4. Close the management software and restart it.

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FIGURE 6-4.8.2 MANAGEMENT SYSTEM SETTINGS - SYSTEM - NETWORK - SNMP

To activate the SNMP agent, proceed as follows:

TRAPS	DESCRIPTION
Port	Activates the active sending of trap messages from the SNMP agent to the SNMP server
Log File Directory	Input of the IP address of the SNMP server in the form "192.168.1.1"
Log File Name	Input of the SNMP port (default: 162)
Log File Extension	Select all traps
Daily Log Files	Notification about matrix status
Maximum Log File Size [KB]	Notification about temperature within the matrix
Maximum Number of Log Files	Not available*
Autostart	When starting the management software, the SNMP function will be started in the background
Open Monitoring Tab	When starting the management software, the monitoring tab will be opened

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 computer on which the management software is operated (SNMP server). The SNMP server authenticates itself with the agent using this login data.

NOTICE

Failed SNMP logging

If the login data differs between the matrix (set up in the User menu) and the SNMP server, no SNMP traps are transmitted.
Ensure the login data (username and password) in both settings are identical (see chapter 5.2 page 79).

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

1. Select **Extras > Options** in the menu bar and open the **SNMP** tab.
 1. Click the **Manage SNMPv3 Users** button.
- A list appears with already created SNMPv3 users.
2. Click the **Add User** button.
- A dialog window appears.
3. Enter the required data and click the **Ok** button to confirm your entries.
 4. Click the **Close** button to close the users list.
 5. Click the **Ok** button in the **SNMP** tab to confirm your settings.
 6. Close the management software and restart it.

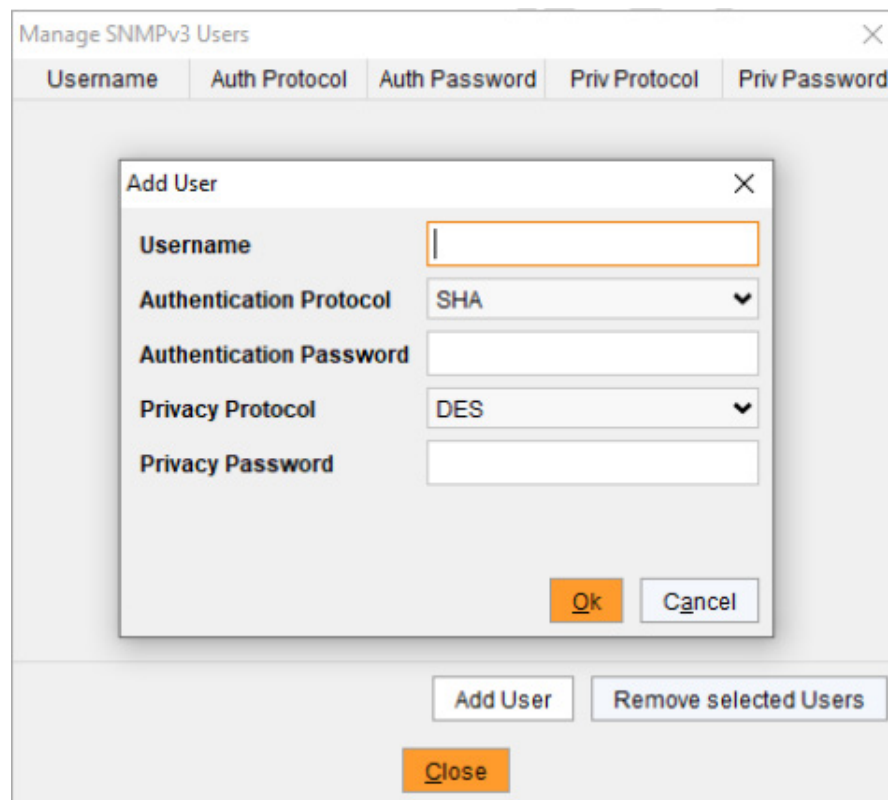


FIGURE 6-4.8.3 MANAGEMENT SOFTWARE MENU - EXTRAS- SNMP - MANAGE SNMPV3 USERS - ADD USER

TRAPS	DESCRIPTION
Username	Activates the active sending of trap messages from the SNMP agent to the SNMP server
Authentication Protocol	Input of the IP address of the SNMP server in the form "192.168.1.1"
Authentication Password	Input of the SNMP port (default: 162)
Privacy Protocol	Select all traps
Privacy Password	Notification about matrix status

6.4.9 SETTING LDAP CONFIGURATION

The general LDAP settings are set in this menu.

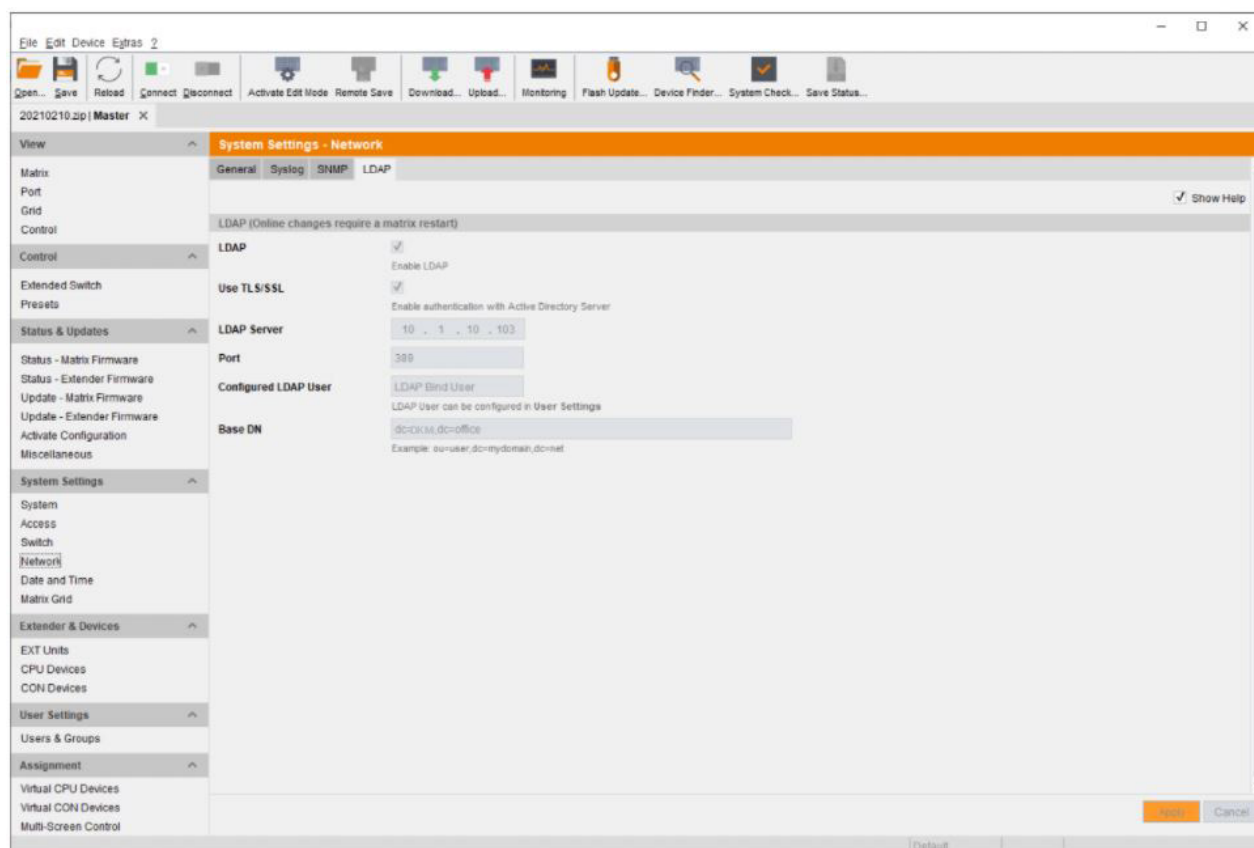


FIGURE 6-4.9.1 MANAGEMENT SOFTWARE MENU - SYSTEM SETTINGS - NETWORK - LDAP

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The following parameters can be configured:

FIELD	ENTRY	DESCRIPTION
LDAP	Activated	LDAP for the request of information from a user administration is active
	Deactivated	Function not active (default)
User TLS/SSL	Activated	Enable a secured transmission (transport layer security) for the Active Directory access.
	Deactivated	Function not active (default)
LDAP Server	Byte	Input of the IP address for the LDAP-Servers in the form "192.168.1.1" and the LDAP port (Default: 389)
Configured LDAP User	Text	Input of the LDAP Base DN according to the existing structure of the user directory
LDAP Base DN	Text	Input of the LDAP Base DN according to the existing structure of the user directory

6.4.10 SETTING DATE AND TIME

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

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

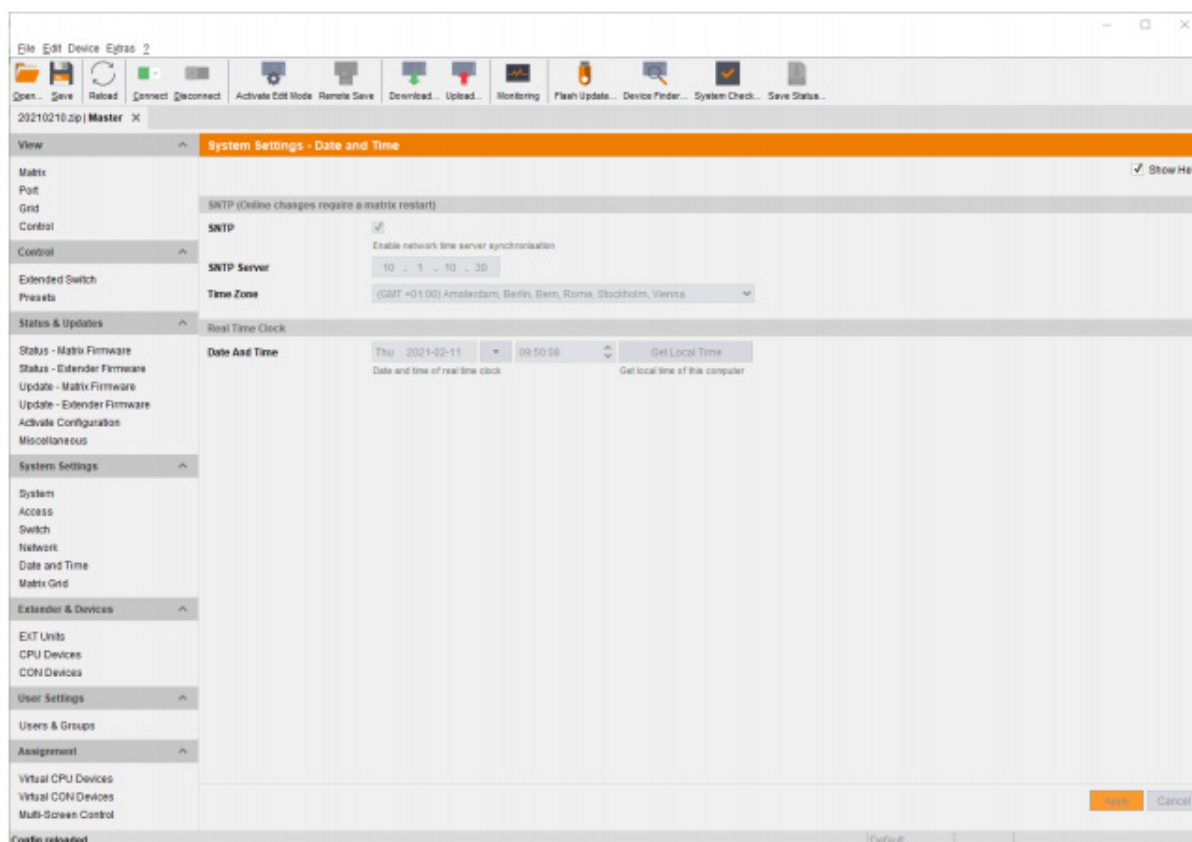


FIGURE 6-4.10.1 MANAGEMENT SOFTWARE MENU - SYSTEM SETTINGS - DATE AND TIME

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The following parameters can be configured:

SNTP

FIELD		DESCRIPTION
Date*		Date and time of real time clock
Get Local Time		Get local time of this computer

Real Time Clock

FIELD	DESCRIPTION
Date*	Date and time of real time clock
Get Local Time	Get local time of this computer

Configuring the time server

To configure a time server, proceed as follows:

1. Select **System Settings > Date and Time** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click 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 in the **Time Zone** field.
6. Click the **Apply** button to confirm your settings.
7. Restart the matrix.

The system time is now provided by the SNTP server.

8. Click the **Deactivate Edit Mode** menu item in the toolbar.

Configuring the real time clock without time server

To set the real time clock without using SNTP, proceed as follows:

1. Select **System Settings > Date and Time** in the task area.
2. Click the **Activate Edit Mode** menu item 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 the **Get Local Time** button.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

FIGURE 2-14. BACK PANEL

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6.5 USER SETTINGS

6.5.1 SETTING USER ACCESS

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

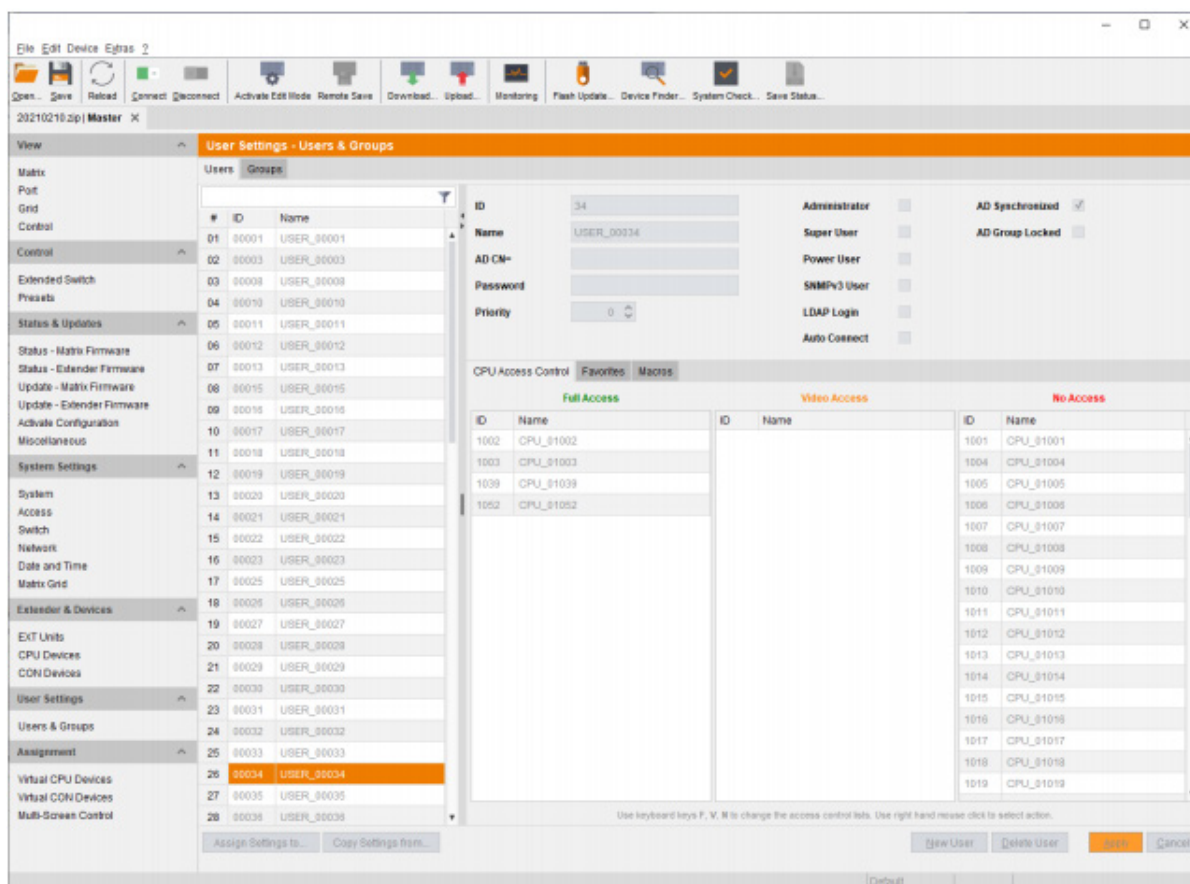


FIGURE 6-5.1.1 MANAGEMENT SOFTWARE MENU - USER SETTINGS - USERS & GROUPS - USERS

The following functions are available:

FIELD	DESCRIPTION
New User	Open a new user configuration
Delete User	Delete an existing user
Apply	Confirm the changes of an existing user or the creation of a new user account
Cancel	Reject changes

The following keyboard commands are available:

SNTP

FIELD	DESCRIPTION
<F>	Add CPU to list Full Access
<V>	IAdd CPU to list Video Access
<N>	Add CPU to list No Access

The following parameters can be configured:

OPTION	ENTRY	DESCRIPTION
ID	Numerical	Ident number of the user
Name	Text	Username (case sensitive) Note: A username can consist of up to 32 characters.
AD CN=	Text	Common name of a right group of the Active Directory
Password	Text	User password (case sensitive, input of minimum 8 characters up to 16 characters)
Priority	Value	Priority of the user
Administrator	Activated	<ul style="list-style-type: none"> • User has administrator rights • Permission for system configuration and all switching operations
	Deactivated	Function not active (default)
Super User	Activated	Permission to switch any console to any CPU in Extended Switching
	Deactivated	Function not active (default)
Power User	Activated	<ul style="list-style-type: none"> • User has user rights • Permission to switch consoles to CPUs in Extended Switching according to the CON or User ACL, but not in Private Mode
	Deactivated	Function not active (default)
SNMPv3 User	Activated	Permission to use SNMPv3 (encrypted)
	Deactivated	SNMPv3 is not enabled
LDAP Logic	Activated	LDAP User for accessing the Active Directory
	Deactivated	Function not active (default)

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Auto Connect	Activated	Re-establish the previous user connection after login
	Deactivated	Function not active
AD Synchronized	Activated	Enable synchronization with the Active Directory Note: LDAP Login has to be activated to use the synchronization
	Deactivated	Function not active (default)
AD Group Locked	Activated	Lock synchronization of group attribute for an Active Directory user. This setting is required for a manual change of user groups for a specific Active Directory user.
	Deactivated	Function not active (default)

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 on page 79).

Creating a new User Account

To create a new user, proceed as follows:

1. Select User **Settings > Users & Groups** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **New User** button.
4. Select a template of an existing user if applicable (**Choose template**).
5. Click the **Apply** button.
6. Set a username.
7. Set a password.
8. Set general access permissions.
9. Set user permissions for CPU access (paste function).
10. Set user favorites for OSD access.
11. Click the **Apply** button to confirm the new user settings.
12. Click the **Deactivate Edit Mode** menu item in the toolbar.



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Configuring User Access Rights

To configure a user access rights for CPUs, proceed as follows:

1. Select **User Settings > Users & Groups** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select a user in the **Users** list.
4. By clicking with the secondary mouse button once on a CPU in one of the respective access lists (**Full Access, Video Access and No Access**) a context menu for selection will appear in which the respective CPU can be moved, and the access rights can be changed. Alternatively, you can type the key commands <F>, <V> or <N> to set the respective access rights.
5. Click the **Apply** button to confirm the changes.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

6.5.2 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 chapter 7.2.1, page 274).

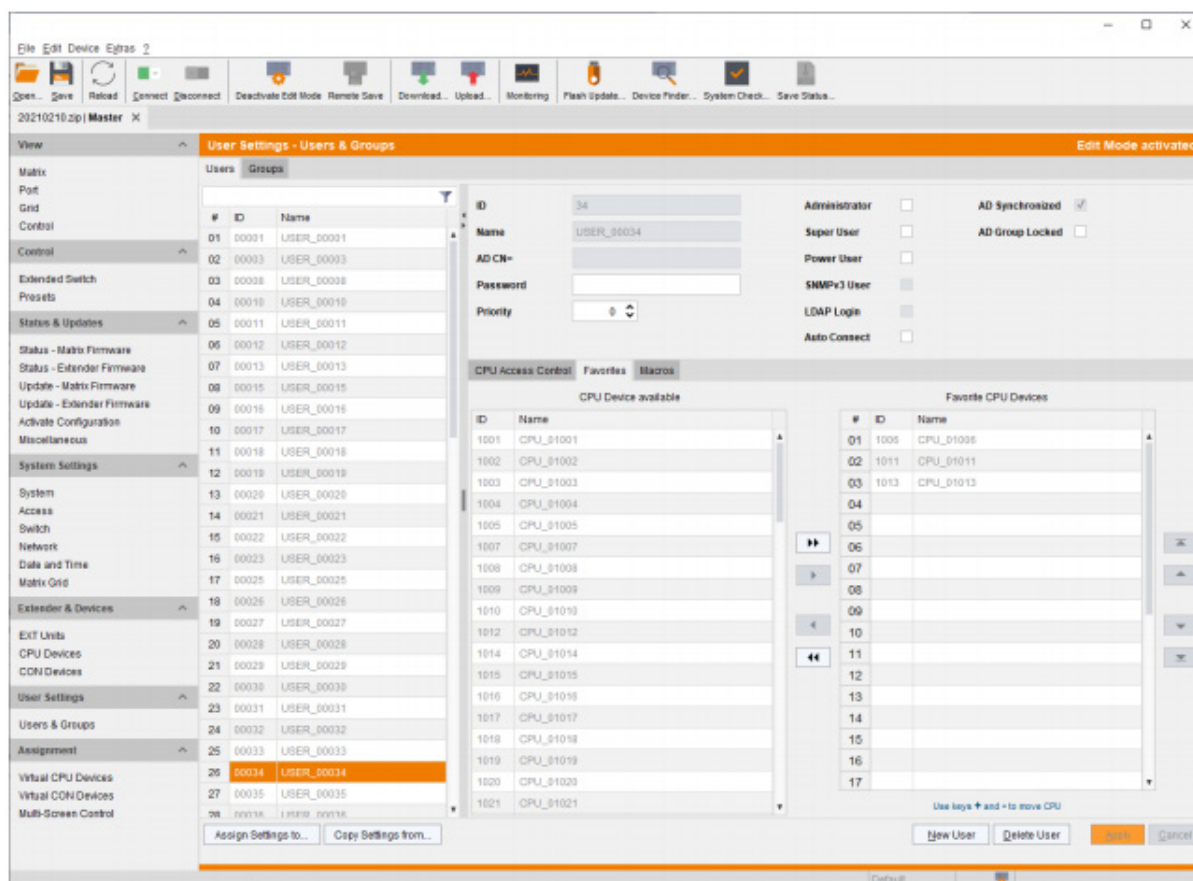


FIGURE 6-5.2.1 MANAGEMENT SOFTWARE MENU - USER SETTINGS - USER & GROUPS - USERS FAVORITES

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Creating a Favorites List for Users

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

1. Select User **Settings> Users & Groups** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
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 the <Ctrl> key at the same time, more than one CPU Device can be highlighted.
6. Click the button to move the highlighted CPU Devices to the favorites list. By clicking the button, 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 the button. If you click the button, all CPU Devices will be removed from the favorites list.
8. Click the or button to change the order of the CPU Devices within the favorites list. Or press the <+> or <-> key to change the order of the CPU Devices within the favorites list.
9. Click the **Apply** button to confirm the changes.
10. Click the **Deactivate Edit Mode** menu item in the toolbar.

Assigning Settings to other Users

To assign settings of a user to other users, proceed as follows:

1. Select User **Settings> Users & Groups** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **Favorites** tab in the working area.
4. Select the user whose settings are to be assign to another user.
5. Click the **Assign Settings to** button below the user list.

A query to select the settings appears.

6. Click the checkboxes for the desired settings.
7. Click the **Next** button.

FIGURE 2-14. BACK PANEL



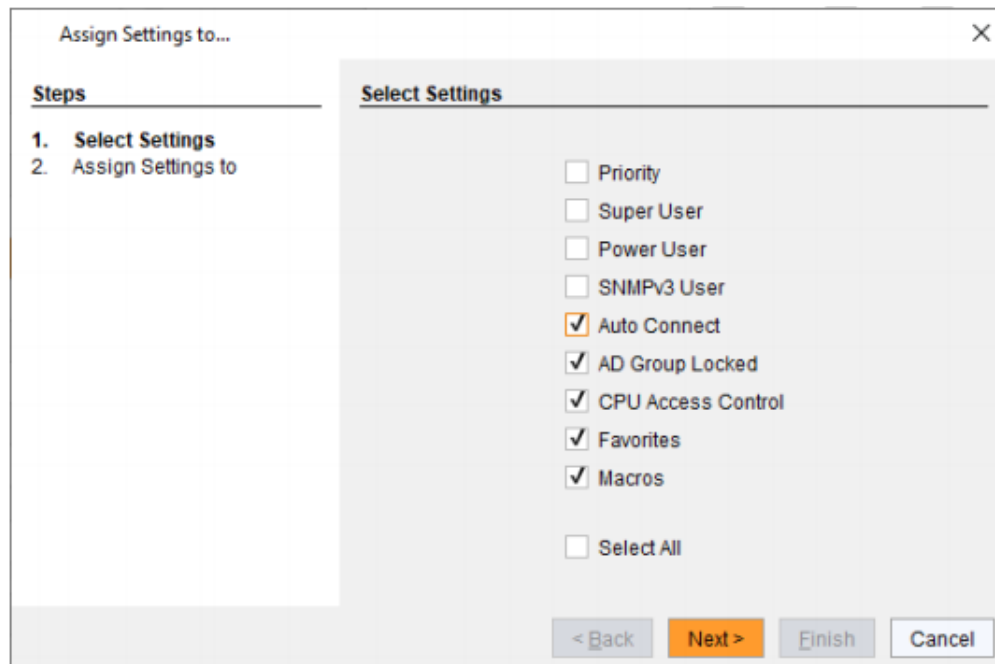


FIGURE 6-5.2.2 MANAGEMENT SOFTWARE MENU - USERS & GROUPS - USERS - SELECT SETTINGS

A query to start the assignment appears.

8. Select the user in the **Available to assign settings to** list to which the settings are to be assigned.

By pressing and holding down the <Ctrl> key at the same time, more than one user can be highlighted.

9. Click the button to move the highlighted user to the **Assign settings to** list. By clicking the button, all users will be moved to the **Assign settings to** list.

10. To remove highlighted user from the **Assign settings to** list, click the button. If you click the button, all users will be removed from the **Assign settings to** list.

11. Click the Finish button.

The settings are immediately assigned to the selected users.

12. Click the **Deactivate Edit Mode** menu item in the toolbar.

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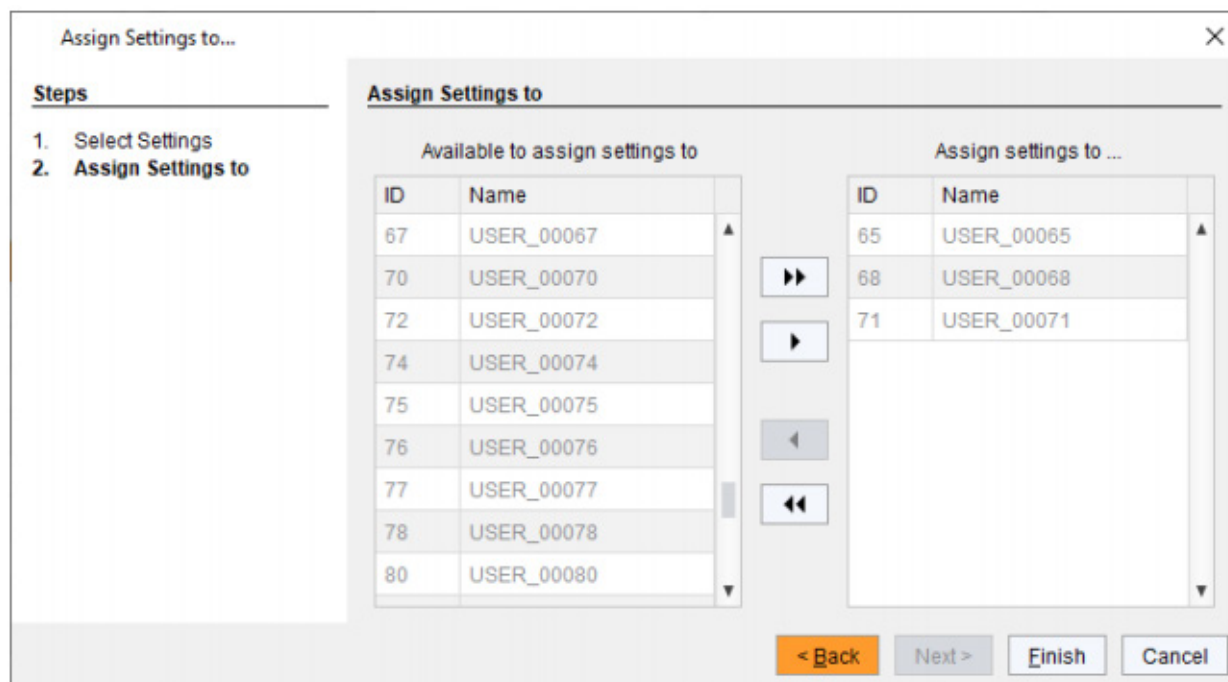


FIGURE 6-5.2.3 MANAGEMENT SOFTWARE MENU - USERS & GROUPS - USERS - ASSIGN SETTINGS

Copying Settings from another User

To copy settings from a user to another user, proceed as follows:

1. Select **Extender & Devices > EXT Units in the task area.**
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the user to which the settings are to be copied. By pressing and holding down the <Ctrl> key at the same time, more than one user can be highlighted.
4. Click the **Copy Settings from** button below the user list.
A query to select the settings appears.
5. Click the checkboxes for the desired settings.
6. Click the **Next** button.

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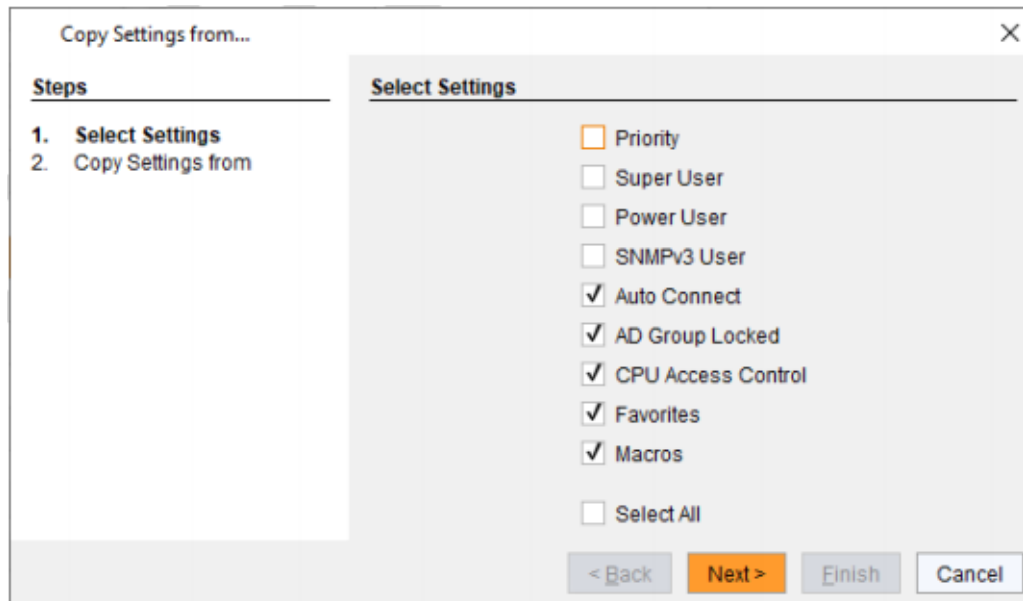


FIGURE 6-5.2.4 MANAGEMENT SOFTWARE MENU - USERS & GROUPS - USERS - SELECT SETTINGS

A query to start the assignment appears.

7. Select the user in the selection list from which the settings are to be copied.
8. Click the **Finish** button.

The settings are immediately copied to the selected user.

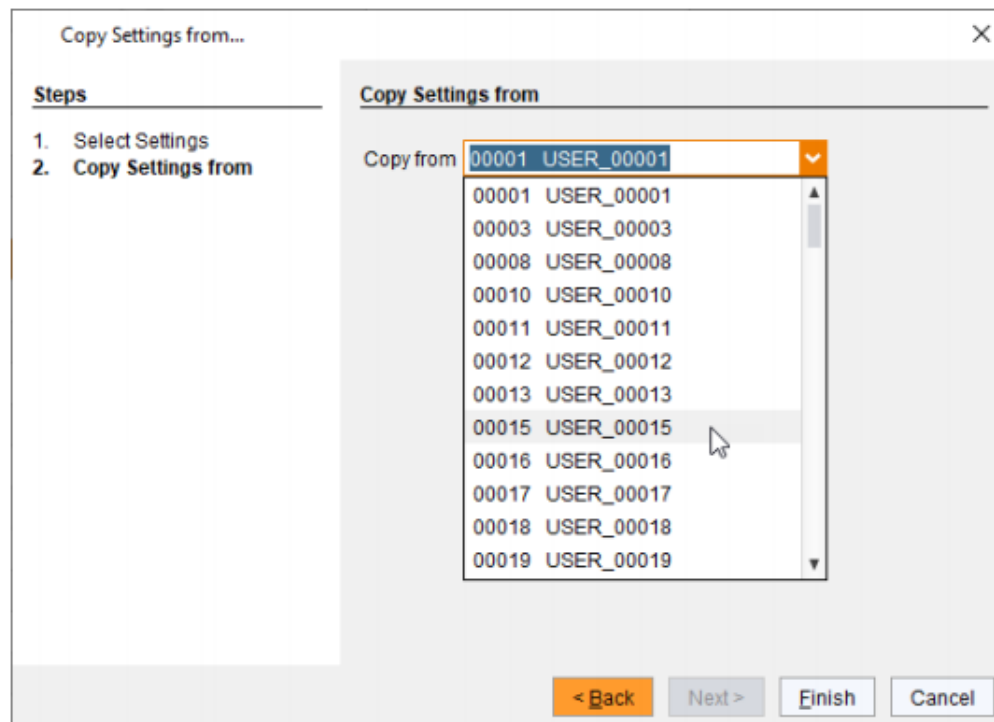


FIGURE 6-5.2.5 MANAGEMENT SOFTWARE MENU - USERS & GROUPS - USERS - COPY SETTINGS

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

6.5.3 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 (see chapter 7.2.2, page 273).

*To execute user macros the user has to be logged in to the matrix.

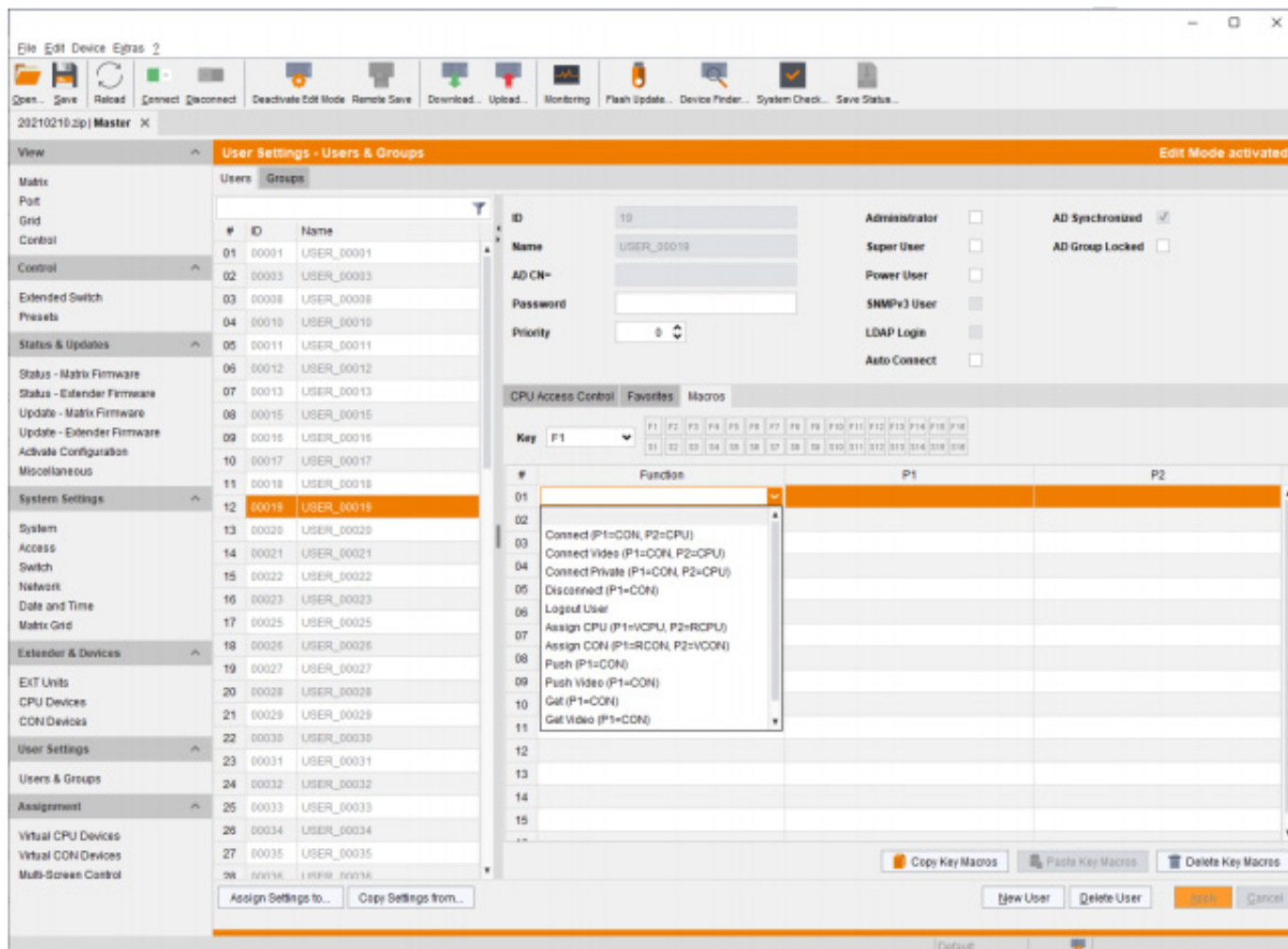


FIGURE 6-5.3.1 MANAGEMENT SOFTWARE MENU - USER SETTINGS - USERS - MACROS

FIELD	SELECTION	DESCRIPTION
Function (01 to 16)	Connect (P1=CON, P2=CPU)	Set a bidirectional connection from CON Device P1 to CPU Device P2
	Connect Video (P1=CON, P2=CPU)	Set a Video Only connection from CON Device P1 to CPU Device P2
	Disconnect (P1=CON)	Disconnect the CON Device P1
	Logout User	Logout the current user
	Set Real CPU (P1=VCP, P2=RCPU)	Assign a Virtual CPU Device to a Real CPU Device
	Logout User	Assign a Real CON Device to a Virtual CON Device
	Set Real CPU (P1=VCP, P2=RCPU)	Assign a Virtual CPU Device to a Real CPU Device
	Set Virtual CON (P1=RCON, P2=VCON)	Assign a Real CON Device to a Virtual CON Device
	Push (P1=CON)	The user's KVM connection is forwarded to CON Device P1 and is changed to a Video Only connection.
	Push Video (P1=CON)	The video signal of the current connection (KVM or Video Only) is forwarded to CON Device P1. The user's connection remains unchanged (KVM or Video Only).
	Get (P1=CON)	The user's CON Device gets a KVM 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 (KVM or Video Only).
	Login User console P2	Login a certain user P1 at CON Device P2
P1	CON or CPU Device	Name of CON Device or CPU Device
P2	CON or CON Device	Name of CON Device or CPU Device

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

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

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FIELD	DESCRIPTION
New Group	Create a new group
Delete User	Delete an existing group
Apply	Apply changes
Cancel	Reject changes

BUTTON	FUNCTION
New Group	Assign selected user to a user group
Delete User	Assign all available users to a user group
Apply	Remove selected user from a user group
Cancel	Remove all users from a user group

Creating a User Group

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

1. Select User **Settings > Users & Groups** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **Groups** tab in the working area.
4. Click the **New Group** button.

A selection dialog appears.

Select **Create a standard Group** in the selection box.

5. Click the **Apply** button.
6. Enter a group name into the field **Name**.
7. Click the **Apply** button to confirm the group creation.
8. Click the **Deactivate Edit Mode** menu item in the toolbar.

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Assigning a User Group

To assign a user to a group, proceed as follows:

1. Select User **Settings > Users & Groups** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **Groups** tab in the working area.
4. Select the User Group to be assigned with a user.
5. Select a user in the list **User/Group available** that should be assigned to the User Group. By pressing and holding down the <Ctrl> key at the same time, more than one User can be highlighted.
6. Click the button to move the highlighted user to the User Group list (**User/Group assigned**). By clicking the button, all users from the list **User/Group available** will be moved to the list **User/Group assigned**.
7. To remove highlighted users from the User Group list, click the button. If you click the button, all Users will be removed from the User Group list.
8. Click the **Apply** button to confirm the group creation.
9. Click the **Deactivate Edit Mode** menu item in the toolbar.
The user is assigned to the User Group now.

6.6 MAIN EXTENDER SETTINGS

6.6.1 EXTENDER SETTINGS

The matrix automatically recognizes every physical extender module with a direct cable connection to the matrix, reads their serial number and creates Ext Units automatically. This is the Flex Port function of the matrix. Dual-Head KVM extenders will be recognized as two independent Ext Units.

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

All Ext Units are managed in this menu. This includes the creation of new Ext Units and the deletion of existing Ext Units.

NOTICE

The connection of a fixed port extender unit (e.g., USB 2.0) to a Flex Port can cause unintended results. Ext Units for USB 2.0 extender modules have to be created manually (see chapter 6.6.5, page 174).



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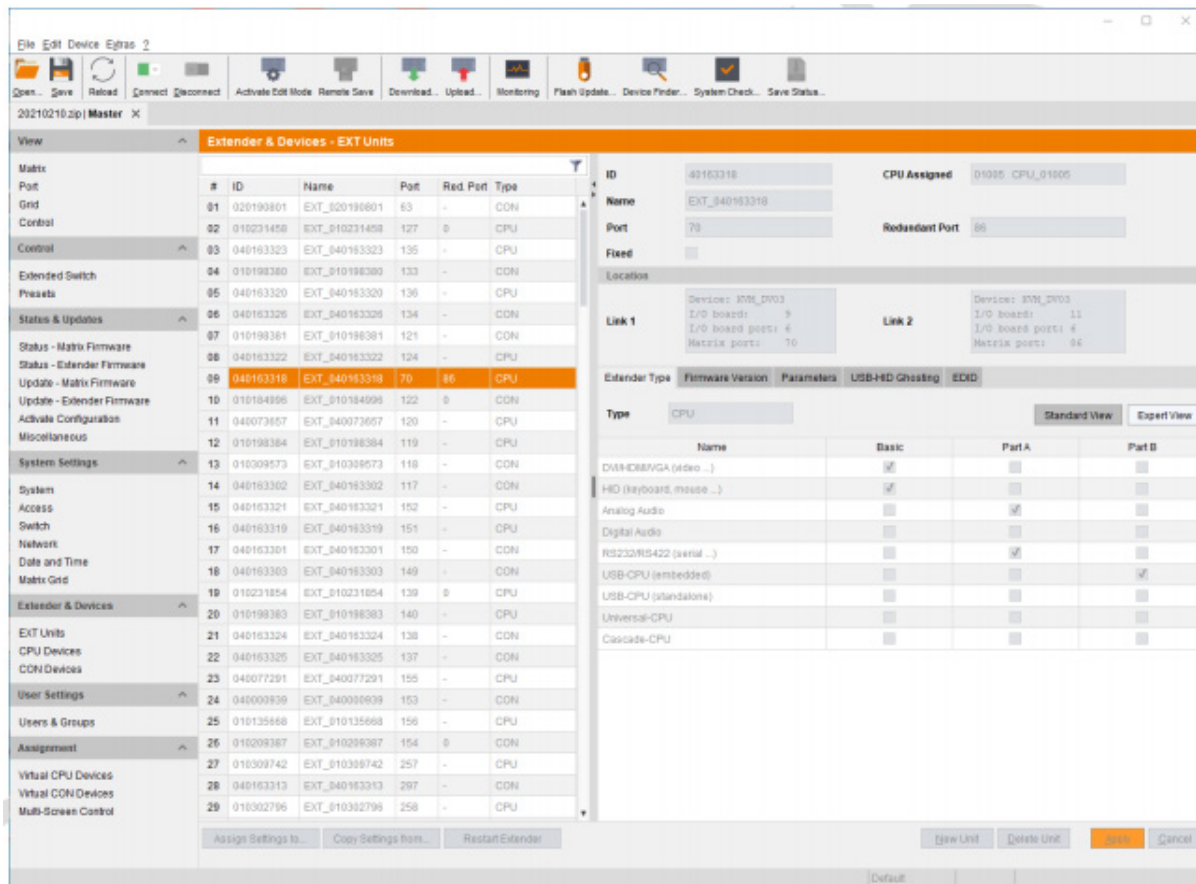


FIGURE 6-5.4.2 MANAGEMENT SOFTWARE MENU - USER SETTINGS - USERS -& GROUPS - GROUPS

The following parameters are recognized automatically:

FIELD	ENTRY	DESCRIPTION
ID	Text	Numerical value of the extender unit ID (KVM extenders: ID is provided by the extender module (serial number) and cannot be changed)
Name	Text	Name of the extender unit
Port	1 to 160 (depending on the matrix)	Port number of the extender unit



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FIELD	ENTRY	DESCRIPTION
Fixed	Activated	Numerical value of the extender unit ID (KVM extenders: ID is provided by the extender module (serial number) and cannot be changed)
	Deactivated	Function not active
CPU/CON Assigned	-	Assigned CPU Device or CON Device
Redundant Port	1 to 160 (depending on the matrix)	Port number of the extender unit

6.6.2 EXTENDER TYPE

To display extender types, proceed as follows:

1. Select **Extender & Devices > EXT** Units in the task area.
2. Select the extender unit to be displayed.

The extender type is displayed on the right side of the working area.

- The **Basic** column stands for the extender of the selected extender unit.
- The **Part A** or **Part B** column stand for the add-on module of the selected extender unit.

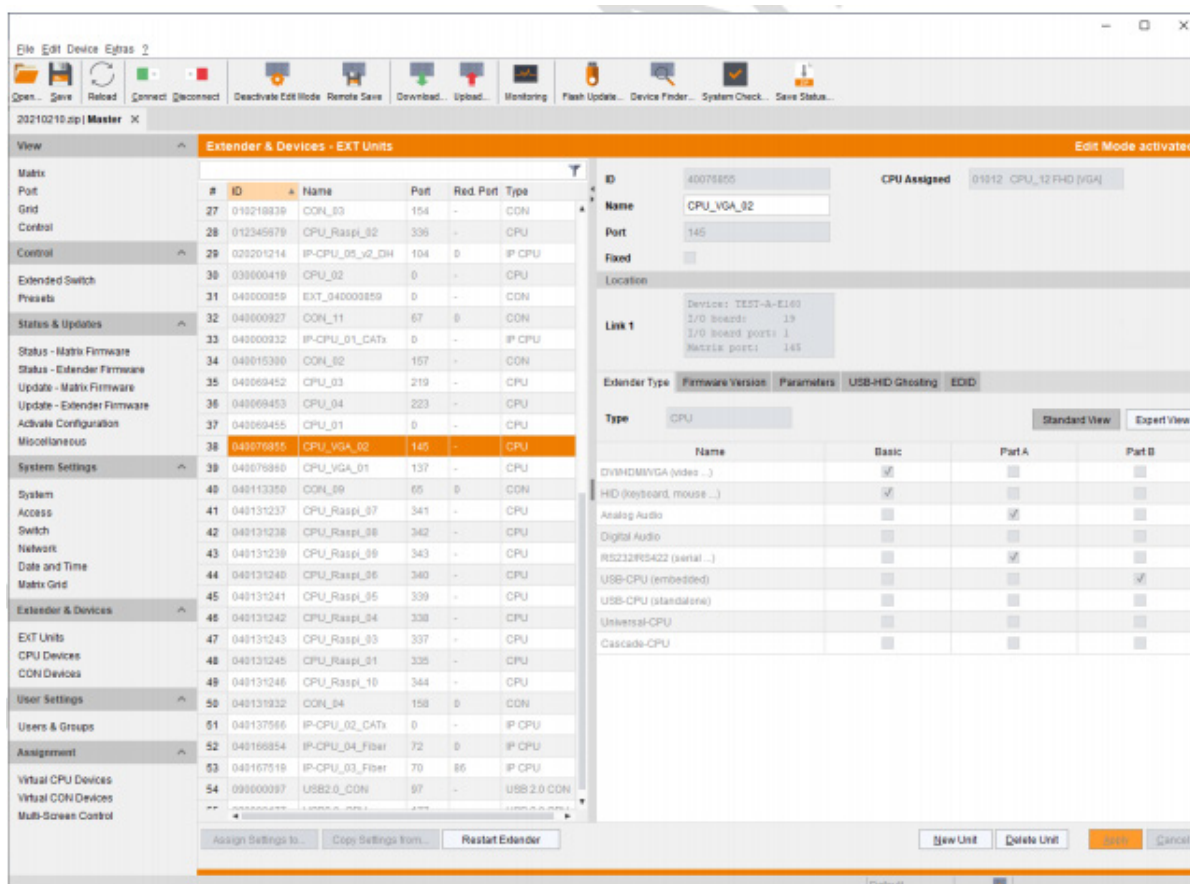


FIGURE 6-6.2.1 MANAGEMENT SOFTWARE MENU - EXT UNITS - EXPERT VIEW - EXTENDER TYPE

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6.6.3 EXTENDER FIRMWARE VERSION

To display extender unit information or to modify settings, proceed as follows:

1. Select **Extender & Devices > EXT Units** in the task area.
2. Select the extender unit to be displayed.
3. Click the **Firmware Version** tab on the right side of the working area.

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

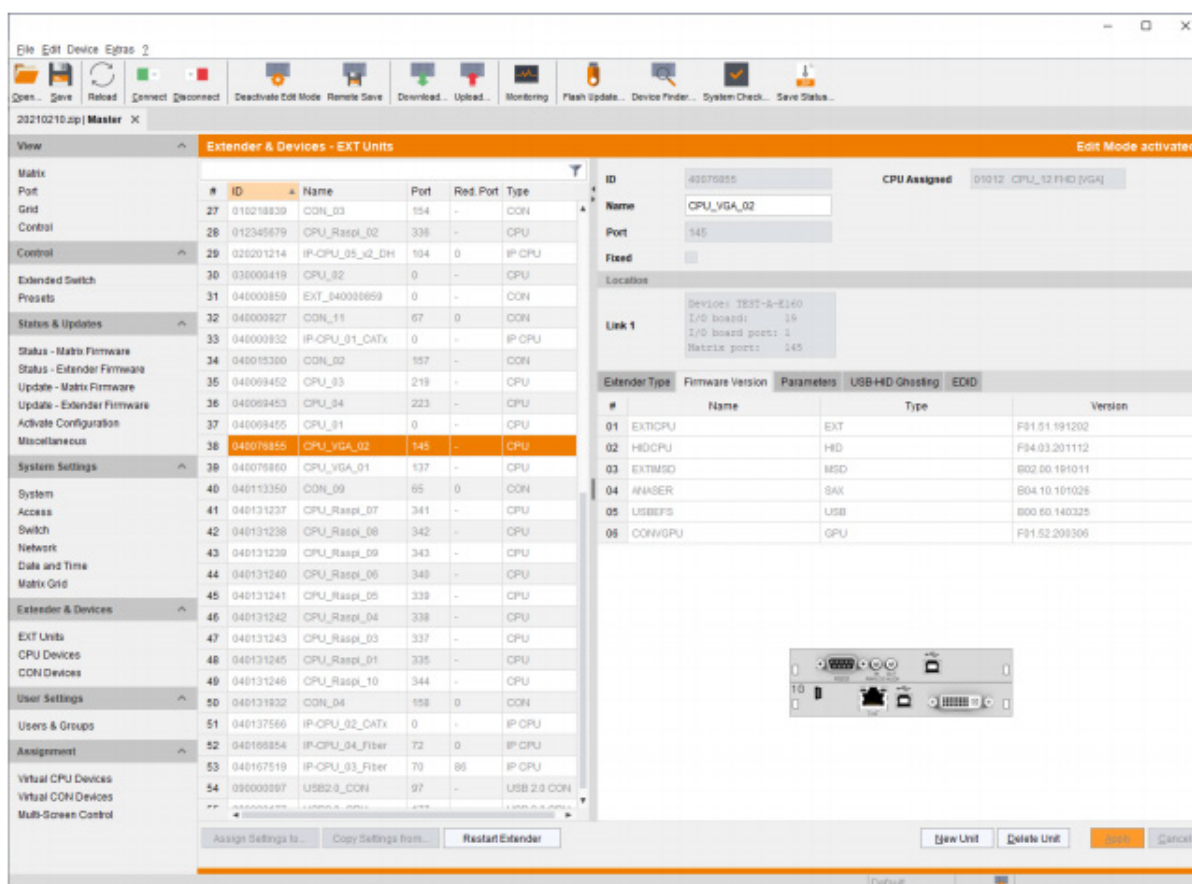


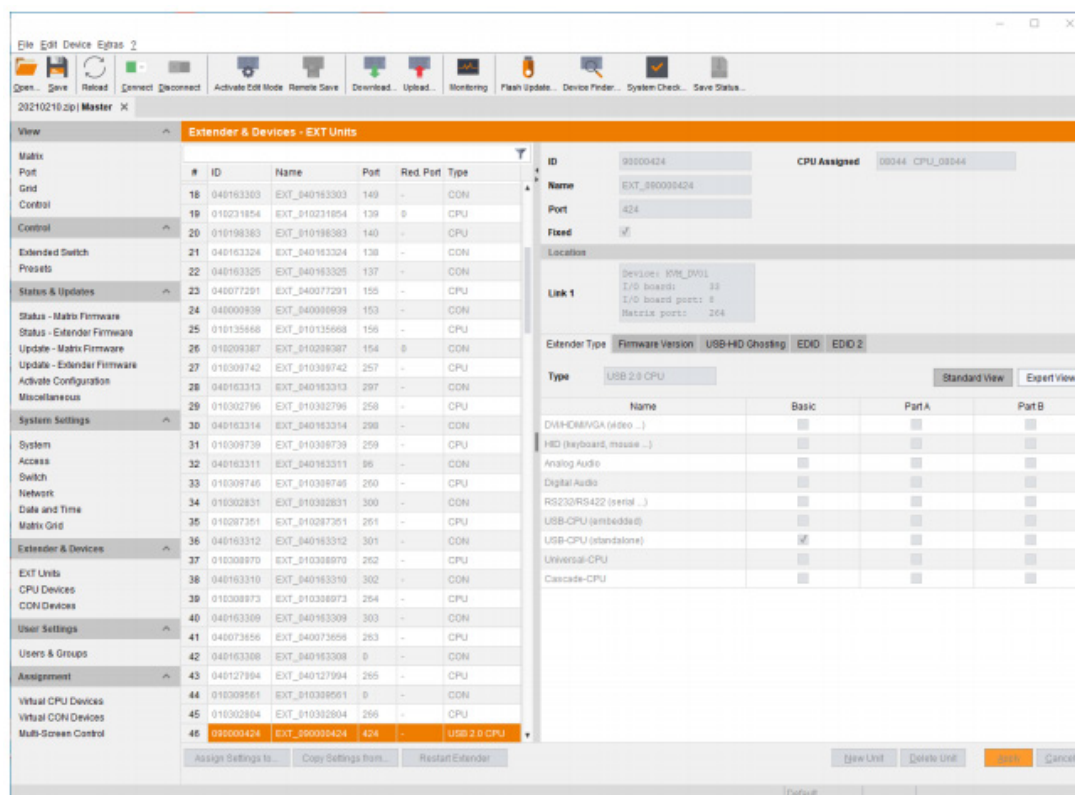
FIGURE 6-6.3.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - FIRMWARE VERSION

*Add-on modules are shown together with the associated KVM extender in one extender unit.

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6.7 CREATING AN USB 2.0 EXTENDER

This chapter helps you to configure and use your USB 2.0 Ext Units. USB 2.0 Ext Units can be configured for independent switching or can be assigned to already existing KVM extenders.



To configure a USB 2.0 extender unit, proceed as follows:

1. Select **Extender & Devices > EXT Units** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **New Unit** button.

A selection dialog appears.

4. Select **Choose template** in the selection box if you want to use a template for a **USB 2.0 CON Unit** or a **USB 2.0 CPU Unit**.

An extender with an eight-digit ID will be created, starting with digit **9**.

5. Enter an appropriate name to the extender in the **Name** field.
6. Enter the port number of the matrix physically connected to the USB 2.0 extender unit into the **Port** field.
7. Click the **Apply** button to confirm the settings.

A dialog appears to restart the I/O board.

8. Click the **Yes** button to restart the I/O board to activate the USB fixed port for the new unit.

FIGURE 6-7.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - EXTENDER TYPE - USB 2.0

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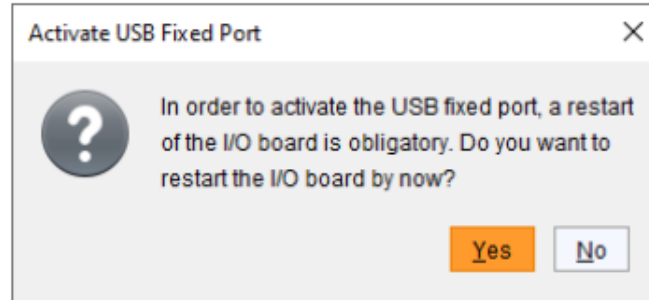


FIGURE 6-7.1.1 MANAGEMENT SOFTWARE DIALOG - ACTIVE USB FIXED PORT

After restart of the I/O board, the parameters and settings of the USB 2.0 extender module are shown in the working area of the respective extender unit.

9. The USB 2.0 CPU/CON extender unit now 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 chapter 5.8.1, page 111,
 - for a **CON Device** see chapter 5.9.3, page 122
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 chapter 6.4.5, page 162).
11. Restart all I/O boards on which USB 2.0 extenders have been configured or alternatively restart the matrix. The USB 2.0 Ext Units are now configured and can be used.

*Manually created Ext Units are always set as fixed port extenders. 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 extender unit, a restart of the I/O board is necessary.

6.7.1 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.

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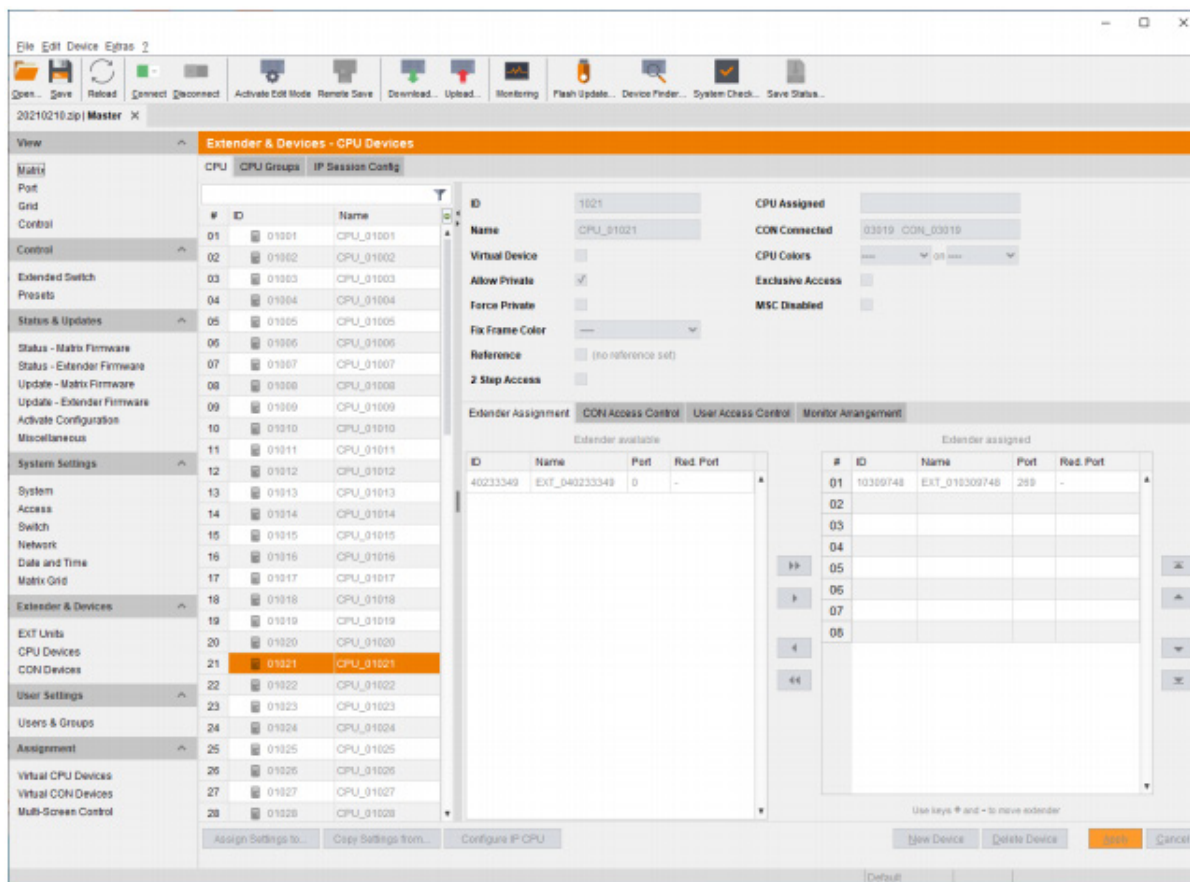


FIGURE 6-8.1.6 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - ASSIGNMENT FINISHED

FIELD	DESCRIPTION
New Device	Create a new CPU Device
Delete	Delete a new CPU Device
Apply	Confirm a created CPU Device
Cancel	Reject changes
	Assign selected Ext Units to a CPU Device
	Assign all available Ext Units to a CPU Device
	Remove selected Ext Units from a CPU Device
	Change assignment number of extender unit upwards
	Change assignment number of extender unit downwards
Deactivate	Change assignment number of extender unit to first position
Reset	Change assignment number of extender unit to last position
	Change assignment number of extender unit upwards
	Change assignment number of extender unit downwards

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The following parameters can be configured:

OPTION	ENTRY	DESCRIPTION
ID	Text	Ident number of the user
Name	Text	Username (case sensitive) Note: A username can consist of up to 32 characters.
Virtual Device allow Private	Activated	Allow switching to the respective CPU Device in Private Mode
	Deactivated	User password (case sensitive, input of minimum 8 characters up to 16 characters)
Force Private	Activated	Force switching to the respective CPU Device only in Private Mode
	Deactivated	Function not active (default)
Fix Frame Color	Selection list	Force showing a colored frame when switching to the respective
Reference	Activated	Activate a reference CPU Device that inherits both CPU Device and extender unit settings to any CPU Unit that is connected to the matrix for the first time. Note: It is recommended to activate the reference setting for one single CPU Device only.
	Deactivated	Function not active (default)
2 Step Access	Activated	Open a pop-up window after switching to the particular CPU Device. In the background a Video Only connection will be established. A confirmation in the pop-up window is required to establish a Full Access connection to the CPU Device.
	Deactivated	Function not active (default)
CPU Assigned	-	ID and name of the assigned Virtual CPU Device, cannot be changed, is retrieved automatically
CON Connected	-	ID and name of the connected CON Device, cannot be changed, is retrieved automatically
CPU Colors	Selection list	The CPU Device name will be highlighted according to the color setting for text and background. You can select between 16 colors.
Exclusive Access	Activated	Activate 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	Multi-Screen Control function deactivated
	Deactivated	Multi-Screen Control function activated



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Creating a new CPU Device

To create a new CPU Device, proceed as follows:

1. Select **Extender & Devices > CPU Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **New Device** button.
A selection dialog appears.
4. Select a real CPU (**Create a standard CPU**) or a virtual CPU (**Create a virtual CPU**) or a template of an existing CPU (**Choose template**) in the **Choose template** selection box.

Note: A template is only available if there is at least one existing CPU Device.

5. Click the **OK** button.

A new CPU Unit will be created.

6. Determine all parameters that are relevant for the CPU Device.
7. Click the **Apply** button to confirm the creation of the CPU Device.
8. Click the **Deactivate Edit Mode** menu item in the toolbar.

Accessing a new CPU via Matrix

To access a new CPU Device via matrix, an assignment of one or more CPU Ext Units is required. Proceed as follows:

1. Select **Extender & Devices > CPU Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the new CPU Device in the **CPU Devices** list.
4. Select an extender unit in the **Extender available** list that you want to assign to the CPU Group.

By pressing and holding down the <Ctrl> key at the same time, more than one extender unit can be highlighted.

5. Click the button to move the highlighted Ext Units to the Extender assigned list. By clicking the button, all available Ext Units from the **Extender available** list will be moved to the **Extender assigned** list.

The assignments are displayed in the **Extender assigned** list.

6. Click the or button to change the order of the Ext Units within the **Extender assigned** list.
Or press the <+> or <-> key to change the order of the Ext Units within the **Extender assigned** list.
7. Click the **Apply** button to confirm the assignment.
8. Click the **Deactivate Edit Mode** menu item in the toolbar.

Removing an Extender Unit Assignment



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To remove an extender unit assignment, proceed as follows:

1. Select **Extender & Devices > CPU Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select a CPU Device in the **CPU Devices** list.
4. Select one or more Ext Units in the **Extender assigned** list.
5. To remove highlighted Ext Units from the **Extender assigned** list, click the button. If you click the button, all CPU Devices will be removed from the **Extender assigned** list.
6. Click the **Apply** button to confirm the removal.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

6.7.2 SETTING CPU GROUPS

The KVM matrix allows 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 in a matrix grid. The configuration of CPU groups at the same times increases the clarity of the configuration.

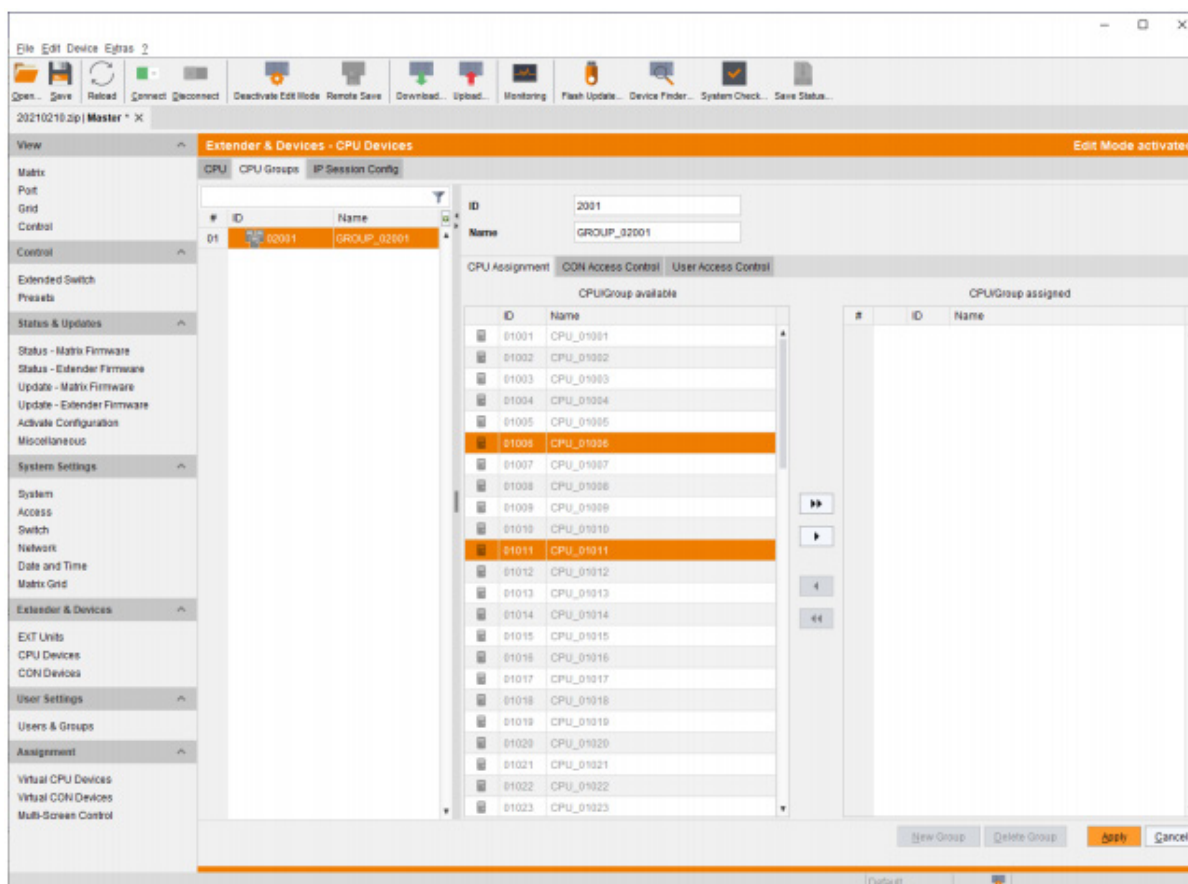


FIGURE 6-8.3.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - CPU DEVICES - CPU GROUPS

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Creating a new CPU Group

To create a CPU Group, proceed as follows:

1. Select **Extender & Devices > CPU Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the **CPU Groups** tab in the working area.
4. Click the **New Group** button.
A selection dialog appears.
5. Select a standard Group (**Create a standard Group**) or a LDAP Group (**Create a LDAP Group**) or a template of an existing Group (**Choose template**) in the **Choose template** selection box.
Note: A template is only available if there is at least one existing Group.
6. Click the **OK** button.
7. Enter a group name into the field **Name**.
8. Click the **Apply** button to confirm the creation of the group.
9. Click the **Deactivate Edit Mode** menu item in the toolbar.

Assigning a CPU Group

To assign a CPU Device to a CPU Group, proceed as follows:

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

6.7.3



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6.8.4 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 consoles will receive the video signal of the new Real CPU Device.

*One Real CPU Device can be assigned to several Virtual CPU Device.

NOTICE

When the **Auto Send** function in the left lower corner of the work area is ticked, switching operations will be completed immediately without user confirmation by means of the **Send** button.

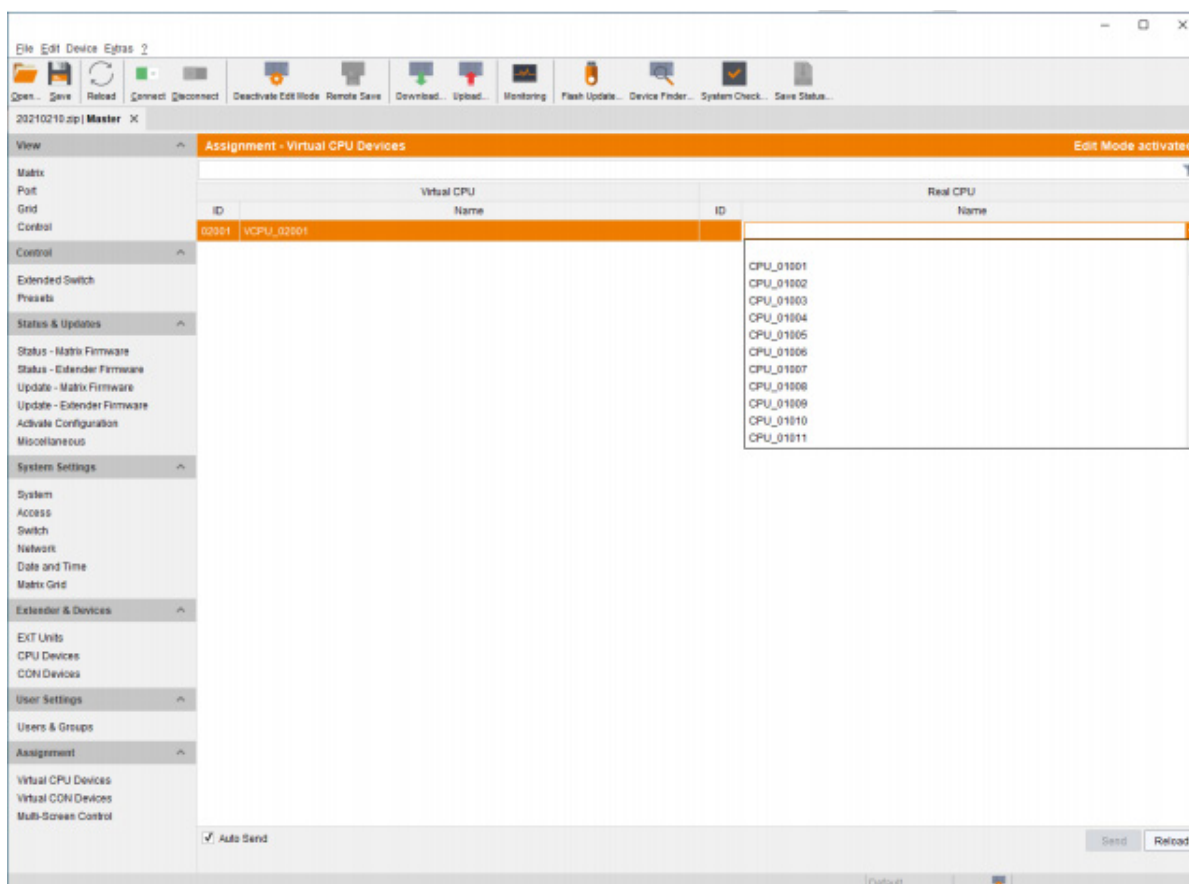


FIGURE 6-8.4.1 MANAGEMENT SOFTWARE MENU - ASSIGNMENT - VIRTUAL CON DEVICES

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FIELD	DESCRIPTION
Send	Send assignments to the matrix
Reload	Reload changes

For an assignment, proceed as follows:

1. Select **Assignment > Virtual CPU Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select a Virtual CPU Device in the **Virtual CPU** list.
4. Double-click in the **Real CPU** column to display a list of all available Real CPU Devices.
5. Select a Real CPU Device in the selection list.
6. Click the **Send** button to send the assignment to the matrix.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

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

The management 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 secondary 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 chapter 6.8.2, page 208).



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6.8 CONFIGURE CONSOLE SETTINGS

Connecting a CON Unit to the matrix creates an extender unit in the matrix, reading the serial number of the CON Unit. An extender 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 chapter. Several Real CON Devices can be assigned to a Virtual CON Device to reduce operation efforts (see chapter 6.9.6, page 235).

6.8.1 CONFIGURING FOR MOUSE AND KEYBOARD USED IN THE EXTENDER OSD

The OSD configuration for mouse and keyboard is made in this menu.

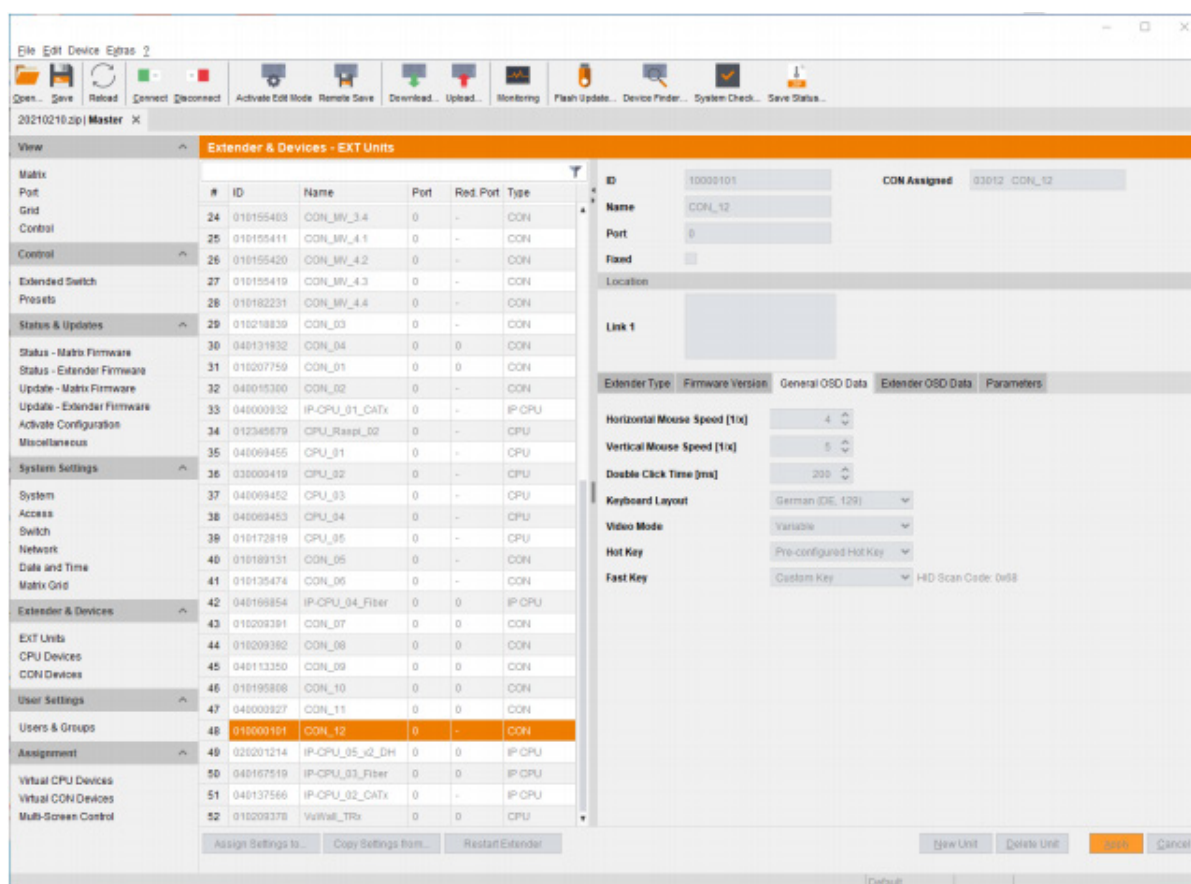


FIGURE 6-9.1.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - GENERAL OSD DATA

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The following parameters can be configured:

OPTION	ENTRY	DESCRIPTION
Horizontal Mouse Speed [1/x]	1 to 9	Adjustment of the horizontal mouse speed, 1 = slow, 9 = fast (default: 4)
Vertical Mouse Speed [1/x]	1 to 9	Adjustment of the vertical mouse speed, 1 = slow, 9 = fast (default: 5)
Double Click Time [sec]	100 to 800	Adjustment of the time slot for a double-click (default: 200 ms)
Keyboard Layout	Region	Set the OSD keyboard layout according to the used keyboard (default: German (DE))
Video Mode	Variable or specific resolution	Resolution that is used when opening OSD
Hot Key	Keyboard command	Calling the command mode via keyboard sequence
Fast Key	Keyboard command	Calling the command mode with only one key

*The OSD configuration for mouse and keyboard is made in this menu.

Changing Settings for Mouse and Keyboard

To change the settings for mouse and keyboard, proceed as follows:

1. Select **Extender & Devices > EXT Units** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON extender unit in the **EXT Units** list whose extender OSD settings has to be adjusted.
4. Select the **General OSD Data** tab.
5. Modify the desired settings.
6. Click the **Apply** button to confirm your entries.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

Assigning Settings to other Ext Units

To assign settings of an extender unit to other Ext Units, proceed as follows:

1. Select **Extender & Devices > EXT Units in the task area.**
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON extender unit whose settings are to be assign to another extender unit.
4. Click the **Assign Settings to** button below the Ext Units list.

A query to select the settings appears.

5. Click the checkboxes for the desired settings.
6. Click the **Next** button.



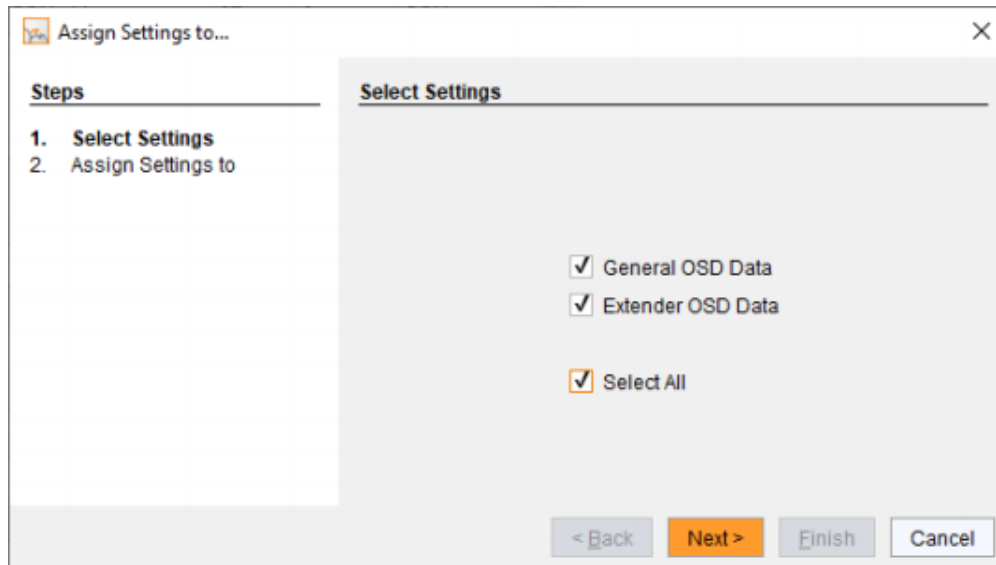


FIGURE 6-9.1.2 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - SELECT SETTINGS

A query to start the assignment appears.

7. Select the Ext Units in the **Available to assign settings to** list to which the settings are to be assigned.

By pressing and holding down the <Ctrl> key at the same time, more than one extender unit can be highlighted.

8. Click the button to move the highlighted Ext Units to the **Assign settings to** list. By clicking the button, 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 the button. If you click the button, all Ext Units will be removed from the **Assign settings to** list.

10. Click the **Finish** button.

The settings are immediately assigned to the selected Ext Units.

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

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The following parameters can be configured:

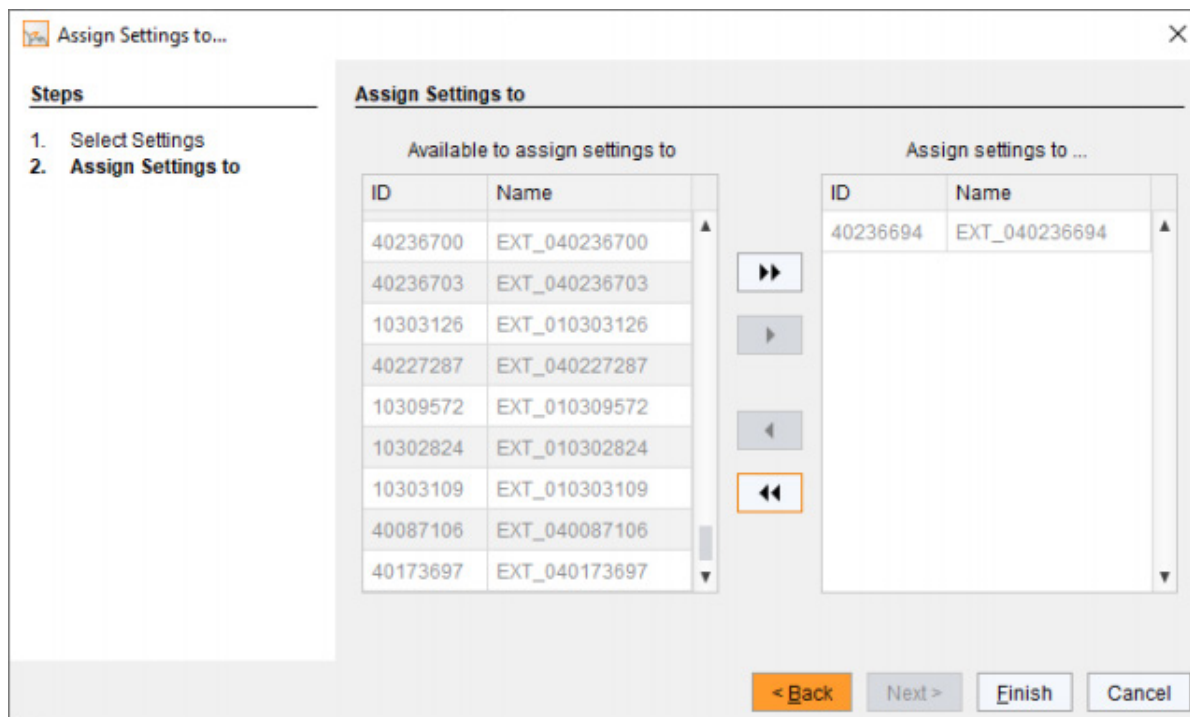


FIGURE 6-9.1.3 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - ASSIGN SETTINGS TO

Copying Settings from another Extender

To copy settings from an extender unit to another extender unit, proceed as follows:

1. Select **Extender & Devices > EXT Units** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON extender unit to which the settings are to be copied. By pressing and holding down the <Ctrl> key at the same time, more than one extender unit can be highlighted.
4. Click the **Copy Settings from** button below the Ext Units list.
A query to select the settings appears.
5. Click the checkboxes for the desired settings.
6. Click the **Next** button.

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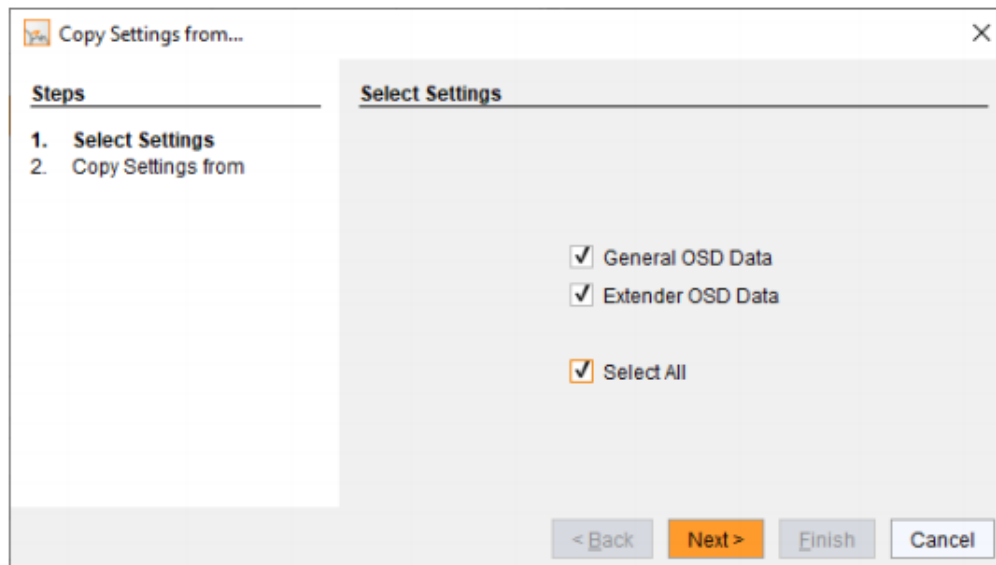


FIGURE 6-9.1.4 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - SELECT SETTINGS

A query to start the assignment appears.

7. Select the extender unit in the selection list from which the settings are to be copied.

8. Click the **Finish** button.

The settings are immediately copied to the selected Ext Units.

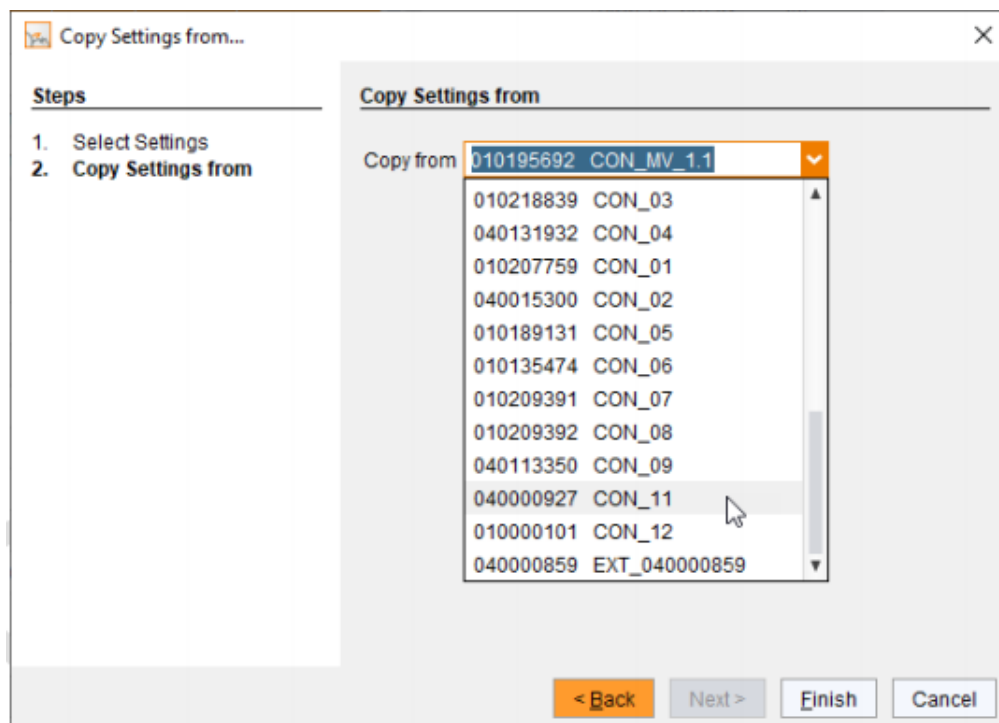


FIGURE 6-9.1.5 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - COPY SETTINGS

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6.8.2 SETTING EXTENDER OSD

In this menu the parameters for the Extender OSD can be set. These are local settings that can be made individually for each console.

When setting the horizontal OSD position, a prefixed minus describes the orientation to the right edge of the monitor, e.g., -2 means $2 \times 10 = 20$ pixels to this edge. When setting a vertical position, a prefixed minus describes the orientation to the bottom edge of the monitor.

If the **Update connection info** function is deactivated, the Extender OSD only appears when switching via OSD.

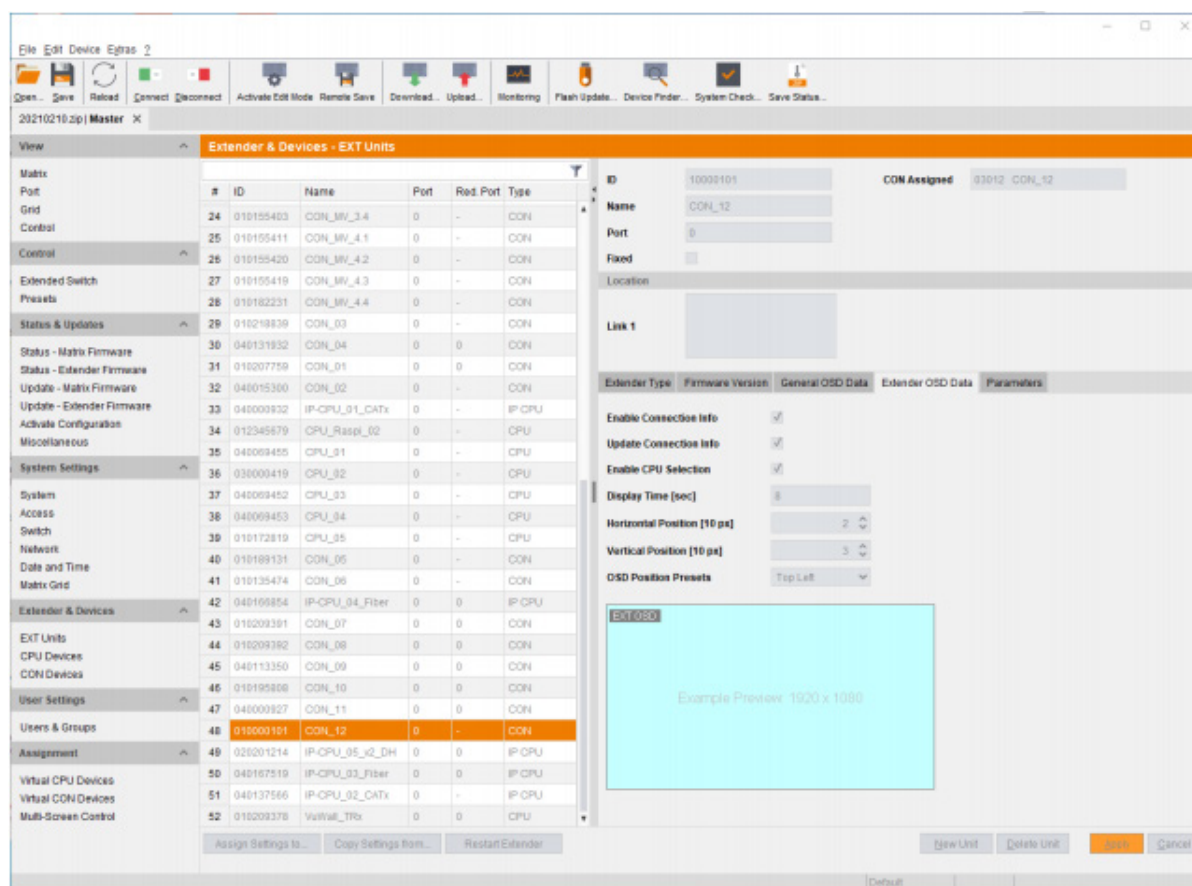


FIGURE 6-9.2.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - EXTENDER OSD DATA

The following parameters can be configured:

OPTION		DESCRIPTION
Enable CPU Selection List	Activated	When executing the key sequence for opening the OSD, a selection list for switching CPU Devices will be displayed in the center of the monitor. Pressing the <F7> key within the selection list opens the standard OSD.
	Deactivated	Function not active (default)
Enable Connection Info	Activated	Enable Extender OSD (default)
	Deactivated	Function not active (default)
Update Connection Info	Activated	Update connection changes during fade-in of Extender OSD (default)
Display Time	0-999 seconds	Duration of OSD fade-in (default: 10)
Horizontal Position	10 pixels	Horizontal OSD position (default: -2)
Vertical Position	10 pixels	Vertical OSD position (default: 2)

Changing the Extender OSD Settings

To change the extender OSD settings, proceed as follows:

1. Select **Extender & Devices > EXT** Units in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON extender unit in the **EXT Units** list whose extender OSD settings has to be adjusted.
4. Select the **Extender OSD Data** tab.
5. Modify the desired settings.
6. Click the **Apply** button to confirm your entries.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

*For an efficient extender OSD configuration, OSD settings can be assigned to EXT Units (see description on page 120) or can be copied from an EXT Unit (see description on page 121).

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6.8.3 SETTING CON DEVICES

New CON Devices are created in this menu including access rights and assignment to Ext Units.

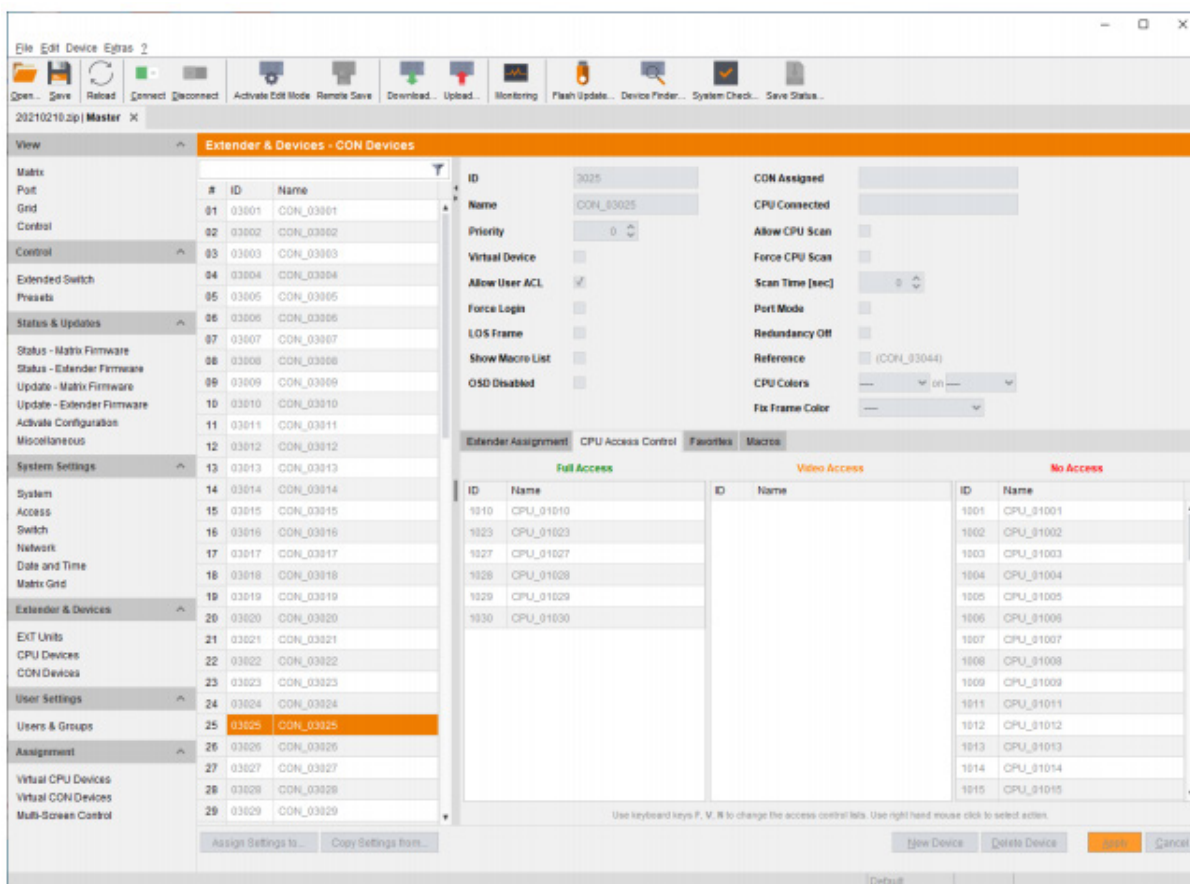


FIGURE 6-9.3.1 MANAGEMENT SOFTWARE MENU - CON DEVICE - CON DEVICES

BUTTON	FUNCTION
New Device	Open a new CON Device
Delete Device	Delete a new CON Device
Apply	Confirm a created CON Device
Cancel	Reject changes

KEYBOARD COMMAND	FUNCTION
<F>	Add CPU to list Full Access
<V>	Add CPU to list Video Access
<N>	Add CPU to list No Access

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OPTION	ENTRY	DESCRIPTION
ID	Text	Ident number of the CON Device
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 only have Video Only access to a CPU Device if a CON Device with a higher priority is already switched to it.
Virtual Device	Activated	Create a new CON Device as a Virtual CON Device
	Deactivated	Function not active (default)
Allow User ACL	Activated	Allow activation of the User ACL at the local console
	Deactivated	Function not active (default)
Force Login	Selection list	Force user login at this CON Device
LOS Frame	Activated	<ul style="list-style-type: none"> When the video signal between source (computer, CPU) 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	Disable OSD access for the respective CON Device
	Deactivated	Function not active (default)
CON Assigned	-	ID and name of the assigned Virtual CPU Device, cannot be changed, is retrieved automatically
CPU Connected	-	ID and name of the connected CON Device, cannot be changed, is retrieved automatically
Allow CPU Scan	Activated	Allow a scan mode with an automatic change of the video signal for the favorite list (CPU Devices) of the respective console or a logged in user.
	Deactivated	Function not active (default)
Force CPU Scan	Activated	Force a scan mode with an automatic change of the video signal for the favorite list (CPU Devices) of the respective console 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)
Scan Time [sec]	0 to 99 seconds	Retention period until switching to the next CPU Device



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OPTION	ENTRY	DESCRIPTION
Port Mode	Activated	The favorite list will be replaced 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 the Port Mode, CON and User favorites will be deactivated.
	Deactivated	Function not active (default)
Redundancy Off	Activated	Function is not active
	Deactivated	Automatically switch to the second link of a connected redundant CON Unit when losing the primary link of a CPU Unit (default).
CPU Colors	Selection list	The CPU Device name will be highlighted according to the color setting for text and background. You can select between 16 colors.
Fix Frame Color	Selection list	Show a colored frame at the CPU Device. You can select between 7 colors. The colored frame of the CPU device is displayed with priority.

Creating a new Console

To create a new console, proceed as follows:

1. Select **Extender & Devices > CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the **New Device** button.

A selection dialog appears.

4. Select a real CPU (**Create a standard CPU**) or a virtual CPU (**Create a virtual CPU**) or a template of an existing CPU (**Choose template**) in the **Choose template** selection box.

Note: A template can only be used if there is at least one existing CON Device.

5. Click the **OK** button.

A new CON Device will be created.

6. Determine all parameters that are relevant for the CON Device.
7. Click the **Apply** button to confirm the creation.
8. Click the **Deactivate Edit Mode** menu item in the toolbar.



Assigning Settings to other CON Devices

To assign settings of a CON Devices to other CON Devices, proceed as follows:

1. Select **Extender & Devices > CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON Device whose settings are to be assign to another CON Devices.
4. Click the **Assign Settings to** button below the CON Device list.

A query to select the settings appears.

5. Click the checkboxes for the desired settings.
6. Click the **Next** button.

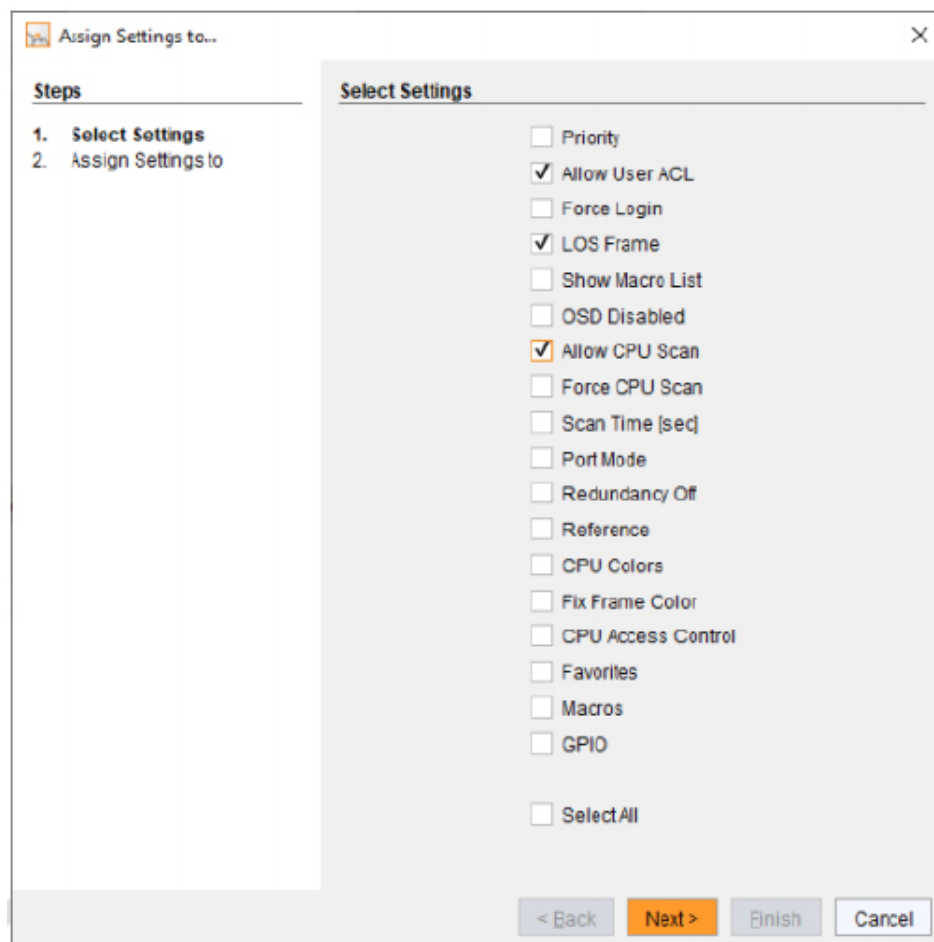


FIGURE 6-9.3.2 MANAGEMENT SOFTWARE MENU - CON SETTINGS - SELECT SETTINGS

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A query to start the assignment appears.

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

The settings are immediately assigned to the selected CON Devices.

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

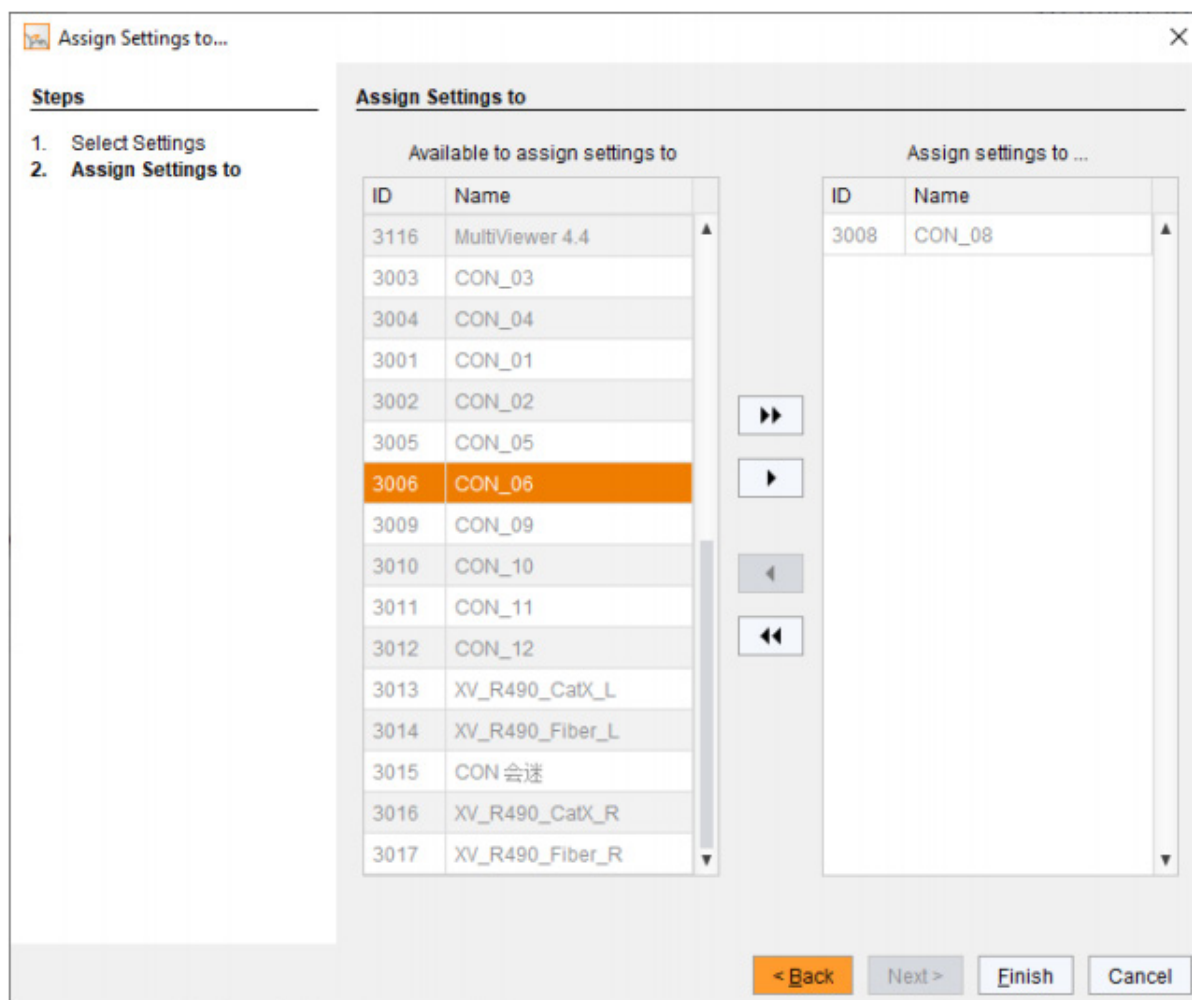


FIGURE 6-9.3.3 MANAGEMENT SOFTWARE MENU - CON SETTINGS - ASSIGN SETTINGS

Copying Settings from another CON Device

To copy settings from a CON Device to another CON Device, proceed as follows:

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

A query to select the settings appears.

5. Click the checkboxes for the desired settings.
6. Click the **Next** button.

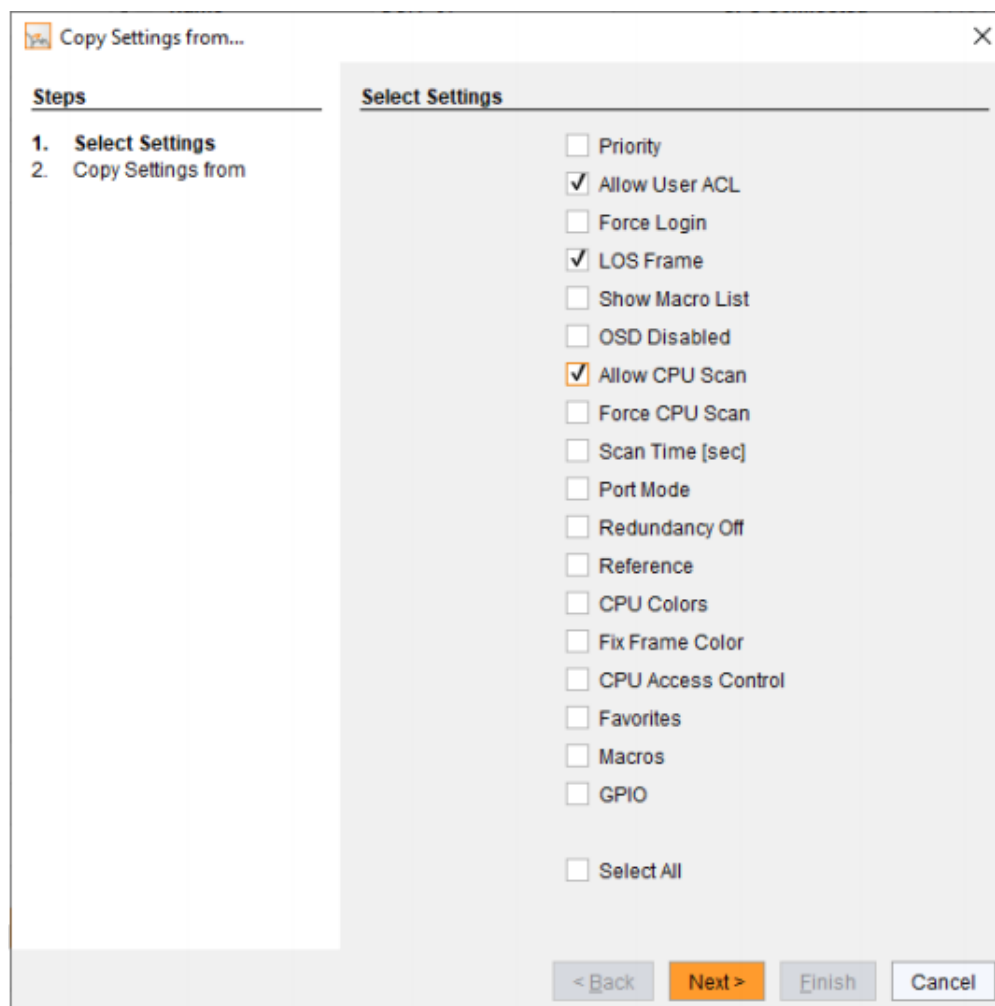


FIGURE 6-9.3.4 MANAGEMENT SOFTWARE MENU -CON SETTINGS - SELECT SETTINGS

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A query to start the assignment appears.

7. Select the CON Device in the selection list from which the settings are to be copied.

8. Click the **Finish** button.

The settings are immediately copied to the selected CON Devices.

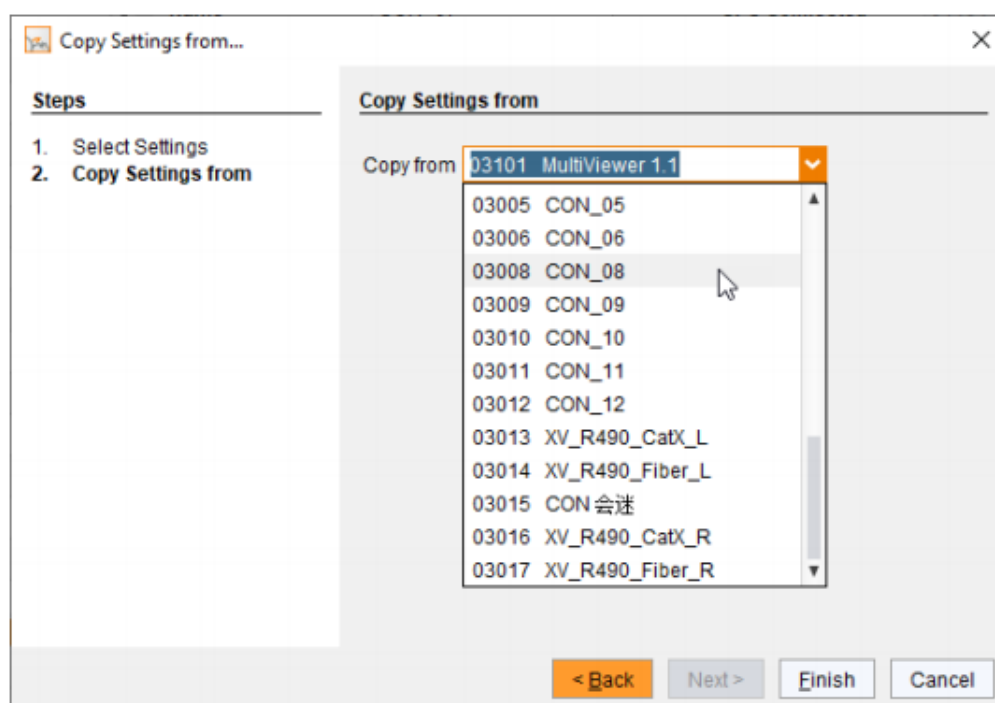


FIGURE 6-9.3.5 MANAGEMENT SOFTWARE MENU -CON SETTINGS - COPY SETTINGS

Configuring Extender Unit Assignments

To run a CPU Device via a matrix, one or more CON Ext Units must be assigned. To place an assignment, proceed as follows:

1. Select **Extender & Devices > CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON Device in the **CON Devices** list that has to be assigned to an extender unit.
4. Select the extender unit in the **Extender available** list that should be assigned to the CON Device.
5. By clicking with the secondary 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 will appear in which the respective CON Device can be moved, and the access rights can be changed. Alternatively, you can type the key commands <F>, <V> or <N> to set the respective access rights.
6. Click the **Apply** button to confirm the assignment.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

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Removing an Extender Unit Assignment

To remove an extender unit assignment, proceed as follows:

1. Select **Extender & Devices > CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON Device in the **CON Devices** list to be modified.
4. Select the extender unit(s) in the **Extender assigned** list to be removed.
5. By clicking with the secondary mouse button once on a CON Device in one of the respective access lists (**Full Access or Video Access**) a context menu for selection will appear in which the respective CON Device can be moved to the **No Access** list. Alternatively, you can enter the <N> key command to remove the access rights.
6. Click the **Apply** button to confirm the changes.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

Configuring CPU Access Rights of CON Devices

To configure CPU access rights of CON Devices, proceed as follows:

1. Select **Extender & Devices > CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select a CON Device in the CON Devices list.
4. Select the **CPU Access Control** tab.
5. Click with the secondary mouse button once on a CON Device to or the respective keyboard commands (cf. below) to assign new access rights. Type the key commands <F>, <V> or <N>
6. Click the **Apply** button to confirm the configuration.
7. Click the **Activate Edit Mode** menu item in the toolbar.

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6.8.4 SETTING CON DEVICE FAVORITES

Individual favorite lists of CPUs to be switched frequently can be created for all consoles 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 commands (see chapter 7.2.1, page 274).

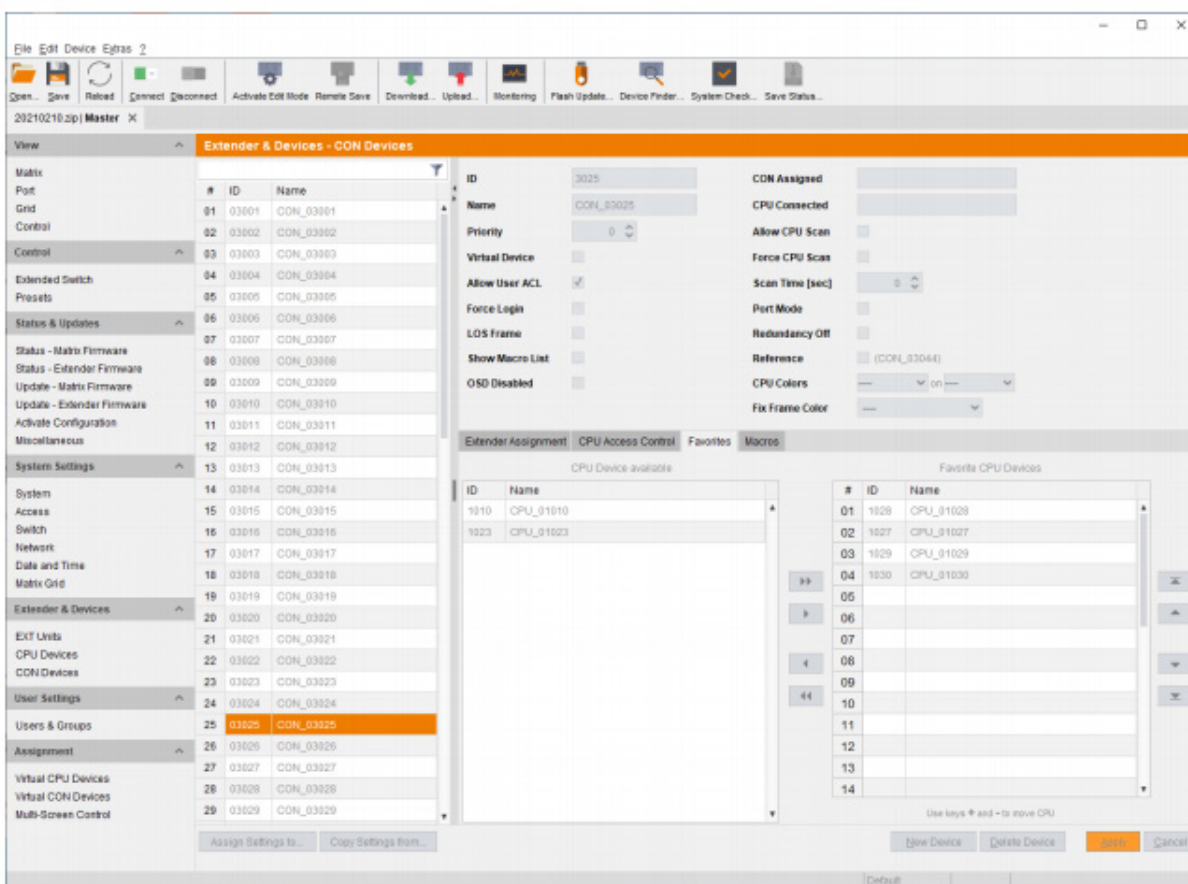


FIGURE 6-9.4.1 MANAGEMENT SOFTWARE MENU - CON SETTINGS - CON DEVICES - FAVORITES

To create a favorite list for any console, proceed as follows:

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

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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 the <Ctrl> key at the same time, more than one CPU Device can be highlighted.
6. Click the button to move the highlighted CPU Devices to the favorites list. By clicking the button, 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 the button. If you click the button, all CPU Devices will be removed from the favorites list.
8. Optional: Click the or button to change the order of the CPU Devices within the favorites list.
Or press the <+> or <-> key to change the order of the CPU Devices within the favorites list.
9. Click the **Apply** button to confirm the changes.
10. Click the **Deactivate Edit Mode** menu item in the toolbar.

*For an efficient favorite configuration, favorite settings can be assigned to CON Devices (see description on page 127) or can be copied from a CON Device (see description on page 129).

6.8.5 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 console separately.

A macro can execute up to 16 switching commands successively.

The execution of the macros is done via Hot Key and the function keys <F1> to <F16> (see chapter 7.2.2, page 273).

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

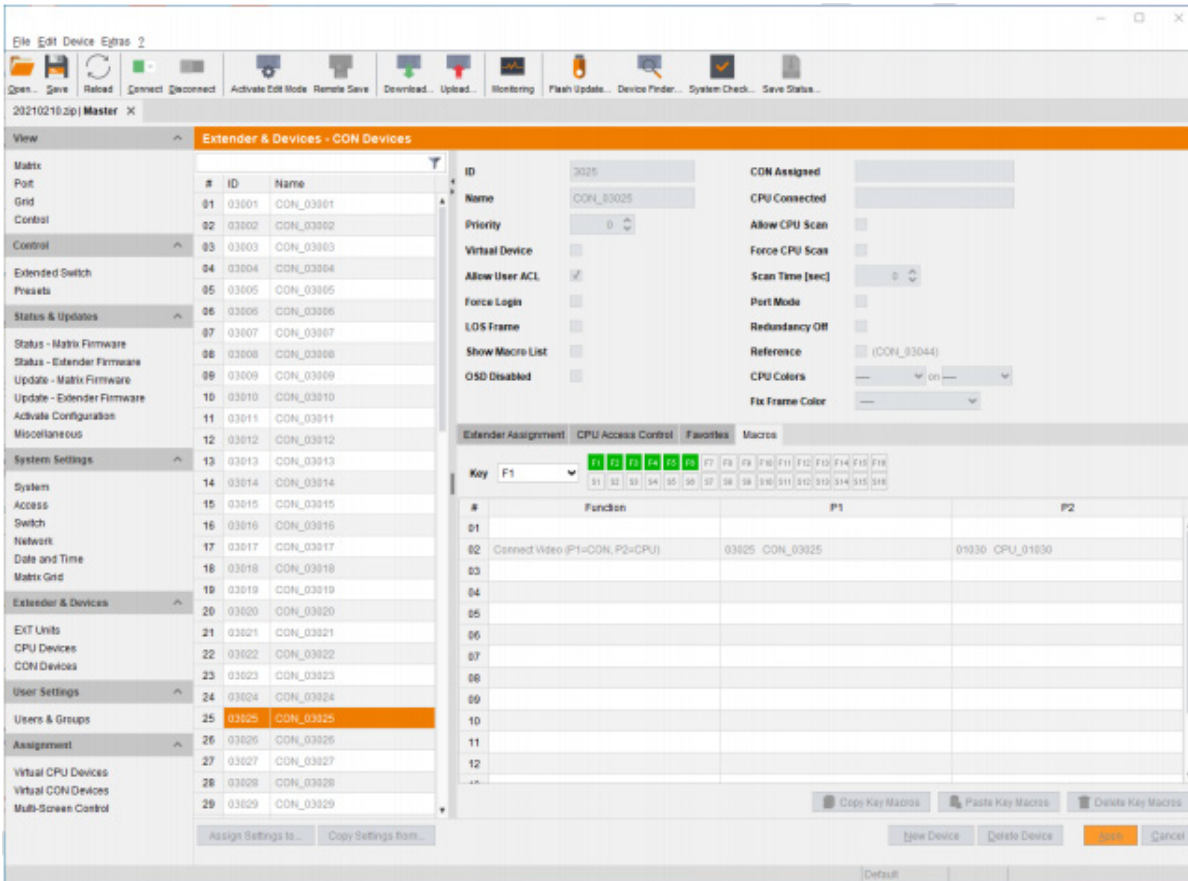


FIGURE 6-9.4.2 MANAGEMENT SOFTWARE MENU - CON SETTINGS - CON DEVICES - MACROS

FIELD	SELECTION	DESCRIPTION
Function (01 to 16)	Connect (P1=CON, P2=CPU)	Set a bidirectional connection from CON Device P1 to CPU Device P2
	Connect Video (P1=CON, P2=CPU)	Set a Video connection from CON Device P1 to CPU Device P2
	Disconnect (P1=CON)	Disconnect the CON Device P1
	Logout User	Logout the current user
	Set Real CPU (P1=VCPU, P2=RCPU)	Assign a Virtual CPU Device to a Real CPU Device
	Set Virtual CON (P1=RCON, P2=VCON)	Assign a Real CON Device to a Virtual CON Device
	Push (P1=CON)	The user's KVM connection is forwarded to CON Device P1 and is changed to a Video Only connection.
	Push Video (P1=CON)	The video signal of the current connection (KVM or Video Only) is forwarded to CON Device P1. The user's connection remains unchanged (KVM or Video Only).

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FIELD	SELECTION	DESCRIPTION
Function (01 to 16)	Get (P1=CON)	The user's CON Device gets a KVM 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 (KVM or Video Only).
	Login User console P2	Login a certain user P1 at CON Device P2
P1	CON or CPU Device	Logout the current user
P2	CPU or CPU Device	Assign a Virtual CPU Device to a Real CPU Device

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

1. Select **Extender & Devices > CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the CON Device for which a console macro is to be created.
4. Select the **Macros** tab.
5. Select in the **Key** field the function key (<F1> to <F32>) for which a macro should 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.
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 the **Apply** button to confirm your entries.
9. Click the **Deactivate Edit Mode** menu item in the toolbar.

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

When clicking on the **Macros** tab, macros can be assigned to other CON Devices by using the **Assign Settings to...** function (see description on page 218) and can be copied from other CON Devices by using the **Copy Settings from...** function (see description on page 219).

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

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6.8.6 ASSIGNING VIRTUAL CON DEVICES

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 Devices that is connected to a CPU Device will receive the video signal. The last-assigned CON Device will also have control of the keyboard and mouse.

*A Virtual CON Device can be assigned to more than one Real CON Devices.

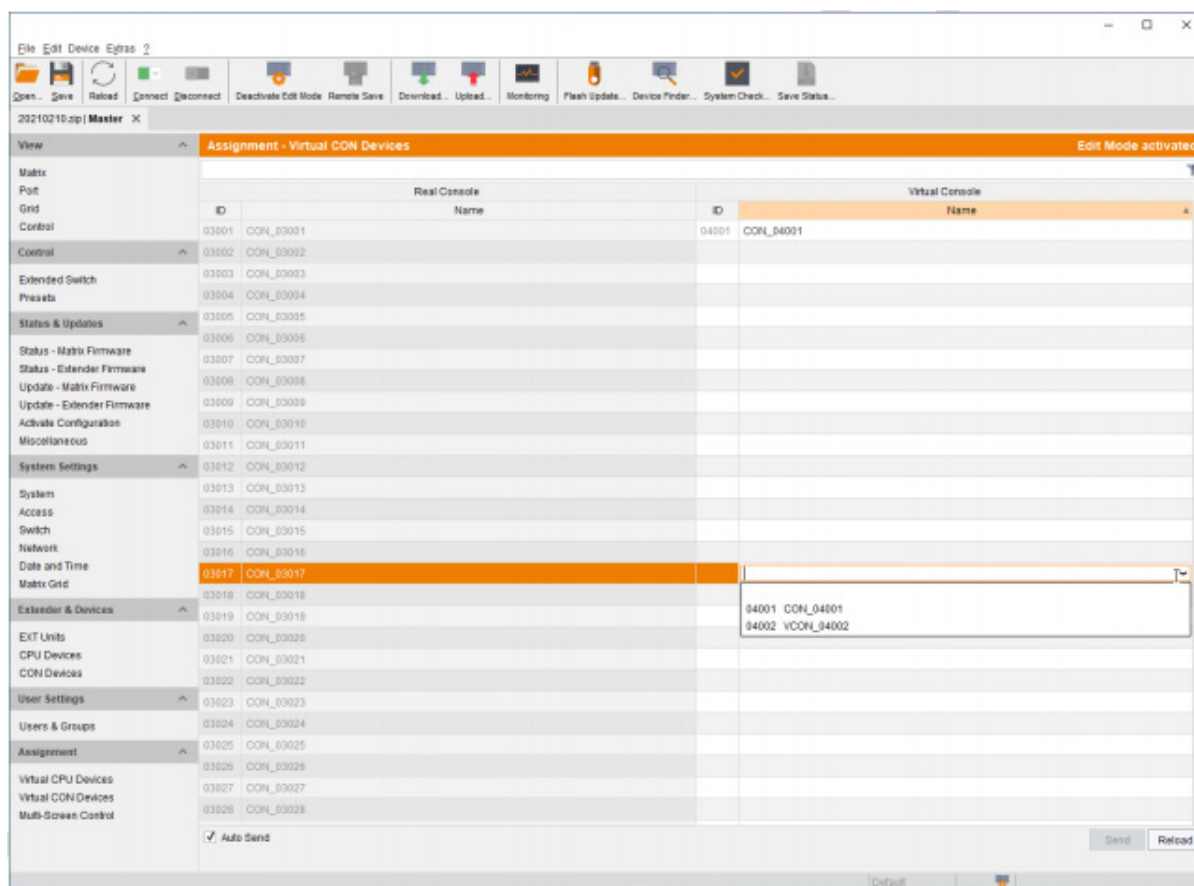


FIGURE 6-9.6.1 MANAGEMENT SOFTWARE MENU - ASSIGNMENT - VIRTUAL DEVICES

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BUTTON	FUNCTION
Send	Send assignments to the matrix
Reload	Reload changes

To place an assignment, proceed as follows:

1. Select **Assignment > Virtual CON Devices** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the required Real CON Device in the **Real Console** list.
4. Double-click in the **Virtual Console** column to display a list of all available Virtual CON Devices.
5. Select the required Virtual CON Device in the selection list.
6. Click the **Send** button to send the assignment to the matrix.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

The selection boxes in the **Virtual Console** column contain a filter function for an easy selection of a single CPU from a larger pool of CPUs.

The management 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 secondary 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 chapter 6.9.1, page 191).

6.8.7 ENABLING SHARED OPERATION

This menu enables shared operation of a CPU Device by two or more CON Devices. A CPU Device can be controlled by only one CON Device at a time but can be taken over successively by other CON Devices. Control of a CPU Unit by a CON Unit is relinquished after the expiration of an inactivity timer associated with the controlling CON Device. The mouse or keyboard may also be used to take 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 chapter 6.8.1, page 204).

When taking over control within 10 s, any assigned USB 2.0 extender 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.

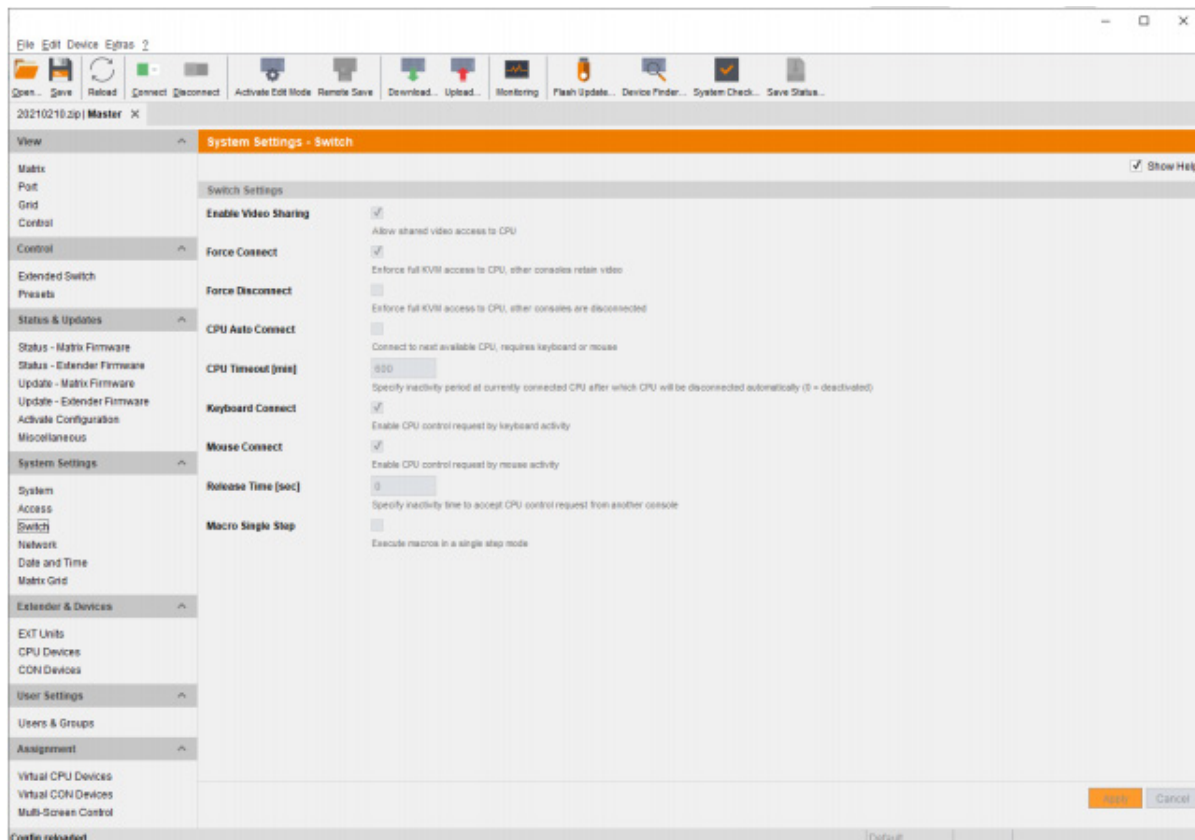


FIGURE 6-9.6.2 MANAGEMENT SOFTWARE MENU - SYSTEM SETTINGS - SWITCH

To configure shared operation, proceed as follows:

1. Select **System Settings > Switch** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Activate the **Enable Video Sharing** function.
4. Activate the **Force Connect** function.
5. Activate the **Keyboard Connect** function if taking over control by a keyboard event is to be permitted.
6. Activate the **Mouse Connect** function if taking over control by a keyboard movement should be possible.
7. Define a **Release Time** of inactivity (0 to 999 seconds) after which control can be taken over.
8. Click the **Apply** button to confirm the changes.
9. Click the **Deactivate Edit Mode** menu item in the toolbar.

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6.8.8 ENABLING MULTI-SCREEN CONTROL

When using Multi-Screen Control, switching up to eight connected sources (computers, CPUs) 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 extenders modules. In a matrix system, Multi-Screen Control can be set up at multiple sinks.

The CON Units of a sink with Multi-Screen Control must all be physically connected to the same block of 8 ports on the I/O board. 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 are referred to the extender modules/Ext Units within the Multi-Screen Control that are connected to keyboard and mouse for operation.

If the 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 freely. Alternatively, switching can be performed via keyboard commands according to the ID number in the Multi-Screen Control setup.

NOTICE

When using CON Units with the possibility to connect a local source (computer, CPU) in a Multi-Screen Control environment, the local switching will be disabled.

*CON Units that have been already configured for Multi-Screen Control 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.

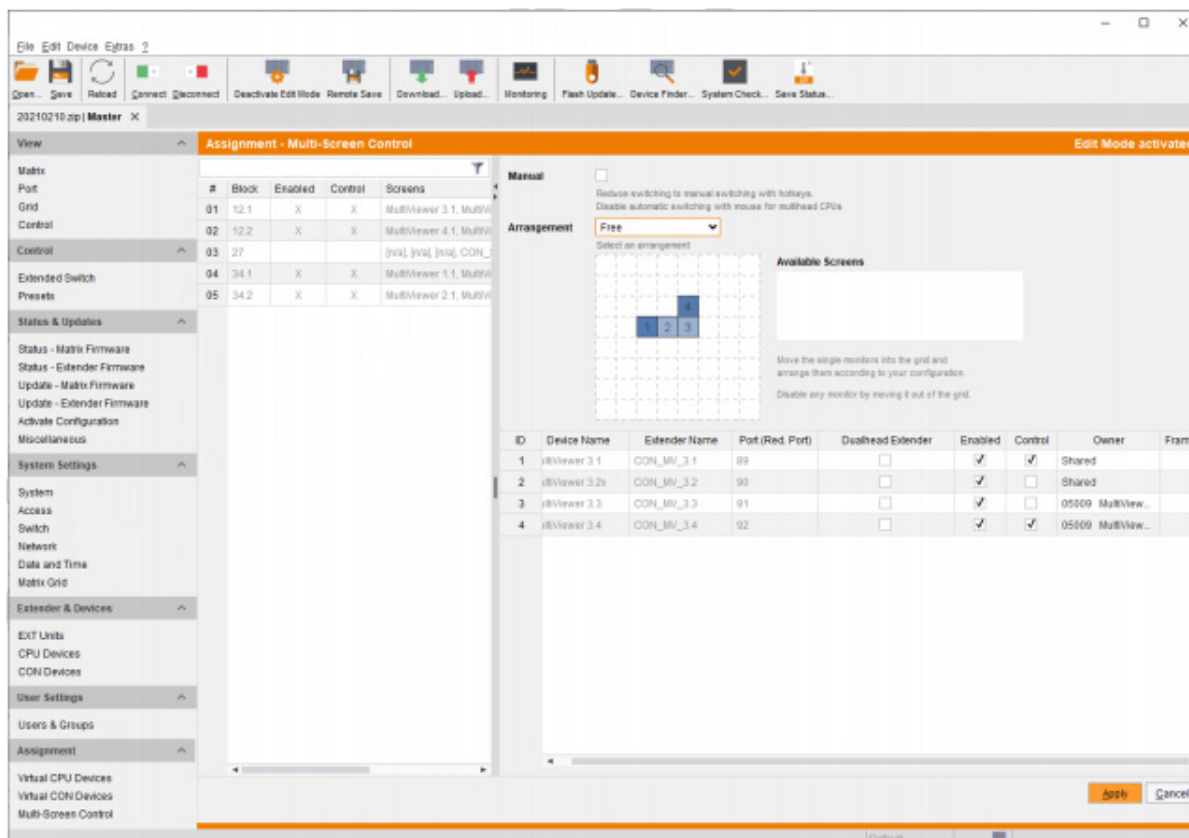


FIGURE 6-9.8.1 MANAGEMENT SOFTWARE MENU - ASSIGNMENT - MULTI-SCREEN CONTROL

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FIELD	ENTRY	DESCRIPTION
Dual-Head Extender Name	Y	Enable configuring two displays for the Dual-Head extender
	N	Function not active (default)
Enable Password	Y	Activate the respective display for Multi-Screen Control
	N	Function not active (default)
Control Administrator	Y	Enable the CON Device for USB-HID control of other CON Devices if access is permitted
	N	Function not active (default)
	Deactivated	Function not active (default)
Super User	Selection	<ul style="list-style-type: none"> • Shared (default) permits the access from a Control CON Device to all other CON Devices except to another Control CON Device • Name of the own Control CON Device to restrict access to other CON Devices
	0 to 999 seconds	Time for fade in a red frame at the display with current mouse/keyboard control

Configuring Multi-Screen Control

To configure the Multi-Screen Control, proceed as follows:

1. Select **Assignment > Multi-Screen Control** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the block of 4 or 8 ports in the list of the working area that should be configured for Multi-Screen Control.

Only blocks of 4 or 8 ports that contain at least one CON Unit are shown.

4. Activate **Manual** option if the USB-HID switching is to be restricted to keyboard commands (see chapter 7.2.6, page 276). 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
- **Block:** block arrangement
- **Free:** free arrangement (The free arrangement allows a flexible positioning of the screens for diverse applications.) Move the screens from the **Available Screens** field to the arrangement field.

The fields for the configuration of the individual displays will be arranged accordingly.

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

An additional display appears in the **Available Screen** field.



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7. Click the **Enable** checkbox for all CON Devices to be enabled for Multi-Screen Control.
8. Click 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 shows the display with current mouse control, for the duration of a specified time by flashing briefly. The frame can be activated individually for each screen by using a timer > 0 seconds.
 - 9.1. Double-click in the respective CON Device in the **Frame** column.
 - 9.2. Select the time, the red frame should be faded in.
10. Click the **Deactivate Edit Mode** menu item in the toolbar.

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

Access Restriction when using Multiple Control CON Devices

Dragging the mouse pointer over the display boundary is only permitted for those displays whose CON Device is enabled for access by the owner of the respective Control CON Device.

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

1. To enable a Control CON Device for access for a CON Device, double-click on the corresponding selection box within the **Owner** column and select the name of the respective Control CON Device.
2. Double-click on the corresponding selection box within the **Owner** column of all Control CON Device whose display should be accessible and select the name of the respective 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.

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 = Sharing**.

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.

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Changing Multi-Screen Control

To change the Multi-Screen Control for a setup, proceed as follows:

1. Select **Assignment > Multi-Screen Control** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the setup in the list of the working area the Multi-Screen Control should be changed.
4. Make any edits at the configuration and system settings.
5. Click the **Apply** button to confirm the changes.
6. Click the **Deactivate Edit Mode** menu item in the toolbar.

Deleting Multi-Screen Control

To delete the Multi-Screen Control for a setup, proceed as follows:

1. Select **Assignment > Multi-Screen Control** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the setup in the list of the working area the Multi-Screen Control should be deleted.
4. Click the **Enable** 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 Multi-Screen Control is disabled.

5. Click the **Control** checkbox for all CON Devices to remove the checkmarks.
6. Click the **Deactivate Edit Mode** menu item 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 (computer, CPU), an additional configuration of the CPU Devices is mandatory. The configuration of CPU Devices, which are connected to Single-Head sources (computer, CPU) is not mandatory.



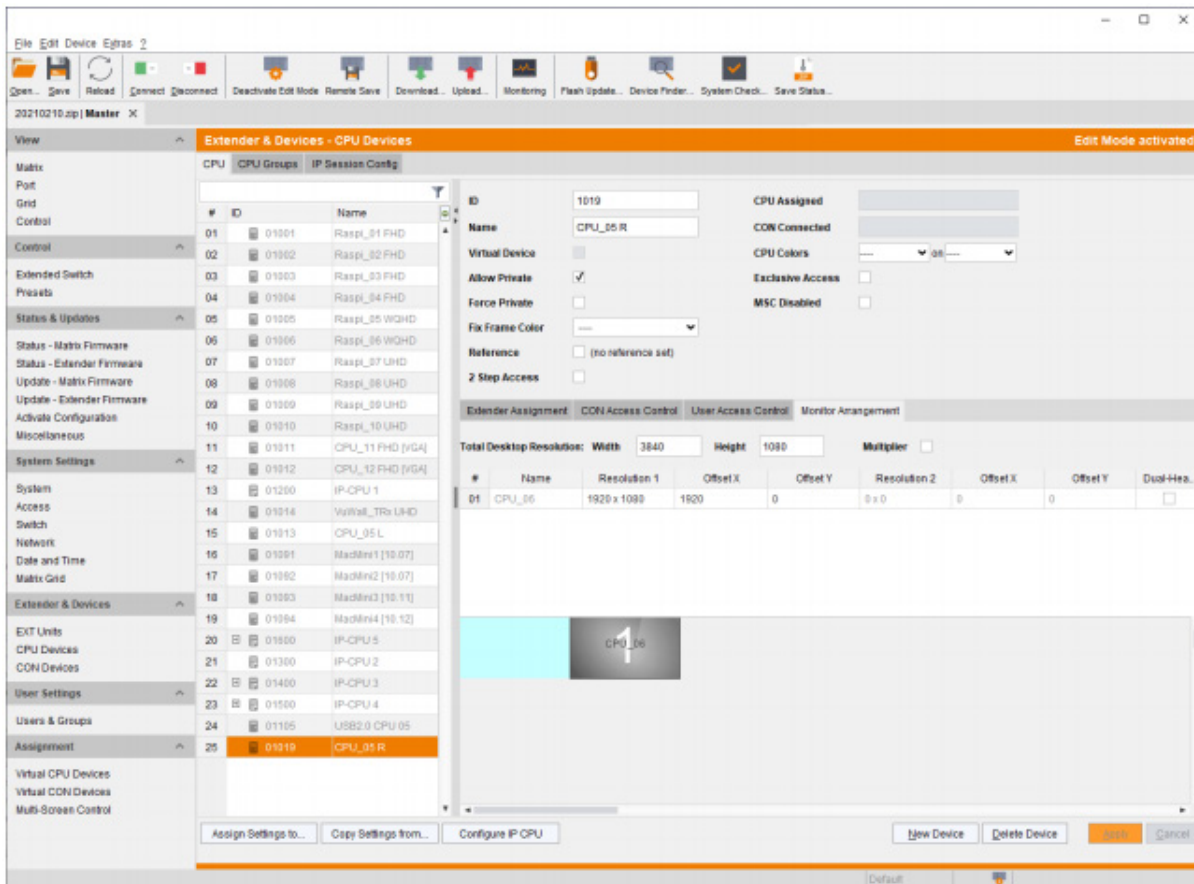


FIGURE 6-9.8.2 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - CPU DEVICES - MONITOR ARRANGEMENT

For an additional configuration of the CPU Devices for the use of Multi-Head sources (computer, CPU), proceed as follows.

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

FIGURE 2-14. BACK PANEL

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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 of the CPU Device in the Multi-Screen Control arrangement into the fields Offset X and Offset Y. For instance, you have to enter 1920 for a shift of 1920 pixels to the right into the field Offset X. DKM flex Configuration via Management Software 215
8. If the CPU Device to be configured is a Dual-Head extender, click 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 the **Apply** button to confirm the settings.
A dialog appears to restart the extender module.
11. Click the **Yes** button to restart the extender module to with the new configuration.
The CPU Device is now configured for the Multi-Head operation.

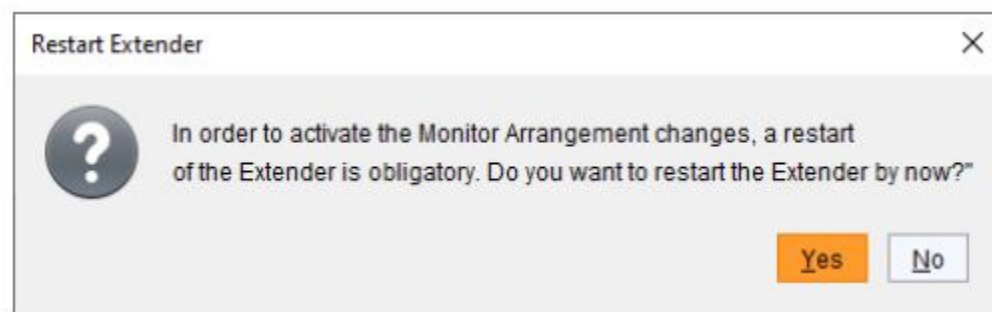


FIGURE 6-9.8.3 MANAGEMENT SOFTWARE DIALOG - MONITOR ARRANGEMENT - RESTART EXTENDER

12. Click the **Deactivate Edit Mode** menu item in the toolbar.

6.9 ACTIVE DIRECTORY

The KVM matrix can be synchronized with the directory service Active Directory regarding user authentication. This allows the user to login at the KVM 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 KVM matrix and the Active Directory server is established via OpenLDAP and periodically synchronized every 5 minutes.

The search of users to be synchronized and automatically added to the KVM 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 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 member of up to 8 groups.
- In 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 located in sub organizational units will be ignored.

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

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

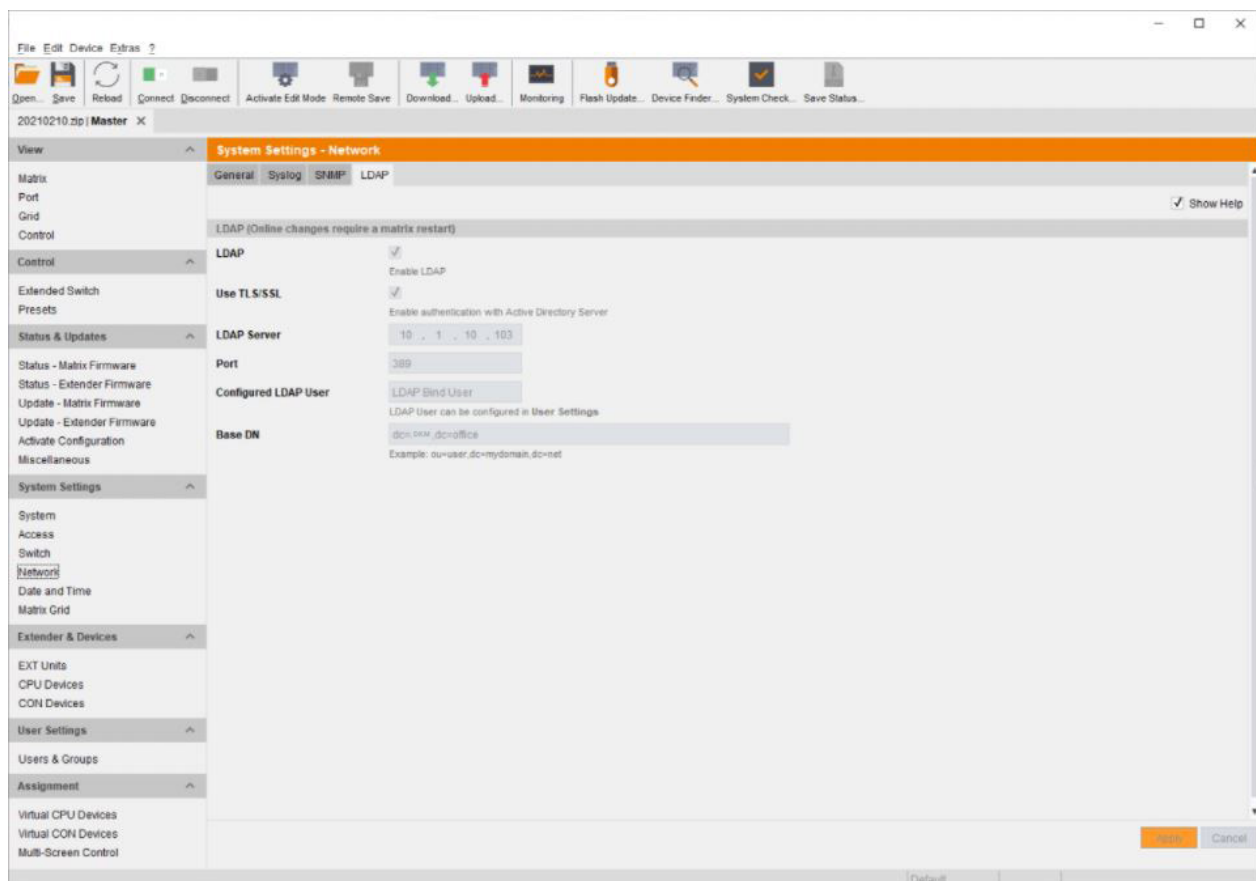


FIGURE 6-10.1 MANAGEMENT SOFTWARE MENU - SYSTEM SETTINGS - NETWORK - LDAP

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- Click the **LDAP** checkbox and optionally the **Use TLS/SSL** checkbox to activate these functions.
- Enter the respective IP address and port number into the field **LDAP Server** (default port number: 389).
- Enter the LDAP **Base DN** into the respective field (e.g., dc=example, dc=com).
- Click the Apply button to confirm the settings.

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

- Select **User Settings > Users & Groups** in the task area.

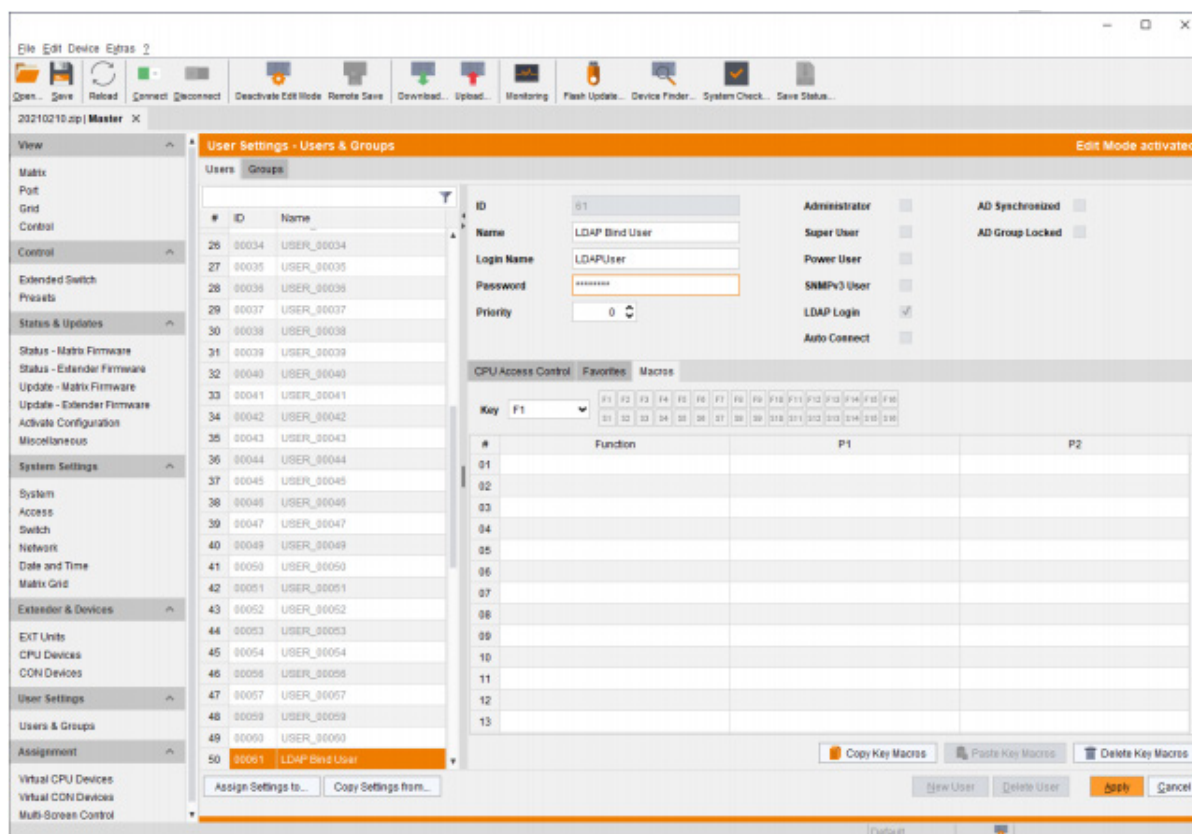


FIGURE 6-10.1.1 MANAGEMENT SOFTWARE MENU - USER SETTINGS -USER & GROUP - USERS

- Click the **New User** button to create a new LDAP user (bind user).
A selection dialog appears.
- Select **Create a LDAP User** in the selection box.
- Enter a username into the field **Name**.
- Enter the Common Name (CN) of the bind user from the Active Directory into the field **Login Name**.
- Enter the password of the bind user from the Active Directory into the field **Password**.
- Click the **Apply** button to confirm the creation of the user.
- Stay in the menu and open the **Groups** tab.

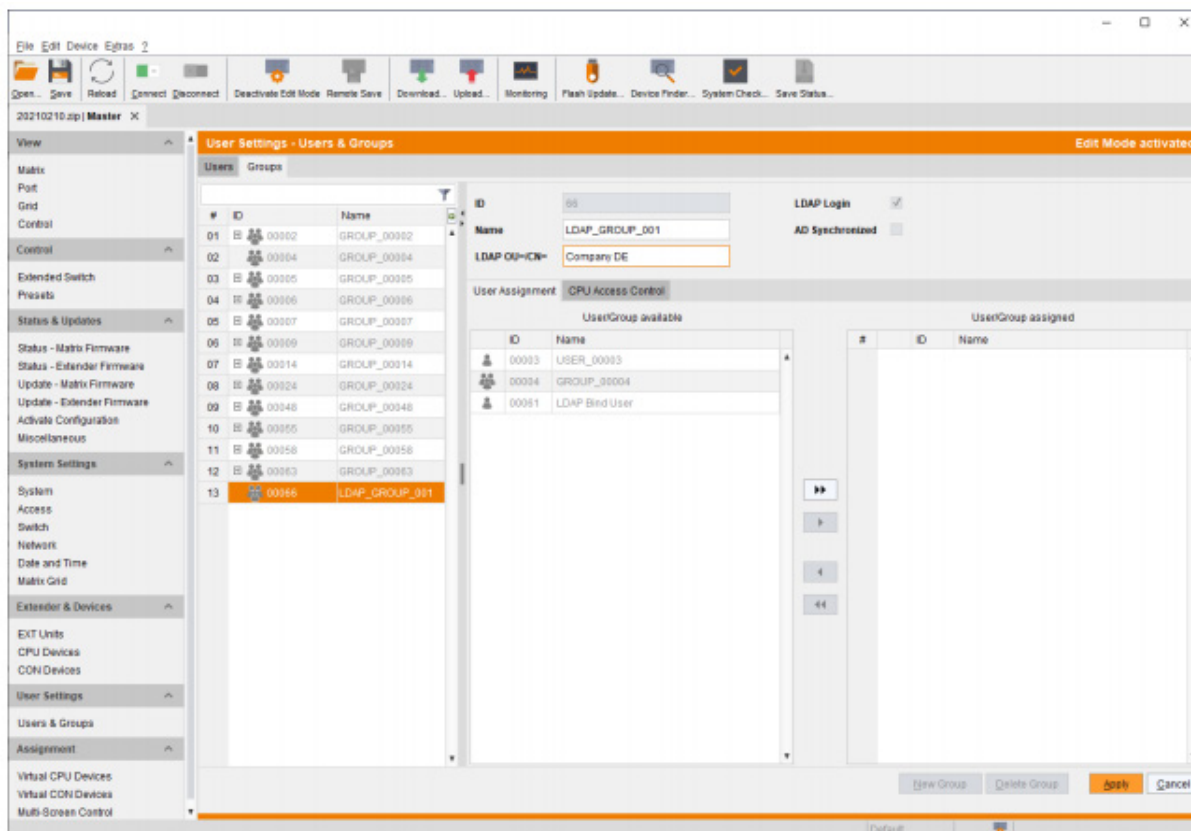


FIGURE 6-10.1.2 MANAGEMENT SOFTWARE MENU - USER SETTINGS - USERS & GROUPS - USER ASSIGNMENT

16. Click the **New Group** button to create a new LDAP group.
A popup window will appear.
17. Select **Create a LDAP Group** in the popup window.
The group determines which users of the Active Directory server should be synchronized.
18. Enter a name into the field **Name**.
19. Enter either the Common Name (CN) of a right group or the Common Name (OU) of an organizational unit into the field **LDAP OU=/CN=** as shown below:
 - OU= name of the organizational unit
 - CN= name of the right group
20. Click the Apply button to confirm the creation of the group.
The Active Directory synchronization can be used now.
21. Click the **Deactivate Edit Mode** menu item in the toolbar.

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6.10 MATRIX CASCADING

This simple method of cascading allows a switchable connection between two matrices via so called **Tie Lines**. The Matrix Cascading does not require **Bundle 4**.

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 Tie Lines are unidirectional and can only be used in one direction according to their configuration. For a bidirectional use of the cascading, you have to configure opposite Tie Lines.

To connect Tie Lines to the matrices, you first have to create intended **Cascade CON Devices** and **Cascade CPU Devices** that have to be switched within the cascaded environment.

*Ensure that the Tie Lines will only be connected after finishing the configuration.

Activating the Sub Matrix Option

1. Connect to the defined Sub Matrix and click the **Activate Edit Mode** menu item in the toolbar.
2. Select **System Settings > System** in the task area of the Sub Matrix.
3. Activate the **Sub Matrix** option in the working area.
4. Click the **Apply** button 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>.

5. Click the **Deactivate Edit Mode** menu item in the toolbar.



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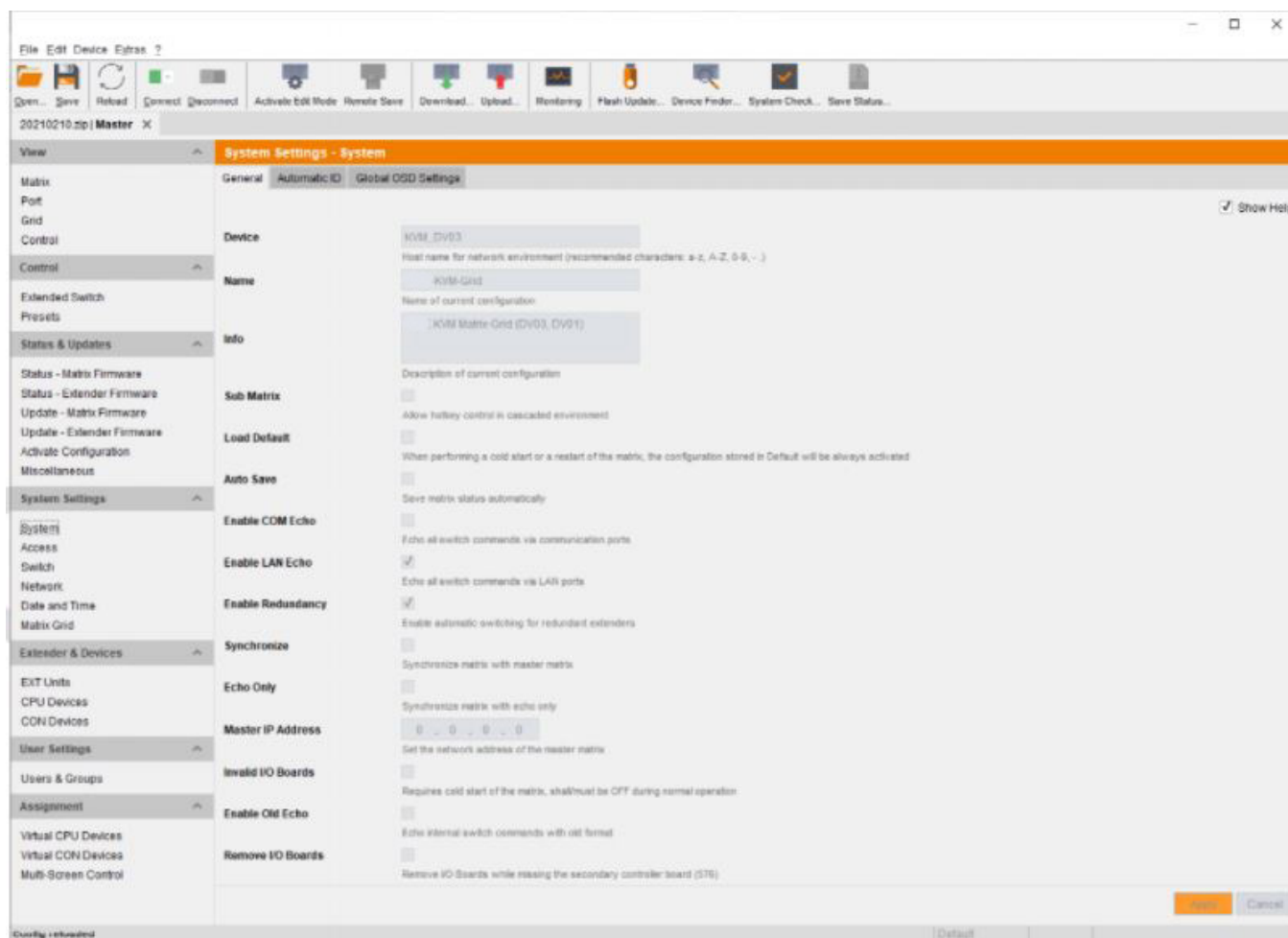


FIGURE 6-11.1 MANAGEMENT SOFTWARE MENU - SYSTEM SETTINGS > SYSTEM

6.10.1 DIRECTING A TIE LINE FROM THE SUB TO THE MASTER

To configure settings for using Matrix Cascading and to direct the Tie Line from the Sub to the Master, proceed as follows:

1. Connect to the Master Matrix.
2. Click the Activate Edit Mode menu item in the toolbar.
3. Select the menu Extender & Devices > EXT Units in the task area.
 - 3.1. Click the New Unit button.
A selection dialog appears.
 - 3.2. Select Cascading CPU Unit in the Choose template selection box.
 - 3.3. Click the OK button.

A new Cascading CPU Unit will be created.

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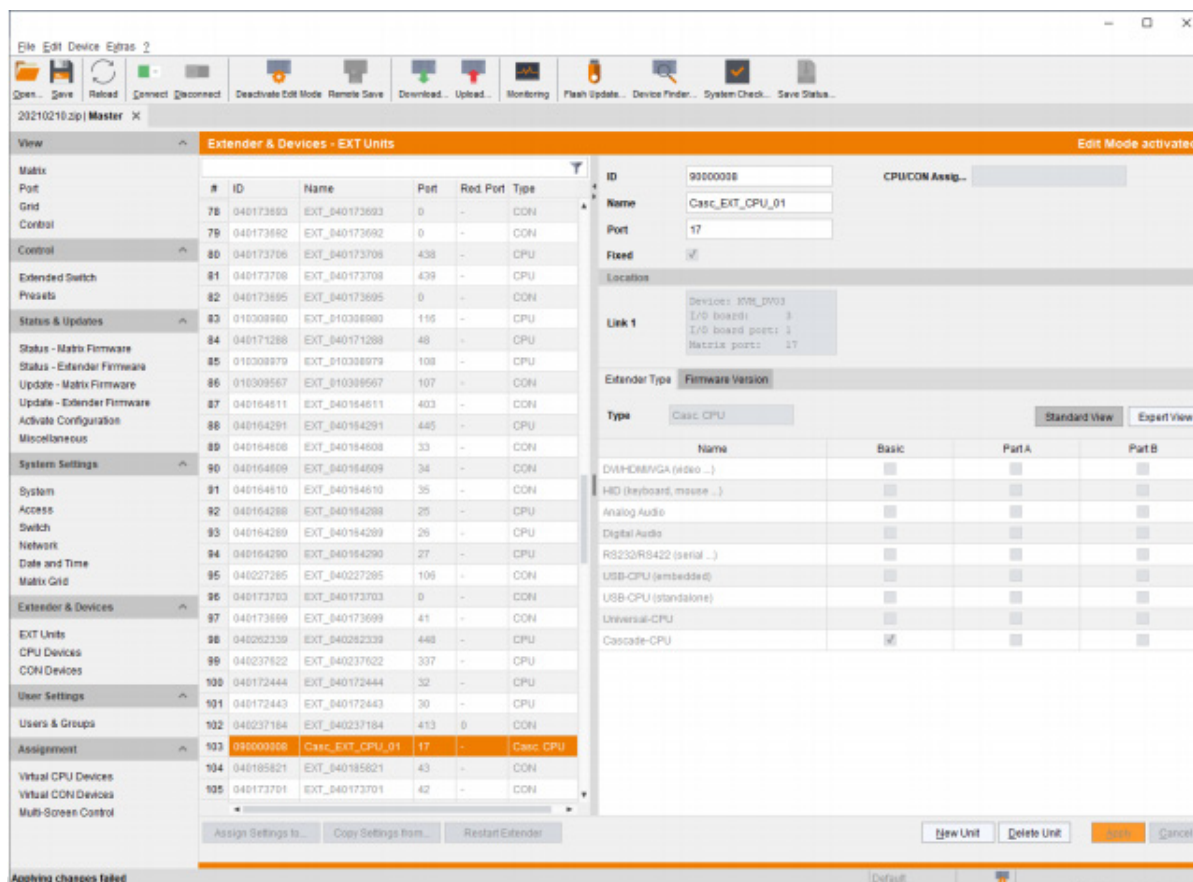


FIGURE 6-11.1.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - CASCADING CPU UNIT

5. Connect to the Sub Matrix.
6. Click the **Activate Edit Mode** menu item in the toolbar.
7. Select the menu **Extender & Devices > EXT Units** in the task area.

- 7.1. Click the **New Unit** button.

A selection dialog appears.

- 7.2. Select **Cascading CPU Unit** in the **Choose template** selection box.

- 7.3. Click the **OK** button.

A new Cascading CPU Unit will be created.



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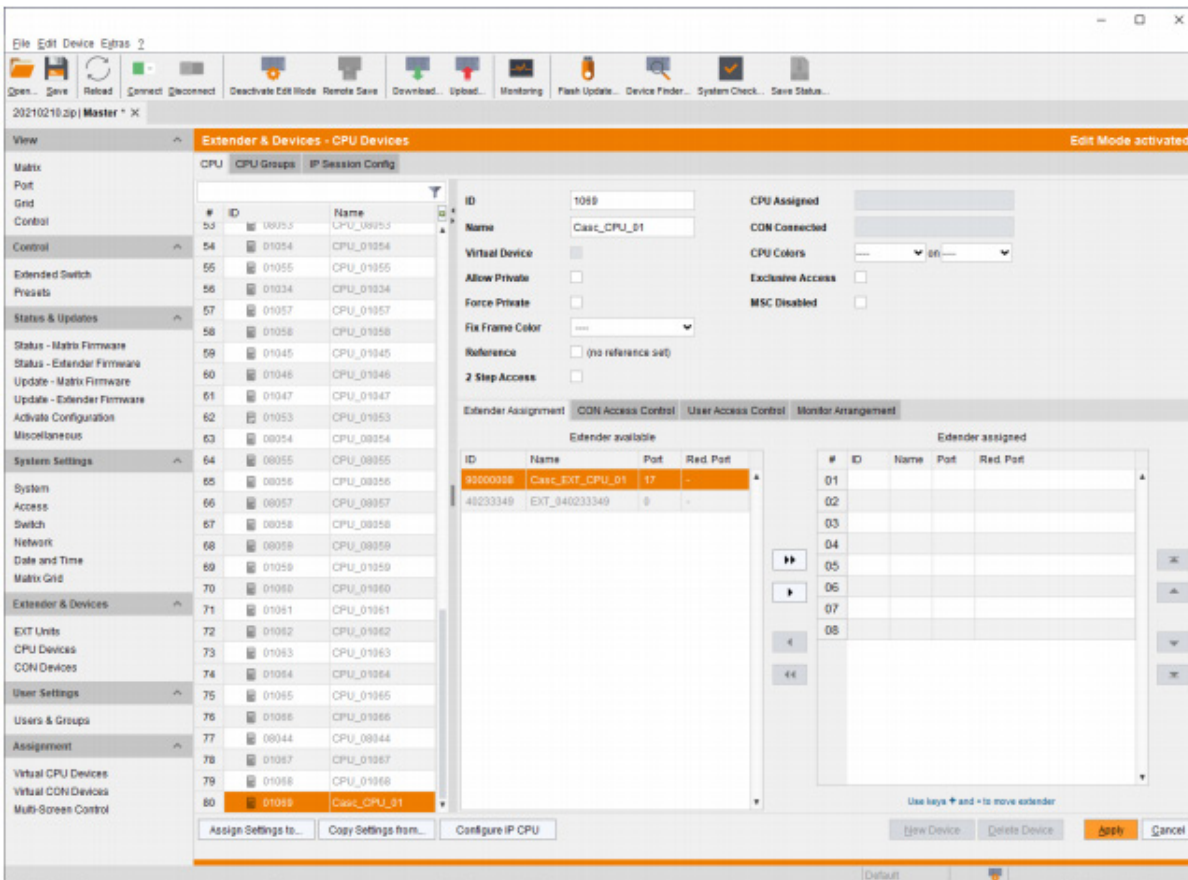


FIGURE 6-11.1.2 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - CASCADING CPU DEVICES

- 7.4. Enter an appropriate name for the Cascading CON Unit into the **Name** field.
- 7.5. Enter a port number into the **Port** field according to the required connection of the Tie Line.
- 7.6. Click the **Apply** button to confirm the creation of a Cascading CON Unit.
8. Select **Extender & Devices > CON Devices** in the task area of the Sub Matrix.
 - 8.1. Click the **New Device** button.
A switchable CON Device will be created.
 - 8.2. Enter an appropriate name for the Cascading CON Device into the **Name** field.

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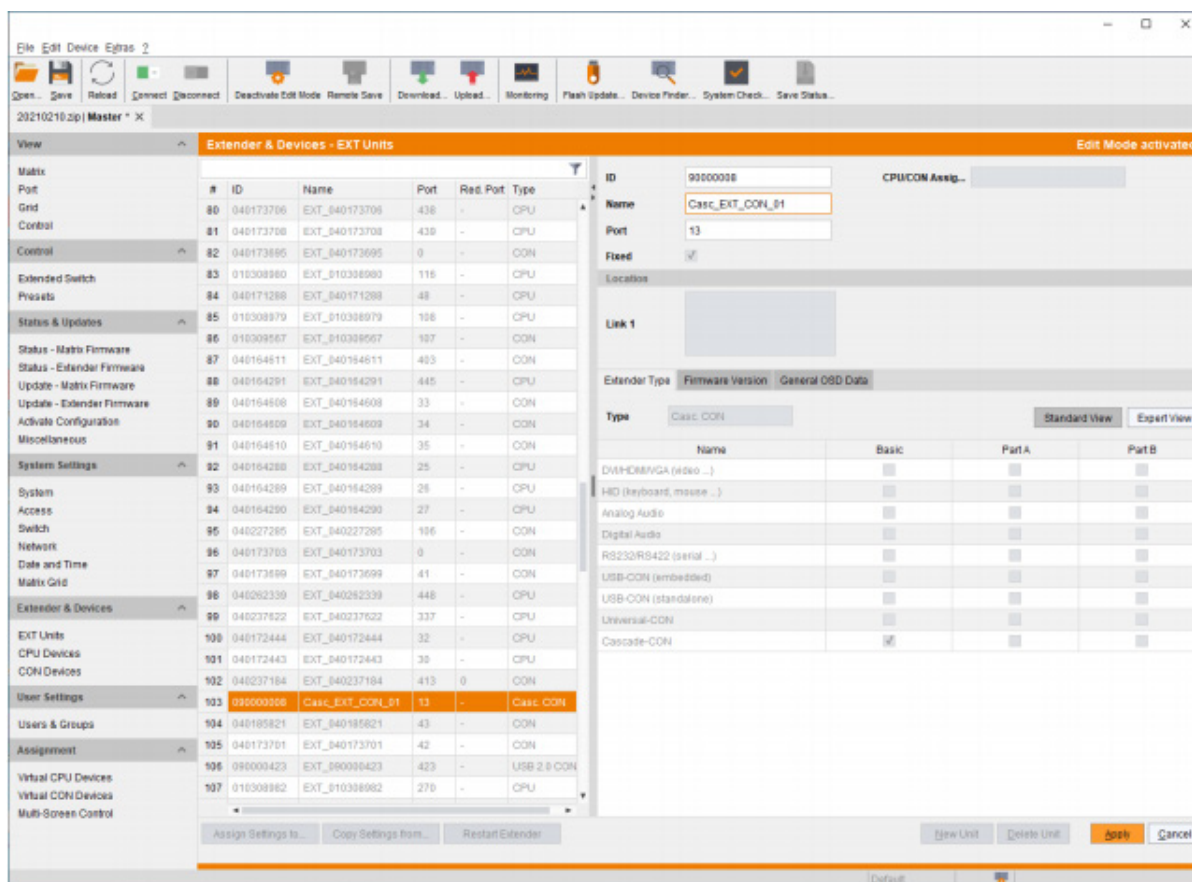


FIGURE 6-11.1.3 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - CASCADING CON UNITS

- 8.1. Select the previously configured Cascading CON Unit in the **Extender available** list.
- 8.2. Click the button to move the highlighted Cascading CON Unit to the **Extender assigned** list.

The assignment is displayed in the **Extender assigned** list.

- 8.3. Click the **Apply** button to confirm the assignment.

9. Click the **Deactivate Edit Mode** menu item in the toolbar.

The OSD of the Sub Matrix will immediately freeze and will be only accessible by using the keyboard command <Hot Key>, <s>, <o>.

10. Restart all I/O boards on which any Master/Sub CON Units or CPU Units have been configured (see chapter 7.10.3, page 295) or alternatively restart the matrix (see chapter 7.10.1, page 293).

11. Connect the Tie Lines to the matrices. Ensure that each **Cascade CON Device** on one matrix is connected to **Cascade CPU Device** on the other matrix to achieve switching ability between two matrices.

The Matrix Cascading is now configured and can be used. Additional Tie Lines are configured accordingly. The use of cascading is described in chapter 6.11, page 247.

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6.10.2 DIRECTING A TIE LINE FROM THE MASTER TO THE SUB

To configure settings for using Matrix Cascading and to direct the Tie Line from the Master to the Sub, proceed as follows:

1. Connect to the Master Matrix.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the menu **Extender & Devices > EXT Units** in the task area.
 - 3.1. Click the **New Unit** button.
A selection dialog appears.
 - 3.2. Select **Cascading CON Unit** in the **Choose template** selection box.
 - 3.3. Click the **OK** button.

A new Cascading CON Unit will be created.

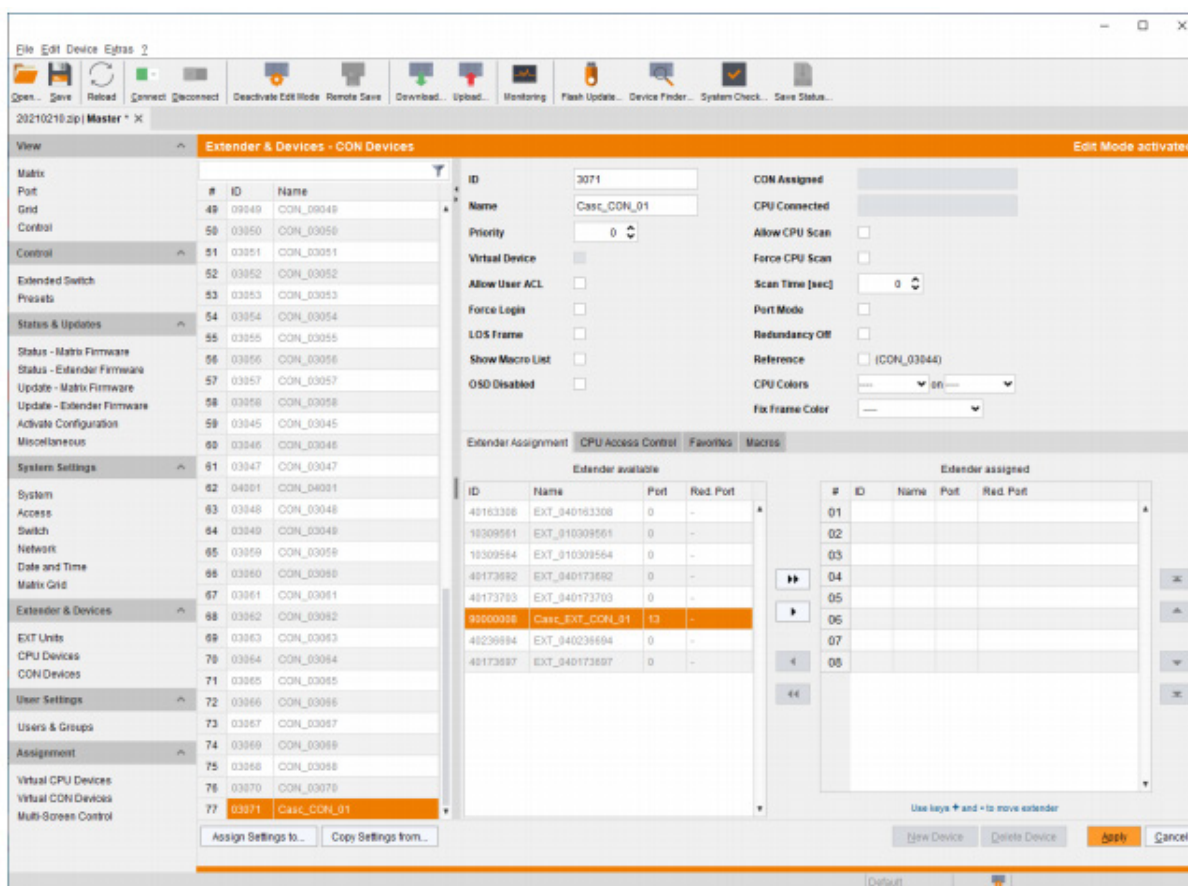


FIGURE 6-11.2.1 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - CASCADING CON UNITS

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- 3.4. Enter an appropriate name for the Cascading CON Unit into the **Name** field.
- 3.5. Enter a port number into the **Port** field according to the required connection of the Tie Line.
- 3.6. Click the **Apply** button to confirm the creation of a Cascading CON Unit.
4. Select **Extender & Devices > CON Devices** in the task area of the Master Matrix.
 - 4.1. Click the **New Device** button.
 - A switchable CON Device will be created.
 - 4.2. Enter an appropriate name for the Cascading CON Device into the **Name** field.

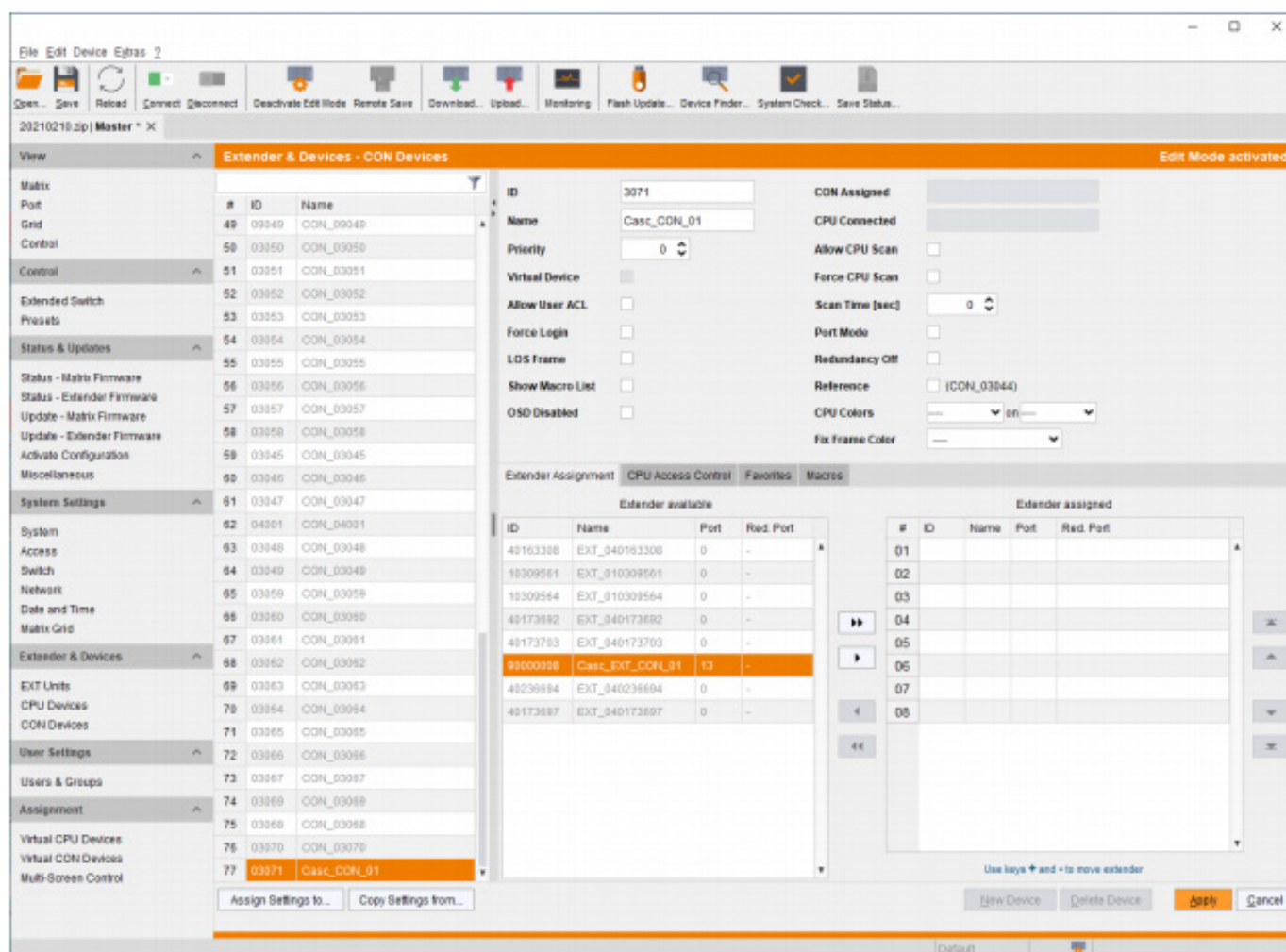


FIGURE 6-11.2.2 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES > CON DEVICES - CASCADING CON DEVICE

- 4.1. Select the previously configured Cascading CON Unit in the **Extender available** list.
- 4.2. Click the button to move the highlighted Cascading CON Unit to the **Extender assigned** list.
- The assignment is displayed in the **Extender assigned** list.
- 4.3. Click the **Apply** button to confirm the assignment.

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5. Connect to the Sub Matrix.
6. Click the Activate Edit Mode menu item in the toolbar.
7. Select the menu Extender & Devices > EXT Units in the task area.

7.1. Click the New Unit button.

A selection dialog appears.

7.2. Select Cascading CPU Unit in the Choose template selection box.

7.3. Click the OK button.

A new Cascading CPU Unit will be created.

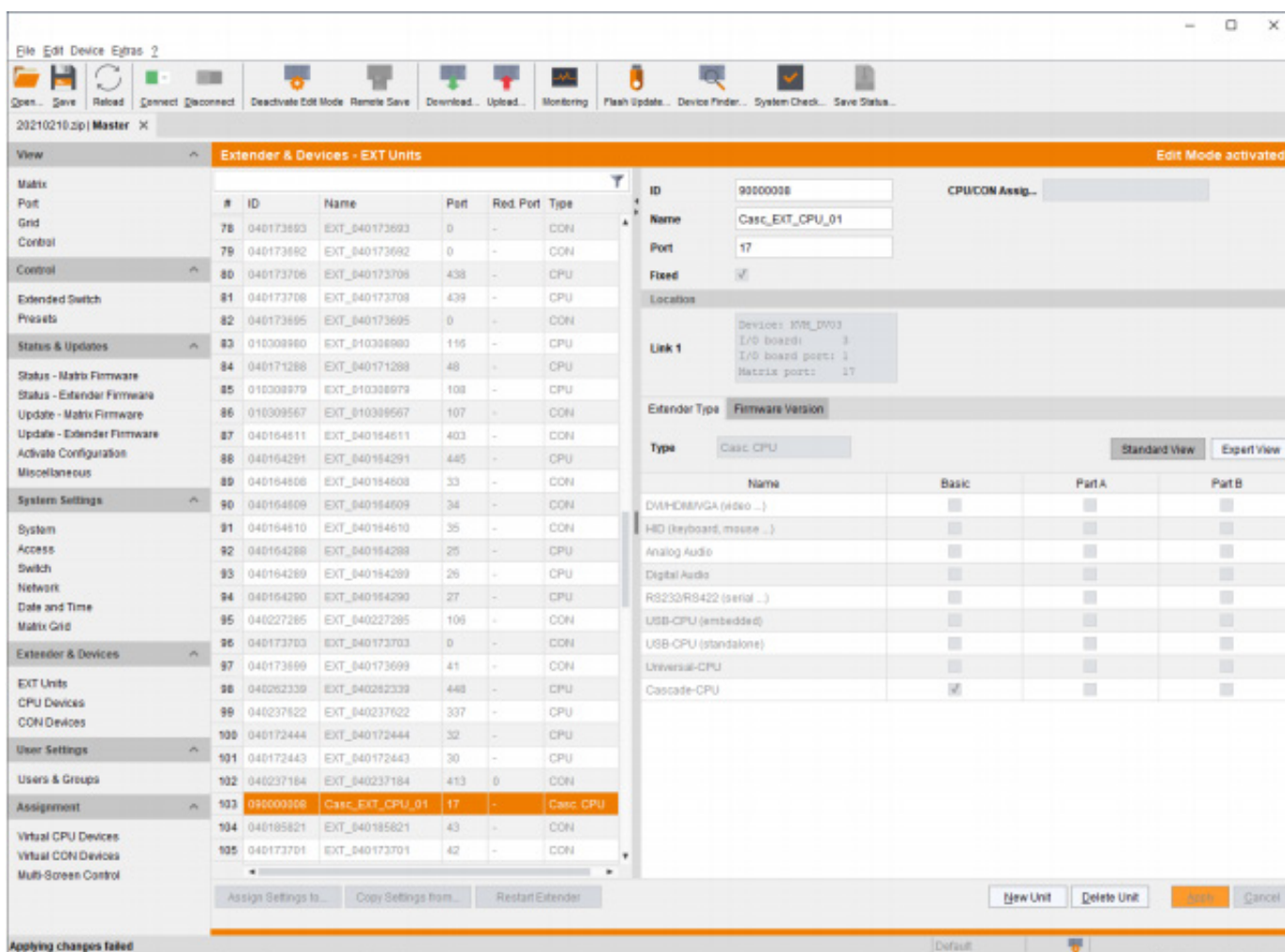


FIGURE 6-11.2.3 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES - EXT UNITS - CASCADING CON UNIT

- 7.4. Enter an appropriate name for the Cascading CPU Unit into the **Name** field.
- 7.5. Enter a port number into the **Port** field according to the required connection of the Tie Line.
- 7.6. Click the **Apply** button to confirm the creation of a Cascading CPU Unit.

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8. Select **Extender & Devices > CPU Devices** in the task area of the Sub Matrix.

8.1. Click the **New Device** button.

A switchable CPU Device will be created.

8.2. Enter an appropriate name for the Cascading CPU Device into the **Name** field.

8.1. Select the previously configured Cascading CPU Unit in the **Extender available** list.

8.2. Click the button to move the highlighted Cascading CPU Unit to the **Extender assigned** list.

The assignment is displayed in the **Extender assigned** list.

8.3. Click the Apply button to confirm the assignment.

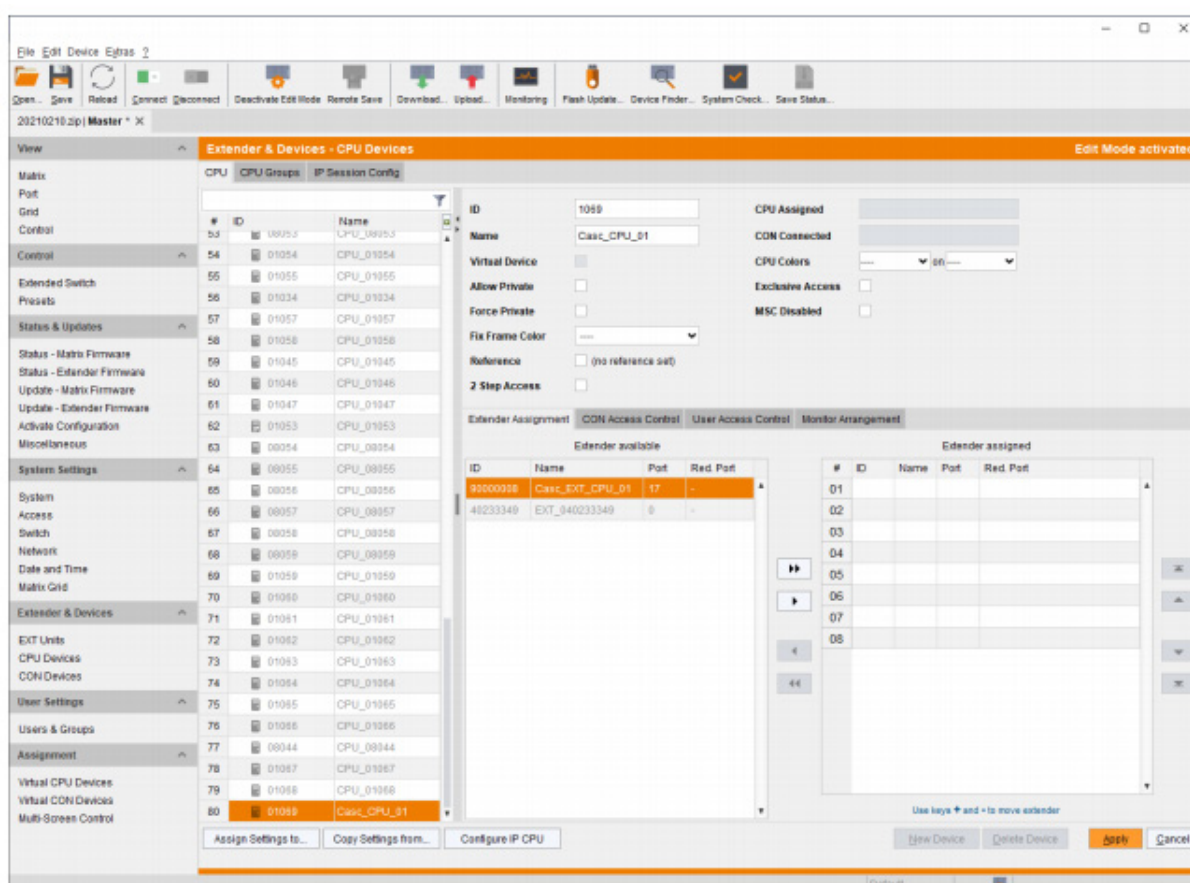


FIGURE 6-11.2.4 MANAGEMENT SOFTWARE MENU - EXTENDER & DEVICES > CON DEVICES - CASCADING CON DEVICE

9. Click the **Deactivate Edit Mode** menu item in the toolbar.

10. Restart all I/O boards (see chapter 7.10.3, page 295) on which any Master/Sub CON Units or CPU Units have been configured or alternatively restart the matrix (see chapter 7.10.1, page 293).

11. Connect the Tie Lines to the matrices. Ensure that each **Cascade CON Device** on one matrix is connected to **Cascade CPU Device** on the other matrix to achieve switching ability between two matrices.

The Matrix Cascading is now configured and can be used. Additional Tie Lines are configured accordingly. The use of cascading is described in chapter 6.11 page 247.

6.11 SAVING AND ACTIVATING CONFIGURATIONS

NOTICE

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

First starting the matrix, the factory configuration will be copied into the current configuration. You have 3 possibilities to save configuration changes:

- saving the current configuration permanently in the matrix memory (**Remote Save**)
- saving configuration on a local memory (**Save** or **Save as**)
- uploading the configuration in up to 8 predefined storage locations, as well as the default configuration in the memory of the matrix (**Upload**)

6.11.1 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 the **Remote Save** menu item in the toolbar.

A query to save the configuration appears.

2. Click the **Yes** button to confirm the saving.

The previously active configuration is overwritten and saved in the permanent memory of the matrix.

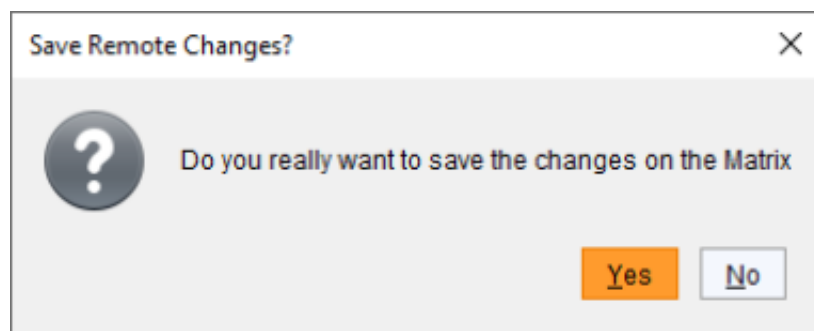


FIGURE 6-12.1.1 MANAGEMENT SOFTWARE DIALOG SAVE REMOTE CHANGES

6.11.2 SAVING OF CONFIGURATIONS LOCALLY

Configurations can be saved as a file that can be stored independent of the matrix.

To save a configuration file locally, proceed as follows:

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

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

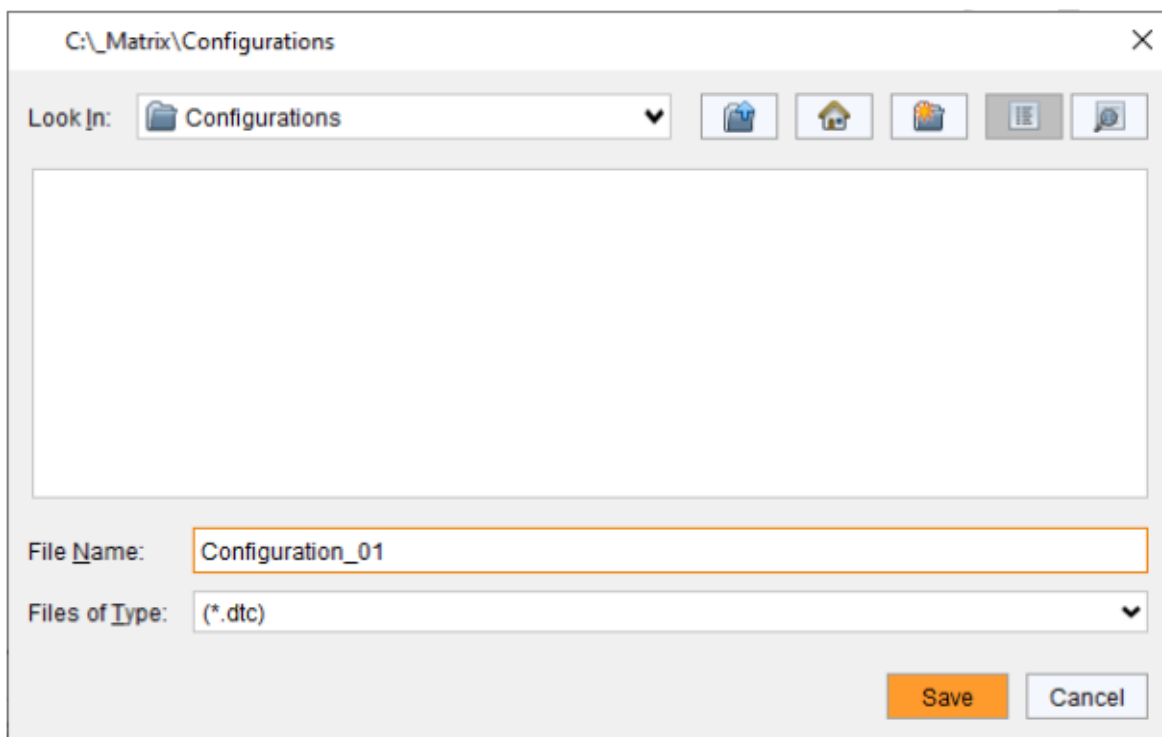


FIGURE 6-12.2.2 MANAGEMENT SOFTWARE MENU FILE - SAVE AS..

6.11.3 OPENING A LOCALLY SAVED CONFIGURATION

To open a locally saved configuration, proceed as follows:

1. Click the **Open...** menu item in the toolbar.
2. Navigate to the location of the configuration file to be opened.
3. Click the configuration file to be opened.
4. Click the **Open button, to open the configuration file.**

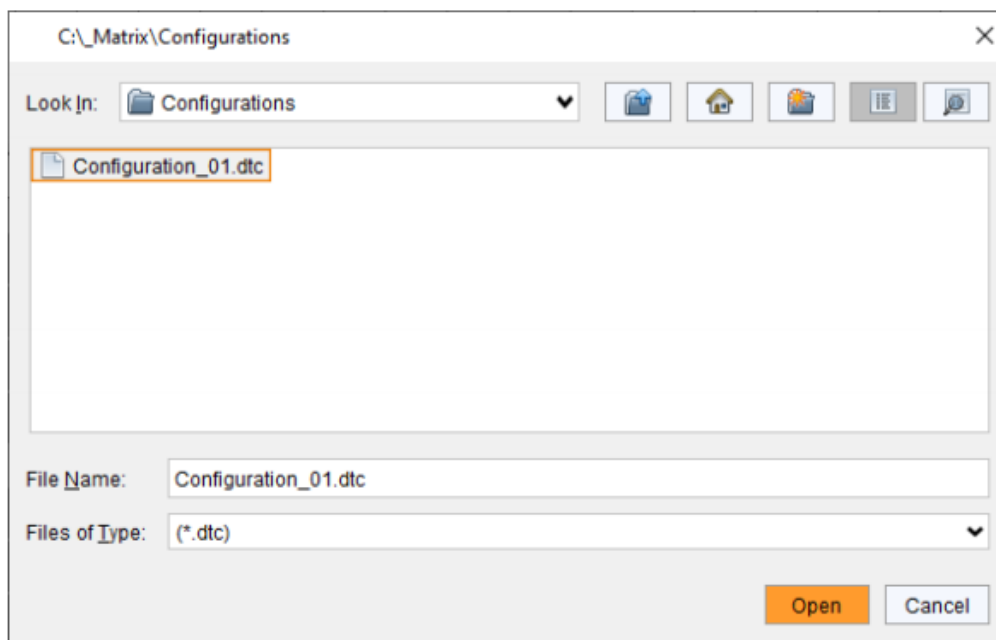


FIGURE 6-12.3.1 MANAGEMENT SOFTWARE MENU OPEN

*The configuration can also be opened via drag & drop. To do this, click on the configuration file, hold down the primary mouse button and drag the configuration file into the management software.

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

6.11.4 UPLOADING A PREDEFINED CONFIGURATION TO THE MATRIX

Using the function **Upload**, the created configuration can be saved within eight storage locations in the matrix (**File#1** to **File#8**). However, it does not replace the buffering of configuration (see chapter 6.12.1, page 228).

Additionally, a configuration can also be saved as default configuration that can be automatically loaded with each start.

To upload an opened configuration to the matrix, proceed as follows:

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

An access window appears.

2. Enter the IP address of the matrix .
3. Enter the username and password of the administrator.
4. Click the **Next** button to display the selection of storage slots.

The screenshot shows a dialog box titled 'Upload...' with a close button (X) in the top right corner. On the left, under the 'Steps' section, there are two steps: '1. Connect' (highlighted) and '2. Select Configuration Slot'. The main area is titled 'Connect' and contains three input fields: 'Hostname / IP Address' with the value '192.168.100.99', 'User' with the value 'admin', and 'Password' with masked characters '*****'. At the bottom right, there are four buttons: '< Back' (disabled), 'Next >' (active/highlighted), 'Finish' (disabled), and 'Cancel'.

FIGURE 6-12.4.1 MANAGEMENT SOFTWARE MENU UPLOAD - CONNECT

5. Under **Select Configuration Slot**, select the storage slot for the configuration (**default** or **config01** to **config08**).

6. Option: To activate the uploaded configuration immediately, click the **Activate configuration after upload** check box.

NOTICE

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

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

7. Click the Finish button to save the configuration to the selected storage location.

A message appears to inform about successful upload.

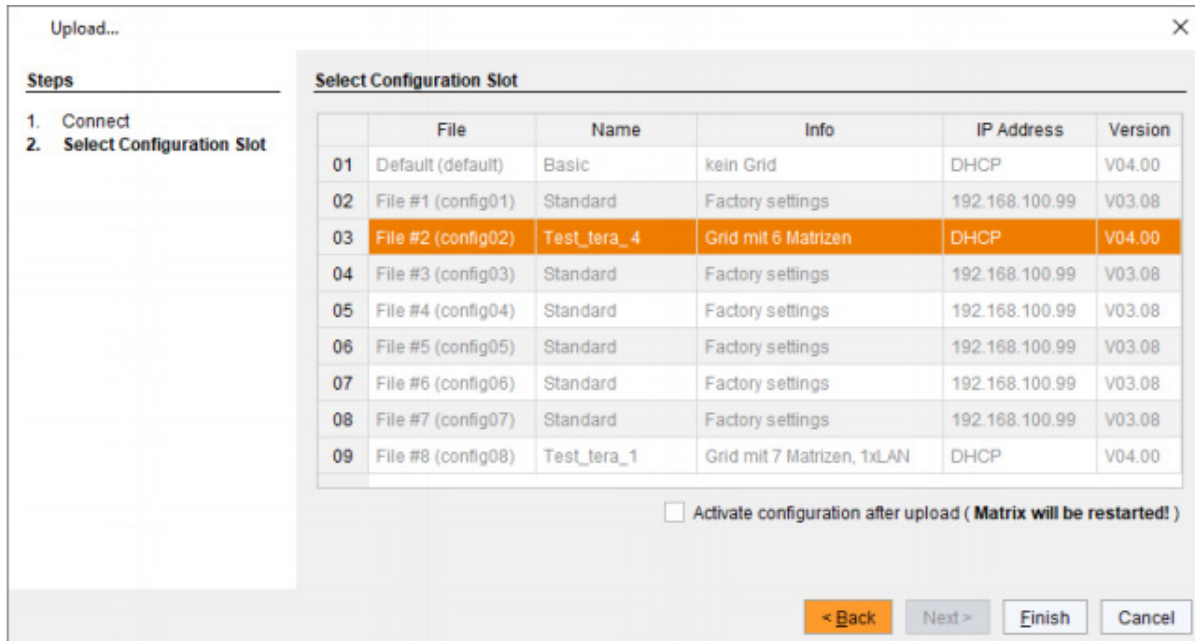


FIGURE 6-12.4.2 MANAGEMENT SOFTWARE MENU UPLOAD - SELECT CONFIGURATION SLOT

6.11.5 ACTIVATING A PREDEFINED 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 eight customizable configurations and the default settings.

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.

To activate an uploaded configuration, proceed as follows:

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

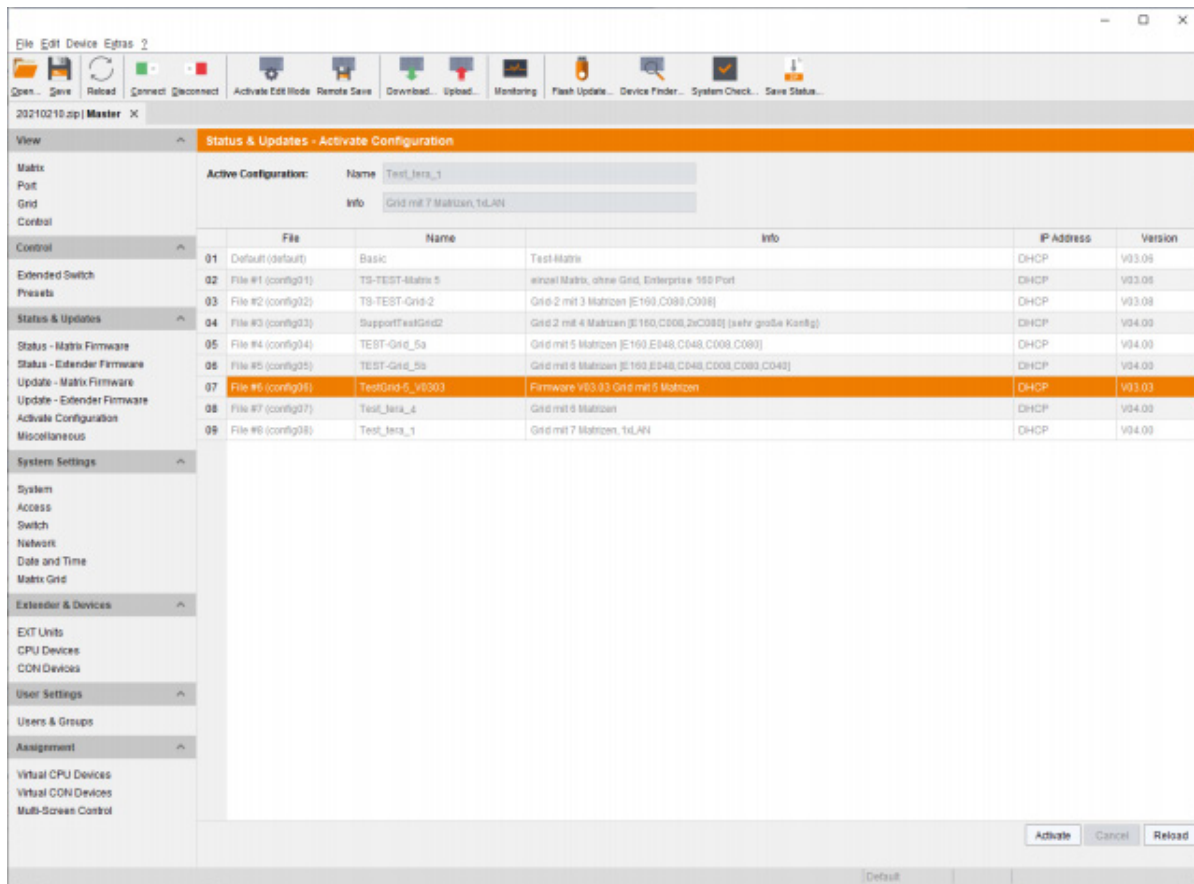


FIGURE 6-12.4.3 MANAGEMENT SOFTWARE STATUS & UPDATES - ACTIVATED CONFIGURATION

- Click the **Activate** button to activate the selected configuration.

A query to restart the matrix appears.

- Click the **Yes** button to confirm the activation of the selected configuration.

The connection is disconnected, and the matrix is restarted. 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.

- Click the **Deactivate Edit Mode** menu item in the toolbar.

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

6.11.6 DOWNLOADING A PREDEFINED 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 the **Download** menu item in the toolbar.
An access window appears.
2. Enter the IP address of the matrix .
3. Enter the username and password of the administrator.
4. Click the **Next** button to display the selection of storage location.

The screenshot shows a 'Download...' dialog box with a 'Connect' tab. On the left, a 'Steps' list shows '1. Connect' and '2. Select Configuration'. The main area contains three input fields: 'Hostname / IP Address' with the value '192.168.100.99', 'User' with the value 'admin', and 'Password' which is masked with asterisks. At the bottom right, there are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

FIGURE 6-12.6.1 MANAGEMENT SOFTWARE MENU - CONNECT

5. Under **Select Configuration**, select the storage location of the desired configuration (**default** or **config01** to **config08**).
6. Click the **Finish** button to download the desired configuration to management software.

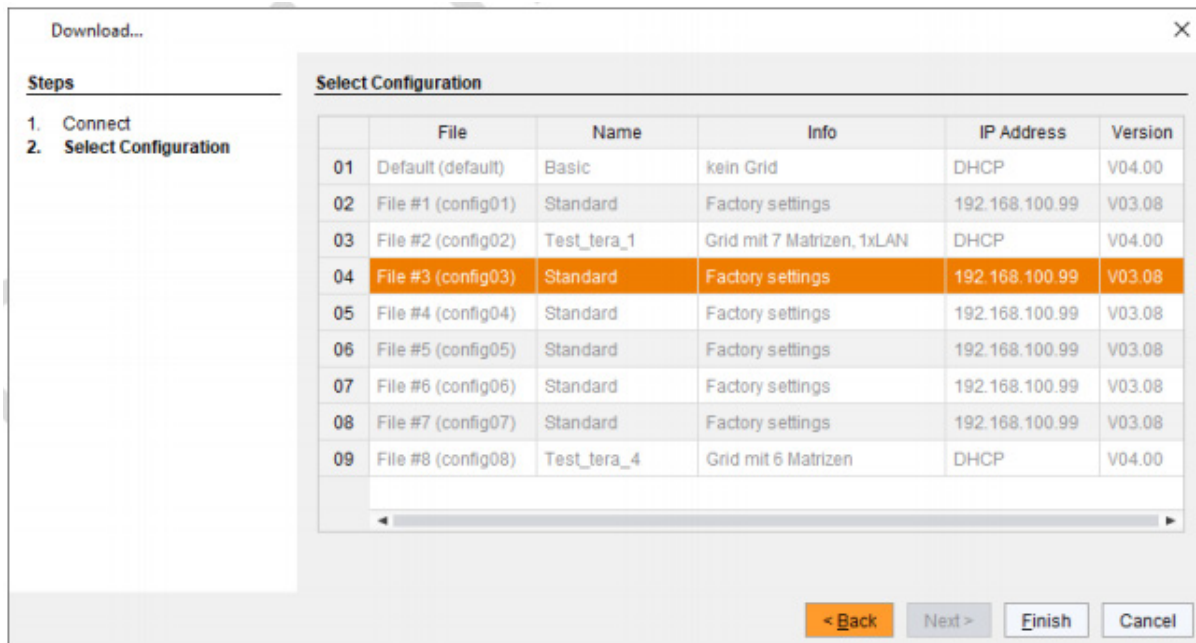


FIGURE 6-12.6.2 MANAGEMENT SOFTWARE MENU -DOWNLOAD - SELECT CONFIGURATION

6.12 EXPORT AND IMPORT OPTIONS

The KVM Matrix offers the ability to read out available configuration lists (extenders, CPUs, consoles and users) for export and import again via management software.

*Exported configuration lists are always saved in .csv format that allows offline editing with common spreadsheet applications.

6.12.1 EXPORT / IMPORT OPTIONS

Configuration lists are exported in this menu.

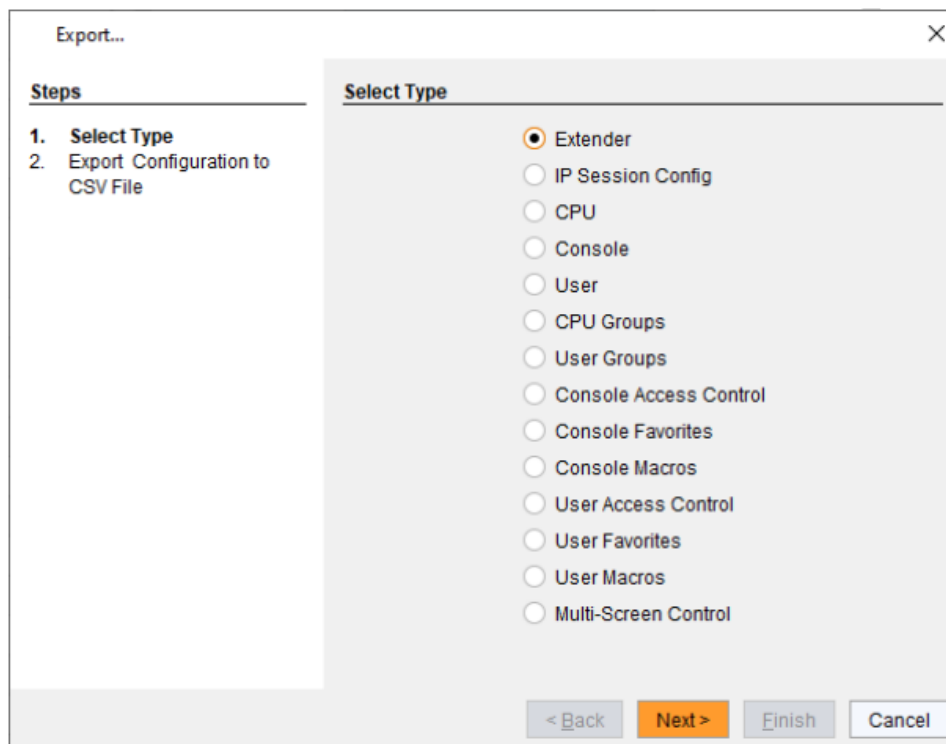


FIGURE 6-13.1.1 MANAGEMENT SOFTWARE MENU - FILE EXPORT - SELECT TYPE

To export, proceed as follows:

1. Select **File > Import / Export** in the menu bar.
2. After opening the menu, select the list to import / export.
3. Click the **Next** button.
4. Navigate to the location of the configuration file to be exported.
5. Enter the name for the configuration file to be exported.
6. Click the **Finish** button to confirm the export.

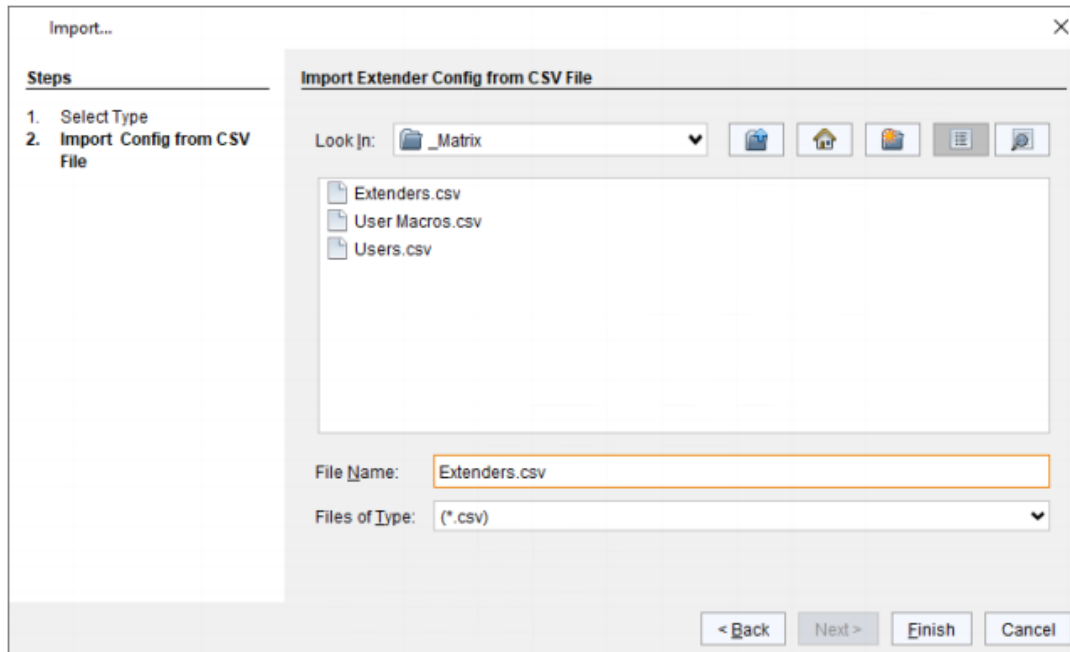


FIGURE 6-13.1.2 MANAGEMENT SOFTWARE MENU - FILE EXPORT - EXPORT CONFIGURATION TO CSV FILE

6.13 UPDATING THE FIRMWARE

6.13.1 UPDATING THE MATRIX FIRMWARE

NOTICE

To process successful firmware updates and avoid failures:
Only use computers to update the matrix that are not integrated into the matrix setup.
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 direct LAN connection for reasons of network stability.

NOTICE

Ensure that all USB 2.0 extenders are only connected to the provided ports (fixed ports) before you start the matrix update. Non-compliance may affect the stability of the update.

*For Linux-based systems, the firmware update of MATLOS has to be performed version by version. E.g., if the current firmware version is F01.04 should be updated to F01.08, first update with F01.05, then F01.06 and so on. After each firmware update, the matrix has to be restarted.

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The firmware of the matrix can be updated in this menu.

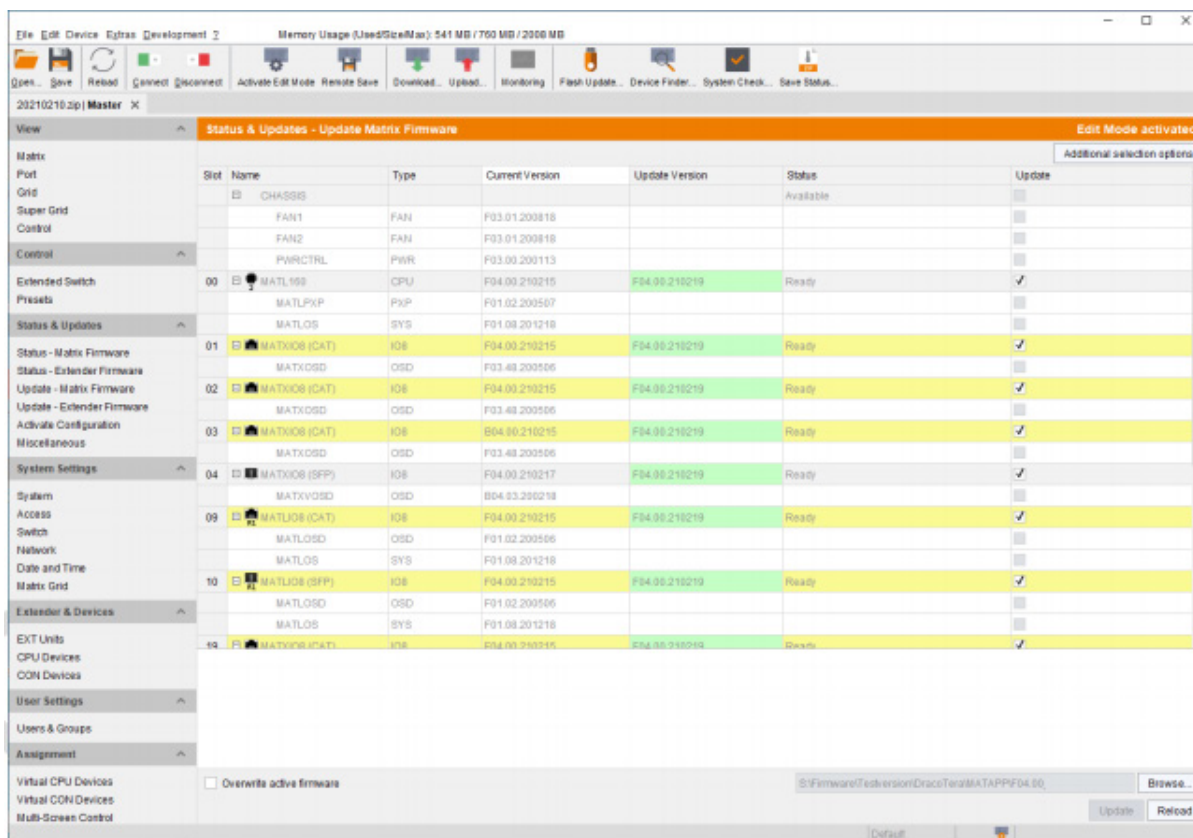


FIGURE 6-14.1.1 MANAGEMENT SOFTWARE MENU - STATUS & UPDATES - UPDATE MATRIX FIRMWARE

The firmware of the matrix can be updated in this menu.

OPTION	DESCRIPTION
Name	Module name
Type	Type number
Current Version	Installed firmware version
Update Version	Current firmware version

Preparation

*If the syslog function has not been set yet, we recommend activating the syslog function (see chapter 6.4.7, page 165) before updating the firmware to log the update in case of update errors.

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To be prepared for a firmware update, proceed as follows:

1. Save the matrix configuration locally (see chapter 6.12.2, page 257).
2. If the options settings for the management software have not yet been set:
 - 2.1. **Open Extras > Options** in the menu bar.
 - 2.2. Under **Firmware Directory** insert in the directory from which the update files should be standardly sourced.
3. Save the update files in the **Firmware Directory**.

Performing the Update

To update the matrix firmware, proceed as follows:

1. Select **Status & Updates > Update - Matrix Firmware** in the task area.

All updateable components of the matrix will be automatically selected and highlighted in green.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click the Update button in the lower part of the working area to start the update.

A query to save the matrix status appears.
4. Click the **Save Matrix Status** button to save the matrix status locally or click the Skip button, if the status is already saved.

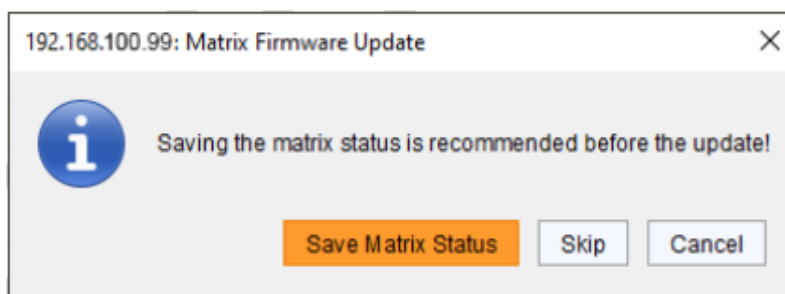


FIGURE 6-14.1.2 MANAGEMENT SOFTWARE DIALOG SAVE MATRIX STATUS

5. The progress of the update is displayed in the working area.

After the update, a query to restart the matrix appears.
6. Click the **Yes** button to restart the matrix.

The updated firmware is displayed in the working area.
7. Click the **Deactivate Edit Mode** menu item in the toolbar.

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6.13.2 EXTENDER UPDATE

The firmware of the extenders connected to the matrix can be updated in this menu, except the firmware type MSD.

NOTICE

Possible failures when updating the firmware

When updating individual firmware files, there may be dependencies on the new content of the files HUSWMSD.pfw or HUSWITCH.pfw if they are changed. Installing in the wrong sequence could lead to failed updates.

To process successful firmware updates and avoid failures:

First check if there is an update available for the HUSWMSD or HUSWITCH firmware (comparison with the status displayed in the management software.

If there is an update available, update the firmware files via service port of the extender modules.

Afterwards proceed the update using the function in the management software.

There are two possibilities to update the extenders:

- **Parallel Mode:** By default, used for parallel updates of several extenders.
- **Sequential Mode:** Option the update an extender after the update of another extender is finished.

Preparation

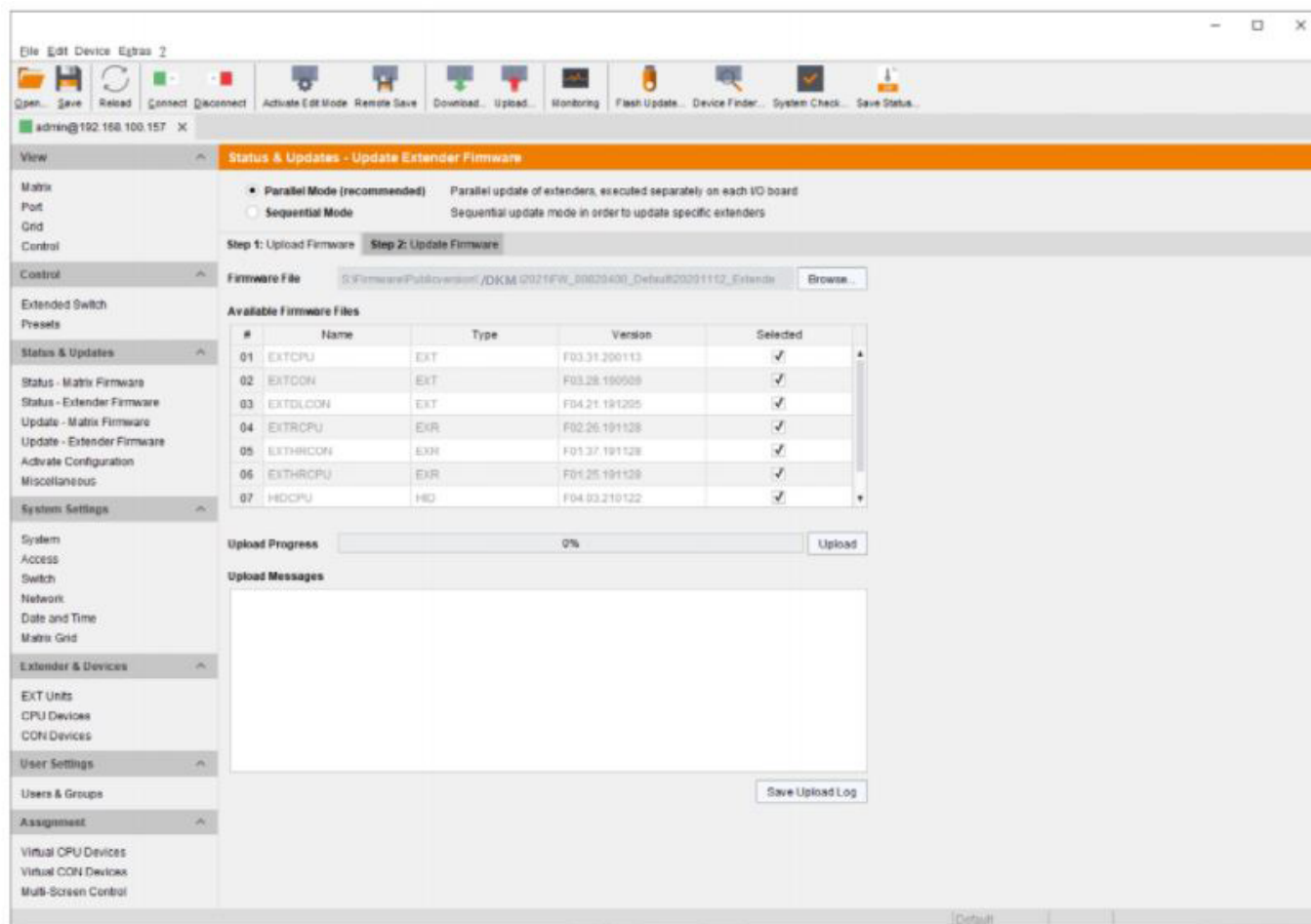
If the syslog function has not been set yet, we recommend activating the syslog function (see chapter 6.4.7, page 165) before updating the firmware to log the update in case of update errors.

To be prepared for a firmware update, proceed as follows:

1. Save the matrix configuration locally (see chapter 6.12.2, page 229).
2. If the options settings for the management software have not yet been set:
 - 2.1. Open **Extras > Options** in the menu bar.
 - 2.2. Under **Firmware Directory** insert in the directory from which the update files should be standardly sourced.
3. Save the update files in the **Firmware Directory**.

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Performing the Update in Parallel Mode (Standard Update)



UPDATE EXTENDER FIRMWARE - PARALLEL MODE - UPLOAD

To update the extender firmware via standard update, proceed as follows:

1. Select **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.
2. Before the actual update process, all firmware files have to be uploaded to the respective I/O boards on which the extenders are to be updated. If a newer firmware is available, appropriate I/O boards will be automatically selected for the upload in the **Selected** column and highlighted in green.
3. Click the **Upload** button 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. If there are not selected all I/O cards, the upload of the update files will be performed in sequence.

A query to update the extender firmware appears finishing the upload process successful.

4. Click the **Yes** button if you want to directly start the actual update process. The **Update Firmware** tab will open immediately.

CHAPTER 6: CONFIGURATION VIA MGMT. SOFTWARE

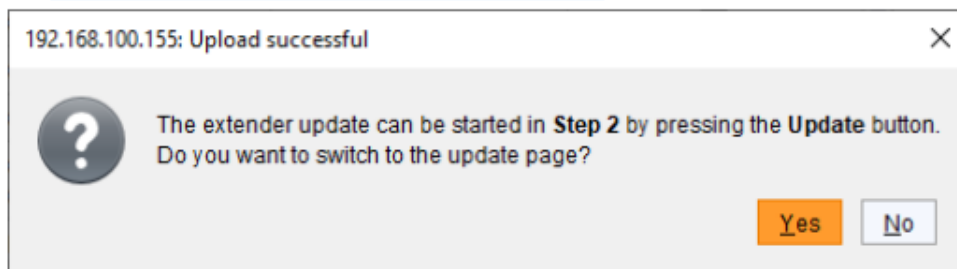


FIGURE 6-14.2.2 MANAGEMENT SOFTWARE DIALOG STATUS & UPDATES - UPDATE EXTENDER
FIRMWARE PARALLEL MODE - UPDATE

*When updating an identical or an older firmware version than the version currently installed, the Enable Downgrade option in the upper part of the working area must be enabled.

5. Click the **Update** button to start the update.

*Just before the update process, all affected I/O boards will be set into the 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 that are connected to the matrix via a CON device.

6. The progress of the update is displayed in the working area.

7. Check the update messages in the message field after the update if the updates for all extenders have been installed correctly.

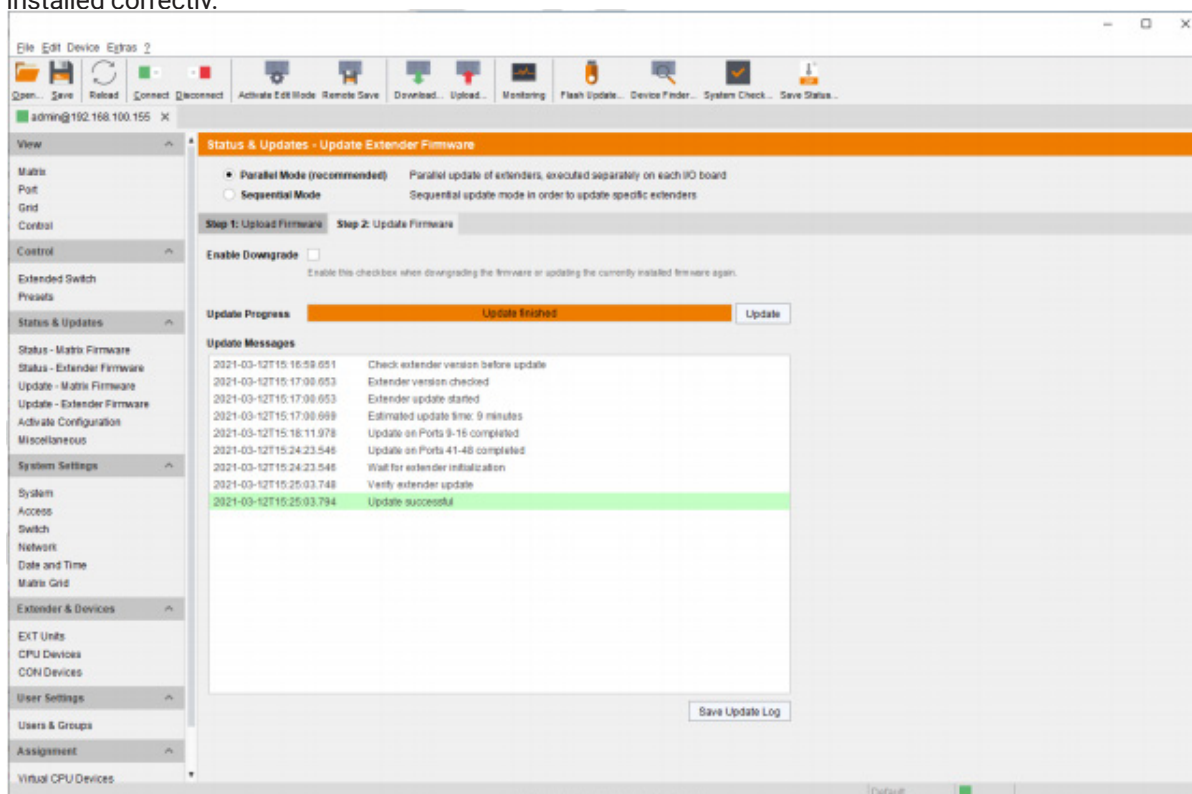


FIGURE 6-14.1.3 MANAGEMENT SOFTWARE DIALOG STATUS & UPDATES - UPDATE EXTENDER
FIRMWARE PARALLEL MODE - UPDATE

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Performing the Update in Sequential Mode (Expert Update)

To update the extender firmware via sequential update, proceed as follows:

1. Select **Status & Updates > Update - Extender Firmware** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the **Sequential Mode** option in the upper part of the working area.

All updateable extenders will be automatically selected and highlighted in green.

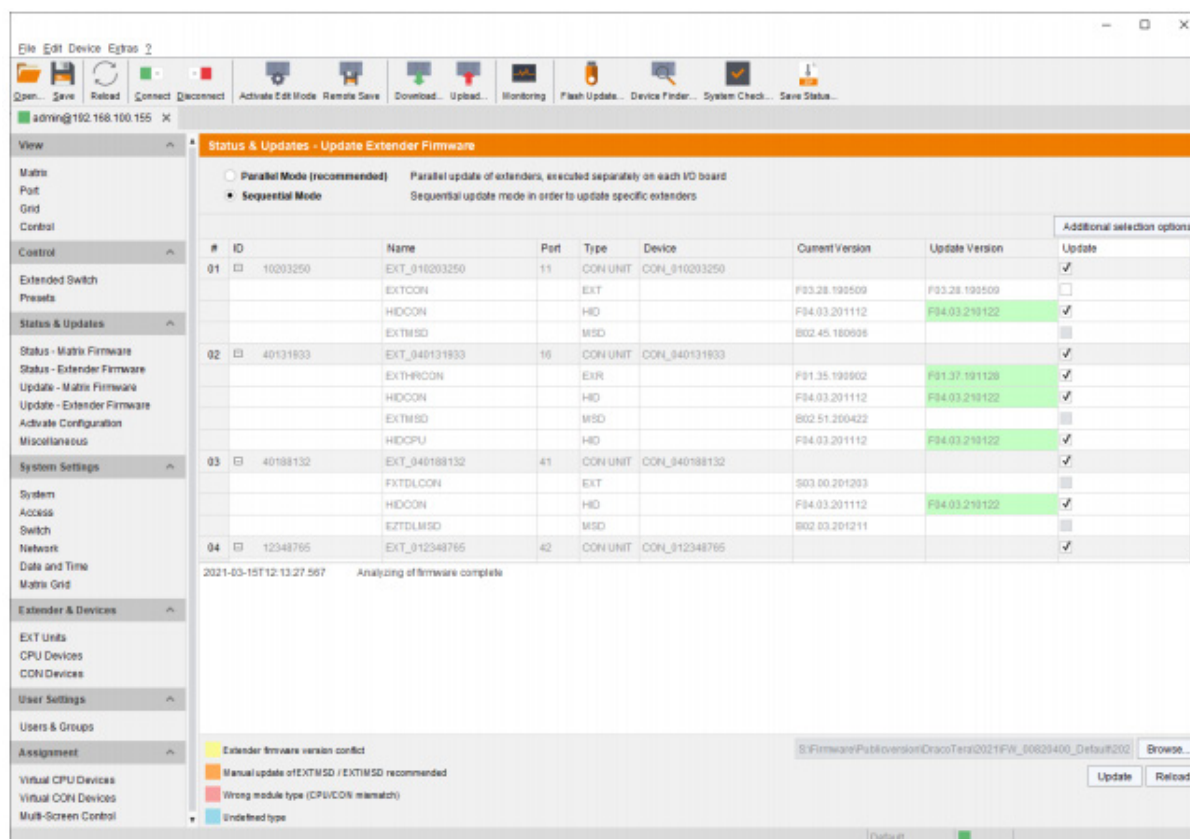


FIGURE 6-14.1.4 MANAGEMENT SOFTWARE MENU STATUS & UPDATES - UPDATE EXTENDER FIRMWARE - SEQUENTIAL MODE

4. Click the **Update** button in the lower part of the working area to start the update.

Just before the update process, all affected I/O boards will be set into the **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 that are connected to the matrix via a CON device.

After update completion the Service Mode will be quit.

5. Check the update messages in the message field after the update if the updates for all extenders have been installed correctly.

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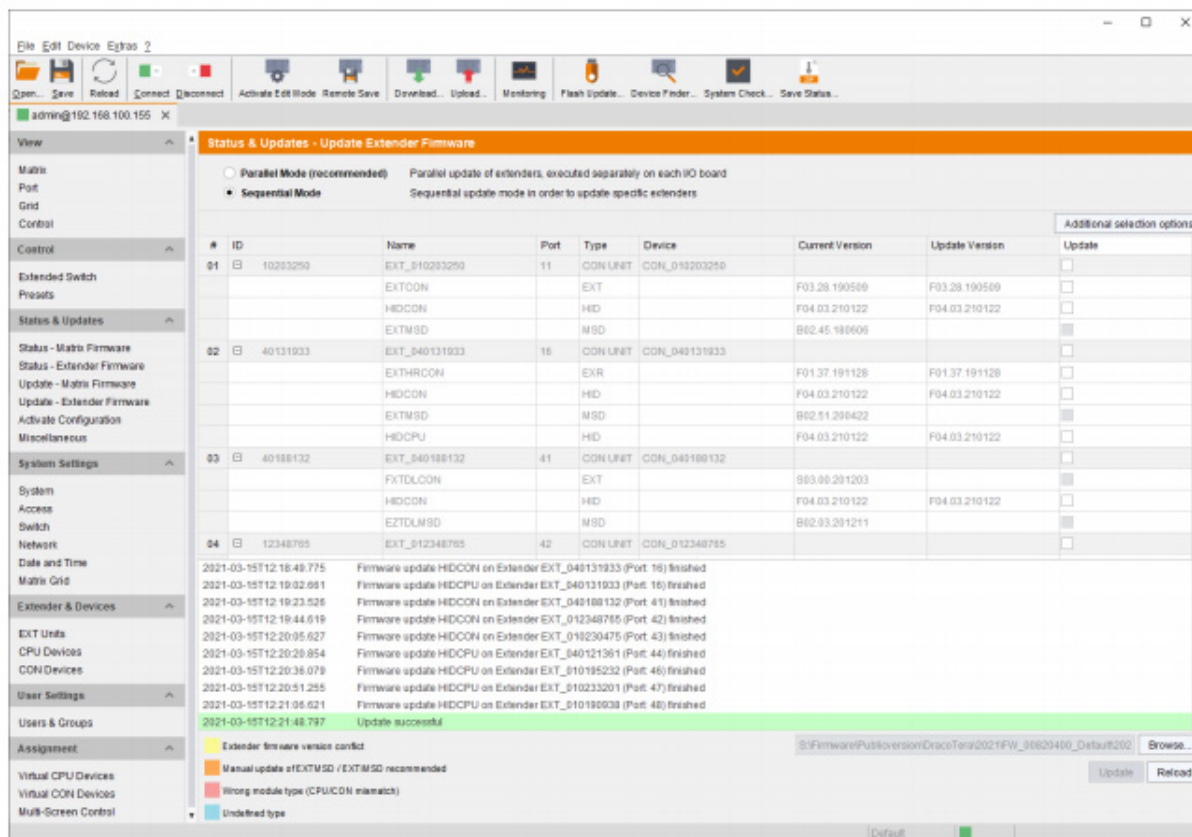


FIGURE 6-14.1.5 MANAGEMENT SOFTWARE MENU STATUS & UPDATES - UPDATE EXTENDER FIRMWARE - SEQUENTIAL MODE

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

6.14 LICENSE MANAGEMENT

In this menu the matrix can be upgraded with new function bundles by installation of license keys.

To obtain license keys to upgrade matrix functions, contact Black Box tech support.

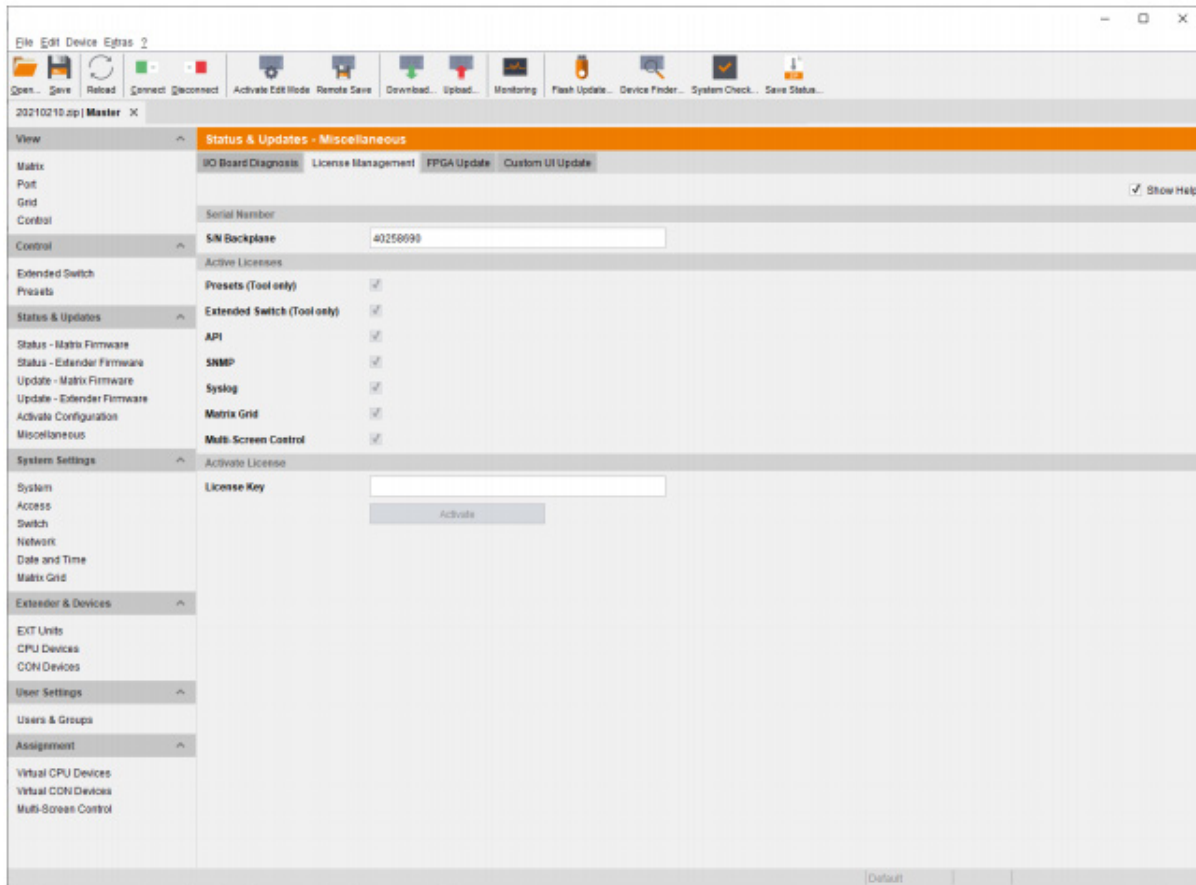


FIGURE 6-15.1 MANAGEMENT SOFTWARE MENU STATUS & UPDATES - MISCELLANEOUS - LICENSE MANAGEMENT

To activate a function bundle, proceed as follows:

1. Select **Status & Updates > Miscellaneous** in the task area.
2. Select the **Miscellaneous** tab.
3. Enter your license key in the working area under **Activate License** in the **License Key** field.
4. To activate the license key, click the **Activate** button.
The new functions will be immediately enabled, a restart of the matrix will not be necessary.

7.1 OPERATION

The matrix can be operated in three different ways:

1. Direct Switching

- via a keyboard connected to a CON port and the favorites
- by a macro keyboard connected to a console port

2. OSD

- via keyboard/mouse directly connected to the CPU board of the matrix
- via keyboard/mouse connected to a CON Unit and the OSD

3. External Switching Commands

- via an external computer via management software (network connection required)
- via a media control (network connection required)

7.2 SWITCHING OPERATION VIA KEYBOARD

7.2.1 DIRECT SWITCHING

The direct switching by favorites on a keyboard is the fastest possibility for a user to switch at his console between different CPUs. This offers the option to switch video, keyboard and mouse or Video Only.

Direct Switching of Video, Keyboard and Mouse

1. Start the command mode with the Hot Key.
The **Caps Lock** and **Scroll Lock** LEDs on the keyboard are flashing.
2. Enter the index number of the new CPU from the list of favorites.
3. Press the <Enter> key to confirm.
At the same time the command mode is closed, and the console is connected to the new CPU which takes over complete control.

Example: Switching to favorite CPU 7 with video, keyboard, and mouse

<left Shift>, <left Shift>, <7>, <Enter>

*Fastest switching time can be achieved by using identical mice, keyboards, and monitors. This contributes to a smooth and seamless direct switching of the matrix.

Switching in Private Mode

1. Start the command mode by entering the Hot Key.
The **Caps Lock** and **Scroll Lock LEDs** on the keyboard are flashing.

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2. Enter the index number of the new CPU from the list of favorites.
3. Press the <left Shift>, <Enter> keys at the same time to confirm.
At the same time the command mode is closed, and the console is connected to the new CPU with complete control in **Private Mode**.

Example: Switching to favorite CPU 3 in **Private Mode**
<left Shift>, <left Shift>, <3>, <left Shift>, <Enter>

Direct Switching of Video

1. Start the command mode by entering the Hot Key.
The **Caps Lock** and **Scroll Lock LEDs** on the keyboard are flashing.
2. Enter the index number of the new CPU from the list of favorites.
3. Press the <Space> key to confirm.
At the same time command mode is closed, and the console is connected to the new CPU with Video Only.

Example: Switching to favorite CPU 1 with Video Only
<left Shift>, <left Shift>, <1>, <Space>

Switching to previous CPU

*If you switch to a CPU that was previously connected with Video Access only, you will be connected to this CPU with full KVM access.

*You can only switch to valid, unused CPUs using Hot Keys. The options Force Connect and Force Disconnect as well as the restrictions of the User ACL and CON ACL are taken into account. Hot Keys are only supported if neither Enable User Login nor the Enable User ACL is selected, and the user is logged in the OSD.

1. Start the command mode by entering the Hot Key.
The **Caps Lock** and **Scroll Lock LEDs** on the keyboard are flashing.
2. Press the <p> key of your keyboard.
At the same time command mode is closed, and the console is connected to the previous CPU with complete control.
Disconnecting current connection
1. Start the command mode by entering the Hot Key.
The Caps Lock and Scroll Lock LEDs on the keyboard are flashing.
2. Press the <Backspace> key of your keyboard.
The command mode is closed, and the console is disconnected from the previous connected CPU.

*Optimal results can be achieved by using identical resolutions as far as possible. This contributes to a smooth and seamless function of the scan mode.

7.2.2 FUNCTION KEYS <F1> TO <F16>

In the command mode you can retrieve the macros 1 to 32 with the <F1> to <F16> function keys on the connected standard keyboard instead of the special macro keyboard.

Executing macros 17 to 32 is realized by the simultaneous use of the <left Shift> key. The stored command sequence for the appropriate function key is executed and the command mode is left immediately.

It is not necessary to press <Enter> to confirm the selection of macros.



7.2.3 SWITCHING A CON UNIT TO A LOCAL SOURCE

KVM extender CON Units connected to a local source (computer, CPU) can be locally switched via the matrix. Switching is performed between the local source and the KVM connection and can be executed via keyboard commands or OSD (see chapter 7.2.4, page 254).
If you switch to the local source, the KVM connection will be automatically disconnected.

*When using CON Units with the possibility to connect a local source (computer, CPU) in a Multi-Screen Control environment, the local switching will be disabled.

The following keyboard commands are available to switch to the local source:

KEYBOARD COMMANDS	DESCRIPTION
<Hot Key>, <k>, <1>, <Enter>	Switching to extender connection
Type <Hot Key>, <k>, <2>, <Enter>	Switching to extender connection 2 (only with redundant CON Units)
<Hot Key>, <l>, <Enter>	Switching to the local source (computer, CPU)

7.2.4 MULTI-SCREEN CONTROL SWITCHING VIA KEYBOARD

The Multi-Screen function contains a switching of the USB-HID signal between different statically connected sources (computer, CPU) within a CON Device and can be performed via keyboard (configuration see chapter 7.12, page 327) or mouse (see chapter 7.3, page 277).

To perform a switching operation via keyboard command, proceed as follows:

1. Enter the <Hot Key> to start the command mode.
2. Press the respective key on the numeric pad of the keyboard to select the target display.
The switching operation will be performed, and the USB-HID signal will be available at the target display.

The following keyboard commands are available for switching operations:

KEYBOARD COMMANDS	DESCRIPTION
<current Hot Key>, <Num 0>	Switching of the USB-HID signal to the own display (CON Unit with keyboard and mouse)
<current Hot Key>, <Num 1>	Switching of the USB-HID signals to display #1
<current Hot Key>, <Num 2>	Switching of the USB-HID signals to display #2)
<current Hot Key>, <Num 3>	Switching of the USB-HID signals to display #3
<current Hot Key>, <Num 4>	Switching of the USB-HID signals to display #4

7.3 SWITCHING VIA OSD

7.3.1 KVM SWITCHING

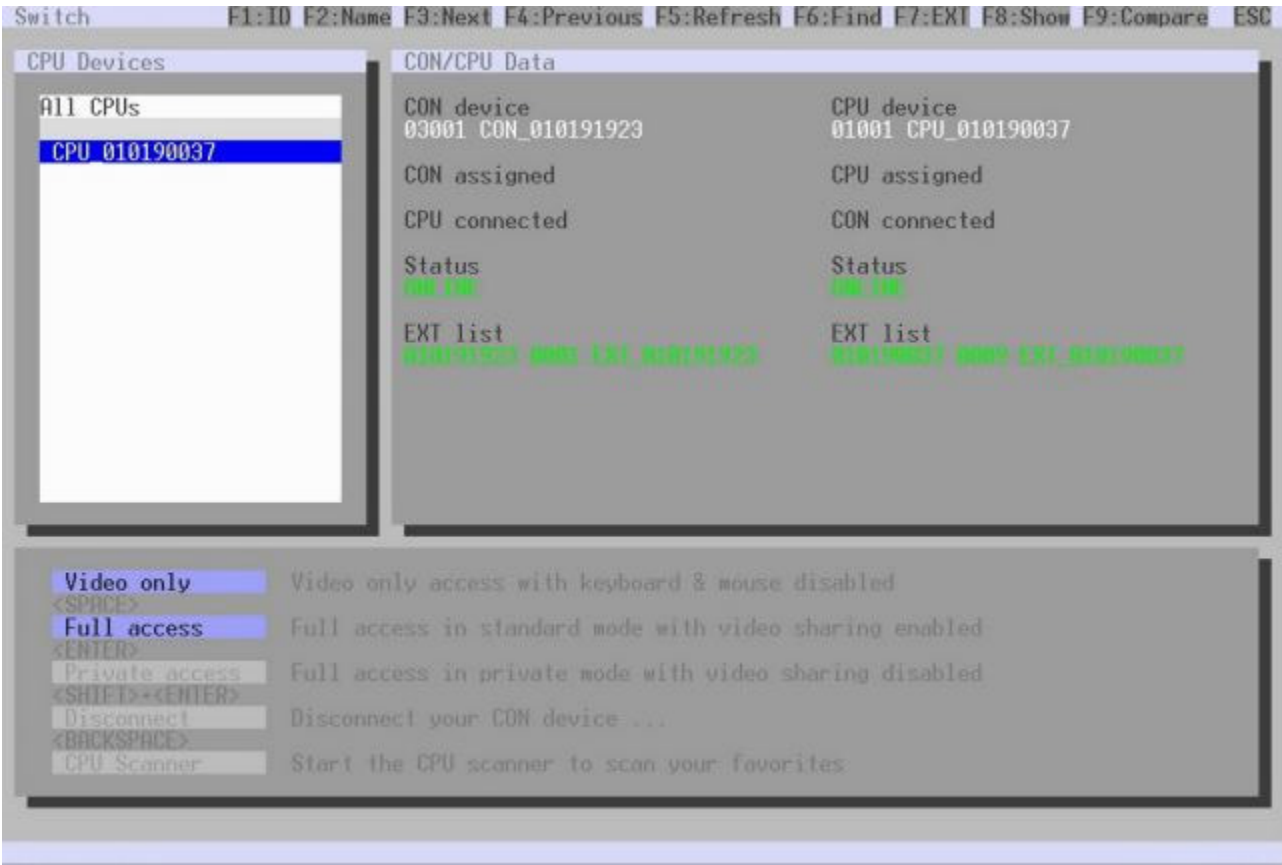


FIGURE 7-3.1.1 OSD MENU SWITCH

To switch the console to any available CPU, proceed as follows:

- 1. Select **Switch** in the main menu.
- 2. Select in the **CPU Devices** list on the left-hand side that CPU that should be connected to the CON Device.
- 3. Press the appropriate keyboard command to confirm desired connection type.

*Switching operations from the own CON Device can only be performed on CPU Devices that are available in the **CPU Devices** list.

*Listed CPU Devices highlighted in red color are currently connected in Private Mode and are blocked by the connected CON Device.

Press the <F8> key to expand the current view to show inactive CPU devices.



Switching via Selection List for CPU Devices

The matrix offers the ability to execute KVM switching operations by means of a selection list for CPU Devices next to the OSD in full screen.

To use the selection list for CPU Devices, proceed as follows:

1. Activate the **Enable CPU Selection** List option in the **Configuration > EXT Units** menu for those consoles where the selection list for CPU Devices should be available.
2. Start the command mode by entering the Hot Key and press <o> to open OSD.
The selection list immediately appears in the preset position of the extender OSD.

*Press the <F8> key to hides inactive CPU Devices to provide a clearer overview.

3. Press the respective key (see chapter 7.2.1, page 250) to execute the desired switching operation.
To prevent a switching operation and access OSD, press <F7> key.
To close the selection list, press <Esc> key.

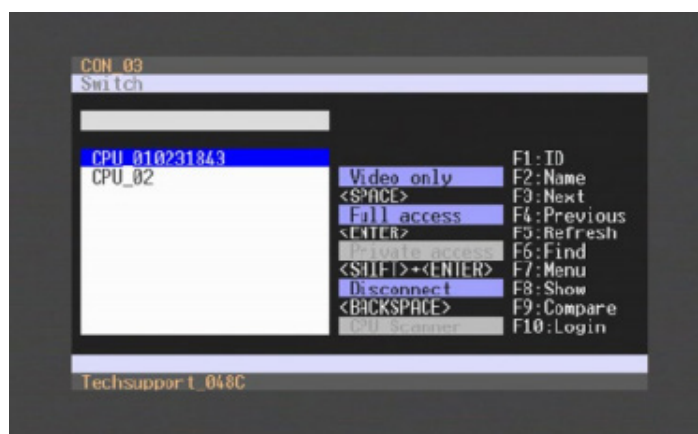


FIGURE 7-3.1.2 EXAMPLE VIEW SELECTION LIST CPU DEVICES

Activating the automatic Scan Mode for CPU Devices

The matrix offers the ability to use a scan mode based on the favorite list of each console or user. Scan mode allows the matrix to switch in sequence between the CPU Devices in the favorite list within a predefined time. All scans are performed in Video Only mode.

To configure the scan mode, refer to chapter 5.8.3, page 100.

To activate the scan mode, proceed as follows:

1. Define a favorite list for the respective CON Device or users
2. Start the command mode by entering the Hot Key and press <o> to open OSD.
3. Select one of the CPU Devices in the CPU selection list that are defined in your favorite list.
4. Confirm your selection by pressing the CPU Scanner button. The scan will automatically start.

*If you have enabled the Force CPU Scan option, the scan will automatically start after switching the respective CON Device to any CPU Device from the favorite list without the need to press the CPU Scanner button.

7.3.2 EXTENDED SWITCHING

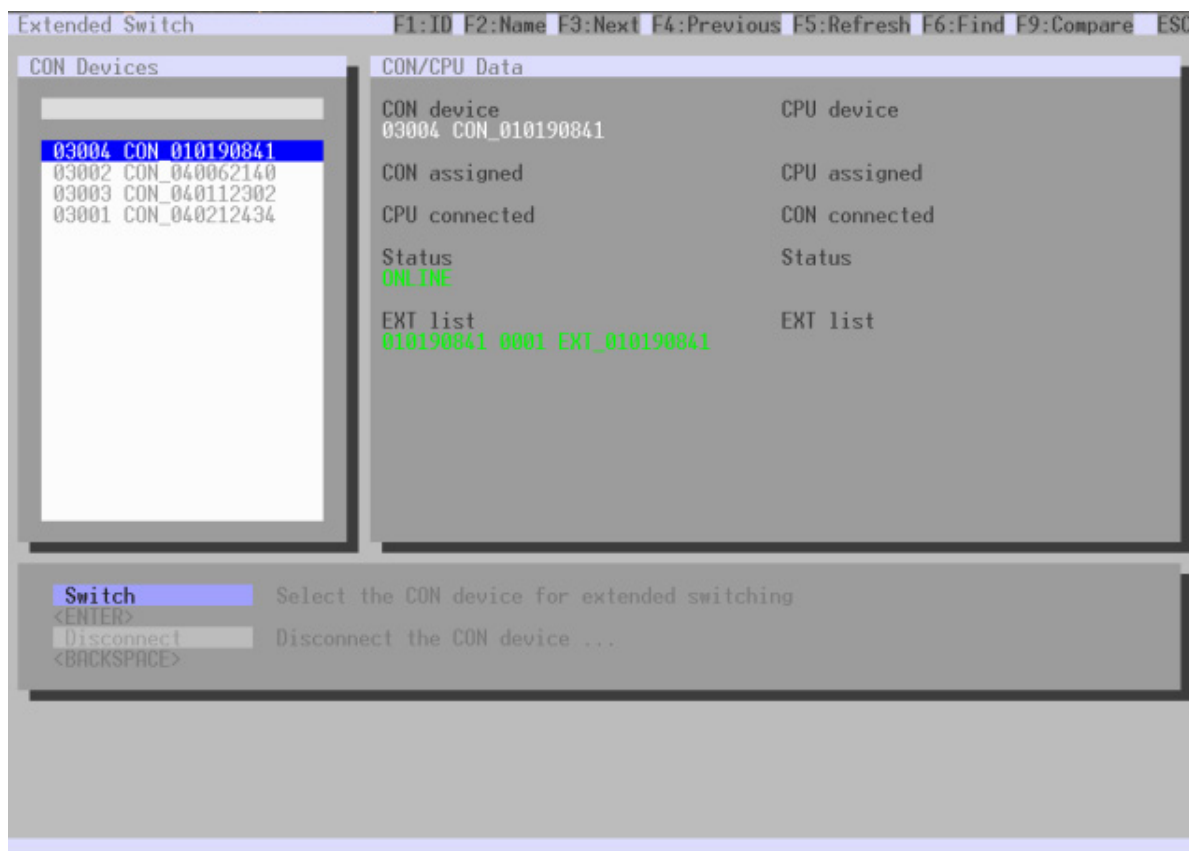


FIGURE 7-3.2.1 OSD MENU EXTENDER SWITCH

The following information is shown in this menu:

FIELD	DESCRIPTION
CON device	Real CON Device with assigned CON EXT Unit
CON assigned	Virtual CON Device that is assigned to the Real CON Device
CPU connected	Currently connected CPU Device
CON status	Current connection status (CON Device)
EXT list	List of all available physical Ext Units (CON Units)
CPU device	Assigned physical EXT Unit (CPU Unit)
CPU assigned	Real CPU Device that is assigned to a Virtual CPU Device

FIELD	DESCRIPTION
CON connected	Currently connected CON Device
CPU status	Current connection status (CPU Device)
EXT list	List of all available physical Ext Units (CPU Units)

The following keyboard commands are available for switching operations:

KEYBOARD COMMAND	FUNCTION
<Space>	Currently connected CON Device
<Enter>	Current connection status (CPU Device)
<Shift> + <Enter>	List of all available physical Ext Units (CPU Units)
<Backspace>	Disconnect own CON Device from CPU Device.

To switch any console to any available CPU, proceed as follows:

1. Select **Switch** in the main menu.
2. Select in the **CON Devices** list on the left-hand side that one that should be switched to a CPU Device.
3. Press the <Enter> key.
The connection types and their corresponding keyboard commands are listed in the lower working area.
4. Press the appropriate keyboard command to confirm the desired connection type.

*Switching operations from the user's CON Device can only be performed on CPU Devices that are available in the CPU Devices list.

*Press the <F8> key to expand the current view to show inactive CPU devices.

7.3.3 USB 2.0 SWITCHING

Switching of USB 2.0 extender basically works like switching of KVM extenders. The following scenarios to switch USB 2.0 extenders are possible.

1. An extender unit with USB 2.0 will be created and assigned to an already existing device with existing KVM Ext Units (see chapter 5.6.1, page 106).
2. A separate device for the extender unit with USB 2.0 will be created without assigning a KVM extender unit to that device. This possibility offers a separate switching of the USB 2.0 signal (see chapter 5.6.1, page 106).

*Switching of USB 2.0 signals uses Extended Switching functionality (see chapter 7.2.2, page 252).
When using parallel operation within the matrix, set the **Release Time** in the **System Settings > Switch** menu to 10 s or more (see chapter 6.4.5, page 162). Otherwise, the connection of the USB 2.0 extender will not be established due to security and stability reasons.

7.3.4 SWITCHING A CON UNIT TO A LOCAL SOURCE

CON Units connected to a local source (computer, CPU) can be locally switched via the matrix. Switching is performed between the local source and the KVM connection and can be executed via OSD or keyboard command (see chapter 7.1.2, page 327).

If you switch to the local source, the KVM connection will be automatically disconnected.

*When using CON Units with the possibility to connect a local source (computer, CPU) in a Multi-Screen Control environment, the local switching will be disabled.

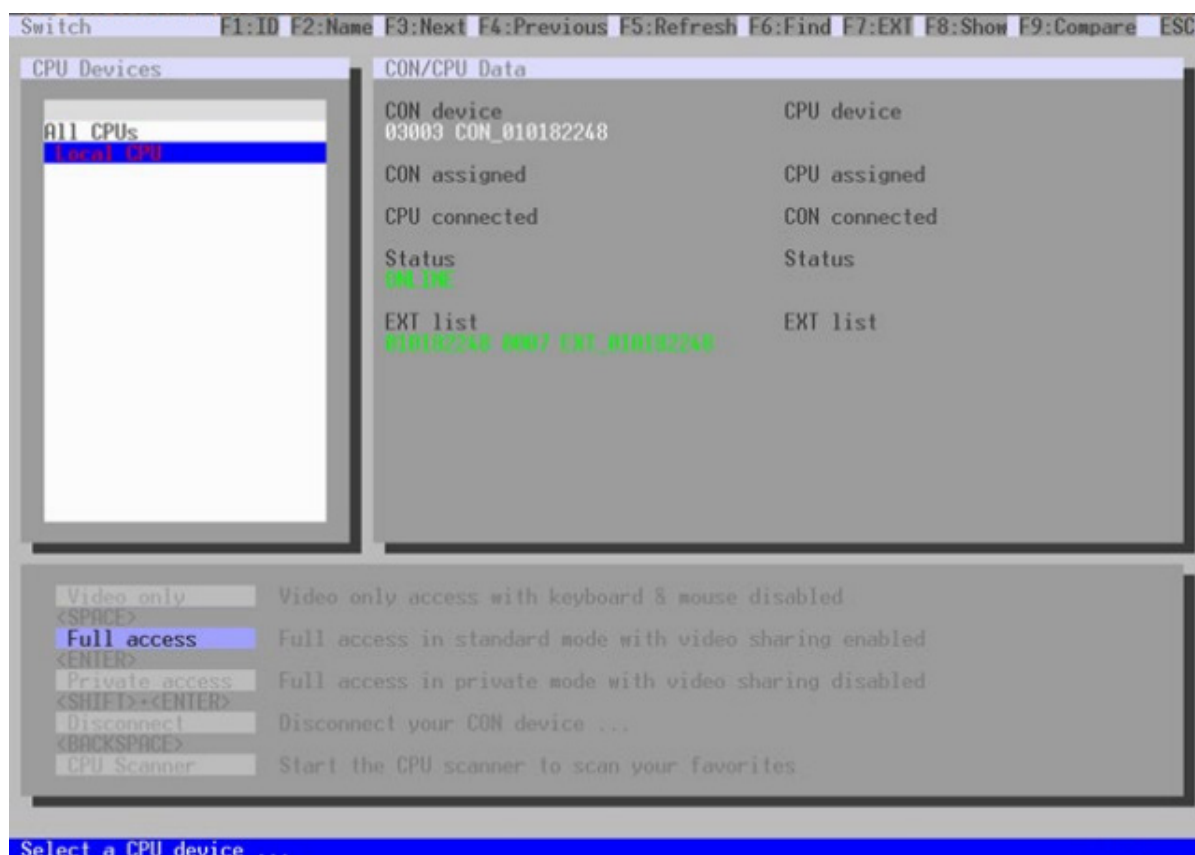


FIGURE 7-3.4.1 OSD MENU SWITCH

To switch to a local source, proceed as follows:

1. Select **Switch** in the main menu.
2. If you are not in the Switch menu of the OSD, enter the <Hot Key> to start the command mode.
3. Press the <o> key to open OSD. You will see a list of all available CPUs as a start menu.
4. Switch to the CPU in the **Local CPU** list.
The switching operation to the local source will be performed immediately.

*The local source (computer, CPU) will be only shown in the OSD if the connected CON Unit includes the option for a local connection.

7.3.5 SWITCHING VIA MACRO LIST

Next to executing macros via function keys <F1> to <F16>, they can also be executed via Macro List in the OSD. At the same time this specific list offers the possibility to see the content of the various macros including the single commands before executing them. There are displayed 16 of the total 32 macros per page.

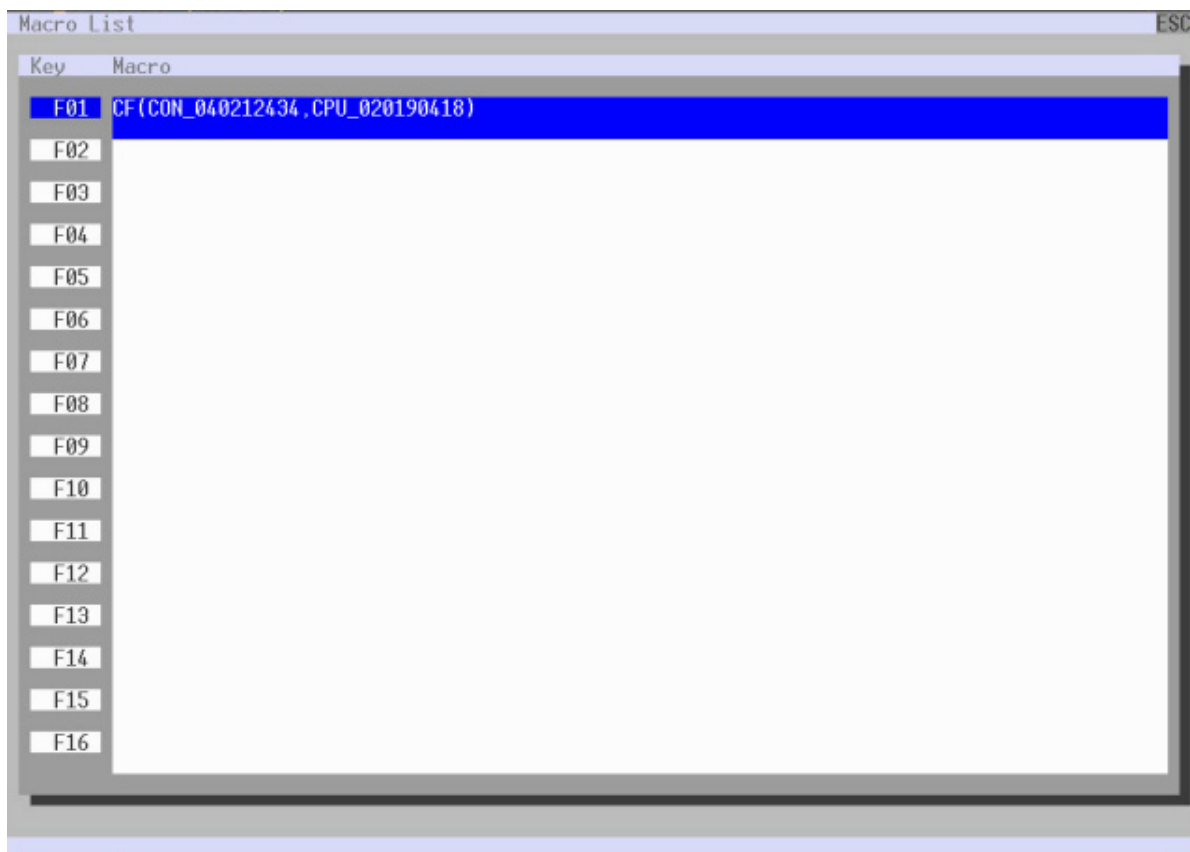


FIGURE 7-3.5.1 OSD MACRO LIST

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1. Select **Macro List** in the main menu.
2. Make sure that you have already configured CON or user macros.
3. Select the respective macro in the list that you want to execute.
4. If you want to execute a macro 17-32 (<Shift> + <F1> to <F16>), press the <Page Down> key and select the macro afterwards.
5. Press the <Enter> key to execute the macro. The macro will be immediately executed.

If the Macro List should be directly displayed upon opening OSD, activate the option Show Macro List in the menu Configuration > CON Devices for the respective CON Devices.

7.3.6 SWITCHING OF SINGLE EXTENDERS WITHIN DEVICES

You can independently switch single extenders within configurations consisting of CON and CPU Devices with multiple extenders.

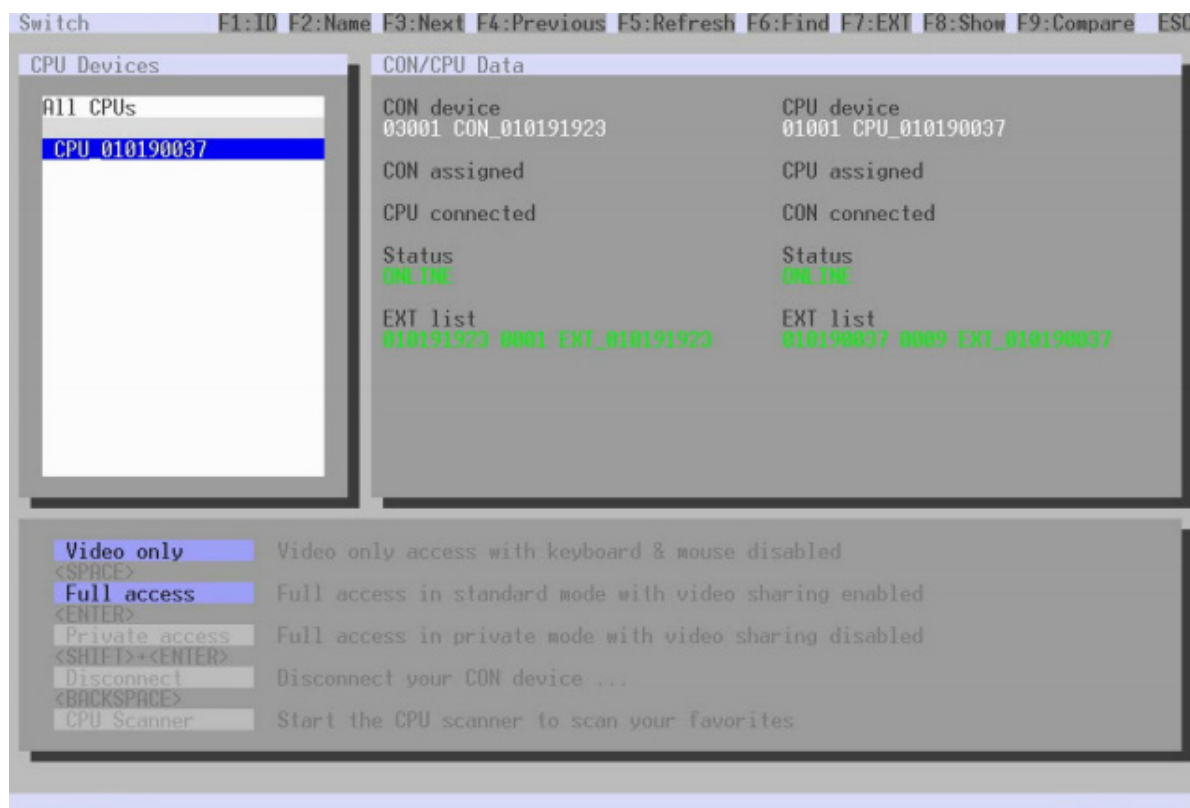


FIGURE 7-3.6.1 OSD MACRO LIST

To switch a single extender to a device with multiple extenders, proceed as follows:

1. Select Switch in the main menu.
2. Select the respective CPU Device in the CPU Devices list containing the extender you want to have access to.
3. Press the <F7> function key on the keyboard. The standard will change into the switching mode for single extenders.

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4. Select the extender you want to switch within your CON Device.
5. Press the <Tab> key to access the extender list of the selected CPU Device.
6. Select the CPU extender you want to switch to.
7. Press the <Space> key to execute the switching operation.

Switching of single extenders from a Device is only possible in **Video Only** mode. Single extenders of a Device that are already switched will be highlighted with "!".

7.3.7 ADDRESSING OF MASTER AND SUB MATRICES

The matrix can be cascaded over two levels. You can either send the commands (including opening the OSD) to the master or the sub matrix.

When in the command mode, you can select whether commands should be handled in the master or the sub matrix.

OSD Access

- OSD access to the master matrix: <Hot Key>, <o>
- OSD access to the sub matrix <Hot Key>, <s>, <o>

To do a cross-matrix switching, proceed as follows:

1. Open the OSD of the master matrix with the following keyboard sequence: <Hot Key>, <o>
2. Select the CPU device configured as Tie Line in the CPU selection list and press the <Enter> key to switch onto.
3. Open the OSD of the sub matrix with the following keyboard command: <Hot Key>, <s>, <o>
4. Select your target CPU in the CPU selection list of the sub matrix.

*The selected master matrix / sub matrix mode is permanently activated until the other mode will be manually activated. This means that if you press the <s> key, all prospective commands will be sent to the sub matrix, but not if the command mode is left in the meantime.

7.4 SWITCHING OPERATION VIA MANAGEMENT SOFTWARE

7.4.1 EXTENDED SWITCHING

*Switching operations can only be performed in online mode. That means an active network connection is required between the matrix and the management software.

You have two options to perform switching operations for the matrix via management software:

Possibility 1:

All connected consoles and the associated CPU connections are shown in columns in the working area in this menu.

1. Select **Control > Extended Switch** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.

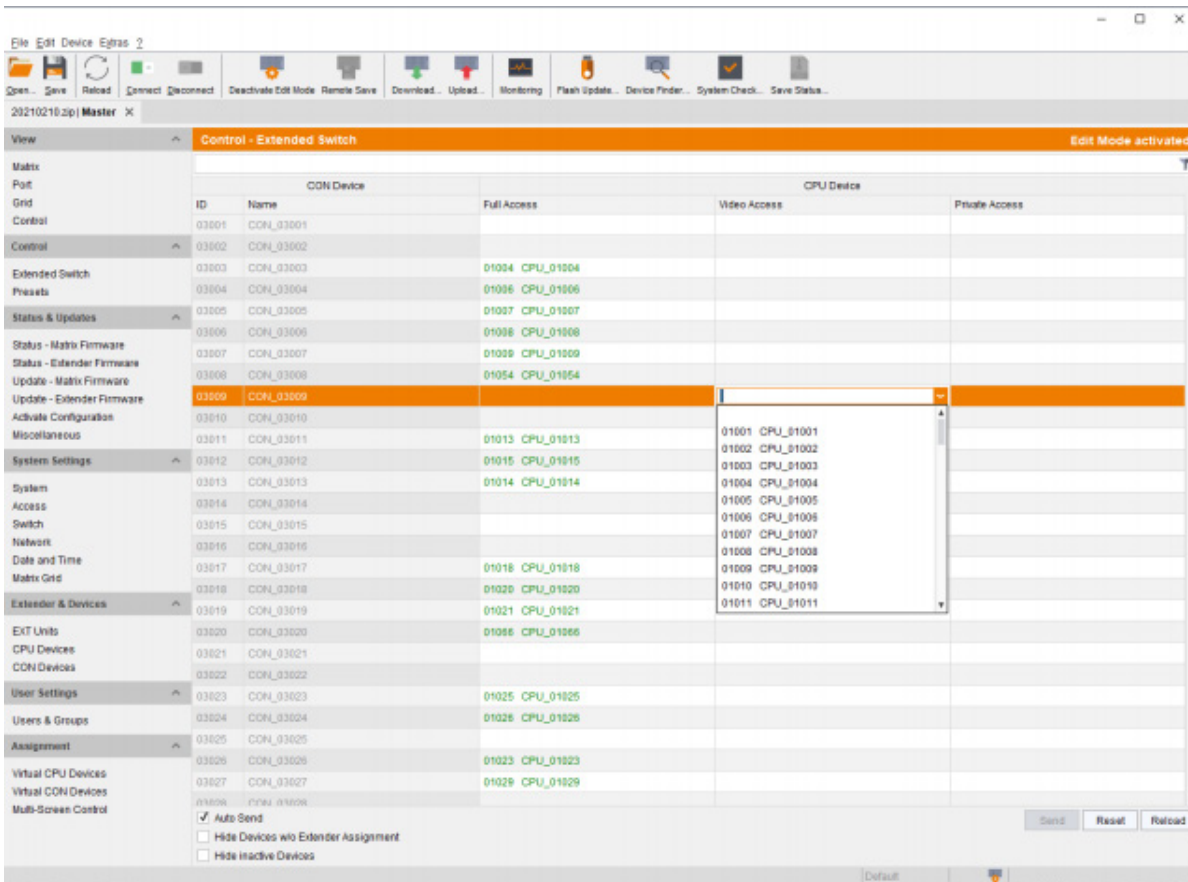


FIGURE 7-4.1.1 MANAGEMENT SOFTWARE MENU CONTROL - EXTENDER SWITCH

The following functions are available to perform a switching operation:

BUTTON	FUNCTION
Send	Send effected switching operations to the matrix
Reset	Disconnect all existing connections within the matrix
Reload	Reload switching status

To perform a switching operation, proceed as follows:

To set a **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 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 CPU Device does not have access rights, it will not appear in the list.

*When the Auto Send function in the left lower corner of the work area is ticked, switching operations will be completed immediately without user confirmation by means of the Send button.

When the Hide Devices w/o Extender Assignment function in the left lower corner of the work area is ticked, only CON Devices and CPU Devices that are assigned to extenders are shown.

Possibility 2:

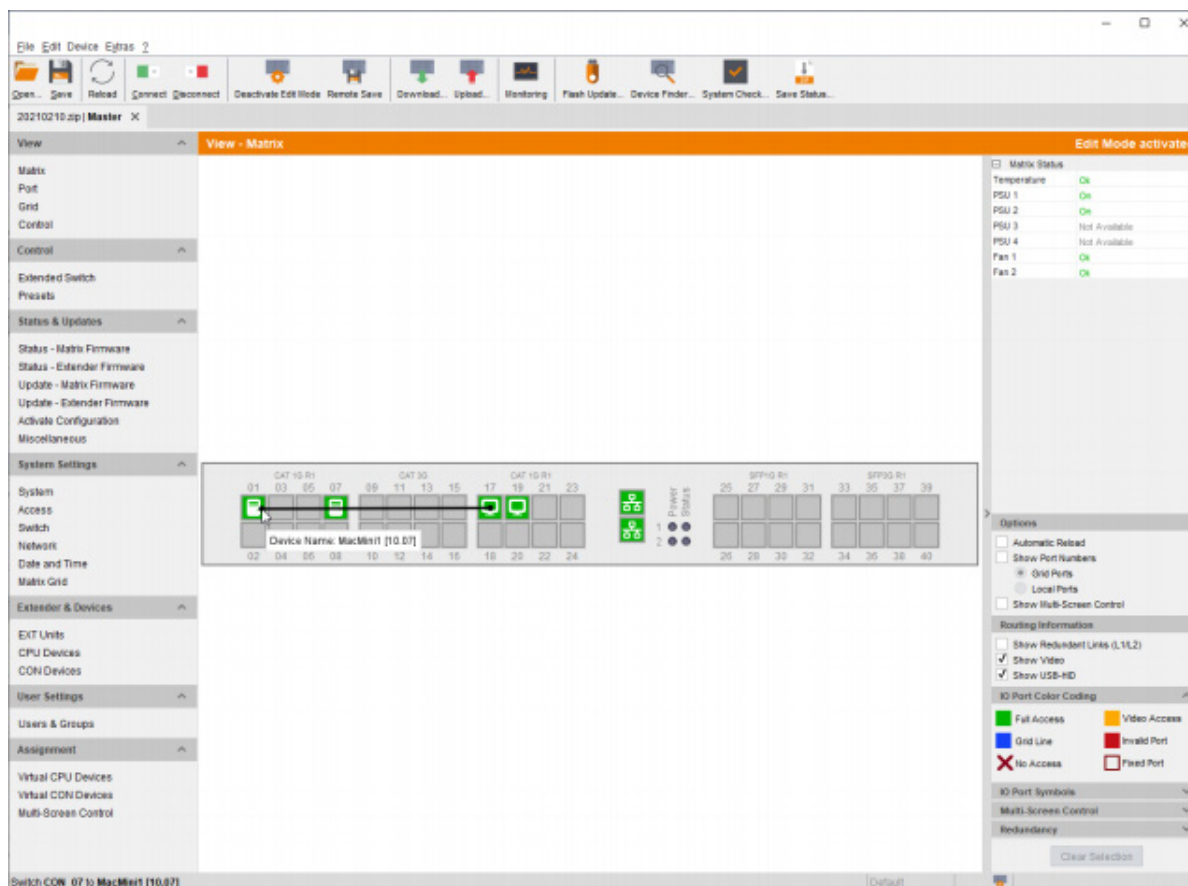


FIGURE 7-4.1.2 MANAGEMENT SOFTWARE MENU VIEW - MATRIX

The following symbols may be shown in the connection overview:

BUTTON	FUNCTION
	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.
Reload	Reload switching status

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To perform switching operations between CON and CPU Devices proceed as follows:

1. Select View > Matrix in the task area or select View > Port when using a Matrix Grid.
2. Move the mouse cursor to the port that has to be switched.
3. Hold down the primary 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 primary mouse button. A popup to select the available switching type (Full Access, Video Access or Private Mode) will be opened.
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 console does not have access rights to the CPU connected to that port.

To disconnect existing connection between CON and CPU Devices proceed as follows:

1. Click with the secondary mouse button on the port that is to be disconnected.
2. Select the Disconnect function in the popup that appears.

The connected ports will be immediately disconnected. At the same time all further connections of the extenders assigned to the involved devices will be disconnected.

7.4.2 USB 2.0 SWITCHING

Switching of USB 2.0 extender basically works like switching of KVM extenders. The following scenarios to switch USB 2.0 extenders are possible.

1. An extender unit with USB 2.0 will be created and assigned to an already existing device with existing KVM Ext Units (see chapter 6.8.2, page 184 or chapter 6.9.3, page 197).
2. A separate device for the extender unit with USB 2.0 will be created without assigning a KVM extender unit to that device. This possibility offers a separate switching of the USB 2.0 signal (see chapter 6.8.2, page 184 or chapter 6.9.3, page 197).

Switching of USB 2.0 signals uses Extended Switching functionality (see chapter 7.3.1, page 258).

When using parallel operation within the matrix, set the **Release Time** in the **System Settings > Switch menu** to 10 s or more (see chapter 6.4.5, page 162). Otherwise, the connection of the USB 2.0 extender will not be established due to security and stability reasons.



7.4.3 PREDEFINING MACROS

Predefined macros to switch the matrix without loading a new configuration can be created and activated in this menu.

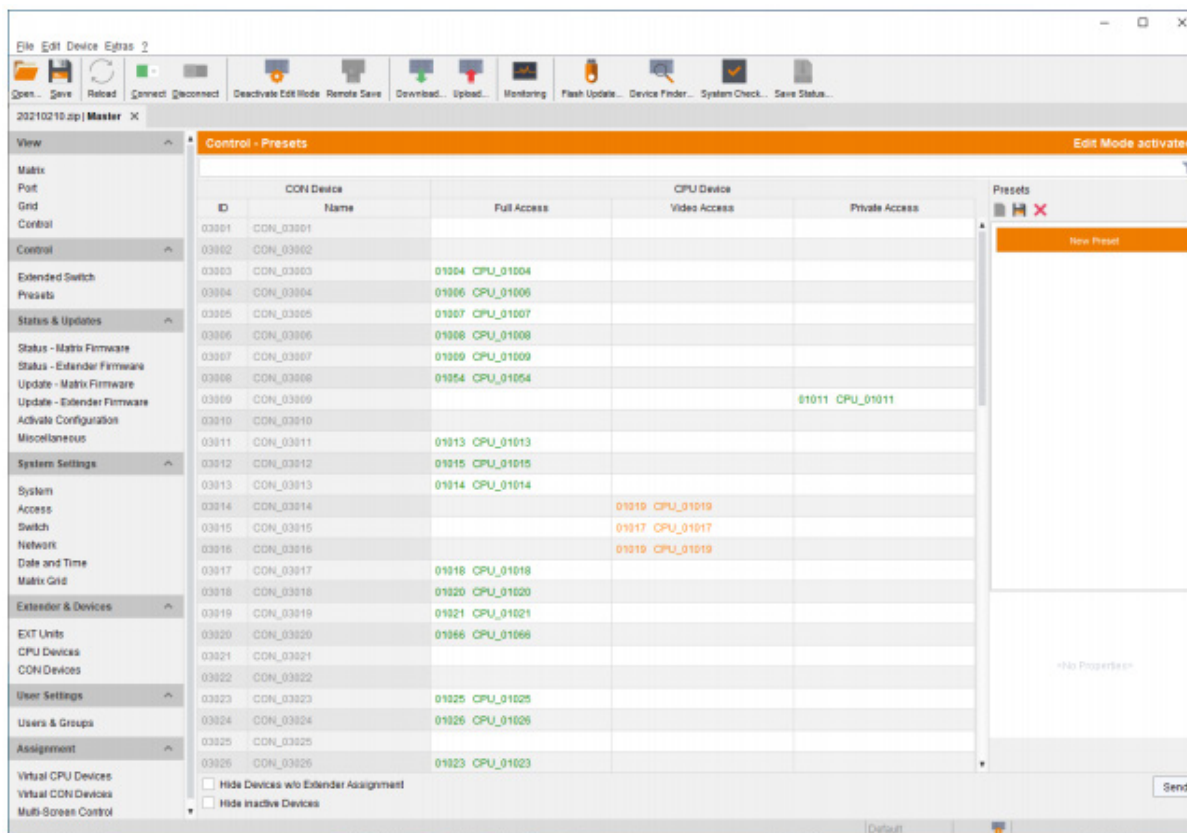


FIGURE 7-4.3.1 MANAGEMENT SOFTWARE MENU CONTROL - PRESETS

Creating a new Switch Macro

To create a new switch macro, proceed as follows:

1. Select **Control > Presets** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click on the **(New)** symbol in the right column of the working area to open a new switch macro. You are asked if the existing connections should be taken over for the new switch macro.
4. Click on a device in the corresponding columns (**Full Access, Video Only or Private Mode**) to drop down the appropriate selection to set the desired switching operations or use the function for a disconnect (**Disconnect CPU**).
5. Click the **(Save)** symbol in the right column of the working area to save the created switch macro. A save dialog will appear.
6. Enter a name for the new switch macro.
7. Click the **Ok** button in the save dialog to confirm the new preset.
The new switch macro is listed in the right column.
8. Click the **Activate Edit Mode** menu item in the toolbar.

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Copying a Switch Macro

To copy a switch macro, proceed as follows:

1. Select **Control > Presets** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Click with the secondary mouse button on a selected switch macro in the right column to copy the current switch macro when using the **Save as...** option.
4. Click the **Activate Edit Mode** menu item in the toolbar.

Deleting a Switch Macro

To delete a switch macro, proceed as follows:

1. Select **Control > Presets** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
1. Select a switch macro to be deleted.
2. Click the **(Delete)** symbol in the right column of the working area to delete the current switch macro or click with the secondary mouse button on a selected switch macro using the **Delete...** option.
3. Click the **Activate Edit Mode** menu item in the toolbar.

Loading a Switch Macro

To load a predefined switching, proceed as follows:

1. Select **Control > Presets** in the task area.
2. Click the **Activate Edit Mode** menu item in the toolbar.
3. Select the switch macro in the right column of the working area that has to be loaded.
4. Press the **Send** button on the bottom right of the working area to activate the selected switch macro.
5. Click the **Activate Edit Mode** menu item in the toolbar.

*A predefined switch macro can only be activated in online mode.

When loading presets, only those switching operations that are compliant with the hardware and the configuration of the currently used matrix are taken into account.

7.5 MULTI-SCREEN CONTROL SWITCHING VIA MOUSE (PANNING)

The Multi-Screen function contains a switching of the USB-HID signal between different statically connected sources (computer, CPU) within a CON Device. The switching of the USB-HID signal can be made by a movement of the mouse pointer beyond the edge of the current display to a neighboring display.

To perform a switching operation by movement of the mouse pointer, proceed as follows:

1. Move the mouse pointer to that edge of the display which borders vertically or horizontally to the neighboring display.
2. Move the mouse pointer beyond the edge of the display.

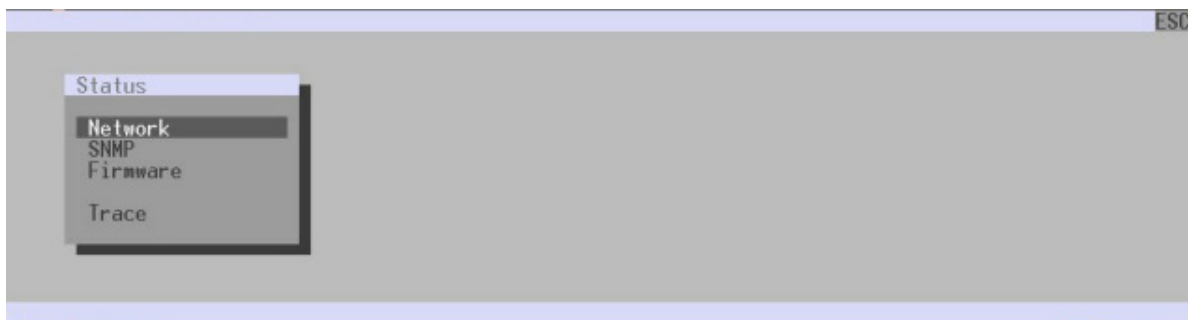
The mouse pointer will appear on the adjacent display. The switching operation has been performed and the USB-HID signal will be now available at the target display.

*The switching operation can also be performed via keyboard (see chapter 7.2.6, page 276).



7.6 QUERYING A STATUS FOR DIAGNOSIS VIA OSD

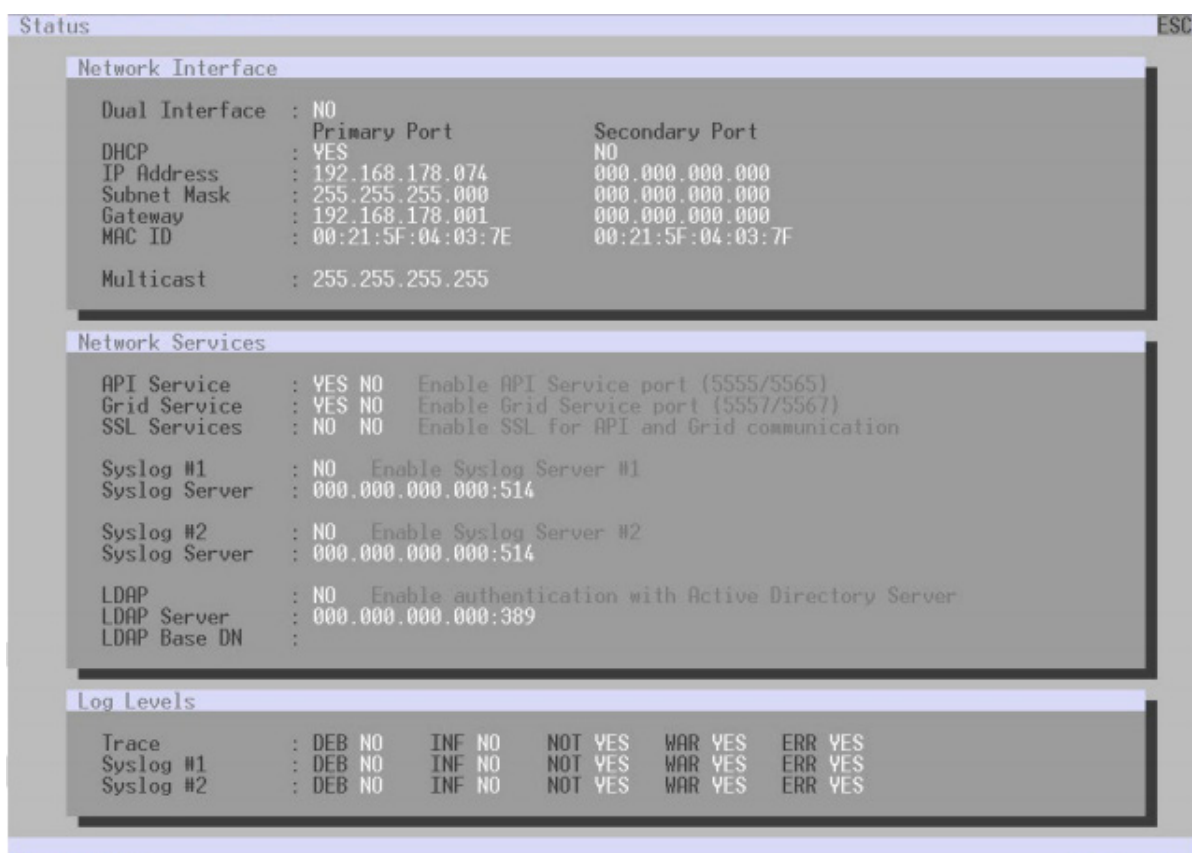
Various statuses can be queried for diagnosis:



7.6.1 NETWORK STATUS

FIGURE 7-6.1 OSD MENU STATUS

The current network configuration is displayed in this menu.
Select **Status > Network** in the main menu to query the network configuration.



7.6.2 SNMP STATUS

FIGURE 7-6.1.1 OSD MENU NETWORK

The current SNMP status is displayed in this menu.

☒ Select Status > SNMP in the main menu to query the SNMP status.

The screenshot shows a terminal window titled 'Status' with an 'ESC' key indicator in the top right corner. The menu is divided into two sections: 'SNMP Agent' and 'SNMP Server'. The 'SNMP Agent' section shows 'Enable : NO' with a note 'Enable SNMP Agent (license key required)'. The 'SNMP Server' section displays configuration for two servers, Server #1 and Server #2, with various status indicators.

SNMP Agent	
Enable	: NO Enable SNMP Agent (license key required)

SNMP Server		
	Server #1	Server #2
Enable Traps	: NO	NO
Server Address	: 000.000.000.000	000.000.000.000
Status	: NO	NO
Temperature	: NO	NO
Insert Board	: NO	NO
Remove Board	: NO	NO
Invalid Board	: NO	NO
Insert Extender	: NO	NO
Remove Extender	: NO	NO
Switch Command	: NO	NO
Fan Tray #1	: NO	NO
Fan Tray #2	: NO	NO
Power Supply #1	: NO	NO
Power Supply #2	: NO	NO
Power Supply #3	: NO	NO
Power Supply #4	: NO	NO

FIGURE 7-6.2.1 OSD MENU STATUS - SNMP

*The procedure for activating the SNMP agent or configuring an SNMP server is described in chapter 5.4.6, page 94.

7.6.3 FIRMWARE STATUS

The current firmware status is displayed in this menu.

Select **Status > Firmware** in the main menu to query the firmware status.

Slot	Firmware
000	MATL040c CPU 1 F04.00 01.12.20
001	MATLCAT I08 8 F04.00 01.12.20
002	MATLCAT I08 8 F04.00 01.12.20
003	MATLCAT I08 8 F04.00 01.12.20

FIGURE 7-6.3.1 OSD MENU STATUS - FIRMWARE

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7.6.4 TRACE

The trace function is used for diagnostic purposes. All recorded events for activities and switching operations of the matrix are displayed in this menu.

Select **Status > Trace** in the main menu of the I/O board, the user's console is connected to display the recorded events of the selected I/O board.

```

Status
Trace
Date      Time      Message
2020/08/15 14:31:59.00 NOT scrHandleOpen(): PORT=1
2020/08/15 14:31:56.00 NOT scrHandleTimeout(): PORT=1 SETHOSTID
2020/08/15 14:31:56.00 WAR picRetVersion(): PORT=1 ID=5 empty
2020/08/15 14:31:56.00 WAR picRetVersion(): PORT=1 ID=4 empty
2020/08/15 14:31:51.00 NOT scrUpdateRX(): PORT=1 RX-ON
2020/08/15 14:31:51.00 NOT catUpdatePortStatus(): PORT=1 REQ=RXON
2020/08/15 14:31:51.00 NOT catUpdatePortStatus(): PORT=1 SYNC=1
2020/08/15 14:26:17.00 NOT catUpdatePortStatus(): PORT=1 CAT=1
2020/08/15 14:26:16.00 NOT scrUpdateRX(): PORT=1 RX-OFF
2020/08/15 14:26:16.00 ERR catErrorHandler(): PORT=1 stopped
2020/08/15 14:26:16.00 WAR catErrorHandler(): PORT=1 restart
2020/08/15 14:26:10.00 NOT scrUpdateRX(): PORT=1 RX-ON
2020/08/15 14:26:10.00 NOT catUpdatePortStatus(): PORT=1 REQ=RXON
2020/08/15 14:26:10.00 NOT catUpdatePortStatus(): PORT=1 SYNC=1
2020/08/15 14:26:08.00 NOT scrUpdateRX(): PORT=1 RX-OFF
2020/08/15 14:26:07.00 WAR catUpdatePortStatus(): PORT=1 REQ=RXOFF
2020/08/15 14:26:07.00 NOT scrUpdateRX(): PORT=1 RX-ON
2020/08/15 14:26:07.00 NOT catUpdatePortStatus(): PORT=1 REQ=RXON
2020/08/15 14:26:07.00 NOT catUpdatePortStatus(): PORT=1 SYNC=1
2020/08/15 14:26:07.00 NOT catUpdatePortStatus(): PORT=1 CAT=1
2020/08/15 14:26:07.00 NOT scrUpdateRX(): PORT=1 RX-OFF
2020/08/15 14:26:06.00 WAR catErrorHandler(): PORT=1 restart
2020/08/15 14:26:00.00 NOT scrUpdateRX(): PORT=1 RX-ON
2020/08/15 14:26:00.00 NOT catUpdatePortStatus(): PORT=1 REQ=RXON
2020/08/15 14:26:00.00 NOT catUpdatePortStatus(): PORT=1 SYNC=1
2020/08/15 14:25:57.00 NOT scrUpdateRX(): PORT=1 RX-OFF
2020/08/15 14:25:57.00 WAR catUpdatePortStatus(): PORT=1 REQ=RXOFF
2020/08/15 14:25:57.00 NOT scrUpdateRX(): PORT=1 RX-ON
2020/08/15 14:25:57.00 NOT catUpdatePortStatus(): PORT=1 REQ=RXON
2020/08/15 14:25:57.00 NOT catUpdatePortStatus(): PORT=1 SYNC=1
2020/08/15 14:25:57.00 NOT catUpdatePortStatus(): PORT=1 CAT=1
2020/08/15 14:25:57.00 NOT scrUpdateRX(): PORT=1 RX-OFF
  
```

FIGURE 7-6.4.1 OSD MENU STATUS-TRACE

The following information is shown in this menu:

FIELD	DESCRIPTION
Date	Date stamp
Time	Time stamp
Message	Detailed description of the event

*The procedure for activating the SNMP agent or configuring an SNMP server is described in chapter 5.3.6, page 75.

7.6.5 REDUNDANCY FUNCTION

The current firmware status is displayed in this menu.
Select **Status > Firmware** in the main menu to query the firmware status.

KVM extenders with redundant connectors for interconnect cables can be simultaneously operated with both connectors at a single Matrix or a Matrix Grid (from firmware version V04.00).

The connector labeled with **Link 1** at the KVM extender is meant for the primary connection. If the connection on CON or CPU Unit side is interrupted due to any problem, the connection will be automatically re-established through the second connector labeled with **Link 2**.

For this kind of redundancy function, there is no need for any configuration of the KVM matrix or the KVM extenders.

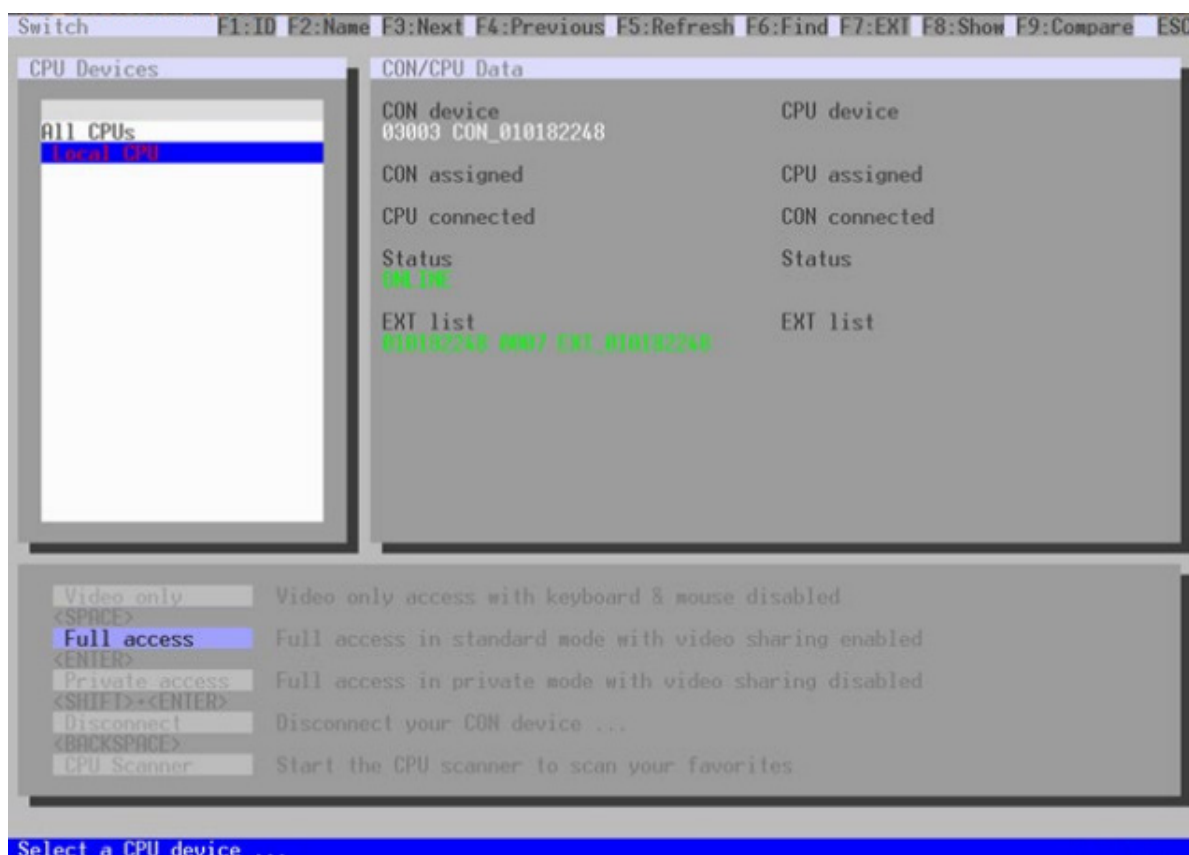


FIGURE 7-6.5.1 OSD MENU STATUS -SWITCH

Select **Switch** in the main menu.

When using redundant KVM extenders, the respectively active connector is shown in this view under **EXT** list in the field **CON/CPU Data**. If the first connector (**Link 1**) is active, it will be highlighted with **:1** behind the respective extender. If the second connector (**Link 2**) is active, this will be highlighted with **:2**.

7.7 QUERYING A STATUS VIA MANAGEMENT SOFTWARE

7.7.1 DEVICE STATUS

The connections to the matrix are displayed in this menu.

Select **View > Matrix** in the task area to display the current connections.

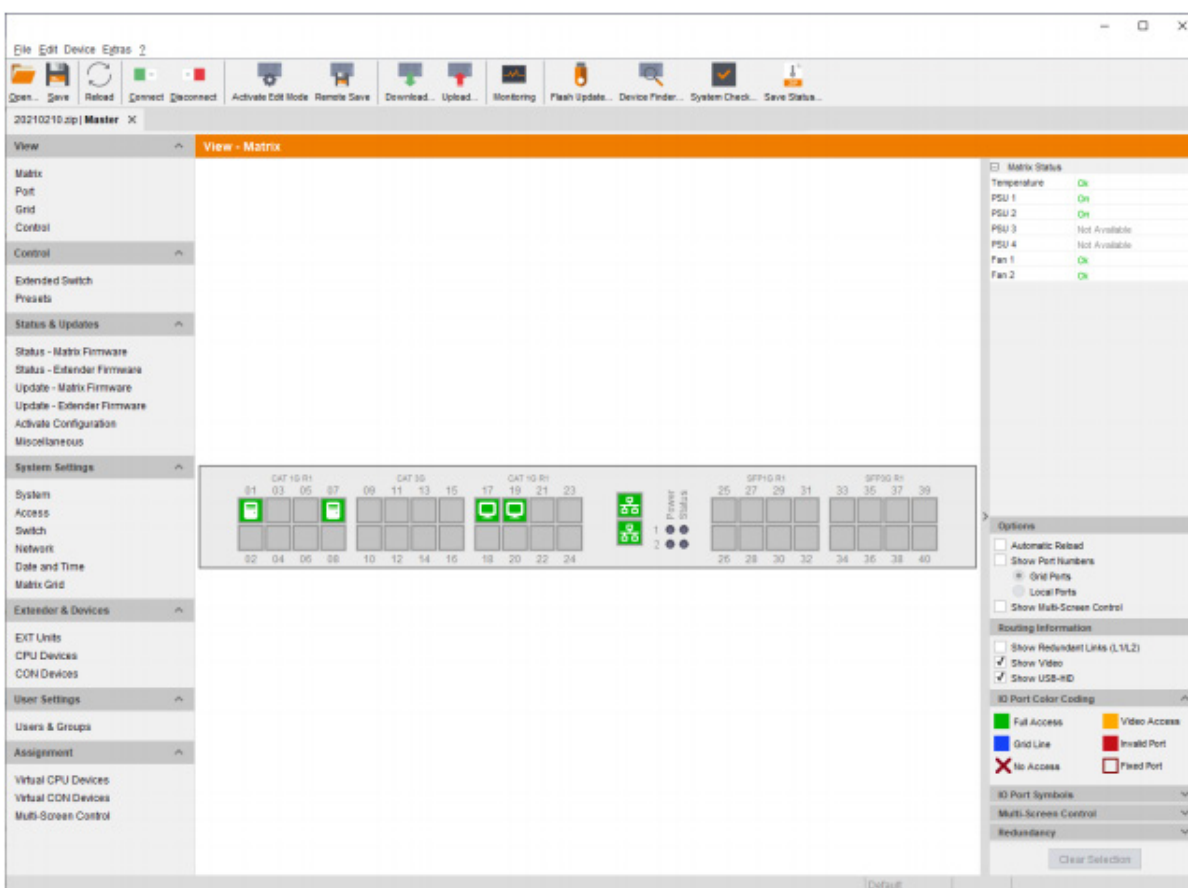


FIGURE 7-7.1.1 OSD MENU VIEW - MATRIX

NETWORK PORT COLOR	DESCRIPTION
Green	Port is connected
Red	Port is not connected or not available

7.7.2 NETWORK STATUS

The current network configuration is displayed in this menu.
Select **System Settings > Network** in the task area to query the network configuration.

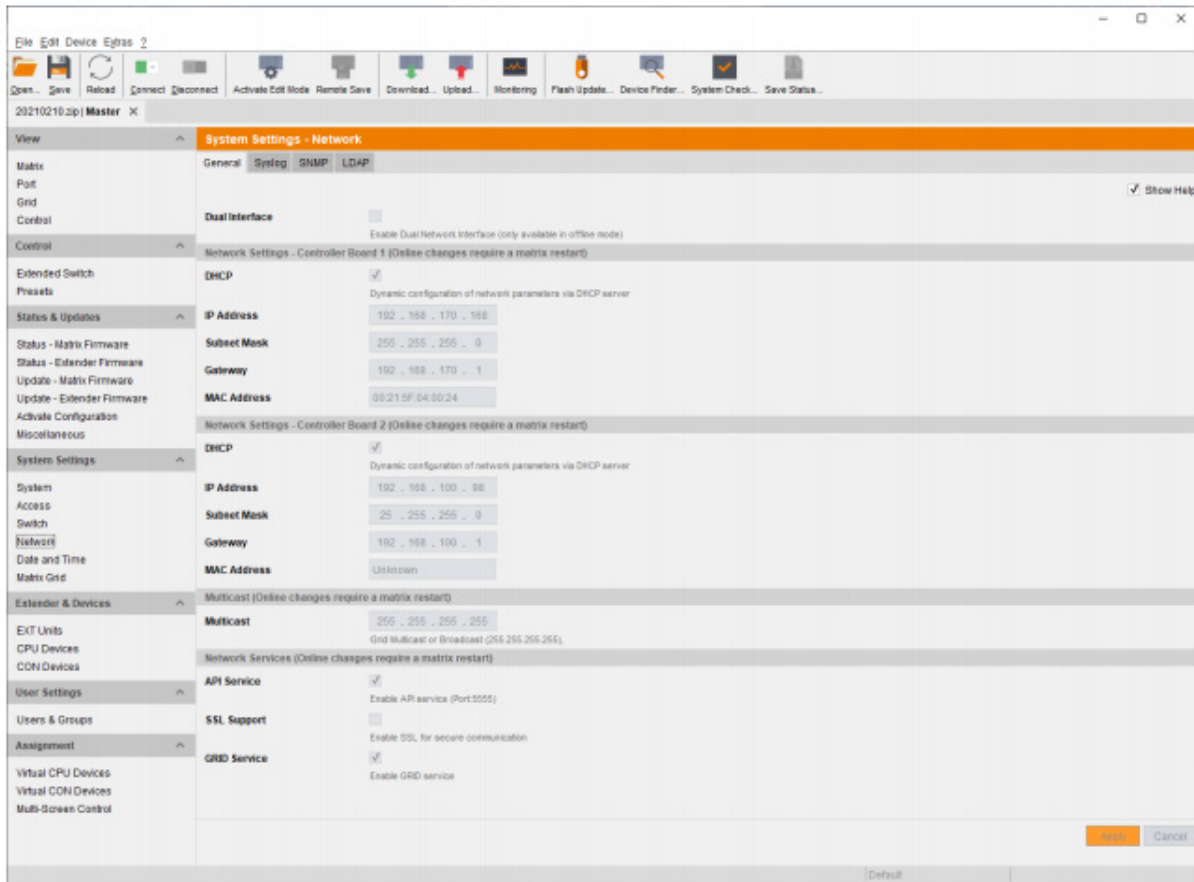


FIGURE 7-7.2.1 MANAGEMENT SOFTWARE MENU SYSTEM SETTINGS - NETWORK - GENERAL

7.7.3 MATRIX FIRMWARE STATUS

The firmware status of the extenders is displayed in this menu.
Select Status & Updates > Status - Matrix Firmware in the task area to query the current firmware status of the extenders.

Slot	Name	Type	Ports	Serial Number	Version	Status
	TEST-F-024C316F		40	40259150		
	CHASSIS					Available
	FAN	FAN	1		F03.01.201208	
	FAN	FAN	1		F03.01.201208	
	PWRCTRL	PWR	1		F03.00.201208	
00	MATL040C	CPU	1	40259151	F04.00.210303	Ready
	MATLPXP	PXP	1		F01.02.200907	
	MATLOS	SYS	1		F01.06.210222	
01	MATL0108 (CAT)	IOB	8	40259152	F04.00.210303	Ready
	MATLOSD	OSD	8		G02.00.201218	
	MATLOS	SYS	1		F01.06.210222	
02	MATL0108 (CAT)	IOB	8	0000000000	F04.00.210303	Ready
	MATLVOSD	OSD	8		F01.14.201209	
	MATLOS	SYS	1		F01.06.210222	
03	MATL0108 (CAT)	IOB	8	40259154	F04.00.210303	Ready
	MATLOSD	OSD	8		G02.00.201218	
	MATLOS	SYS	1		F01.06.210222	
04	MATL0108 (SFP)	IOB	8	40259155	F04.00.210303	Ready
	MATLOSD	OSD	8		G02.00.201218	
	MATLOS	SYS	1		F01.06.210222	
05	MATL0108 (SFP)	IOB	8	0000000000	F04.00.210303	Ready
	MATLVOSD	OSD	8		F02.01.201022	
	MATLOS	SYS	1		F01.06.210222	
06	MATL0108 (SFP)	IOB	8	40259156	F04.00.210303	Ready
	MATLOSD	OSD	8		G02.00.201218	
	MATLOS	SYS	1		F01.06.210222	
07	MATL0108 (SFP)	IOB	8	0000000000	F04.00.210303	Ready
	MATLVOSD	OSD	8		F02.01.201022	
	MATLOS	SYS	1		F01.06.210222	

FIGURE 7-7.3.1 MANAGEMENT SOFTWARE MENU STATUS & UPDATES - STATUS - MATRIX FIRMWARE

COLUMN	DESCRIPTION
Slot	Slot number of the I/O module or CPU module
Name	<ul style="list-style-type: none"> Name of the I/O module or CPU module Name of the I/O module firmware or CPU module firmware
Type	Firmware type
Port	Number of ports
Serial Number	Serial number of the I/O module or CPU module
Version	Installed firmware version
Status	Status of the I/O module or CPU module

The different modules can be expanded and collapsed by left-clicking on the “plus” and “minus” symbols in the **Name** column.

By clicking on the “plus” and “minus” symbol in the upper right corner of the working area, you can expand and collapse all module information with a click of the primary mouse button.

7.7.4 EXTENDER FIRMWARE STATUS

The firmware status of the extenders is displayed in this menu.

Select Status & Updates > Status - Extender Firmware in the task area to query the current firmware status of the extenders.

#	ID	Name	Port	Type	Device	Version
		TEST-AE100				
01	40113959	CON_09	65	CON UNIT	CON_09	
02	10195808	CON_10	66	CON UNIT	CON_10	
		EXTHRCON		EXR		B01.37.181128
		HDCCON		HGD		P04.03.201112
		EXTMSD		MSD		B02.51.200422
03	40090927	CON_11	67	CON UNIT	CON_11	
04	10090101	CON_12	68	CON UNIT	CON_12	
05	40167519	IP-CPU_03_Fiber	70	CPU UNIT	IP-CPU C Fiber	
06	40168854	IP-CPU_04_Fiber	72	CPU UNIT	IP-CPU D Fiber	
07	10155408	CON_MV_3.1	89	CON UNIT	MultiViewer 3.1	
08	10155418	CON_MV_3.2	90	CON UNIT	MultiViewer 3.2x	
09	10155422	CON_MV_3.3	91	CON UNIT	MultiViewer 3.3	
10	10155403	CON_MV_3.4	92	CON UNIT	MultiViewer 3.4	
11	10155411	CON_MV_4.1	93	CON UNIT	MultiViewer 4.1	
12	10155420	CON_MV_4.2	94	CON UNIT	MultiViewer 4.2	
13	10155419	CON_MV_4.3	95	CON UNIT	MultiViewer 4.3	
14	10182231	CON_MV_4.4	96	CON UNIT	MultiViewer 4.4	
15	20201214	IP-CPU_05_V2_DH	104	CPU UNIT	IP-CPUv2	
16	40076860	CPU_VGA_01	137	CPU UNIT	CPU_11 FHD (VGA)	
17	40076865	CPU_VGA_02	145	CPU UNIT	CPU_12 FHD (VGA)	
18	10207759	CON_01	153	CON UNIT	CON_01	
19	10218839	CON_03	154	CON UNIT	CON_03	

FIGURE 7-7.4.1 MANAGEMENT SOFTWARE MENU STATUS & UPDATES - STATUS EXTENDER FIRMWARE - FIRMWARE

COLUMN	DESCRIPTION
ID	Ident number of the extender
Name	Name of the extender and the extender firmware
Port	Number of ports
Type	Extender type
Device	Device to which the extender is assigned
Version	Installed firmware version

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

The different modules can be expanded and collapsed by left-clicking on the “plus” and “minus” symbols in the **Name** column. By clicking on the “plus” and “minus” symbol in the upper right corner of the working area, you can expand and collapse all module information with a click of the primary mouse button.

7.7.5 EXTENDER FIRMWARE STATUS ON I/O BOARD

The extender firmware status of the I/O boards is displayed in this menu.

1. Select **Status & Updates > Status - Extender Firmware** in the task area to query the current firmware status of the extenders.
2. Select the **Extender Firmware Status on I&O Board** tab in the working area.

File Edit Device Egras ?

Open... Save Reload Connect Disconnect Activate Edit Mode Remote Save Download... Upload... Monitoring Flash Update... Device Finder... System Check... Save Status...

20210210.zip | Master X

View

Status & Updates - Status Extender Firmware

Matrix	Firmwares - Extender Firmware on IO Board		
Port	Slot	Name	Type
Grid		TEST-A-E100	
Control	01	MATX08 (ORD)	IOB
	02	MATX08 (CAT)	IOB
		HIDCON	HID
Extended Switch		HIDCPU	HID
Presets	03	MATX08 (CAT)	IOB
Status & Updates	04	MATX08 (CAT)	IOB
Status - Matrix Firmware	05	MATX08 (CAT)	IOB
Status - Extender Firmware	06	MATX08 (CAT)	IOB
Update - Matrix Firmware	07	MATX08 (CAT)	IOB
Update - Extender Firmware		HIDCON	HID
Activate Configuration		HIDCPU	HID
Miscellaneous	08	MATX08 (LINE)	IOB
System Settings	09	MATX08 (SFP)	IOB
System	10	MATX08 (SFP)	IOB
Access	11	MATX08 (SFP)	IOB
Switch	12	MATX08 (CAT)	IOB
Network	13	MATX08 (CAT)	IOB
Date and Time	14	MATX08 (CAT)	IOB
Matrix Grid	15	MATX08 (CAT)	IOB
Extender & Devices	16	MATX08 (CAT)	IOB
EXT Units	17	MATX08 (CAT)	IOB
CPU Devices	18	MATX08 (CAT)	IOB
CON Devices	19	MATX08 (CAT)	IOB
	20	MATX08 (CAT)	IOB
User Settings		TEST-C-C048	
Users & Groups	27	MATX08 (CAT)	IOB
Assignment	28	MATX08 (CAT)	IOB
Virtual CPU Devices	29	MATX08 (CAT)	IOB
Virtual CON Devices	30	MATX08 (CAT)	IOB
Multi-Screen Control	31	MATX08 (CAT)	IOB
	32	MATX08 (CAT)	IOB
		TEST-G-C008	

COLUMN	DESCRIPTION
Slot	Ident number of the extender
Name	Name of the extender and the extender firmware
Type	Extender type
Mem Usage / Version	<ul style="list-style-type: none">• Free memory on the I/O module (in MB)• Firmware version of the I/O module

The different modules can be expanded and collapsed by left-clicking on the “plus” and “minus” symbols in the **Name** column.

By clicking on the “plus” and “minus” symbol in the upper right corner of the working area, you can expand and collapse all module information with a click of the primary mouse button.

7.7.6 SYSLOG MONITORING

The syslog function offers a complete logging of the matrix activities and switching operations in this menu. During logging the activities are written continuously into log files and stored locally.

NOTICE

Syslog messages are transmitted via UDP. Therefore, port 514 within the used network should not be blocked, e.g., by a firewall.

The procedure for activating the syslog function is described in chapter 6.4.7, page 165.

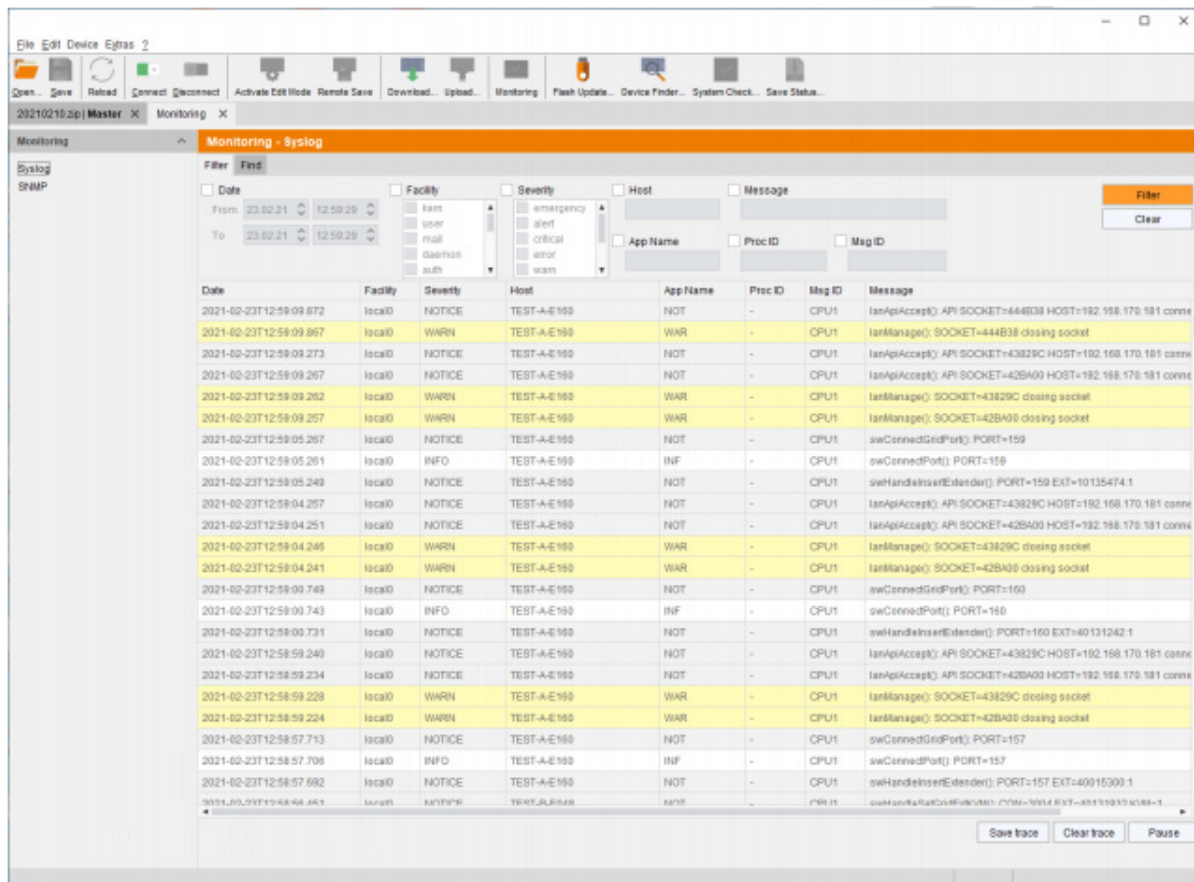


FIGURE 7-7.5.2 MANAGEMENT SOFTWARE MENU MONITORING

To open the monitoring, proceed as follows:
Click the **Monitoring** menu item in the toolbar.
The logged syslog messages are displayed in the working area.

Filter function

To filter relevant messages from the multitude of logged activities of the SNMP module, the extenders and the chassis, the syslog monitoring offers various filter options.

To set and activate a filter, proceed as follows:

1. Activate the respective checkbox(es) to activate the desired filter option(s).
2. Click the **Filter** button to activate the filter settings.
3. Click the **Clear** button to deactivate an activated filter setting.

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

Filter options are not valid within the locally stored log files.

Recording function

Various options are available for the messages displayed in the SNMP log.
To save the displayed messages (filtered or unfiltered), click the **Save trace** button.
The messages are saved in a SNMP file (extension .csv).

To clear the view with the displayed messages, click the **Clear trace** button.
The recorded messages will be kept.

To pause the display of messages, click the **Pause** button.
During the pause, the messages will be recorded continuously.

To display the messages recorded in the background during the pause, click the **Pause** button again.
All messages recorded in the background will be displayed immediately.

Search function

The search function can be used to search for specific Syslog messages from a variety of logged activities and relevant messages from the SNMP module, extenders, and chassis.

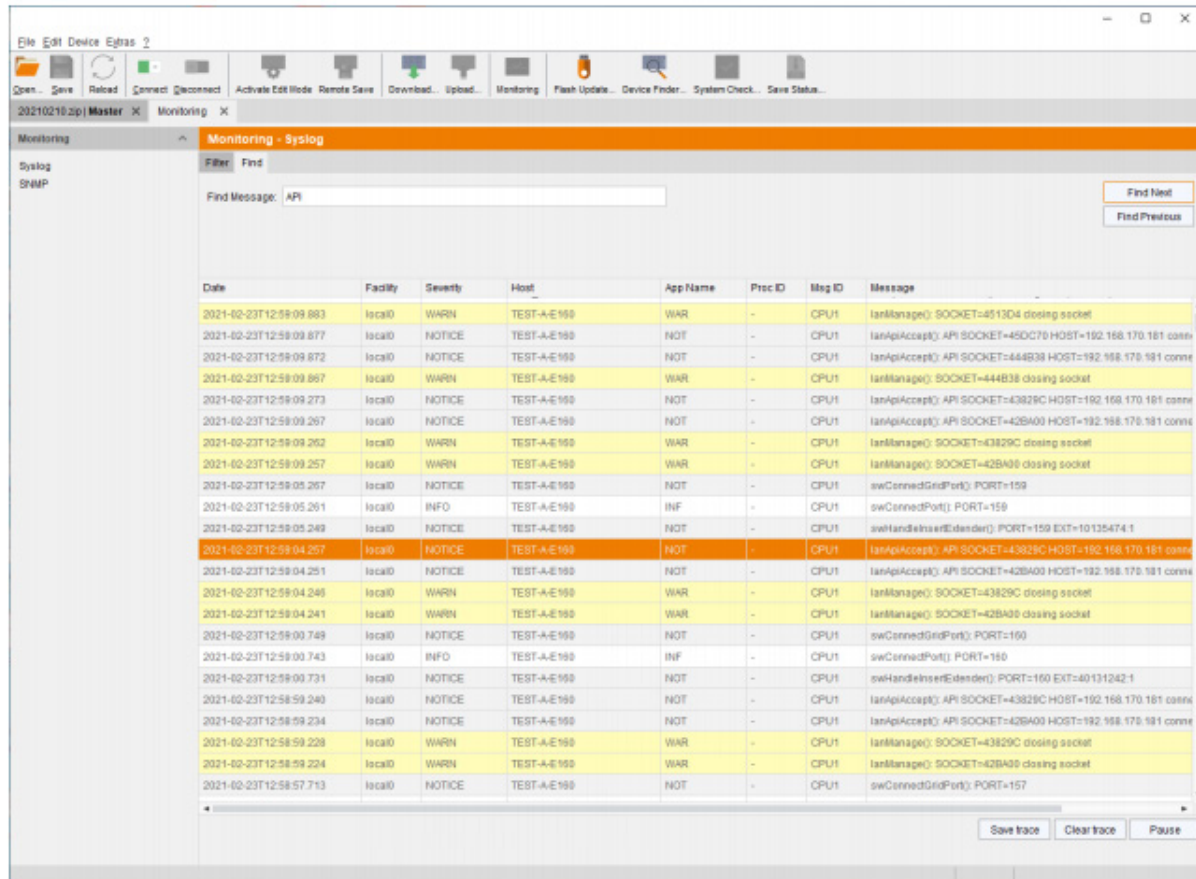


FIGURE 7-7.5.3 MANAGEMENT SOFTWARE MENU MONITORING - SYSLOG - EXAMPLE FOR SEARCH RESULT

To find specific syslog messages, proceed as follows:

1. Click the monitoring menu item in the toolbar.
2. Click the **Find** tab in the working area.

The recorded SNMP messages are displayed in the working area.

3. Enter a search term in the **Find Message** search field.
4. Click the **Find Next** button.

The first message with the entered search term is highlighted.

5. Click the **Find Next** button again to find another message with this search term.

The next message with the entered search term is highlighted.

Possible search terms would be, e.g., the port ID (e.g., MOD=10), the firmware (e.g., EXTCON), link status (e.g., link).

To go back to the previous search result, click the **Find Previous** button.

Filter function

To filter relevant messages from the multitude of logged activities of the SNMP module, the extenders and the chassis, the SNMP monitoring offers various filter options.

To set and activate a filter, proceed as follows:

1. Activate the respective checkbox(es) to activate the desired filter option(s).
2. Click the **Filter** button to activate the filter settings.
3. Click the **Clear** button to deactivate an activated filter setting.

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

*Filter options are not valid within the locally stored log files.

Recording function

Various options are available for the messages displayed in the SNMP log.

To save the displayed messages (filtered or unfiltered), click the **Save trace** button.

The messages are saved in a SNMP file (extension .csv).

To clear the view with the displayed messages, click the **Clear trace** button.

The recorded messages will be kept.

To pause the display of messages, click the **Pause** button.

During the pause, the messages will be recorded continuously.

To display the messages recorded in the background during the pause, click the **Pause** button again.

All messages recorded in the background will be displayed immediately.

7.7.7 SNMP MONITORING

The SNMP function allows all function-critical and safety-critical elements of the SNMP module, the extenders, and the chassis to be monitored and queried. This function complies with the RFC 1157 conformance standard.

The procedure for activating the SNMP agent or configuring an SNMP server is described in chapter 6.4.7, page 143.

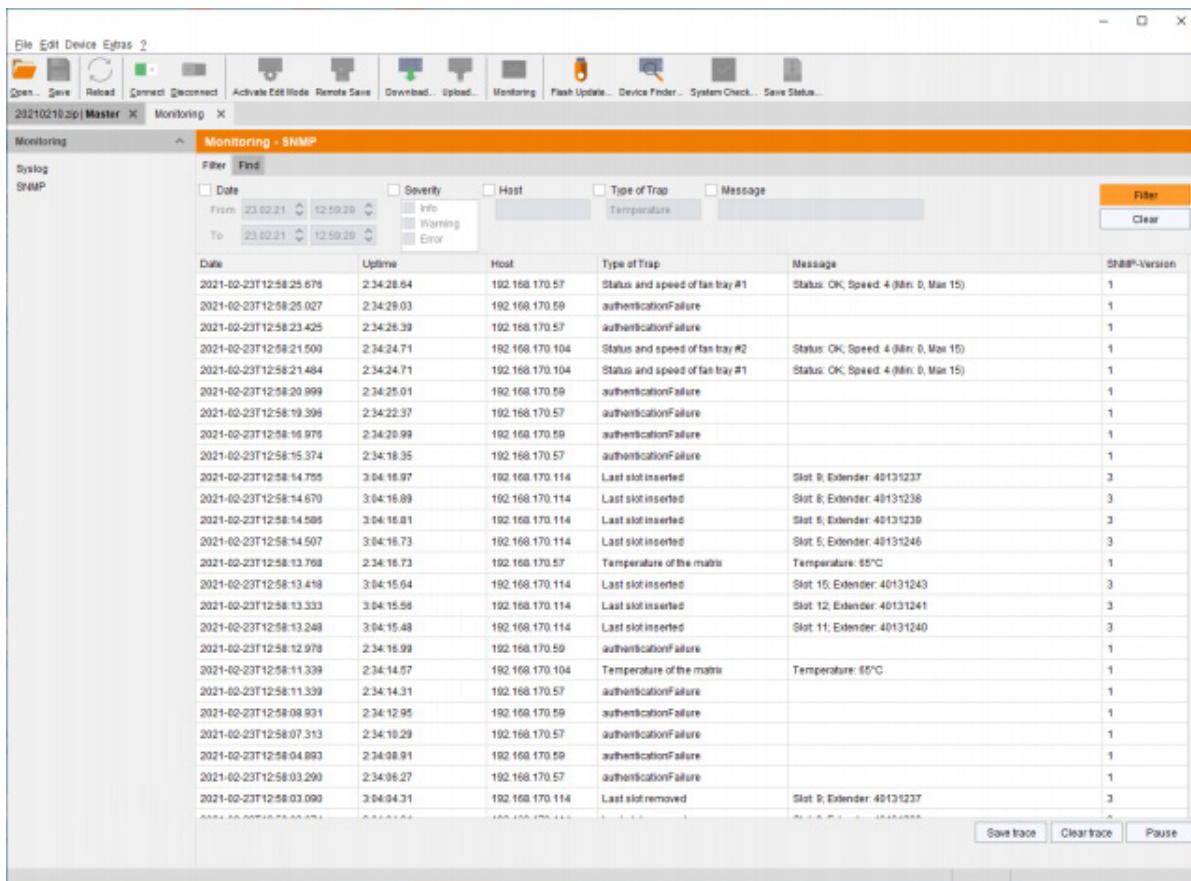


FIGURE 7-7.7.1 MANAGEMENT SOFTWARE MENU MONITORING SNMP

To open the SNMP monitoring, proceed as follows:

1. Click the **Monitoring** menu item in the toolbar.
2. Click the **SNMP** button in the task area.

The logged SNMP messages are displayed in the working area.

Filter function

To filter relevant messages from the multitude of logged activities of the SNMP module, the extenders and the chassis, the SNMP monitoring offers various filter options.

To set and activate a filter, proceed as follows:

1. Activate the respective checkbox(es) to activate the desired filter option(s).
2. Click the **Filter** button to activate the filter settings.
3. Click the **Clear** button to deactivate an activated filter setting.

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

*Filter options are not valid within the locally stored log files.

Recording function

Various options are available for the messages displayed in the SNMP log.

To save the displayed messages (filtered or unfiltered), click the **Save trace** button.

The messages are saved in a SNMP file (extension .csv).

To clear the view with the displayed messages, click the **Clear trace** button.

The recorded messages will be kept.

To pause the display of messages, click the **Pause** button.

During the pause, the messages will be recorded continuously.

To display the messages recorded in the background during the pause, click the **Pause** button again.

All messages recorded in the background will be displayed immediately.

Search function

The search function can be used to search for specific SNMP messages from a variety of logged activities and relevant messages from the SNMP module, extenders, and chassis.

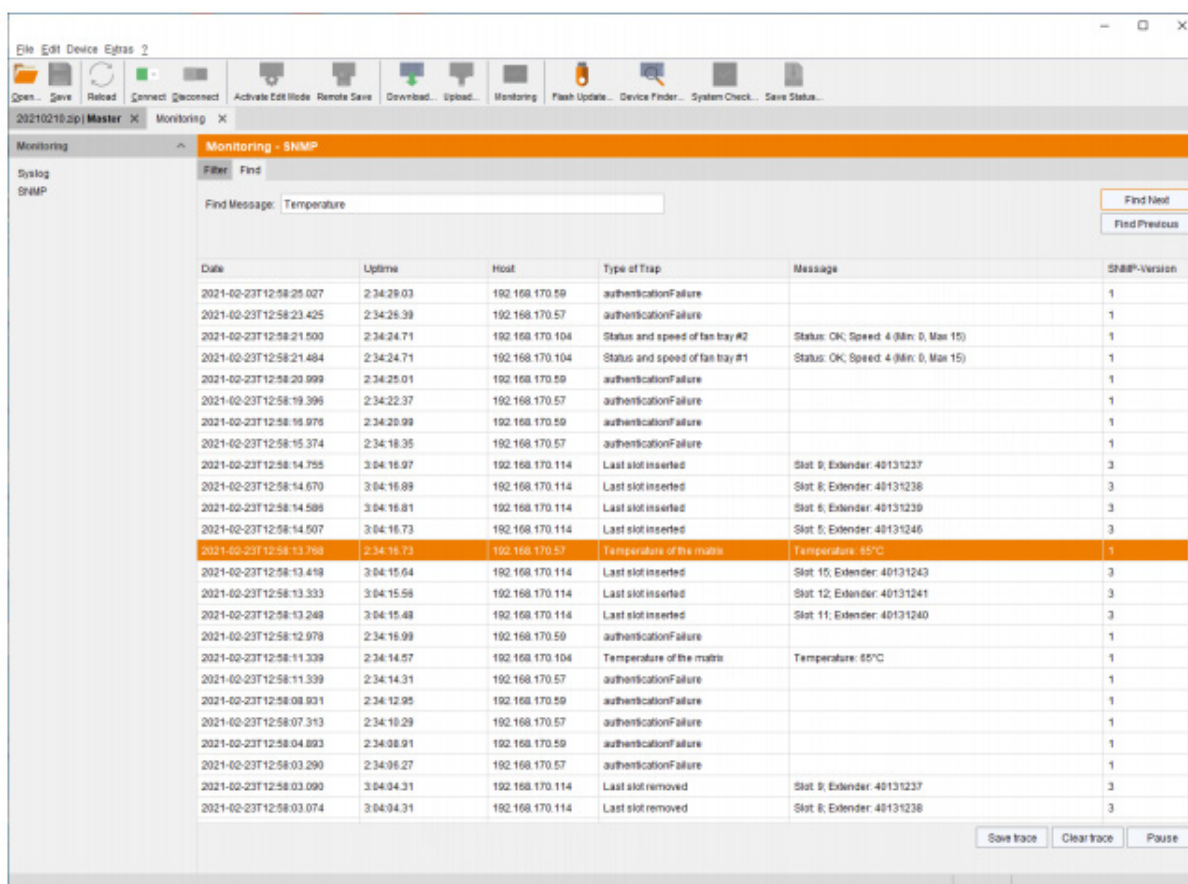


FIGURE 7-7.2 MANAGEMENT SOFTWARE MENU MONITORING SNMP
EXAMPLE FOR SEARCH RESULT

To find specific syslog messages, proceed as follows:

1. Click the monitoring menu item in the toolbar.
2. Click the **Find** tab in the working area.
The recorded SNMP messages are displayed in the working area.
3. Enter a search term in the **Find Message** search field.
4. Click the **Find Next** button.
The first message with the entered search term is highlighted.
5. Click the **Find Next** button again to find another message with this search term.
The next message with the entered search term is highlighted.

*Possible search terms would be, e.g., temperature, fan, or the serial number of an extender (e.g., 40131237).
To go back to the previous search result, click the **Find Previous** button.

7.7.8 REDUNDANCY FUNCTION

KVM extenders with redundant connectors for interconnect cables can be simultaneously operated with both connectors at a single Matrix or a Matrix Grid (from firmware version V04.00).

The connector labeled with **Link 1** at the KVM extender is meant for the primary connection. If the connection on CON or CPU Unit side is interrupted due to any problem, the connection will be automatically re-established through the second connector labeled with **Link 2**.

For this kind of redundancy function, there is no need for any configuration of the KVM matrix or the KVM extenders.

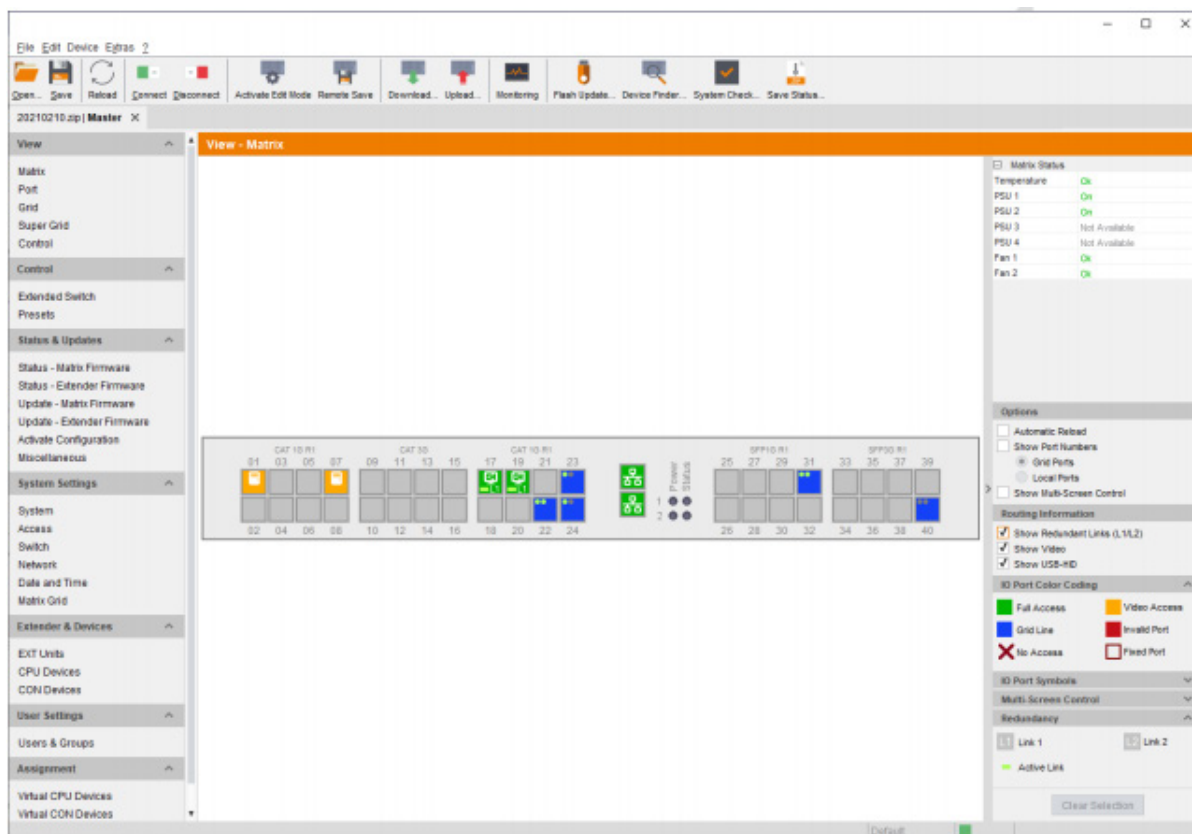


FIGURE 7-7.8.1 MANAGEMENT SOFTWARE VIEW - MATRIX

To check the connection status of the redundant KVM extenders, proceed as follows:

1. Select **View > Matrix** in the task area.
2. Activate the checkbox **Show Redundant Links (L1/L2)** under **Routing Information** on the right side of the working area.
3. Open the menu **Redundancy** on the right side of the working area to receive the respective legend information.
4. Redundant connectors are highlighted in the matrix view with L1 and L2. The respectively active link is highlighted with a light green label.

CHAPTER 7: OPERATION

7.7.9 SYSTEM CHECK

Users have access to a diagnostic function through system check 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 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
OK (green)	System checks completed without any abnormalities.
WARNING (yellow)	System checks revealed abnormalities in the configuration that point to incomplete parts of the configuration, firmware differences, duplications, or unconnected extenders, but without being system critical.
ERROR (red)	System checks revealed 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, and the matrix is not available during this time.



To start the system check, proceed as follows:

1. Click the menu item **System Check** in the tool bar.

A query appears to check the system.

2. Click the **Yes** button to start the system check.

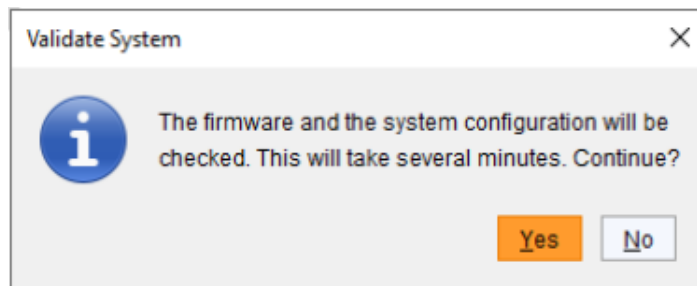


FIGURE 7-7.9.1 MANAGEMENT SOFTWARE DIALOG - VALIDATE SYSTEM

A report is displayed after the system check.

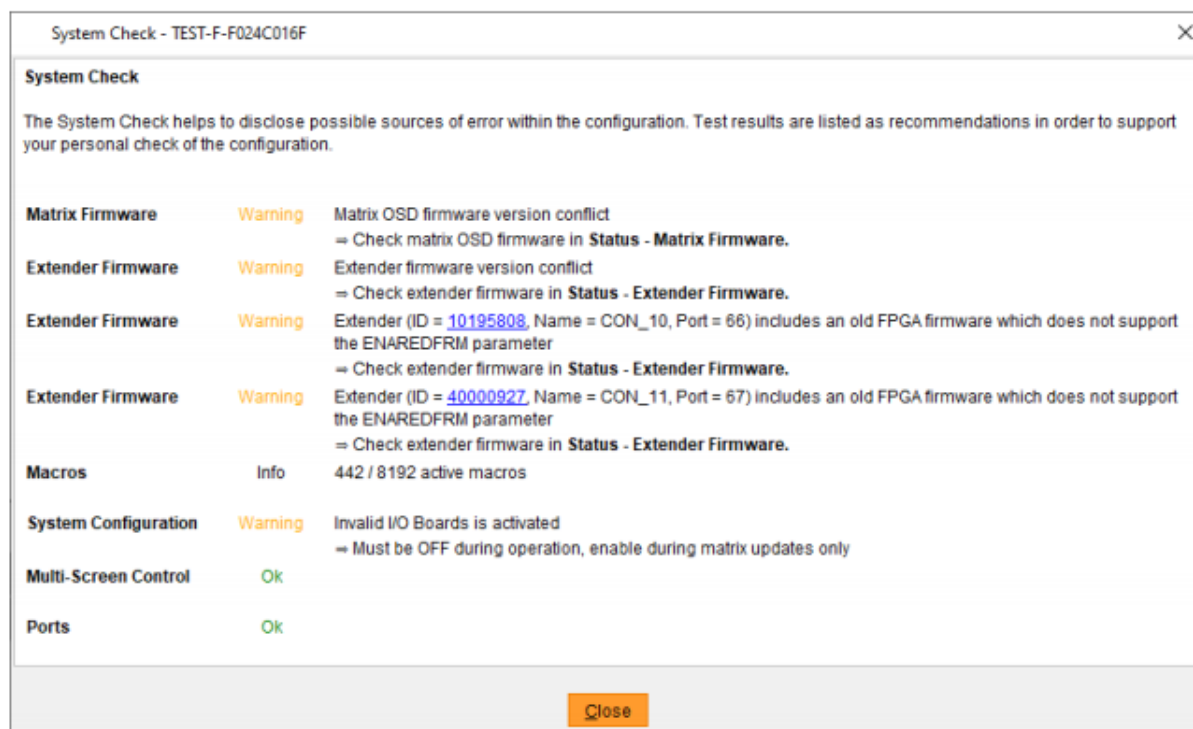


FIGURE 7-7.9.2 MANAGEMENT SOFTWARE REPORT SYSTEM CHECK

7.7.10 NETWORK CHECK

The network check checks the firewall settings for 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. Select **Extras > Network Check** in the menu bar.

A query appears with an input field for the IP address of the SNMP module to be queried.

2. Enter the IP address of the SNMP module.

3. Click the **Start network check** button to start the network check.

The availability of the ports is shown after a short moment.

The screenshot shows a 'Network Check' dialog box. At the top, there is a 'Hostname / IP Address' field containing '192.168.100.99'. Below this field is an orange button labeled 'Start network check'. The main area of the dialog is a table with two rows, both highlighted in green, indicating available ports. The first row shows a timestamp '2021-02-25T10:13:24.744' and the text 'API port (5555/5565) - available'. The second row shows a timestamp '2021-02-25T10:13:38.865' and the text 'Syslog port (514) - available'. At the bottom right of the dialog, there are two buttons: 'Save Log Messages' and 'Close'.

Network Check	
Hostname / IP Address	192.168.100.99
Start network check	
2021-02-25T10:13:24.744	API port (5555/5565) - available
2021-02-25T10:13:38.865	Syslog port (514) - available
<div> <div>Save Log Messages</div> <div>Close</div> </div>	

FIGURE 7-7.10.1 MANAGEMENT SOFTWARE REPORT NETWORK CHECK - AVAILABLE PORTS

7.8 SAVING A STATUS VIA MANAGEMENT SOFTWARE

1. Click the **Save Status** menu item in the toolbar to read out the overall status of the device and store it locally (file extension **.zip**).
A dialog appears.
2. Choose the status option.
3. Click the **Next** button.

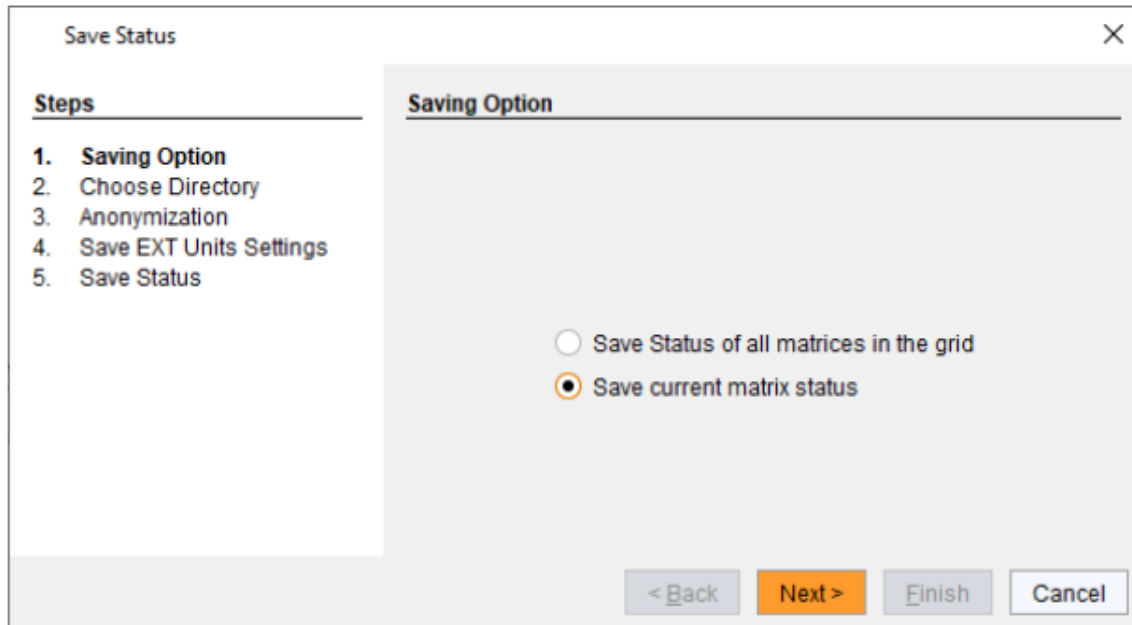


FIGURE 7-8.1.1 MANAGEMENT SOFTWARE MENU SAVE STATUS - SAVING OPTIONS

4. Navigate to the directory you want to save the status file.
5. Click the **Next** button.
6. Click the **Anonymize** checkbox to anonymize your personal data when saving the status file if necessary (not recommended for trouble shooting).
If you want to use the status file as a backup, do not click the **Anonymize** checkbox.
7. Click the **Next** button.

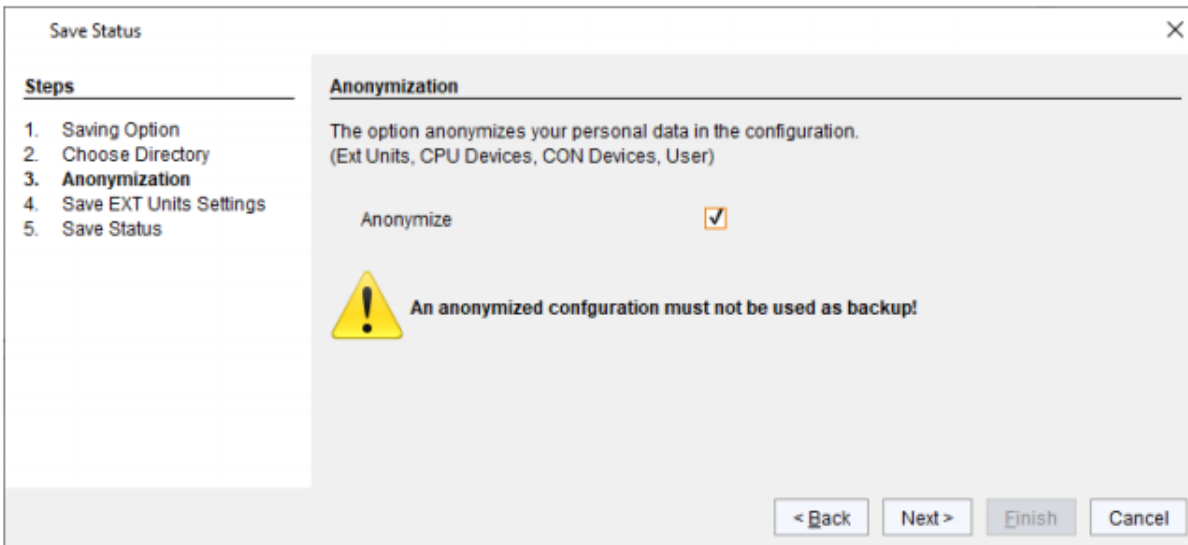


FIGURE 7-8.1.2 MANAGEMENT SOFTWARE MENU SAVE STATUS - ANONYMIZATION

8. Click the Save **EXT Units Settings** checkbox to save your extender settings.
9. Click the **Next** button.

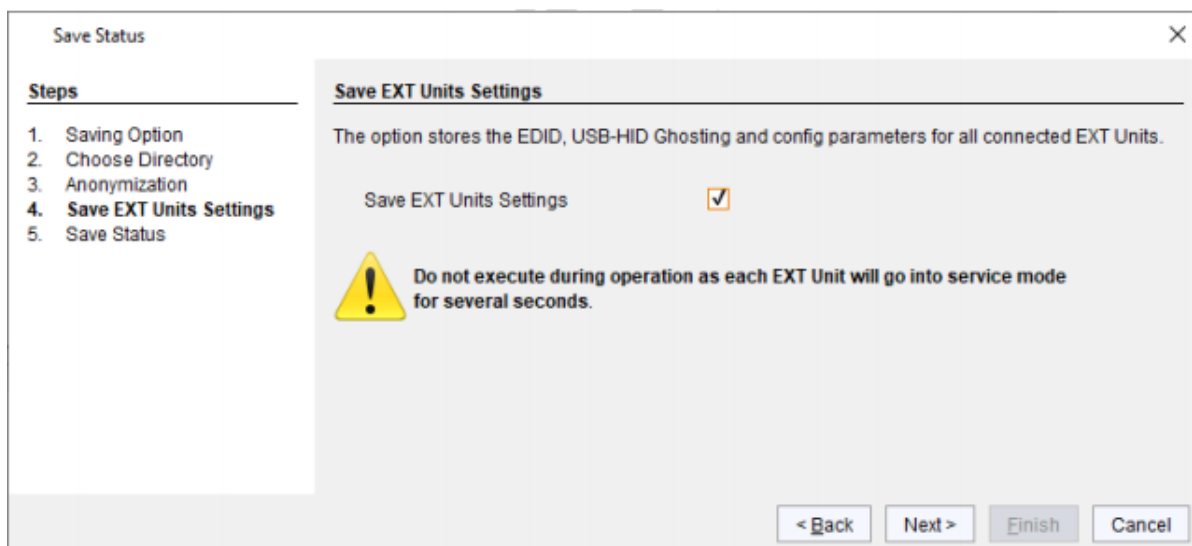


FIGURE 7-8.1.3 MANAGEMENT SOFTWARE MENU SAVE STATUS - SAVE EXT UNIT SETTINGS

10. Wait until all steps show green checkmarks and the “**Saving status successful**” message is displayed.
11. Click the **Finish** button to finish the saving.

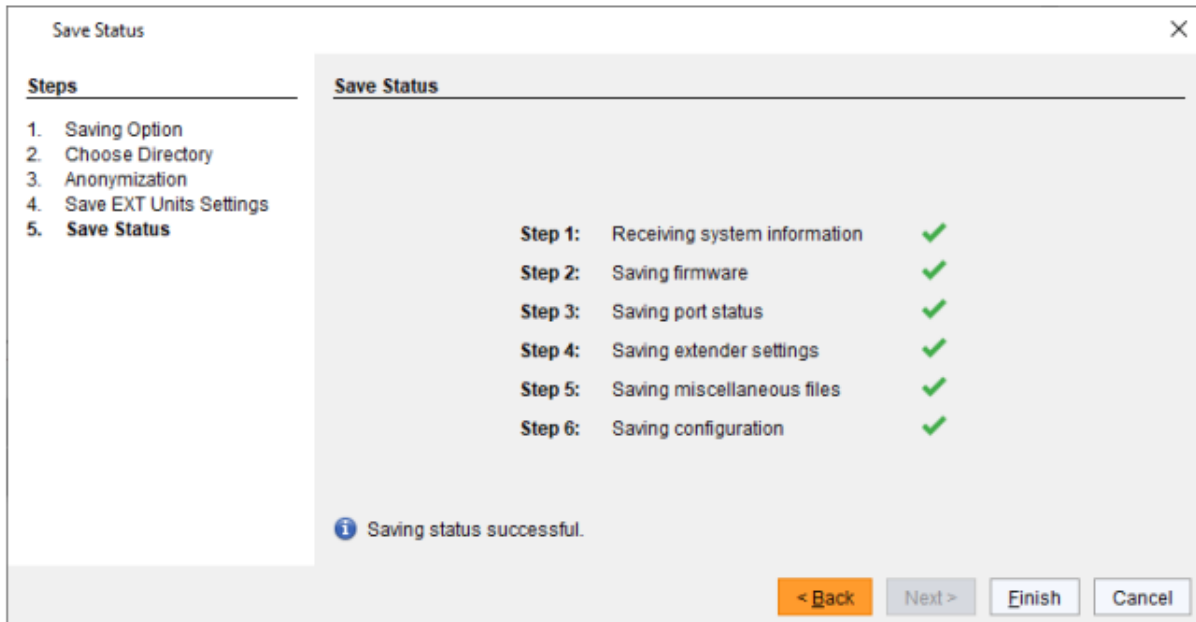


FIGURE 7-8.1.4 MANAGEMENT SOFTWARE MENU SAVE STATUS - SAVE STATUS

7.9 OPENING A LOCALLY SAVED STATUS VIA MANAGEMENT SOFTWARE

To load a locally saved status, proceed as follows:

1. Select **Device > Load Status...** in the menu bar.
2. Navigate to the storage location of the status file to be opened.
3. Click the status file to be opened.
4. Click the **Open** button to open the status file.

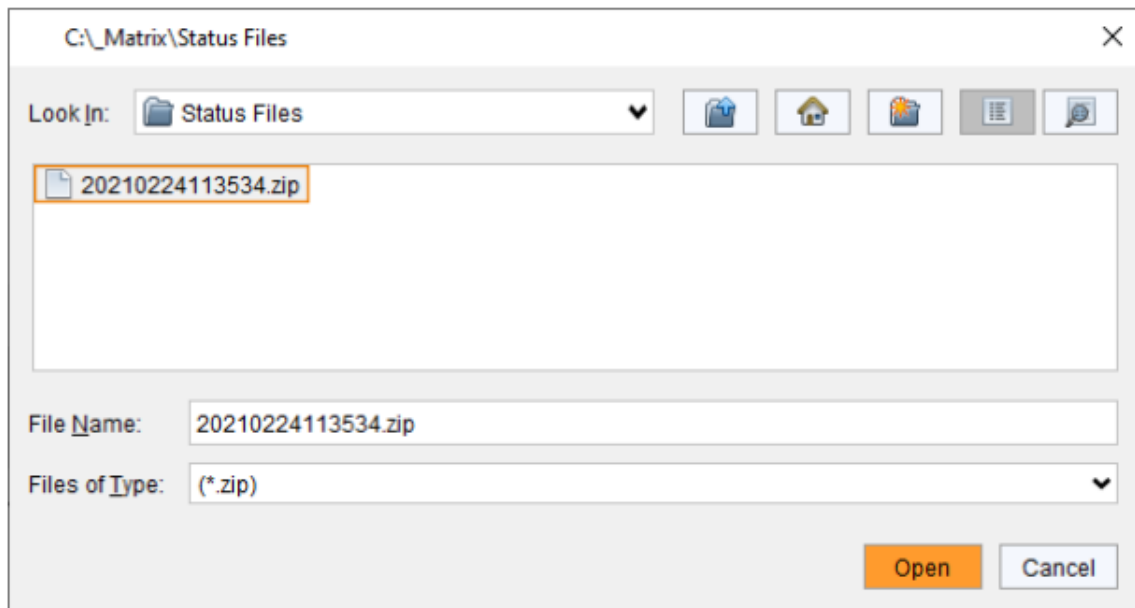


FIGURE 7-9.1.1 MANAGEMENT SOFTWARE MENU DEVICE - LOAD STATUS

The status can also be opened via drag & drop. To do so, open the file browser, navigate to the storage location of the status file, click on the status file, hold down the primary mouse button and drag and drop the status file into the management software.

7.10 RESTARTING, RESETING, AND POWERING DOWN FUNCTIONS VIA OSD

7.10.1 RESTARTING THE MATRIX

To perform a restart of the matrix, proceed as follows:

Select **Configuration > Restart Matrix** in the main menu.

The current configuration is saved in the permanent memory of the matrix and matrix will be restarted with the current configuration..



FIGURE 7-10.1.1 OSD MENU CONFIGURATION - RESTART MATRIX

7.10.2 RESTARTING THE I/O BOARD

To perform a restart of the I/O board, the user's console is connected, proceed as follows:

Select **Configuration > Restart IO Board** in the main menu.

The I/O board will be restarted.



FIGURE 7-10.2.1 OSD MENU CONFIGURATION - RESTART I/O BOARD

*To restart I/O boards with CPU extenders, use the restart option of the management software (see chapter 7.10.3, page 295)

7.10.3 RESTARTING THE CPU BOARD

To perform a restart of the CPU board, proceed as follows:

Select **Configuration > Restart CPU Board** in the main menu.

The current configuration of the CPU board is saved in the permanent memory of the matrix and the CPU boards will be restarted with the current configuration.

7.10.4 RESTARTING THE MATRIX

To perform a restart of the CPU board, proceed as follows:

Select **Configuration > Restart CPU Board** in the main menu.

The current configuration of the CPU board is saved in the permanent memory of the matrix and the CPU boards will be restarted with the current configuration.



FIGURE 7-10.4.1 OSD MENU CONFIGURATION -RESTARTING CPU BOARD

7.10.5 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.

If a firmware update has been installed since the delivery, the matrix will be set to the state defined there

7.10.6 POWERING DOWN THE MATRIX

To shut down the system, proceed as follows:

1. Select **Configuration > Shut down Matrix** in the main menu.
2. Click the **Okay** button to confirm the selection.

The current configuration of the matrix is saved in the permanent memory of the matrix and the matrix will be shut down.

*The fans will be switched to maximum speed after the shutdown. Then the matrix can be disconnected from the power supply.

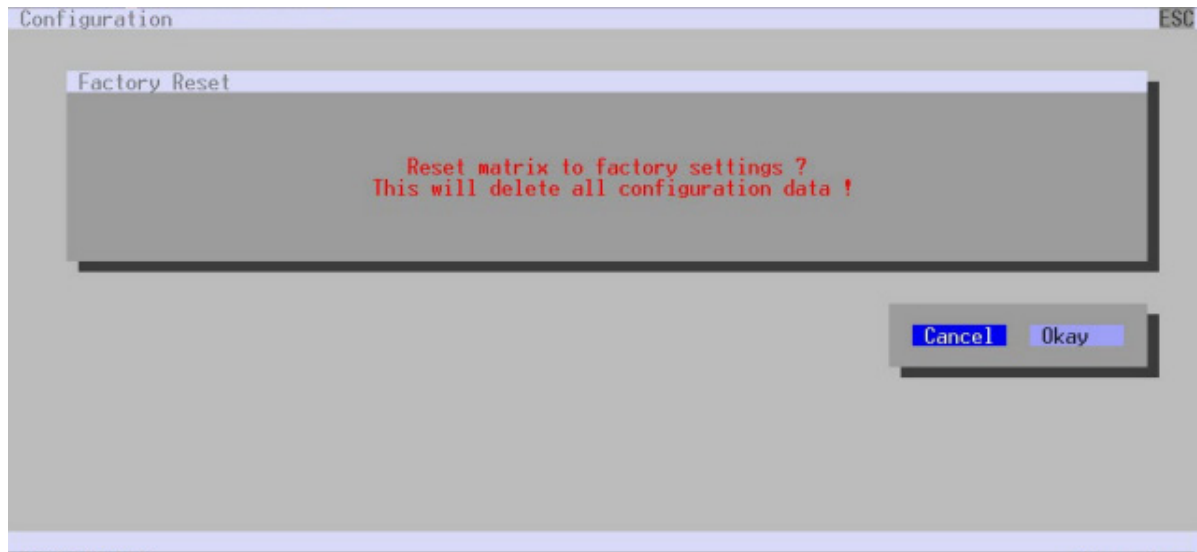


FIGURE 7-10.6.1 OSD MENU FACTORY RESET

7.10.7 POWERING DOWN THE I/O BOARD

To shut down the I/O board, proceed as follows:

1. Select **Configuration > Shut down IO Board** in the main menu.
2. Click the **Okay** button to confirm the selection.

The current configuration of the I/O boards is saved in the permanent memory of the matrix and the I/O board will be shut down.



FIGURE 7-10.7.1 OSD MENU CONFIGURATION - SHUT DOWN MATRIX

7.11 RESTARTING, RESETTNG, AND POWERING DOWN FUNCTIONS VIA MANAGEMENT SOFTWARE

7.11.1 RESTARTING THE MATRIX

NOTICE

When restarting the matrix, the current configuration is saved in the permanent memory of the matrix and the matrix will be restarted with the active configuration.

To perform a restart of the matrix, proceed as follows:

1. Select **Device > Advanced Service > Restart Device** in the menu bar.

An access window appears.

2. Enter the username and password of the administrator.
3. Click the **Ok** button.

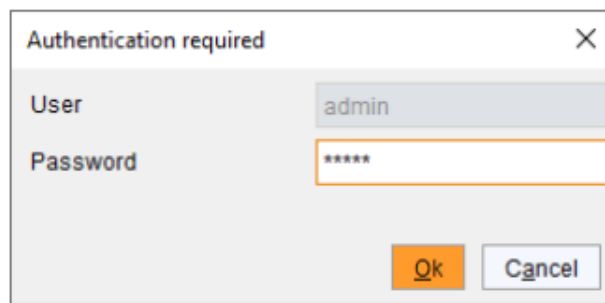


FIGURE 7-11.1.1 MANAGEMENT SOFTWARE DIALOG LOG IN ADMINISTRATOR

A query to restart the matrix appears.

4. Click the **Yes** button to restart the matrix.

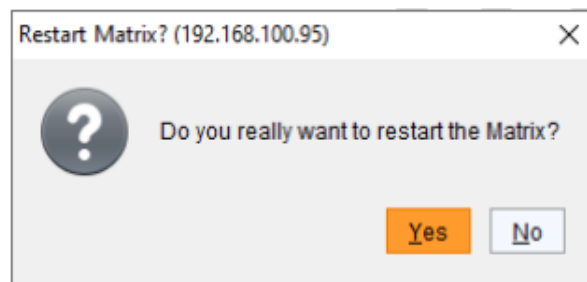


FIGURE 7-11.1.2 MANAGEMENT SOFTWARE DIALOG RESTART MATRIX

The current configuration is saved in the permanent memory of the matrix and the matrix will be restarted.

7.11.2 RESTARTING THE CPU BOARD

To perform a restart of the CPU board, proceed as follows:

1. Select **View > Matrix** in the task area.
2. Click with the secondary mouse button on the symbol of a network port of the CPU board to be restarted.

A context menu appears.

3. Select the **Restart CPU Board** function in the context menu.

Note: The CPU board will be restarted immediately without user confirmation. 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 CPU board was successful.

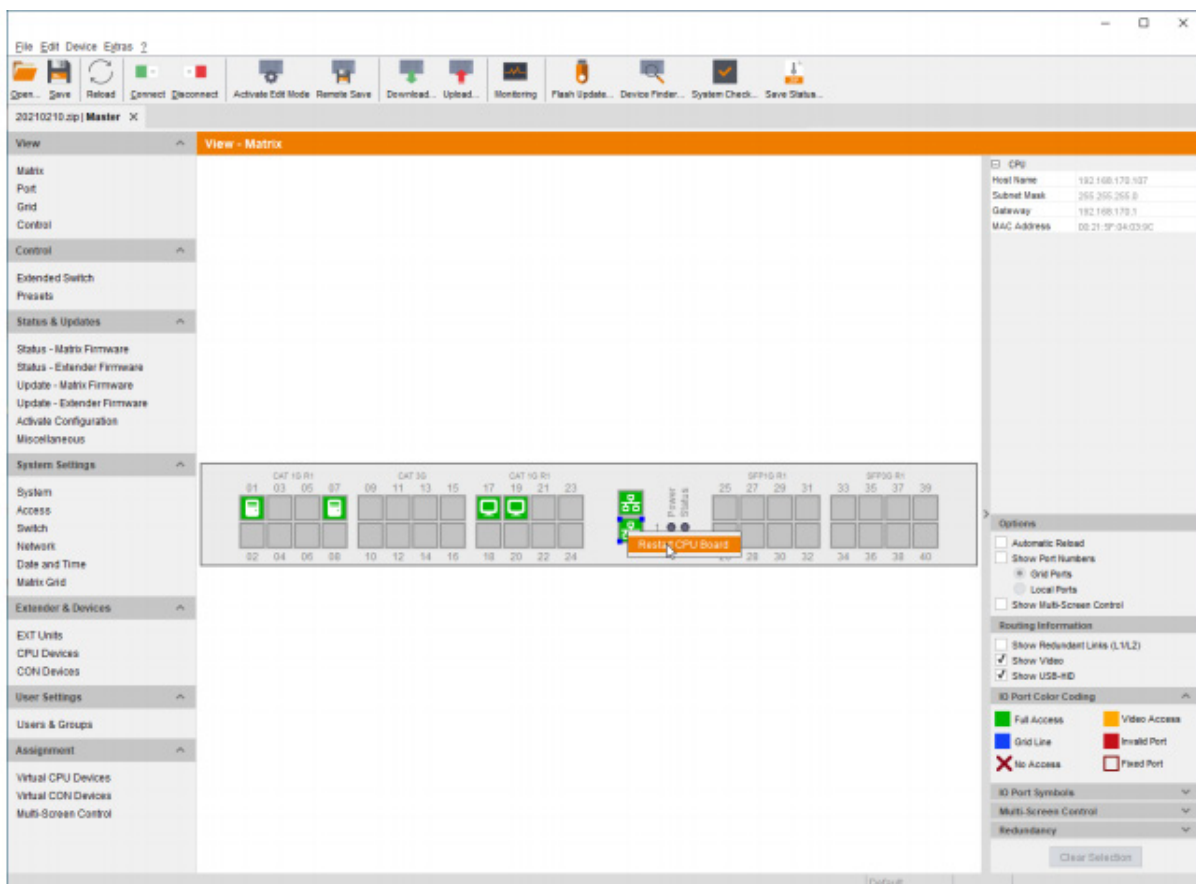


FIGURE 7-11.2.1 MANAGEMENT SOFTWARE VIEW - MATRIX - RESTART I/O BOARD

7.11.3 RESTARTING AN I/O BOARD

To perform a restart of the I/O board, proceed as follows:

1. Select **View > Matrix** in the task area.
2. Click with the secondary mouse button on the symbol of the extender of the I/O board to be restarted.
A context menu appears.
3. Select the **Restart I/O Board** function in the context menu.

Note: The I/O board will be restarted immediately without user confirmation. The I/O board will disappear for a short time in the overview. When the I/O board is visible again, the restart of the I/O board was successful.

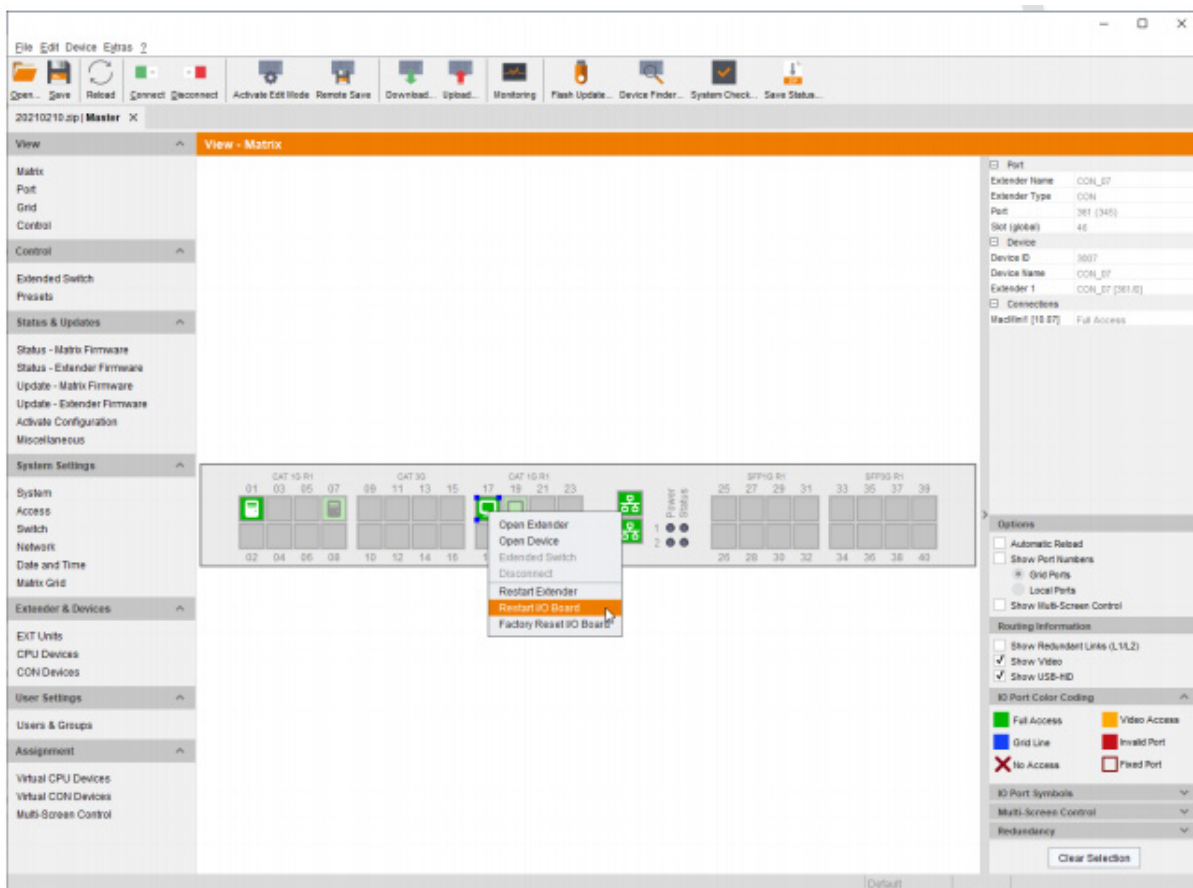


FIGURE 7-11.3.1 MANAGEMENT SOFTWARE VIEW - MATRIX - RESTART I/O BOARD

7.11.4 RESTARTING AN EXTENDER MODULE

To perform a restart of an extender module, proceed as follows:

1. Select **View > Matrix** in the task area.
2. Click with the secondary mouse button on the symbol of the extender to be restarted.
A context menu appears.
3. Select the **Restart Extender** function in the context menu.

Note: The extender module will be restarted immediately without user confirmation. The extender symbol will disappear for a short time in the overview. When the symbol is visible again, the restart of the extender module was successful.

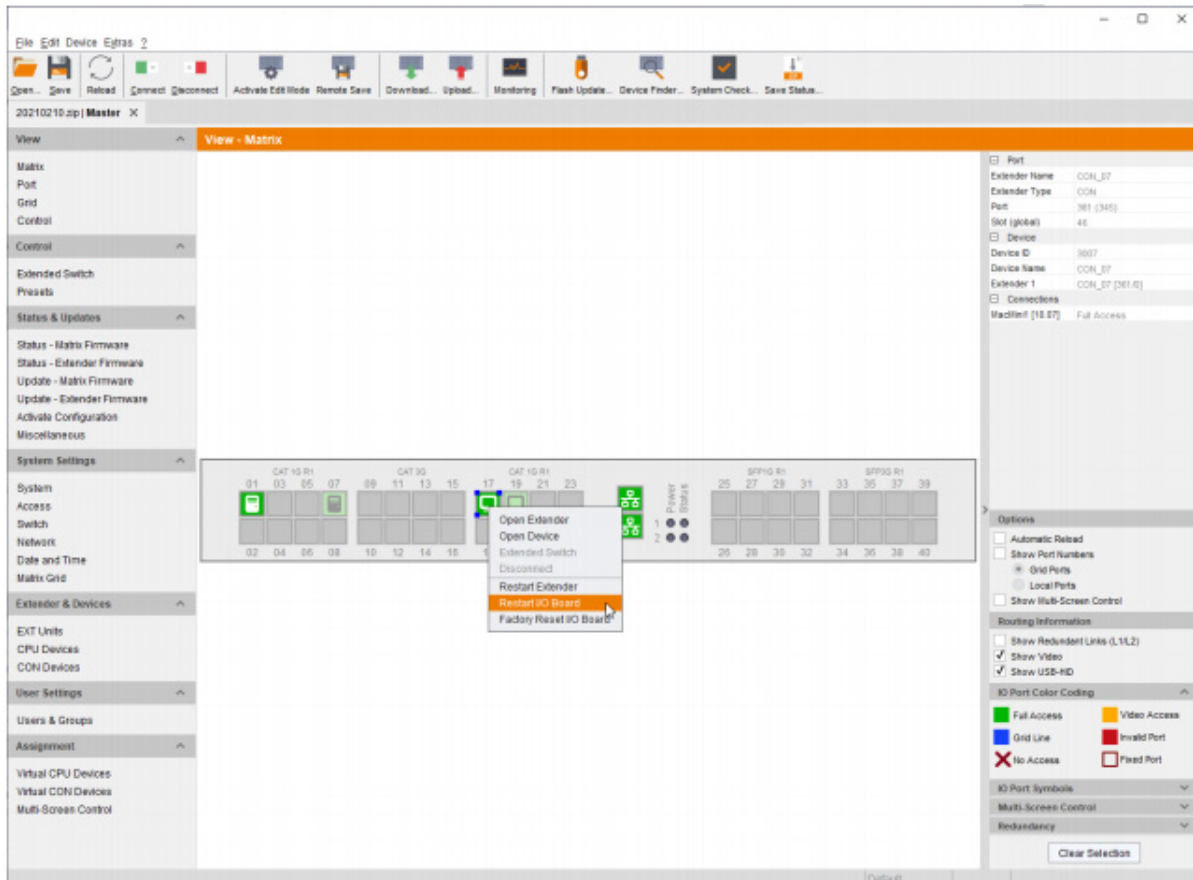


FIGURE 7-11.4.1 MANAGEMENT SOFTWARE VIEW - MATRIX - RESTART EXTENDER

7.11.5 POWERING DOWN THE MATRIX

NOTICE

When restarting the matrix, the current configuration is saved in the permanent memory of the matrix and the matrix will be restarted with the active configuration.

- To shut down the matrix, proceed as follows:
1. Select **Device > Advanced Service > Shut down Matrix** in the menu bar.
- An access window appears.
2. Enter the username and password of the administrator.
 3. Click the **Ok** button.

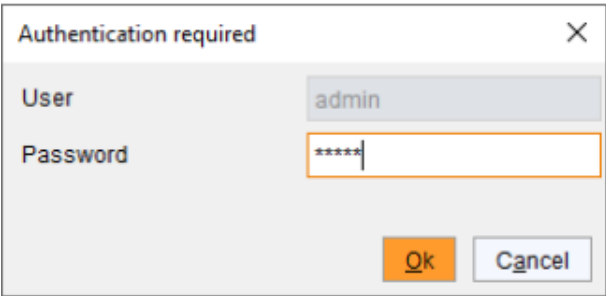


FIGURE 7-11.5.1 MANAGEMENT SOFTWARE DIALOG LOG IN ADMINISTRATOR

- A query to shut down the matrix appears.
4. Click the **Yes** button to start the shutdown.

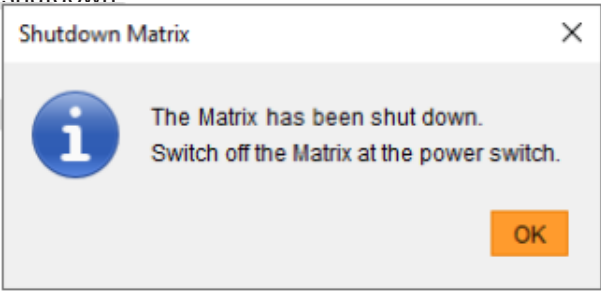


FIGURE 7-11.5.2 MANAGEMENT SOFTWARE DIALOG LOG SHUT DOWN MATRIX



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.

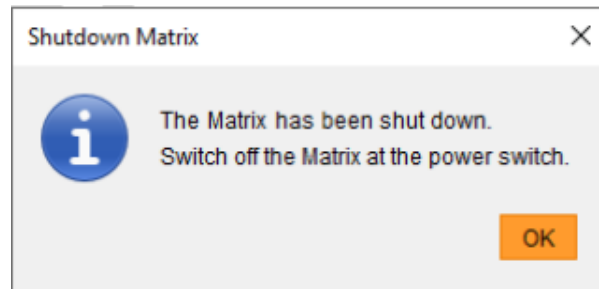
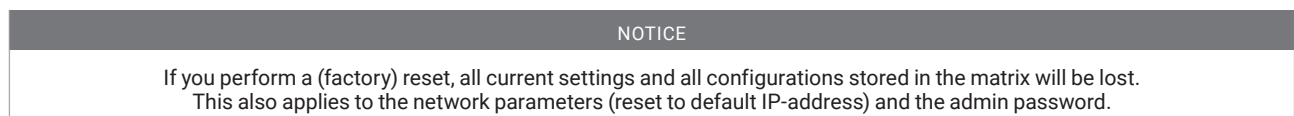


FIGURE 7-11.5.3 MANAGEMENT SOFTWARE DIALOG LOG SWITCH OFF MATRIX

7.11.6 RESETTING THE MATRIX TO THE FACTORY SETTINGS



*If a firmware update has been installed since the delivery, the matrix will be set to the state defined there.

To perform a reset of the matrix, proceed as follows:

1. Select **Device > Advanced Service > Factory Reset > Factory Reset** in the menu bar.

An access window appears.

2. Enter the username and password of the administrator.
3. Click the **Ok** button to confirm your entries.

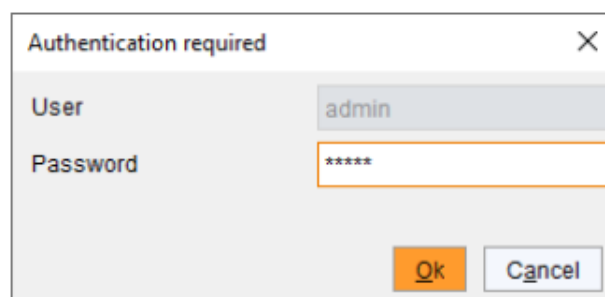


FIGURE 7-11.6.1 MANAGEMENT SOFTWARE DIALOG LOG IN ADMINSTRATOR

A query to reset the matrix appears.

4. Click the **Yes** button to reset the device.

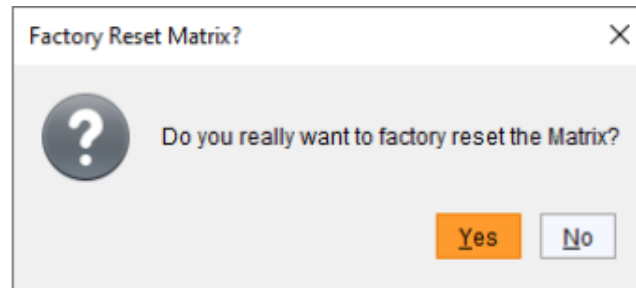


FIGURE 7-11.6.2 MANAGEMENT SOFTWARE DIALOG FACTORY RESET

The matrix is reset to factory settings.

7.11.7 RESETTING AN I/O BOARD TO THE FACTORY SETTINGS

NOTICE

If you perform a (factory) reset, all current settings and all configurations of the I/O board will be lost.

If a firmware update has been installed since the delivery, the I/O boards will be set to the state defined there.

To perform a reset of an I/O board, proceed as follows:

1. Select **View > Matrix** in the task area.
2. Click with the secondary mouse button on the symbol of an extender of the I/O board to be reset. A context menu appears.
3. Select the **Factory Reset I/O Board** function in the context menu.

Note: The I/O board will be restarted immediately without user confirmation. The I/O board will disappear for a short time in the overview. When the I/O board and the extenders are visible again, the reset of the I/O board was successful.

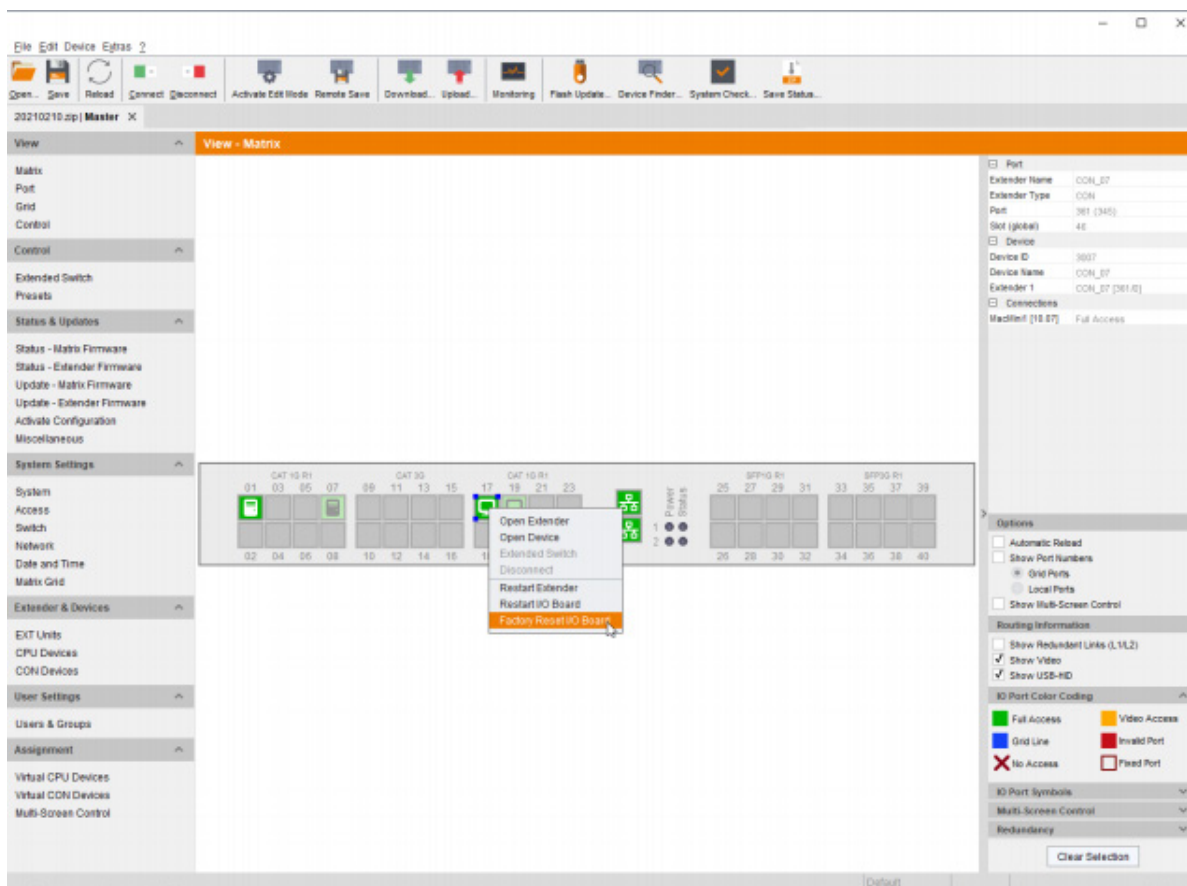


FIGURE 7-11.7.1 MANAGEMENT SOFTWARE VIEW - MATRIX - CONTEXT VIEW

7.12 SUMMARY OF KEYBOARD COMMANDS

In the following you find a summary of keyboard commands that can activate extender and matrix functions after executing the Hot Key.

Extender

BUTTON	DESCRIPTION
<Hot Key>, <a>	Download of DDC information for the monitor connected to the CON Unit into the CPU Unit
<Hot Key>, <k>, <1>, <Enter>	Switch to the KVM connection 1 (only with HDMI CON Units with available connection for a local source)
<Hot Key>, <k>, <2>, <Enter>	Switch to the KVM connection 2 (only with HDMI CON Units with available connection for a local source and a redundant interconnection)
<Hot Key>, <l>, <Enter>	Switch to local source (computer, CPU) (only with HDMI CON Units with available connection for a local source)
<Hot Key>, <h>, <w>, <Enter>	USB-HID Ghosting: Write device descriptions of the input devices connected to the CON Unit into the CPU Unit. Activate the emulation in the CPU Unit.
<Hot Key>, <h>, <e>, <Enter>	Activate the emulation of already stored device descriptions in the CPU Unit
<Hot Key>, <h>, <d>, <Enter>	Deactivate the emulation of active device descriptions in the CPU Unit. The input devices connected to the CON Unit will be passed transparently to the source (computer, CPU).
<Hot Key>, <h>, <r>, <Enter>	Deactivate the emulation of active device descriptions in the CPU Unit. Delete the descriptions out of the CPU Unit. The input devices connected to the CON Unit will be passed transparently to the source (computer, CPU).
<Hot Key>, <d>, <1>, <Enter>	Switch to video channel 1 of the Dual-Head CPU Unit (482 series only)
<Hot Key>, <d>, <2>, <Enter>	Switch to video channel 2 of the Dual-Head CPU Unit (482 series only)

Matrix

BUTTON	DESCRIPTION
<Hot Key>, <o>	Open OSD
<Hot Key>, <s>, <o>	Open OSD of the sub matrix in a cascaded environment
<Hot Key>, <Backspace>	Close the current connection of the own console
<Hot Key>, <p>	Switch back to the previous connected source (computer, CPU) with a KVM connection)
<Hot Key>, <1> ... <16>, <Enter> (<Space> or <Left Shift> + <Enter>)	Switch to a source (computer, CPU) stored in the favorite list with a KVM connection (Video Only or Private Mode connection)

BUTTON	DESCRIPTION
<Hot Key>, <F1> ... <F16>	Open OSD
<Hot Key>, <Left Shift> + <F17> ... <F32>	Open OSD of the sub matrix in a cascaded environment
<Hot Key>, <c>, <new Hot Key Code>, <Enter>	Close the current connection of the own console
<Hot Key>, <c>, <0>, <new Hot Key>, <Enter>	Switch back to the previous connected source (computer, CPU) with a KVM connection)
<<Hot Key>, <f>, <new Hot Key Code>, <Enter>	Switch to a source (computer, CPU) stored in the favorite list with a KVM connection (Video Only or Private Mode connection)
<Hot Key>, <f>, <0>, <new Hot Key key>, <Enter>	Define freely selectable Hot Key for direct OSD access
<Hot Key>, <Num 0>	Switch the USB-HID signal to the user's display (CON Unit with keyboard and mouse)
<Hot Key>, <Num 1>	Switching of the USB-HID signals to display #1
<Hot Key>, <Num 2>	Switching of the USB-HID signals to display #2
<Hot Key>, <Num 3>	Switching of the USB-HID signals to display #3
<Hot Key>, <Num 4>	Switching of the USB-HID signals to display #4

8.1 INTERFACES

8.1.1 RJ45 (NETWORK)

The network communication of the devices requires a 100BASE-T connection. The cabling has to be done according to EIA/TIA-568-B (100BASE-T) with RJ45 connectors at both ends. All four wire pairs are used in both directions. The cabling is suitable for a full duplex operation. For the cable connection to a source (computer, CPU), a crossed network cable (cross cable) has to be used.

8.1.2 8.1.2 RJ45 (INTERCONNECT)

The communication between Cat X devices requires a 1000BASE-T connection. Connector wiring must comply with EIA/TIA-568-B (1000BASE-T), with RJ45 connectors at both ends. All four cable wire pairs are used.

CHAPTER 8: EXTENDED SPECIFICATIONS

8.1.3 FIBER SFP TYPE LC (INTERCONNECT)

The communication of fiber devices is performed via Gigabit SFPs that are connected to suitable fibers fitted with connectors type LC.

NOTICE

If you perform a (factory) reset, all current settings and all configurations of the I/O board will be lost.

NOTICE

SFP modules can be damaged by electrostatic discharge (ESD).

- ◆ Please consider ESD handling specifications.

8.2 INTERCONNECT CABLE

8.2.1 CAT X

NOTICE

Transmission problems
Routing over an active network component, such as an Ethernet Hub, Router or Matrix, is not allowed.
Operation with several patch fields is possible.
Establish a point-to-point connection.
Avoid routing Cat X cables along power cables.

NOTICE

Exceeding the limit of the device class
The use of unshielded Cat X cables with higher electromagnetic emissions / radiation can exceed the limit values for the specified device class.
Correctly install shielded Cat X cable throughout interconnection, to maintain regulatory EMC compliance.

NOTICE

Exceeding limit values for electromagnetic radiation
The limit values for the electromagnetic radiation of the device are complied with if ferrites are mounted on both sides of all Cat X cables near the device. With installed ferrites, the devices meet the EU guidelines for electromagnetic compatibility. The operation of the devices without mounted ferrites leads to a loss of conformity with the EU directives.
☐ Mount ferrites on both sides of all Cat X cables near the device to maintain regulatory EMC compliance.



Type of Interconnect Cable

The KVM-Extender requires interconnect cabling specified for Gigabit Ethernet (1000BASE-T). The use of solid core (AWG24), shielded, Cat 5e (or better) is recommended.

TYPE OF CABLE	SPECIFICATION
Cat X installation cable AWG24	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG24. Connection according to EIA/TIA-568-B (1000BASE-T).
Cat X patch cable AWG26/8	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG26/8. Connection according to EIA/TIA-568-B (1000BASE-T).

*The use of flexible cables (patch cables) type AWG26/8 is possible; however, the maximum possible extension distance is halved.

Maximum acceptable cable length

TYPE OF CABLE	SPECIFICATION
Cat X installation cable AWG24	140 m (460 ft)
Cat X patch cable AWG26/8	70 m (230 ft)

8.2.2 FIBER

NOTICE
<p>Transmission problems</p> <p>Routing over an active network component, such as an Ethernet Hub, Router or Matrix, is not allowed.</p> <p>Operation with several patch fields is possible.</p> <p>Establish a point-to-point connection.</p> <p>Avoid routing Cat X cables along power cables.</p>

FIGURE 2-14. BACK PANEL

NOTICE

Transmission problems

Routing over an active network component, such as an Ethernet Hub, Router or Matrix, is not allowed.

Operation with several patch fields is possible.

⌘ Establish a point-to-point connection.

⌘ Avoid routing Cat X cables along power cables.

Type of Interconnect Cable*

TYPE OF CABLE	SPECIFICATION
Single-mode 9 µm	<ul style="list-style-type: none"> • Two fibers 9 µm • I-V(ZN)H 2E9 (in-house patch cable) • I-V(ZN)HH 2E9 (in-house breakout cable) • I/AD(ZN)H 4E9 (in-house or outdoor breakout cable, resistant) • A/DQ(ZN)B2Y 4G9 (outdoor cable, with protection against rodents)
Multi-mode 50 µm	<ul style="list-style-type: none"> • Two fibers 50 µm • I-V(ZN)H 2G50 (in-house patch cable) • I/AD(ZN)H 4G50 (in-house or outdoor breakout cable, resistant)
* Cable notations according to VDE	

Maximum acceptable cable length

TYPE OF CABLE	SPECIFICATION
Single-mode 9 µm	10,000 m (32,808 ft)
Single-mode 9 µm XV	5,000 m (16,404 ft)
Multi-mode 50 µm (OM3)	1,000 m (3,280 ft)
Multi-mode 50 µm	400 m (1,312 ft)

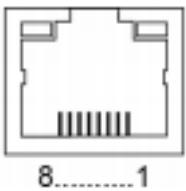
*Using single-mode SFPs with multi-mode fibers, the ranges can be increased.

Maximum acceptable cable length

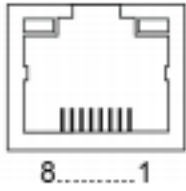
CONNECTOR	TYPE
Plug-in connector	LC-Connector

8.3 CONNECTOR PINOUTS

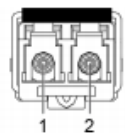
8.3.1 RJ45 (NETWORK)

	TYPE OF CABLE	SIGNAL	PIN	SIGNAL
	1	D1+	5	Not connected
	2	D1-	6	D2-
	3	D2+	7	Not connected
	4	Not connected	8	Not connected

8.3.2 RJ45 (INTERCONNECT)

	TYPE OF CABLE	SIGNAL	PIN	SIGNAL
	1	D1+	5	D3-
	2	D1-	6	D2-
	3	D2+	7	D4+
	4	D3+	8	D4-

8.3.3 FIBER SFP TYPE LC

CONNECTOR	TYPE OF CABLE	SIGNAL
	1	Data OUT
	2	Data IN

8.4 POWER SUPPLY, CURRENT DRAW AND POWER CONSUMPTION

8.4.1 POWER SUPPLY, CURRENT DRAW AND POWER CONSUMPTION FLEX CAT X 1G

PRODUCT TYPE	MAX CURRENT	MAX VOLTAGE (AC)	FREQUENCY	POWER CONSUMPTION
ACXC16F-1G	3,918 mA	100 to 240 V	50/60 Hz	53.7 W
ACXC24F-1G	5,057 mA	100 to 240 V	50/60 Hz	69.3 W
ACXC32F-1G	6,196 mA	100 to 240 V	50/60 Hz	85.0 W
ACXC40F-1G	7,334 mA	100 to 240 V	50/60 Hz	100.6 W
ACXC48F-1G	9,600 mA	100 to 240 V	50/60 Hz	126.6 W
ACXC64F-1G	11,933 mA	100 to 240 V	50/60 Hz	157.4 W
ACXC80F-1G	14,267 mA	100 to 240 V	50/60 Hz	188.1 W
ACXC120F-1G	21,900 mA	100 to 240 V	50/60 Hz	279.6 W
ACXC128F-1G	23,067 mA	100 to 240 V	50/60 Hz	294.5 W
ACXC144F-1G	25,400 mA	100 to 240 V	50/60 Hz	324.3 W
ACXC160F-1G	27,733 mA	100 to 240 V	50/60 Hz	354.0 W

8.4.2 POWER SUPPLY, CURRENT DRAW AND POWER CONSUMPTION CAT X 3G

PRODUCT TYPE	MAX CURRENT	MAX VOLTAGE (AC)	FREQUENCY	POWER CONSUMPTION
ACXC16F-1G	5,318 mA	100 to 240 V	50/60 Hz	72.9 W
ACXC24F-1G	7,157 mA	100 to 240 V	50/60 Hz	98.1 W
ACXC32F-1G	8,996 mA	100 to 240 V	50/60 Hz	123.4 W
ACXC40F-1G	10,834 mA	100 to 240 V	50/60 Hz	148.6 W
ACXC48F-1G	13,800 mA	100 to 240 V	50/60 Hz	182.0 W
ACXC64F-1G	17,533 mA	100 to 240 V	50/60 Hz	231.2 W
ACXC80F-1G	21,267 mA	100 to 240 V	50/60 Hz	280.4 W
ACXC120F-1G	32,400 mA	100 to 240 V	50/60 Hz	413.6 W
ACXC128F-1G	34,267 mA	100 to 240 V	50/60 Hz	437.4 W
ACXC144F-1G	38,000 mA	100 to 240 V	50/60 Hz	485.1 W
ACXC160F-1G	41,733 mA	100 to 240 V	50/60 Hz	532.8 W

8.5 CONNECTOR PINOUTS

8.5.1 POWER SUPPLY, CURRENT DRAW AND POWER CONSUMPTION FIBER 1G & 3G

PRODUCT TYPE	MAX CURRENT	MAX VOLTAGE (AC)	FREQUENCY	POWER CONSUMPTION
ACXC16F-1G/3G	3,918 mA	100 to 240 V	50/60 Hz	53.7 W
ACXC24F-1G/3G	5,057 mA	100 to 240 V	50/60 Hz	69.3 W
ACXC32F-1G/3G	6,196 mA	100 to 240 V	50/60 Hz	85.0 W
ACXC40F-1G/3G	7,334 mA	100 to 240 V	50/60 Hz	100.6 W
ACXC48F-1G/3G	9,600 mA	100 to 240 V	50/60 Hz	126.6 W
ACXC64F-1G/3G	11,933 mA	100 to 240 V	50/60 Hz	157.4 W
ACXC80F-1G/3G	14,267 mA	100 to 240 V	50/60 Hz	188.1 W
ACXC120F-1G/3G	21,900 mA	100 to 240 V	50/60 Hz	279.6 W
ACXC128F-1G/3G	23,067 mA	100 to 240 V	50/60 Hz	294.5 W
ACXC144F-1G/3G	25,400 mA	100 to 240 V	50/60 Hz	324.3 W
ACXC160F-1G/3G	27,733 mA	100 to 240 V	50/60 Hz	354.0 W

8.5.2 POWER SUPPLY, CURRENT DRAW AND POWER CONSUMPTION HYBRID 1G

PRODUCT TYPE	MAX CURRENT	MAX VOLTAGE (AC)	FREQUENCY	POWER CONSUMPTION
ACXC24FH16-1G	7,334 mA	100 to 240 V	50/60 Hz	100.6 W
ACXC24FH40-1G	11,933 mA	100 to 240 V	50/60 Hz	157.4 W
ACXC40FH24-1G	11,933 mA	100 to 240 V	50/60 Hz	157.4 W
ACXC40FH40-1G	14,267 mA	100 to 240 V	50/60 Hz	188.1 W
ACXC80FH40-1G	21,900 mA	100 to 240 V	50/60 Hz	279.6 W
ACXC80FH80-1G	27,733 mA	100 to 240 V	50/60 Hz	354.0 W
ACXC120FH40-1G	27,733 mA	100 to 240 V	50/60 Hz	354.0 W

FIGURE 2-14. BACK PANEL

CHAPTER 8: EXTENDED SPECIFICATIONS

8.5.3 POWER SUPPLY, CURRENT DRAW AND POWER CONSUMPTION HYBRID 3G

PRODUCT TYPE	MAX CURRENT	MAX VOLTAGE (AC)	FREQUENCY	POWER CONSUMPTION
ACXC40-1G-2RU	9,434 mA	100 to 240 V	50/60 Hz	53.7 W
ACXC40-1G-4RU	14,033 mA	100 to 240 V	50/60 Hz	69.3 W
ACXC40F-1G-2RU	17,433 mA	100 to 240 V	50/60 Hz	85.0 W
ACXC40F-1G-4RU	17,7677 mA	100 to 240 V	50/60 Hz	100.6 W
ACXC24F16-1G-2RU	28,067 mA	100 to 240 V	50/60 Hz	126.6 W
ACXC24F16-1G-4RU	33,067 mA	100 to 240 V	50/60 Hz	157.4 W

8.6 OPEN_ENVIRONMENTAL CONDITIONS AND EMISSIONS

PARAMETER	VALUE
Operating Temperature	5 to 45 °C (41 to 113 °F)
Storage Temperature	-25 to 60 °C (-13 to 140 °F)
Relative Humidity	Max. 80% non-condensing
Operating Altitude	Max. 2.500 m (7,500 ft)
Heat Dissipation	Corresponds to power consumption in Watt (W)

CHAPTER 8: EXTENDED SPECIFICATIONS

8.7 DIMENSIONS

PRODUCT/ PACKAGING	DIMENSION	DIMENSION INCL. SHIPPING BOX
DKM flex 1RU chassis	442 x 449 x 44 mm (17.4" x 17.7" x 1.7")	602 x 526 x 154 mm (23.7" x 20.7" x 6.1")
DKM flex 2RU chassis	442 x 449 x 90 mm (17.4" x 17.7" x 3.5")	602 x 526 x 208 mm (23.7" x 20.7" x 7.9")
DKM flex 4RU chassis	442 x 449 x 177 mm (17.4" x 17.7" x 7.0")	640 x 570 x 360 mm (25.2" x 22.4" x 14.2")

8.8 8.7 OPEN_WEIGHT

PRODUCT	WEIGHT (INCL. FANS AND PSUS)
DKM flex 1RU chassis	7.7 kg (17 lb)
DKM flex 2RU chassis	11 kg (24.3 lb)
DKM flex 4RU chassis	19 kg (41.9 lb)

8.9 8.8 MTBF

The following table contains the mean time between failure (MTBF) in power-on hours (POH). The estimate is based on the FIT rates of the parts included. FIT rates are based on normalized environmental conditions of T = 60°C and activation energy (Ea) of 0.7 eV. Calculations are based on 90% confidence limit.

We estimate that inside the housing, temperature will be 15°C higher than the ambient temperature. Therefore, the MTBF calculation refers to an ambient temperature of 45°C. The humidity is limited to 60%.

Under these standard conditions, the MTBF for the components of the DKM flex KVM matrices are estimated as follows:

COMPONENT	MTBF IN POH
DKM flex 1RU chassis (incl. fans and PSUs)	71,900
DKM flex 2RU chassis (incl. fans and PSUs)	74,300
DKM flex 4RU chassis (incl. fans and PSUs)	65,400
I/O card Cat X 1G	899,200
I/O card Cat X 3G	474,800
I/O card fiber 1G & 3G (without SFP modules)	878,700

CHAPTER 9: MAINTENANCE

9.1 MAINTENANCE

The device contains no user serviceable parts inside.

⚠ Do not attempt to open or repair the device.

⚠ Please contact your dealer or manufacturer if there is a fault.

10.1 TROUBLESHOOTING

The following chapters provide help in case of problems with the DKM unit. The content of this help is based on an already functioning extender section. Before operating your extenders with the matrix, please make sure that the extenders work via a direct point-to-point connection. A Cat X or fiber optic coupler can be used to support this. In case of problems in this regard, the manuals of the respective extenders offer assistance if necessary.

10.2 EXTERNAL FAILURE

DIAGNOSIS	POSSIBLE REASON	MEASURE
Matrix cannot be started anymore	Fuse at the standard appliance outlet.	Check the fuse.

10.3 VIDEO INTERFERENCE

DIAGNOSIS	POSSIBLE REASON	MEASURE
Opening the OSD not possible	No OSD jumper set	Set jumper 11 on the CON Unit.
Incorrect video display	Cable connection disturbed	Check the connection, length, and quality of the interconnect cable to the units.

10.4 MALFUNCTION OF FANS

DIAGNOSIS	POSSIBLE REASON	MEASURE
Fans do not run	Fans defective	Contact your dealer.t.

10.5 MALFUNCTION OF POWER SUPPLY UNITS

DIAGNOSIS	POSSIBLE REASON	MEASURE
Matrix cannot be started	No power supply available.	Check if power supply cables are connected correctly.
	Power supply units are not switched on	Check switch on the power supply units.

10.6 NETWORK ERROR

DIAGNOSIS	POSSIBLE REASON	MEASURE
Network settings are not assumed after editing.	Restart of the matrix not yet completed.	Restart the matrix.

10.7 FAILURE AT THE MATRIX

DIAGNOSIS	POSSIBLE REASON	MEASURE
Port definitions as USB 2.0 invalid.	Restart of the matrix not yet completed.	Restart the matrix.
No OSD access possible.	Wrong Hot Key	Reset Hot Key if necessary (see chapter 3.9.1, from page 43).

10.8 FAILURE AT THE INTERCONNECTION PORT

10.8.1 ERROR INDICATION AT THE 1G CAT X PORT

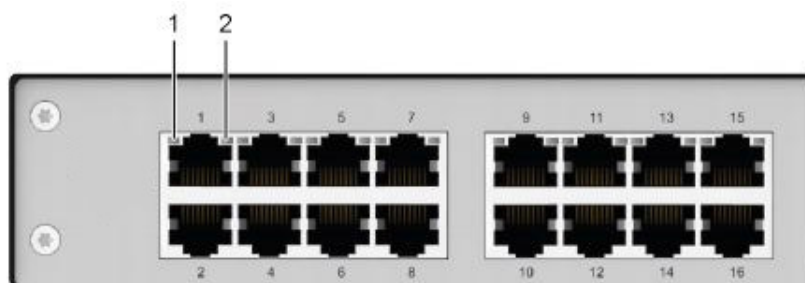


FIGURE 10-8.1.1 LEDS OF I/O MODULE 1G CAT X

DIAGNOSIS	POSSIBLE REASON	MEASURE
LED 1 or LED 2 flashing orange	Connections CON Unit, matrix and CPU Unit.	<ul style="list-style-type: none"> ☒ Check connecting cables and connectors. (cable break, CPU/CON Unit offline). ☒ Connect a 3G extender to a 3G port. ☒ Contact dealer if necessary.

10.8.2 ERROR INDICATION AT THE 3G CAT X PORT

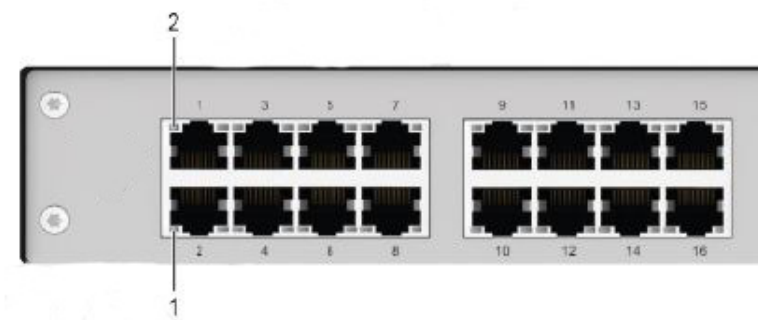


FIGURE 10-8.1.2 LEDS OF I/O MODULE 3G CAT X

DIAGNOSIS	POSSIBLE REASON	MEASURE
LED 1 or LED 2 flashing orange	Connections CON Unit, matrix and CPU Unit.	<ul style="list-style-type: none"> ☒ Check connecting cables and connectors. (cable break, CPU/CON Unit offline). ☒ Connect a 3G extender to a 3G port. ☒ Contact dealer if necessary.

*For further measures see user manual of the respective extender series.

10.8.3 ERROR INDICATION AT THE FIBER PORT

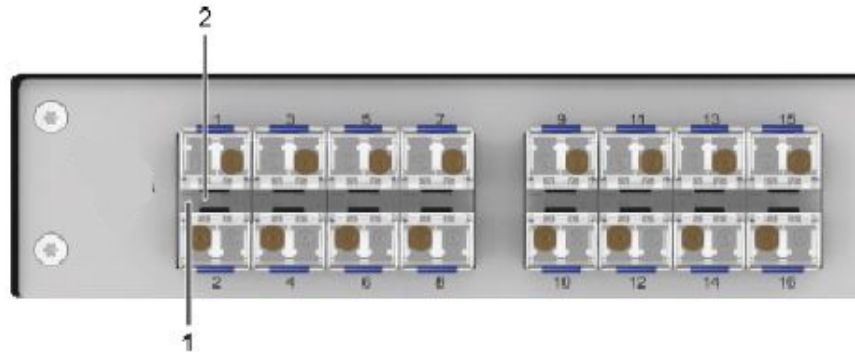


FIGURE 10-8.1.3 LEDS OF I/O MODULE FIBER PORT

DIAGNOSIS	POSSIBLE REASON	MEASURE
LED 1 or LED 2 flashing RED	Connections CON Unit, matrix and CPU Unit.	<ul style="list-style-type: none"> ☒ Check connecting cables and connectors. (cable break, CPU/CON Unit offline). ☒ Connect a 3G extender to a 3G port. ☒ Contact dealer if necessary.

*For further measures see user manual of the respective extender series.

10.9 BLANK SCREEN

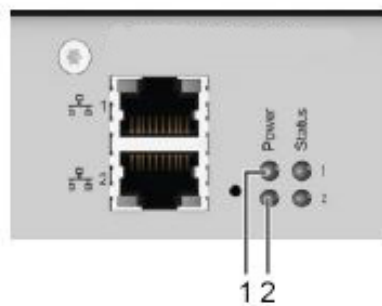


FIGURE 10-9.1.1 LEDS FOR POWER SUPPLY

DIAGNOSIS	POSSIBLE REASON	MEASURE
LED 1 and LED 2 off	Power supply	Check the connection to the power network.
Monitors remains dark after switching operation	Switching to a port without connected source (computer, CPU).	Switch to a Port with a connected source (computer, CPU).
	Connections CON Unit, matrix, and CPU Unit.	Check connecting cables and connectors (no cable, cable break, CPU/CON Unit offline, CPU/CON Unit connected to the wrong port) see chapter 10.7, from page 310)).

*For further measures see user manual of the respective extender series.

CHAPTER 11: TECHNICAL SUPPORT

11.1 TECHNICAL SUPPORT

Prior to contacting support, please ensure you have read this manual, and then installed and set-up your DKM flex as recommended.

11.1.1 11.1 SUPPORT CHECKLIST

To efficiently handle your request, it is necessary that you complete a support request checklist (Download). Please ensure that you have the following information available before you call:

- Company, name, phone number and email,
- Type and serial number of the device (see bottom of the device),
- Date and number of sales receipt and name of dealer if necessary,
- Issue date of the existing manual,
- Nature, circumstances, and duration of the problem,
- Components included in the system (such as graphic source/CPU, OS, graphic card, monitor, USB-HID/USB 2.0 devices, interconnect cable) including manufacturer and model number,
- Results from any testing you have done.

11.1.2 11.2 SHIPPING CHECKLIST

1. To return your device, you need an RMA number (Return-Material-Authorization). Therefore, please contact your dealer.
2. Package your devices carefully. Add all pieces which you received originally. Preferably use the original box.
3. Note your RMA number visibly on your shipment.

*Devices that are sent in without an RMA number will not be accepted. The shipment will be sent back without being opened; postage unpaid.

12.1 CERTIFICATES/DIRECTIVES

12.1.1 12.1 NORTH AMERICAN REGULATORY COMPLIANCE

This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded cables must be used with this equipment to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All power supplies are certified to the relevant major international safety standards.

12.1.2 12.2 WEEE

The manufacturer complies with the EU Directive 2012/19/EU on the prevention of waste electrical and electronic equipment (WEEE).

The device labels carry a respective marking.

12.1.3 12.3 ROHS

This device complies with the Directive 2011/65/EU of the European Parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (including the Commission Delegated Directive (EU) 2015/853 of 31 March 2015 amending Annex II to Directive 2011/65/EU).

The device labels carry a respective marking.

13.1 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 console and a CPU, if OSD is opened via this console.
Auto Logout	Matrix function that describes the duration of inactivity after the user has been logged out from the OSD at this console.
Cat X	Any Cat 5e (Cat 6, Cat 7) cable
CON Device	Logical term that summarizes several physical extenders to switch more complex console systems via matrix.
CON Timeout	Matrix function that allows an automatic disconnect of the own console from the connected CPU after a predefined time.
CON Unit	Component of a KVM Extender or Media Extender to connect to the console (monitor(s), keyboard, and mouse; optionally also with USB 2.0 devices)
Console	Keyboard, video, and mouse
Console ACL	Console Access Control List is a list that shows the respective switching rights for the various consoles.
CPU Auto Connect	Matrix function that allows an automatic connection establishment between the own console and a random CPU that is available.
CPU Device	Logical term that summarizes several physical extenders to switch more complex CPU systems via matrix.
CPU Timeout	Matrix function that allows the user to disconnect after a predefined period of inactivity from the respective CPU.
Dual Access	A system to operate a source (computer, CPU) from two consoles
Dual-Head	A system with two video connections
EXT Unit	Part or extender board of a CON or CPU unit with a connection to the matrix. A CON or CPU unit can consist of several EXT devices.
Fiber	Single-mode or multi-mode fiber cables
Force Connect	Matrix function that allows to switch with the own console to a CPU that is already used and in doing so to take keyboard and mouse control. The connected console so far loses K/M control but keeps video control.
Force Disconnect	Matrix function that allows to switch with the own console to a CPU that is already used and in doing so to take KVM control. The connected console so far loses complete KVM control.
KVM	Keyboard, video, and mouse
Keyboard Connect	Matrix function that allows taking over the keyboard control of an inactive console.
Macro Keys	Programmable keys that can execute a stringing together of commands to the matrix.

TERM	DESCRIPTION
Mouse Connect	Matrix function that allows taking the mouse control of an inactive console.
MTBF	Mean Time Between Failure (MTBF) is measured in power-on hours..
Multi-mode	50 µm multi-mode fiber cable
Multi-Screen Control	Control of USB-HID of up to eight sources (computer, CPU) 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 can be set up at multiple sinks.
Non-Blocking Access	Matrix configuration where no user can be disturbed by an 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 corresponds to the average operating time
Quad-Head	A system with four video connections.
Release Time	Matrix function that allows a console that is connected with the same CPU to release the K/M control after a predefined time.
Service Mode	Defined maintenance condition that allows updating of extenders 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 to and between extension modules in a network environment.
USB-HID	USB-HID devices (Human Interface Device) allow for data input. There is no need for a special driver during installation; "New USB-HID device found" is reported. 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 console to any CPU with video.

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