

DISCONTINUED



User Manual

Edition: 2011-10-31

THOR Large Switch

**Model:
THOR-SLG**

Telecast Fiber Systems
A Belden Brand

102 Grove Street

Worcester, MA 01605

www.telecast-fiber.com

Tel. +1 508-754-4858

Fax +1 508-752-1520

Copyright

© 2011. All rights reserved. This information may not be reproduced in any manner without the prior written consent of the manufacturer.

Information in this document is subject to change without notice.

Trademarks

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

Disclaimer

While every precaution has been taken during preparation of this manual, the manufacturer assumes no liability for errors or omissions. Neither does the manufacturer assume any liability for damages resulting from the use of the information contained herein.

The manufacturer reserves the right to change specifications, functions, or circuitry of the product without notice.

The manufacturer cannot accept liability for damage due to misuse of the product or due to any other circumstances outside the manufacturer's control (whether environmental or installation related). The manufacturer shall not be liable for any loss, damage, or injury arising directly, indirectly, incidentally, or consequently from the use of this product.

Contents

1	About This Manual	7
1.1	Scope.....	7
1.2	Validity	7
1.3	Cautions and Notes.....	7
2	Safety Instructions	8
3	Description	9
3.1	Application	9
3.2	System Overview	10
3.3	Product Range	11
3.4	Accessories.....	11
3.5	Device Views	13
3.5.1	Configuration Redundancy.....	13
3.5.2	Configuration Standard 1	14
3.5.3	Configuration Standard 2	15
3.6	Diagnostics and Status	16
3.6.1	Status LEDs.....	16
3.6.2	Status of Console Ports	18
3.6.3	Status of the CPU ports	21
3.6.4	Network Status.....	24
3.6.5	Firmware Status.....	26
3.7	Trace Function	28
3.8	Flash Memory Status	29
4	Installation	31
4.1	Package Contents.....	31
4.2	System Setup.....	32
4.3	Example Applications.....	33
4.3.1	Single-Head KVM Switcher.....	34
4.3.2	Dual-Head KVM Switcher	35
4.3.3	Quad-Head KVM Switcher	36
4.3.4	Single-Head KVM / USB 2.0 Switcher	38

THOR- Large Switch

4.3.5	Triple-Head KVM / USB 2.0 Switcher	40
4.3.6	Training System 15	42
4.3.7	Training System 30	44
4.3.8	Crosspoint Switcher	46
4.3.9	Parallel mode (Stacking)	48
4.3.10	Cascading	50
5	Configuration.....	52
5.1	Command Mode.....	52
5.2	Control of the THOR Large Switch.....	54
5.2.1	Control via OSD	54
5.2.2	Control via Java Tool	58
5.2.3	Control via LCD Display	64
5.2.4	Control via Serial Interface.....	68
5.3	System Settings	69
5.3.1	System	69
5.3.2	Access	73
5.3.3	Switcher	76
5.3.4	Network.....	81
5.3.5	Date and Time	84
5.4	User Settings	86
5.4.1	User Properties	86
5.4.2	User Switcher.....	89
5.5	Console Settings.....	91
5.5.1	Console Ports (CON Ports).....	91
5.5.2	Console Switcher (CON Switcher)	95
5.5.3	Mouse and Keyboard.....	97
5.5.4	Touchscreen	100
5.5.5	Macro Keys	102
5.5.6	Follow Me (Multicast)	105
5.6	CPU Settings	108
5.6.1	CPU Ports	108
5.7	Saving and Loading of configurations	111

5.7.1	Saving of Configurations in the Switcher.....	111
5.7.2	Saving of Configurations in a File	111
5.7.3	Loading of Configurations	114
5.7.4	Saving and Loading of Configurations from FTP	117
6	Operation	119
6.1	Operation by 'Hot Keys'.....	119
6.1.1	Direct Switchering	119
6.1.2	Scan Mode.....	120
6.1.3	Addressing of Master and Slave	120
6.1.4	Macro Keyboard.....	121
6.1.5	Function Keys F1 - F12.....	121
6.2	KVM Mode	123
6.2.1	KVM List.....	123
6.2.2	KVM Switcher Function.....	124
6.2.3	Follow Me Function (Multicast)	127
6.3	Crosspoint Mode.....	130
6.3.1	CON Ports in the Crosspoint Switcher	130
6.3.2	CPU Ports in the Crosspoint Switcher	133
6.4	Serial Interface.....	135
6.5	Power On and Power Down Functions	136
6.5.1	Restart	136
6.5.2	Reset.....	136
6.5.3	Power down	137
7	Specifications	138
7.1	Interfaces	138
7.1.1	RJ45 (Interconnect)	138
7.1.2	Fiber SFP Type LC (Interconnect)	138
7.1.3	RJ45 (Network)	138
7.1.4	RS-232 (Serial)	138
7.2	Interconnect Cable.....	139
7.2.1	Cat X.....	139

THOR- Large Switch

- 7.2.2 Fiber..... 140
- 7.3 Supported Peripherals 141
 - 7.3.1 KVM Extender..... 141
- 7.4 Serial Control 147
 - 7.4.1 Command Structure..... 147
 - 7.4.2 Commands, Switching Functions..... 148
 - 7.4.3 Assignment of Configuration File to Command
- 7.5 Connector Pinouts..... 152
- 7.6 Power Supply..... 153
- 7.7 Environmental Conditions 153
- 7.8 Size 153
- 7.9 Shipping Weight..... 153
- 8 Troubleshooting..... 154**
 - 8.1 External Failure 154
 - 8.2 Failure at the Switcher 154
 - 8.3 Blank Screen..... 155
 - 8.4 Video Interference..... 155
- 9 Technical Support..... 157**
 - 9.1 Support Checklist..... 157
 - 9.2 Shipping Checklist..... 157
- 10 Regulatory and Standards Compliance 158**
 - 10.1 CE Declaration Of Conformity..... 158
 - 10.2 North American Regulatory Compliance 159
 - 10.3 WEEE 159
 - 10.4 RoHS 159
- 11 Glossary..... 160**
- 12 Switcher specific Glossary..... 163**

1 About This Manual

1.1 Scope

This manual describes how to install your THOR-SLG, operate it, and how to perform troubleshooting.

1.2 Validity

This manual is valid for all devices listed on the front page. The product code is printed on the base of the device.

1.3 Cautions and Notes

The following symbols are used in this manual:



This symbol indicates an important operating instruction that should be followed to avoid any potential damage to hardware or property, loss of data, or personal injury.



This symbol indicates important information to help you make the best use of this product.

2 Safety Instructions

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

Installation

- Only use the device according to this user manual. Otherwise, the provided safety measures can be affected.
- Only use in dry, indoor environments.
- The THOR-SLG and the power supply units can get warm. Do not situate them in an enclosed space without any airflow.
- Do not place the power supply directly on top of the device.
- Do not obscure ventilation holes.
- Only use power supplies originally supplied with the product or manufacturer-approved replacements. Do not use a power supply if it appears to be defective or has a damaged case.
- Connect all power supplies to grounded outlets. In each case, ensure that the ground connection is maintained from the outlet socket through to the power supply's AC power input.
- Do not connect the link interface to any other equipment, particularly network or telecommunications equipment.
- Take any required ESD precautions.

Repair

- Do not attempt to open or repair a power supply unit.
- Do not attempt to open or repair the THOR-SLG. There are no user serviceable parts inside.
- Please contact your dealer or manufacturer if there is a fault.

3 Description

3.1 Application

The THOR-SLG switcher is used to establish a connection from consoles (monitor, keyboard, mouse, and other peripheral devices) to various sources (computer, CPU).

In a maximum configuration, up to 16 independent consoles can be switched with up to 32 independent sources.

The THOR-SLG switcher is only specified for use with extenders that are able to transmit video, KVM and USB 2.0 signals.

The connection between the switcher and the KVM extenders can only be made by Cat X or fiber cables.

The switcher serves as a repeater. Thus the switcher can be run a maximum distance of 10 km away from the consoles and 10 km away from the sources.

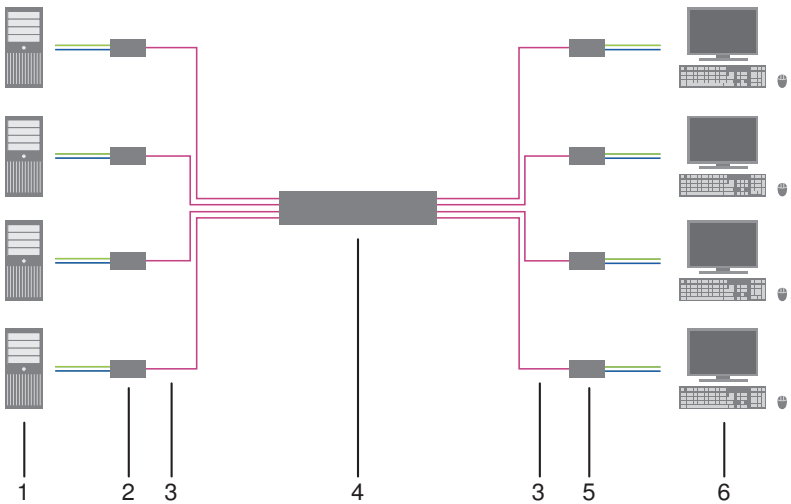
3.2 System Overview

A THOR-SLG switcher system consists of a THOR-SLG switcher and one or more CPU and CON units. The THOR-SLG switcher is connected to the CPU and CON units by interconnect cables.

The CPU units are connected directly to the source (computer, CPU) by the provided cables.

Monitor(s), keyboard and mouse are connected to the CON units.

The communication between the THOR-SLG switcher, the CPU, and CON units takes place over the respective interconnect cables.



Example System Overview

- 1 Source (computer, CPU)
- 2 CPU Units
- 3 Interconnect cable
- 4 THOR-SLG switcher
- 5 CON Units
- 6 Console (monitor, keyboard, mouse)

THOR- Large Switch



See Chapter 4.3, Page 33 for installation examples.

3.3 Product Range

Part No.	Description
TH-SLG-8IN-OUT	THOR-SLG switcher for 8 users and 8 CPUs
TH-SLG-16IN-8OUT	THOR-SLG switcher for 8 users and 16 CPUs
TH-SLG-24IN-8OUT	THOR-SLG switcher for 8 users and 24 CPUs
TH-SLG-32IN-8OUT	THOR-SLG switcher for 8 users and 32 CPUs
TH-SLG-8IN-16OUT	THOR-SLG switcher for 16 users and 8 CPUs
TH-SLG-16IN-16OUT	THOR-SLG switcher for 16 users and 16 CPUs
TH-SLG-24IN-16OUT	THOR-SLG switcher for 16 users and 24 CPUs
TH-SLG-32IN-16OUT	THOR-SLG switcher for 16 users and 32 CPUs
TH-SLG-EMPTY	THOR-SLG switcher empty (consisting of a basic chassis, a basic circuit board, a control board and a plug-in power supply unit for free configuration)

3.4 Accessories

Part No.	Description
TH-SLG-PS	Plug-in power supply unit as a replacement or for an upgrade to a redundant power supply
TH-SLG-OSD	THOR-SLG OSD card
TH-SLG-DIS	THOR-SLG display card
TH-SLG-M-CAT	THOR-SLG Cat X I/O card
TH-SLG-M-MM	THOR-SLG fiber I/O card, Multi-mode
TH-SLG-M-SM	THOR-SLG fiber I/O card, Single-mode
TH-SLG-EMPTY-MODULE	THOR-SLG I/O card empty, for free configuration
SFP-MM	Multi-mode SFP for the use in THOR-SLG
SFP-SM	Single-mode GBIC for the use in THOR-SLG

THOR- Large Switch

Part No.	Description
1583A	Belden Category 5e Cable for Non Plenum
1585A	Belden Category 5e Cable for Plenum
2412	Belden Category 6 Cable for Non Plenum
2413	Belden Category 6 Cable for Plenum



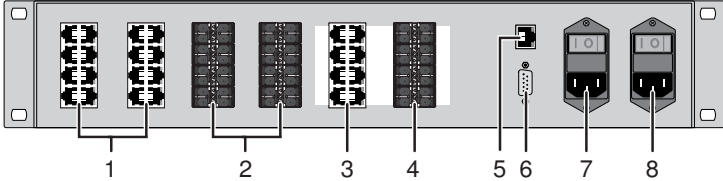
You can find appropriate extenders or other components in chapter 7.3, page 138.

3.5 Device Views

The following views of the THOR-SLG switcher illustrate the different available configurations, each completely equipped as an example.

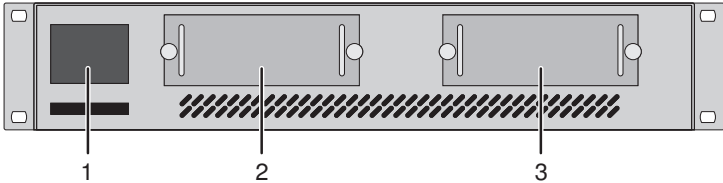
3.5.1 Configuration Redundancy

Rear View



- 1 I/O module CPU (Cat X)
- 2 I/O module CPU (fiber)
- 3 I/O module console (Cat X)
- 4 I/O module console (fiber)
- 5 Connect to network (RJ45)
- 6 Connect to serial interface (D-sub 9-pole)
- 7 Connect to power supply unit 2 (redundancy)
- 8 Connect to power supply 1 (standard)

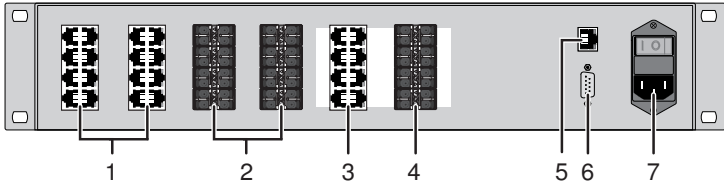
Front View



- 1 LCD display
- 2 Plug-in power supply unit 1 (standard)
- 3 Plug-in power supply unit 2 (redundancy)

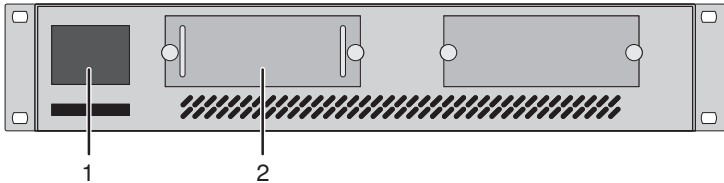
3.5.2 Configuration Standard 1

Rear View



- 1 I/O module CPU (Cat X)
- 2 I/O module CPU (fiber)
- 3 I/O module console (Cat X)
- 4 I/O module console (fiber)
- 5 Connect to network (RJ45)
- 6 Connect to serial interface (D-sub 9-pole)
- 7 Connect to power supply

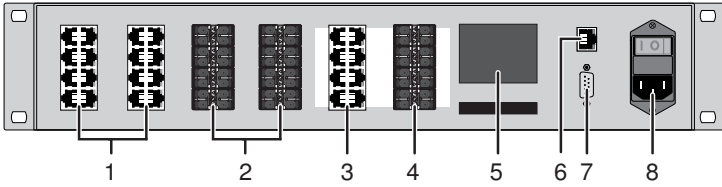
Front View



- 1 LCD display
- 2 Plug-in power supply unit

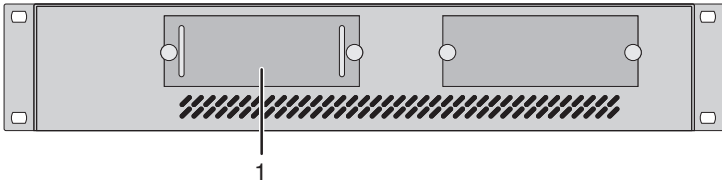
3.5.3 Configuration Standard 2

Rear View



- 1 I/O module CPU (Cat X)
- 2 I/O module CPU (fiber)
- 3 I/O module console (Cat X)
- 4 I/O module console (fiber)
- 5 LCD display
- 6 Connect to network (RJ45)
- 7 Connect to serial interface (D-sub 9-pole)
- 8 Connect to power supply

Front View



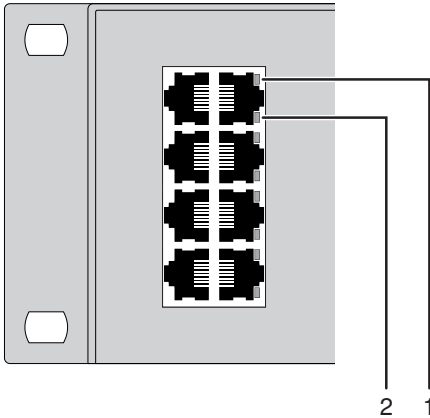
- 1 Plug-in power supply unit

3.6 Diagnostics and Status

3.6.1 Status LEDs

The THOR-SLG is fitted with the following LEDs for overall status indication on every I/O module:

I/O card Cat X



Rear View

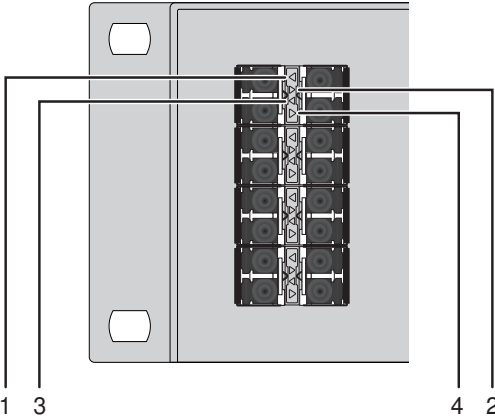
- 1 Status LED left port
- 2 Status LED right port

Status LEDs on Cat X I/O modules

Pos.	LED	Status	Description
1,2	Link Status (green)	Off	Port offline
		Flashing	Port online, no connection via Cat X cable
		On	Connection via Cat X cable ok, data traffic active.
	Link Status (orange)	Off	Port offline
		Flashing	Port online, no connection via Cat X cable.

THOR- Large Switch

I/O card fiber



Rear View

- 1 Failure LED left port
- 2 Status LED left port
- 3 Status LED right port
- 4 Failure LED right port

Status LEDs on fiber I/O modules

Pos.	LED	Status	Description
1,4	Failure Status (red)	Off	Port offline
		Flashing	Port online, SFP module failure signal
2,3	Failure Status (green)	Off	Port offline
		On	Port online, signal ok
		Flashing	Port online, no signal

3.6.2 Status of Console Ports



All of the connections between the various consoles and CPUs are shown in this menu.

You have the following possibilities to access the status view of the various console ports:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Status' in the main menu and then select 'CON Ports'.


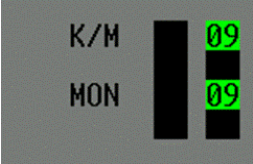
Switch to the 'CPU Port' view by pressing <F1>.



Menu View 'Status - CON Ports'

THOR- Large Switch

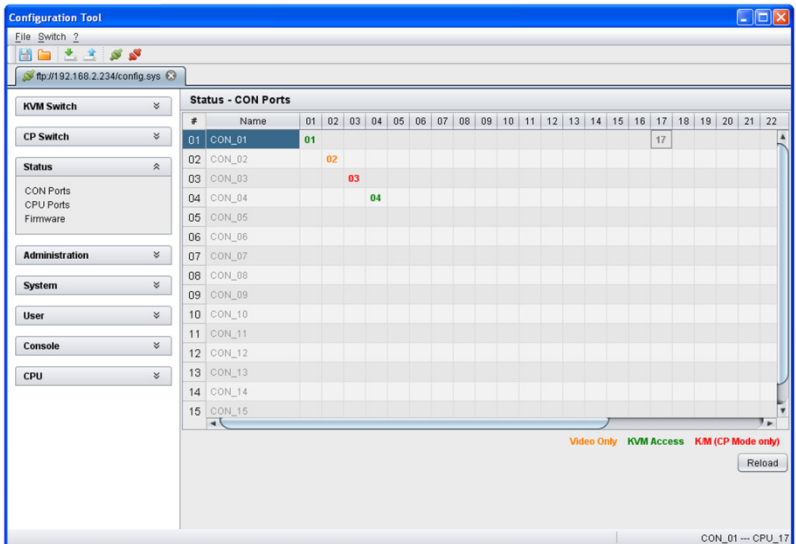
You can find the following pictures in the status view:

Picture	Description
	Number of the console port (black); Name of the console port (green)
	Number of the CPU ports with keyboard and mouse connection ('K/M'); Number of the CPU ports with video connection ('MON')

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Status' in the left menu bar and afterwards go to 'CON Ports'.



Menu View 'Status - CON Ports'

THOR- Large Switch

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Select the menu item 'Status' in the main menu and then go to "Ports."

The display consists of six pages.

The first four pages provide information of the existing video connections.

The last two pages provide information of the existing mouse and keyboard connections.

```
Status                                     Ports
Output                                     Input
CPU_01                                     CON_01
CPU_02                                     n.c.
CPU_03                                     n.c.
CPU_04                                     n.c.
CPU_05                                     n.c.
CPU_06                                     n.c.
CPU_07                                     n.c.
CPU_08                                     n.c.
```

Menu View 'Status – Ports' video connections

The following information is available in the status view of pages 1-4:

Field	Description
Left column	Name of CPU port
Right column	Name of CON ports that is connected with the output signal ('video') of the CPU port.

```
Status                                     Ports
Output                                     Input
CON_01                                     CPU_01
CON_02                                     n.c.
CON_03                                     n.c.
CON_04                                     n.c.
CON_05                                     n.c.
CON_06                                     n.c.
CON_07                                     n.c.
CON_08                                     n.c.
```

Menu view 'Status – Ports' mouse/keyboard connection

THOR- Large Switch

The following information is available in the status view of pages 5-6:

Field	Description
Left column	Name of CON port
Right column	Name of CPU port that is connected with the output signal ('KM') of the CON port.

3.6.3 Status of the CPU ports



All of the connections between the various consoles and CPUs are shown in this menu.

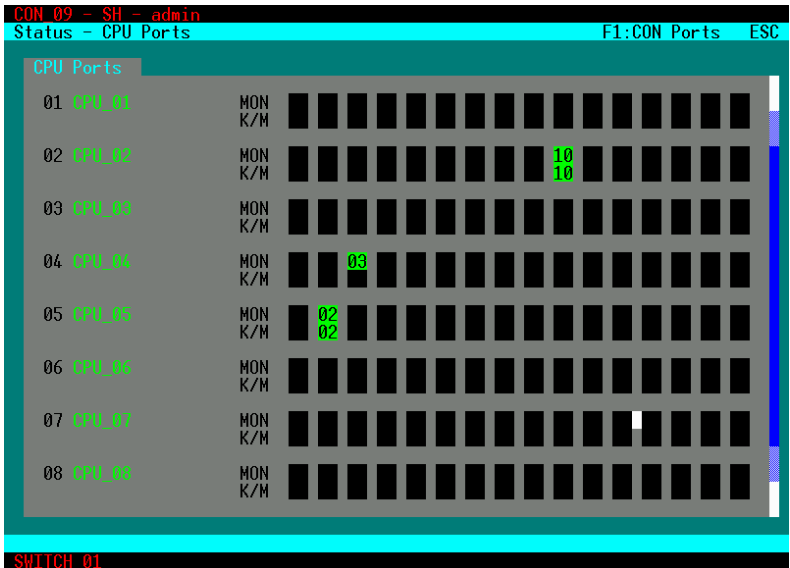
You have the following possibilities to access the status view of the various CPU ports:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Status' in the main menu and go to 'CPU Ports'.

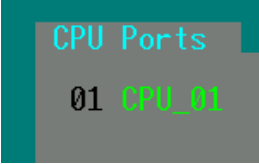

Switch to the 'CON Port' view by pressing <F1>.



Menu View "Status - CPU Ports"

THOR- Large Switch

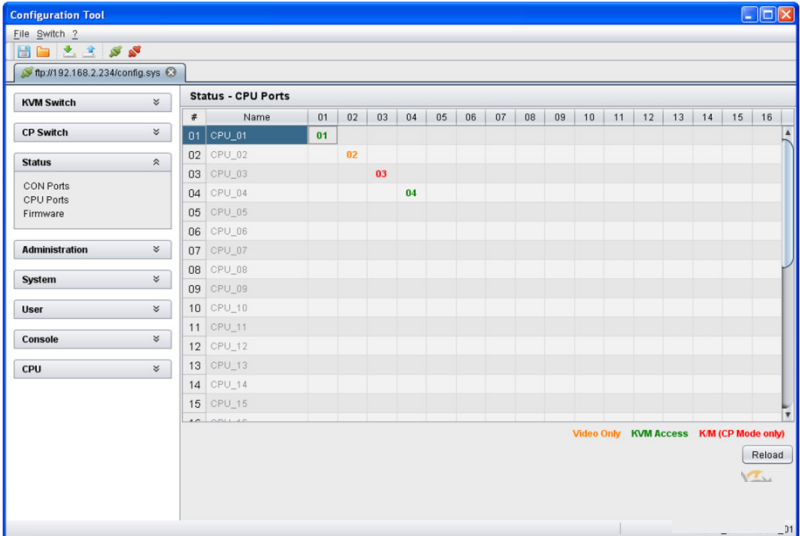
You can find the following pictures in the status view:

Picture	Description
	Number of the CPU port (black), Name of the CPU port (green)
	Number of the CON Port with keyboard/mouse connection ('K/M'), Number of the CON Port with video connection ('MON')

Java Tool

The general operation of the Java tool and the connection to the switch is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Status' in the left menu bar and afterwards go to 'CPU Ports'.



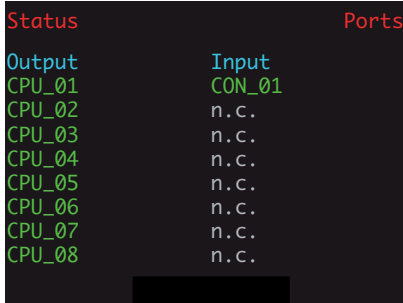
Menu View 'Status - CPU Ports'

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Select the menu item 'Status' in the main menu and got to 'Ports'.

This view consists of four pages to show the status of the CPU ports and two pages to show the status of the CON ports.



Output	Input
CPU_01	CON_01
CPU_02	n.c.
CPU_03	n.c.
CPU_04	n.c.
CPU_05	n.c.
CPU_06	n.c.
CPU_07	n.c.
CPU_08	n.c.

Menu View 'Status – Ports'

3.6.4 Network Status



The current network configuration is shown in this menu.

The network status contains the following information for the network interface:

Field	Description
DHCP	Indicates if the network settings are set dynamically. Displays 'YES' or 'NO'
IP Address	Display of the IP address as entered manually or set by DHCP
Subnet Mask	Display of the subnet mask as entered manually or set by DHCP
Gateway	Display of the gateway address as entered manually or set by DHCP
MAC ID	Display of the MAC address of the switcher
Errors	Number of data packets with errors
Dropped	Number of dropped data packets
Station	Number of data packets for single receivers
Broadcast	Number of data packets for all receivers
Bytes	Number of received/transmitted bytes

You have the following possibilities to access the status view of the switcher network:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Status' in the main menu and go to 'Network'.

THOR- Large Switch

```
CON_09 - SH - admin
Status - Network ESC
Interface
DHCP      : NO
IP address : 192.168.2.11
Subnet mask : 255.255.255.0
Gateway   : 192.168.2.12
MAC ID    : 00:21:5F:01:00:00

Statistics
Errors    : 0           Receive      Transmit
Dropped   : 0           0           0
Station   : 14          14          14
Broadcast : 75          0           0
Bytes     : 10573       984         0

SWITCH_01
```

Menu View 'Status – Network'

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Select the menu item 'Status' in the main menu and go to 'Network'.

```
Status Network
DHCP      : YES
IP address : 0.0.0.0
Subnet mask: 255.255.255.0
Gateway   : 0.0.0.0
MAC ID    : 00:21:5F:01:00:AE
Errors    : 0           RX          TX
Dropped   : 0           0           0
Station   : 0           6           0
Broadcast : 0           0           0
Bytes     : 0           2064
```

Menu View 'Status – Network'

3.6.5 Firmware Status



The firmware version of the built-in modules is shown in this menu.

The following status views for the various modules are available in the menu:

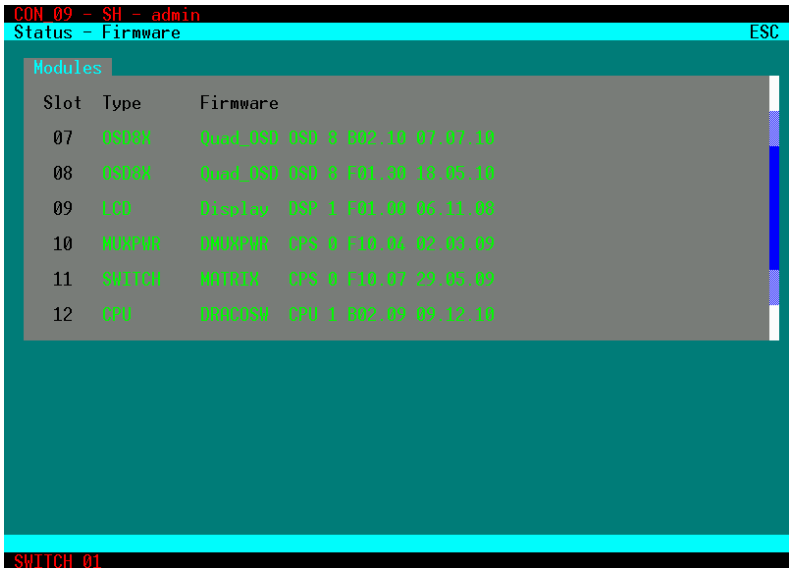
Field	Description
Slot	Assignment of the single modules by a slot number
Type	Type of module
Firmware	Name of the firmware of a module with the appropriate release date

You have the following possibilities to access the status view of the switcher firmware:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Status' in the main menu and go to 'Firmware'.



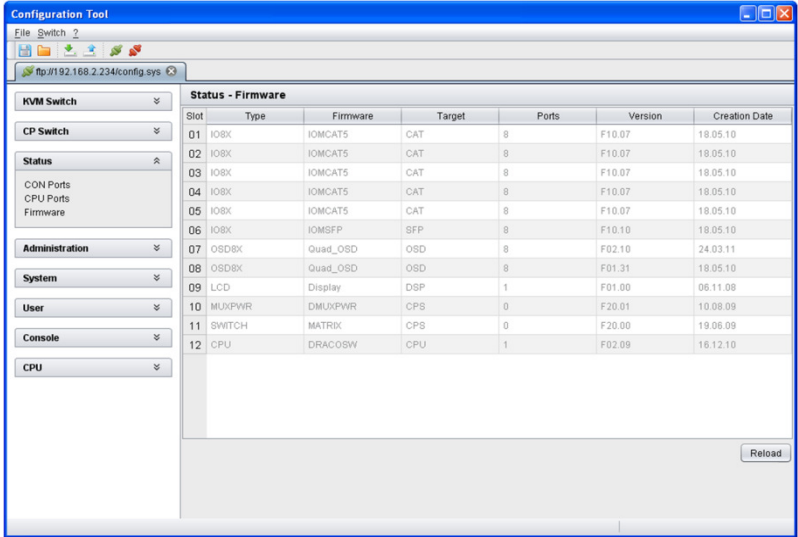
Menu View 'Status – Firmware'

THOR- Large Switch

Java-Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Status' in the left menu bar and afterwards go to 'Firmware'.



Slot	Type	Firmware	Target	Ports	Version	Creation Date
01	IOBK	IOMCAT5	CAT	8	F10.07	18.05.10
02	IOBK	IOMCAT5	CAT	8	F10.07	18.05.10
03	IOBK	IOMCAT5	CAT	8	F10.07	18.05.10
04	IOBK	IOMCAT5	CAT	8	F10.07	18.05.10
05	IOBK	IOMCAT5	CAT	8	F10.07	18.05.10
06	IOBK	IOMBFP	SFP	8	F10.10	18.05.10
07	OSDBK	Quad_OSD	OSD	8	F02.10	24.03.11
08	OSDBK	Quad_OSD	OSD	8	F01.31	18.05.10
09	LCD	Display	DSP	1	F01.00	06.11.08
10	MUXPWR	DMUXPWR	CPS	0	F20.01	10.08.09
11	SWTCH	MATRIX	CPS	0	F20.00	19.06.09
12	CPU	DRACOSW	CPU	1	F02.09	16.12.10

Menu View 'Status – Firmware'

3.7 Trace Function

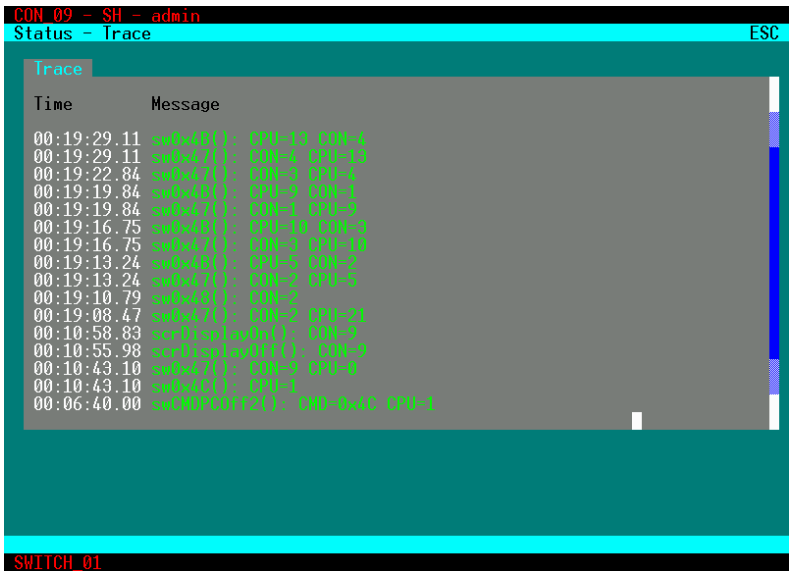


The general operation of the OSD is explained in chapter 5.2.1.

All of the activities and switching operations of the THOR-SLG are logged and recorded in this menu.

This function is used for diagnostic purposes if there are problems with the switcher.

Select the menu item 'Status' in the main menu and go to 'Trace'.



Menu View "Status - Trace"

The following views are shown for the trace function:

Field	Description
Time	Time specification for the execution of an activity or a switching operation
Message	Accurate documentation of the execution of an activity or a switching operation

3.8 Flash Memory Status

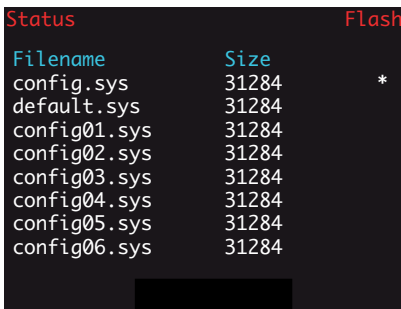


The general operation of the LCD display is explained in chapter 5.2.3.

The name and size of the configuration files are shown in this menu.

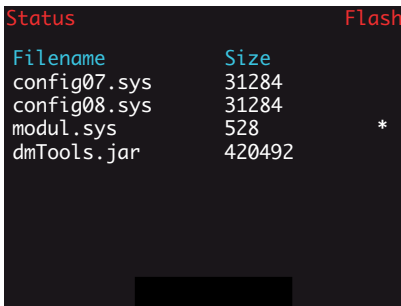
You have the possibility to access the status view of the switcher flash memory on the LCD display.

Select the menu item 'Status' in the main menu and go to 'Flash'.

A screenshot of an LCD screen displaying the 'Flash' menu. The screen has a black background with text in red, cyan, and white. The title 'Flash' is in red at the top right. The word 'Status' is in red at the top left. Below is a table with two columns: 'Filename' in cyan and 'Size' in cyan. The rows are: config.sys (31284, *), default.sys (31284), config01.sys (31284), config02.sys (31284), config03.sys (31284), config04.sys (31284), config05.sys (31284), and config06.sys (31284).

Filename	Size	
config.sys	31284	*
default.sys	31284	
config01.sys	31284	
config02.sys	31284	
config03.sys	31284	
config04.sys	31284	
config05.sys	31284	
config06.sys	31284	

Menu View Page 1 'Status Flash'

A screenshot of an LCD screen displaying the 'Flash' menu, page 2. The screen has a black background with text in red, cyan, and white. The title 'Flash' is in red at the top right. The word 'Status' is in red at the top left. Below is a table with two columns: 'Filename' in cyan and 'Size' in cyan. The rows are: config07.sys (31284), config08.sys (31284), modul.sys (528, *), and dmTools.jar (420492).

Filename	Size	
config07.sys	31284	
config08.sys	31284	
modul.sys	528	*
dmTools.jar	420492	

Menu View Page 2 'Status Flash'

An asterisk at the end of a line shows a system file that cannot be changed. All of the other files can be loaded, saved or deleted by FTP (see Chapter XXX, Page XXX).

This page intentionally left blank.

4 Installation

4.1 Package Contents

Your extender package contains the following items:

- THOR-SLG switcher
- 1x power cord per built-in power supply unit
- 1x serial control cable
- 1x infrared remote control
- 2x 19" rack mount
- User manual
- Java tool



If anything is missing, contact your dealer.

4.2 System Setup



First time users are recommended to setup the system in the same room as a test setup. This will allow you to identify and solve any cabling problems, and experiment with your system more conveniently.

1. Switch off all devices.
2. Connect your monitor(s), keyboard and mouse to the CON Unit of the extender.



Optimal results can be achieved by the use of identical mice, keyboards, and monitors. This contributes to smooth and fast switching without any delays.

3. Connect the source (computer, CPU) with the supplied cables to the CPU unit of the extender. Please ensure that the cables are not strained.
4. Connect the THOR-SLG switcher with the extenders via interconnect cables (Cat X or fiber). Please ensure that fiber I/O modules are all equipped with SFPs.



Please ensure that your interconnect cables meet specifications (see Chapter 7.2, Page 136).

5. Connect the 5VDC power supply units to the extenders.
6. If you have a dual access system, please connect the monitor for the local console with the appropriate female connector at the CPU unit. To connect a local (USB) keyboard or mouse, please use free USB ports on your source (computer, CPU) or use a USB hub between CPU and CPU unit.
7. Power up the system.
8. Log in at the console as administrator.
9. Configure your system.



Reconfiguration of a CPU or CON Port between DVI/KVM and USB 2.0 function needs a saving of the new configuration and a restart of the THOR-SLG.

4.3 Example Applications

The THOR-SLG Switcher offers a completely flexible configuration of your Switcher environment:

A part of the THOR-SLG can be configured as a Single-Head work station, another part as a Dual-Head or Quad-Head work station. There are also configurations with KVM and USB 2.0 available.

You can copy your own screen content with the 'Follow Me' function to one or several monitors, e.g. to a projector for training or presentation purposes.

In addition to that, you can use the Switcher in every operation mode with the 'Crosspoint Switcher' function. This function can be used, for example, to do the complete Switcher operation from a central place or to do special Switches that are not possible in standard operation modes. This is the exclusive operation mode if you only want to Switcher video.

In addition to accessing the OSD with a connected keyboard, the following additional access methods are available:

By the built-in display and the provided infrared remote control

By the Java tool

By the serial interface

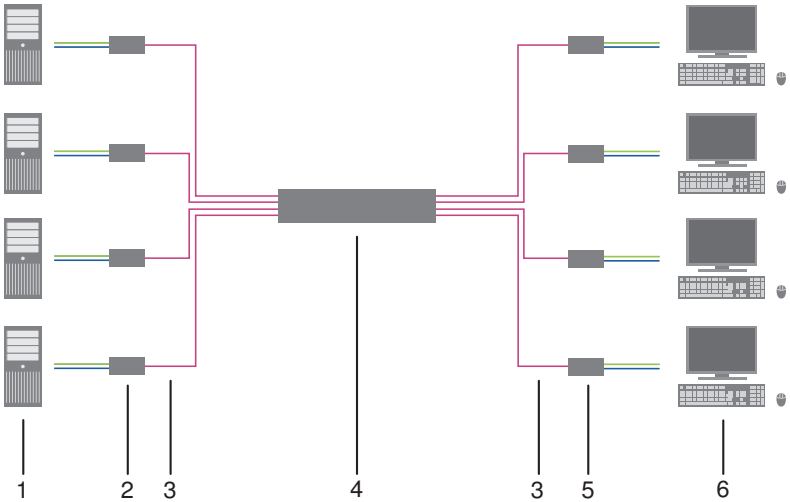
A connection to standard media controls is possible.

The following pages show typical and exemplary installations of the THOR-SLG:

4.3.1 Single-Head KVM Switcher

Up to 16 users can have access to up to 32 CPUs in the Single-Head operation mode. Non-blocking access is given for all users; that means no user can be disturbed by any activity from another user.

Installation example:



System Overview

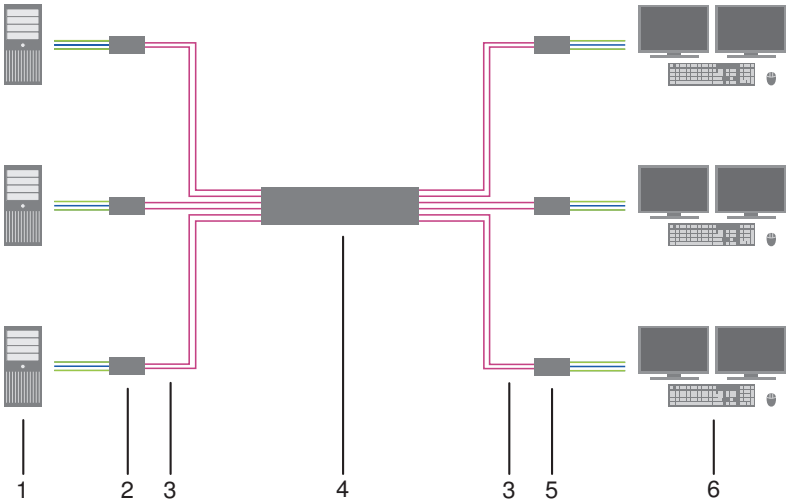
- 1 Source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher
- 5 CON Unit
- 6 Console (monitor, keyboard, and mouse)

If you have a Single-Head console, you can also get access to Dual-Head or Quad-Head CPUs. However, control will only be given at monitor one.

4.3.2 Dual-Head KVM Switcher

Up to 8 users can have access to up to 16 CPUs in the Dual-Head operation mode. Non-blocking access is given for all users; that means a user can't be disturbed by any activity from another user.

Installation example:



System Overview

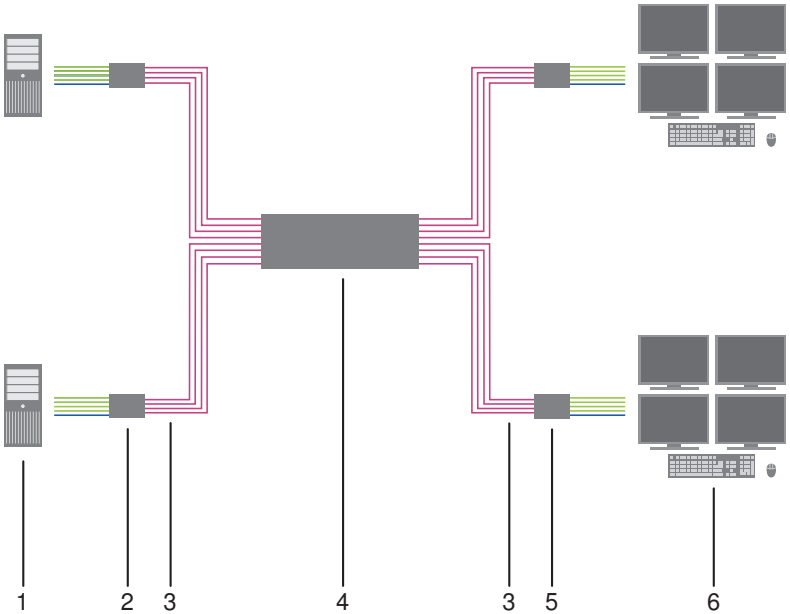
- 1 Dual-Head source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher
- 5 CON Unit
- 6 Console (2x monitor, keyboard, and mouse)

If you have a Dual-Head console, you can also get access to a Single-Head or Quad-Head CPU. However, the second monitor will remain black, if you have a Single-Head CPU and if you have a Quad-Head CPU, control will only be given at monitor one and two.

4.3.3 Quad-Head KVM Switcher

Up to 4 users can have access to up to 8 CPUs in the Dual-Head operation mode. Non-blocking access is given for all users; that means a user can't be disturbed by any activity from another user.

Installation example:



System Overview

- 1 Quad-Head source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher
- 5 CON Unit
- 6 Console (4x monitor, keyboard, and mouse)

If you have a Quad-Head console, you can also get access to a Single-Head or Dual-Head CPU.

THOR- Large Switch

However, the second, third and fourth monitor will remain dark, if you have a Single-Head CPU and if you have a Dual-Head CPU, the third and fourth monitor will stay dark.

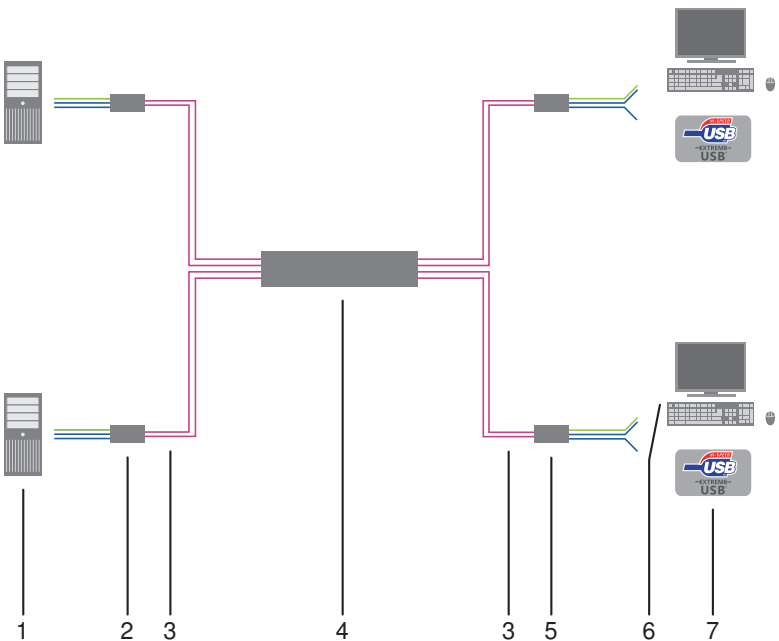
4.3.4 Single-Head KVM / USB 2.0 Switcher

Up to 8 users with a USB 2.0 link (for USB 2.0 devices such as memory sticks, printers additionally to keyboard and mouse) can have access to up to 16 CPUs in the Single-Head KVM/USB operation mode.

Up to 4 USB 2.0 peripheral devices can be connected directly to the CON unit; more devices can be connected by a standard USB 2.0 hub.

Non-blocking access is given for all users; that means no user can be disturbed by any activity from another user.

Installation example:



System Overview

- 1 Source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher
- 5 CON Unit

THOR- Large Switch

- 6 Console (monitor, keyboard, and mouse)
- 7 USB 2.0 device

If you have a Single-Head KVM/USB 2.0 console, you can also get access to a Triple-Head KVM/USB 2.0 CPU. However, if you have a Single-Head CPU, the second monitor will remain black and if you have a Quad-Head CPU, control will only be given at monitor one and two.

However, control will only be given at monitor one. You cannot use the USB peripheral if you try to get access to CPUs without USB 2.0 connection.

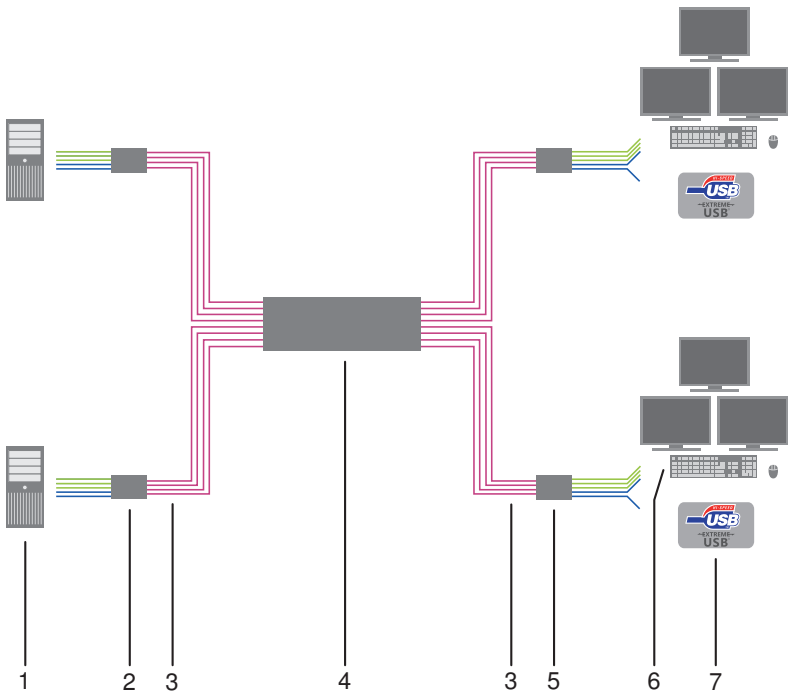
4.3.5 Triple-Head KVM / USB 2.0 Switcher

Up to 4 users with an USB 2.0 link (for USB 2.0 devices such as memory sticks, printers additionally to keyboard and mouse) can have access to up to 16 CPUs in the Triple-Head KVM/USB operation mode.

Up to 4 USB 2.0 peripheral devices can be connected directly to the CON unit; more devices can be connected by a normal USB 2.0 hub.

Non-blocking access is given for all users; that means no user can be disturbed by any activity from another user.

Installation example:



System Overview

- 1 Triple-Head source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher

THOR- Large Switch

- 5 CON Unit
- 6 Console (3x monitor, keyboard, and mouse)
- 7 USB 2.0 device

If you have a Triple-Head KVM/USB 2.0 console, you can also get access to a Single-Head KVM/USB 2.0 CPU. However, the second and third monitor will remain black.

You cannot use the USB periphery if you try to get access to CPUs without USB 2.0 connection.

4.3.6 Training System 15

You can have flexible access for up to 15 students if you use the 'Training System 15' operation mode. All of the work stations of the students and of the teacher are connected to the THOR-SLG switcher with a interconnect cable.

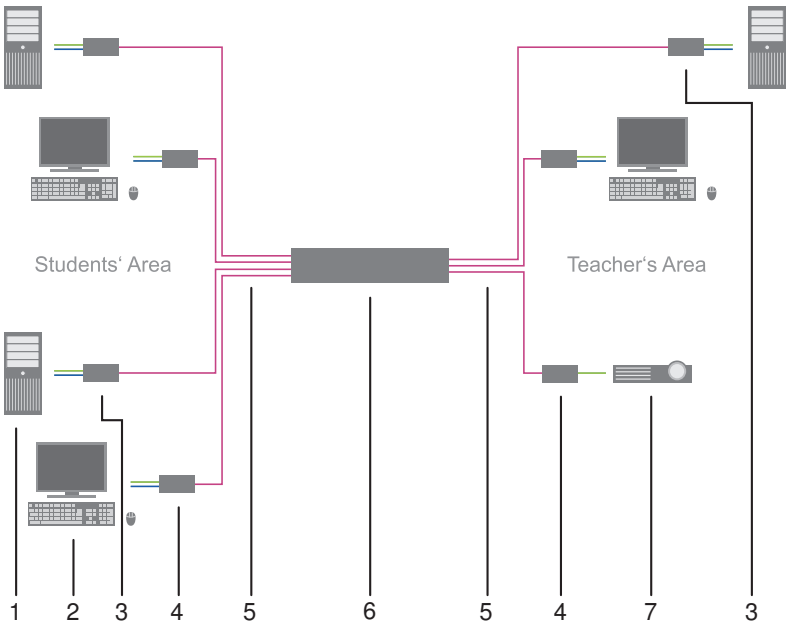
The following functions are possible:

The teacher can get the screen content of every single student and can take control, if necessary.

The screen content of the teacher can be shown to one, several or all of the student work stations.

The screen content of every single student can be shown to one, several or all of the student work stations.

Installation example:



System Overview

- 1 Source (computer, CPU)
- 2 Console (monitor, keyboard, and mouse)

THOR- Large Switch

- 3 CPU Unit
- 4 CON Unit
- 5 Interconnect cable
- 6 THOR-SLG switcher
- 7 Projector (as an option)

The CPU that should be displayed on the respective monitor can be selected by the OSD or by a control panel with control keys.

If you use the 'Follow Me' function, the screen content of the teacher can be duplicated to one or more additional monitors (e.g. to a projector) – in this case, the number of available students will be reduced.

4.3.7 Training System 30

If you want to use the THOR-SLG switcher with the 'Training System 30' operation mode, the access is slightly limited, but still comfortable. Every single student work station and the workstation of the teacher are connected to the switcher with an interconnect cable.

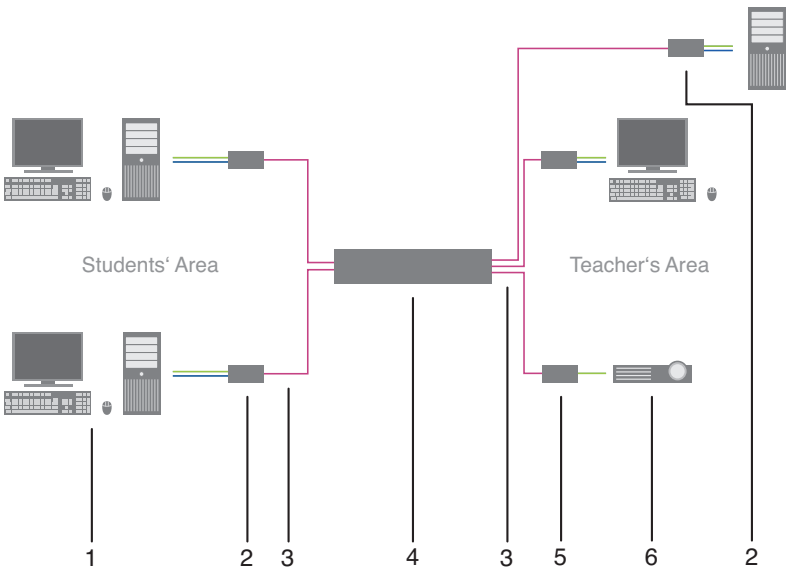
The following functions are possible:

The teacher can receive the screen content of every single student, but he cannot take over control.

The screen content of the teacher can be displayed on an additional monitor (e.g. a projector).

The screen content of every single student can be displayed on an additional monitor (e.g. a projector).

Installation example:



System Overview

- 1 Student's work station (source console)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher

THOR- Large Switch

- 5 CON Unit
- 6 Projector (optional)

The CPU displayed on the teacher's monitor and on an additional monitor respectively can be selected by the OSD or by a control panel with control keys at any time.

4.3.8 Crosspoint Switcher

The use of the 'Crosspoint Switcher' function allows a flexible performance of the switching functions. This operation mode is generally used to switch up to 32 sources (Computer, CPU) and up to 16 consoles.

Reverse Mode

In 'reverse mode', up to 16 sources (computer, CPU) can be switched to 32 consoles.

The switching can be done in a number of different ways:

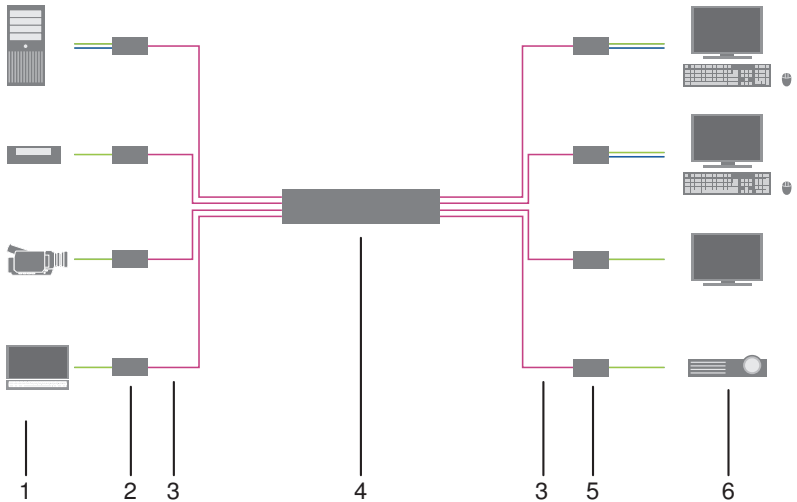
By the OSD of a console that is connected to the CON port

By a PC and the Java tool

By switching commands in combination with the network connection

By switching commands in combination with the serial connection

Installation example:



System Overview

- 1 Source (e.g. computer, DVD player and video camera)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher

THOR- Large Switch

- 5 CON Unit
- 6 Console (e.g. monitor, keyboard, mouse and projector)

Any signal source can be switched to as many displays as required. On these displays, video can be shown at the same time. In addition to that, even (optional) audio signals can be disposed.

4.3.9 Parallel mode (Stacking)

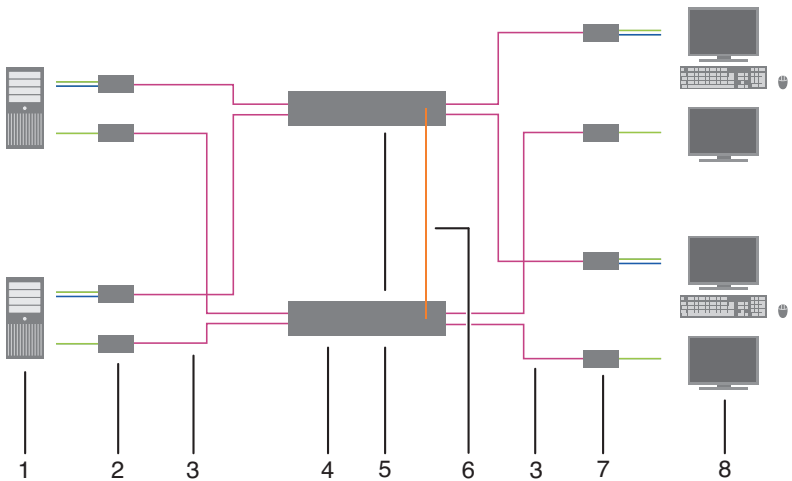
If you have special configurations, especially at installations with several monitors per work station or additional support of USB 2.0 transmission paths, the number of connectable CPUs and consoles can be increased by a parallel operation (stacking) of several THOR-SLG switchers.

One of the THOR-SLG switchers has to be defined as the master switcher; all of the others have to be configured as slave (see Chapter 5.3.1, Page 66) and have to be connected to the master switcher by the network.

Keyboard and mouse of the CON units are connected to the master. All of the other console elements (e.g. further monitors, USB 2.0) are connected to the same ports at the slave switchers.

If a switching command is done in the OSD, the slave switchers will also switch.

Installation example:



System Overview

- 1 Dual-Head source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG switcher (Master)

THOR- Large Switch

- 5 THOR-SLG switcher (Slave)
- 6 Network connection Master / Slave(s)
- 7 CON Unit
- 8 Console (2x monitor, keyboard and mouse)

4.3.10 Cascading

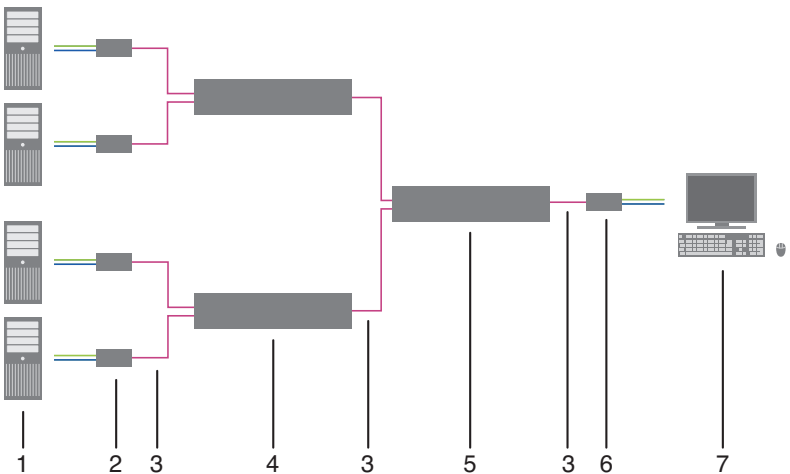
If you have applications in which the number of consoles is sufficient, for example, but the number of CPUs is higher than 32, you can increase this number by cascading.

In doing so, the CPU port of the primary THOR-SLG switcher (master) is connected to the user port of the secondary (slave). In theory, up to 32 THOR-SLG switchers can be run in the second level and one THOR-SLG switchers in the first level. So up to 32 x 32 or 1024 CPUs can be switched.



Depending on the configuration the access to the subordinated switchers can be limited by the number of users (Blocking Access).

Installation example:



System Overview

- 1 Source (computer, CPU)
- 2 CPU Unit
- 3 Interconnect cable
- 4 THOR-SLG (Slave)
- 5 THOR-SLG (Master)

THOR- Large Switch

- 6 CON Unit
- 7 Console (monitor, keyboard and mouse)

5 Configuration

5.1 Command Mode

The THOR-SLG has a Command Mode that allows several functions via keyboard command during normal use.

To enter Command Mode, use a 'Hot Key' sequence. To exit Command Mode, press <Esc>. While in Command Mode, the LEDs **Shift** and **Scroll** on the console keyboard will flash.



In Command Mode normal keyboard and mouse operation will cease. Only selected keyboard commands are available.

The following table lists the keyboard commands to enter and to exit Command Mode and to change the 'Hot Key' sequence:

Function	Keyboard Command
Enter Command Mode (default)	2x <Right Shift> (or 'Hot Key')
Exit Command Mode	<Esc>
Change 'Hot Key' sequence	<Left Ctrl> + <Left Shift> + <c>, <'Hot Key' Code>, <Enter>



- <Key> + <Key> Press keys simultaneously
- <Key>, <Key> Press keys successively
- 2x <Key> Press key quickly, twice in a row (similar to a mouse double-click)

The 'Hot Key' sequence to enter Command Mode can be changed. The following table lists the 'Hot Key' Codes for the available key sequences:

'Hot Key' Code	'Hot Key'
1	<Left Ctrl> + <Left Shift> + <l>
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>

THOR- Large Switch



In a KVM switcher configuration, choose different 'Hot Keys' for the KVM extender and the THOR-SLG.

5.2 Control of the THOR-SLG

You have the following possibilities to access the THOR-SLG for configuration and operation:

via OSD

via Java tool

via LCD display

via serial interface

5.2.1 Control via OSD



Via On-Screen-Display (OSD) you can do all of the settings for the THOR-SLG operating system from every single console. The settings are described in the submenu 'Configuration'. All the other submenus are described in later chapters.

Entering OSD

1. Open Command Mode with the 'Hot Key' (see Chapter 5.1, Page 52).
2. Press <o> to open OSD. 'KVM-List' is opened as a start menu.
3. Press <Esc> to enter the main menu.



If the option 'Listview' is not active, 'KVM Switch' view will be shown. The input of capital or lower case letters does not make a difference.

Leaving OSD

You can leave the OSD by simultaneously pressing <Shift> + <Esc>.

THOR- Large Switch

General layout of the OSD screen



Example View 'Main Menu'

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

- 1 Upper status area (topmost two text lines)
- 2 Working area
- 3 Lower status area (lowermost two text lines)

Keyboard control in the OSD

You can navigate within the various screens with the following keys and key combinations:

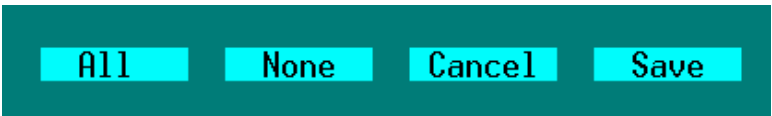
Function	Keyboard Command
Left cursor - only within an input field or a switching screen	<Cursor Left>
Right Cursor - only within an input field or a switching screen	<Cursor Right>
Line up (with wrap around) in an input field or a switching screen, line up (without wrap around) in menus	<Cursor Up>
Line down (with wrap around) in an input field or a switching screen,	<Cursor Down>

THOR- Large Switch

Function	Keyboard Command
line down (without wrap around) in menus	
Previous page in input masks or status screens with several pages	<Page Up>
Next page in input masks or status screens with several pages	<Page Down>
Next field in input masks	<Tab>
Previous field in input masks	<Left Shift> + <Tab>
Next option in selection fields	<>
Previous option in selection fields	<<>
Switching between selection fields in selection screens with two conditions (On/Off and No/Yes). Only if 'Allow Sharing' is active: Switching and data transfer by save function in the 'KVM-Switch' screen	<Space>
Data transfer by save function in input fields. Menu selection in menus	<Enter>
Abort data transfer without saving (in input fields). Back to the menu (in input fields)	<Esc>

Menu options in the OSD

Following menu options are selectable in the menu items with input options in the OSD:



Menu Option	Function
All	Selection of all options
None	Deselect all options
Cancel	Abort data transfer without saving
Save	Data transfer with saving

THOR- Large Switch

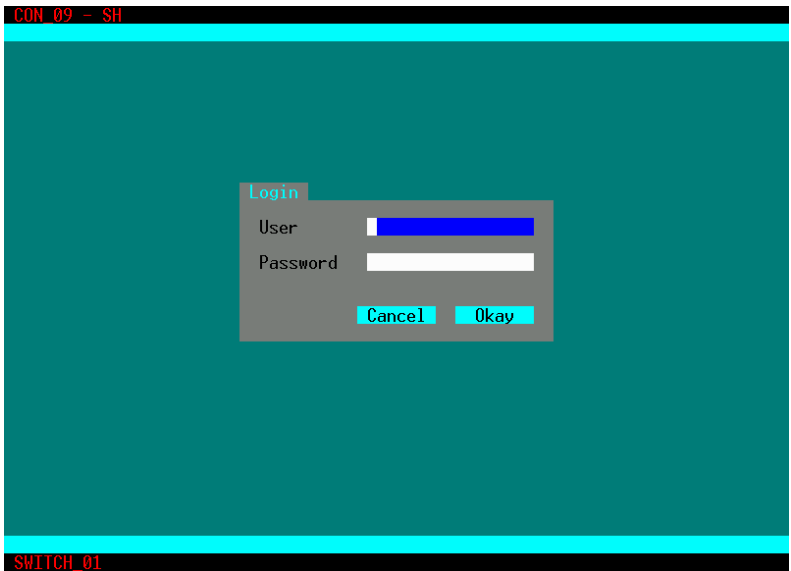
Password request in the OSD

You have to login with administrator rights to be able to do configuration settings. By default, a user with administrator rights is predefined:

Login	Password
User	admin
Password	admin (until 20.10.2009: THOR-SLG)



This user should be supplied with a unique password as soon as possible.



View 'Login Dialogue'

5.2.2 Control via Java Tool



Requirements

If you want to use the Java Tool, the following requirements have to be fulfilled:

- Computer with an executable Java tool and an installed Java Runtime Environment (JRE)
- Available network connection between the computer and the switcher
- Appropriate switcher configuration
- Available connection between the Java tool and the switcher

Installation of the Java Tool

The Java-Tool is available in the form of a single executable program file that does not require a separate installation.

➔ Copy the tool after receiving the file to a directory on your computer.



If you do not have a Java tool, contact your dealer.

Computer Connection to the Switcher



For the connection between computer and switcher, a crossover network cable is required.

➔ Connect the network cable with the appropriate RJ45 connectors of both devices.

Start of the Java Tool

➔ Open the Java tool by a double click on the program file or use the <enter> key of the keyboard.

Connection to the Switcher

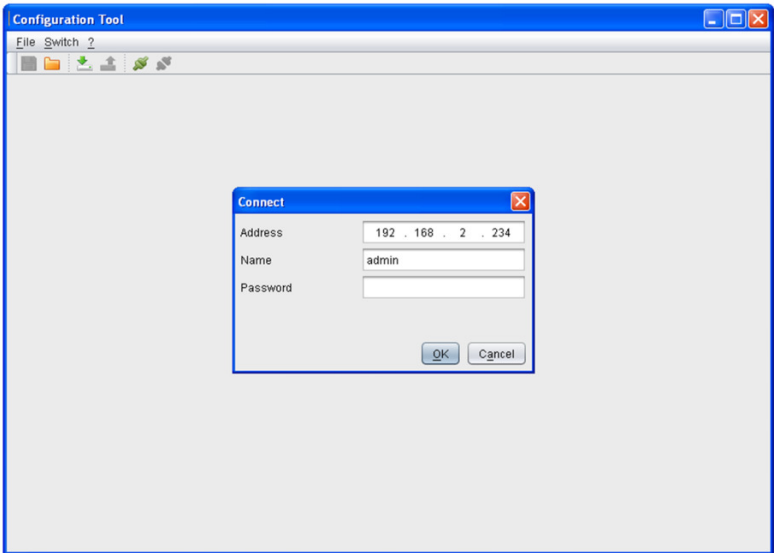
1. Open the Java tool.
2. Select **Switch > Connect** in the menu bar.
3. Enter the IP address in the appearing input field according to the network configuration of the THOR-SLG (see Chapter 5.3.4, Page 78). In addition to that, enter the user name and password according

THOR- Large Switch

to the predefined user properties of the THOR-SLG (see Chapter 5.4.1, Page 83).

Confirm your inputs with the OK button or ---+

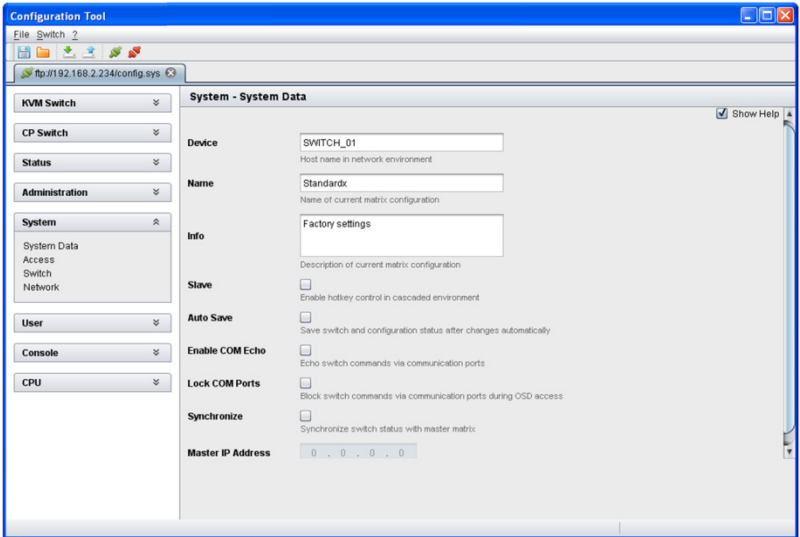
Cancel...



View **Connect**

THOR- Large Switch

Menu structure



Example View

The menu structure of the Java tools is subdivided into various sections:

- Menu bar (top line)
- Toolbar (second line)
- Tab bar (third line)
- Task area (left menu section)
- Working area (right menu section)
- Status bar (lower menu section)

Operating Instructions

The operation of the Java tool is intuitive and corresponds to the user interface of common operating systems.

The Java tool contains its own support function.

In this manual for the THOR-SLG, the only described functions of how to find and open the appropriate menus in the Java tool are shown. For further operation instructions, use the Java tool support function.

The integrated help in the Java tool can be activated or deactivated by the checkbox in the right upper corner.

Mouse Control

You can select between the following mouse commands:

Function	Mouse Command
Menu selection, marking	Left mouse button
Open specific field	Double click left mouse button
Open context menu	Right mouse button

Keyboard Control

You can use the following keyboard commands:

Function	Keyboard Command
Cursor to the left	<Cursor Left>
Cursor to the right	<Cursor Right>
Line up	<Cursor Up>
Line down	<Cursor Down>
Previous page in input or status menus with more than one page	<Page Up>
Next page in input or status menus with more than one page	<Page Down>
Next field in input menus	<Tab>
Previous field in input menus	<Left Shift> + <Tab>
Switching in selection fields between two conditions (checkmark or not). Opening of already marked fields with editing or selecting possibility.	<Space>
Data saving in menus. Menu item selection – in menus	<Enter>



Various functions within the menus in the menu bar can be done with the provided keyboard commands (e. g. press <Ctrl> + <S> to **Save**) that are listed to the right of the respective menu item.

Context Function

The Java tool is equipped with several context functions that support a user friendly and effective operation of the tool. The context functions are described in the appropriate chapters.

- ➔ To execute a context function, use the right mouse button on the corresponding field and select the desired function.

Sorting Function

The lists and tables in the Java tool are equipped with a sorting function that allows a fast and smooth search inside.

1. To do an ascending sort, use the left mouse button once to click on the header of the column that has to be sorted. The sort is displayed by an arrow that points upwards.
2. To do a descending sort, use the left mouse button twice to click on the header of the column that has to be sorted. The sort is displayed by an arrow that points downwards.
3. To remove the sort, use the left mouse button once or twice to click on the header of the column that is sorted until the displayed arrow will disappear.

Filter Function

The lists and tables in the Java tool are equipped with a filter function that allows a fast and smooth search inside.

1. To activate a filter, use the right mouse button to click on the header of the column that has to be filtered and select **Set Filter**.
2. Write the word or part of a word that has to be filtered into the header. The filter results are shown immediately.
3. To delete a filter, use the right mouse button to click on the header of the column that has to be filtered and select **Clear Filter**.



The filter function works on the same functional principle as a common web search engine would.

Configuration in the Java tool

Configurations and system settings via the Java tool can only be done in offline mode without a direct connection between the switcher and Java tool.

To activate a created configuration in the switcher, please proceed as follows:

1. Select **File > Upload to** in the menu bar. Enter the IP address of the switcher (see Chapter 5.4.5, Page 68) and the name and password of

THOR- Large Switch

the user identification and select the storage location of the new configuration (**default** older **config01-08**) in the menu **Select Configuration**.

2. Select **Switch > Connect** in the menu bar and enter the IP address of the switcher and the name and password of the user.
3. Select **Administration > Activate Configuration** in the task area and select the storage location that has been selected in point 1.
4. Use the button **Activate** to load the selected configuration in the switcher. The connection and the open tab will be closed and the switcher will be restarted.



During the activation of a configuration, the switcher is temporarily unavailable.

5.2.3 Control via LCD Display



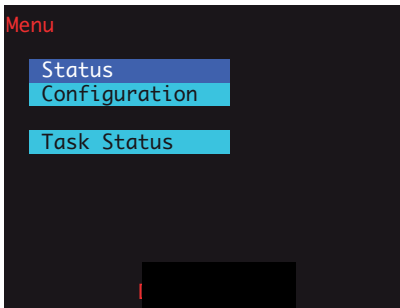
In normal operation, the LCD displays the 'Home' screen as shown. In this view you can find information about the device:



Menu View 'Home Screen'

Press the <Enter> key on the infrared remote control to get from the 'Home' screen into the main menu.

Press the <Enter> key again to get from the 'Menu' screen into the respective sub menus.

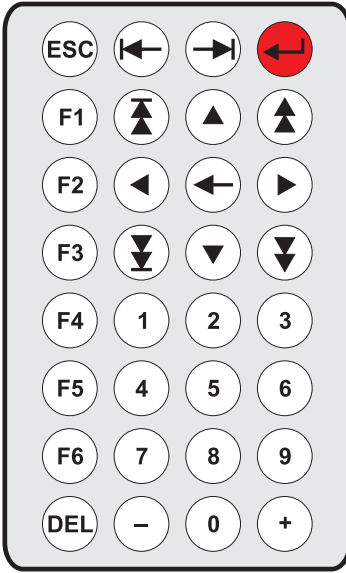


Menu View 'Main Menu'




THOR- Large Switch

Infrared Remote Control


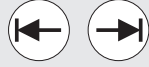


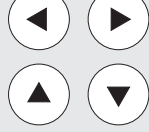
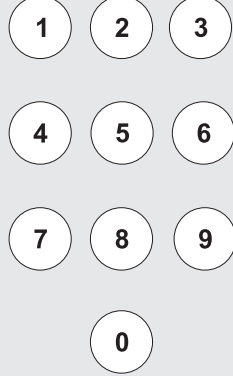

The LCD display on the THOR-SLG can be controlled by an infrared remote control.



The following keys are used as follows on the LCD display:

Key	Description
	Open OSD and select menu.
	Open OSD and select menu.
	Leave current menu and go back to the previous menu level. Exit OSD.

THOR- Large Switch

Key	Description
	Delete contents in the input field.
	Switch between two input fields.
	Navigate to the beginning or the end of an input field.
	Scroll page by page in multilateral menu items.
	Navigate within the menu level. Navigate within the input field.
	Set parameters directly by the keypad.
	Select between different possibilities in the selection field.

5.2.4 Control via Serial Interface



The THOR-SLG comes with widespread functions for operation via serial interface (see chapter 7.4, page 143). There are operations for Switching single or all connections available, both unidirectional and bidirectional. In addition to that, there are operations for an overall definition of the total switching status and for saving and loading such switching states.

The functionality is consistent with the switching in the 'Crosspoint Mode' of the OSD (see Chapter 6.3, Page 127).

By request, the THOR-SLG optionally provides an echo of all affected switching operations via serial interface or network interface. That is why you have the possibility to track the actual configurations of the switcher at any time to update your own applications.

5.3 System Settings

You have the following options to adjust the system settings.

5.3.1 System



You can configure the parameters for the system configuration in this menu.



Please note that you can only set a selection of system parameters in the LCD display, in contrast to the OSD.

The following settings can be done:

Field	Selection	Description
Name	Text	Inserting a name of the configuration in which the current settings should have to be saved.
Device	Text	Inserting the name of the switcher that is shown in the lower left corner of all menus.
Info	Text	Additional text field for the description of the configuration.
Slave	Yes	Y – Configuration and remote control of the slave switcher according to the settings of the master switcher. No local configuration opportunity available.
	No	N – No remote control.



If the switcher is defined as a slave, the user automatically loses control in the OSD. Control can be gained again if you open the OSD of the defined slave switcher again by using the 'Hot Key' command <Shift>, <Shift>, <S>, <O>.

Load Default	Yes	Y – Starting the switcher after restart or a switch-on with the default configuration.
--------------	-----	---

THOR- Large Switch

Field	Selection	Description
	No	N – Starting the switcher after a restart or a switch-on with the last saved
Auto Save	Yes	Y – Save the current configuration of the switcher in the flash memory periodically.
	No	N – No automatic saving.
Enable COM Echo	Yes	Y – Send echoes of all switching commands done by the switcher.
	No	N – No echoes.
Lock COM Ports	Yes	Y – Reject commands via external interfaces (RJ45, RS232) during OSD is open.
	No	N – No rejection
Baud rate baud	Numerical value	Select a predefined Baud rate for the serial control.
Synchronize	Yes	Y – Synchronize the slave switcher according to the settings of the master switcher.
	No	N – No synchronization.
Master IP Address	Numerical value	Set the network address of the master switcher.

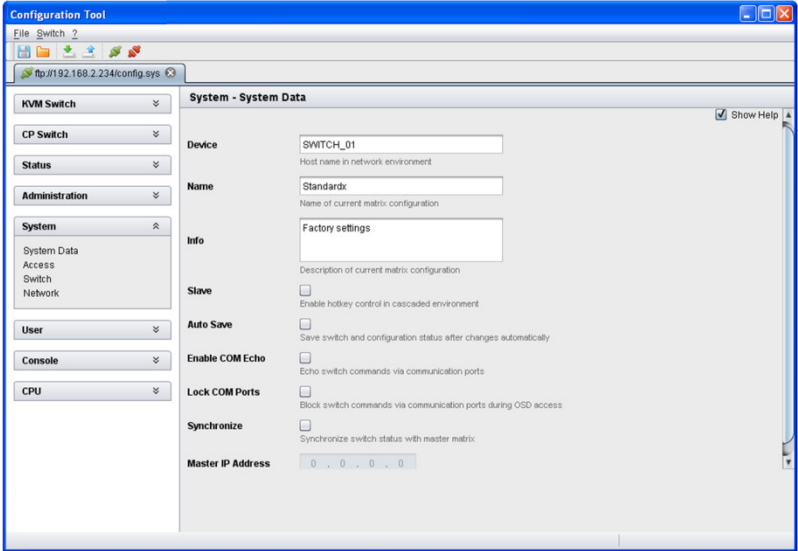
You have the following options to adjust the system settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'System'.

THOR- Large Switch

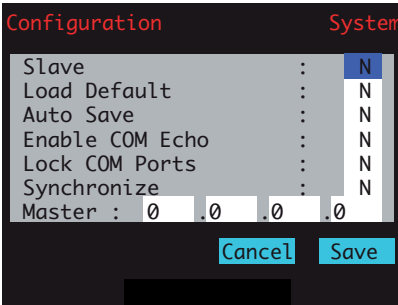


Menu View 'System -System Data'

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'System'.



Menu View 'Configuration – System'

5.3.2 Access



You can configure the parameters for the access configuration in this menu.

The following settings can be done:

Field	Selection	Description
Enable Login	Yes	Y – The user has to log in with a user name and a password once to enter OSD. Thereafter, the user remains logged in until he explicitly logs out or an auto logout is done.
	No	N – No login necessary.
User Switcher	Yes	Y –The user can only switch to CPU ports that are unlocked for him in the User Switcher. KVM switching with 'Hot Key' commands is only possible if the user is logged in.
	No	N – No use of the User Switcher.
CON Switcher	Yes	Y – The user can only switch from his console to CPU ports that are unlocked in the menu 'CON Switcher'.
	No	N – No use of the CON Switcher
Auto Disconnect	Yes	Y – If you open the OSD, the console will be automatically disconnected from the current CPU. Only effective with 'Enable Login' or 'User Switcher'.
	No	N – The current connection is retained.



Only keyboard/mouse connections will be disconnected, video connections are preserved.

THOR- Large Switch

Field	Selection	Description
OSD Timeout	Seconds	Period of inactivity after which OSD will be closed automatically. If you select 0 seconds, there will be no timeout.
Auto Logout	Minutes	Period of inactivity after which a user is automatically logged out from the OSD at this console.



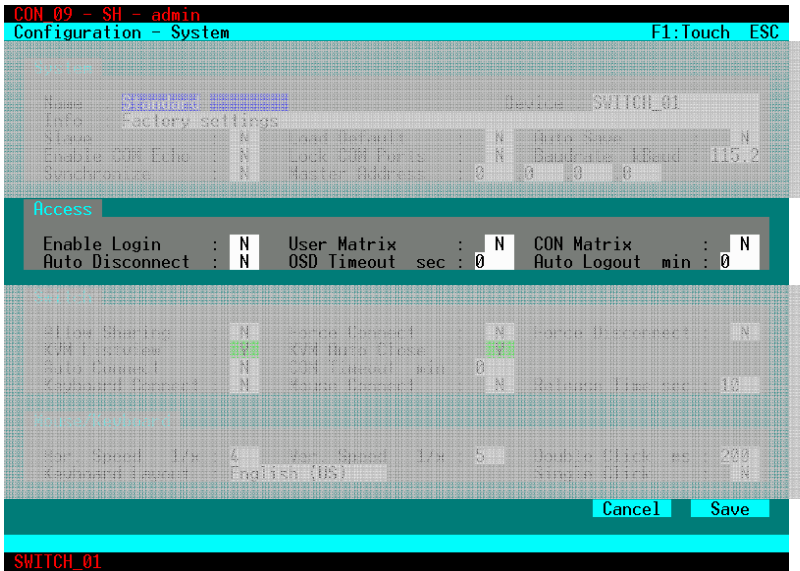
The timer is inactive when the OSD is open.

You have the following options to adjust the access settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'System'.



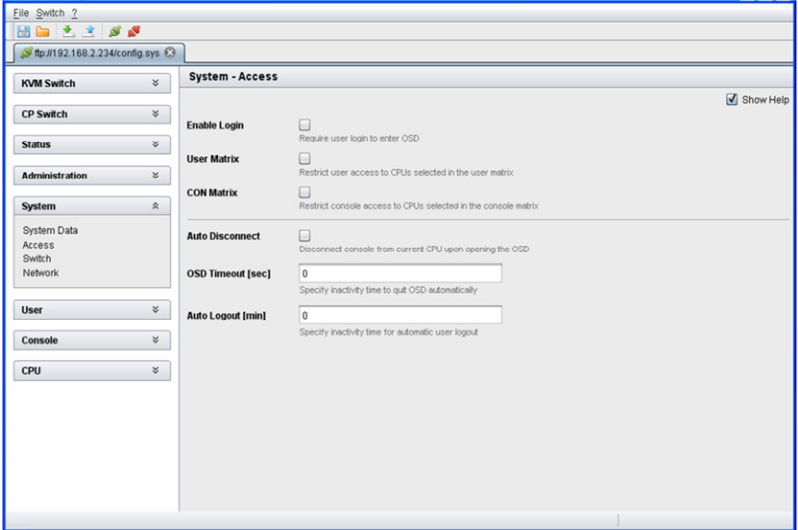
Menu View 'Configuration – System'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

THOR- Large Switch

Select the menu item 'System' in the left menu bar and afterwards go to 'Access'.

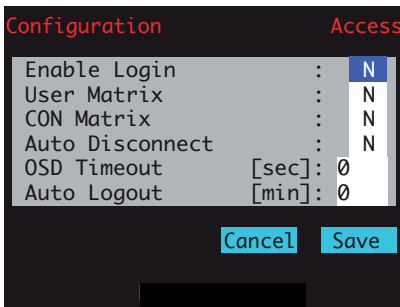


Menu View "System - Access"

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Access'.



Menu View 'Configuration - Access'

5.3.3 Switch



You can configure the parameters for the switcher configuration in this menu.

The following settings can be done:

Field	Selection	Description
Allow Sharing	Yes	Y – The user can switch the video signal from any CPU to his monitor (observer). Keyboard/mouse control is not possible. Please note: Switch with <Space> and not <Enter>.
	No	N – No video access.



The operator will not be informed if other users connect as an observer to the CPU that is connected to his console.

Force Connect	Yes	Y – The User can connect to any single CPU as an operator, even to ones that are related to another user. The previous user is set to observer status.
	No	N – No Force Connect.



To share K/M control 'Force Connect' has to be activated.

Force Disconnect	Yes	Y – Extension of 'Force Connect': If the user connects to a CPU as an operator that is already related to another user, the connection to the previous user will be completely disconnected.
	No	N – No Force Disconnect.



To share K/M control 'Force Disconnect' has to be deactivated.

THOR- Large Switch

Field	Selection	Description
KVM Listview	Yes	Y – After opening the OSD, the user views only the 'KVM List'. This list only contains the CPU ports available at this console (default setting).
	No	N – No 'KVM Listview'. After opening the OSD, the user manually goes to the extended 'KVM-Switch'.
KVM Auto Close	Yes	Y – After switching of the CPU port in the masks 'KVM-List' or 'KVM-Switch', OSD will automatically close and the connection to the new CPU will be displayed (default setting).
	No	N – No Auto Close.
Auto Connect	Yes	Y – After pressing any key a KVM connection to the first available CPU will be established.
	No	N – No Auto Connect.



The option 'Auto Connect' is only functional if there is no active connection to a CPU.

CON Timeout	Minutes	Period of inactivity until the connection of the console of the connected CPU will be automatically disconnected.
Keyboard Connect	Yes	Y – Activate request of keyboard control between two consoles.
	No	N – No Keyboard Connect.
Mouse Connect	Yes	Y – Activate request of mouse control between two consoles.
	No	N – No Mouse Connect.
Release Time	Seconds	Period of inactivity of a connected console until keyboard and mouse control can be requested for other consoles that are connected to the same CPU.

THOR- Large Switch

Field	Selection	Description
-------	-----------	-------------



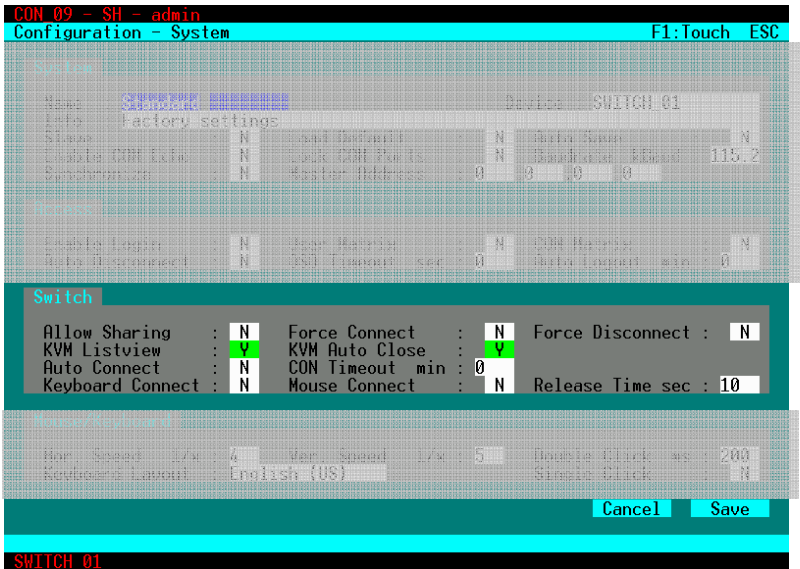
Set value '0' for a real-time transfer. Only one console can have keyboard and mouse control at the same time. The other consoles that are connected to the same CPU have a video-only status.

You have the following options to adjust the switcher settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'System'.



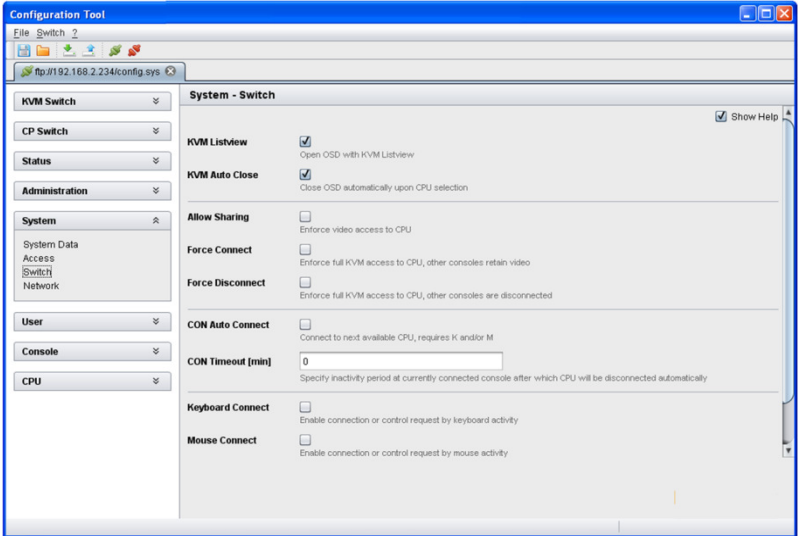
Menu View 'Configuration – System'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'System' in the left menu bar and afterwards go to 'Switch'.

THOR- Large Switch

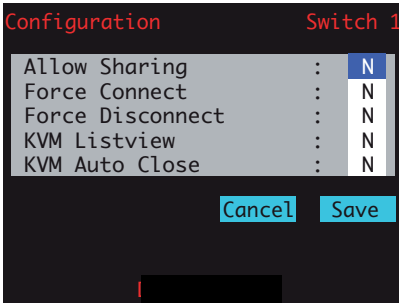


Menu View "System - Switch"

LCD Display

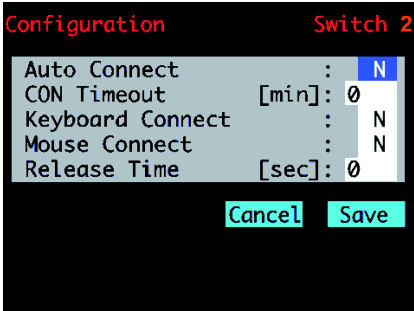
The general operation of the LCD display is explained in chapter 5.2.3.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Switch 1' or 'Switch 2'.



Menu View 'Configuration - Switch 1'

THOR- Large Switch



Menu view 'Configuration - Switch 2'

5.3.4 Network



You can configure the network parameters in this menu.

The following settings can be done:

Field	Selection	Description
DHCP	Yes	Y – Select whether network settings are supplied automatically.
	No	N – No automatic supply of the network settings
IP Address	Byte	Input of the IP address in the form '192.168.1.1' in combination with an operation without DHCP
Subnet Mask	Byte	Input of the subnet mask in the form '255.255.255.0' in combination with an operation without DHCP
Gateway	Byte	Input of the subnet mask in the form '192.168.1.1' in combination with an operation without DHCP.



Only modify the network parameters in consultation with your system administrator. Otherwise, unexpected results and failures can occur in combination with the network.

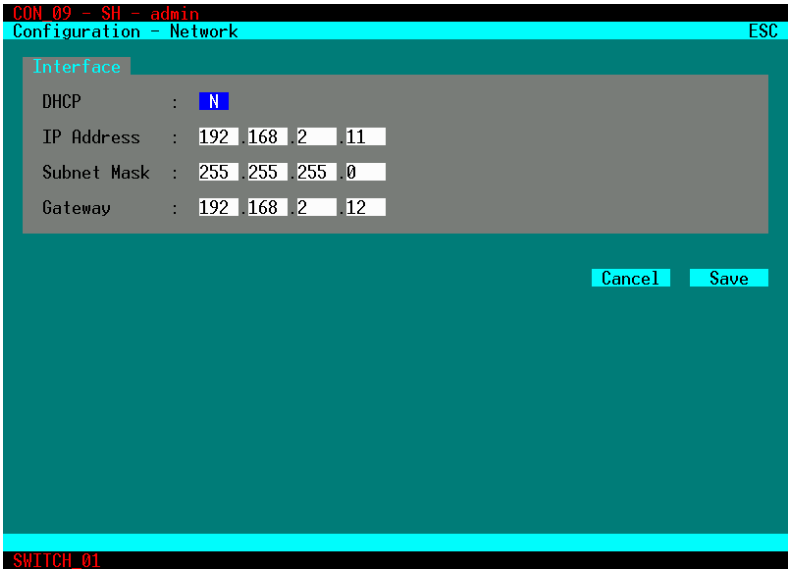
You have the following options to adjust the network settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'network'.

THOR- Large Switch



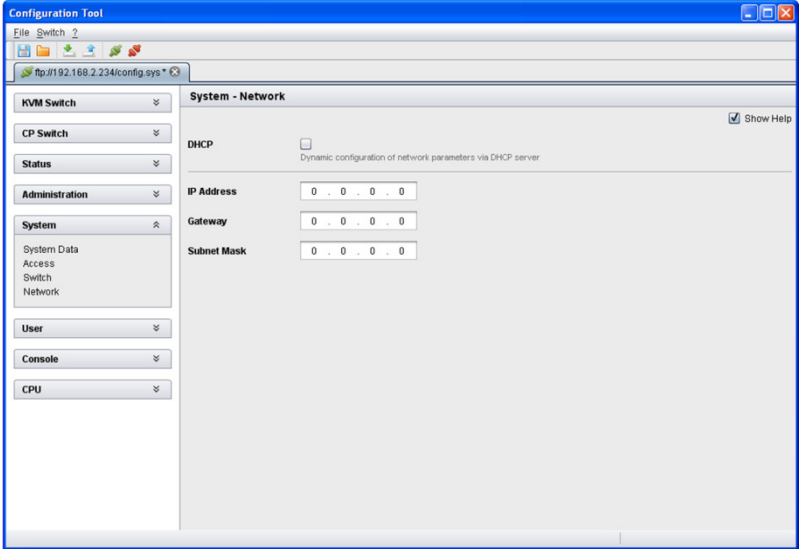
Menu View 'Configuration – Network'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'System' in the left menu bar and afterwards go to 'Network'.

THOR- Large Switch

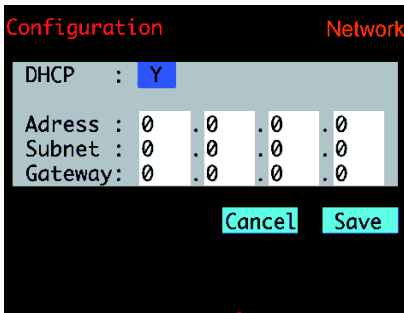


Menu View 'System - Network'

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Please select the menu item 'Configuration' in the main menu and afterwards open the menu item 'network'.



Menu View 'Configuration – Network'

5.3.5 Date and Time



You can configure date and time in this menu.

The following settings can be done:

Field	Selection	Description
Month	1 -12	Selection of the month
Date	1 – 31	Selection of the date
Year	1 – 99	Selection of the year
Day of the week	1 – 7	Selection of the day of the week
Hours	0 – 23	Selection of the hour
Minutes	0 – 59	Selection of the minute
Seconds	0 – 59	Selection of the second



The date input should be done according to standard month, day year notation.

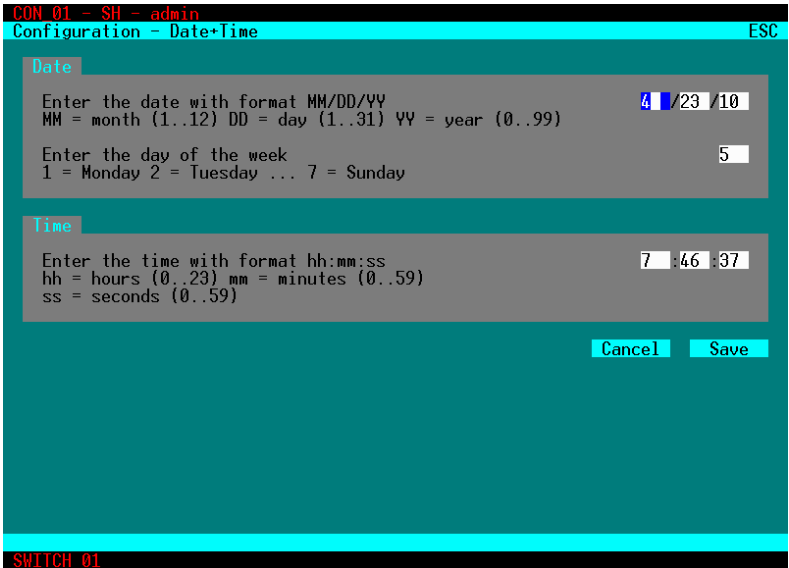
You have the following options to adjust date and time settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Date + Time'.

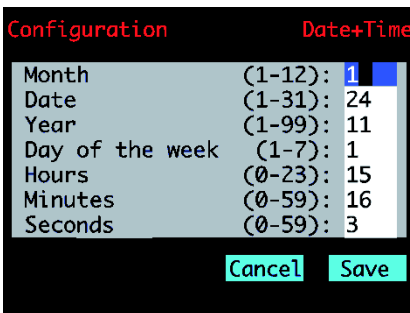
THOR- Large Switch



Menu View 'Configuration - Date + Time'

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3. Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Date + Time'.



Menu View 'Configuration - Date + Time'

5.4 User Settings

You have the possibility to adjust the following user settings:

5.4.1 User Properties



You can configure the various user properties and add new users in this menu.

The following settings can be done:

Field	Selection	Description
Name	Text	User name (case sensitivity)
Password	Text	User password (case sensitivity)
HTTP	Yes	Y – User is allowed to login and access via HTTP.
	No	N – No access via HTTP.
FTP	Yes	Y – User is allowed to login and access via FTP.
	No	N – No access via FTP.
PPP	Yes	Y – User is allowed to login and access via Internet (currently not realized).
	No	N – No access via Internet.
TEL	Yes	Y – User is allowed to login and access via Telnet.
	No	N – No access via Telnet.
POW	Yes	Y – User is 'Power-User' and is allowed to open Crosspoint mode.
	No	N – No 'Power-User' rights.
ADM	Yes	Y – User is Administrator and is allowed to do all configurations and settings at the switcher.
	No	N – No administrator rights

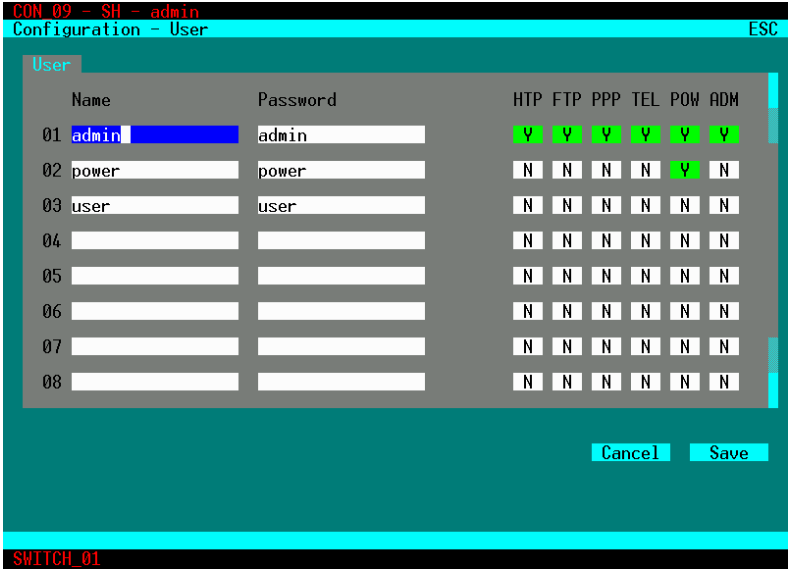
You have the following options to adjust the user properties:

THOR- Large Switch

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'User'.



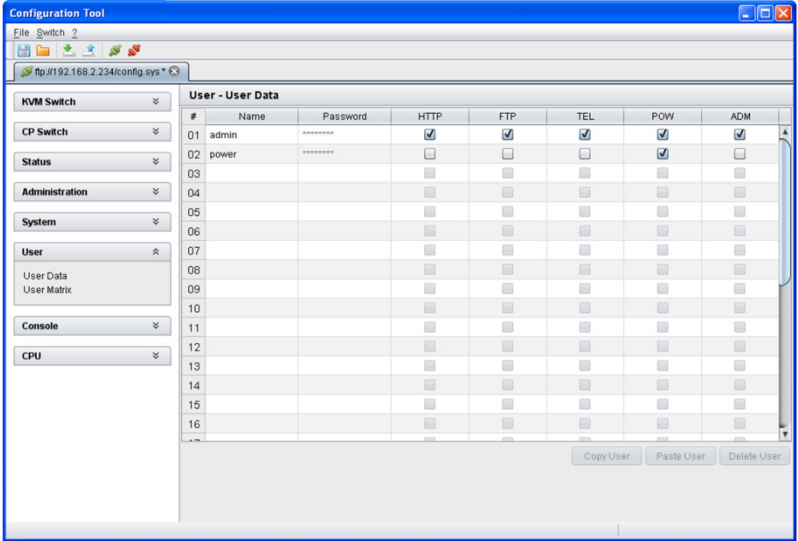
Menu View 'Configuration – User'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'User' in the left menu bar and afterwards go to 'User Data'.

THOR- Large Switch



Menu View 'User - User Data'

5.4.2 User Switcher



In this menu you can unlock a specific selection of CPU ports for every single user.

The use of the User Switcher can be activated in the system settings (see Chapter 5.3.1, Page 65). If the option 'User Switcher' is active, every switching operation requires a logged in user at the console. Also the switching by keyboard 'Hot Keys' needs a prior login

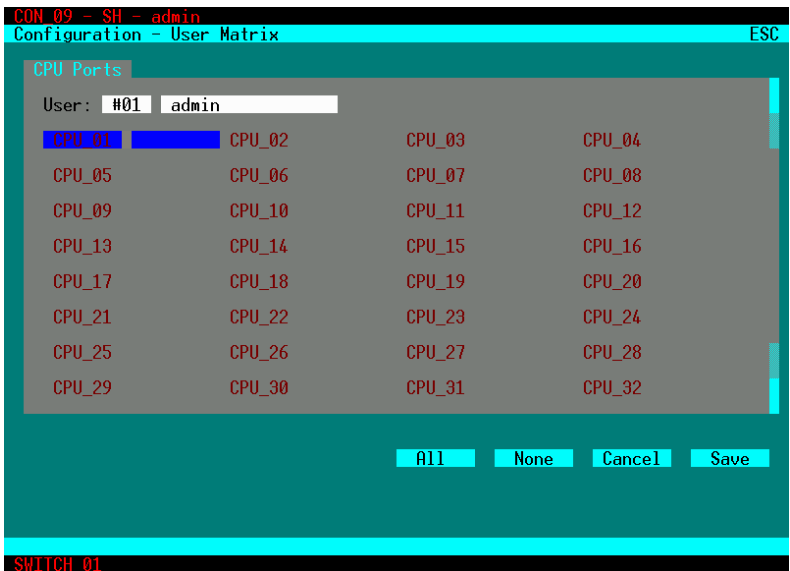
You have the following possibilities to configure the 'User Switcher':

OSD

The general operation of the OSD is explained in chapter 5.2.1.

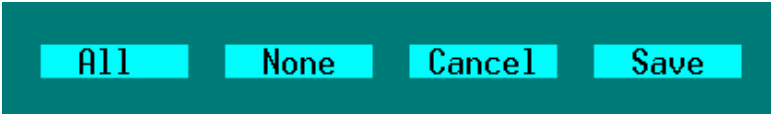
Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'User Switcher'.

Unlocked ports are marked in green; all the other ports are marked in red.



Menu View 'Configuration - User Switcher'

The following menu options are selectable to configure the 'User Switcher':



Menu Option	Function
All	Selection of all CPUs
None	Deselect all of the CPUs
Cancel	Abort data transfer without saving
Save	Data transfer with saving

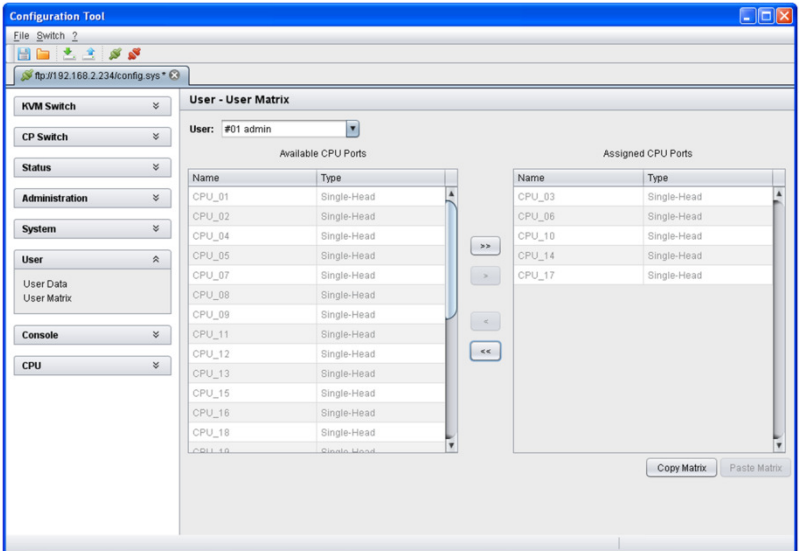


The options 'All' and 'None' have to be confirmed with 'Save' or rejected with 'Cancel'.

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'User' in the left menu bar and afterwards go to 'User Switcher'.



Menu View 'User - User Switcher'

5.5 Console Settings

You have the possibility to adjust the following console settings:

5.5.1 Console Ports (CON Ports)



The name, type, OSD view and the currently related CPU port for every single console are shown and can be configured in this menu.

If you want to configure the console ports, you will have to consider the following notes for a correct selection of the port types:

Single-Head ports and USB 2.0 ports can be switched individually.

Dual-Head ports, Quad-Head ports and also Single-Head/USB 2.0 ports are always switched together.

Only odd ports (#01, 03, 05, etc.) can be configured as Dual-Head ports or Single-Head/USB 2.0 ports.

Only every fourth port (#01, 05, 09, etc.) can be configured as Quad-Head port or Triple-Head/USB 2.0 port.

Respectively, only the first CON port can be switched by 'Hot Keys'. The other ports behave like 'slaves'.

If you switch to differently configured CPU ports, one or more monitors can remain dark.

If a user switches from a Quad-Head console to a Single-Head CPU port, the other three monitors will remain dark.

If a user switches from a Quad-Head console to a Dual-Head CPU port, two of the four monitors will remain dark.

If a user switches from a '1U' console to a Single-Head CPU port followed by a '0U' CPU port, the USB port will remain active.



If a user switches from a '1U' console to a Single-Head CPU port followed by a '0U' CPU port, the USB port will remain active.



The reconfiguration of a CPU or CON port between DVI/KVM and USB 2.0 functionality requires a backup of the new configuration by the 'Save' option and can only be activated by a subsequent restart of the THOR-SLG.

THOR- Large Switch

The following settings can be done:

Field	Selection	Description
Name	Text	Name of the connected console at this port.
Type	Port definition	SH = Single-Head port DH = Dual-Head port QH = Quad-Head port 0U = USB 2.0 port 1U = Single-Head port with USB 2.0 Port 3U = Triple-Head port with USB 2.0 port
OSD	OSD resolution	<ul style="list-style-type: none">• VAR = OSD embedded in the current resolution (default)• 800 = OSD view in full screen (800x600)• 1024 = OSD view in full screen (1024x768)• 1280 = OSD view in full screen (1280x1024)• 1600 = OSD view in full screen (1600x1200)• 1920 = OSD view in full screen (1920x1200)
CPU	Port number	Number of the CPU that is connected to the console or will be connected after saving ('Save').

You have the following possibilities to configure the console ports:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'CON Ports'.



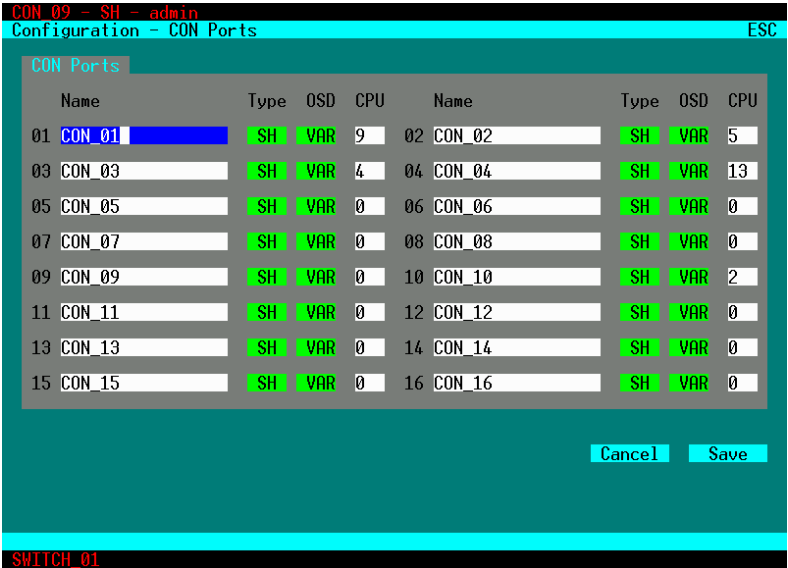
Consider the following notes to configure the OSD:

If you select 'VAR' (default setting), the OSD will be embedded in the

THOR- Large Switch

current screen resolution. If the monitors have different resolutions, the OSD will be displayed in different sizes at the various consoles.

- If you select a constant resolution, the OSD will be displayed in full screen: the monitor resolution will be changed. This can lead to a delay regarding video display, both opening and leaving the OSD.



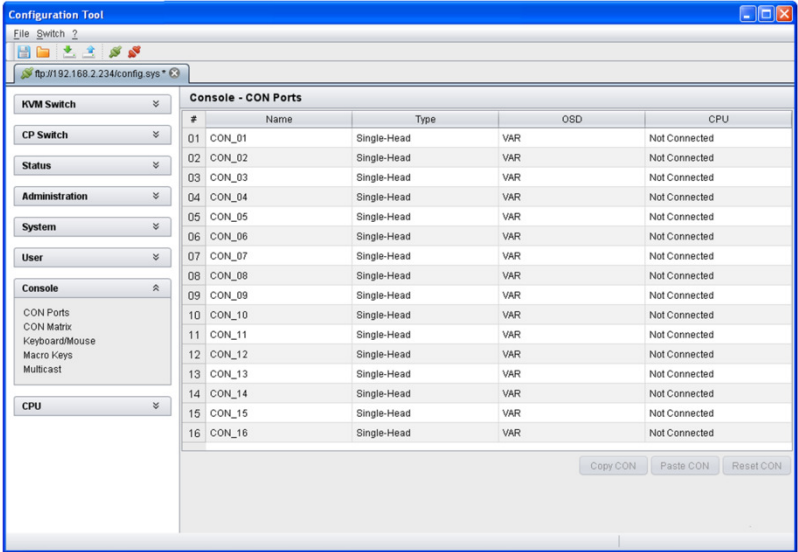
Menu View 'Configuration - CON Ports'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the left menu bar and afterwards go to 'CON Ports'.

THOR- Large Switch



Menu View 'Console - CON Ports'

5.5.2 Console Switcher (CON Switcher)



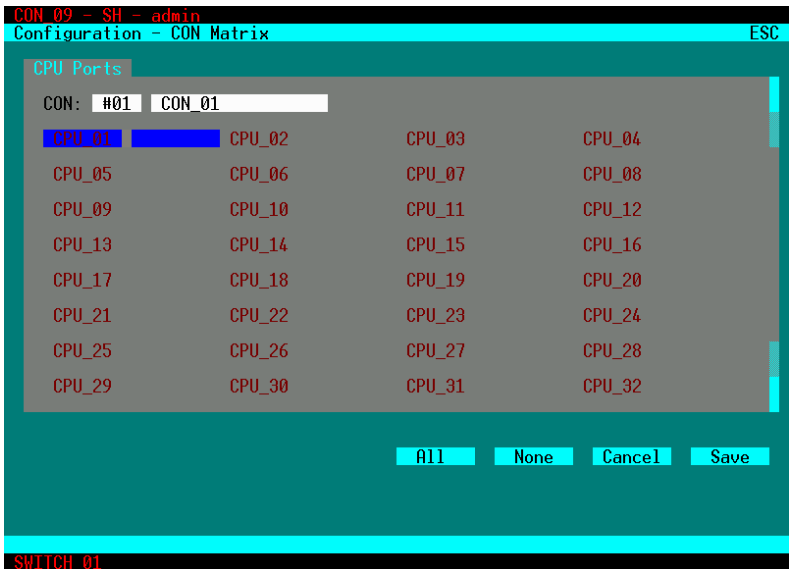
You can unlock a specific selection of CPU ports for every single console in this menu.

You have the following possibilities to configure the 'Console Switcher':

OSD

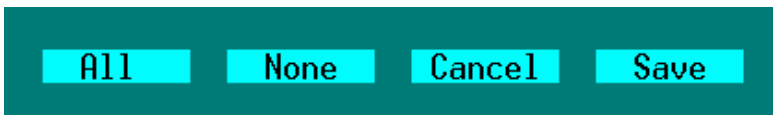
Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'CON Switcher'.

Unlocked ports are marked in green; all the other ports are marked in red.



Menu View 'Configuration - CON Switcher'

The following menu options are selectable in the menu to configure the Console Switcher:



THOR- Large Switch

Menu Option	Function
All	Selection of all CPUs
None	Deselect all of the CPUs
Cancel	Abort data transfer without saving
Save	Data transfer with saving

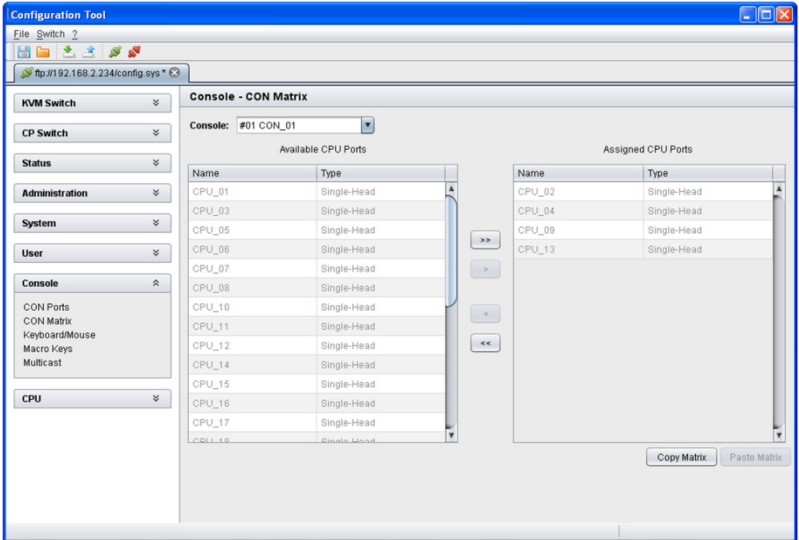


The options 'All' and 'None' have to be confirmed with 'Save' or rejected with 'Cancel'.

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the left menu bar and afterwards go to 'CON Switcher'.



Menu View "Console - CON Switcher"

5.5.3 Mouse and Keyboard



In this menu you can make mouse and keyboard specific adjustments.

The following settings can be done:

Field	Selection	Description
Hor. Speed 1/x	Numerical value	Adjustment of the horizontal mouse speed.
Ver. Speed 1/x	Numerical value	Adjustment of the vertical mouse speed.
Double Click	Milli-seconds	Adjustment of the time slot for a double click.
Keyboard Layout	Region	Set the OSD keyboard layout according to the used keyboard.
Single Click	Yes	Y – Execute OSD commands with a single click (relevant with the use of touch screens to control the OSD).
	No	N – No Single Click



The mouse and keyboard settings are console specific and can be separately set for every single console.

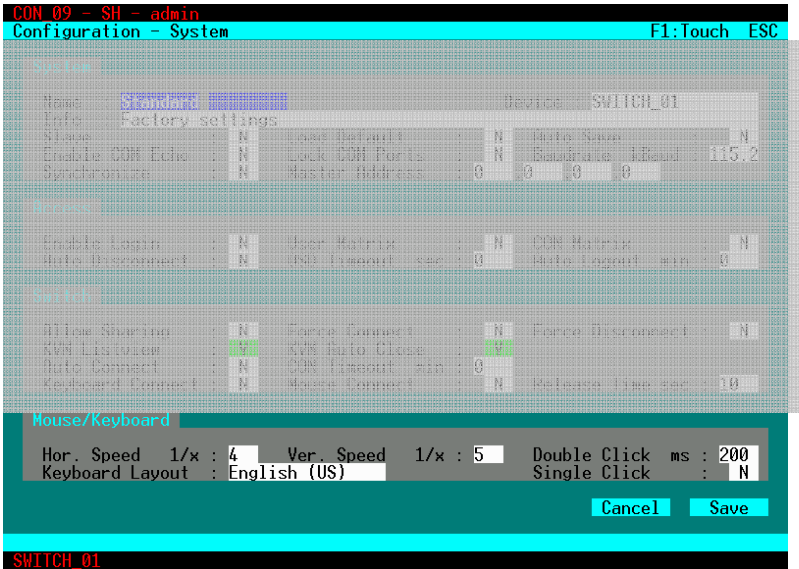
You have the following possibilities to configure the mouse and keyboard settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'System'.

THOR- Large Switch



Menu View 'Configuration - System'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the left menu bar and afterwards go to 'Keyboard/Mouse'.

THOR- Large Switch

Configuration Tool

File _Switch_ ?

Ap://192.168.2.234/config.sys*

KVM Switch ▾

CP Switch ▾

Status ▾

Administration ▾

System ▾

User ▾

Console ▲

- CON Ports
- CON Matrix
- Keyboard/Mouse
- Macro Keys
- Multicast

CPU ▾

Console - Keyboard/Mouse

#	Name	Horizontal Speed	Vertical Speed	Double Click	Country
01	CON_01	4	5	200	English (US)
02	CON_02	4	5	200	English (US)
03	CON_03	4	5	200	English (US)
04	CON_04	4	5	200	English (US)
05	CON_05	4	5	200	English (US)
06	CON_06	4	5	200	English (US)
07	CON_07	4	5	200	English (US)
08	CON_08	4	5	200	English (US)
09	CON_09	4	5	200	English (US)
10	CON_10	4	5	200	English (US)
11	CON_11	4	5	200	English (US)
12	CON_12	4	5	200	English (US)
13	CON_13	4	5	200	English (US)
14	CON_14	4	5	200	English (US)
15	CON_15	4	5	200	English (US)
16	CON_16	4	5	200	English (US)

Copy K/M Paste K/M Reset K/M

Menu View 'Keyboard/Mouse'

5.5.4 Touchscreen



The general operation of the OSD is explained in chapter 5.2.1.

In this menu you can make touchscreen-specific adjustments. The OSD of the THOR-SLG supports the control by a touchscreen.



USB-HID based touchscreen protocols are supported.
Support of manufacturer specific protocols by request.

Press <F1> to get from the 'System' mask in the configuration menu into the 'Touchscreen' mask.



Menu View 'Configuration – Touch'

In this mask, you can do the calibration of your touchscreen for every single console. For this purpose you are required to click at least two times at a point at the top left and at the bottom right. After that you will have the opportunity to check the calibration, to save it or to abort it.

The calibration has to be done for every single touchscreen at any console.

THOR- Large Switch

The touchscreen control behaves like a mouse as much as possible; for a smooth control of the OSD by a touchscreen, activation of the mouse/keyboard setting 'Single Click' in the OSD is recommended (see Chapter 5.5.3, Page 93).

5.5.5 Macro Keys



The programming of the macro commands for switching can be done in this menu. The macros are separately deposited for each console. For the use of the macros, you need a macro keyboard- an available accessory- that is connected to one of the USB-HID ports of the appropriate CON unit. Alternatively, the execution of the macros can also be done by 'Hot Key' and the function keys F1 - F12.



If keyboard, mouse and a macro keyboard should be used at the same time, you will have to use an extender with four USB-HID ports or an USB hub.

The following settings can be done:

Field	Selection	Description
Function (1 to 8)	Function	Connect P1 to P2: Establish bidirectional connection of console P1 with CPU P2.
		Connect Video P1 to P2: Establish video connection of console P1 with CPU P2.
		Disconnect: Disconnect console P1.
		Open P1: Open configuration file No. P1.
		Save: Saving of the current configuration in the switcher.
		Save As P1: Saving of the current configuration in configuration file No. P1.
		Logout: Logout of current user.
P1	Number	Number of console that has to be connected to a CPU. Number of configuration file (0 = default).

THOR- Large Switch

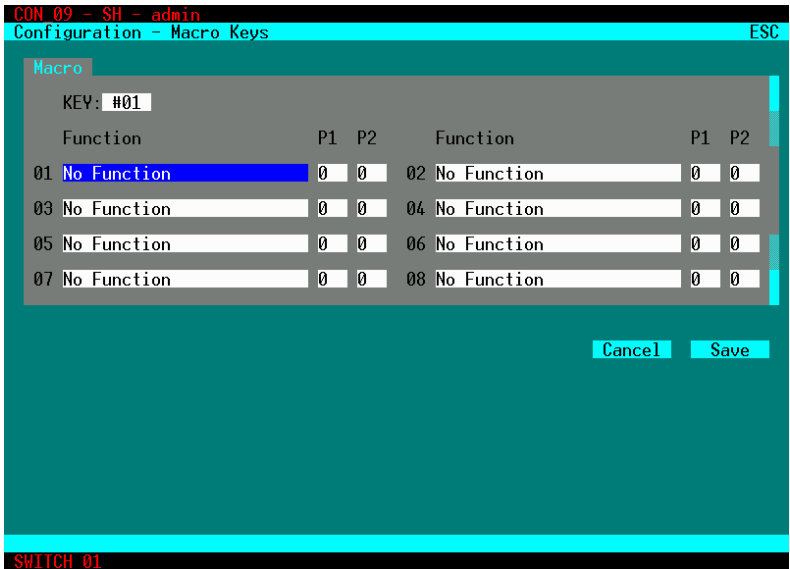
Field	Selection	Description
P2	Number	Number of CPU that has to be connected to a console.

You have the following possibilities to do the programming of the macro commands:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Macro Keys'.



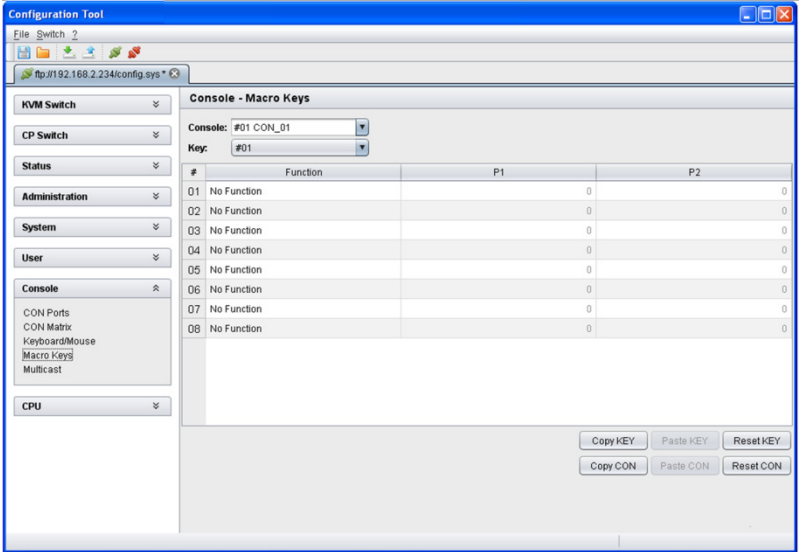
Menu View 'Configuration - Macro Keys'

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the left menu bar and afterwards go to 'Macro Keys'.

THOR- Large Switch



Menu View 'Console - Macro Keys'

5.5.6 Follow Me (Multicast)



The "Follow Me" function allows the user to show the current monitor screen to other consoles. The appropriate consoles are connected with the current CON port and, thereby, they lose their keyboard/mouse control and the ability to switch. If you switch to another CPU, the connected consoles will follow.

To ensure an optimal overview, the current switching status is displayed in the "Follow Me" mask.



The consoles that are selected in the "Follow Me" mask will only receive the possibility for control, if the function is explicitly switched off from the single consoles.

You have the following possibilities to configure the 'Follow Me' function:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Press the <F2> key in the 'KVM List' view after opening the OSD to get to the 'Follow Me' configurations

THOR- Large Switch



Menu View 'Follow Me'

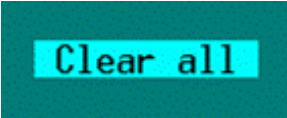
By selecting available CON ports, the consoles can be selected that should be used for the 'Follow Me' function.

Color combinations that are available in the 'Follow Me' mask:

Color CON Port	Color CPU Port	Description
Green	n. c.	Available CON Port
Red	Red	Number of CON port that is connected to the number of the CPU port or to the number of the CON port in the 'Follow Me' mode.
Black	Black	Own CON port connection
Black	n. c.	CON port not available

THOR- Large Switch

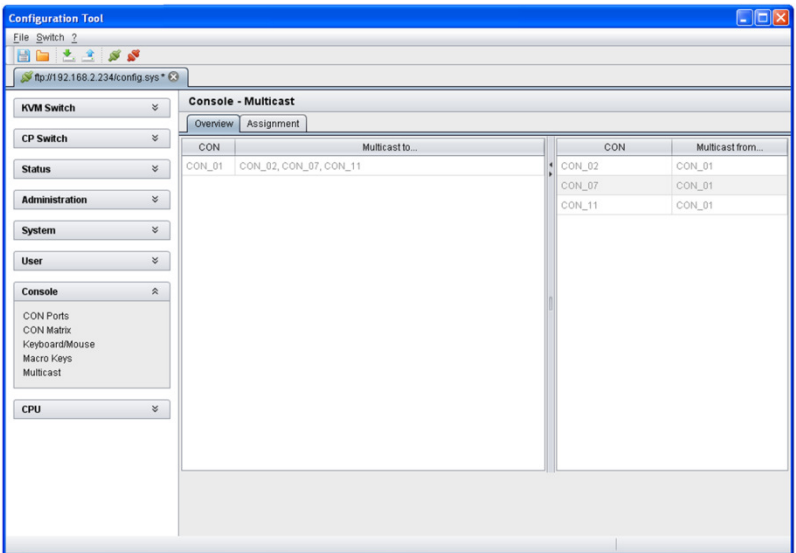
Following functions are available for the menu control:

Picture	Description
	Unblocking of all consoles that are connected to the current CON Port.

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the left menu bar and afterwards go to 'Multicast'.



Menu View "Console - Multicast"

5.6 CPU Settings

You have the possibility to adjust the following CPU settings.

5.6.1 CPU Ports



The name, type and the currently assigned console port are displayed and defined for every single console port in this menu. Please consider the configuration information during configuration (see Chapter 5.5.1, Page 87).

The following settings can be done:

Field	Selection	Description
Name	Text	Name of the port that is connected to the console
Type	Port definition	SH = Single-Head port DH = Dual-Head port QH = Quad-Head port 0U = USB-2.0 port 1U = Single-Head port with a USB 2.0 port 3U = Triple-Head port with a USB 2.0 port
CON	Port number	Number of the CPU that is connected to the console or will be connected after saving ('Save').

You have the following possibilities to make the configuration of the CPU settings:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'CPU Ports'.

THOR- Large Switch

CON_09 - SH - admin
Configuration - CPU Ports ESC

CPU Ports

Name	Type	CON	Name	Type	CON
01 CPU_01	SH	0	02 CPU_02	SH	10
03 CPU_03	SH	0	04 CPU_04	SH	0
05 CPU_05	SH	2	06 CPU_06	SH	0
07 CPU_07	SH	0	08 CPU_08	SH	0
09 CPU_09	SH	1	10 CPU_10	SH	3
11 CPU_11	SH	0	12 CPU_12	SH	0
13 CPU_13	SH	4	14 CPU_14	SH	0
15 CPU_15	SH	0	16 CPU_16	SH	0

Cancel Save

SWITCH_01

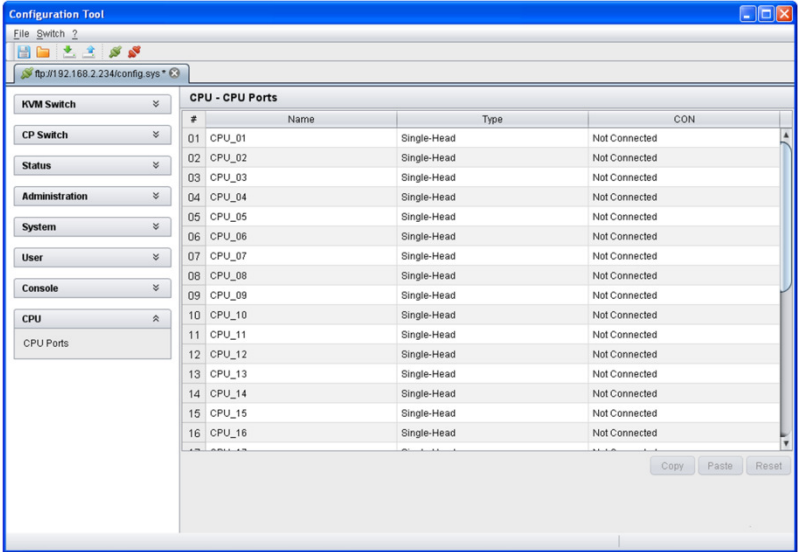
Menu View 'Configuration - CPU Ports'

Java-Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the left menu bar and afterwards go to 'CPU Ports'.

THOR- Large Switch



Menu View "CPU - CPU Ports"

5.7 Saving and Loading of configurations

You have the possibility to administrate all of the configurations.

5.7.1 Saving of Configurations in the Switcher



You have the following possibilities to save the configurations in the switcher:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Save' in the configuration menu.

By selecting this menu item, the current configuration of the switcher is saved in the switcher memory. As a standard, the last configuration that has been saved in this way will be restored after a restart of the switcher.



These backups need a 'Blocking Access' to the switcher memory and leads to a freeze of all OSD menus for a few seconds. The switching connections are not affected by this freeze.

By selecting the menu item 'Auto Save' in the system settings, the configuration is saved automatically. (See Chapter 5.3.1, Page 65).

5.7.2 Saving of Configurations in a File



In this menu you can save the current switcher configuration in a file on the switcher. But this does not replace the saving of the configuration in the switcher memory (see Chapter 5.7.1, Page 107).

The name and the detailed information of the current configuration are shown under 'Active'. This configuration can be saved now.

The name and the detailed information of the saved configurations are shown under 'Default' and 'File #1' to 'File #8'. These memory locations can be overwritten.

The memory location that has to be overwritten with the current configuration has to be selected specifically.

THOR- Large Switch

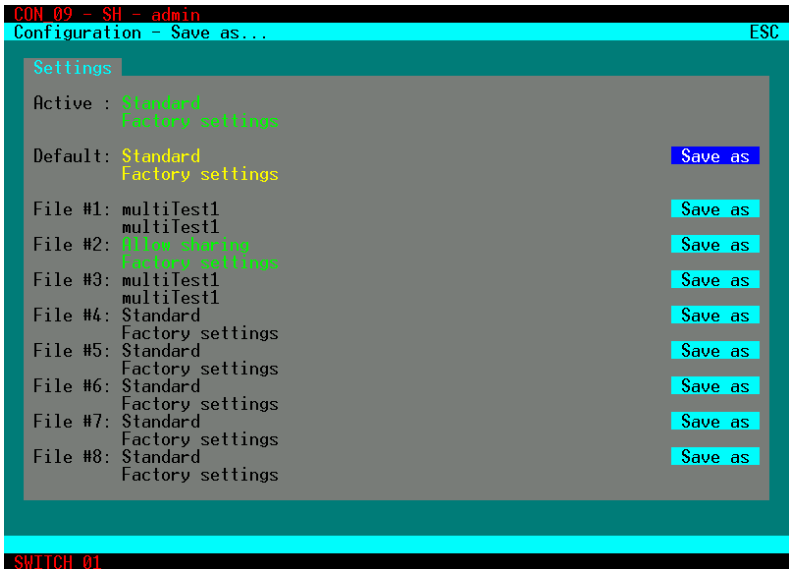
After that, the current configuration is saved on this memory location and is directly shown in the menu. The configuration that has been saved on this memory location before is deleted.

You have the following possibilities to save the configurations in files:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Save as'.



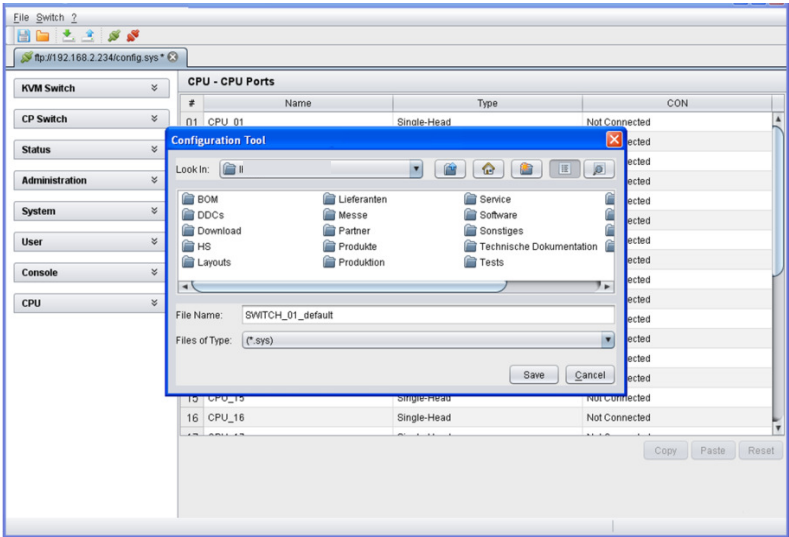
Menu View 'Configuration - Save as'

Java-Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the upper menu bar and afterwards go to 'Save as'.

THOR- Large Switch



Menu View 'File - Save as'

Serial Interface

The general operation of the serial interface is explained in chapter 5.2.4.

Use the following command structure to save a configuration in a file:

Command	Reply
STX, 0x66, 0x8C, <Config File No>, ETX	ACK

Assignment of configuration files to command:

Configuration file	Address
Default.sys	0x80
Config01.sys	0x81
Config02.sys	0x82
Config03.sys	0x83
Config04.sys	0x84
Config05.sys	0x85
Config06.sys	0x86

5.7.3 Loading of Configurations



You can load previously saved configurations in this menu.

The current configuration is shown under 'Active'.

Apart from the default configuration, up to eight further configurations can be loaded.

The selection of the configurations for a download can be made between the eight personalized configurations and the default settings.

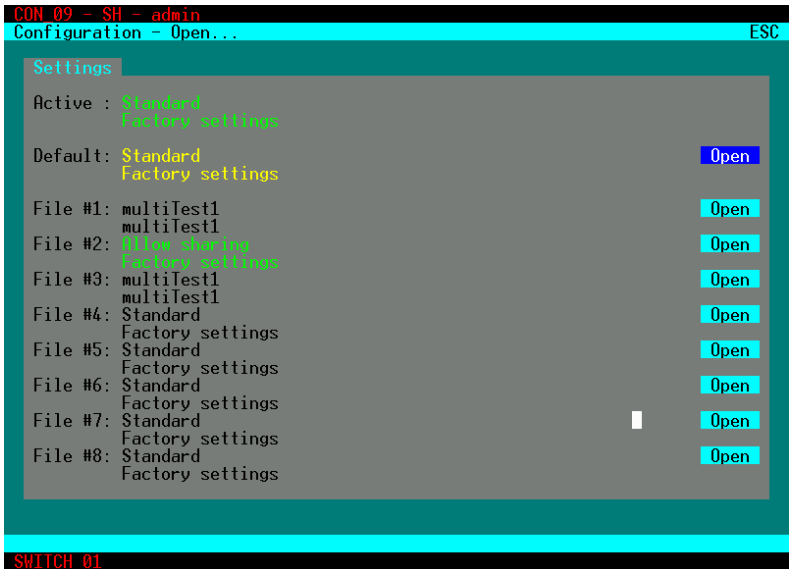
The selected configuration is loaded immediately and shown in the menu under 'Active'. The previously active configuration is deleted.

You have the following possibilities to load the configurations from files on the THOR-SLG:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the menu item 'Configuration' in the main menu and afterwards open the menu item 'Open'.



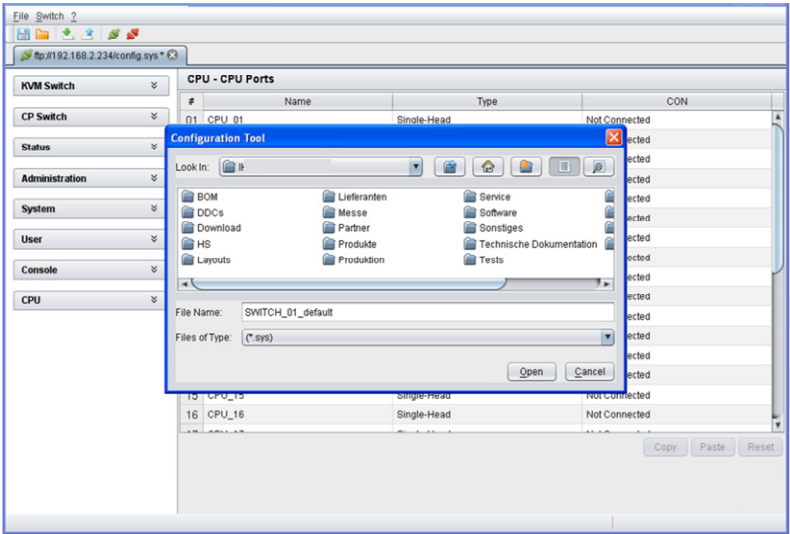
Menu View 'Configuration – Open'

THOR- Large Switch

Java-Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'Console' in the upper menu bar and afterwards go to 'open'.



Menu View 'File – Open'

Serial Interface

The general operation of the serial interface is explained in chapter 5.2.4.

Use the following command structure to load a configuration from a file:

Command	Reply
STX, 0x67, 0x8C, <Config File No>, ETX	ACK

Assignment of configuration files to command:

Configuration file	Address
Default.sys	0x80
Config01.sys	0x81
Config02.sys	0x82
Config03.sys	0x83

THOR- Large Switch

Configuration file	Address
Config04.sys	0x84
Config05.sys	0x85
Config06.sys	0x86

5.7.4 Saving and Loading of Configurations from FTP

If a switcher is connected to the network and the network interface is configured accordingly (see Chapter 5.3.4, Page 77), the configuration files can be read out via FTP and saved externally. At the same time already externally saved configuration files can be read in via FTP.

To have a FTP access to the configuration files, the THOR-SLG has to be connected to a network and the network interface has to be configured appropriately.

Open the file directory with the link

<ftp://user:password@xxx.xxx.xxx.xxx>

in a browser.

In this case 'user' means the name of the user who is created in the switcher and 'password' means the appropriate password for the access. The user must have administrator rights and ftp access rights; 'xxx.xxx.xxx.xxx' means the current IP address of the switcher.

You can find the following files in the directory:

File	Description
config.sys	This file includes the reset configuration of the switchers (internal).
default.sys	This file includes the default configuration of the switcher.
config01.sys	Configuration file 1
config02.sys	Configuration file 2
config03.sys	Configuration file 3
config04.sys	Configuration file 4
config05.sys	Configuration file 5
config06.sys	Configuration file 6
config07.sys	Configuration file 7
config08.sys	Configuration file 8
module.sys	This file includes module information of the switcher (internal)

Some of these files are changeable like "default.sys" or "config01.sys" to "config08.sys". The file names are predefined; other file names are not supported.

Please open the directory.

THOR- Large Switch

You can save the required configuration file on an external storage medium.



Please note that these configuration files only work with the latest switcher firmware. Compatibility to firmware updates at a later time is possible, but cannot be guaranteed.

6 Operation

The THOR-SLG can be handled in three different ways:

1. Direct Switching

- by a keyboard connected to a CON port and the 'Hot Keys'
- by a macro keyboard connected to a console port

2. OSD:

- by a keyboard connected to a CON Unit and the OSD

3. External Switching Commands:

- by an external computer via Java tool (network connection required)
- by a media control (network or serial connection required)

6.1 Operation by 'Hot Keys'

6.1.1 Direct Switching

The direct switching by 'Hot Keys' on a keyboard is the fastest possibility for a user to switch at his console between different CPUs. There is a possibility to switch video, keyboard and mouse or only video.

Direct Switching of Video, Keyboard and Mouse

1. Start Command Mode with the 'Hot Key'. For control, the LEDs **Shift** and **Scroll** flash at the keyboard, if Command Mode is activated.
2. Enter the number of the new CPU port and confirm with <Enter>. At the same time the Command Mode is closed and the console is connected to the new CPU with complete control.

Direct Switching of Video

1. Start Command Mode with the 'Hot Key'. For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.
2. Enter the number of the new CPU port and confirm with <Space>. At the same time the Command Mode is closed and the console is connected to the new CPU with video only.



You can only switch to not-used and allowed CPUs with the 'Hot Keys'. The options 'Force Connect' and 'Force Disconnect' as well as the restrictions of the 'User Switcher' and 'CON Switcher' are also required. 'Hot Keys' are only supported, if neither 'Enable Login' nor the 'User Switcher' is selected and the user is logged in the OSD.

6.1.2 Scan Mode

The Scan Mode offers the possibility to show video signals of the different CPUs quickly and offers switching in between without continuously using the 'Hot Key'. The switching between two video signals can even take place within one frame.

1. Start command mode with the 'Hot Key'. For control, the LEDs **Shift** and **Scroll** flashes at the keyboard, if command mode is activated.
2. Press the <Left Shift> key and hold it down. You can now enter the numbers of the various CPUs with the keyboard and immediately switch to the video signal of the respective CPU after entering the port number.



Optimal results can be achieved by the use of as identical resolutions as possible. This contributes to a smooth and fast function of the scan mode.

6.1.3 Addressing of Master and Slave

The THOR-SLG system can be cascaded in two steps. You can optionally send the commands (including opening the OSD) to the master or the slave switcher.

Whenever command mode is activated, you can select by a <m> or a <s>, if all of the following commands should be handled in the master or in the slave switcher.

OSD Access

OSD access to the master switcher:

<Left Shift>, <Left Shift>, <m> (optional), <o>

OSD access to the slave switcher:

<Left Shift>, <Left Shift>, <s>, <o>

Example: Switching to the CPU port 23 of the slave switcher.

THOR- Large Switch

1. Switching to the CPU Port (e.g. 12) of the master switcher that has a connection to a slave switcher:
<Left Shift>, <Left Shift>, <m>, <1>, <2>, <Enter>
2. Switching to CPU Port 23 of the slave switcher:
<Left Shift>, <Left Shift>, <s>, <2>, <3>, <Enter>



The selected master/slave mode is permanently activated until another mode is manually activated. This means that if you select <s>, for example, all prospective commands will be sent to the slave, also if the Command Mode is left in the meantime.

6.1.4 Macro Keyboard

The control of the THOR-SLG can be efficiently performed by a macro keyboard that is available as an accessory.

For the use of a macro, the macro keyboard has to be connected to a USB-HID port of the CON unit.



If you want to use keyboard, mouse and macro keyboard at the same time, you will have to use an extender with four USB-HID ports or an USB hub.

The programming of the macros is console specific, requires administrator rights, and takes place in the OSD (see Chapter 5.5.5, Page 98). Up to eight commands per key can be saved in the OSD. They can be retrieved sequentially by pressing a key.

For switching, please press the favored key. In doing so, the monitor will remain dark for a short time.

6.1.5 Function Keys F1 - F12

In Command Mode you can retrieve the macros 1 - 12 with the function keys F1 – F12 of the connected standard keyboard instead of the special macro keyboard.

The deposited command sequence for the appropriate function key is executed and Command Mode is left immediately.

By a prefixed <s> or <S> and <m> or <M> you can select if the command sequence should be executed for the master or the slave.

THOR- Large Switch



The chosen control level remains selected until another one is selected, even if Command Mode is left alone in the meantime.

6.2 KVM Mode

In 'KVM Mode' the user can only switch with its own console. To switch other consoles, the user needs the 'Crosspoint Mode' (see Chapter 6.3, Page 126).

You have the possibility to do the following switching operations.

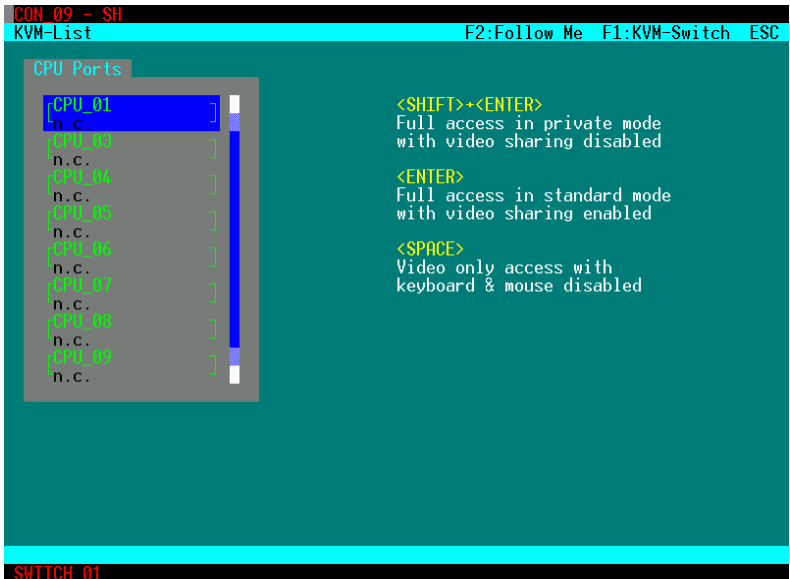
6.2.1 KVM List



The general operation of the OSD is explained in chapter 5.2.1.

You have the possibility to do a switching operation in the 'KVM-List'.

To do this, open the OSD. The screen mask 'KVM-List' will be opened as a standard, if you login to the OSD. Alternatively, the configuration can be modified in this way that the 'KVM-Switch' mask will be started (see Chapter 5.3.3, Page 69).



Menu View 'KVM-List'

In this menu, all CPU ports that are unlocked for the user are shown.

THOR- Large Switch

With it, the restrictions that are given by used CPU ports and access restrictions in the 'User Switcher' as well as in the 'Console Switcher' are considered. Restrictions by used CPU ports can be cancelled by a selection of 'Allow Sharing', 'Force Connect' and/or 'Force Disconnect' (see Chapter 5.3.3, Page 72).

Color combinations that are available during operation:

CPU Port	CON Port	Description
Green	n. c.	CPU port not connected bi-directionally. Video connection to another console
Green	Yellow	CPU port not connected bi-directionally. Video connection to the own console
Yellow	Yellow	CPU port bi-directionally connected to the own console
Red	Red	CPU port bi-directionally connected to another console
Red	Yellow	CPU port bi-directionally connected to another console. Video connection with the own console



The user receives a CPU port without control by mouse or by touchscreen; only if the CPU is already used and neither 'Force Connect' nor 'Force Disconnect' is selected. In all the other cases the user receives the CPU port including keyboard/mouse control.

6.2.2 KVM Switch Function



You have the following possibilities to do a switching operation with the 'KVM Switch' function:

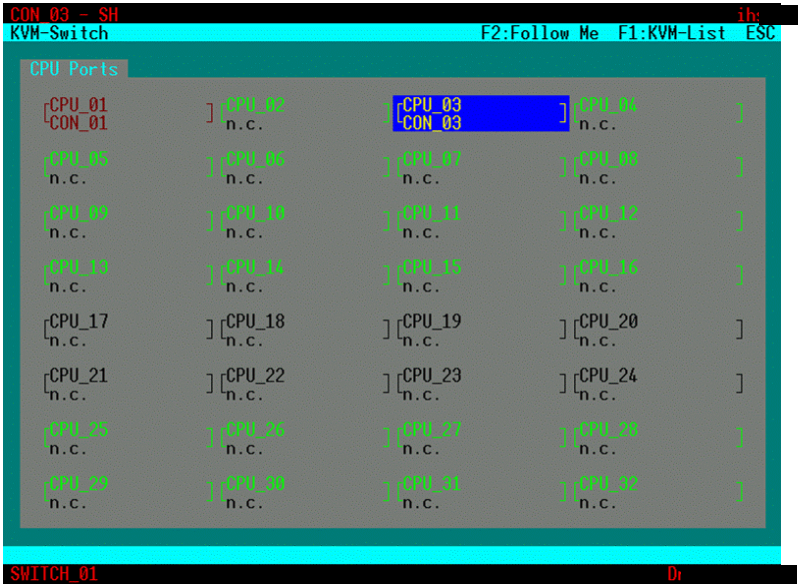
OSD

The general operation of the OSD is explained in chapter 5.2.1.

The screen mask 'KVM Switcher' will be opened if you log in to the OSD and the configuration is modified accordingly.

The complete and current switching status is shown in this view.

THOR- Large Switch



Menu View 'KVM-Switch'

Color combinations that are available during operation:

CPU Port	CON Port	Description
Green	n.c.	CPU port not connected, video can be connected to another console
Green	Yellow	CPU port not connected, video can be connected to the own console
Yellow	Yellow	CPU port connected to the own console
Red	Red	CPU port connected to a different console
Red	Yellow	CPU Port connected with a different console, video connected to the own console
Black	n.c.	CPU Port not available



By default, the user is only able to switch to available CPU ports.

In the 'Configuration – System' menu (see Chapter 5.3.3, Page 72) the user is able to activate the options 'Allow Sharing', 'Force Connect' and 'Force Disconnect'.

If 'Allow Sharing' is active, the user will be able to switch to another user-assigned CPU by using the <Space> key and will receive the monitor display, but without the opportunity to control. The current user will not be informed about this procedure.

THOR- Large Switch

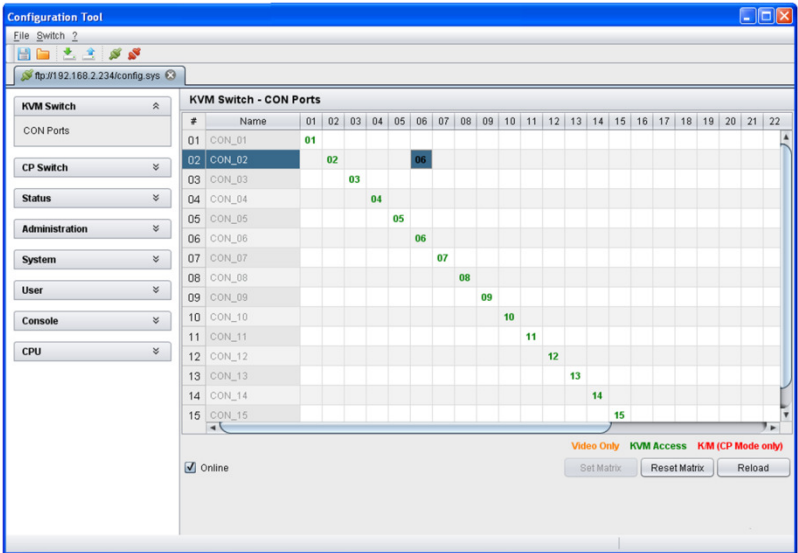
If 'Force Connect' is active, the user will be able to switch to any CPU by pressing the <Enter> key and will receive the monitor display including the opportunity for control. The previous user will lose his control, but will still receive the monitor display.

If 'Force Disconnect' is active, the user will be able to switch to any CPU by pressing the <Enter> key and will receive the monitor display including the opportunity for control. The previous user will be disconnected from the CPU.

Java Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'KVM Switch' in the upper menu bar and afterwards go to 'CON Ports'.



Menu View 'KVM Switch - CON Ports'

6.2.3 Follow Me Function (Multicast)



The 'Follow Me' function allows you to duplicate the display content of the current console to other monitors. For this purpose, the appropriate CON ports are linked with the current CON port. If you set this link, these CON ports will lose their ability for switching and controlling. If another CPU is selected via switching at the guiding console after 'Follow Me' configuration has been done, the linked CON ports will follow according to the switching and will also show the display content of the new CPU.

This function does not provide any access to the display content of other consoles.

The 'Follow Me' function is helpful for example:

To make the display content of a presentation available for a projector.

To make monitors in control rooms available for all monitoring purposes.

To show the current display content to an administrator, if there are some questions

You have the following possibilities to do a switching operation with the 'Follow Me' function:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

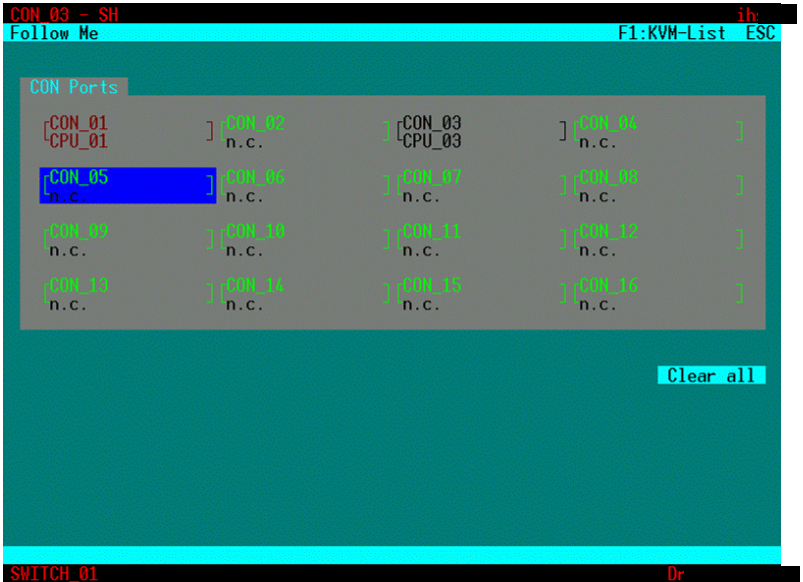
To access the 'Follow Me' mask, please press <F2> in the 'KVM-List' mask or in the "KVM-Switch" mask.

For better orientation, the current switching status is shown in the 'Follow Me' mask:



The 'Follow Me' mask only works from Single-Head work stations with Single-Head work stations.

THOR- Large Switch

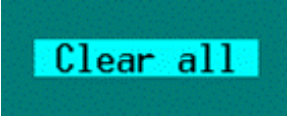


Menu View 'Follow Me'

Color combinations that are available during operation:

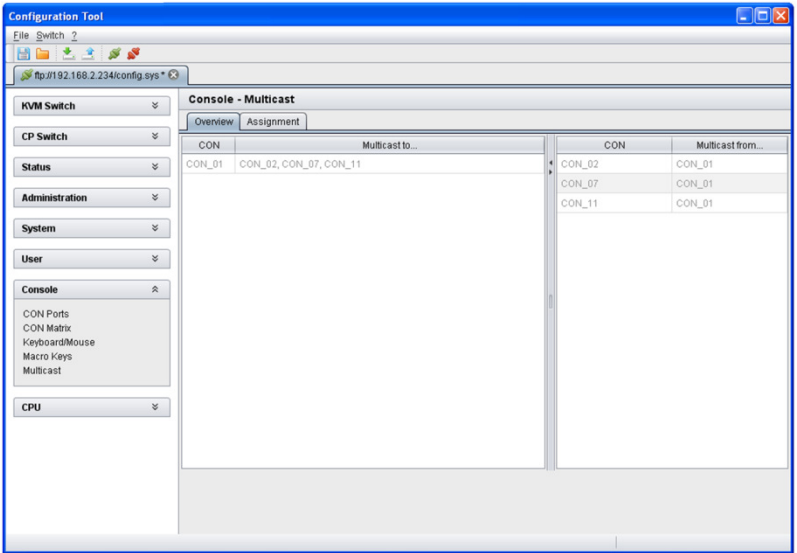
CON Port	CPU Port	Description
Green	n.c.	CON Port available
Red	Rot	CON port # connected to CPU Port # or with CON Port # in the 'Follow Me' mode
Black	Black	Own CON port connection
Black	n.c.	CON port available

The following functions are available for menu control:

Picture	Description
	Unlock all ports that are connected to the current console

THOR- Large Switch

Java Tool



Menu View "Console - Multicast"

6.3 Crosspoint Mode

In 'Crosspoint Mode', an assignment of inputs to outputs can be done. As the video signals of a CPU port can be connected to several CON ports, the KM signal can only be connected to a CON port that includes the corresponding video signal at the same time.

All existing connections can be overwritten in the 'CP Mode'. That is why only users with power user rights have an access to this mode.

The switching result has to be controlled by the user, because there is no plausibility check for connectivity.

6.3.1 CON Ports in the Crosspoint Switch



In the 'Crosspoint-Switch' mask, the various consoles that are switchable to available CPUs are shown. For an optimal overview, a switcher display is used in this case.

You can only assign 1x video ('MON') and 1x keyboard and mouse control ('K/M') to any console. If another CPU is selected ('K/M' or 'MON'), an existing connection will be stopped.

You can assign 1x MON without K/M to any console. But if you assign 1x K/M to a console, you will also have to assign the corresponding video signal to this console.

The switching operation of a single keyboard/mouse or video signal is done by pressing the <Space> key. The combined switching of K/M and Mon is done by the <Enter> key. The switching is done immediately. If the switching is done on an existing connection, the connection will be stopped.



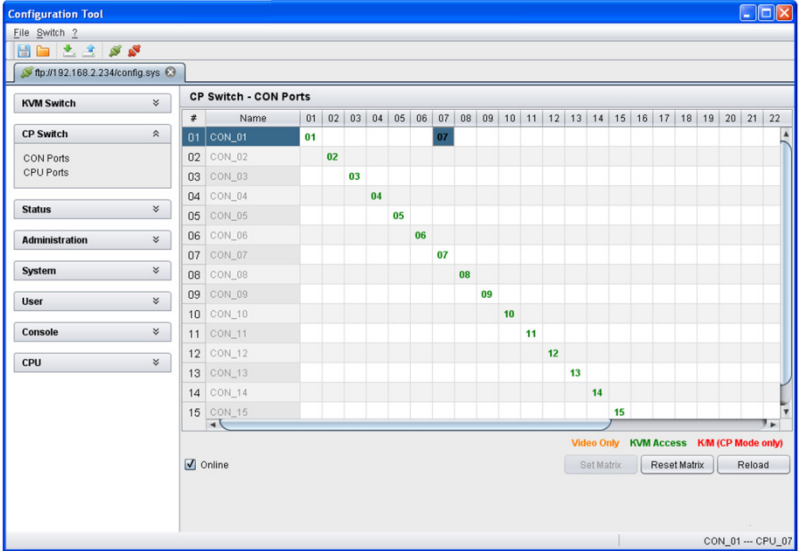
The switching function is done immediately. The user has to take care of the legitimacy of the switching operation. There is no control by the system.

You have the following possibilities to do a switching operation of the consoles with the 'Crosspoint Switch' mode:

OSD

The general operation of the OSD is explained in chapter 5.2.1.

THOR- Large Switch



Menu View 'CP Switch - CON Ports'

6.3.2 CPU Ports in the Crosspoint Switch



In the 'Crosspoint-Switch' mask, the various CPUs that are switchable to available consoles are shown. For the largest overview, a switcher display is used.

You have the following possibilities to do a switching operation of the CPUs with the 'Crosspoint Switch' mode:

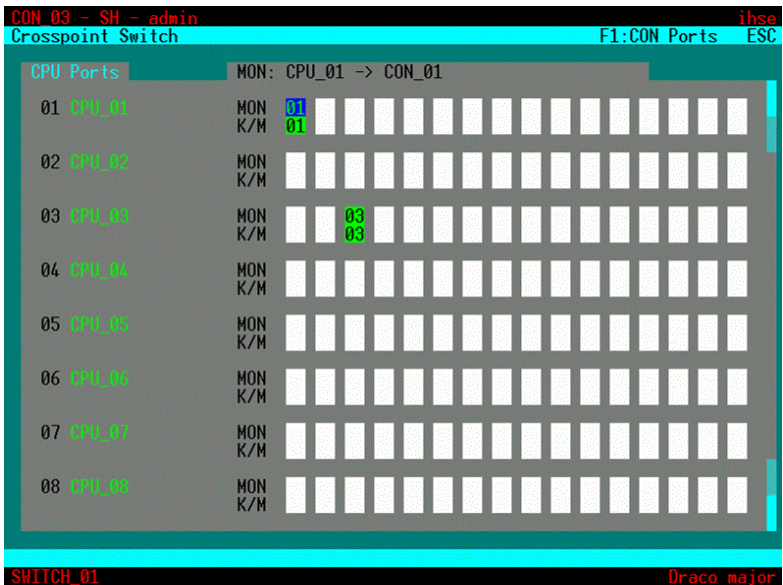


The switching function is done immediately. The user has to take care of the legitimacy of the switching operation. There is no control by the system.

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Press <F1> to get from the 'Crosspoint Switch - CON Ports' mask to the 'Crosspoint Switch - CPU Ports' mask.



Menu View 'Crosspoint Switch'

- 1 The 32 CPU ports are shown in the columns.

THOR- Large Switch

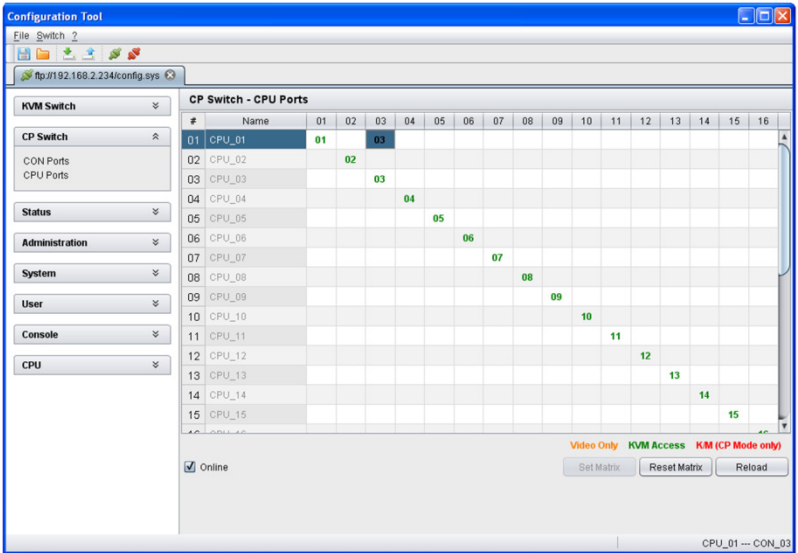
- 2 In the lines the 16 possible CON ports are shown for every single CPU.
- 3 In the upper line ('MON') of any CPU port is shown, on which console the video signal of the current CPU port is shown.
- 4 In the lower line ('K/M') of any CPU port is pictured, on which console the keyboard/mouse control is at the moment.

Practically any number of monitors can be switched to a CPU in a line, but always only 1x keyboard/mouse ('K/M').

Java-Tool

The general operation of the Java tool and the connection to the switcher is explained in chapter 5.2.2 and in the Java tool itself.

Select the menu item 'CP Switch' in the upper menu bar and afterwards go to 'CPU Ports'.



Menu View 'CP Switch - CPU Ports'

6.4 Serial Interface



The THOR-SLG offers the possibility to switch via a serial interface (RS232).

For the control of the THOR-SLG via serial interface, certain parameters are used.

Please set up the following format of the serial data transfer for the communication:

115.2K, 8, 1, NO

(115.2 KBAUD, 8 Data bit, 1 Stop bit, no parity)

6.5 Power On and Power Down Functions

The THOR-SLG has the following power on and down functions:

6.5.1 Restart



You have the following possibilities to do a restart:



If the parameter 'Load Default' is enabled in the 'System' menu, the switcher will be restarted with the default configuration. Otherwise, a request will appear before restart if the switcher should be started with the default settings.

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the option "restart" in the configuration menu.

If you select the option 'Restart', the THOR-SLG will be restarted with the current settings.

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Select the option 'Restart' in the configuration menu.

If you select the option 'Restart', the THOR-SLG will be restarted with the current settings.

6.5.2 Reset



You have the following possibilities to do a reset:



If a firmware update has been done since the delivery, the switcher will be set to the state defined there.

OSD

The general operation of the OSD is explained in chapter 5.2.1.

Select the option 'Reset' in the configuration menu.

If you do a reset, the THOR-SLG will be set back into delivery status.

LCD Display

The general operation of the LCD display is explained in chapter 5.2.3.

Select the option 'Reset' in the configuration menu.

If you do a reset, the THOR-SLG will be set back to the delivery status.

6.5.3 Power Down

The THOR-SLG can be switched off in the following way:

Press the 'On' and 'Off' button at the rear outlet to power on and power off the switcher.

7 Specifications

7.1 Interfaces

7.1.1 RJ45 (Interconnect)

The communication of the 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.

7.1.2 Fiber SFP Type LC (Interconnect)

The communication of fiber devices is performed via Gigabit SFPs that have to be connected to suitable fibers fitted with connectors type LC (see Chapter 7.2.2, Page 136).



The correct function of the device can only be guaranteed with SFPs provided by the manufacturer.



SFP modules can be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged.

7.1.3 RJ45 (Network)

The communication of the Cat X devices requires a 1000BASE-T connection.

The cabling has to be done according to EIA/TIA-568-B (1000BASE-T) with RJ45 connectors at both ends. All of the 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 crossover network cable (cross cable) has to be used.

7.1.4 RS-232 (Serial)

The communication takes place with a transmission speed of up to 115.2 Kbaud, regardless of the file format. The transmission takes place with eight data bits and a stop bit, but without a parity bit. Limited hardware handshake (DSR) is possible.

7.2 Interconnect Cable

7.2.1 Cat X



A point-to-point connection is required. Operation with several patch fields is possible. Routing over an active network component, such as an Ethernet Hub, Router or Switcher, is not allowed.

- ➔ Avoid routing Cat X cables along power cables.
- ➔ If the site has 3-phase AC power, try to ensure that CPU Unit and CON Unit are on the same phase.



To maintain regulatory EMC compliance, correctly installed, shielded Cat X cable must be used throughout the interconnection link.



To maintain regulatory EMC compliance, all Cat X cables need to carry ferrites on both cable ends close to the device.

Type of Interconnect Cable

The THOR-SLG requires interconnect cabling specified for Gigabit Ethernet (1000BASE-T). The use of solid-core (AWG24), shielded, Cat 5e (or better) is recommended.

Cat X Solid-Core 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

Cat X Installation Cable AWG24	140 m (400 ft)
Cat X Patch Cable AWG26/8	70 m (200 ft)

7.2.2 Fiber



A point-to-point connection is necessary. Operation with multiple patch panels is allowed. Routing over active network components, such as Ethernet Hubs, Switchers or Routers is not allowed.

Type of Interconnect Cable

(Cable notations according to VDE)

Type of cable	Specifications
Single-mode 9µm	<ul style="list-style-type: none">• Two fibers 9µm• 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 50µm	<ul style="list-style-type: none">• Two fibers 50µm• I-V(ZN)H 2G50 (in-house patch cable)• I/AD(ZN)H 4G50 (in-house or outdoor breakout cable, resistant)
Multi-mode 62.5µm	<ul style="list-style-type: none">• Two fibers 62.5µm• I-V(ZN)HH 2G62,5 (in-house breakout cable)• A/DQ(ZN)B2Y 4G62,5 (outdoor cable, with protection against rodents)

Maximum Acceptable Cable Length

Type of cable	Maximum Acceptable Cable Length
Single-mode 9µm	10,000 m (32,800 ft)
Multi-mode 50µm (OM3)	1,000 m (3,280 ft)
Multi-mode 50µm	400 m (1,300 ft)
Multi-mode 62.5µm	200 m (650 ft)



If you use single-mode SFPs with multi-mode fibers, you normally can double the maximum acceptable cable length.

Type of Connector

Connector	LC Connector
-----------	--------------

7.3 Supported Peripherals

7.3.1 KVM Extender

The THOR-SLG switcher has been tested with the following KVM extenders and can be run with them:

KVM Extender with Cat X Connection, THOR-E Series

TYPE	DESCRIPTION
TH-E-KIT-1-SL-4-CAT	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,CATx
TH-E-KIT-1-SL-4-CAT-A232	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,CATx,Anal.Audio,RS232
TH-E-KIT-1-SL-4-CAT-DA	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,CATx,Dig.Audio
TH-E-KIT-1-SL-2-CAT	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,CATx
TH-E-KIT-1-SL-2-CAT-A232	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,CATx,Anal.Audio,RS232
TH-E-KIT-1-SL-2-CAT-DA	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,CATx,Dig.Audio
TH-E-KIT-1-SL-2-CAT-V	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,CATx,VGA/IN
TH-E-KIT-1-SL-24-CAT	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,CATx
TH-E-KIT-1-SL-24-CAT-A232	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,CATx,Anal.RS232
TH-E-KIT-1-SL-24-CAT-DA	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,CATx,Dig.Audio
TH-E-KIT-2-SL-4-CAT	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,CATx
TH-E-KIT-2-SL-4-CAT-A232	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,CATx,Anal.Audio,RS232
TH-E-KIT-2-SL-4-CAT-DA	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,CATx,Dig.Audio
TH-E-KIT-2-SL-24-CAT	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,CATx
TH-E-KIT-2-SL-24-CAT-A232	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,CATx,Anal.Audio,RS232
TH-E-KIT-2-SL-24-CAT-DA	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,CATx,Dig.Audio
TH-E-KIT-4-SL-8-CAT	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,CATx
TH-E-KIT-4-SL-8-CAT-A232	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,CATx,Anal.Audio,RS232
TH-E-KIT-4-SL-8-CAT-DA	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,CATx,Dig.Audio
TH-E-KIT-4-SL-24-CAT	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,CATx
TH-E-KIT-4-SL-24-CAT-A232	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,CATx,Anal.Audio,RS232
TH-E-KIT-4-SL-24-CAT-DA	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,CATx,Dig.Audio

THOR- Large Switch

KVM Extender with Fiber Connection (MultiMode), THOR-E Series

TYPE	DESCRIPTION
TH-E-KIT-1-SL-4-MM	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,MM,Fiber
TH-E-KIT-1-SL-4-MM-A232	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-1-SL-4-MM-DA	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,MM,Fiber,Dig.Audio
TH-E-KIT-1-SL-2-MM	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,MM,Fiber
TH-E-KIT-1-SL-2-MM-A232	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-1-SL-2-MM-DA	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,MM,Fiber,Dig.Audio
TH-E-KIT-1-SL-2-MM-V	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,MM,Fiber,VGA/IN
TH-E-KIT-1-SL-24-MM	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,MM,Fiber
TH-E-KIT-1-SL-24-MM-A232	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-1-SL-24-MM-DA	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,MM,Fiber,Dig.Audio
TH-E-KIT-2-SL-4-MM	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,MM,Fiber
TH-E-KIT-2-SL-4-MM-A232	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-2-SL-4-MM-DA	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,MM,Fiber,Dig.Audio
TH-E-KIT-2-SL-24-MM	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,MM,Fiber
TH-E-KIT-2-SL-24-MM-A232	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-2-SL-24-MM-DA	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,MM,Fiber,Dig.Audio
TH-E-KIT-4-SL-8-MM	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,MM,Fiber
TH-E-KIT-4-SL-8-MM-A232	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-4-SL-8-MM-DA	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,MM,Fiber,Dig.Audio
TH-E-KIT-4-SL-24-MM	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,MM,Fiber
TH-E-KIT-4-SL-24-MM-A232	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,MM,Fiber,Anal.Audio,RS232
TH-E-KIT-4-SL-24-MM-DA	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,MM,Fiber,Dig.Audio

THOR- Large Switch

KVM Extender with Fiber Connection (SingleMode), THOR-E Series

TYPE	DESCRIPTION
TH-E-KIT-1-SL-4-SM	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,SM,Fiber
TH-E-KIT-1-SL-4-SM-A232	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-1-SL-4-SM-DA	THOR,E,EXTENDER,KIT,1Mon,SL,4xHID,SM,Fiber,Dig.Audio
TH-E-KIT-1-SL-2-SM	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,SM,Fiber
TH-E-KIT-1-SL-2-SM-A232	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-1-SL-2-SM-DA	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,SM,Fiber,Dig.Audio
TH-E-KIT-1-SL-2-SM-V	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,SM,Fiber,VGA/IN
TH-E-KIT-1-SL-24-SM	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,SM,Fiber
TH-E-KIT-1-SL-24-SM-A232	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-1-SL-24-SM-DA	THOR,E,EXTENDER,KIT,1Mon,SL,2xHID,4xUSB2,SM,Fiber,Dig.Audio
TH-E-KIT-2-SL-4-SM	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,SM,Fiber
TH-E-KIT-2-SL-4-SM-A232	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-2-SL-4-SM-DA	THOR,E,EXTENDER,KIT,2Mon,SL,4xHID,SM,Fiber,Dig.Audio
TH-E-KIT-2-SL-24-SM	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,SM,Fiber
TH-E-KIT-2-SL-24-SM-A232	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-2-SL-24-SM-DA	THOR,E,EXTENDER,KIT,2Mon,SL,2xHID,4xUSB2,SM,Fiber,Dig.Audio
TH-E-KIT-4-SL-8-SM	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,SM,Fiber
TH-E-KIT-4-SL-8-SM-A232	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-4-SL-8-SM-DA	THOR,E,EXTENDER,KIT,4Mon,SL,8xHID,SM,Fiber,Dig.Audio
TH-E-KIT-4-SL-24-SM	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,SM,Fiber
TH-E-KIT-4-SL-24-SM-A232	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,SM,Fiber,Anal.Audio,RS232
TH-E-KIT-4-SL-24-SM-DA	THOR,E,EXTENDER,KIT,4Mon,SL,2xHID,4xUSB2,SM,Fiber,Dig.Audio

THOR- Large Switch

THOR-E Series Basic Modules:

TH-E-L-UPD-1-SL-2-X	Single-Head Module for 1x DVI-D Single Link (up to 1920x1200) with 2x USB-HID
TH-E-R-UPD-1-SL-2-X	
TH-E-L-UPD-1-SL-2-X-V	Single-Head Module for 1x DVI-I (VGA / DVI) Single Link (up to 1920x1200) with 2x USB-HID
TH-E-R-UPD-1-SL-2-X-V	

THOR-E Series Upgrade Modules:

TH-E-L-UPD-2HID	Upgrade Module with 2x USB-HID
TH-E-R-UPD-2HID	
TH-E-L-UPD-A232	Upgrade Module with Analog Audio / Serial (bidirectional)
TH-E-R-UPD-A232	
TH-E-L-UPD-DA	Upgrade Module with Digital Audio (unidirectional)
TH-E-R-UPD-DA	
TH-E-L-UPD-2HID-A232	Upgrade Module with Analog Audio / Serial (bidirectional) and 2x USB-HID
TH-E-R-UPD-2HID-A232	
TH-E-L-UPD-2HID-DA	Upgrade Module with Digital Audio (unidirectional) and 2x USB-HID
TH-E-R-UPD-2HID-DA	
TH-E-L-UPD-DA-DA	Upgrade Module with Digital Audio (bidirectional)
TH-E-R-UPD-DA-DA	
TH-E-L-UPD-A232-DA	Upgrade Module with Digital Audio (unidirectional) and Analog Audio / Serial (bidirectional)
TH-E-R-UPD-A232-DA	

THOR-E Series USB 2.0 Modules:

TH-E-L-UPD-4USB-X	USB 2.0 Module with 4x USB 2.0
TH-E-R-UPD-4USB-X	

This page intentionally left blank.

This page intentionally left blank.

7.4 Serial Control

7.4.1 Command Structure

Command

<STX>, <command byte (CMD)>, [data bytes (D0...DN)], <ETX>

[] = Optional elements

Response

<ACK> , [<ECHO>]

[] = Optional elements

<ECHO> reports the switcher sequences solicited by a command and thus the new switching status of the switcher. The echo can be used to update user applications and to operate several switchers in parallel.

Parameter Description

Command byte: In the range 0x40 to 0x6F
(see list of allowed commands below)

Data bytes: **a) Binary data:** In order to prevent control statements of control commands being transferred during the transmission of binary data, the data is divided into low-nibble and high-nibble. The data is distributed to the low-nibbles of two bytes and provided with an offset by 0x60 e.g. 0x1F
=> 0x61 + 0x6F

b) 7bit data: (0x0 to 0x7F) are provided with an offset by 0x80, e.g. 0000011 => 0x83

c) ASCII data => 0x20 to 0x7E are transmitted unencrypted.

(Special) characters:	ACK	0x06
	NAK	0x15
	STX	0x02
	ETX	0x03
	CR	0x0D
	ESC	0x1B

THOR- Large Switch

HTAB 0x09
 LF 0x0A

Sequence of a Data Communication

THOR-SLG Switcher	Control CPU
	Sending of a command
Acquiring of a command, processing of a command, blocking of further commands	
a) Errors occurred: <NAK> b) No errors: <ACK><ECHO> c) Optional: Reply command with data	
	a) Repeat command b) Next command c) Receive and process the repeat command



The serial interface can be blocked while OSD has been opened.

7.4.2 Commands and Switching Functions

Console Receipt ('Video Signal')

#	Function	Command	Reply
1	CON# output signal from CPU#	STX, 0x47, <CON#>, <CPU#>, ETX	ACK, ECHO
2	CON# output off	STX, 0x48, <CON#>, ETX	ACK, ECHO
3	CON01...CON16 output signal from CPU#1...CPU#16 – Requires 16 CPU# – 0x80 "not output"	STX, 0x49, <CPU#1>, <CPU#2>, ..., <CPU#16>, ETX	ACK, ECHO
4	Output off for all CON ports	STX, 0x4A, ETX	ACK, ECHO

CPU Receipt ('K/M Return Channel')

#	Function	Command	Reply
5	CPU# output signal from CON#	STX, 0x4B, <CPU#>, <CON#>, ETX	ACK, ECHO
6	CPU# output off	STX, 0x4C, <CPU#>, ETX	ACK, ECHO
7	CPU01...CPU32 output signal from CON#1...CON#32 <ul style="list-style-type: none"> - Requires 32 CON# - 0x80 for 'no output' 	STX, 0x4D, <CON#1>, <CON#2>, ..., <CON#32>, ETX	ACK, ECHO
8	Output off for all CPUs	STX, 0x4E, ETX	ACK, ECHO



Only 16 consoles available, at least 16x 0x80 necessary.

Bidirectional Connections

#	Function	Command	Reply
9	Establish a bidirectional connection CON# ↔ CPU#	STX, 0x4F, <CON#>, <CPU#>, ETX	ACK, ECHO
10	Disconnect CON#	STX, 0x50, <CON#>, ETX	ACK, ECHO

THOR- Large Switch

Switch Switcher

#	Function	Command	Reply
11	Set switch switcher (complete setup): <ul style="list-style-type: none"> - Requires 48 values written (at first 16 CPUs, then 32 consoles) - 0x80 for „not output“ - CON 01 - 16 output signal from CPU#1...CPU#16 (cf. command 3) - CPU01...CPU32 output signal from CON# to CON#32 (cf. command 7) 	STX, 0x51, <CPU#1>, <CPU#2>, ..., <CPU#16>, <CON#1>, <CON#2>, ..., <CON#32>, ETX	ACK, ECHO
12	Reset switch switcher	STX, 0x52, ETX	ACK
13	Report switcher (complete setup): <ul style="list-style-type: none"> - Output of 48 values - 0x80 for 'no output“ - The first 16 values describe the CON port output (cf. command 3) - The next 32 values describe the CPU output (cf. command 7) 	STX, 0x53, ETX	STX, 0x53, <CPU#1>, <CPU#2>, ..., <CPU#16>, <CON#1>, <CON#2>, ..., <CON#32>, ETX

THOR- Large Switch

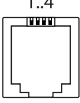


The correct assignment of consoles and CPUs has to be ensured by the user.

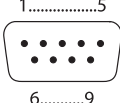
Only 16 consoles are available, at least 16x 0x80 required.

7.5 Connector Pin-outs

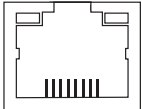
RJ10 (Serial Control)

Picture	Pin	Signal
	1	LED +
	2	LED -
	3	Dry Contact
	4	GND


D-Sub 9 (Serial)

Picture	Pin	Signal	Pin	Signal
	1	n.c.	6	DTR
	2	CTS	7	TxD
	3	RTS	8	RxD
	4	DSR	9	n.c.
	5	GND		

RJ45

Picture	Pin	Signal	Pin	Signal
	1	D1+	5	D3-
	2	D1-	6	D2-
	3	D2+	7	D4+
	4	D3+	8	D4-

Fiber SFP Type LC

Picture	Diode	Signal
	1	Data OUT
	2	Data IN

7.6 Power Supply

Voltage	100-240V~, 50-60Hz, 2A max.
Power Requirement	230 V/2000 mA - 115 V/4000 mA
Fuse	T2A, L250V
Battery	Panasonic BR1225, 3 V, 48 mAh

7.7 Environmental Conditions

Operating Temperature	41 to 113°F (5 to 45°C)
Storage Temperature	-13 to 140°F (-25 to 60°C)
Relative Humidity	Max. 80% non-condensing

7.8 Size

THOR-SLG Switcher	483 x 85 x 450 mm (19"/2HE x 18")
Shipping Box	500 x 500 x 100 mm (20" x 20" x 4")

7.9 Shipping Weight

THOR-SLG Switcher	6,0 kg (12.9 lb)
Shipping Box	8,0 kg (17.2 lb)

8 Troubleshooting

In the following chapters, support for problems with the THOR-SLG switcher is provided. This help is based in the context of a functional extender route. Please ensure, before running your extenders with the switcher that they work over a peer-to-peer connection. This can be supported by the use of a Cat X or fiber coupler. If you have problems referring to this, the manuals of the respective extenders will offer support.

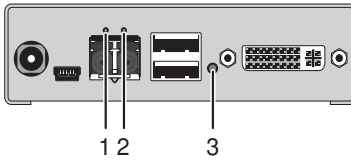
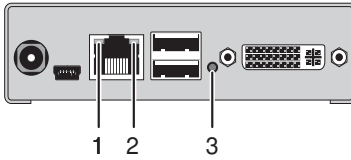
8.1 External Failure

Diagnosis	Possible Reason	Measure
Switcher cannot be started anymore.	Fuse at the standard appliance outlet.	→ Check fuse.

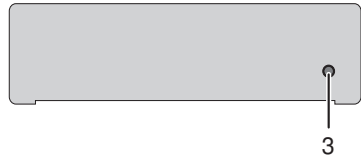
8.2 Failure at the Switcher

Diagnosis	Possible Reason	Measure
Serial control impossible or restricted use	Different Baud rate of CPU and switcher.	→ Adapt Baud rate in the switcher and in the CPU (see Chapter 5.3.1, Page 65)
Serial control via RJ45 port not possible.	Wrong network cable.	→ Use a crossover network cable
Network settings are not stored after editing.	Restart of the switcher not yet completed.	→ Do a restart.
Port definitions as USB 2.0 invalid.	Restart of the switcher not yet completed.	→ Do a restart.

8.3 Blank Screen



Rear View



Front View

Diagnosis	Possible Reason	Measure
Monitors remains dark after switching operation	Switching to a CPU Port without active Source (computer, CPU).	➔ Switching to a CPU Port with an active source (computer, CPU).
	Connection of a console with a CON port or connection of a CPU to a CPU port not established correctly.	➔ Check connections regarding CON and CPU ports at the switcher.
LED 1 on or LED 2 off	Connections CON unit, switcher and CPU unit.	➔ Check connecting cables and connectors. (No cable, cable break, CPU/CON unit offline, CPU/CON unit connected to the wrong port)

8.4 Video Interference

Diagnosis	Possible Reason	Measure
Opening the OSD not possible	No OSD jumper set	➔ Set jumper 11 on the CON unit
	CON unit connected with the wrong port (e.g. USB 2.0 port of a 1U, 2U or 3U port configuration).	➔ Switch to another Port
	No OSD card	➔ Mount OSD card

THOR- Large Switch

	Wrong Firmware on the OSD card	➔ Run a firmware update of the OSD card according to the extenders that are used in combination with the THOR-SLG.
Incorrect video display	Cable connection disturbed	➔ Check the connection, length and quality of the interconnect cable to the units.

9 Technical Support

Prior to contacting support please ensure you have read this manual, and then installed and set-up your KVM Extender as recommended.

9.1 Support Checklist

To efficiently handle your request it is necessary to complete our checklist for support and problem cases ([Support](#)). Keep the following information available before you call:

Company, name, phone number and email

Type and serial number of the device (see bottom of device)

Date and number of sales receipt, name of dealer if necessary

Issue date of the existing manual

Nature, circumstances and duration of the problem

Involved components (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

9.2 Shipping Checklist

1. To return your device, contact your dealer to obtain a RMA number (Return-Material-Authorization).
2. Package your devices carefully, preferably using the original box. Add all pieces which you received originally.
3. Note your RMA number visibly on your shipment.



Devices that are sent in without a RMA number cannot be accepted. The shipment will be sent back without being opened, postage unpaid.

10 Regulatory and Standards Compliance

10.1 CE Declaration of Conformity

The products listed in this manual in the form as delivered comply with the provisions of the following European Directives:

2004/108/EG Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility



CE Marking 2009

The products comply with the following harmonized standards for Information Technology Equipment:

EN 55022:2006 + A1:2007 (Class A)

EN 55024:1998 + A1:2001+ A2:2003

This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety instructions and installation guidelines noted in this manual shall be considered in detail. Compliance with the specifications for cable lengths and types is mandatory.



Use in a Domestic Environment

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

10.2 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 international safety standards.

10.3 WEEE

The manufacturer complies with the EC Directive 2002/96/EG on the prevention of waste electrical and electronic equipment (WEEE).

The device labels carry a respective marking.

10.4 RoHS

This device complies with the EC Directive 2002/95/EG on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS).

The device labels carry a respective marking.

11 Glossary

The following terms are commonly used in this guide or in video and KVM technology:

Term	Explanation
Cat X	Any Cat 5e (Cat 6, Cat 7) cable
CGA	The Color Graphics Adapter (CGA) is an old analog graphic standard with up to 16 displayable colors and a maximum resolution of 640x400 pixels.
Component Video	The Component Video (YPbPr) is a high-quality video standard that consists of three independently and separately transmittable video signals, the luminance signal and two color difference signals.
Composite Video	The Composite Video is also called FBAS and it is part of the PAL TV standard.
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)
CPU Unit	Component of a KVM Extender or Media Extender to connect to a source (computer, CPU)
DDC	The Display Data Channel (DDC) is a serial communication interface between monitor and source (computer, CPU). It allows a data exchange via monitor cable and an automatic installation and configuration of a monitor driver by the operating system.
Dual Access	A system to operate a source (computer, CPU) from two consoles
Dual-Head	A system with two video connections
Dual-Link	A DVI-D interface for resolutions up to 2560x2048 by signal transmission of up to 330 MPixel/s (24-bit)
DVI	Digital video standard, introduced by the Digital Display Working Group (http://www.ddwg.org). Single Link and Dual Link standard are distinguished. The signals have TMDS level.
DVI-I	A combined signal (digital and analog) that allows running a VGA monitor at a DVI-I port – in contrast to DVI-D (see DVI).
Fiber	Single-mode or multi-mode fiber cables

THOR- Large Switch

Term	Explanation
EGA	The Enhanced Graphics Adapter (EGA) is an old analog graphic standard, introduced by IBM in 1984. A D-Sub 9 connector is used for connection.
FBAS	The analog color video baseband signal (FBAS) is also called Composite Video and it is part of the PAL TV standard.
Console	Keyboard, mouse and monitor
KVM	Keyboard, video and mouse
Mini-XLR	Industrial standard for electrical plug connections (3 pole) for the transmission of digital audio and control signals
Multi-mode	62.5 μ multi-mode fiber cable or 50 μ multi-mode fiber cable
OSD	The On-Screen-Display is used to display information or to operate a device.
Quad-Head	A system with four video connections
RCA (Cinch)	A not standardized plug connection for transmission of electrical audio and video signals, especially with coaxial cables
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 Link	A DVI-D interface for resolutions up to 1920x1200 by signal transmission of up to 165 MPixel/s (24-bit). Alternative frequencies are Full HD (1080p), 2K HD (2048x1080) and 2048x1152.
Single-mode	9 μ single-mode fiber cable
S-Video (Y/C)	The S-Video (Y/C) is a video format transmitting luminance and chrominance signals separately. Thereby it has a higher quality standard than FBAS.
TOSLINK	Standardized fiber connection system for digital transmission of audio signals (F05 plug connection)
Triple-Head	A system with three video connections

THOR- Large Switch

Term	Explanation
USB-HID	<p>USB-HID devices (Human Interface Device) allow for data input.</p> <p>There is no need for a special driver during installation; "New USB-HID device found" is reported.</p> <p>Typical HID devices include keyboards, mice, graphics tablets and touch screens. Storage, video and audio devices are not HID.</p>
VGA	<p>Video Graphics Array (VGA) is a computer graphics standard with a typical resolution of 640x480 pixels and up to 262,144 colors. It can be seen as a follower of the graphics standards MDA, CGA and EGA.</p>

12 Switcher specific Glossary

Term	Explanation
Allow Sharing	Switcher function that allows switching from the own console to any CPU with video.
Auto Connect	Switcher function that allows an automatic connection establishment between the own console and a random CPU that is available.
Auto Logout	Switcher function that describes the duration of inactivity after the user has been logged out from the OSD at this console.
CON Timeout	Switcher function that allows console to disconnect from the connected CPU automatically after a predefined time.
Crosspoint Mode	Free switching assignment of inputs and outputs, whereas the video signal can be connected as often as required and the K/M signal for only one time.
Follow-Me	Duplicating of the own display content to further consoles. If you switch to another CPU, the linked consoles will follow.
Force Connect	Switcher 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.
Force Disconnect	Switcher 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.
Java Tool	Java based control and configuration tool for the THOR-SLG switcher.
Keyboard Connect	Switcher function that allows taking over the keyboard control of an inactive console.
KVM Auto Close	Switcher function that allows after a connection establishment with a CPU in the OSD to close it and to set up the connection immediately.
KVM Listview	Listing of all CPUs that are available for the CPU.
KVM Mode	The user can switcher with his own console to all available CPUs in the KVM mode.

THOR- Large Switch

Term	Explanation
Allow Sharing	Switcher function that allows switching from the own console to any CPU with video.
Auto Connect	Switcher function that allows an automatic connection establishment between the own console and a random CPU that is available.
Auto Logout	Switcher function that describes the duration of inactivity after the user has been logged out from the OSD at this console.
CON Timeout	Switcher function that allows console to disconnect from the connected CPU automatically after a predefined time.
Macro Keys	Programmable keys that can execute a stringing together of commands to the switcher.
Mouse Connect	Switcher function that allows taking the mouse control of an inactive console.
Non-Blocking-Access	Switcher configuration where no user can be disturbed by an activity of another user.
OSD Timeout	Switcher function that describes the period of inactivity after OSD will be closed automatically.
Release Time	Switcher function that allows a console that is connected with the same CPU to release the K/M control after a predefined time.
Tie-Line	Communication connection to and between extension modules in a network environment.

This page intentionally left blank.