



**NETWORK
TECHNOLOGIES
INCORPORATED**

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SPLITMUX® Series

SPLITMUX-DVI-4

Quad Screen Video Splitter

Installation and Operation Manual



TRADEMARK

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CHANGES

The material in this guide is for information only and is subject to change without notice. Network Technologies Inc reserves the right to make changes in the product design without reservation and without notification to its users.

FIRMWARE VERSION

3.02

WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network Technologies Inc at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** or visit our website at <http://www.networktechinc.com> for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.

SPLITMUX-DVI-4 3.02 Release Notes

Correction for display of serial number in the OSD.

SPLITMUX-DVI-4 3.00 Release Notes

Transparent USB 2.0 Matrix

The transparent USB 2.0 Matrix allows switching of up to four USB devices to the connected hosts.

New improved Video ICs

The new video processor of V-Switch quad II provides best image quality in Quad, PiP, Dual and Fullscreen mode. New interpolation filters guarantee brilliant image quality when scaling.

New equalizers allow connecting sources and console at up to 20 meters distance.

Improved Input Video Mode Support

New DVI receivers support *any* resolution up to 1920x1200@60 Hz at digital inputs following the VESA or CEA standards.

Support for 1920x1200 and 1920x1080 at 50 Hz and 60 Hz as analog input modes.

1920x1200 and 1920x1080 at 50 Hz and 60 Hz are now supported as analog input modes.

Improved EDID Management

Input EDIDs can now be programmed comfortably. The content of monitor EDIDS can be copied into the input EDIDs.

SPLITMUX-DVI-4 - 2.1 Release Notes

SPLITMUX firmware version 2.1 contains new and improved features, including smooth transitions, manual input video mode selection, and automatic hiding of notifications like “no signal” to prevent burn-in.

New Features in 2.1

Fade through black

An elegant visual effect for presentations: When switching channels or display modes, the previous image fades to black, and the next image is faded in smoothly. Fade through black can be enabled or disabled by the user, and has five speed settings.

Screen protection

Some servers switch off their video output after a period of inactivity. To prevent burn-in, notifications such as “no signal” are hidden after 10 seconds.

Manual settings for input video mode

To enable users to ensure they always have the current input video mode, SPLITMUX now supports manual settings for modes that are difficult to distinguish automatically.

Improved video mode detection

Automatic input and output mode detection have been improved.

SPLITMUX-DVI-4- 1.40a Release Notes

SPLITMUX Firmware version 1.40a features improved keyboard compatibility and includes minor features and bug fixes.

New Features in 1.40a

Improved keyboard compatibility

Version 1.40a adds compatibility with programmable keyboards that can send custom key combinations. Now you can efficiently operate a single unit as well as multiple cascaded units with the press of a button.

Raw EDID data

Using the CONSOLE->EDID menu, it is now possible to view the raw EDID data of the connected monitor to facilitate troubleshooting.

New resolution

HDTV 720p (1280x720) is now accepted both as an analog signal as well as a digital signal. Previous firmware versions only support digital HDTV resolutions.

More on Cascading

By cascading the Splitmux-DVI-4, you can connect up to 16 computers, and show them simultaneously on a single display. Please see drawings at the end of this manual. They are for 8 computers on a single console (or computers with multiple outputs).

NOTE: Instead of using a standard keyboard you can use a key pad (like X-key) and program any command behind a single key. This allows switching comfortably between display modes and active channels.

LIMITATION: Please remember the issue with the lack of resolution of displays and the real time video issue. There will be no real time video in each of the small quadrants even if you would lower each computers resolution to 800x600 and rise the refresh rate to 180Hz.. The reason is that the outputs of the “slave” Splitmux-DVI-4unit will only support up to 80Hz. This means about 10-12 frames per second for each of the up to 16 quadrants.

SPLITMUX-DVI-4- 1.40 Release Notes

Touch Screen Support

SPLITMUX version 1.40 adds touch screen support to allow the user to operate four computers with a touch screen. The initial release includes support for touch screens from the following manufacturers:

- **elo AccuTouch 2116 Controller Series**
includes monitor models 1215L, 1229L, 1515L, 1522L, 1528L Medical, 1529L, 1537L, 1715L, 1729L, 1739L, 1915L, 1928L, 1928L Medical, 1939L, 2020L
- **TSharc Octopus Controller**
widely used, including in touch screens manufactured by 3M, Microtouch, TrollTouch, The Bergquist Company

Version 1.40b and higher:

- **2701 Controller Series** (IntelliTouch, SecureTouch)

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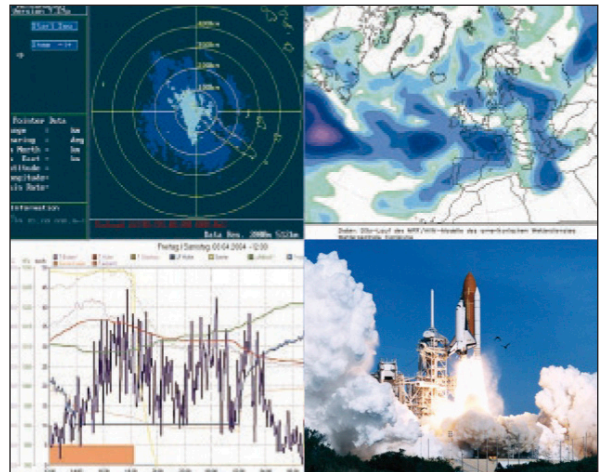
FEATURES

Thank you for choosing SPLITMUX-DVI-4 from NTI. This product represents the latest state-of-the-art technology in keyboard-video-mouse (KVM) switching. The SPLITMUX-DVI-4's key advantage over conventional KVM switches is that it allows you to simultaneously display and administer 4 computers on a single console. It combines key features of a high-end KVM switch and a digital multiviewer scaling and converting videos at both inputs and output.

DISPLAY MODES

QUAD MODE ►

In this mode, the screen is split into four fields of equal size each displaying the entire screen contents of one source.



◀ FULLSCREEN MODE

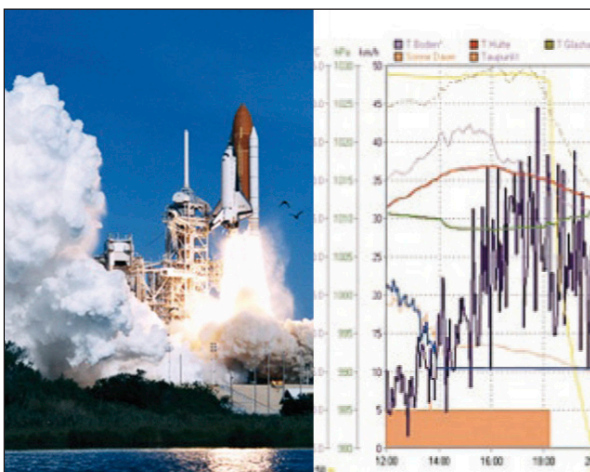
In Fullscreen mode, one of the four sources is displayed in full screen size and maximum resolution.



PiP MODE (Picture in Picture) ►

Using this feature, the full screen display of one of the four video sources is accompanied by one to three small images (thumbnails) of the other video sources which are displayed on the right hand side of the screen allowing simultaneous monitoring.

All PiP display modes are described in chapter OSD – MODE – PIP (pages 27ff).



◀ DUAL MODE

In Dual mode the left halves of the fullscreen images from two video sources are displayed side by side at full size and at full vertical resolution. For a version of Dual mode with two images side by side at full size (entire screen content, not only left halves) see page 22.

INTRODUCTION

FEATURES

DVI & VGA

SPLITMUX-DVI-4 supports resolutions of up to 1920 x 1200 @ 60 Hz for both DVI and VGA.

Any combination of VGA and DVI at all standard resolutions is possible at inputs and output. Analog video input is converted to digital. If an analog display is connected, SPLITMUX-DVI-4 converts the digital signal to analog at the output. Internally, SPLITMUX-DVI-4 processes video **purely digital** guaranteeing best digital image quality.

USB & PS/2 for keyboard / mouse / touch screen / trackball

Use either PS/2 or USB ports on the computer to connect keyboard and mouse to SPLITMUX-DVI-4. It supports any combination.

To connect the console, SPLITMUX-DVI-4 features two USB ports for mouse, keyboard, touchscreen or trackball connection.

Transparent USB 2.0

SPLITMUX-DVI-4 features a transparent high speed USB 2.0 matrix: USB 2.0 devices (e.g. printer, external memory, memory stick, webcam, 3D mouse, finger printer) can be switched to computers connected.

Operation

There are six ways to operate SPLITMUX-DVI-4, switch channels, and select display modes:

1. Using the buttons on the front of the unit
2. Using configurable hotkeys
3. Using the unit's external configuration program on a remote computer
4. Via a serial port using the protocol DCP XML
5. Using mouse functions (Hotmouse)
6. Using a touch screen

The configuration of SPLITMUX-DVI-4 is effected via an On Screen Display (OSD) opened and navigated either with keyboard commands or front panel buttons or remotely via ConfDev on an external PC.

The LEDs on the front panel indicate the unit's current status.

Use the serial (RS232) port for remote control and firmware updates.

TECHNICAL SPECIFICATIONS

Casing:	Desktop or 19", black (RAL 9005)
Dimensions WxDxH:	43.6 x 23.4 x 4.4 cm
Weight:	2.9 kg
Operating controls:	Front panel: Four channel selection buttons, one Quad mode button, one PiP mode button, one Fullscreen mode button Rear panel: One Power On/Off switch, one Reset button
Indicators:	Four active channel indicator LEDs, one Quad mode LED, one PiP mode LED, one Fullscreen mode LED
Computer ports:	4 x DVI-I (analog and digital), 4 x PS/2, 4 x USB
Console ports:	1 x DVI-I, 2 x USB for keyboard and mouse
Transparent USB 2.0 ports:	4 x transparent high-speed USB 2.0
Maximum distance:	Video (DVI / VGA) up to 20 meters; keyboard / mouse up to 5 meters
Input and output resolution:	up to 1920 x 1200 @ 60 (DVI and VGA) *
EDID adjustments:	EDID at each input port customizable
Supported keyboard layouts:	German, English, French, Italian, Spanish, Japanese
Power supply:	Internal AC adapter, 100 to 240V 50/60 Hz
Power consumption:	40 watts
Operating temperature:	5 to 45°C
Storage temperature:	-10 to 60 °C
Rel. humidity:	5 to 65% non-condensing

*(at WUXGA: reduced blanking only - WUXGAr)

INTRODUCTION

SAFETY GUIDELINES

WARNING:

To avoid risk of electric shock do not open the device or remove any part of the casing. Please contact our technical support if the device requires servicing.

Please read this manual carefully before putting the device into operation.

Observe all warnings and instructions on the device and in the operation manual. Keep this user manual for future reference.

Power supply:

Only connect the device to a grounded power supply.

Installation:

Ensure that the device is disconnected from the mains before performing any installation work. Unplug the device or disconnect the power supply.

Cables:

Only use the cables supplied by NTI together with the device.
Damage resulting from the use of third-party cables is not covered by warranty.
Take care not to create tripping hazards when laying cables.

Location:

Electronic devices should never be placed on the ground between the cables.
Never obstruct any vents the device may have.
Take care to ensure adequate ventilation.

Maintenance:

This device is maintenance-free.
Never open the casing.
No settings can be made inside the device.

HARDWARE

FRONT PANEL

The SPLITMUX-DVI-4 front panel has seven status indicators (LEDs) and seven buttons.

Buttons 1 to 4 switch between channels, LEDs 1 to 4 indicate the status of the individual channels. **Full**, **Quad** and **PiP** buttons and LEDs are used to switch and indicate display modes and other functions, e.g. open the OSD menu etc.



Indicators



- LEDs **1 to 4**: When these LEDs light up **green**, the corresponding channel (computer port) has been selected and is available for keyboard and mouse access. When a LED flashes green, there is no signal at the video input of the selected channel.
An LED lights up **yellow** when there is a signal at the video input, but another channel has been selected.
When the LED is **dark**, there is no signal at the video input and another channel has been selected.
- LED **Full**: This LED lights up **green** when the Fullscreen mode is selected.
- LED **Quad**: When this LED lights up **green**, the unit is in Quad mode.
- LED **PiP**: This LED lights up **green** when the PiP function is enabled.

Note:

While the OSD menu is open, the active computer can still be operated by mouse.

INTRODUCTION

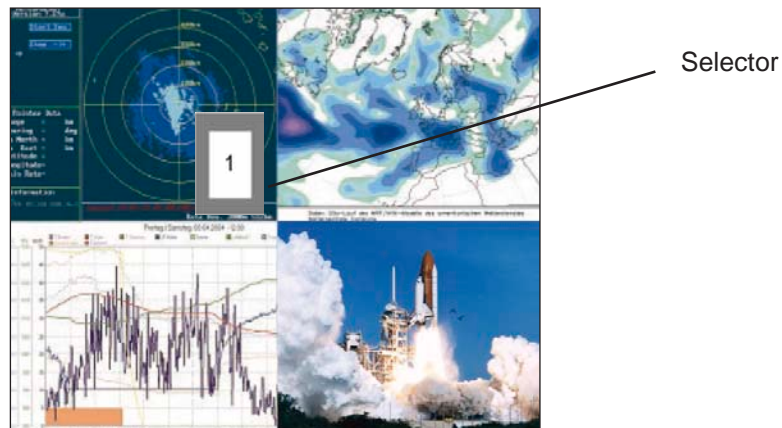
HARDWARE

FRONT PANEL (continued)

Push buttons



- Buttons 1 to 4: These buttons activate the corresponding channel (computer port).
- Full button: Press to chose the Fullscreen mode.
- Quad button: Press this button to switch from Fullscreen mode to Quad mode.
- PiP button: Press this button to enable the PiP (picture in picture) function.



You can also select the active channel using hotkey and the arrow keys. The selection window closes upon expiry of the channel selection timeout period. Channel selection timeout is configured in OSD under SYSTEM ► QUAD MODE. Use the “Time out of channel selection:” menu item to define how long the selector is to be displayed.

HARDWARE

FRONT PANEL (continued)

Additional button functions

Setting output resolution to safe display modes

To set output resolution to 640 x 480 pixel @ 60 Hz simultaneously press buttons **1** and **2** for longer than 1 second. Use of this feature is recommended when you cannot use the OSD (on screen display dark or illegible) because the output resolution setting is not supported by the monitor. After setting the correct output resolution (640x480@60), you can choose a resolution the connected monitor supports in the OSD.

Alternatively, hold buttons 1 and 2 again to cycle through the following video modes: VGA 640x480@60, SVGA 800x600@60, XGA 1024x768@60, UXGA 1600x1200@60, and the preferred video resolution found in the monitor EDID.

LEDs 1 to 4 and FULL indicate the selected mode.



Resolution VGA, SVGA, XGA and UXGA

Hardware Reset

Press buttons **3** and **4** simultaneously for longer than 4 seconds in order to reset the unit completely (video + mouse + keyboard) (see also page 8: Reset button)



Hardware Reset

Note:
Due to the “keep alive” function of keyboard and mouse, turning power off/on resets **only the video circuit**.

Calling up OSD

Simultaneously press **Quad** and **PiP** buttons for longer than one second to open the OSD menu.



OSD Menu

Note:
While the OSD menu is open, the active computer can still be operated by mouse.

INTRODUCTION

HARDWARE

REAR PANEL

The rear panel of SPLITMUX-DVI-4 features four input source/computer ports, the console port (KVM), the serial RS232 port, four transparent high-speed USB 2.0 device ports, the power connection, and a reset button.



- 1 - Power
- 2 - Reset
- 3 - Monitor / DVI-I output
- 4 - Four DVI-I inputs
- 5 - RS232 / RJ45 port
- 6 - USB for keyboard, mouse, touch or trackball (console)
- 7 - USB or PS2 keyboard and mouse (computer)
- 8 - Four transparent high-speed USB 2.0 ports

1 - Power

Plug for enclosed power cable.

2 - Reset

Press this button, using a suitable pointed object (e.g. ballpoint pen), for an entire reset of SPLITMUX-DVI-4.

Note:

Due to the "keep alive" function of keyboard and mouse, turning power off/on resets **only the video circuit**.

If you experience problems with mouse or keyboard, we therefore recommend executing a complete RESET by either pressing the RESET button on the rear panel or by simultaneously pressing buttons 3 and 4 on the front panel for longer than 4 seconds (see page 7 – Hardware Reset).

3 - Monitor / DVI-I output

Connect your analog or digital display to this DVI-I port.

HARDWARE

REAR PANEL (continued)

4 - DVI-I inputs

Connect the analog or digital video signal of your up to four sources to these four DVI-I ports.

5. - RS 232 / RJ45 port

Connect external serial control devices to this RJ-45 port to operate SPLITMUX-DVI-4 remotely, e.g. connect to this port to access the OSD menu from a computer using the ConfDev device configuration tool (see page 67).

The serial RS 232 port is also used for firmware updates (see page 69).

6 - USB for keyboard, mouse, touch or trackball (console)

Two USB ports allow connecting keyboard, mouse, touch screen or trackball.

Using a USB-Hub, you can connect **multiple** keyboards and mice. They will work in share mode with an inactivity timeout of 3 seconds.

7 - USB or PS2 keyboard and mouse (computer)

Each computer source can be connected with PS/2 or USB-B for keyboard and mouse.

8 - Four transparent high-speed USB 2.0 ports

USB devices (printer, memory stick, finger printer, 3D mouse) are connected to the four transparent USB ports. This transparent USB 2.0 matrix switches USB 2.0 peripherals to computer sources connected to SPLITMUX-DVI-4.

INSTALLATION

INSTALLATION

SPLITMUX-DVI-4 is best located as close as possible to the sources / computers to reduce the length of cables. By default, SPLITMUX-DVI-4 is delivered as desktop version. Using the rack mount kit supplied, it may also be mounted in a 19" rack. See deliverables page 76.

Keyboard, monitor, mouse (console) and USB devices are connected to SPLITMUX-DVI-4 by means of the corresponding cables (DVI, USB or PS/2).

KVM extenders allow you to work remotely via CAT5, fiber optic or Ethernet connection.

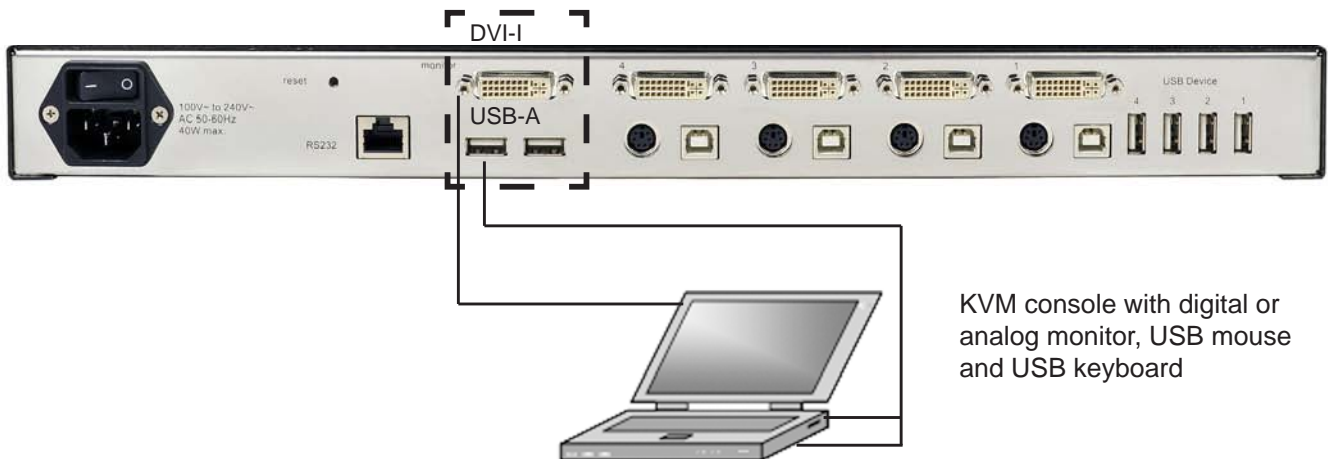


CONNECTING UNIT TO POWER

- Plug the power cable into the power plug located on the rear panel of SPLITMUX-DVI-4, but do not turn power on yet.

CONNECTING CONSOLE (MONITOR, KEYBOARD, MOUSE, TOUCH SCREEN, TRACKBALL)

- Connect your monitor to the monitor port of SPLITMUX-DVI-4 via VGA-DVI cable (analog) or DVI cable (digital) up to 20 meters. For greater distances use a DVI or VGA extender.
- Connect your USB mouse and keyboard to the USB-A ports on the console up to 5 meters. For greater distances use a KVM or USB extender.
- PS/2 mouse and keyboard can be connected to SPLITMUX-DVI-4 using a PS/2-USB adaptor.
- Connect your touchscreen to the DVI-I port and the USB-A port (for calibration see page 36)



Note:

Maximum cable length for video (DVI / VGA) is up to 20 meters. Maximum cable length for USB / PS2 keyboard and mouse is up to 5 meters. For greater distances SPLITMUX-DVI-4 supports most KVM extenders, video (DVI / VGA) extenders, and USB extenders.

INSTALLATION

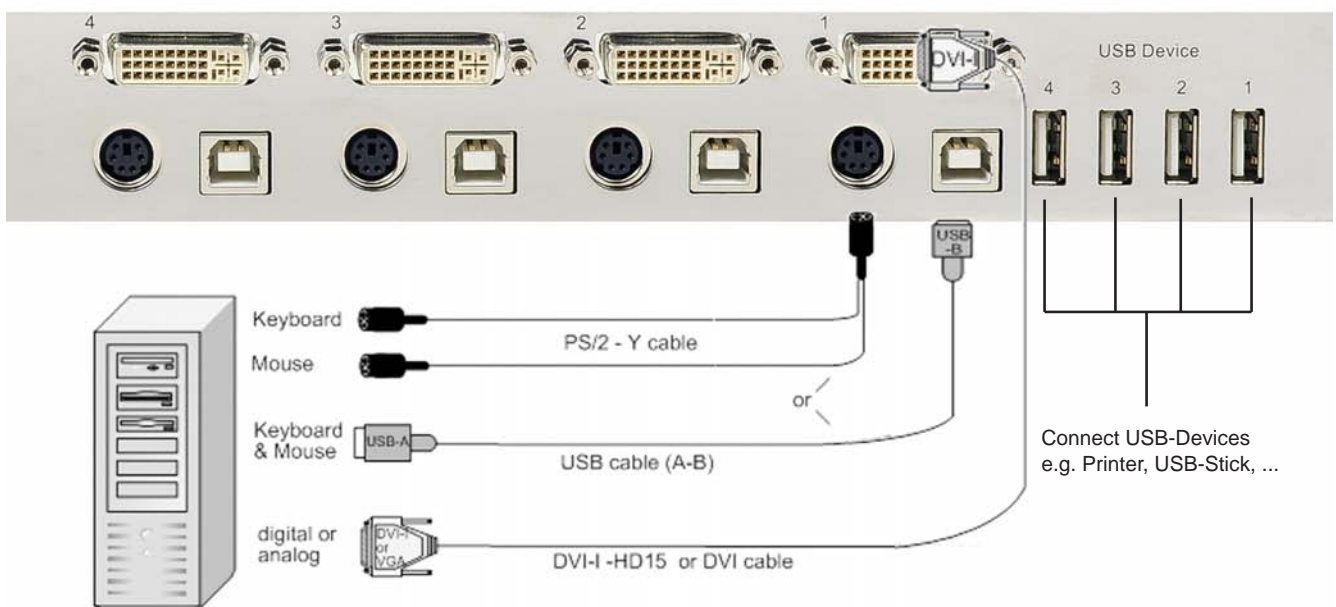
CONNECTING SOURCES / COMPUTERS

- Switch off the computer and disconnect keyboard, monitor and mouse.
- Connect keyboard and mouse to the computer ports either with a single USB cable or via the PS/2 interface (use the Y cable) up to 5 meters. For greater distances use a KVM or USB extender.
- To connect an analog video / computer source (VGA) to SPLITMUX-DVI-4, use a VGA-DVI cable. Digital video sources are connected via a DVI cable up to 20 meters. For greater distances use a DVI or VGA extender.

CONNECTING USB DEVICES

Connect your USB device to one of the four transparent USB ports to use it with computers connected to SPLITMUX-DVI-4. It supports transparent USB devices such as printer, external memory, 3D mouse, and finger printer.

(Configuration see page 50)

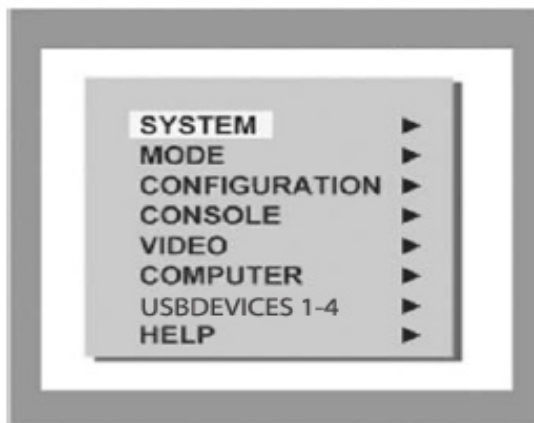


POWERING UP THE SYSTEM

- Switch on SPLITMUX-DVI-4 with the power switch on the rear panel. All front panel LEDs light up briefly indicating that SPLITMUX-DVI-4 is ready for operation. SPLITMUX-DVI-4 is now in Quad mode (default).
- Power up all connected computers. SPLITMUX-DVI-4 recognizes all input video sources automatically and displays them on your monitor screen.
- To select another display mode, use the relevant keyboard commands (see page 65) or buttons on the front panel (page 6).

ON SCREEN DISPLAY

OSD - OVERVIEW

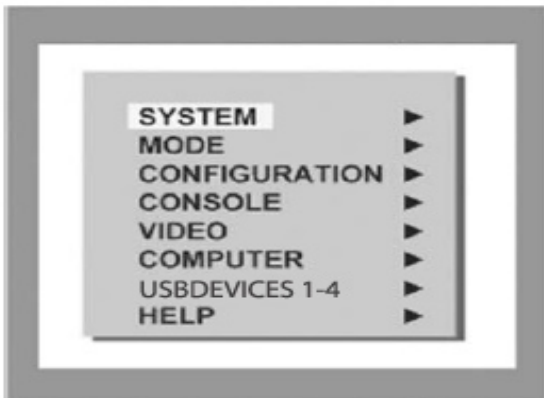


SYSTEM	HOTKEY HOTMOUSE QUAD MODE OSD POSITION OSD LANGUAGE SECURITY TEST PATTERN DISABLE CHANNEL CONTROL	Multiple Hotkey / Double Click Hotkey Hotmouse Recognition, Hotmouse Timeout Channel Selection Timeout Position of OSD window German / English / Spanish Set security level Crosshairs – Color gradient - Rhombus - Rectangle – Stripes Deactivate unused channels Device control via DCP-XML protocol (RS232)
MODE	PIP (picture in picture) START	Size, zoom, position and display modes Set start configuration
CONFIGURATION	BACKUP RECALL FACTORY RESET	Save configuration settings Restore last saved configuration Reset to factory default settings
CONSOLE	VIDEO OUTPUT KEYBOARD TOUCHSCREEN FADE MULTI MONITOR EDID	Video resolution and frequency Keyboard layout Calibration / Mouse key emulation / Enlarge on touch Smooth transitions Assign mouse/keyboard to video Read and display EDID data of monitor
VIDEO	INPUT STATUS DVI / VGA BRIGHTNESS CONTRAST HORIZ POSITION VERT POSITION SCREEN WIDTH PHASE FORMAT	Display computers' video input resolutions Setting: DVI - VGA – VGA/DVI – DVI/VGA Set brightness of analog input signal Set contrast of analog input signal Horizontal screen position Vertical screen position Set screen width of analog input signal Adjust phase of analog input signal Fit input format to screen
COMPUTER	KEYBOARD MOUSE RESET PS/2 EDID / DDC	Display type of keyboard (PC1, PC2, PC3 or USB) Display type of mouse (PS/2, PS/2 Wheel or USB) Set USB mouse positioning (absolute / relative) Reset PS/2 mouse and keyboard Program input EDID
USB DEVICE 1-4	USB PORT STATUS CHANGE	Shows USB 2.0 matrix status Switch to / Switching mode / Device name
HELP	HOTKEY INFO CONTACT	List of keyboard commands Revision level – firmware / hardware Contact information

OSD - MAIN MENU WINDOW

There are three ways to open the OSD main menu (figure):

- use keyboard command „hotkey“ + „O“ (see Annex pages 65f)
 - simultaneously press front panel buttons „Quad“ + „PiP“ for longer than one second
 - remotely open the OSD via ConfDev program on an external PC with serial connection (see Annex pages 67f)
- The main menu pops up in the center of the screen (on top of the video image).



Main Menu



OSD Start

OSD - NAVIGATION

Using the On Screen Display is simple and easy. To navigate either use the buttons on the front panel or your keyboard.

Navigation with keyboard

To navigate from one field to the next in the OSD menu use the UP and DOWN arrow keys or TAB/SHIFT-TAB keys. Use the LEFT and RIGHT arrow or + (PLUS) and – (MINUS) keys to change the value in the current field. Press ENTER to select a menu item.

Press ESC to return to the previous window (higher menu level) or exit the OSD. Changes in parameters are saved automatically.

Navigation using the buttons on the front panel



Corresponding keys on console keyboard

Navigation using the buttons on the front panel is analogous to using the console keyboard. Buttons **1** and **2** correspond to the UP and DOWN arrow keys and buttons **3** and **4** to the LEFT and RIGHT arrow keys or +/- keys. Confirm your entry by pressing the **PiP / select** button.

Press the **Quad / exit** button to return to the previous page (higher menu level) or exit the OSD. Changed settings are saved automatically.

Note:

Keyboard commands are possible while the OSD window is open.

To activate hotkey commands, use the CTRL key instead of the currently set hotkey (page 65f).

ON SCREEN DISPLAY

OSD - SYSTEM - HOTKEY

HOTKEY

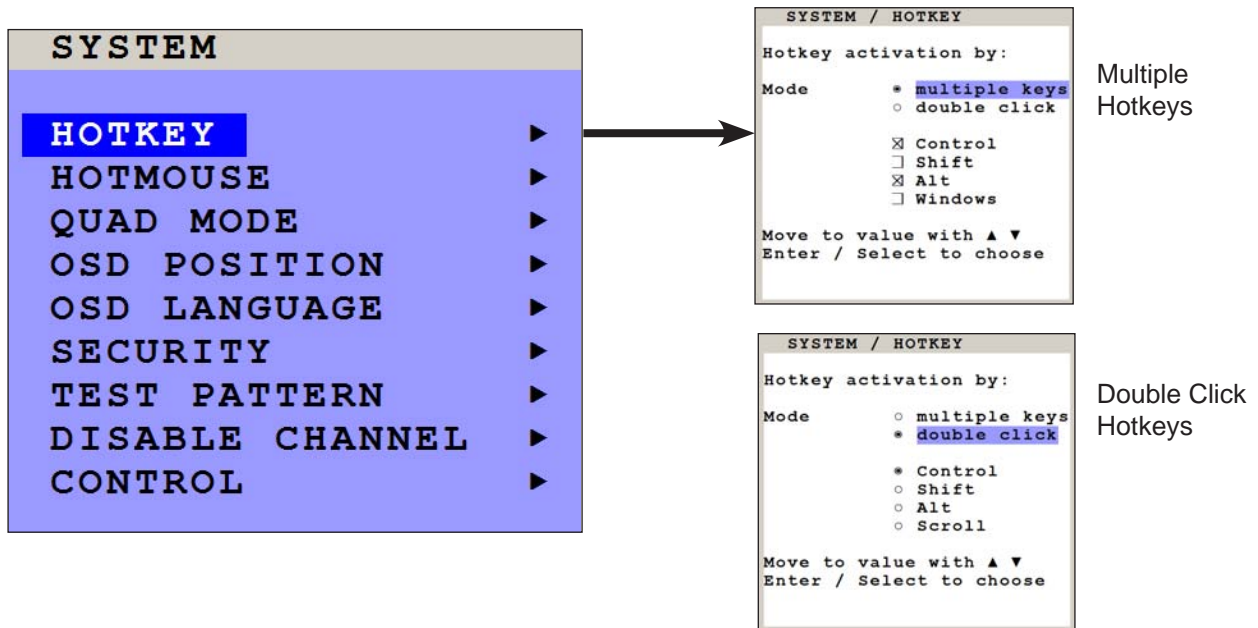
Use the arrow keys to navigate in the SYSTEM menu to the entry HOTKEY and press the ENTER/SELECT key to open the HOTKEY window.

Two different hotkey modes are available:

- For multiple hotkey commands you can define one to four keys which are pressed simultaneously to enter the command mode. Selectable keys are: STRG, SHIFT, ALT and WINDOWS.

- For double click hotkey commands you can choose one key, which is double clicked to enter the command mode. Selectable keys are: STRG, SHIFT, ALT and SCROLL.

To change the hotkey mode or select another hotkey, navigate with the TAB or ARROW UP/DOWN keys to the respective field and use the ARROW LEFT/RIGHT or the +/- keys to change the setting.



The command mode is indicated by LED flashing on the console keyboard.

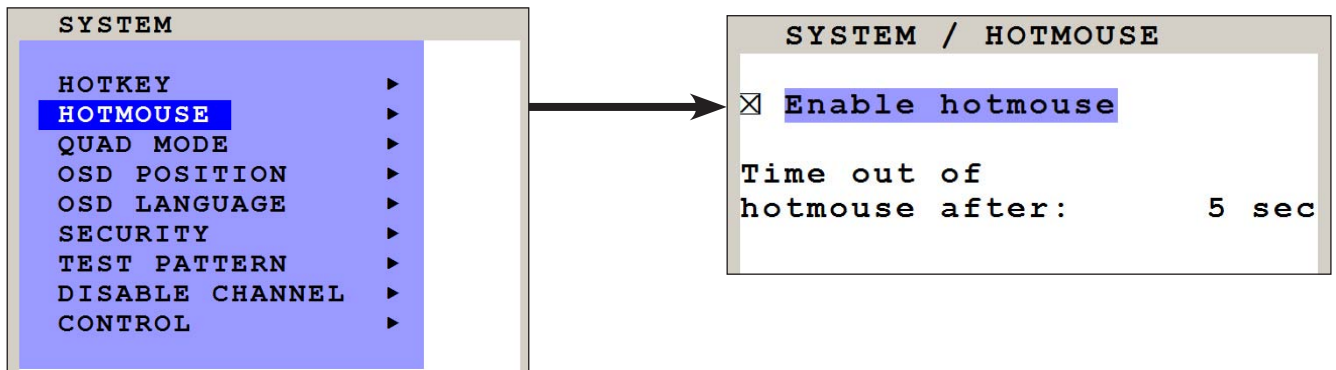
Default setting: Multiple Hotkey: CTRL + ALT

Note:

For a list of hotkeys to operate SPLITMUX-DVI-4 see Annex page 65f.

OSD - SYSTEM - HOTMOUSE**HOTMOUSE FUNCTION**

Use the arrow keys to navigate in the SYSTEM menu to the entry HOTMOUSE and press ENTER/SELECT to open the HOTMOUSE window.



Hotmouse is an exclusive function that comes with NTI SPLITMUX-DVI-4. It works with your standard mouse or trackball.

To activate Hotmouse operation, navigate to "Enable Hotmouse" and change the setting to "Yes".

There are two modes of Hotmouse operation: **Hotmouse Cursor** and **Hotmouse Menu**.

While **Hotmouse Cursor** supports only a limited set of operations, **Hotmouse Menu** allows execution of all switch operations and PiP settings.

While the Hotmouse function is activated, the active computer can still be operated by keyboard.

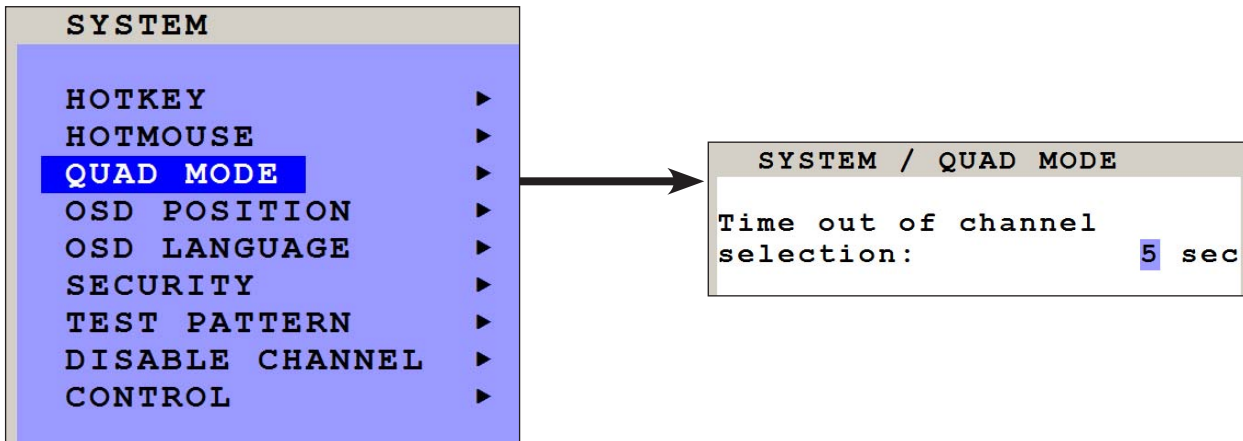
For a detailed description of Hotmouse, Hotmouse functionalities, and Hotmouse menu please see chapter HOTMOUSE on pages 54ff.

ON SCREEN DISPLAY

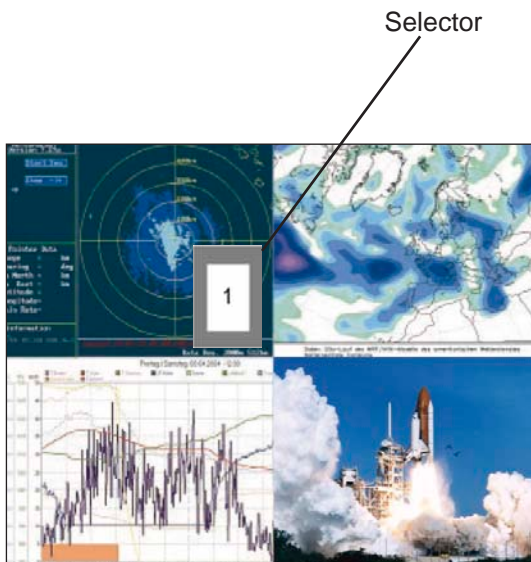
OSD - SYSTEM - QUAD MODE

QUAD MODE

Use arrow keys to navigate in the SYSTEM menu to the entry QUAD MODE and press ENTER/SELECT to open the QUAD MODE window.



Channel selection timeout defines the period (1 to 30 seconds) after which the selector will close automatically. Default setting is 5 seconds.



In Quad mode, use **hotkey 'Q'** to open the selector. The selector indicates the active channel (mouse and keyboard enabled). Alternatively, press front button „Quad”.

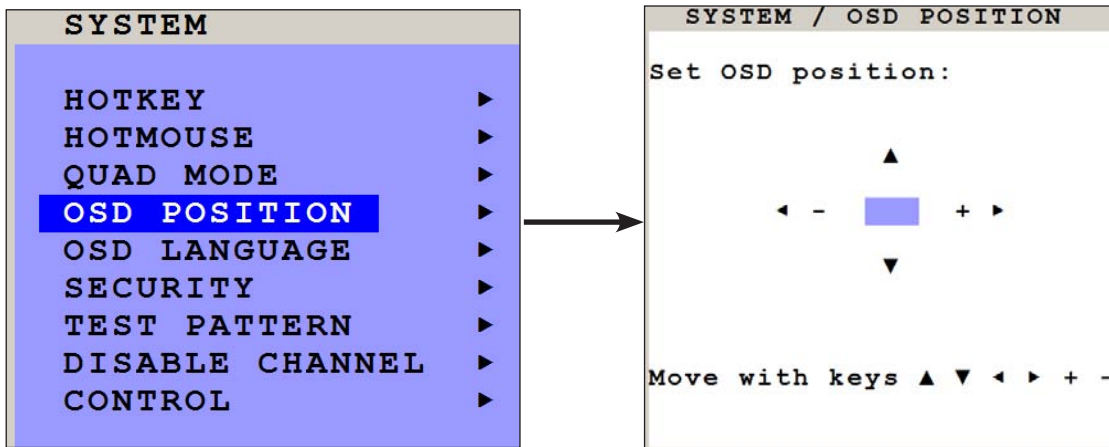
Press **hotkey + arrow key** to switch the selector (active channel) from one channel to the next.

After expiry of the selector timeout, the selector closes.

OSD - SYSTEM - OSD POSITION / OSD LANGUAGE

OSD POSITION

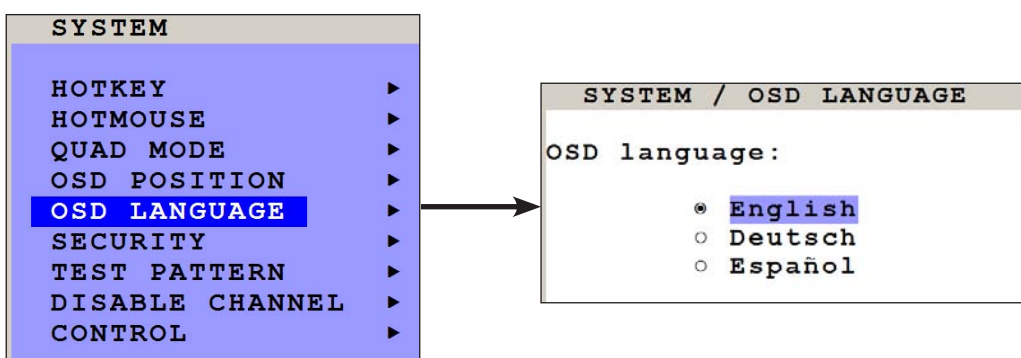
Use arrow keys to navigate in the SYSTEM menu to the entry OSD POSITION and press ENTER/SELECT to open the OSD POSITION window.



Use this function to move the OSD window to any position on the screen.

OSD LANGUAGE

Use arrow keys to navigate in the SYSTEM menu to the entry OSD LANGUAGE and press ENTER/SELECT to open the OSD LANGUAGE window.



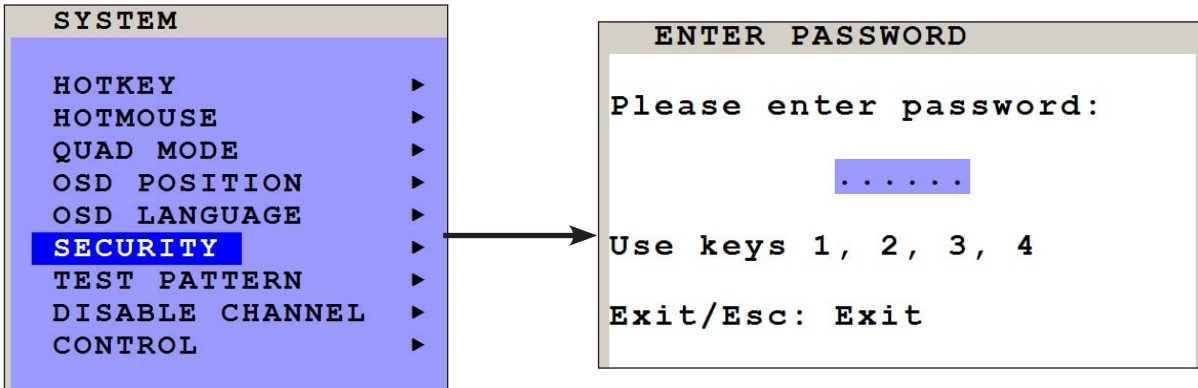
Set OSD LANGUAGE to either Deutsch (German), Español (Spanish), or English (default: English).

ON SCREEN DISPLAY

OSD - SYSTEM - SECURITY

SECURITY – SECURITY LEVELS

Use arrow keys to navigate in the SYSTEM menu to the entry SECURITY and press ENTER/SELECT to open the SECURITY window.

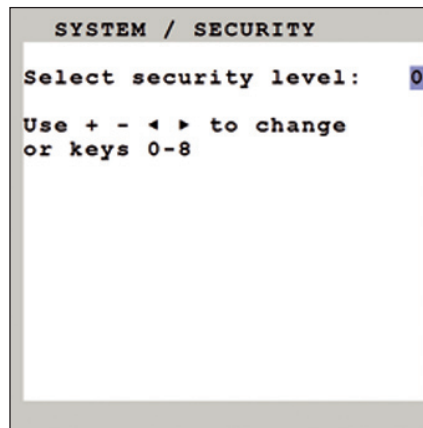


The SECURITY feature allows you to reduce the functional range of SPLITMUX-DVI-4. Eight security levels are available for this purpose.

By default, all functions are enabled (security level 0). To change the security level, you must first enter a predefined password. This six-digit password is enclosed separately with the deliverables of SPLITMUX-DVI-4 and should only be accessible to authorized persons (administrators etc.).

After entering the password on the keyboard or front panel (password is not displayed in password field), the SECURITY window opens.

Enter the desired security level (0 to 8) under "Select security level".



SECURITY LEVEL 0

This is the default setting of SPLITMUX-DVI-4. All settings are allowed and all functions are enabled.

OSD - SYSTEM - SECURITY

Note:

Before changing the security level, please set the configuration you wish to work with to the higher security level, under MODE ► START (see page 31). This configuration will be maintained when SPLITMUX-DVI-4 is reset, in case of power failure, or when power is turned off and on again.

SECURITY LEVEL 8

Security level 8 allows you to work only on one channel (computer) in a predefined display mode (Quad, Fullscreen or PiP mode). No settings can be changed, apart from the SECURITY menu item, where you can change the security level.

SYSTEM SECURITY

SECURITY LEVEL 7

As security level 8, but you can open OSD windows that only show display modes and device settings.

CONSOLE	VIDEO OUTPUT/EDID
VIDEO	INPUT STATUS
COMPUTER	KEYBOARD/MOUSE/EDID/DDC
HELP	HOTKEY/ABOUT/CONTACT

SECURITY LEVEL 6

As security level 7, with the following additional operations:

SYSTEM	CONTROL
CONSOLE	FADE

- Setting of active channel using front panel buttons, hotkeys or hotmouse
- Selecting channel with PiP button in Quad mode
- Changing the directly selectable PiP channel in PiP mode single direct

SECURITY LEVEL 5

As security level 6, with the following additional operations:

- Setting of display mode (Quad / Fullscreen / PiP) using front panel buttons, hotkeys or hotmouse.

SYSTEM TEST PATTERN

ON SCREEN DISPLAY

OSD - SYSTEM - SECURITY

SECURITY LEVEL 4

As security level 5, with the following additional settings in the OSD:

SYSTEM	OSD POSITION
MODE	PIP / START
CONFIGURATION	RECALL
VIDEO	FORMAT

- Modify PiP settings in Hotmouse menu
- Changing both channels in Dual mode
- Changing the fixed PiP channel in PiP mode single fixed

SECURITY LEVEL 3

As security level 4, with the following additional settings in the OSD:

SYSTEM	OSD LANGUAGE
VIDEO	BRIGHTNESS / CONTRAST / HORIZ POSITION / VERT POSITION
	SCREEN WIDTH / PHASE
USB DEVICE 1-4	

SECURITY LEVEL 2

As security level 3, with the following additional settings in the OSD:

SYSTEM	HOTKEY / HOTMOUSE / QUAD MODE
CONSOLE	KEYBOARD / TOUCHSCREEN

SECURITY LEVEL 1

As security level 2, with the following additional settings in the OSD:

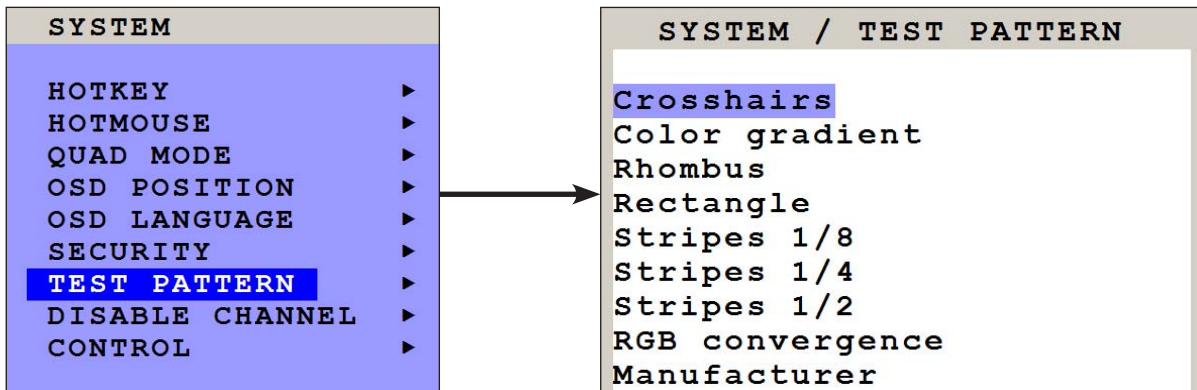
SYSTEM	DISABLE CHANNEL
CONSOLE	MULTIMONITOR / VIDEO OUTPUT
VIDEO	DVI/VGA
COMPUTER	MOUSE / RESET PS/2

- Switch video output to VGA (using hotkey 'V' or front panel buttons 1+2)

OSD - SYSTEM - TEST PATTERN

TEST PATTERN

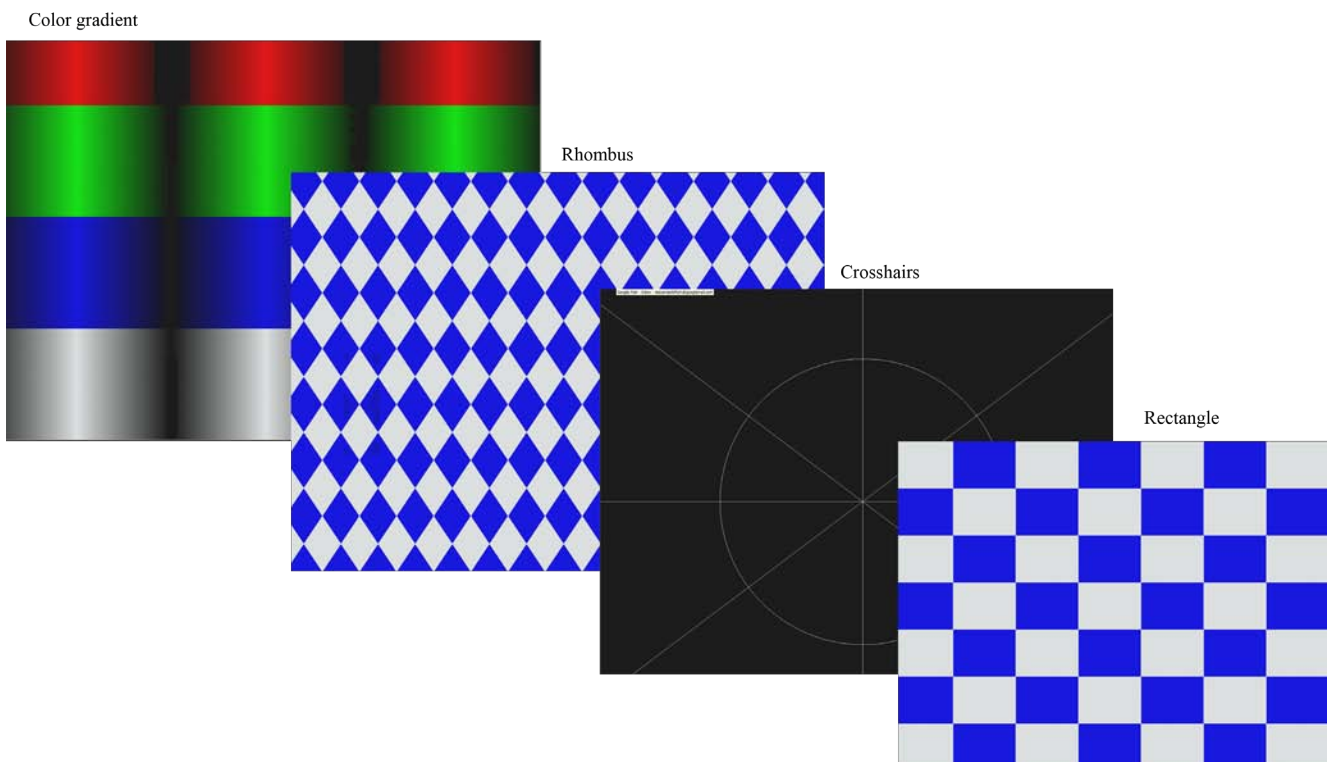
Use arrow keys to navigate in the SYSTEM menu to the entry TEST PATTERN and press ENTER/SELECT to open the TEST PATTERN window.



Use the Test Pattern feature to check monitor quality (pixel errors, contrast, etc) or the functionality of the SPLITMUX-DVI-4's video output.

It is recommended to use all available test patterns for the test procedure.

To exit TEST PATTERN mode, use the front panel buttons „Quad” „Full” or „PiP” or hotkey commands accordingly.

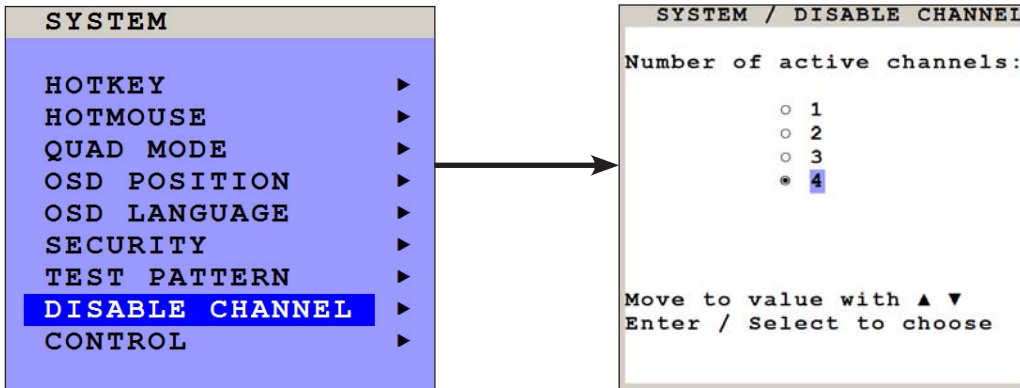


ON SCREEN DISPLAY

OSD - SYSTEM - DISABLE CHANNEL

DISABLE CHANNEL

Use arrow keys to navigate in the SYSTEM menu to the entry DISABLE CHANNEL and press ENTER/SELECT to open the DISABLE CHANNEL window.



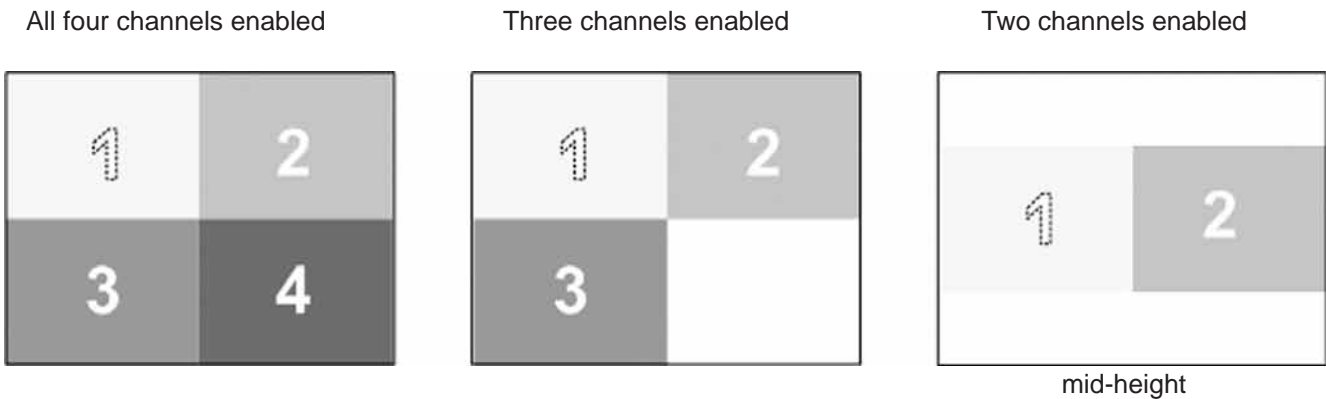
If two or three computers or video sources are connected to SPLITMUX-DVI-4, use the DISABLE CHANNEL feature to ensure that for the unused channels:

- a) message "no signal input x" is not shown in Quad mode
- b) PiP images are not displayed on screen
- c) these channels are not selectable in Fullscreen mode

For example, if you have connected three computers (channel 1 to 3) to SPLITMUX-DVI-4, use the arrow keys to navigate to the number 3 and confirm by pressing ENTER/SELECT.

Note:
To use the "DISABLE CHANNEL" feature, computers/video sources must be connected to SPLITMUX-DVI-4 in ascending order from channel 1 to 4.

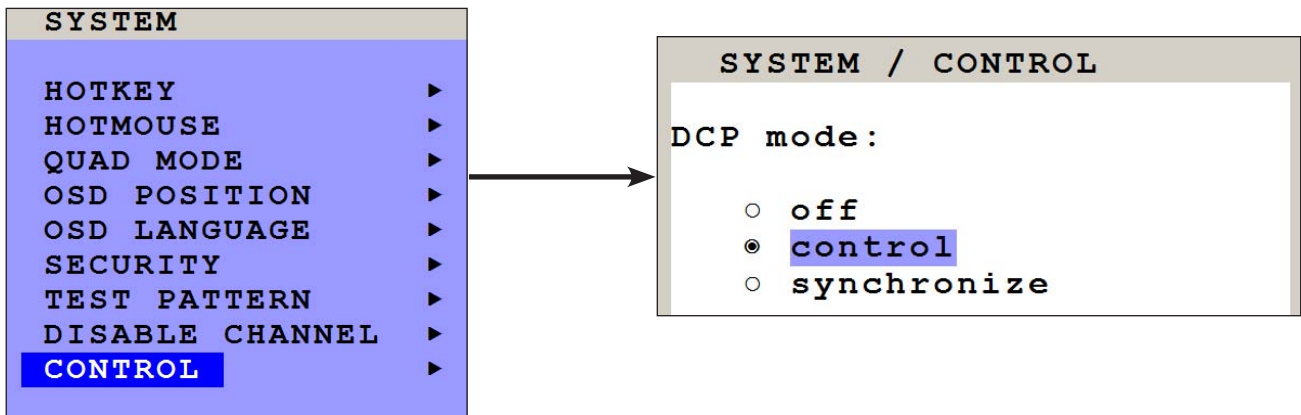
Example in Quad mode:



OSD - SYSTEM - CONTROL

CONTROL

Use arrow keys to navigate in the SYSTEM menu to the entry CONTROL and press ENTER/SELECT to open the CONTROL window.



NTI devices can be controlled via DCP (Device Control Protocol), an XML-based protocol. (see page 71 in Annex)

There are two DCP modes:

- DCP control**, which allows external control of the display mode.
 - DCP synchronize**, which keeps several SPLITMUX-DVI-4 devices in the same display mode.
- Default setting is "off", which prevents any external CONTROL.

Use a serial cable to connect a control unit to the RS 232 port (RJ 45) on the SPLITMUX-DVI-4 rear panel.

To synchronize several devices, special Y cables are required.

Settings for the connection are:

Transfer rate 57600 baud, 8 data bits, no parity, 1 stop bit, no flow control

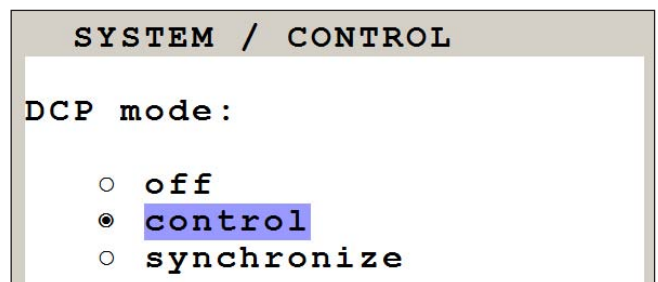
The two control modes operate as follows:

DCP control

This mode allows direct control of a single switch by means of a control device, e.g. a computer.

The control device can query and change the mode of SPLITMUX-DVI-4.

SPLITMUX-DVI-4 responds to each DCP message sent by the control device with a DCP reply. This reply includes the values of all settings queried or set by means of the last message. If the message sent by the control unit contains errors, the switch will reply by sending an error message.

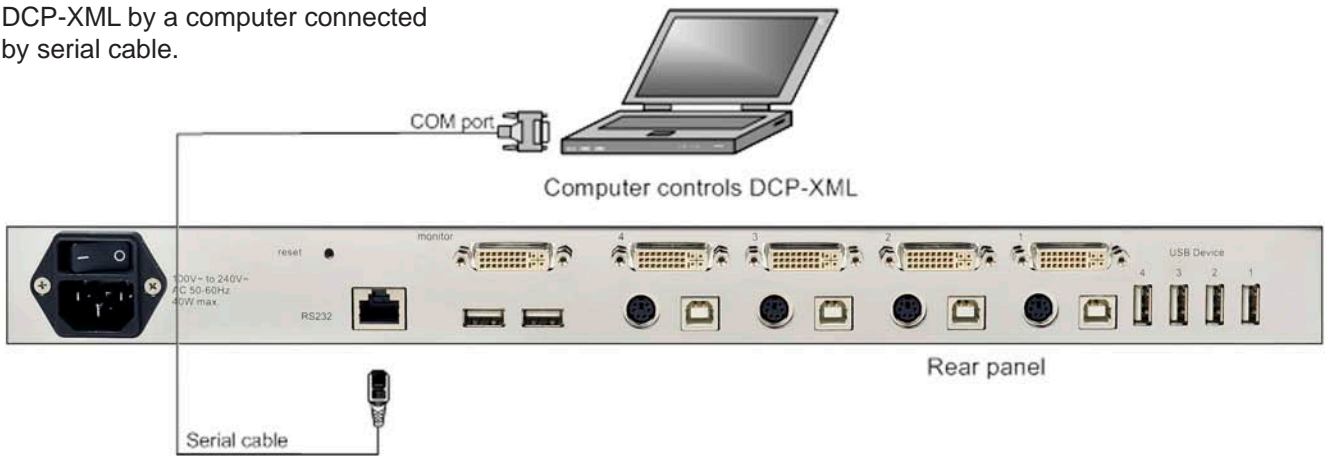


ON SCREEN DISPLAY

OSD - SYSTEM - CONTROL

Example of DCP control

A SPLITMUX-DVI-4 is controlled via DCP-XML by a computer connected by serial cable.



For an introduction to the DEVICE CONTROL PROTOCOL please see page 71 in Annex.

DCP synchronize

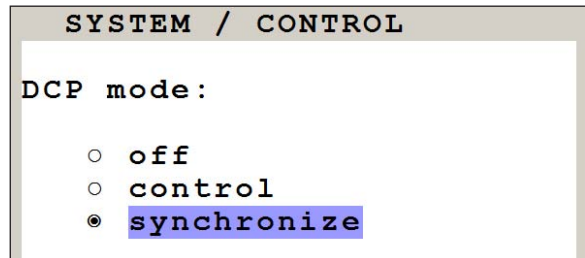
Use this mode to keep several SPLITMUX-DVI-4 devices in the same mode.

Every change in settings initiated in the first switch by

**Hotkeys,
Hotmouse,
Front panel buttons, or
a controlling device**

synchronizes the modes of all connected devices via DCP messages.

Special serial Y cables are used for this purpose (see example on page 70)



Important:

Each time you restart a SPLITMUX-DVI-4 set to **synchronize**, it will send all its settings to the next connected device. This process also takes place after activating **synchronize** in the OSD menu.

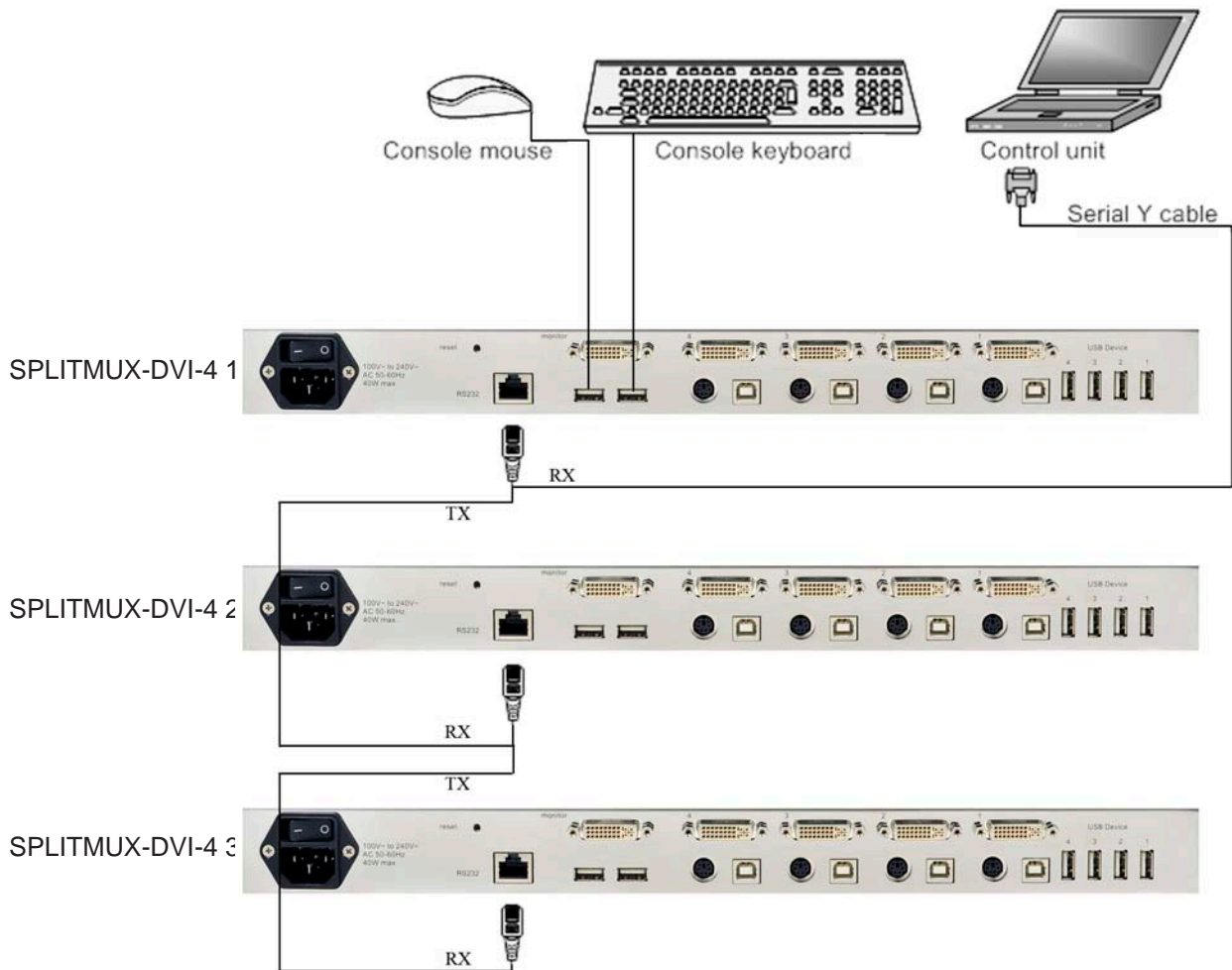
When starting a chain of devices, always start by **first** switching on the device **at the end of the chain**. When the device has completed its startup phase and sent its DCP messages, switch on the next device in the chain.

Finally, switch on the first device in the chain, which synchronizes the settings of all other devices in the chain with its own settings as it starts up.

OSD - SYSTEM - CONTROL

Example of DCP synchronization

SPLITMUX-DVI-4 2 and 3 are synchronized with SPLITMUX-DVI-4 1.



To synchronize, SPLITMUX-DVI-4 1 sends every change in settings as a DCP message via the serial Y cable to the RX input of SPLITMUX-DVI-4 2.

SPLITMUX-DVI-4 2 adopts the settings and sends a DCP message via TX output over the Y cable to the RX input of SPLITMUX-DVI-4 3.

The synchronization chain can have any length.

Do not connect the last device in the chain to the first device (i.e. do not create a loop).

ON SCREEN DISPLAY

OSD - SYSTEM - CONTROL

SECURITY LEVELS

The security level settings in the OSD menu described on page 18ff also apply to control via DCP messages. Queries are possible up to security level 7.

The table below shows the maximum security levels for simple element settings. These settings may be changed via DCP up to the specified protection level.

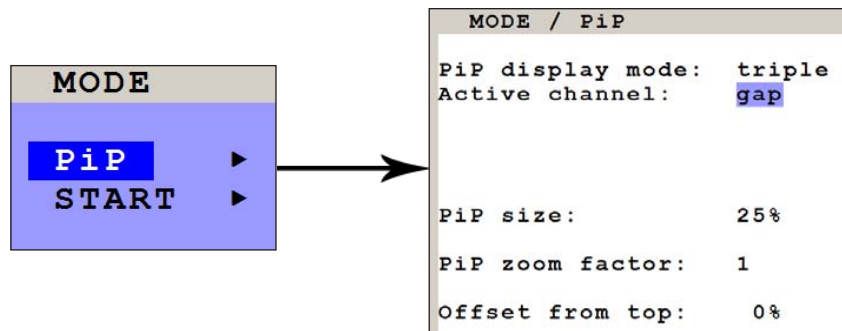
Maximum security level for:

CONSOLE CHANNEL	6
VIDEO CHANNEL	6
VIDEO LAYOUT	5
PIP LAYOUT	4
PIP SIZE	4
PIP OFFSET	4
PIP ZOOM	4
PIP CHANNEL	4
DUAL CHANNELS (L/R)	6
PIP SCAN TIME	4

OSD - MODE - PiP

PiP (Picture in Picture Function)

Use arrow keys to navigate in the MODE menu to the entry PiP and press ENTER/SELECT to open the PiP window.



In the PiP window you can configure PiP size, position, and display mode.

PiP size

Adjust the size of PiP images to your requirements. 12 (single mode) or 9 (triple mode) different sizes are available:

Single: 3 % - 5 % - 7 % - 10 % - 15 % - 20 % - 25 % - 28 % - 33 % - 38 % - 44 % - 50 %

Triple: 3 % - 5 % - 7 % - 10 % - 15 % - 20 % - 25 % - 28 % - 33 %

50 % equals the size of one quad screen (one quarter of a full size screen).

PIP zoom factor

Use this option to zoom the center of the PiP images by a factor of 2.

Offset from top

Use this option to change the position of PiP images. PiP images can be moved vertically to any position on the screen's right hand margin.

Note:

All settings also possible via Hotmouse menu, see page 54.

ON SCREEN DISPLAY

OSD - MODE - PiP

PiP Display Modes

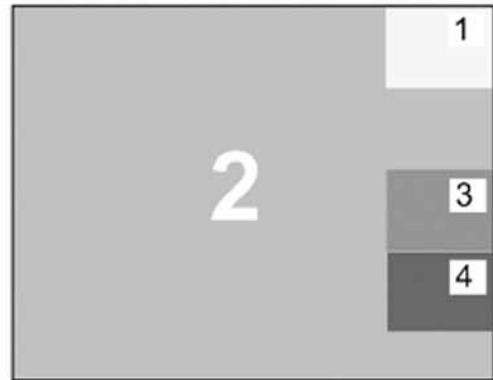
SPLITMUX-DVI-4 offers the following PiP modes:

PiP display mode **triple**: All other video sources are displayed (three PiP images)

```
MODE / PiP
PiP display mode:  triple
Active channel:    gap

PiP size:          25%
PiP zoom factor:  1
Offset from top:  0%
```

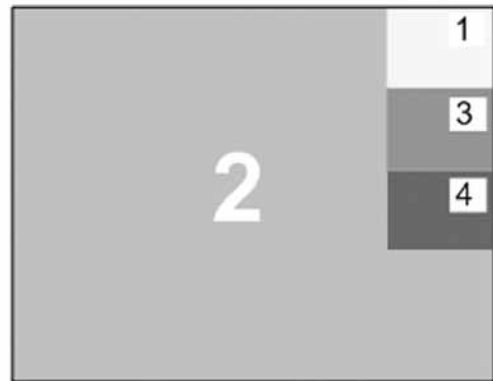
Triple gap:
PiP images are displayed with a gap in place of the active channel.



```
MODE / PiP
PiP display mode:  triple
Active channel:    no gap

PiP size:          25%
PiP zoom factor:  1
Offset from top:  0%
```

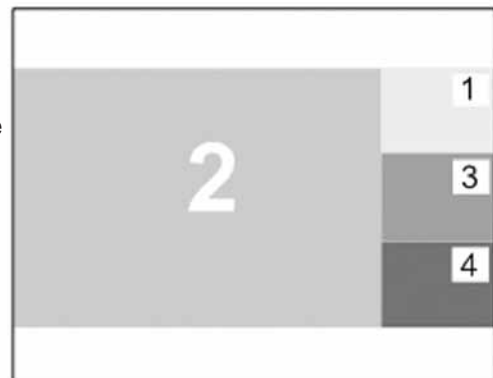
Triple no gap:
PiP images are displayed without a gap.



```
MODE / PiP
PiP display mode:  triple
Active channel:    tile

PiP size:          -
PiP zoom factor:  1
Offset from top:  -
```

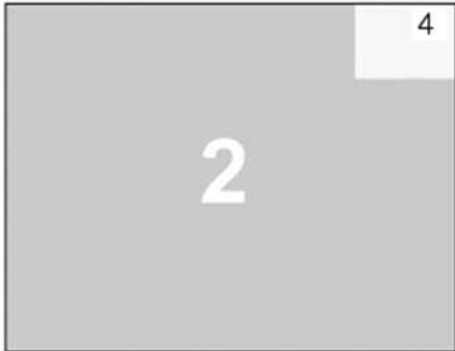
Triple tile:
The size of the main image and the PiP images is optimized so that the main image and the PiP images are shown as large as possible without overlapping.



OSD - MODE - PiP

PIP Display Modes (continued)

PIP display mode **single**: One PiP image is displayed.
 You can choose between different display modes:



```

MODE / PiP
PiP display mode:  single
Channel selection:  fixed
PiP channel:      4

PiP size:         15%
PiP zoom factor:  1
Offset from top:  0%
    
```

Single fixed:

One channel is selected to be displayed as permanent PiP image. Only the active channel (full image) can be switched. Press front panel buttons 1, 2, 3, or 4 to switch the full image.

```

MODE / PiP
PiP display mode:  single
Channel selection:  direct
PiP channel:      4

PiP size:         15%
PiP zoom factor:  1
Offset from top:  0%
    
```

Single direct:

One channel is selected to be displayed as permanent full image (active channel).

Only the PiP can be switched. Press front panel buttons 1, 2, 3, or 4 to switch the full image.

ON SCREEN DISPLAY

OSD - MODE - PIP

PIP Display Modes (continued)

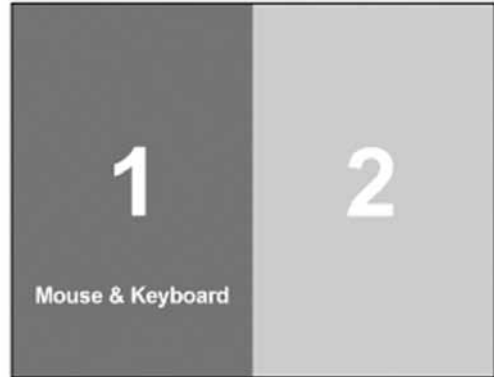
```
MODE / PiP
PiP display mode: single
Channel selection: dual
Left channel: 1
Right channel: 2
Active channel: left

PiP size: -
PiP zoom factor: -
Offset from top: -
```

Single dual:

In Dual mode the left halves of the fullscreen images from two video sources are displayed side by side.

You can choose the left or the right image as the active channel.



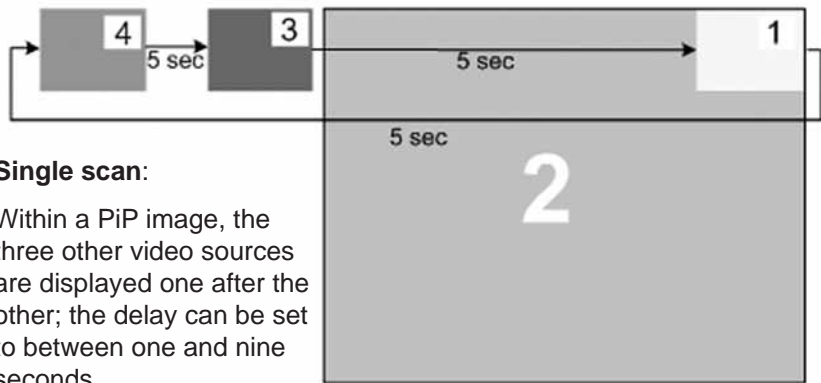
To switch the active channel use the OSD, hotkeys or front buttons.

```
MODE / PiP
PiP display mode: single
Channel selection: scan
Scan time: 5 sec

PiP size: 15%
PiP zoom factor: 1
Offset from top: 0%
```

Single scan:

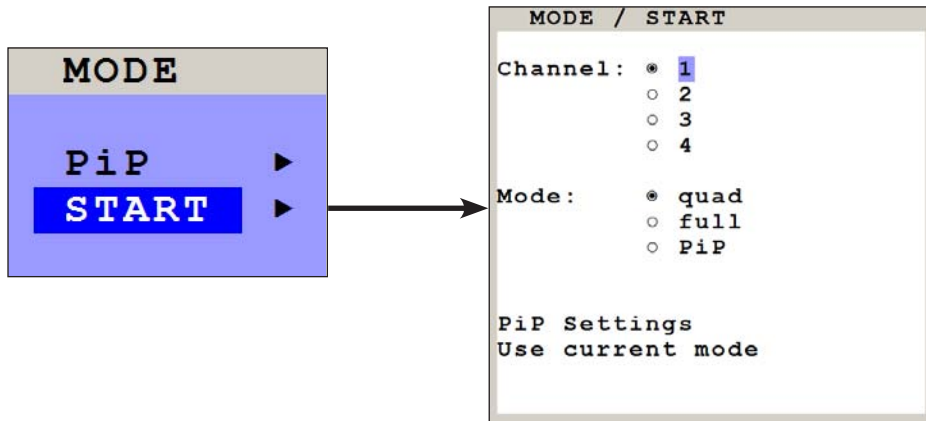
Within a PiP image, the three other video sources are displayed one after the other; the delay can be set to between one and nine seconds.



OSD - MODE - START

START (Set start mode)

Use arrow keys to navigate in the MODE menu to the entry START and press ENTER/SELECT to open the START window.

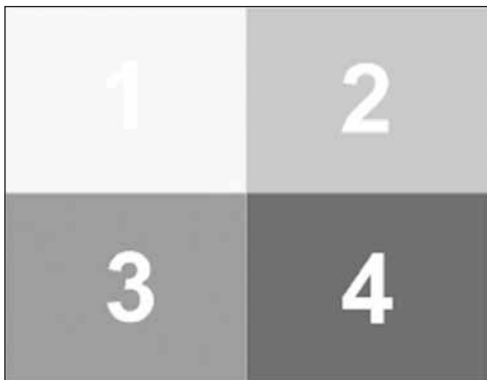


This feature allows you to define the start configuration, i.e. the display mode (Quad, Fullscreen, or PiP), active channel, and PiP settings which SPLITMUX-DVI-4 uses after a reset or when the system is powered up.

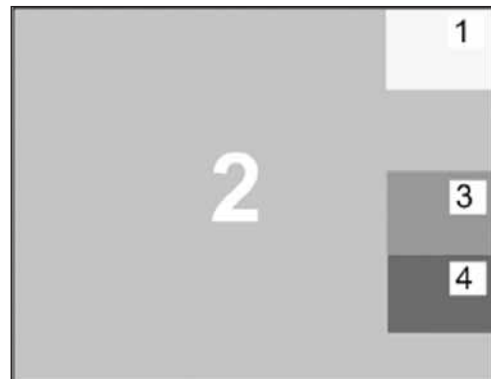
When the START menu is called up, the current start configuration is displayed. To modify your start configuration, change parameters in the channel, mode, and PiP fields. Press ESC to save the new parameters and exit the START menu.

Choose "Use current mode" to adopt the current settings as start mode. Use arrow keys to navigate to "Use current mode" and confirm by pressing ENTER.

The factory default start mode is Quad-mode with active channel 1.



Default start screen



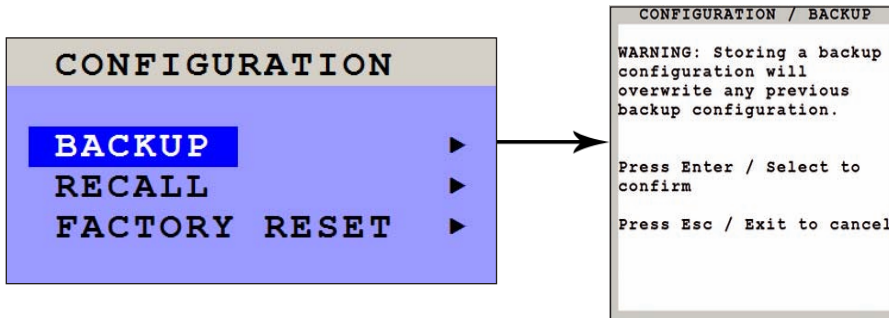
Example of a start screen configuration

ON SCREEN DISPLAY

OSD - CONFIGURATION - BACKUP / RECALL

BACKUP

Use arrow keys to navigate in the CONFIGURATION menu to the entry BACKUP and press ENTER/SELECT to open the BACKUP window.

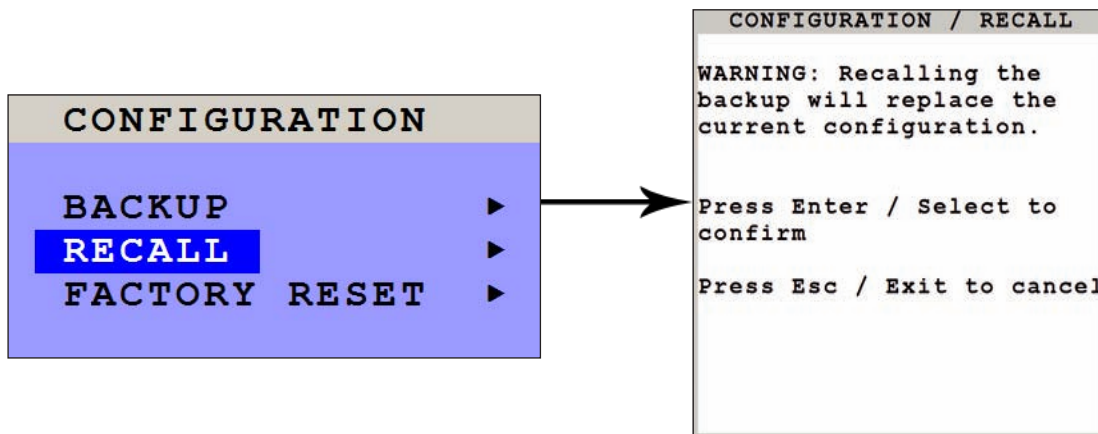


This function saves the current device settings, including the start mode set in MODE START.

Note:
The EDID configuration will not be saved and can not be recovered with the RECALL function.

RECALL

Use arrow keys to navigate in the CONFIGURATION menu to the entry RECALL and press ENTER/SELECT to open the RECALL window.

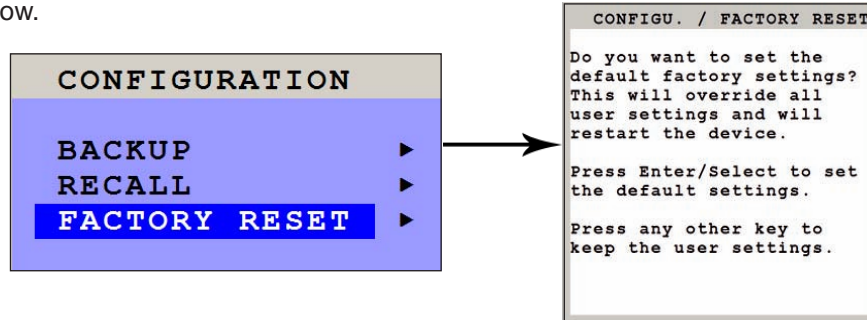


Use this feature to replace the current settings with the last configuration saved using the BACKUP command.

OSD - CONFIGURATION - FACTORY RESET

FACTORY RESET

Use arrow keys to navigate in the CONFIGURATION menu to the Factory Reset and press ENTER/SELECT to open the DEFAULTS window.



Use this function to reset the current settings of SPLITMUX-DVI-4 to the factory default configuration. All four input EDIDs are also reseted to their default values.

If necessary, save your current settings before using the DEFAULTS command. Execution of this command results in a complete reset and reboot of SPLITMUX-DVI-4 with factory defaults.

FACTORY DEFAULTS:

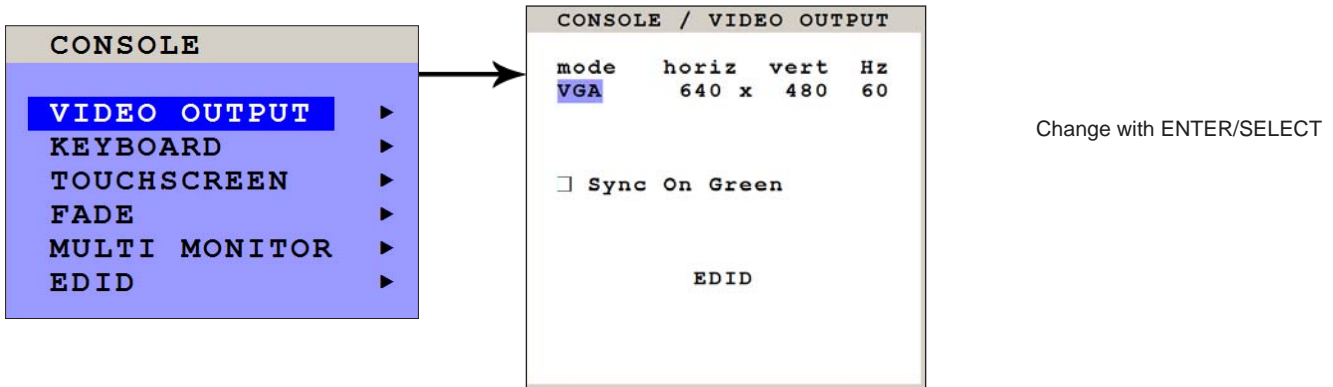
SYSTEM	HOTKEY	= Multiple Hotkey / Hotkey = Ctrl + Alt
	HOTMOUSE	= ON / Hotmouse timeout = 5 sec.
	QUAD MODE	= Channel selection timeout = 5 sec.
	OSD POSITION	= centered
	OSD LANGUAGE	= English
	SECURITY	= None (security level = 0)
	DISABLE CHANNEL CONTROL	= All four channels are active / Off
MODE	PIP	= Size = 15 % Zoom factor = 1 Display mode = triple Active channel = gap; Offset from top = 0 % Start configuration = Quad / active channel = 1
CONSOLE	VIDEO OUTPUT	= auto
	KEYBOARD	= English
	TOUCHSCREEN	= Mouse emulate right click / Quad remains / PiP switches
	FADE	= Off
	MULTI MONITOR	= Monitor 1 --> Channel 1; Monitor 2 --> Channel2; Monitor 3 --> Channel 3; Monitor 4 --> Channel4;
VIDEO	VIDEO INPUT	= DVI / VGA (all channels)
	BRIGHTNESS	= +0 (all channels)
	CONTRAST	= 56 % (all channels)
	HORIZ POSITION	= auto (all channels)
	VERT POSITION	= auto (all channels)
	SCREEN WIDTH	= +0 (screen-width correction of all channels)
	PHASE	= +0 (all channels)
	FORMAT	Fit to screen = No (all channels)
COMPUTER	MOUSE	USB mouse positioning = relative (all channels)
	EDID / DDC	1600x1200@60, 1920x1200@60, digital
USB DEVICE 1-4		= Off / manual switching w. warning / name: Device 1 (-4)

ON SCREEN DISPLAY

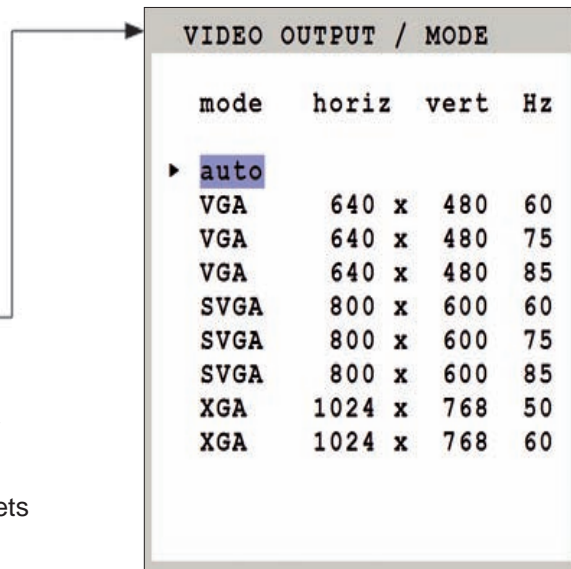
OSD - CONSOLE - VIDEO OUTPUT

VIDEO OUTPUT

Use arrow keys to navigate in the CONSOLE menu to the entry VIDEO OUTPUT and press ENTER/SELECT to open the VIDEO OUTPUT window.



Use the VIDEO OUTPUT menu to choose an output resolution supported by your monitor. Press ENTER/SELECT to enter the selection menu. Use arrow keys to select the desired line in the list shown on the right and press ENTER/SELECT for the new video format.



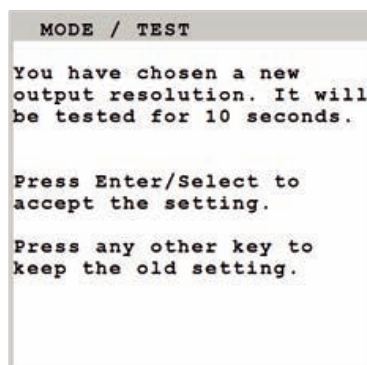
When the output mode is set to 'auto', SPLITMUX-DVI-4 chooses a resolution by reading the connected monitor's EDID data. Choose the EDID menu item to check whether the connected monitor provides this data.

If the monitor does not offer this data, SPLITMUX-DVI-4 sets VGA mode (640x480@60Hz) as default and activates Sync on Green.

Sync on Green can be deactivated on SPLITMUX-DVI-4.

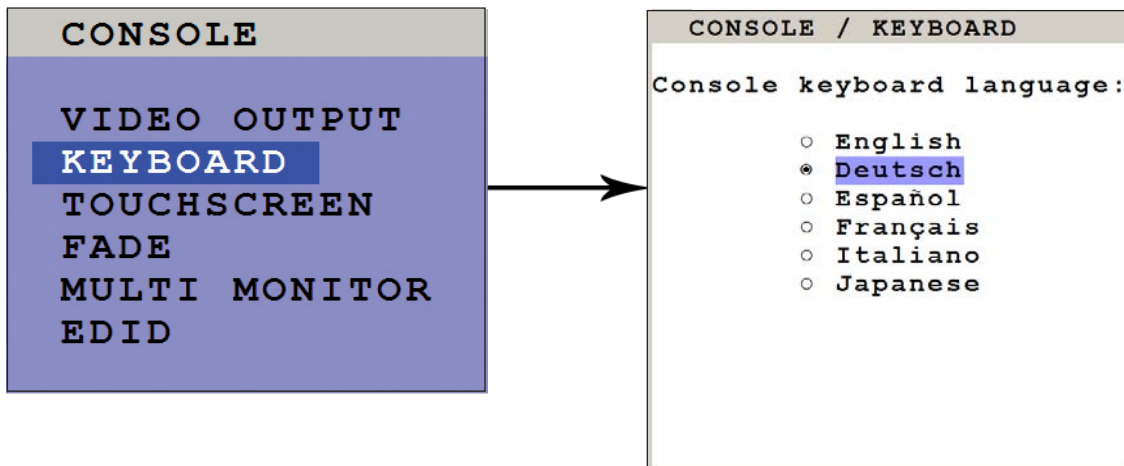
The new output mode is visible for 10 seconds.

Within this time you can either accept the new setting by pressing ENTER/SELECT or return to your original setting by pressing ESC/EXIT.



OSD - CONSOLE - LANGUAGE / LAYOUT**LANGUAGE / LAYOUT**

Use arrow keys to navigate in the CONSOLE menu to the entry KEYBOARD and press ENTER/SELECT to open the KEYBOARD window. Set the keyboard layout to the desired language, English, Deutsch (German), Español (Spanish), Français (French), Italiano (Italian) or Japanese.



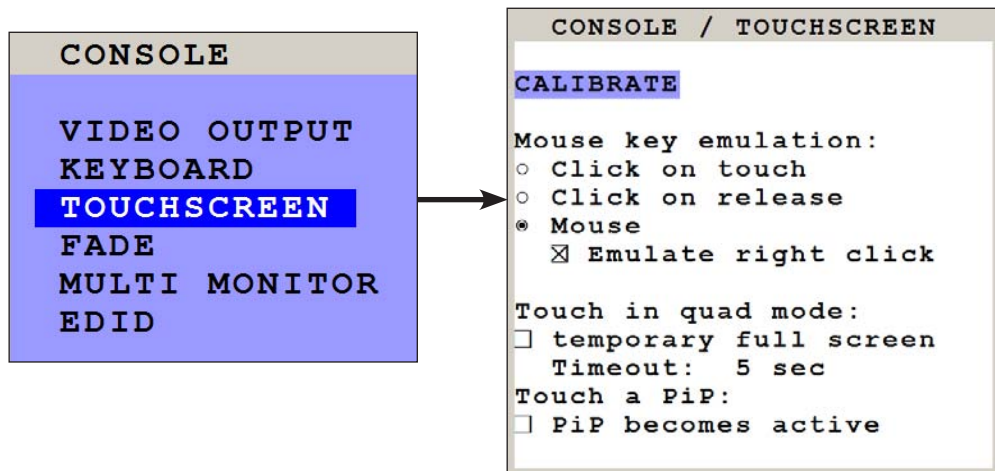
OSD - CONSOLE - TOUCHSCREEN

TOUCHSCREEN

SPLITMUX-DVI-4 enables the user to use a touchscreen to control and switch between four computers as well as change display modes.

SPLITMUX-DVI-4 supports a great number of USB touch screens with commonly integrated touch controllers. For a list of supported touchscreens, please see Annex on page 72.

To control SPLITMUX-DVI-4 using a touchscreen, connect the touchscreen to SPLITMUX-DVI-4 by connecting the VGA or DVI cable from the SPLITMUX-DVI-4 monitor port to the input of the touchscreen. Connect the USB port of the touchscreen to the SPLITMUX-DVI-4 console USB port. Please see page 8ff for a description of the SPLITMUX-DVI-4 ports.

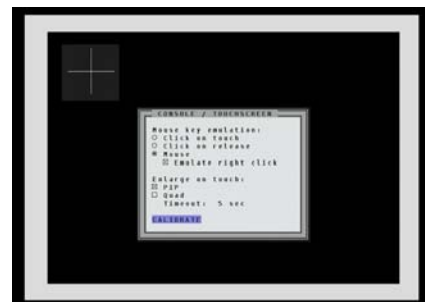


Calibration

After connecting a touchscreen to SPLITMUX-DVI-4 for the first time, calibrate the touchscreen.

Open CONSOLE ► TOUCHSCREEN menu, choose CALIBRATE, and press ENTER/SELECT.

Four markers will be displayed in the corners of the touchscreen. The diagram shows the first marker in the top left corner of the screen. Touching the center of the markers as accurately as possible yields best calibration results. Then repeat for the other three markers to complete calibration.



Mouse key emulation

SPLITMUX-DVI-4 offers three modes of interpreting the user input as mouse clicks.

1. Mouse: When touching the touchscreen, the mouse button is pressed. When the finger is released from the touchscreen, the mouse button is released. This mode can be used for drag and drop operations.
2. Click on touch: When touching the touchscreen, a mouse click is generated at the position of the touch.
3. Click on release: When the finger is released from the touchscreen, a mouse click is generated at the last position of the finger.

By default, „mouse” is set as mode. You could use your finger on the touchscreen similarly to using your mouse. “Click on touch” and “click on release” are suited for kiosk applications or environments where touchscreens are used instead of keyboards and mice, such as in medical industries for hygienic reasons, in industrial production and automation for operation with gloves, or in vehicles and aircraft where robust components are required.

OSD - CONSOLE - TOUCHSCREEN

TOUCHSCREEN (continued)

```
Touch in quad mode:  
 temporary full screen  
Timeout: 5 sec  
Touch a PiP:  
 PiP becomes active
```

Touch in quad mode:

Check this box to switch a quadrant from Quad mode temporarily to full screen when touching the quadrant. This activates keyboard and mouse of that quadrant and allows operating the computer in full screen. The other sources are not visible during this time. After a timeout of 5 seconds without keyboard/mouse activity, SPLITMUX-DVI-4 automatically switches back to Quad mode. The timeout can be set to values between 1 and 10 seconds.

Touch a PiP:

Check this box to activate keyboard and mouse on a computer shown as PiP. When touching a PiP, keyboard and mouse become active in this PiP. This activated channel now remains a little PiP and does not switch to full image. In this PiP you can operate the computer with keyboard and mouse.

When unchecked (by default), a PiP is switched to full image as soon as it is touched. The full image gets exchanged with the other sources remaining visible as PiPs.

Right mouse button

Press and hold your finger on the touchscreen to emulate the right mouse button. This only works in „mouse“ emulation mode, not in “click on touch” or “click on release”. By default „Emulate right click” is set in order to perform a right mouse click. Some touch controller models do not support right mouse click. Using touch screens with such controllers requires unchecking the box „Emulate right click”.

Hotmouse and Hotmouse menu

To open the Hotmouse menu, tap the screen twice, and leave your finger pressed on the touchscreen after the second tap (tap – hold, like a double click without lifting the finger on the second click), until the Hotmouse menu opens.

By clicking outside the Hotmouse menu, you can open the Hotmouse cursor to enlarge and reposition PiPs (only in PiP mode), and switch channels (see page 54ff for a description of the Hotmouse function).

After you are finished using the Hotmouse cursor, the Hotmouse menu will reopen.

ON SCREEN DISPLAY

OSD - CONSOLE - TOUCHSCREEN / FADE

TOUCHSCREEN (continued)

Mouse position

Absolute mouse position

SPLITMUX-DVI-4 works best together with touchscreens when using absolute mouse positioning mode with the connected computers. To enable absolute mouse positioning mode, use the menu **COMPUTER ► MOUSE** in the OSD (see page 46).

This mode works when a computer is connected via USB, and with most modern operating systems.

Relative mouse position

When using relative mouse positioning, please check the configuration of the computers connected to ensure that mouse acceleration is switched off and mouse scaling is set to 1:1.

Resetting the mouse position: When using relative positioning mode, the actual position of the mouse cursor and the position of your finger on the touchscreen may not match in certain cases when a computer switches resolution or changes the mouse position (e.g. when the system is configured to place the mouse pointer over the 'OK' button of a window). In these cases, to reset the mouse position, either switch to a different channel, and back again, or tap the touchscreen three times, and leave your finger pressed on the touchscreen after the third tap (tap – tap – hold), until the mouse cursor moves to the top left corner of the screen.

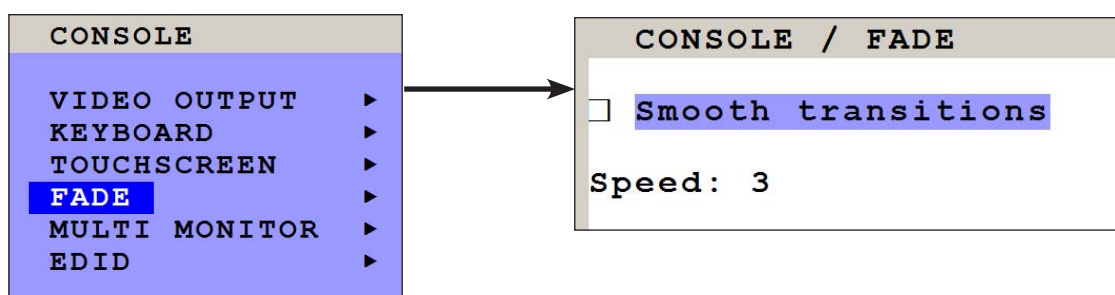
FADE

Use arrow keys to navigate in the **CONSOLE** menu to the entry **FADE** and press **ENTER/SELECT** to open the **FADE** window.

Fade Through Black is an elegant visual effect for presentations: When switching channels or display modes, the previous image fades to black, and the next image is faded in smoothly.

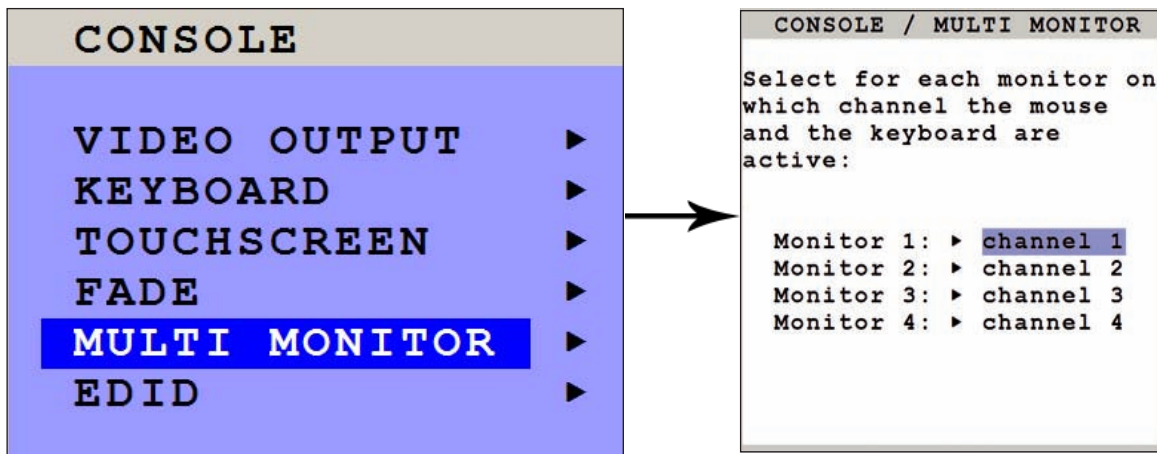
To enable fade through black, check the box "Smooth transitions".

The "Speed" setting controls the speed of the transition, with 1 being the slowest, and 5 the fastest transition.



OSD - CONSOLE - MULTI MONITOR**MULTI MONITOR**

Use arrow keys to navigate in the CONSOLE menu to the entry MULTI MONITOR and press ENTER/SELECT to open the MULTI MONITOR window.



Multi Monitor is used if computers with multiple video output are connected to SPLITMUX-DVI-4 but only one keyboard and mouse to operate the computer. If you use graphics cards with multiple video outputs, you must assign the computer's mouse and keyboard to the corresponding video output (channels 1-4).

Example:

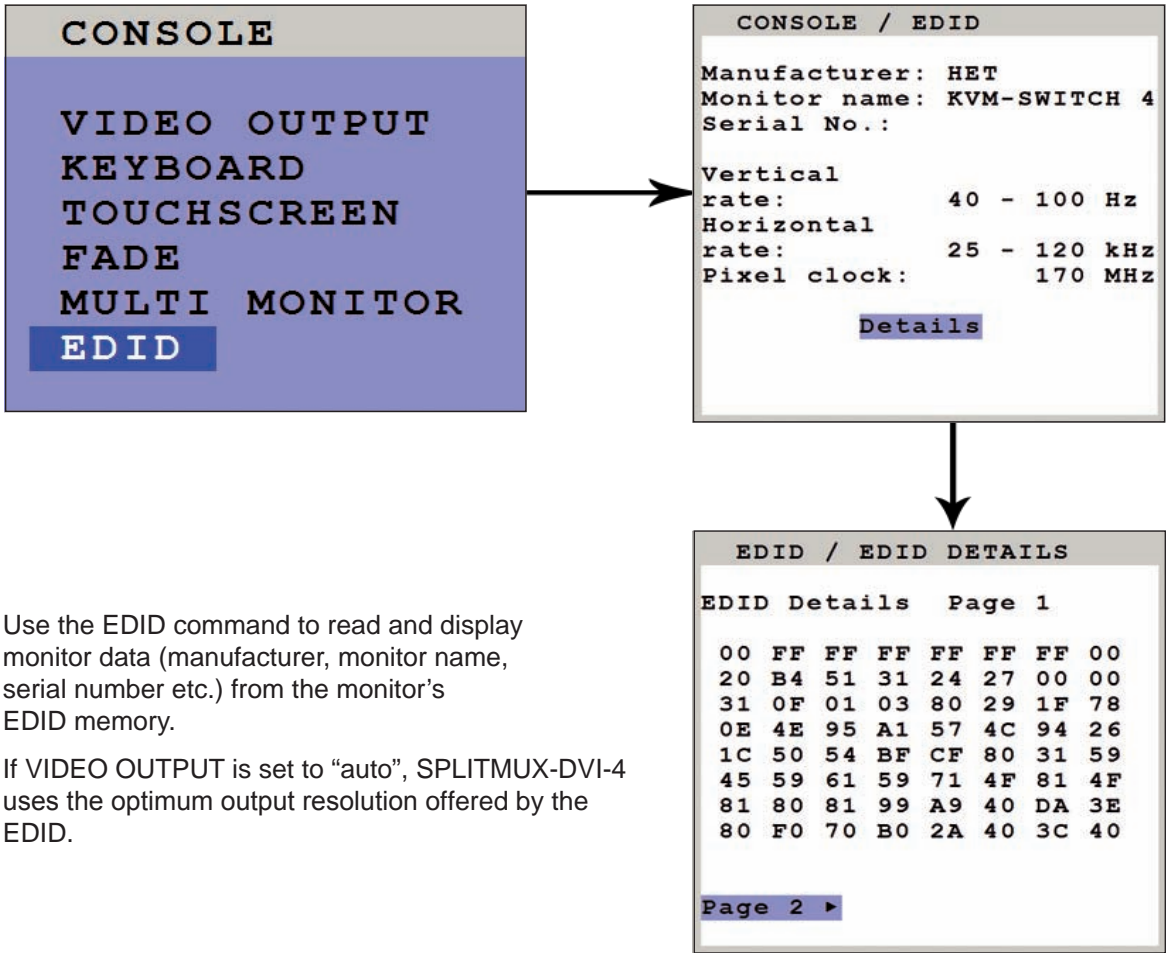
If a computer with quad-head graphics card is connected to SPLITMUX-DVI-4, and keyboard and mouse are connected to channel 1, you must assign console „channel 1” to all video channels („Monitor 1 - 4”).

ON SCREEN DISPLAY

OSD - CONSOLE - EDID

EDID (display of monitor data)

Use arrow keys to navigate in the CONSOLE menu to the entry EDID and press ENTER/SELECT to open the EDID window.



Use the EDID command to read and display monitor data (manufacturer, monitor name, serial number etc.) from the monitor's EDID memory.

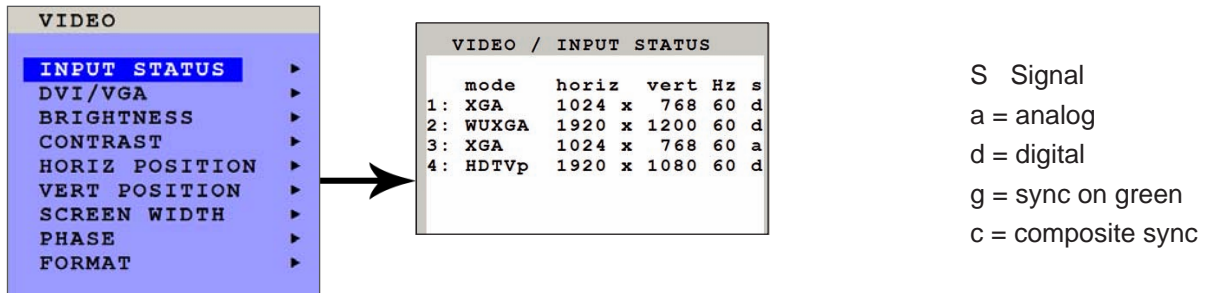
If VIDEO OUTPUT is set to "auto", SPLITMUX-DVI-4 uses the optimum output resolution offered by the EDID.

EDID (Extended Display Identification Data) is a VESA standard data format that contains basic information about a monitor and its capabilities. This information is stored in the monitor by the manufacturer and can be read by SPLITMUX-DVI-4 or graphics card via a monitor cable's Display Data Channel (DCC) interface.

OSD - VIDEO - INPUT STATUS / DVI/VGA

INPUT STATUS (Display Video Formats)

Use arrow keys to navigate in the VIDEO menu to the entry INPUT STATUS and press ENTER/SELECT to open the INPUT STATUS window.



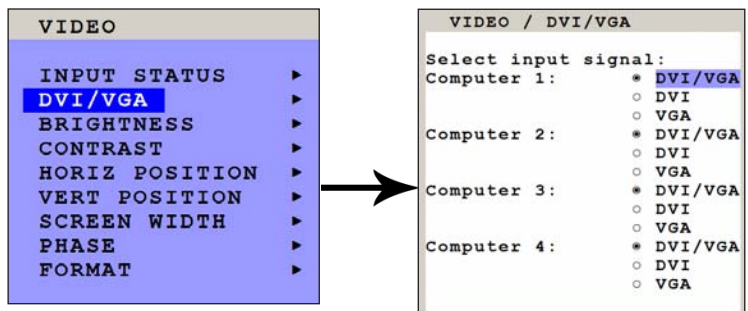
This window shows the resolutions at the four video inputs.
Resolution recognition at the four video inputs is automatic.
Some analog input resolutions may not correctly be detected.

See Annex page 73f for a list of video formats supported by SPLITMUX-DVI-4.

Note:
Fluid video performance in Quad mode:
With digital input and a resolution of 800x600, the input frame rate may be increased up to 180 Hz. This provides smooth video output even in Quad mode. To use this feature, it is necessary to choose this resolution and refresh rate on **all** devices connected to the SPLITMUX-DVI-4's video inputs.

DVI/VGA

Use arrow keys to navigate in the VIDEO menu to the entry INPUT STATUS and press ENTER/SELECT to open the INPUT STATUS window.



Go to "Select input signal" and define which video signal (VGA or DVI) is to be displayed.
If the setting „DVI/VGA" is selected, SPLITMUX-DVI-4 will first check the digital input.
If there is no signal at this input, the analog signal input will be checked.

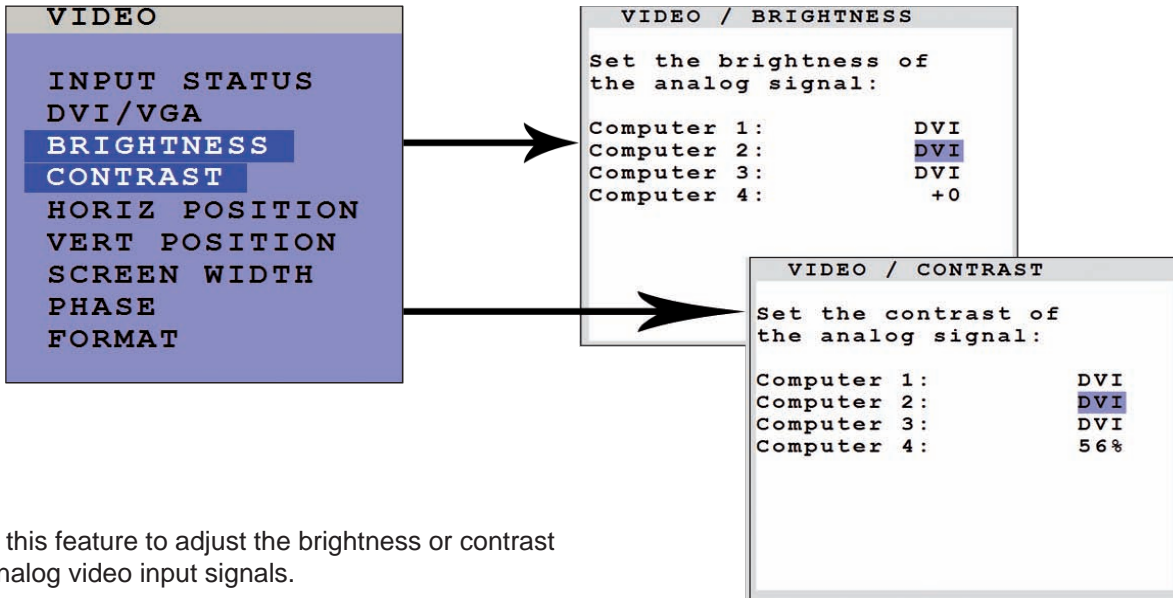
This function can be used to connect e.g. 8 sources (4x VGA + 4x DVI) via Y-cables to SPLITMUX-DVI-4.

ON SCREEN DISPLAY

OSD - VIDEO - BRIGHTNESS / CONTRAST / H + V POSITION

BRIGHTNESS – CONTRAST (with analog input only)

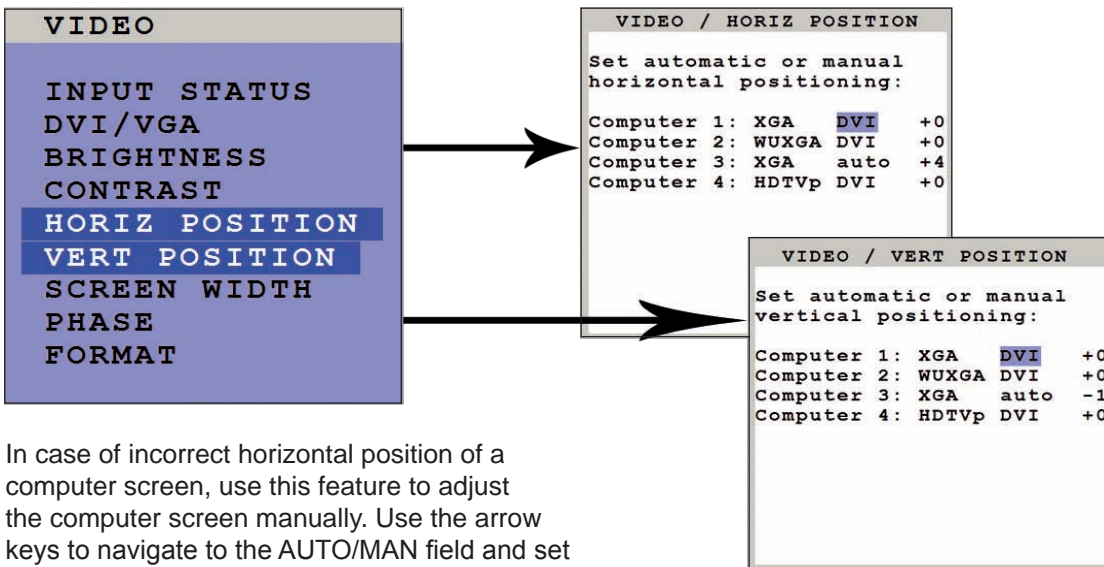
Use arrow keys to navigate in the VIDEO menu to the entry BRIGHTNESS or CONTRAST and press ENTER/SELECT to open the BRIGHTNESS or CONTRAST window.



Use this feature to adjust the brightness or contrast of analog video input signals.

HORIZ / VERT POSITION (horizontal / vertical position of computer screen) (with analog input only)

Use arrow keys to navigate in the VIDEO menu to the entry HORIZ POSITION or VERT POSITION and press ENTER/SELECT to open the HORIZ POSITION or VERT POSITION window.

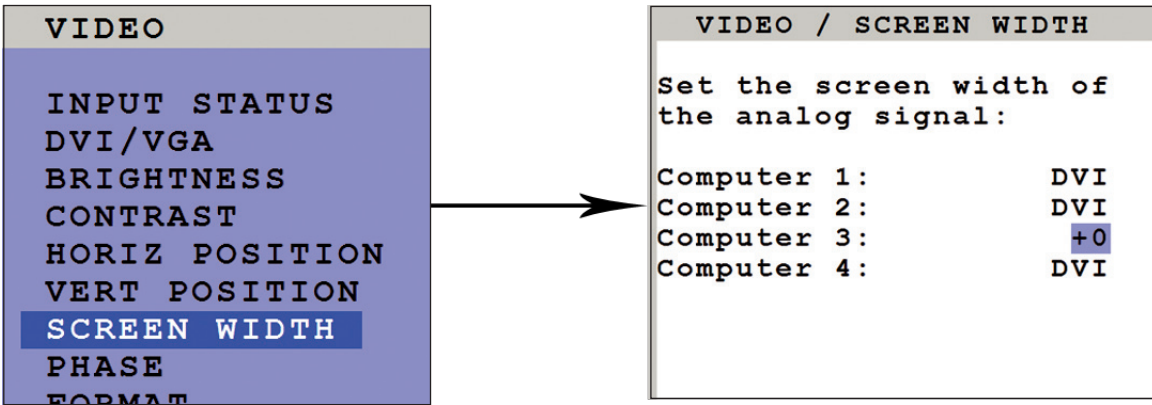


In case of incorrect horizontal position of a computer screen, use this feature to adjust the computer screen manually. Use the arrow keys to navigate to the AUTO/MAN field and set MAN for manual. Use the “+” or “-” keys in the value field to adjust the vertical position between -20 and +20, and the horizontal position between -63 and +63.

OSD - VIDEO - SCREEN WIDTH / PHASE

SCREEN WIDTH (with analog input only)

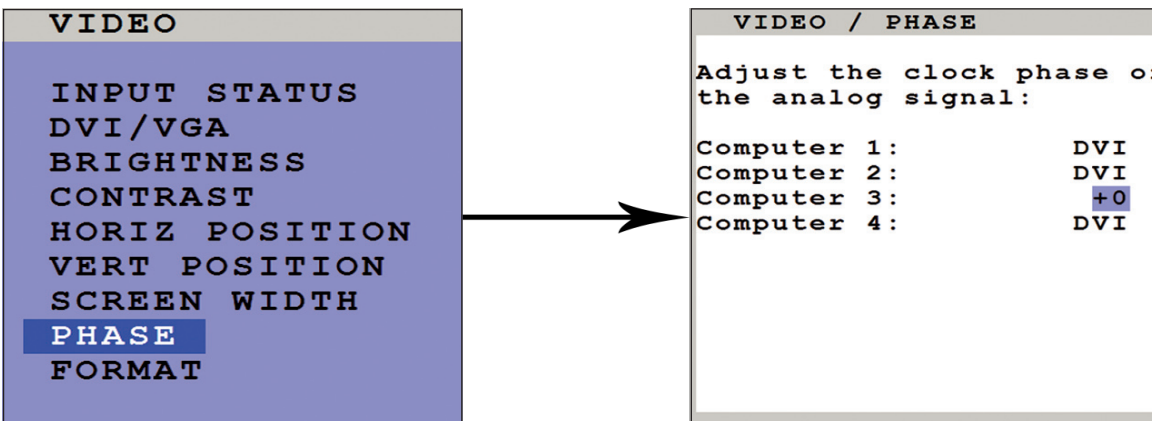
Use arrow keys to navigate in the VIDEO menu to the entry SCREEN WIDTH and press ENTER/SELECT to open the SCREEN WIDTH window.



Normally, screen width (number of horizontal pixels) is defined by the VESA standard. If the screen appears blurred, change this setting to improve screen quality.

PHASE (with analog input only)

Use arrow keys to navigate in VIDEO menu to the PHASE line and press ENTER/SELECT to open the PHASE window.



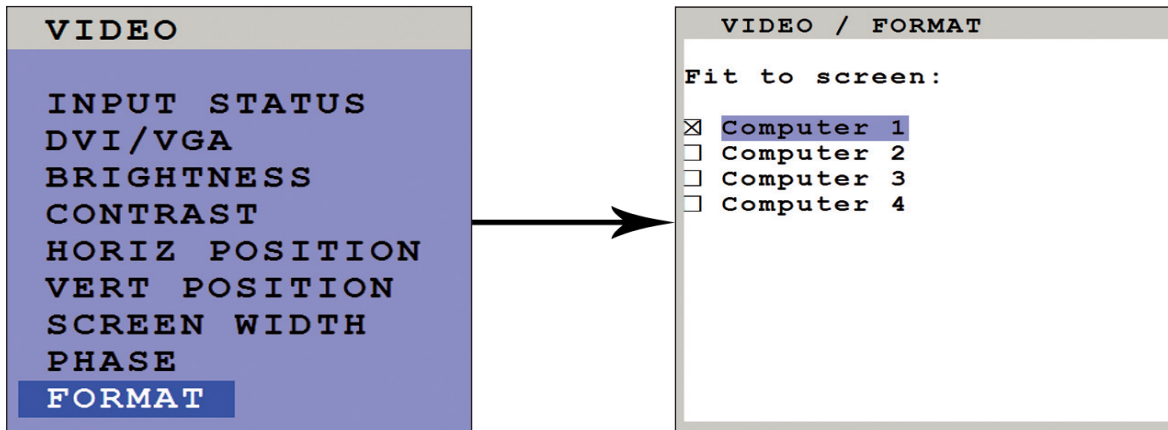
Incorrect phase (sampling time of pixel color value) may result in blurring, bad contrast, or poor legibility. Use this setting to adjust phase.

ON SCREEN DISPLAY

OSD - VIDEO - FORMAT

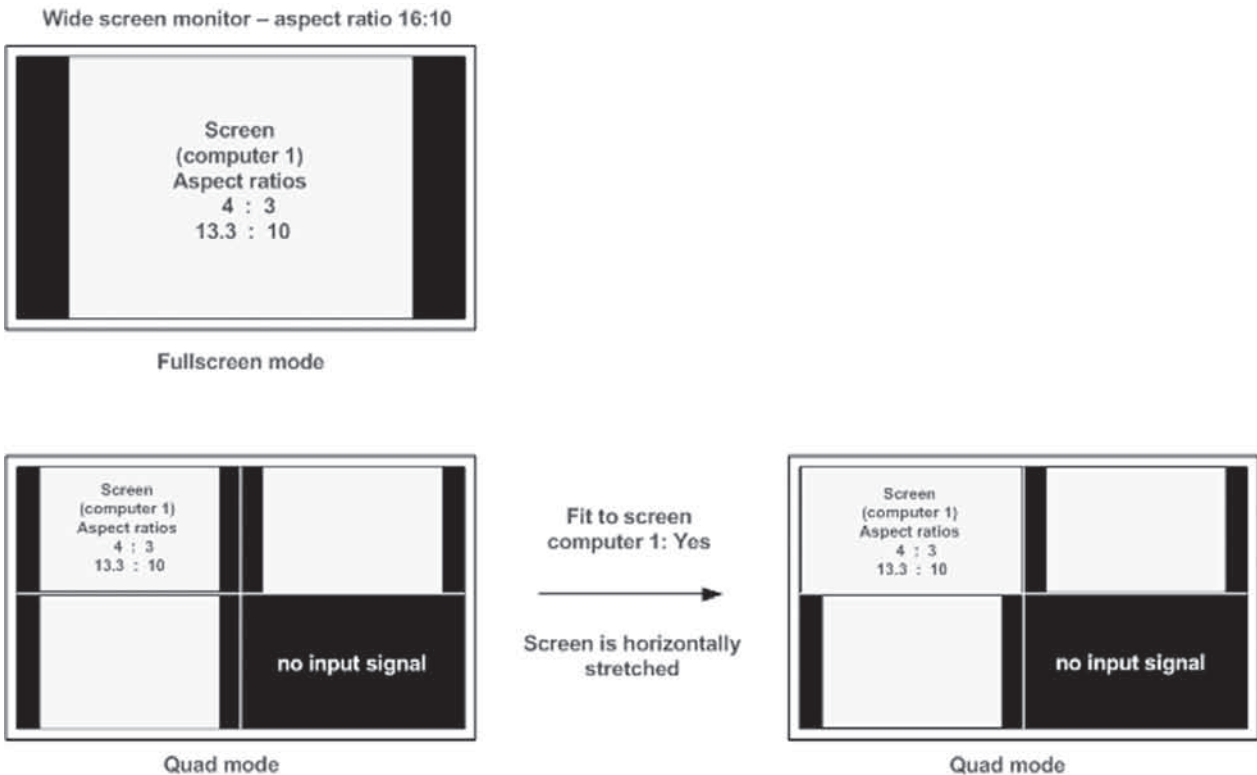
FORMAT

Use arrow keys to navigate in the VIDEO menu to the entry FORMAT and press ENTER/SELECT to open the FORMAT window.



When using a wide-screen monitor (aspect ratio 16:10) in Quad mode, a video input with a different aspect ratio is normally displayed with black borders to the left and right. If „fit to screen” is enabled, the image is resized to fill the entire quadrant in Quad mode.

By default, „fit to screen” is disabled to display each source in its native aspect ratio in all display modes (Quad, PiP, Full) of SPLITMUX-DVI-4.



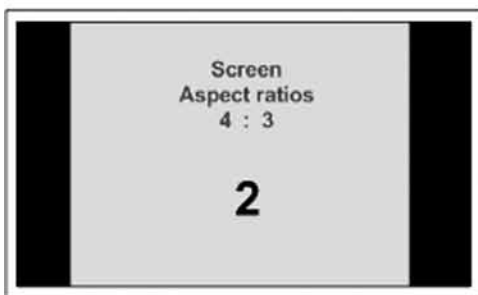
OSD - VIDEO - FORMAT

FORMAT (continued)

PiP mode for wide-screen monitors

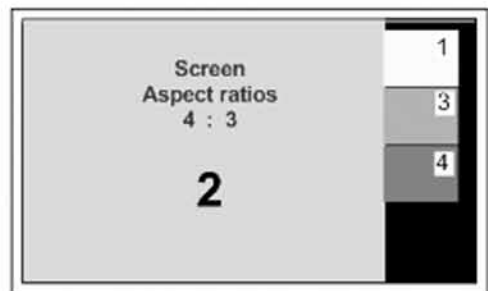
If you use a wide-screen monitor (for example with an aspect ratio of 16:10) and the active channel does not have a wide-screen aspect ratio (e.g. 4:3), PiPs are placed aside the full image of the active channel in the black bar on the right side. The full image of the active channel is displayed left-aligned on the screen resulting in a black bar on the right side. Provided appropriate PiP size (20%) is set, PiP images are thus placed entirely outside the full screen channel. No screen content is overlapped. All content of all sources is visible.

Wide screen monitor – aspect ratio 16:10



Fullscreen mode

Fullscreen ist positioned on the left-hand side in PiP mode



PiP mode



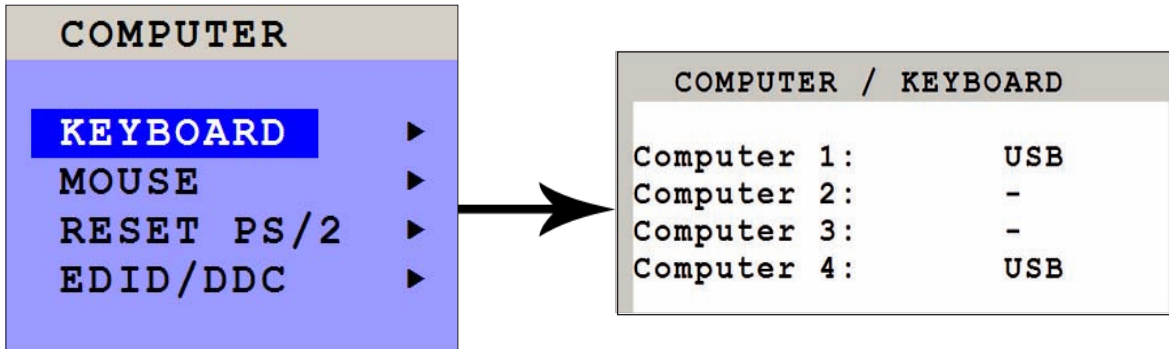
Quad mode

ON SCREEN DISPLAY

OSD - COMPUTER - KEYBOARD / MOUSE

KEYBOARD

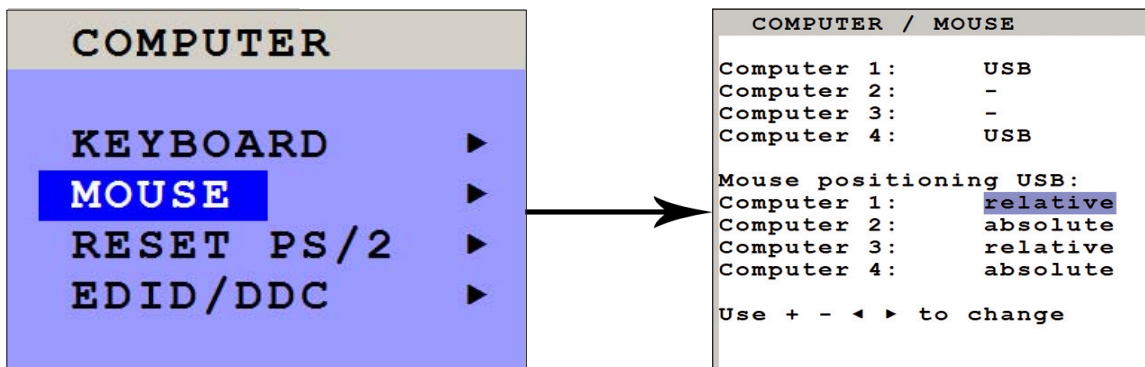
Use arrow keys to navigate in the COMPUTER menu to the entry KEYBOARD and press ENTER/SELECT to open the KEYBOARD window.



Use this display feature to identify which keyboard type (USB, PC1, PC2 or PC3) has been recognized at which computer port.

MOUSE

Use arrow keys to navigate in COMPUTER menu to the MOUSE line and press ENTER/SELECT to open the MOUSE window.



The upper half of the MOUSE window shows which mouse type (USB, PS/2 or PS/2 wheel) has been recognized at which computer port.

USB – mouse positioning

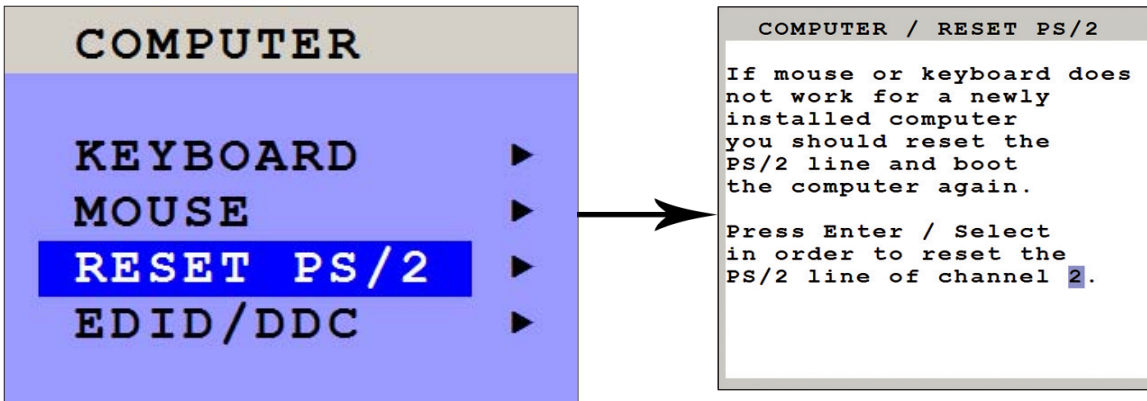
For USB ports, you may specify absolute or relative mouse positioning.

Choose absolute mouse positioning if a device is connected to the console that supports absolute coordinates, such as graphic trays, screen pads or KVM extenders.

OSD - COMPUTER - RESET PS/2 / EDID/DDC

RESET PS/2

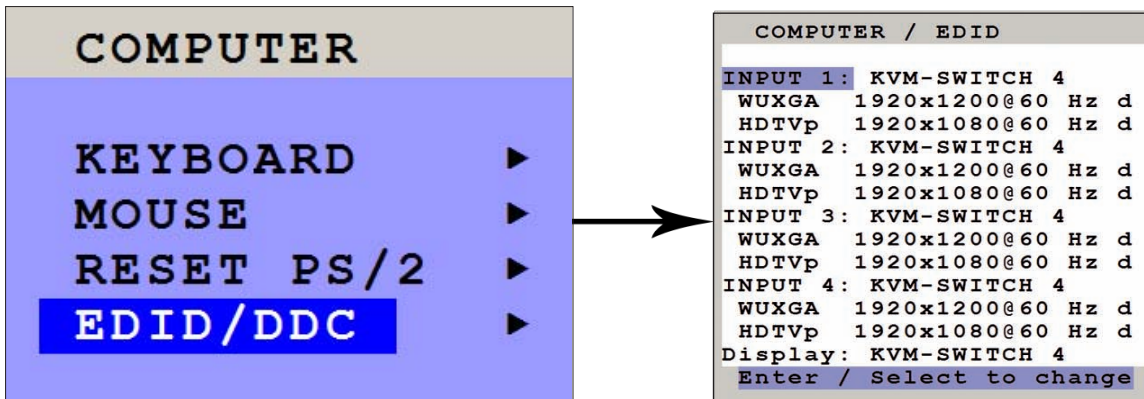
Use arrow keys to navigate in the COMPUTER menu to the entry RESET PS/2 and press ENTER/SELECT to open the RESET PS/2 window.



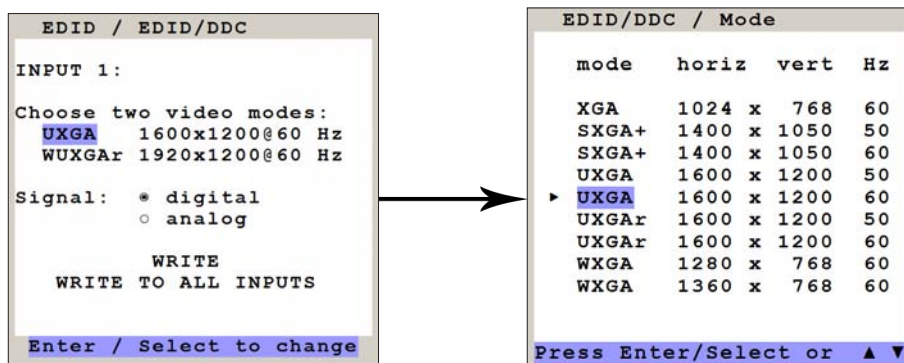
Use arrow keys ◀▶ or "+" and "-" keys to select the channel (1 to 4) you wish to reset and confirm by pressing ENTER/SELECT.

EDID/DDC

This window presents an overview of the status of the input EDIDs and the display EDID.



Use arrow keys to select one EDID and press ENTER/SELECT to open the window with detailed settings for this EDID.



ON SCREEN DISPLAY

OSD - COMPUTER - EDID/DDC

EDID/DDC (continued)

In this window two freely selectable video modes can be programmed in the input EDID visible to the connected computer at the input port.

It is recommended to program the preferred video modes for the connected signal source.

SPLITMUX-DVI-4 also uses these entries to distinguish between confusable analog input video signals. The following groups of analog input signals are difficult to distinguish automatically:

WUXGA 1920x1200 60 Hz
UXGA 1600x1200 60Hz
UXGA 1600x1200 60Hz with reduced blanking

WUXGA 1920x1200 50 Hz
UXGA 1600x1200 50Hz
UXGA 1600x1200 50Hz with reduced blanking

SXGA+ 1400x1050 60Hz
WSXGA 1680x1050 60Hz

XGA 1024x768 60Hz
WXGA 1280x768 60Hz
WXGA 1360x768 60Hz

If you experience problems with the automatic input detection of an analog input signal in these groups you can overwrite the automatic detection by programming the expected video signal into the input EDID.

Note:

Please keep in mind that this setting will overwrite the automatic analog input mode detection. If you connect a different video source, or change the video mode from the PC, you may need to change this setting again to get correct results. For the detection of digital input signals this setting has no effect.

Use arrow keys ◀▶ to navigate to the first video mode entry and press ENTER/SELECT to open the window with a list of selectable video modes.

In this window use arrow keys ◀▶ to select the desired line in the list shown on the right and press ENTER/SELECT for the video format.

Use arrow keys ◀▶ to navigate to the second video mode entry and press ENTER/SELECT to open the window with a list of selectable video modes.

Use arrow keys ◀▶ to navigate to "Signal" and press ENTER/SELECT to switch between analog or digital. This setting specifies whether the EDID should identify the SPLITMUX-DVI-4 as an analog or digital device. Usually it is safe to leave this setting at "digital".

Use arrow keys ◀▶ to navigate to the following write options:

WRITE	save the changes in the current input EDID.
WRITE TO ALL INPUTS	save the changes to all four input EDIDs.
SAME AS DISPLAY EDID	write the contents of the display EDID to the current input EDID.

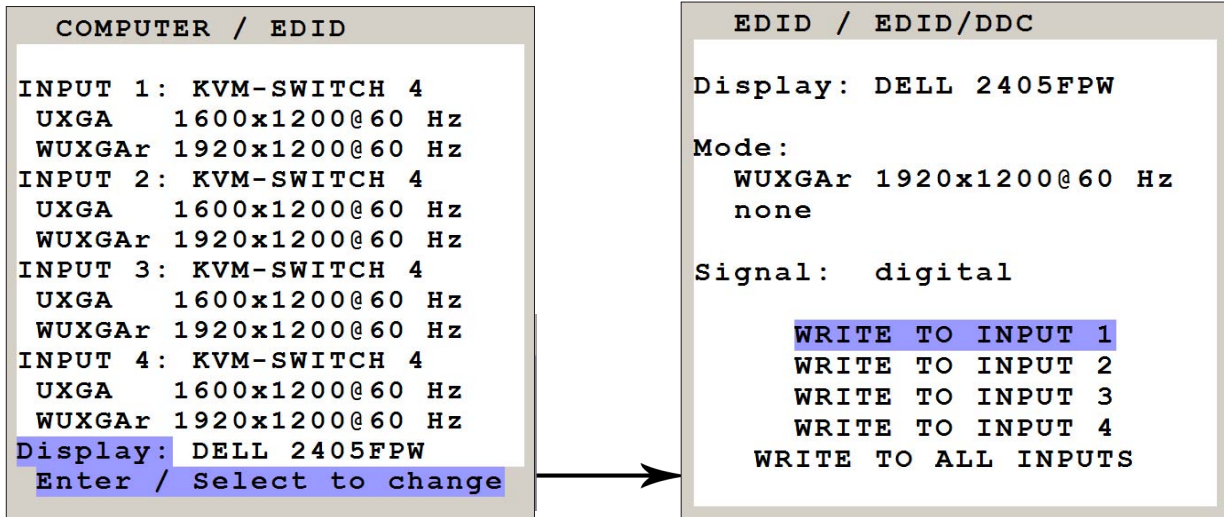
Press ENTER/SELECT to start the selected write option and wait until "successful" is displayed in the bottom status line.

Note:

If a display EDID was written to an input EDID then a subsequent write command will restore the content of the input EDID to the default SPLITMUX-DVI-4 values.

OSD - COMPUTER - EDID/DDC

EDID/DDC (continued)



This window gives an overview of the contents of the display EDID.

It has the following write options:

- WRITE TO INPUT 1 write the monitor EDID to input 1
- WRITE TO INPUT 2 write the monitor EDID to input 2
- WRITE TO INPUT 3 write the monitor EDID to input 3
- WRITE TO INPUT 4 write the monitor EDID to input 4
- WRITE TO ALL INPUTS write the monitor EDID to all inputs

Note:
 The content of the input EDIDs can be reset to default by the OSD function CONFIGURATION / FACTORY RESET. All user settings will be changed to factory default if factory reset is selected.

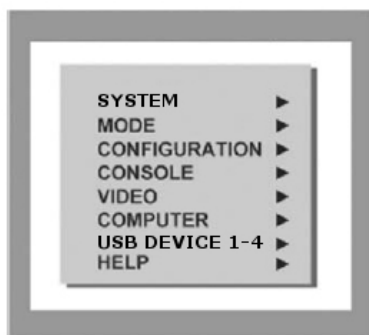
ON SCREEN DISPLAY

OSD - USB DEVICE 1-4

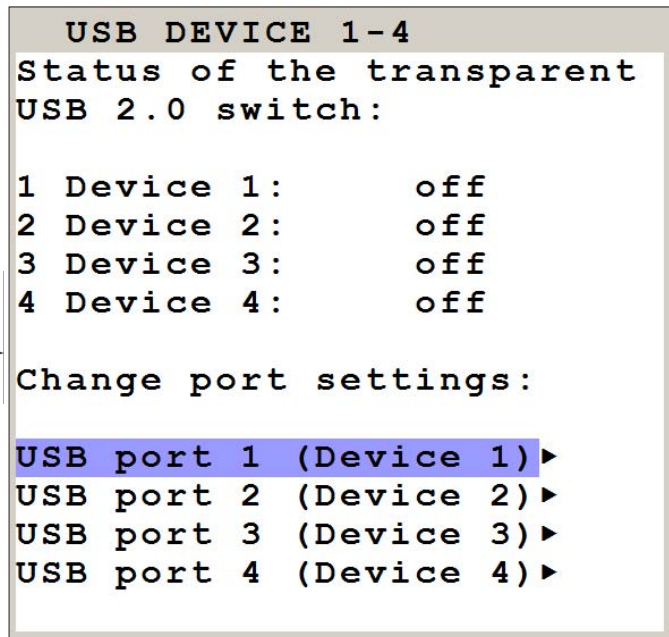
USB Device 1-4

SPLITMUX-DVI-4 supports and switches transparent USB 2.0 devices such as printer, camera, 3D mouse, finger printer, and external memory. Connect a single finger printer to log in on all four computers connected to SPLITMUX-DVI-4; or connect a memory stick to copy data from one computer to the stick, and from the stick to another computer connected to SPLITMUX-DVI-4: Data can be copied between computers without being networked.

Use arrow keys to navigate in the OSD menu to the entry USB DEVICE 1-4 and press ENTER/SELECT to open the window.



This window shows the status of the transparent USB 2.0 switch: Which USB device/port is switched to which computer (1 to 4) connected to SPLITMUX-DVI-4 or switched off.



OFF: Port is not switched to a computer. A USB device may be connected, but it is not switched to a computer. Computer (1-4): Port is switched to one of the computers.

This window also allows changing port and switching settings.

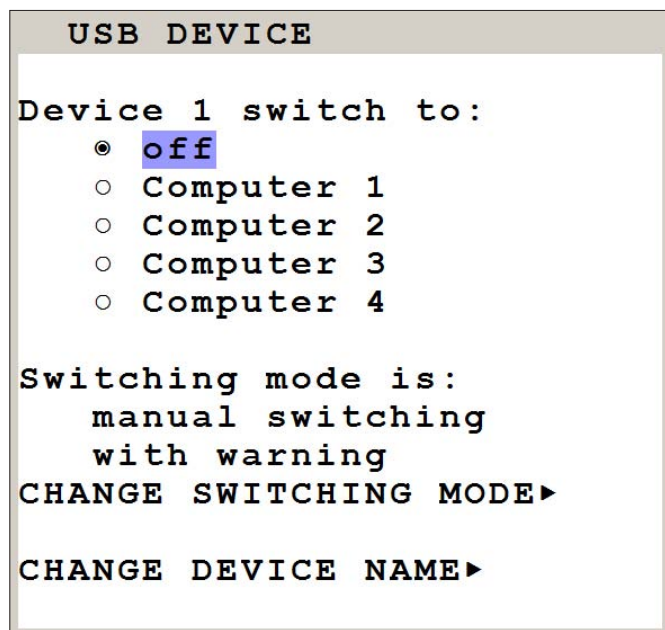
Use arrow keys to select one of the four USB ports and open its submenu by pressing ENTER/SELECT.

This window allows changing the following settings dedicated to this USB port: Manual switching, change switching mode, change USB device name.

Device 1 switch to:

By default, it is switched „off”: This USB port is not switched to any of the four computers.

To **manually** switch this USB port to one of the four computers or „off”, use arrow keys to navigate in the „Device 1 switch to” menu and press ENTER/SELECT.



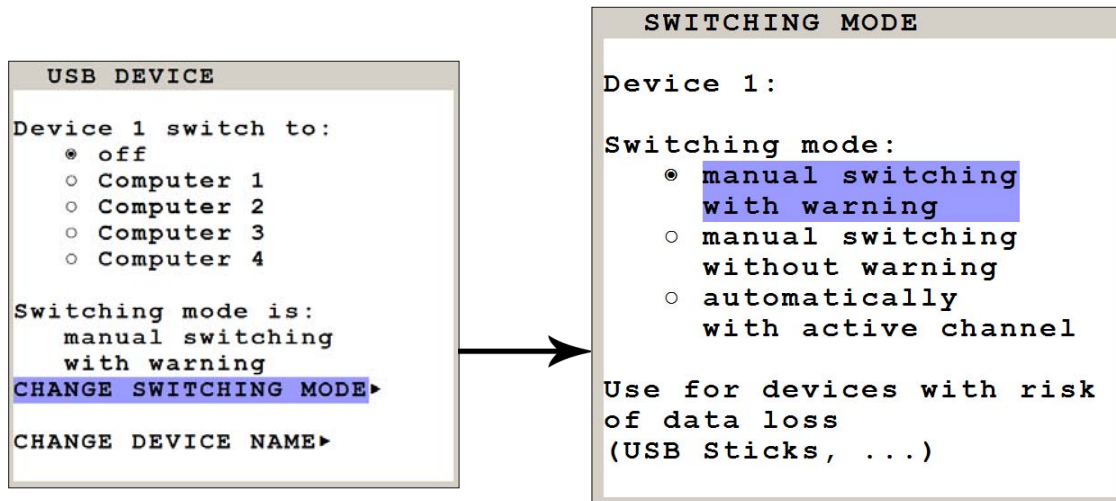
OSD - USB DEVICE 1-4 - SWITCHING MODE

USB Device 1-4 (continued)

Switching mode:

By default, switching mode is „manual switching with warning”.

To change the switching mode use the arrow keys to navigate to „CHANGE SWITCHING MODE” and press ENTER/SELECT.



Use arrow keys to choose one of the following modes to change the switching mode:

1. **Manual switching with warning:** This mode allows switching the USB port manually by selecting one of the computers connected. But before executing the switching the following warning message is displayed: „In order to prevent data loss, stop the USB device before switching!” To execute the switching press ENTER/SELECT. This switching mode is recommended for USB devices with risk of data loss (e.g. USB stick, printer, external memory)
2. **Manual switching without warning:** This mode allows switching the USB port manually by selecting one of the computers connected. The switching is executed immediately. This switching mode is recommended for USB devices without risk of data loss.
3. **Automatically with active channel:** In this mode, the USB device/port is always switched automatically with the active channel. When switching channel/computer this USB device/port will automatically be switched to the activated channel/computer.

Note:

After power on, all USB devices are disconnected from computers except devices with switching mode “automatically with active channel”.

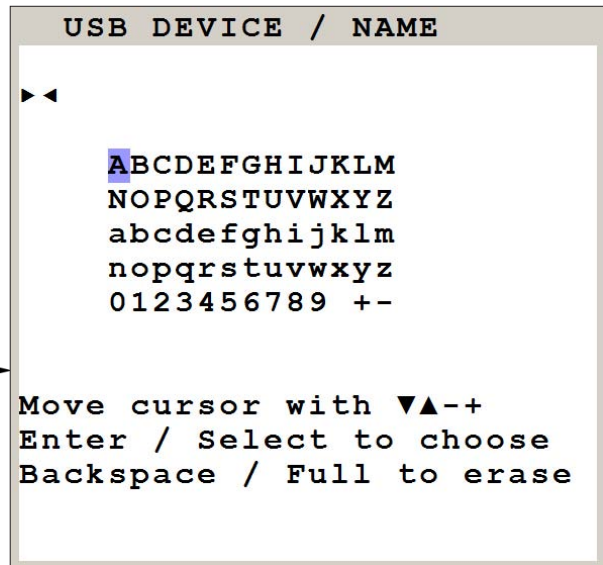
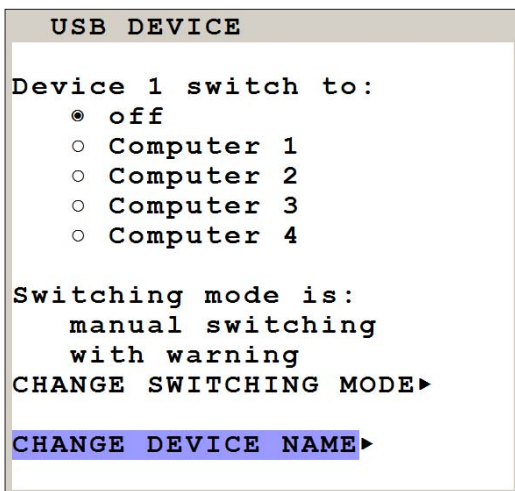
OSD - USB DEVICE 1-4 - CHANGE NAME

USB Device 1-4 (continued)

Change device name:

In the „USB DEVICE. / USB DEVICE” menu chose „Change device name” and press ENTER/SELECT to change the name of the connected USB device.

Use the keyboard to rename the USB device or use the front panel buttons (as described in the OSD). Exit the menu. The new name will automatically be saved and displayed in the other menus.

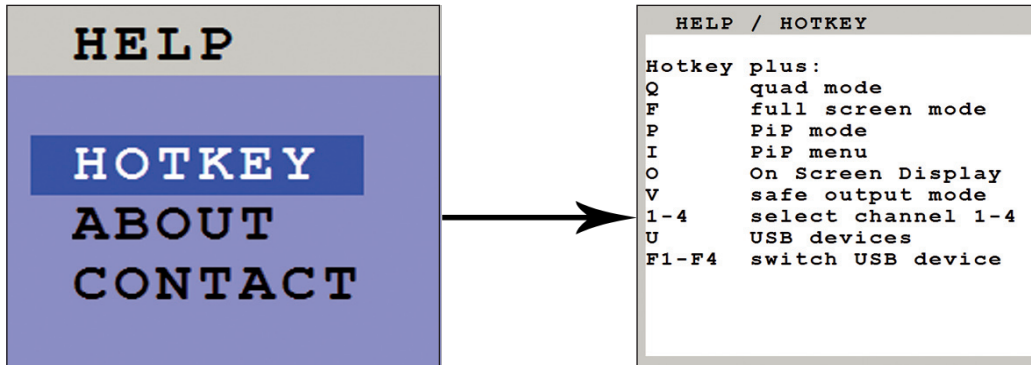


Note:

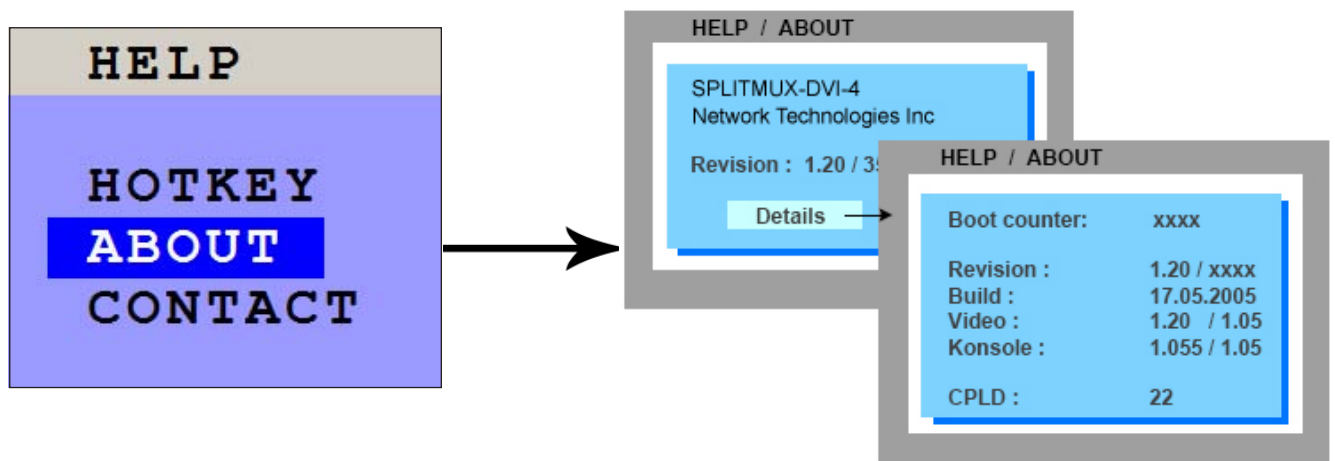
Use hotkey + „u” (by default: hotkey = Ctrl + Alt) to quickly access the USB DEVICE 1-4 menu. This allows quick access to this menu when switching manually.
To directly open the switching menu of e.g. USB device/port 1 use hotkey + „F1” (by default: hotkey = Ctrl + Alt).

OSD - HELP - HOTKEY / ABOUT / CONTACT

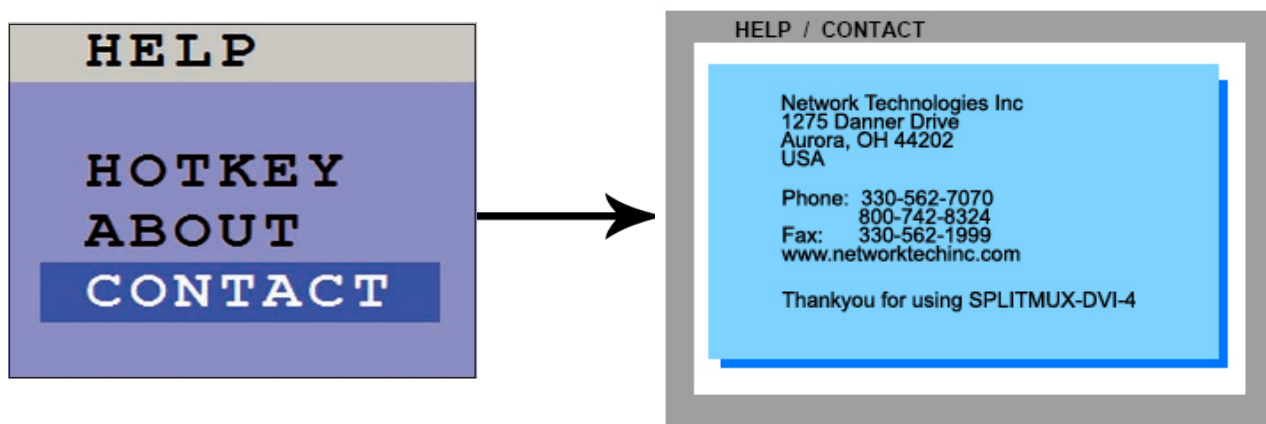
Use arrow keys to navigate in the HELP menu to the desired line and press ENTER/SELECT to open the corresponding window.



The HELP / COMMAND LIST window lists keyboard commands and their functions.



The HELP / ABOUT windows show the current revision levels of SPLITMUX-DVI-4 hardware and firmware.



The HELP / CONTACT window contains information on how to contact NTI support. For contact info see also page 62.

HOTMOUSE

HOTMOUSE - ACTIVATING HOTMOUSE CURSOR

HOTMOUSE

Hotmouse is an exclusive function offered by NTI SPLITMUX-DVI-4. It works with your standard mouse or trackball. Similar to using hotkeys on your keyboard, Hotmouse is a quick and comfortable way to operate SPLITMUX-DVI-4 simply with your standard mouse, trackball, or touch screen. No software or additional hardware is required.

When activated, your mouse cursor becomes Hotmouse Cursor - a gray and white rectangle - that allows performing all Hotmouse functions.

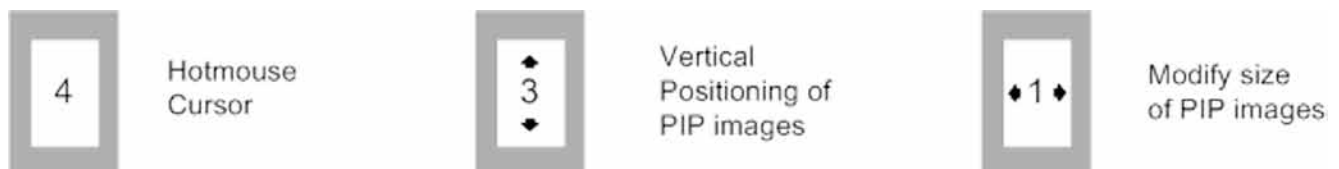
ACTIVATING HOTMOUSE CURSOR

To activate **Hotmouse Cursor** move / shake your mouse at the console rapidly four times in alternating horizontal direction.



The Hotmouse Cursor can also be activated via touch screen: tap the screen twice, and leave your finger pressed on the touchscreen after the second tap (tap – hold, like a double click without lifting the finger on the second click), until the Hotmous Menu opens. Now click outside the Hotmouse Menu to open the Hotmouse Cursor.

The Hotmouse Cursor changes its look depending on its position on the screen (arrows in vertical or horizontal direction, and number of channel).



Use the Hotmouse Cursor to perform the following functions:

- in Fullscreen mode: - Switch to another fullscreen channel
- in Quad mode: - Select another active channel (keyboard, mouse)
- in PiP mode: - Modify position and size of PIP images
- Change active channel

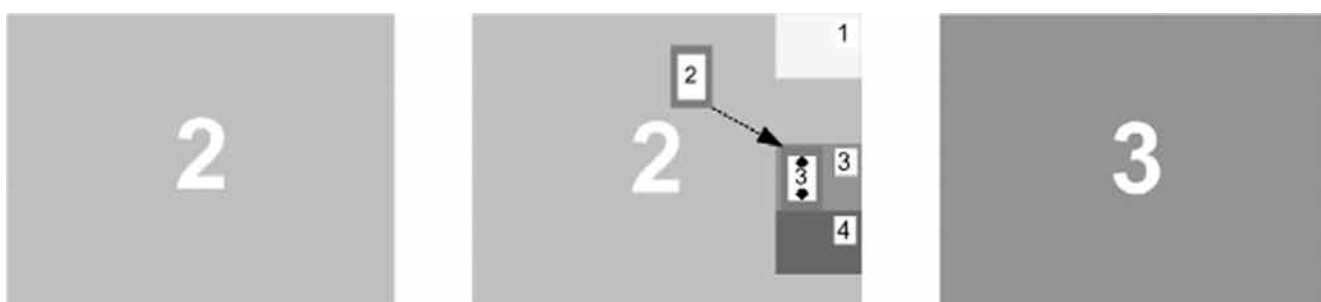
HOTMOUSE CURSOR IN FULLSCREEN MODE / QUAD MODE

HOTMOUSE CURSOR IN FULLSCREEN MODE

When you activate the Hotmouse Cursor in Fullscreen mode, PiP images of the other channels are temporarily displayed to allow you to switch to another channel.

Switching to another fullscreen channel

Activate Hotmouse Cursor. Move the Hotmouse Cursor over the PiP image of the channel that you wish to activate and press the **left** mouse button.



Example: Switch from channel 2 to channel 3

HOTMOUSE CURSOR IN QUAD MODE

Switching active channel (mouse, keyboard)

Activate Hotmouse Cursor. To change the active channel (switching mouse and keyboard), position the Hotmouse Cursor in the respective channel field (1 to 4) and press the left mouse button.

Note:

When you move into another channel field, the channel number in the Hotmouse Cursor changes.



Example: Switch active channel from 1 to 3

HOTMOUSE

HOTMOUSE CURSOR IN PIP MODE

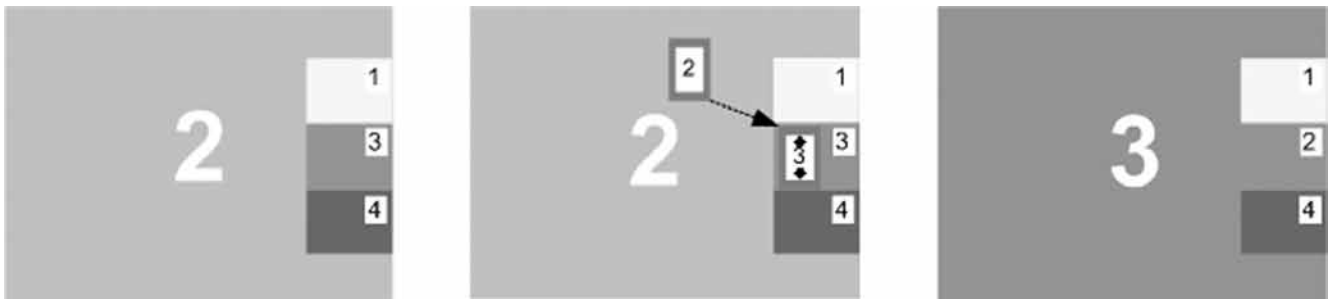
HOTMOUSE CURSOR IN PIP MODE

Change active channel

Enable Hotmouse Cursor. Move the Hotmouse Cursor to the PiP-image of the channel you wish to activate and press the left mouse button.

Note:

When the Hotmouse Cursor moves over a PiP-image, its appearance changes (arrows, channel number).



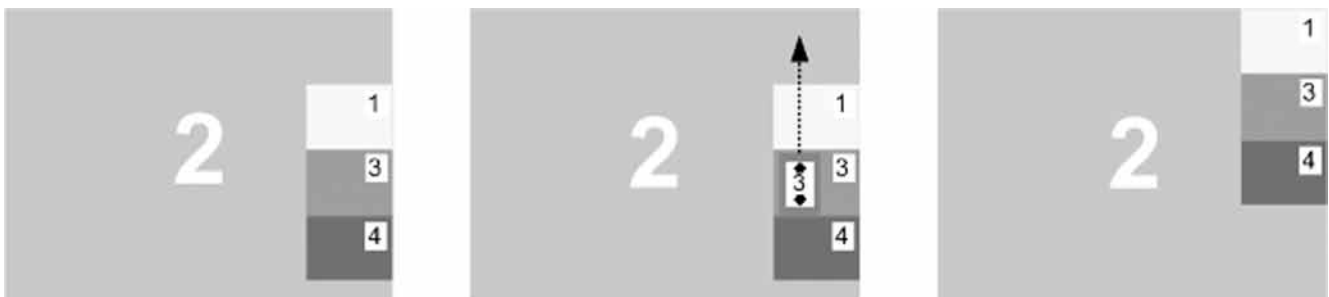
Example: Switch active channel from 2 to 3

Vertical positioning of PiP images

Activate Hotmouse Cursor. Move the Hotmouse Cursor to the PiP-image area, hold down the left mouse button and drag the PiPs to the desired vertical position.

Note:

As soon as the Hotmouse Cursor moves over a PiP image, its appearance changes (arrows, channel number).



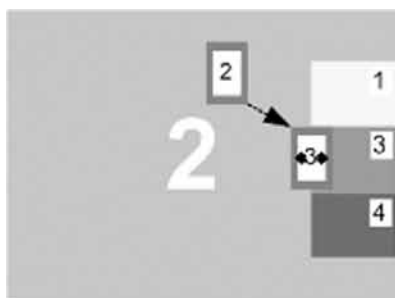
Example: Move PiP images upwards.

HOTMOUSE CURSOR IN PIP MODE**HOTMOUSE CURSOR IN PIP MODE (continued)****Modify size of PiP images**

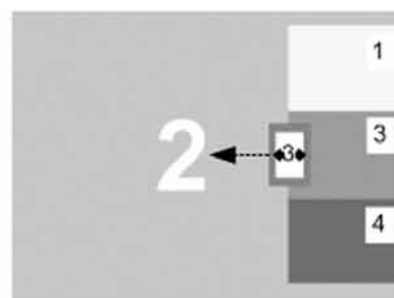
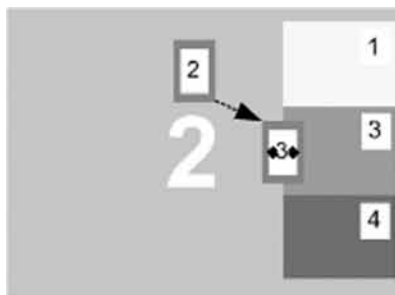
Activate Hotmouse Cursor and move to the left edge of the PiP image area until horizontal arrows appear in the Hotmouse Cursor. Hold down the left mouse button and drag the Hotmouse Cursor to the left to increase PiP image size, or to the right to reduce PiP image size.

Note:

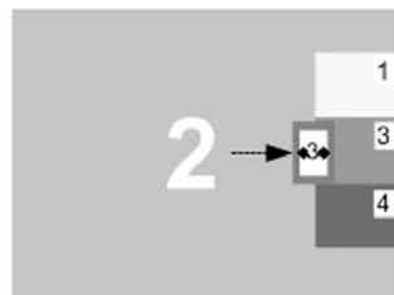
As soon as the Hotmouse Cursor moves to the left edge of the PiP image area, its appearance changes (horizontal arrows, channel number).

Scaling PiP images up

Hold left mouse button

**Scaling PiP images down**

Hold left mouse button



HOTMOUSE

HOTMOUSE MENU - ACTIVATING / OPERATING

HOTMOUSE MENU - ACTIVATING

Activate Hotmouse Cursor and press the right mouse button to open the Hotmouse Menu. The Hotmouse Menu can also be opened via touch screen: tap the screen twice, and leave your finger pressed on the touchscreen after the second tap (tap – hold, like a double click without lifting the finger on the second click), until the Hotmouse Menu opens.

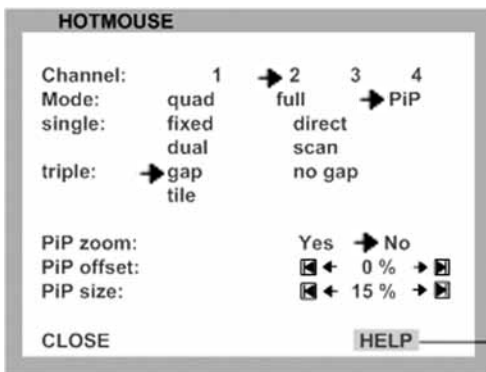
By clicking outside the Hotmouse Menu, you can open the Hotmouse Cursor to enlarge and reposition PiPs (only in PiP mode), and switch channels.

After you are finished using the hotmouse cursor, the hotmouse menu will reopen. Menu appearance varies depending on display mode (Quad / Fullscreen / PiP). This menu allows you to carry out switching operations and change PiP settings:

HOTMOUSE MENU - OPERATING

The Hotmouse Menu allows you to carry out switching operations and to enter PiP settings by mouse click (left mouse button).

Click Help on the Hotmouse Menu for information on the individual symbols.

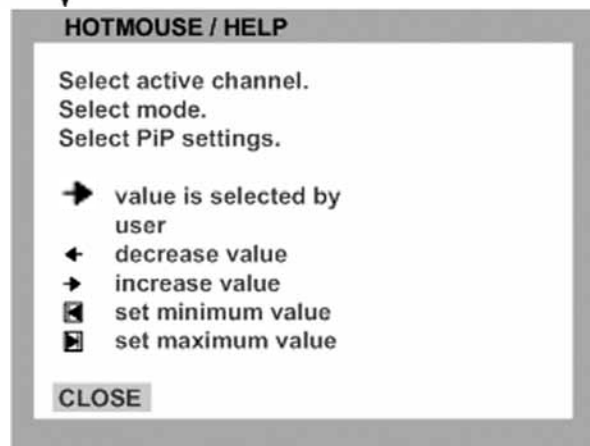


Click on HELP to open the HOTMOUSE HELP window.

Hotmouse menu in PiP-mode

Click with the left mouse button on the → arrow symbols to either increase or decrease the values in question. Clicking on the ◀ ▶ arrow symbols sets the minimum or maximum value.

After having completed the settings, click on CLOSE to close the Hotmouse Menu window and exit the Hotmouse Function.



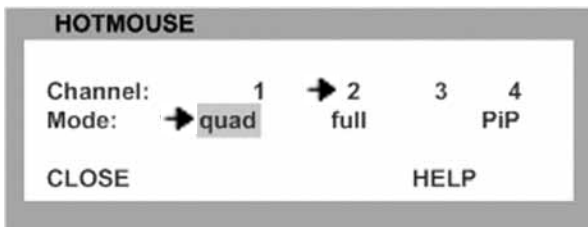
HOTMOUSE MENU - MODES

HOTMOUSE MENU - MODES

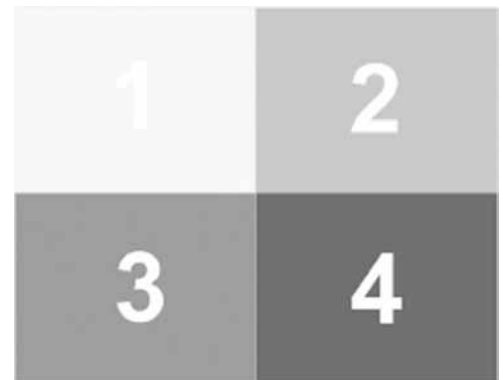
The individual modes can be set as follows:

HOTMOUSE MENU - QUAD MODE

Use the mouse to navigate to a channel in the Hotmouse Menu and click the left mouse button to activate it. You can also switch to a different mode with the left mouse button.



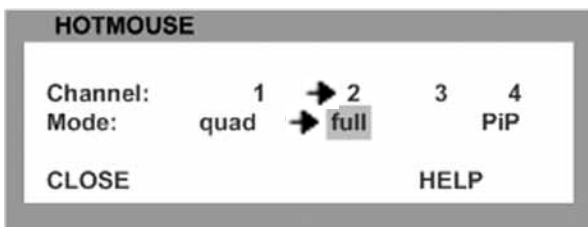
Hotmouse Menu in Quad mode



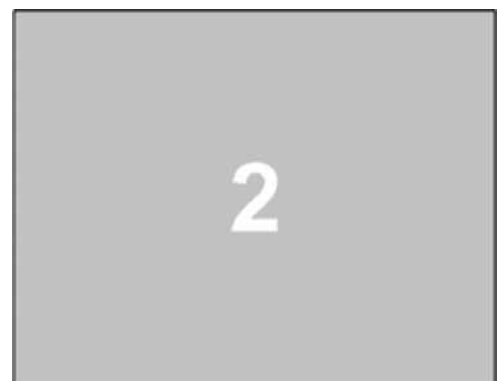
Quad mode

HOTMOUSE MENU - FULLSCREEN MODE

Use the mouse to navigate to a channel in the Hotmouse Menu and click the left mouse button to activate it. You can also switch to a different mode with the left mouse button.



Hotmouse Menu in Fullscreen mode



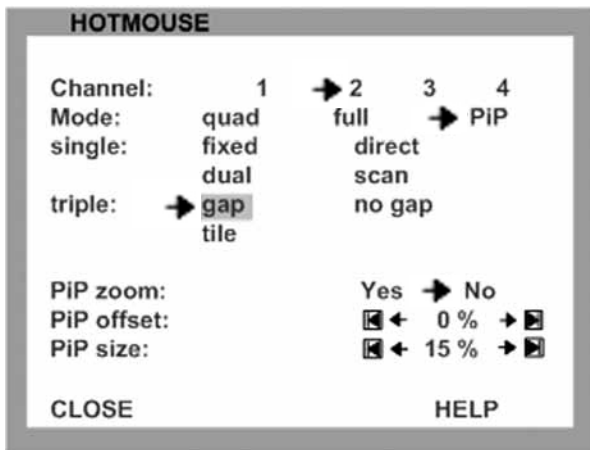
Fullscreen mode

HOTMOUSE MENU - MODES

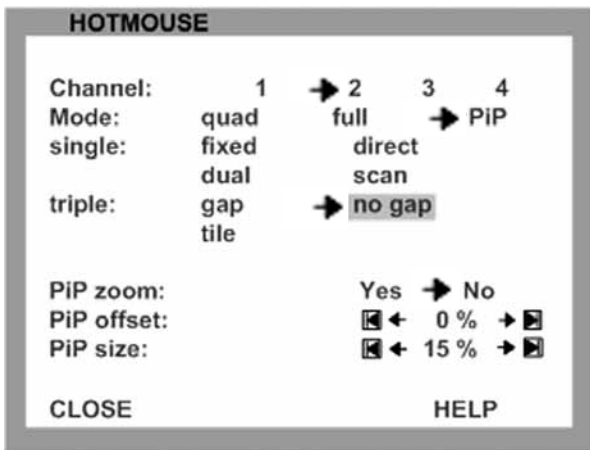
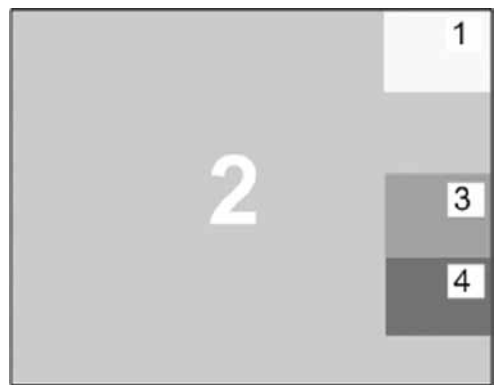
HOTMOUSE MENU – MODES (continued)

HOTMOUSE MENU – PIP MODE

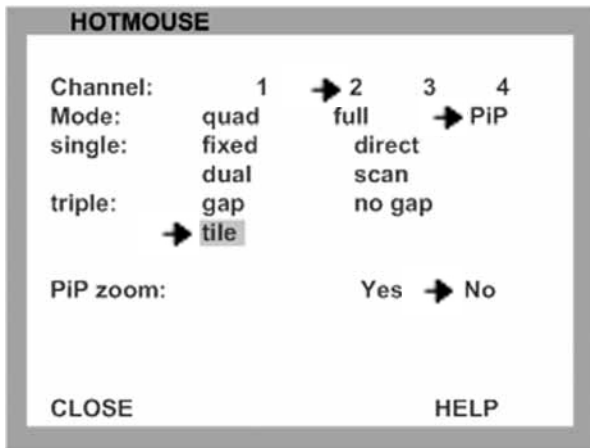
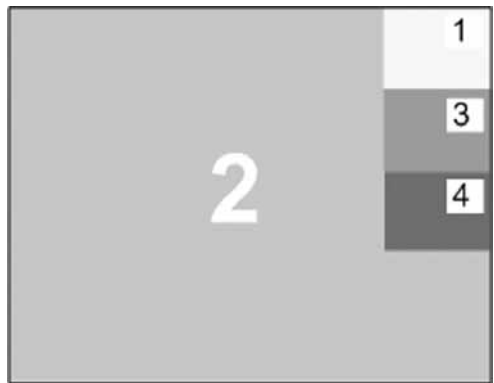
Use the mouse to navigate to a channel in the Hotmouse Menu and click the left mouse button to activate it. Change position and size of PiP images, and PiP zoom. Change PiP mode (triple / triple gap / single fixed / single direct / single scan) and scan time. The PiP modes are described in detail on page 27ff.



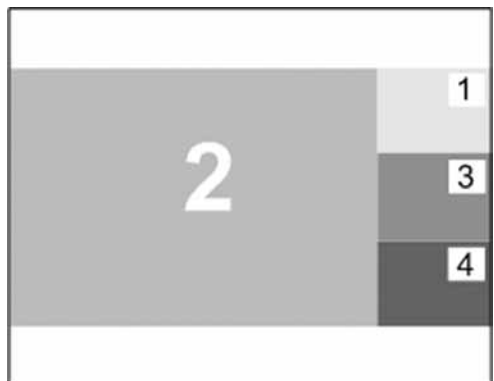
Triple gap: PiP images are displayed with a gap in place of the active channel.



Triple no gap: PiP images are displayed without a gap.

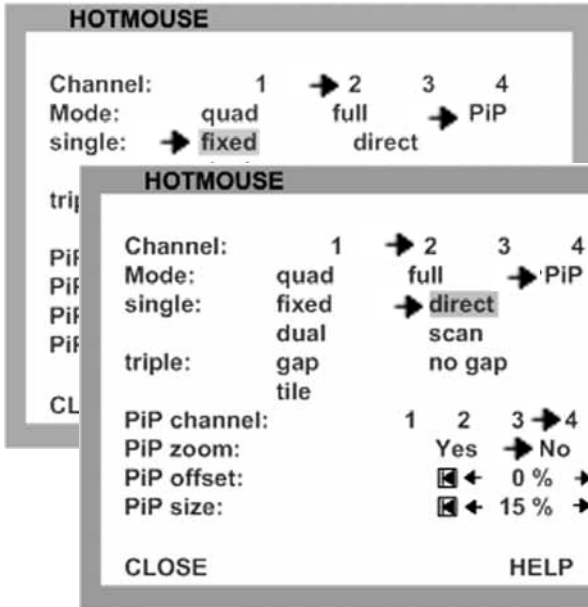


Triple tile: The size of the main image and the PiP images is optimized so that the main image and the PiP images are shown as large as possible without overlapping.



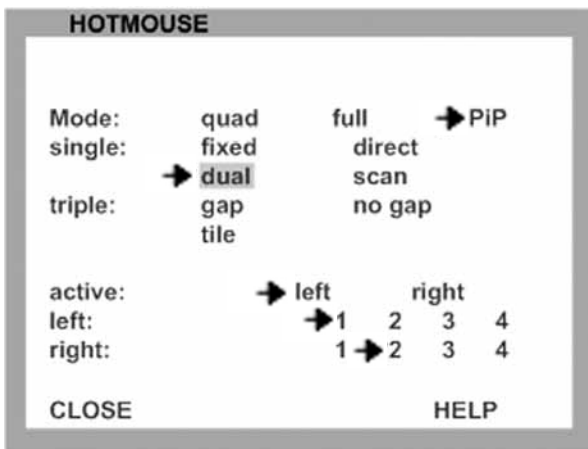
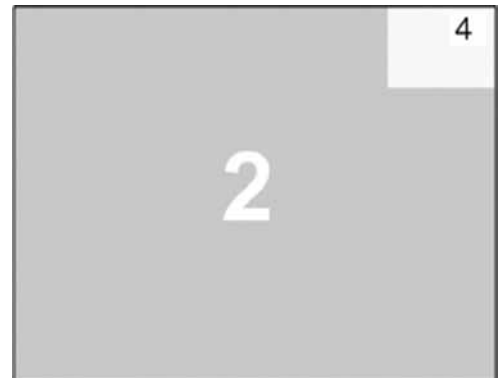
HOTMOUSE MENU - MODES

HOTMOUSE MENU – PIP MODE (continued)



Single fixed: One selected PiP image is permanently displayed.

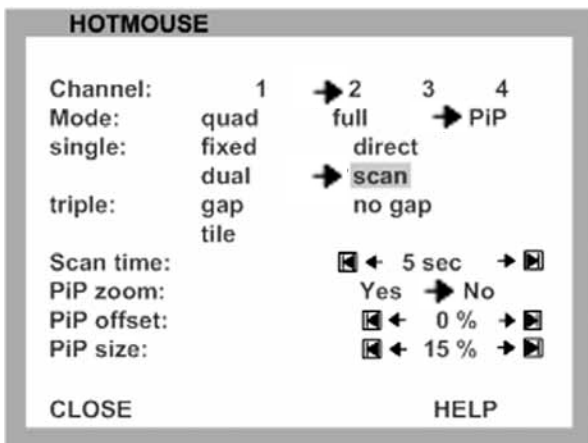
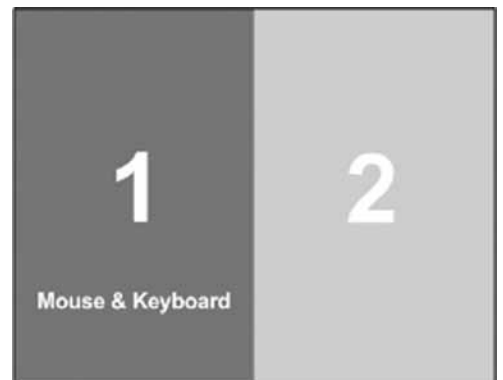
Single direct: Press the front panel buttons 1, 2, 3, or 4 to directly select the PiP channel you want.



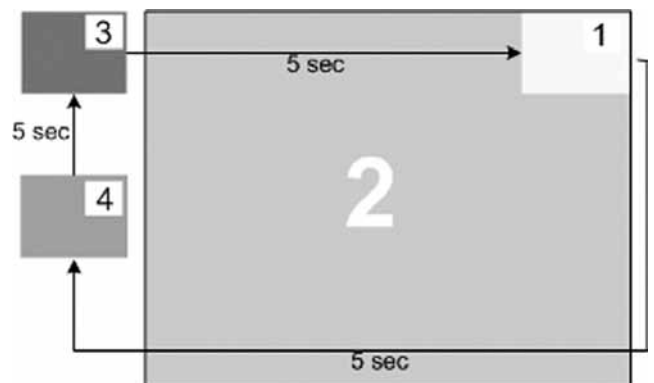
Single dual: The left half of the first channel is displayed at full size next to the left half of the second channel.

Use the „active“ setting to select the active channel.

To switch the active channel use the OSD, Hotkeys or front buttons.



Single scan: Cycles through the PiP images at a set interval.



SERVICE

SERVICE INFORMATION

MAINTENANCE AND REPAIR

SPLITMUX-DVI-4 does not contain any user-serviceable parts. Please report any malfunction or deviation from the functionality described in this manual during operation to NTI's Technical Support Department.

If we cannot solve your problem by phone and find that the fault is due to the unit, we will repair your unit free of charge during our warranty period. Please pack the device carefully, if possible in its original packaging, and contact us for a return merchandise authorization at 1-800-742-8324 (USA & Canada) or 330-562-7070 (Worldwide).

DECLARATION OF CONFORMITY



Declaration of Conformity

This declaration is valid for following product:

Equipment: Video, Keyboard, Mouse, USB Switching System

Type: V-Switch Quad II

NTL Model: SPLITMUX-DVI-4

Hereby the equipment is confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (2004/108/EC) and the Council Directive relating to Low Voltage (73/23/EC).

The following company is responsible for this declaration:

**HETEC Datensysteme GmbH
Landsberger Strasse 65
D-82110 Germering
Germany**

The measurements were carried out in accredited laboratories.

For the evaluation of above mentioned Council Directives for Electromagnetic Compatibility and for Low Voltage following standards were consulted:

DIN EN 55022 class A: (Emission)

DIN EN 61000-3-2: (Harmonic current emission)
DIN EN 61000-3-3: (Flicker)

DIN EN 61000-6-2: (Immunity)

- DIN EN 61000-4-2
- DIN EN 61000-4-3
- DIN EN 61000-4-4
- DIN EN 61000-4-5
- DIN EN 61000-4-6
- DIN EN 61000-4-11

Place / Date:
Germering, 1-June 2011

Signature of responsible Person:

(Wolfgang Herrle)

FCC DECLARATION

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

KEYBOARD COMMANDS

SPLITMUX-DVI-4 supports two types of hotkey: „multiple keys” and „double click”.

By default, SPLITMUX-DVI-4 is set to „multiple keys”.

Use the OSD menu to choose the hotkey type and keys (see page 14).





Multiple keys: Press multiple keys plus command key.

COMMAND = Hotkey  and  together



The following hotkeys are available for selection:


By Default: **HOTKEY**  =  + 

Further examples:  =  +  + 

 =  + 

 = 

Double click key: Double click one key (=hotkey) and right after press the command key within 2 seconds.

COMMAND = Hotkey  and  in sequence

As double click hotkey you can choose one of the following keys:

Examples: **HOTKEY**  =  

 =  

Note:

In command mode (hotkey is activated) LED flashing on the keyboard.

In double click hotkey mode, pressing an invalid key leaves the command mode.

While OSD is open hotkey = 

KEYBOARD COMMANDS

Selecting display mode

- HK** + **Q** **Quad mode**
- HK** + **F** **Fullscreen mode**
- HK** + **P** **PiP mode**

Selecting active channel in Fullscreen / Quad / PiP mode

- HK** + **1** **Computer 1**
- HK** + **2** **Computer 2**
- HK** + **3** **Computer 3**
- HK** + **4** **Computer 4**

You can also use hotkey and the arrow keys to switch the active channel.

In Dual mode, you can select the channel on the right using the 1, 2, 3, or 4 keys on the numeric keypad. Switch the active channel with hotkey and the arrow keys.

In PiP mode, the active channel automatically is displayed as full image.

Open USB device switch menu

- HK** **F1** **Open USB device/port 1 switch menu**
- HK** **F2** **Open USB device/port 2 switch menu**
- HK** **F3** **Open USB device/port 3 switch menu**
- HK** **F4** **Open USB device/port 4 switch menu**

Other Commands

- HK** + **O** **Open OSD**
- HK** + **U** **Directly open OSD USB Device 1-4**
- HK** + **V** **Safe output resolution**
- HK** + **I** **Directly open OSD PiP menu**
(In the background display mode switches to PiP as long as menu is open)

DEVICE CONFIGURATION PROGRAM

Installation of Device Configuration Program (CONFDEV)

The Device Configuration Program allows you to remotely operate the OSD of SPLITMUX-DVI-4 on an external Windows computer via serial connection.

To install the device configuration software CONFDEV, you need

- A Windows computer with a free RS 232 COM-port
- Your SPLITMUX-DVI-4
- The installation CD containing the **confdevEn.exe** program
- The enclosed „serial cable” (RJ45-DB9 adaptor + RJ45 CAT5 cable)



Use the serial cable to connect the COM port of the Windows computer with the serial port of your SPLITMUX-DVI-4.

Insert the installation CD into the CD-ROM drive and start the **confdevEn.exe** program.

The Device Configuration Program (CONFDEV) window opens:




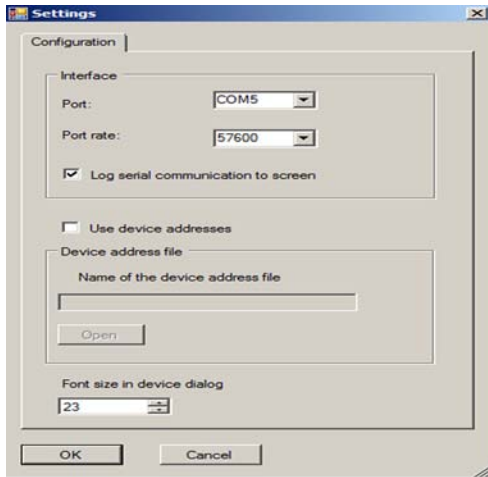
Click to open the OSD (device configuration) remotely.

Click to change settings, like COM port.


DEVICE CONFIGURATION PROGRAM

Settings

Click the „device configuration” button  to open the SETTINGS window. It allows you to set the font size for the OSD window, log parameters, and the COM port SPLITMUX-DVI-4 is connected to.



Remote OSD operation

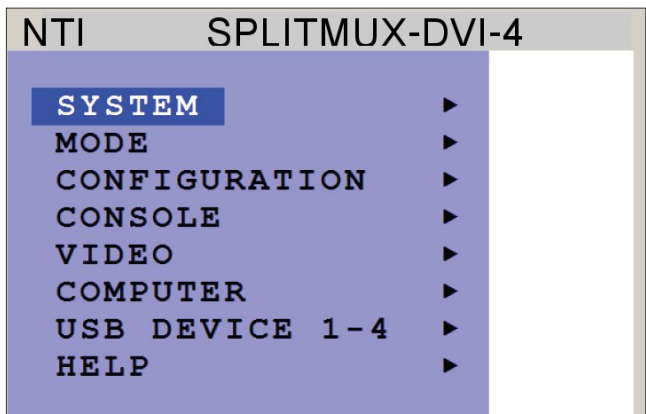
Click the green arrow  to open the On Screen Display (OSD) of SPLITMUX-DVI-4 remotely on your external Windows computer.

Now, the main OSD menu is open and ready for navigation.

Navigation

Use arrow keys on the keyboard of your remote Windows computer to navigate to the desired line in the OSD menu and confirm by pressing ENTER.

Use the ESC key to return to the previous menu.



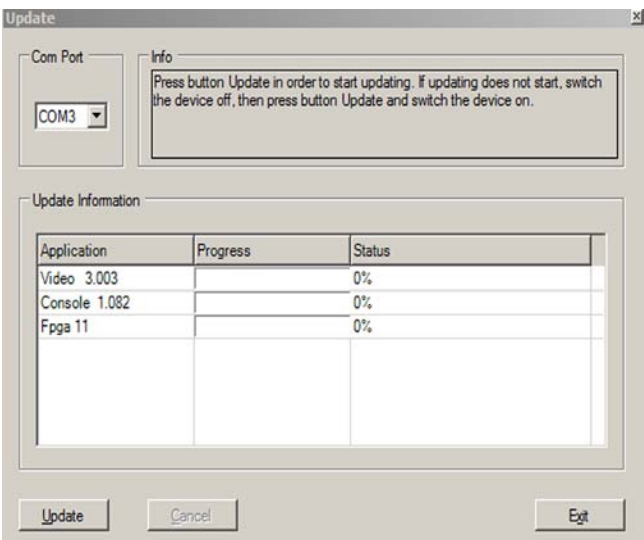
FIRMWARE UPDATE

Update firmware of SPLITMUX-DVI-4

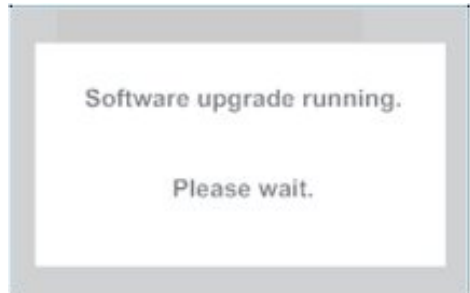
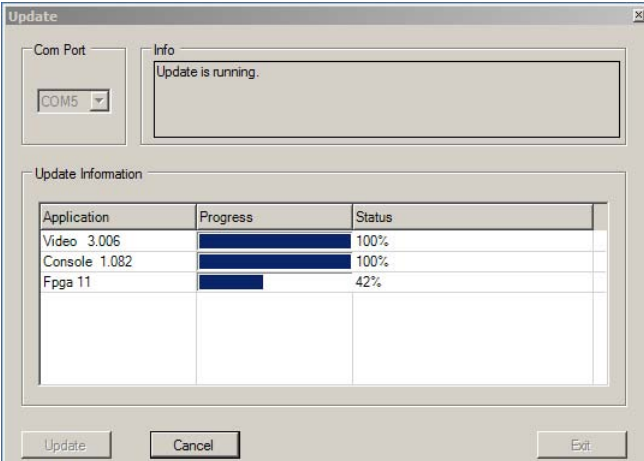
To execute a firmware update, you need:

- a computer with serial port
- the enclosed „serial cable” (RJ45-DB9 adaptor + RJ45 CAT5 cable)
- the current executable firmware file

Use the serial cable to connect the COM port of your computer to the RS232 port on SPLITMUX-DVI-4.



Start the executable firmware file.
 Set the desired COM port and press „Update”.
 All LEDs on the front panel of SPLITMUX-DVI-4 flash (blue) during the upgrade.
 Additionally, the upgrade process is indicated by an OSD window on your remote computer.

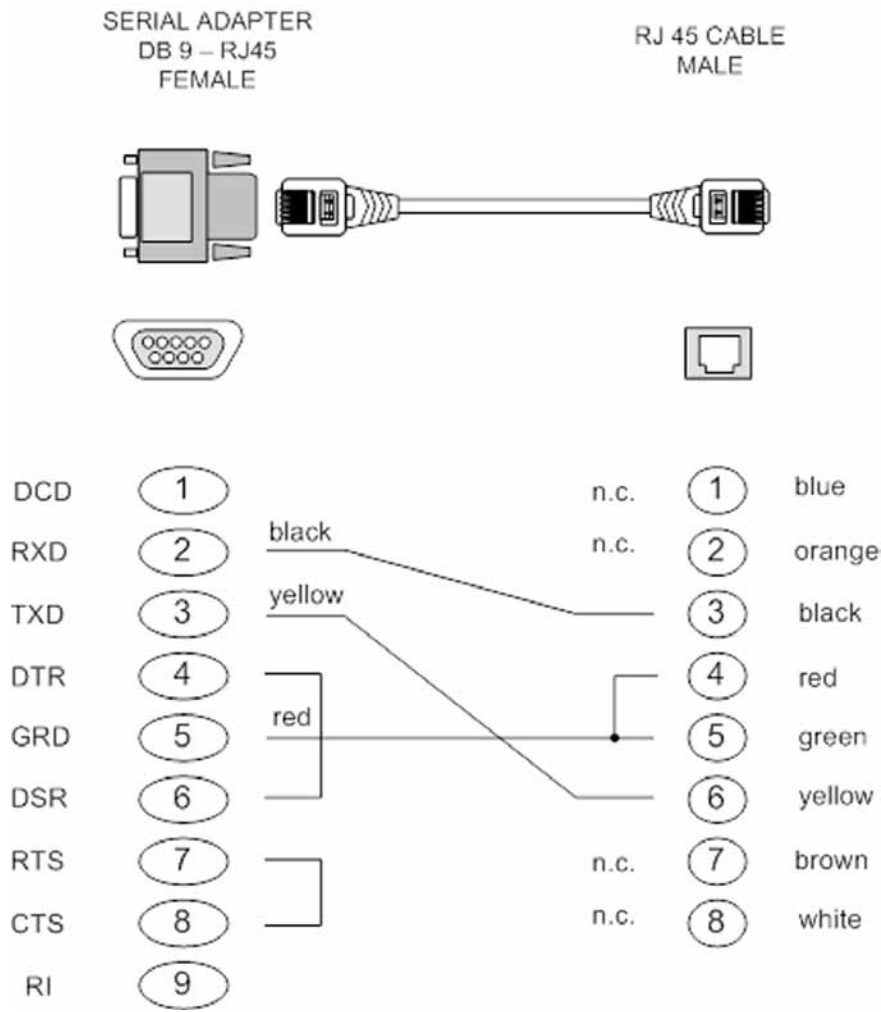


After successful update, SPLITMUX-DVI-4 restarts without changing configuration.

SERIAL CABLE

For serial remote control, SPLITMUX-DVI-4 requires a special adaptor to connect a CAT5 cable to the serial RJ45 port at the rear panel of SPLITMUX-DVI-4. This adaptor is connected to your external serial control device (e.g. computer). To the adaptor any CAT5 patch cable (wired straight-through) can be connected. The CAT5 cable again is connected to the RJ45 port of SPLITMUX-DVI-4. The adaptor (plus a standard CAT5 cable (in green)) always is delivered with SPLITMUX-DVI-4.

Serial cable = NTI adaptor + standard CAT5 cable



DCP-XML REMOTE CONTROL

DCP-XML permits remote control of SPLITMUX-DVI-4 by a computer or other devices using the RS-232 serial port of SPLITMUX-DVI-4. To connect to this port, use the "serial cable" (NTI RJ45-DB9 adaptor + standard RJ45 CAT5 cable).

DCP is an XML-based protocol.

Using DCP, all important settings of SPLITMUX-DVI-4 can be queried and changed.

A general description of XML can be found at <http://www.w3.org/XML/>

The XML scheme for DCP can be found on the enclosed CD, under the name "dcp.xsd".

For a detailed description on how to use DCP-XML with SPLITMUX-DVI-4 please see the "DCP-XML Manual" on CD supplied with SPLITMUX-DVI-4.

DCP Modes

DCP has two modes of operation:

1. Control

This mode is intended for direct control of a SPLITMUX-DVI-4, for example using a computer.

2. Synchronize

This mode is used to synchronize multiple, linked devices.

In Synchronize mode, SPLITMUX-DVI-4 sends all settings changes as DCP messages.

Thus, a chain of linked SPLITMUX-DVI-4 can be controlled synchronously.

SUPPORTED TOUCH SCREEN CONTROLLER

SPLITMUX-DVI-4 supports **USB touch screens** having built in one of the following controllers:

Tyco ELO Touch System:

- **AccuTouch** Five-Wire Resistive Touch Technology

includes models 1215L, 1229L, 1515L, 1522L, 1528L Medical, 1529L, 1537L, 1715L, 1729L, 1739L, 1915L, 1928L, 1928L Medical, 1939L, 2020L

- **IntelliTouch** Surface Wave Touch Technology

elo 2701 Controller Series (IntelliTouch, SecureTouch)

- **CarrollTouch** Infrared Touch Technology

(not supported: Acoustic Pulse Recognition (APR))

TSharc:

TSharc Octopus Controller

widely used, including in touch screens manufactured by 3M, Microtouch, TrollTouch, The Bergquist Company

XanQ:

USB-R5W-HT580-R by **XanQ** Technology Corporation

used in the NTI CompactConsole HE-TFT-RM17 rack console

3M MicroTouch:

- **MicroTouch™ EX II** (new release delivered since 2009 with support of HID)

- **MicroTouch™ DST**, only restrict: (first calibrate it at computer, then same procedure but while connected at SPLITMUX-DVI-4; only left mouse key support, right mouse key has no function). E.g. integrated at display NEC Multeos 32" und 40" LCD with touch option.

ET&T Technology:

ETouch IR™ infra red touch screen, aluminium frame, 26" up to 65"

eGalaxy eMPIA Technology Inc. (EETI):

S5000UEGG; 4/5-Wire Resistive Touch Technology; USB;

Note:

If your USB touch screen does not feature one of the controllers listed above, please contact NTI technical support to determine compatibility.

SUPPORTED VIDEO INPUT

VIDEO INPUT (Display Video Formats)

Mode	Resolution	Sync	Refresh rate		Set in EDID	VESA / CEA Standard
		polarity H/V	analog Hz	digital* Hz		
CGA	640x350	+/-	85	85		DMT
CGA	640x400	-/+	85	85		DMT
EGA	720x400	+/+	70	70	x	CVT
EGA	720x400	-/+	85	85		DMT
VGA	640x480	-/-	60	22 - 60	x	DMT
VGA	640x480	-/-	72	72	x	DMT
VGA	640x480	-/-	75	75	x	DMT
VGA	640x480	-/-	85	85	x	DMT
SVGA	800x600	+/+	56	22 - 56	x	DMT
SVGA	800x600	+/+	60	60	x	DMT
SVGA	800x600	+/+	72	72	x	DMT
SVGA	800x600	+/+	75	75	x	DMT
SVGA	800x600	+/+	85	85 - 180	x	DMT
XGA	1024x768	-/+	50	22- 50		CVT
XGA	1024x768	-/-	60	60	x	DMT
XGA	1024x768	-/-	70	70	x	DMT
XGA	1024x768	+/+	75	75	x	DMT
XGA	1024x768	+/+	85	85	x	DMT
XGA/B	1152x864	+/+	75	75	x	DMT
SUN	1152x900	+/+	66	66		CVT
HDTVp	1280x720	+/+	50	22 - 50		CEA-861-E
HDTVp	1280x720	+/+	60	60		CEA-861-E
WXGA	1280x768	-/+	60	60		DMT
UWXGA	1280x960	+/+	60	60		DMT
UWXGA	1280x960	+/+	85	85		DMT
SXGA	1280x1024	g	50	50		CVT
SXGA	1280x1024	+/+	60	60	x	DMT
SXGA	1280x1024	g	72	72		CVT
SXGA	1280x1024	+/+	75	75	x	DMT
SXGA	1280x1024	+/+	85	85	x	DMT
WXGA	1360x768	+/+	60	22 - 60		DMT
SXGA+	1400x1050	-/+	50	22 - 50		CVT
SXGA+	1400x1050	-/+	60	60		DMT
SGI	1600x1024	+/+	60	60		CVT
UXGA	1600x1200	+/+	50	50		CVT
UXGA	1600x1200	+/+	60	60	x	DMT
UXGAr	1600x1200	+/+	50	50		CVT
UXGAr	1600x1200	+/+	60	60		CVT
WSXGA	1680x1050	-/+	60	60		DMT
HDTVp	1920x1080	+/+	---	22 - 24		CEA-861-E
HDTVp	1920x1080	+/+	50	50		CEA-861-E
HDTVp	1920x1080	+/+	60	60	x	CEA-861-E
WUXGAr	1920x1200	+/+	50	22 - 50		CVT
WUXGAr	1920x1200	+/+	60	60	x	DMT

Note:

* digital: **all** video formats up to 162 MHz pixel clock following DMT, CVT or GTF standard timings are supported. Within this range **ANY** digital resolution is supported.
Analog input may not be detected correctly. See page 47 EDID/DDC.

SUPPORTED VIDEO OUTPUT

VIDEO OUTPUT (Display Video Formats)

The table lists all video formats supported by SPLITMUX-DVI-4 at the output port.

Mode	Horizontal	Vertical	Hz
VGA	640	480	60
VGA	640	480	75
VGA	640	480	85
SVGA	800	600	60
SVGA	800	600	75
SVGA	800	600	85
XGA	1024	768	50
XGA	1024	768	60
XGA	1024	768	70
XGA	1024	768	75
XGA	1024	768	85
SXGA	1280	1024	50
SXGA	1280	1024	60
SXGA	1280	1024	75
SXGA+	1400	1050	50
SXGA+	1400	1050	60
UXGA	1600	1200	50
UXGA	1600	1200	60
UXGAr	1600	1200	50
UXGAr	1600	1200	60
XGA/B	1152	864	75
UWXGA	1280	960	60
UWXGA	1280	960	85
SUN	1152	900	66
WXGA	1280	768	60
WXGA	1366	768	60
WSXGA	1680	1050	60
WUXGAr	1920	1200	40
WUXGAr	1920	1200	50
WUXGAr	1920	1200	60
HDTVp	1280	720	50
HDTVp	1920	1080	24
HDTVp	1920	1080	50
HDTVp	1920	1080	60

Note:

When set to auto (by default) SPLITMUX-DVI-4 reads the EDID of the monitor connected and automatically supports its resolution.

Note:

Fluid video performance:

With digital input and a resolution of 800x600, the input frame rate may be increased up to 180 Hz.

This provides smooth video output even in Quad mode. To use this feature, it is necessary to choose this resolution and refresh rate on **all** devices connected to the SPLITMUX-DVI-4's video inputs.

CASCADING

CASCADING multiple SPLITMUX-DVI-4 units - more than 4 sources on a single display

SPLITMUX-DVI-4 can be cascaded in order to display more than 4 sources simultaneously on a single display.

In this master-slave-system, any SPLITMUX-DVI-4 can be used as master or slave. It is the same hardware. One SPLITMUX-DVI-4 is used as master unit. To the output of the master unit the console with keyboard mouse and display or touch screen is connected. To each input of the master unit, a slave SPLITMUX-DVI-4 can be connected. In this way, each quadrant on the display can be split in four more quadrants.

Example: In a setup with one master and four slave SPLITMUX-DVI-4 a total of 16 sources can be displayed simultaneously on a single console.

All display modes:

Display modes (Quad, PiP, Dual, Fullscreen) of slaves and master can individually be set, combined, and switched, e.g. the master unit could be set to Quad mode, while the first slave is set to PiP, the second slave to Fullscreen, the third slave to Quad, and the fourth slave to Dual mode. Any combination is possible.

Keyboard and mouse operation:

Keyboard and mouse can be activated on any of the up to 16 computers connected to operate these.

Hotkeys for switching:

Use hotkeys to quickly activate any of the e.g. 16 channels or to switch the display mode of any of the SPLITMUX-DVI-4 units in the master-slave-system.

Different levels (master or slave) require different types of hotkeys.

For example, keep the hotkey default setting **HK 1** = **Ctrl** + **Alt** for all slave SPLITMUX-DVI-4.

Just change the hotkey settings for the master SPLITMUX-DVI-4 to e.g. **HK 2** = **Ctrl** + **Win**

See page 65 on how to change hotkeys.

Example:

In a cascaded SPLITMUX-DVI-4 setup with one master, 4 slaves, and 16 computers connected you can activate keyboard and mouse of computer 16 by pressing the following hotkey combination:

HK 2 + 4 (to activate the channel 4 on the master level), **then HK 1 + 4** (to activate the channel 4 on the slave SPLITMUX-DVI-4 connected to port 4 of the master)

Example:

To change a display mode of e.g. the slave SPLITMUX-DVI-4 connected to port 4 of the master SPLITMUX-DVI-4 press the following hotkey combination:

HK 2 + 4 (to activate the channel 4 on the master level), **then HK 1 + P** to switch from default Quad mode to PiP mode in this quadrant. The result is a screen split in four equal quadrants. All quadrants are split again in four equal quadrants (Quad mode), just the quadrant in the lower right corner (channel 4) is showing its four sources in PiP mode.

Note:

Use a programmable keyboard for comfortable switching of cascaded SPLITMUX-DVI-4. Behind a single key you can program a combination of hotkeys. By pressing a single key you can activate keyboard and mouse of one of e.g. 16 computers connected or the switch display mode of the master or any of the four slave SPLITMUX-DVI-4.

DELIVERABLES

Please use the list below to verify that all parts have been delivered.

The following components are included:

- 1 SPLITMUX-DVI-4
- 1 19" rack mount kit
- 1 Installation and Operation Manual on CD
- 1 installation CD
- 1 country-specific power cable
- 1 cable set HW-KON-DVI-VGA: 1 video cable DVI/DVI for console
 1 short PS/2 keyboard mouse/USB adaptor
- 2 cable set HW-CPU-VGA: 1 video cable DVI/VGA, length 2.0 m
 1 Y-cable PS/2 for mouse and keyboard, length 2.0 m
 1 USB cable plug A - plug B, length 2.0 m
- 2 cable set HW-CPU-DVI: 1 video cable DVI/DVI, length 2.0 m
 1 Y-cable PS/2 for mouse and keyboard, length 2.0 m
 1 USB cable plug A - plug B, length 2.0 m
- 1 serial adaptor with green CAT5 cable.

