G&D DVIVision

Installation and Operating Guide

About this manual

This manual has been carefully compiled and examined to the state-of-the-art.

G&D neither explicitly nor implicitly takes guarantee or responsibility for the quality, efficiency and marketability of the product when used for a certain purpose that differs from the scope of service covered by this manual.

For damages which directly or indirectly result from the use of this manual as well as for incidental damages or consequential damages, G&D is liable only in cases of intent or gross negligence.

Caveat Emptor

G&D will not provide warranty for devices that:

- Are not used as intended.
- Are repaired or modified by unauthorized personnel.
- Show severe external damages that was not reported on the receipt of goods.
- Have been damaged by non G&D accessories.

G&D will not be liable for any consequential damages that could occur from using the products.

Proof of trademark

All product and company names mentioned in this manual, and other documents you have received alongside your G&D product, are trademarks or registered trademarks of the holder of rights.

Version 1.91 – 04/07/2011
Firmware: 1.9.7cpu; 1.8.5con

Guntermann & Drunck GmbH
Dortmunder Str. 4a
57234 Wilnsdorf

Germany

Phone +49 2739 8901-100
Fax   +49 2739 8901-120

http://www.GDsys.de
sales@GDsys.de

Contents

Safety instructions

Please read the following safety instructions carefully before you start operating the G&D product. The instructions well help in avoiding damages to the product and in preventing possible injuries.

Keep this manual handy for all persons who will be using this product.

Follow all warnings or operating instructions which are on the device or stated in this user manual.

⚠ **Beware of electric shocks**

To avoid the risk of electric shock, do not open the device or remove the covers. If service is required, please contact our technicians.

⚠ **Disconnect the main power plug or the power supply before installation**

Before installation, ensure that the device has been disconnected from the power source. Disconnect the main power plug or the power supply of the device.

⚠ **Ensure constant access to the power plugs**

During the installation of the devices, ensure that the power plugs remain accessible.

⚠ **Do not cover the ventilation openings**

Ventilation openings prevent the device from overheating. Do not cover them.

⚠ **Ensure proper installation position**

For reasons of electric safety, the device has to be installed upright and horizontally.

⚠ **Avoid tripping hazards**

Avoid tripping hazards while laying cables.

⚠ **Only use a grounded voltage source**

Operate this device by using a grounded voltage source.

⚠ **Use only the provided G&D power pack**

Operate this device with the provided G&D power pack or with the power pack listed in the manual.

⚠ **Operate the device only in designated areas.**

The devices are designed for indoor use. Avoid exposure to extreme cold, heat or humidity.

The *DVIVision* series

The KVM extenders of the *DVIVision* series consist of a computer module and a user module.

The computer to be operated as well as an optional console are connected to the computer module (*DVIVision-CPU*). The remote console is connected to the user module (*DVIVision-CON*).

Both the computer module and the user module are connected through a twisted pair cable (category 5e or better). The keyboard, mouse and digital video signals of the connected computer are transmitted through this cable and enable you to operate the computer remotely.

The computer can either be operated at the remote console of the user module or at the local console of the computer module.

The *DVIVision* series provides further devices that enable the transmission of additional signals and the usage of several monitors:

Variant	Video channels	Keyboard & Mouse	Audio & RS232	USB 1.1
DVIVision	1	✓		
DVIVision-AR	1	✓	✓	
DVIVision-ARU	1	✓	✓	✓
DVIVision-MC2	2	✓		
DVIVision-MC2-AR	2	✓	✓	
DVIVision-MC2-ARU	2	✓	✓	✓
DVIVision-MC4	4	✓		
DVIVision-MC4-AR	4	✓	✓	
DVIVision-MC4-ARU	4	✓	✓	✓

NOTE: Optionally, the *DVI-Power* expansion is available for *DVIVision-AR* and *-ARU* variants. This expansion enables you to control both the ATX-Power button and the Reset button remotely.

For detailed information regarding the expansion DVI-Power also see the chapter *The DVI-Power expansion* on page 49.

Package contents

Standard package contents of the *DVIVision* series

The KVM extenders of the *DVIVision* series consist of a computer module (*DVIVision-CPU*) and a user module (*DVIVision-CON*).

Additionally, the devices' package contents include the following accessories:

- 2 × power cable (*PowerCable-2 Standard*)
- 1 × video cable (*DVI-D-SL-M/M-2*)
- 1 × PS/2 mouse cable (*PS/2-M/M-2 green*)
- 1 × PS/2 keyboard cable (*PS/2-M/M-2 purple*)
- 1 × USB device cable (*USB-AM/BM-2*)
- 1 × data cable (*Update-Cable-2*)
- 1 × Installation and Operating Guide

Expanded package contents of *-AR* and *-ARU* variants

If you purchased the *-AR* or *-ARU* variant of the *DVIVision* series, the scope of delivery additionally includes the following cables:

- 2 × audio cable (*Audio-M/M-2*)
- 1 × serial connection cable (*RS232-M/F-2*)

Additional package contents of multi-channel variants

The multi-channel variants of the *DVIVision* series provide a separate video cable for each video channel.

The *DVIVision-MC2* variant is supplied with two and the *-MC4* variant with four video cables.

> **NOTE:** The scope of delivery of the *multi-channel devices* provides several rackmount sets (19" RM-Set-435) to install the devices to a 19" rack. The installation of the devices to the rack can be carried out with both the front panel or the back panel facing forwards.
>
> *Single-channel devices* are available as desktop or as rackmount variant. Rackmount variants must be installed to the rack with the front panel facing forwards.

Installation

The computer module is placed close to the computer to be operated by the *DVIVision* system. If desired, connect a separate user console to the computer module. The desktop environment of the user includes a monitor, a keyboard and a mouse.

A category 5e (or better) twisted pair cable connects the user module to the computer module. The remote console is connected to this module.

Preparation

NOTE: When choosing a place for the device, please ensure to comply with the ambient temperature limit (see *Technical data* on page 53 ff.) close to the device. The ambient temperature limit must not be influenced by other devices.

When installing the devices, make sure to only place a maximum of three devices directly on top of each other. Therefore, a good circulation of air is enabled and a mutual thermal interference can be avoided. After having installed three devices, provide for a distance (at least 2 cm).

IMPORTANT: Please refrain from using devices with louvres in dusty environments. Dust in the housing can damage the electronics and may cause failures.

IMPORTANT: Mind the additional information on page 44 when installing a computer module or a user module of the *DVIVision-MC4* variant.

1. Ensure that the computer to be connected to the *DVIVision* system is switched off. If the computer is provided with keyboard and mouse, unplug the cables of the input devices from the interfaces.

2. Place the computer module (*DVIVision-CPU*) close to the computer. Please mind the maximum cable length of *five* metres between the computer module and the computer to be connected.

3. Place the user module (*DVIVision-CON*) close to the remote console. Please also mind the maximum cable length of *five* metres between the user module and the devices of the user console.

4. Take the supplied cables of the *DVIVision* system and place them ready for installing the devices. The scope of delivery of both the computer module and the user module provides an IEC cable and a set of signal cables, which are listed on the following page.

	DVI-D-SL-M/M-2	PS/2-M/M-2 (2x)	USB-AM/BM-2
Device			
DVIVision			

The scope of delivery of the *DVIVision-AR* and *-ARU* variants also provides two audio cables and one RS232 cable for both the computer module and the user module:

	Audio-M/M-2 (2x)	RS232-M/F-2
Device		
DVIVision		

NOTE: The last number (**-2**) of the cable designation corresponds to the cable length.

If you ordered the cable sets with cables of five metres length, the cable designation ends with the number **-5**.

Installing the computer module (*DVIVision-CPU*)

The computer, whose signals are transmitted to the remote console, is connected to the computer module. A local console can optionally be connected to the computer module.

Connecting the computer
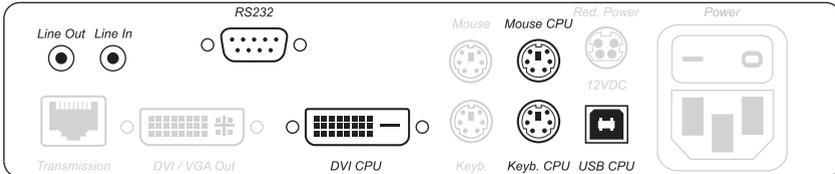
Figure 1: Interfaces to connect the computer to the computer module

DVI CPU: Connect the digital video output of the computer to this interface. For this purpose, use the *DVI-D-M/M-2* cable.

> **NOTE:** The mouse and keyboard signals of both consoles can either be transmitted to the computer through the USB interface *USB CPU* or the PS/2 interfaces *Mouse CPU* and *Keyb. CPU.*

USB CPU: Connect the USB interface of the computer to this interface. For this purpose, use the *USB-AM/BM-2* cable.

Keyb. CPU: Connect the PS/2 keyboard interface of the computer to this interface. For this purpose, use the *PS/2-M/M-2* cable (purple plugs).

Mouse CPU: Connect the PS/2 mouse interface of the computer to this interface. For this purpose, use the *PS/2-M/M-2* cable (green plugs).

Additional interfaces of *DVIVision-AR* and *-ARU* variants*:*

Line Out: Connect the Line-In interface of the computer to this interface. For this purpose, use the *Audio-M/M-2* cable.

Line In: Connect the Line-Out interface of the computer to this interface. For this purpose, use the *Audio-M/M-2* cable.

RS232: Connect the nine-pin serial interface of the computer to this interface. For this purpose, use the *RS232-M/F-2* cable.

Optional: Connecting the local console
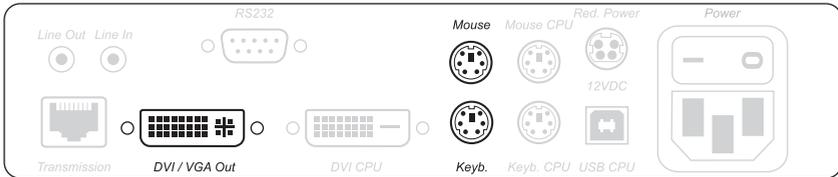
Figure 2: Interfaces to connect the local console to the computer module

DVI/VGA Out: Connect the monitor of the local console to this interface.

If the monitor only provides an analog VGA input, connect an optional adapter to this interface. Afterwards, connect the monitor's VGA cable to the adapter.

Keyb.: Connect the keyboard of the local console to this interface.

Mouse: Connect the mouse of the local console to this interface.

Connections for data transmission and power supply

Figure 3: Interfaces for data transmission and power supply

Transmission: Connect the category 5e (or better) twisted pair cable, which is available as accessories, to this interface. Connect the other end of the cable to the respective interface of the user module.

Power: Insert the supplied *PowerCable-2 Standard* IEC cable.

Red. Power: The *Power-Set 12/Type 2* power pack can be optionally connected using this plug. Through this, a second, redundant power supply of the computer module is achieved.

Additional interfaces of the multi-channel variants

Figure 4: Additional interfaces of the multi-channel variant at the computer module

> **NOTE:** For *each* additional video channel, the multi-channel variants of the computer module are provided with the interfaces *Transmission*, *DVI/VGA Out* and *DVI CPU*.
>
> The interfaces of each channel are located next to each other. The names of the interfaces show the channel number.

Transmission x: Connect the category 5e (or better) twisted pair cable, which is available as accessories, to this interface. Connect the other end of the cable to the respective interface of the user module.

DVI/VGA Out x: Connect the monitor of the local console to this interface.

If the monitor only provides an analog VGA input, connect an optional adapter to this interface. Afterwards, connect the monitor's VGA cable to the adapter.

DVI CPU x: Connect the digital video output of the computer to this interface. For this purpose, use the *DVI-D-SL-M/M-2* cable.

Installing the user module (*DVIVision-CON*)

Connecting the remote console
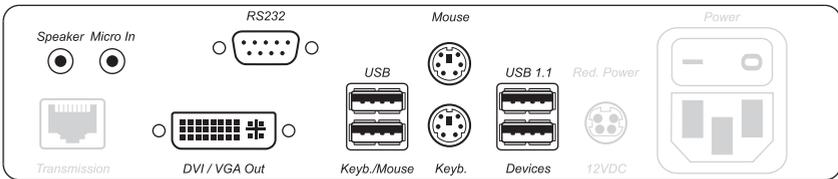
Figure 5: Interfaces to connect the user console to the user module

DVI/VGA Out: Connect the console monitor to this interface.

If the monitor only provides an analog VGA input, connect an optional adapter to this interface. Afterwards, connect the monitor's VGA cable to the adapter.

> **NOTE:** Both mouse and keyboard of the remote console can *either* be connected as a PS/2 device or as a USB device.

USB Keyb.: Connect the USB keyboard to this interface.

USB Mouse: Connect the USB mouse to this interface.

Keyb.: Connect the PS/2 keyboard to this interface.

Mouse: Connect the PS/2 mouse to this interface.

Additional USB interfaces of *DVIVision-ARU* and *-U* variants:

USB 1.1 Devices: Any USB device can be connected to these interfaces. Two USB interfaces are located on the back panel of the device, another two can be found on the front panel. The data rate of the interfaces is 12 MBit/s (USB 1.1).

The USB devices are provided to the computer module (*DVIVision-CPU*), which is connected to the computer.

Additional interfaces of *DVIVision-AR* and *ARU* variants:

Speaker: Connect the speakers of the console to this interface.

Micro In: If desired, connect the console microphone to this interface.

RS232: Connect the serial device to this interface.

The serial end device ist provided to the computer, which is connected to the computer module (*DVIVision-CPU*).

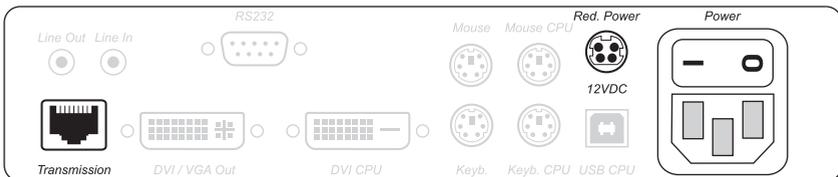## Connections for data transmission and power supply
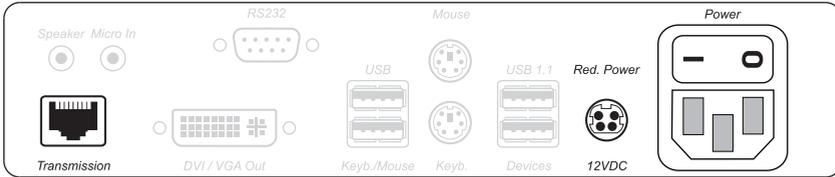
Figure 6: Interfaces for data transmission and power supply

Transmission: Connect the category 5e (or better) twisted pair cable, which is available as accessories, to this interface. Connect the other end of the cable to the respective interface of the computer module.

Power: Insert the supplied *PowerCable-2 Standard* IEC cable.

Red. Power: The *Power-Set 12/Type 2* power pack can optionally be connected using this plug. This enables a second, redundant power supply of the user module.

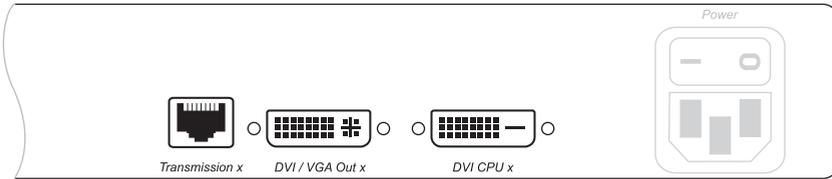## Additional interfaces of the multi-channel variants
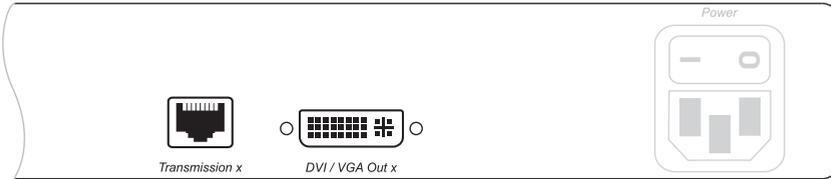
Figure 7: Additional interfaces of the multi-channel variants at the user module

> **NOTE:** For *each* additional video channel, the multi-channel variants of the user module are provided with the interfaces *Transmission* and *DVI/VGA Out*.
>
> The interfaces of each channel are located next to each other. The names of the interfaces show the number of the channel.

Transmission x: Connect the category 5e (or better) twisted pair cable, which is available as accessories, to this interface. Connect the other end of the cable to the respective interface of the computer module.

DVI/VGA Out x: Connect the monitor of the console to this interface.

If the monitor only provides an analog VGA input, connect an optional adapter to this interface. Afterwards, connect the monitor's VGA cable to the adapter.

Start-up

After the *DVIVision* system has been properly installed, it can be immediately put into operation.

Mind the following activation sequence when starting the system:

1. Use the switch above the *Power* socket to turn on the user module (*DVIVision-CON*).

2. Use the switch above the *Power* socket to turn on the computer module (*DVIVision-CPU*).

3. Turn on the computer that is connected to the computer module.

> **NOTE:** The recommended activation sequence ensures that the *DVIVision* system is able to read out the features of the connected monitor and to transmit them to the computer.

After the *DVIVision* system has been turned on, the LEDs on the front panel of both the computer module and the user module signal the system's operating status. For further advices on this topic, also see the chapter *Status displays* on page 47 ff.

Operation

The computer, which is connected to the computer module (*DVIVision-CPU*), can be operated at the remote console of the user module as well as at the local console of the computer module.

After both consoles have been initiated, they are enabled to operate the computer.

> **NOTE:** In the default setting, the monitors of both the remote and the local console of the *DVIVision* system *always* display the same image at the same time – independently from the input lock.
>
> The paragraph *Changing the video mode of user consoles* on page 27 explains how this setting can be changed.

Concurrent operation of the *DVIVision* system

If a user carries out a keyboard or a mouse input, the *DVIVision* system automatically locks the input devices of the concurrent console. The lock is lifted if no inputs are made at the active console during the adjusted timing of the automatic input lock (default: 1 second).

After the automatic input lock has been lifted, both consoles are again able to operate the computer.

As an alternative to operate the computer concurrently through the consoles, the exclusive operation (see below) can also be activated.

Related topics:
- *Changing the timeout of the automatic input lock* on page 25
- *Changing the video mode of user consoles* on page 27

Exclusive operation of the *DVIVision* system

For operating the *DVIVision* system exclusively, the function *Authorising permanent console access* can be activated in the setup menu.

If this function is switched on, the user of the *DVIVision* system can activate the exclusive operation by pressing the key combination **Hotkey+PrtScr** (default: **Ctrl+PrtScr**).

After having pressed this key combination, the input devices of the concurrent console are deactivated. By pressing the key combination again at the console where the permanent input lock has been activated, users at both consoles are again able to operate the *DVIVision* system.

After the permanent input lock has been activated at one console, the *Scroll* LEDs are blinking on the keyboards of both consoles.

Related topics:
- *Authorising permanent console access* on page 26
- *Changing the video mode of user consoles* on page 27

Configuration

The configuration of the *DVIVision* system can optionally be changed in the setup mode or in the setup menu:

- Enable the *setup mode* using the console keyboard. You can change the configuration via special setup keys.
- The *setup menu* is operated with a terminal emulator and provides a user interface to configure the device.

IMPORTANT: Some functions of the *DVIVision* system can only be carried out in either the setup mode or the setup menu. The following pages provide notes referring to this.

Overview of the functions and default settings

The following table provides an overview of functions that can be configured in the *DVIVision* system.

Detailed description of the functions is given in the following pages.

Function	Standard setting	Page
Activating the hotkey delay	enabled	17
Using single or double hotkeys	single hotkeys	18
Changing the single hotkey	**Ctrl**	19
Changing the double hotkey	**Ctrl+Shift**	20
Changing the scancode set of a PS/2 keyboard	scan code set 2	21
Support for special keyboards	disabled	22
Support for multimedia or special Sun keys	PC Multimedia	23
Changing the timeout of the automatic input lock	1 second	25
Authorising permanent console access	disabled	26
Changing the video mode of user consoles	enabled	27
Choosing the EDID mode	Auto forward	28
Showing the last image after disconnection (Freeze)	disabled	29
Optimising the video image		30
Activating or resetting a PS/2 mouse		32
Displaying the system's status information		33
Resetting the default settings		34

NOTE: In addition to the configuration settings, further settings are available (see page 35 ff.) that enable the user to adjust special system features to the characteristics of the operating environment.

Changing the configuration

The configuration can either be changed in the setup mode or in the setup menu. The descriptions of the configurable functions on the following pages include instructions on how to configure both the setup mode and the setup menu.

Operating the setup mode

The setup mode can be enabled using the console keyboard. After enabling, the configuration of the *DVIVision* system can be changed by using various step keys.

> **NOTE:** Only one setup function can be performed after the calling of the setup mode. If you want to perform more functions, please restart the setup mode.

How to enable the setup mode:

- Press the `Hotkey+Backspace` (default: `Ctrl+Backspace`) key combination to enable the setup mode.

> **IMPORTANT:** The key combination for enabling the setup mode needs to be pressed for *seven seconds*.
>
> After the first call of the setup mode, the hotkey delay can be disabled by pressing the setup key `8` (see page 17).

The successful activation of the setup mode is displayed by the blinking **NUM**, ⇩ and **Scroll** control LEDs on the keyboard. Additionally, the yellow *User* LED will blink at both the computer module and the user module.

Now you can perform a setup function.

How to perform a setup function:

- After enabling the setup mode, press one of the setup keys described on the following pages.

How to end the setup mode without performing a function:

- Press `ESC` to end the setup mode.

Operating the setup menu

The setup menu provides a convenient alternative to view and edit the configuration of the *DVIVision* system. The system can be operated through the setup menu which both easy operation and adjustment of several settings within a session.

The setup menu can be operated via any terminal emulator (e.g. *HyperTerminal* or *PuTTY*). Use the supplied service cable to connect the computer on which the terminal emulator is installed with the *Service* port of the device.

How to establish a connection within the terminal emulator:

▪ Start any terminal emulator (e.g. *HyperTerminal* or *PuTTY*).
▪ Establish a new connection in the terminal emulator and enter the following settings:
  ▫ Bits per second: 38400
  ▫ Data bits: 8
  ▫ Parity: None
  ▫ Stop bits: 1
  ▫ Flow control: None
▪ Use the provided data cable to connect the computer to the *Service* port at the front panel front panel of the computer module or the user module.

How to call up setup menu:

▪ Start the terminal emulator.
▪ Load the connection settings of the setup menu and establish the connection.
▪ Press the **Enter** key in the terminal emulation program.

If the connection has been successfully established, the setup menu is displayed within the terminal emulation program (see figure on page 16).

How to end the setup menu:

▪ Press **Ctrl+X** twice to end the setup menu.

Operating the setup menu

The setup menu lists all settings of the *DVIVision* system in tabular form:

```
 Setup Menu for DVIVision-CPU
▶Show System Info             ...◀
 Show Version Info            ...
 Show Line Info               ...
 Show Temperature Info        ...
 Show Video Info              ...
 Show Monitor Info            ...
 Hotkey:                     Ctrl
 Double Hotkey:                No
 Hotkey Delay:                Yes
 Set System Defaults          ...
 Scancode Set CPU:              2
 Scancode Set CON:              2
 PS/2 Keyboard Type CPU:  Standard
 PS/2 Keyboard Type CON:  Standard
 USB Keymode:         PC Multimedia
 Console Access               ...
 Freeze Image                 ...
 Special Extended Options     Off
 Video Optimisation:          ...
 EDID Mode:                   ...
 'Space': Toggle       'S': Save
```

The active setting of the various functions is displayed in the right-hand column. Menu items with submenus containing more settings are indicated with three dots (...) in the right-hand column.

How to operate the setup menu:

- Use the **Arrow↑** or **Arrow↓** keys to select the desired menu item. The active row is marked with angular ▶ arrows◀.
- Menu items whose settings are displayed in the right column can be changed by pressing the **Space** key (repeatedly).
- A menu item that has a sub-dialogue available can be opened by pressing **Enter**

Configuration settings

Activating the hotkey delay

Press the **Hotkey+Backspace** (default: **Ctrl+Backspace**) key combination for seven seconds in order to start the setup mode in the default settings. You can disable the hotkey delay if you want to start the setup mode immediately after pressing the key combination.

How to (de)activate the hotkey delay:

Setup mode

1. Press **Hotkey+Backspace** (default: **Ctrl+Backspace**) to enable the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.

2. Press one of the setup keys listed below to (de)activate the hotkey delay:

   7 ‣ activates the hotkey delay
   8 ‣ deactivates the hotkey delay

Setup menu

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **Hotkey Delay** row.

3. Press the **Space** key (repeatedly) to (de)activate the hotkey delay:

   Yes ‣ activates the hotkey delay
   No   ‣ deactivates the hotkey delay

4. Press the **S** key to save your settings.

Using single or double hotkeys

If many application programs with key combinations are operated on one computer or if different G&D devices are used in one cascade, the number of available key combinations might be restricted.

In such a case, it is appropriate to apply double hotkeys.

How to activate the use of single or double hotkeys:

Setup mode

1. Press **Hotkey+Backspace** (default: **Ctrl+Backspace**) to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.

2. Press one of the setup keys listed below to activate the use of single or double hotkeys:

   S ‣ enables single hotkeys
   A ‣ enables double hotkeys

Setup menu

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **Double Hotkey** row.

3. Press the **Space** key (repeatedly) to activate the use of single or double hotkeys:

   No ‣ enables use of single hotkeys
   Yes ‣ enables use of double hotkeys

4. Press the **S** key to save the settings.

Depending on your settings, the active hotkey is converted into a double hotkey (or vice versa):

Single hotkey	Double hotkey
Ctrl	Ctrl+Shift
Alt	Alt+Shift
Alt Gr	Alt Gr+Ctrl
Win	Win+Ctrl
Shift	Shift+Win

Related topics:
- *Changing the single hotkey* on page 19
- *Changing the double hotkey* on page 20

Changing the single hotkey

Press the hotkey and the `Backspace` key simultaneously to start the setup mode of the *DVIVision* system.

If an application program or another G&D device uses the same hotkey within the cascade, the hotkey can be changed.

NOTE: The single hotkey `Ctrl` is preset at default.

How to change the current hotkey:

Setup mode

1. Press `Hotkey+Backspace` (default: `Ctrl+Backspace`) to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.

2. Press one of the setup keys listed below to activate a certain hotkey:

   `Ctrl`   ‣ activates `Ctrl` hotkey
   `Alt`   ‣ activates `Alt` hotkey
   `Alt Gr` ‣ activates `Alt Gr` hotkey
   `Win`   ‣ activates `Win` hotkey
   `Shift`   ‣ activates `Shift` hotkey

Setup menu

1. Use the terminal emulatr to establish the connection to the *DVIVision* system.

2. Use the `arrow` keys to select the `Hotkey` row.

3. Press the `Space` key (repeatedly) to activate a certain hotkey:

   `Ctrl`   ‣ activates `Ctrl` hotkey
   `Alt`   ‣ activates `Alt` hotkey
   `Alt Gr` ‣ activates `Alt Gr` hotkey
   `Win`   ‣ activates `Win` hotkey
   `Shift`   ‣ activates `Shift` hotkey

4. Press the `S` key to save your settings.

Related topic:

- *Using single or double hotkeys* on page 18

Changing the double hotkey

If the use of double hotkeys is enabled (see page 18), press the double hotkey and the **Backspace** key simultaneously to start the setup mode *DVIVision* system.

If an application program or another G&D device uses the same hotkey within the cascade, the hotkey can be changed.

How to change the current double hotkey:

<table>
<tr><td rowspan="4">Setup mode</td><td>

1. *Requirement:* enabling of the double hotkeys (see page 18).

2. Press **Double Hotkey+Backspace** (default:**Ctrl+Shift+Backspace***)* to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.

3. Press one of the setup keys listed below to activate the desired double hotkey:

Ctrl	‣	activates the **Ctrl+Shift** double hotkey
Alt	‣	activates the **Alt+Shift** double hotkey
Alt Gr	‣	activates the **Alt Gr+Ctrl** double hotkey
Win	‣	activates the **Win+Ctrl** double hotkey
Shift	‣	activates the **Shift+Win** double hotkey

</td></tr>
</table>

<table>
<tr><td rowspan="5">Setup menu</td><td>

1. *Requirement:* activation of the double hotkeys (see page 18).

2. Use the terminal emulator to establish the connection to the *DVIVision* system.

3. Use the **arrow** keys to select the **Hotkey** row.

4. Press the **Space** key (repeatedly) to activate the desired double hotkey:

Ctrl + Shift	‣	activates the **Ctrl+Shift** double hotkey
Alt + Shift	‣	activates the **Alt+Shift** double hotkey
Alt Gr + Ctrl	‣	activates the **Alt Gr+Ctrl** double hotkey
Win + Ctrl	‣	activates the **Win+Ctrl** double hotkey
Shift + Win	‣	activates the **Shift+Win** double hotkey

5. Press the **S** key to save your settings.

</td></tr>
</table>

Related topic:

▪ *Using single or double hotkeys* on page 18

Changing the scancode set of a PS/2 keyboard

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

The *DVIVision* system interprets all inputs of the PS/2 keyboard with scan code set 2.

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

How to change the setting of the scancode set:

Setup mode	1. Press **Hotkey+Backspace** (default: **Ctrl+Backspace**) to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.
	
	 2. Press one of the setup keys listed below to activate a particular scancode set:
	
	   2 ‣ activates the scancode set 2 for PS/2 keyboard inputs
	   3 ‣ activates the scancode set 3 for PS/2 keyboard inputs
	
	 3. Restart the *DVIVision* system. After the restart, the keyboard is initialised and the selected scan code set does apply.

Setup menu	1. Use the terminal emulator to establish the connection to the *DVIVision* system.
	
	 2. Use the **arrow** keys to select the **Scancode Set CPU** row to change this setting for the local console.
	
	 Use the **arrow** keys to select the **Scancode Set CON** row to change this setting for the remote console.
	
	 3. Press the **Space** key (repeatedly) to activate a certain scancode set:
	
	   2 ‣ activates the scancode set 2 for PS/2 keyboard inputs
	   3 ‣ activates the scancode set 3 for PS/2 keyboard inputs
	
	 4. Press the **S** key to save the settings.
	
	 5. Restart the *DVIVision* system. After the restart, the keyboard is initialised and the selected scan code set does apply.

Support for special keyboards

In addition to standard PS/2 keyboards, the *DVIVision* system also supports *PixelPower Clarity (blue)* and *SKIDATA1* keyboards.

Select the keyboard type if you want to use such a keyboard at the console.

NOTE: The PS/2 keyboard type can only be selected in the setup menu.

How to enable/disable the support for special keyboards:

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **PS/2 Keyboard Type CPU** row if you want to change this setting for the local console.

   Use the **arrow** keys to select the **PS/2 Keyboard Type CON** row if you want to change this setting for the remote console.

3. Press the **Space** key (repeatedly) to to (de)activate the support for a special keyboard:

PixelPower Blue	‣	activates the support of the *PixelPower Blue* keyboard
SKIDATA1	‣	activates the support of the *SKIDATA1* keyboard
Standard	‣	deactivates the support of PixelPower keyboards

4. Press the **S** key to save your settings.

Support for multimedia or special Sun keys

> **NOTE:** The support of multimedia or special Sun keys can only be changed in the setup menu.

Various manufacturers added special keys to the standard keyboards.

Some keyboards are provided with multimedia keys which enable the user to easily operate special multimedia functions of the computer. For example, the keyboard of the *Apple Mac mini* is provided with a key to open the DVD drive.

Compared to standard keyboards, Sun desktops and servers are provided with separate keys (Solaris Shortcut Keys) to operate special system functions. These keys can be used at the console after enabling the keyboard mode for Sun desktops and servers. If the console only has a standard keyboard available, several key combinations are provided to emulate Solaris Shortcut Keys (see page 24).

Several *USB Keymodes* are provided for using the special keys of such keyboards.

How to (de)activate the support for multimedia or special Sun keys:

Setup menu

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **USB Keymode** row.

3. Press the **Space** key (repeatedly) to select between the following settings:

PC Multimedia	‣ activates the support for multimedia keys
SUN German	‣ Sun keyboard (German layout)
SUN US	‣ Sun keyboard (American layout)
PC Standard	‣ deactivates the support for special keys

4. Press the **S** key to save yoursettings.

5. *Optional:* If you changed the keyboard layout of the Sun keyboard from *SUN German* to *SUN US* or vice versa, the Sun computer must be rebooted.

If the console is provided with a Sun keyboard, use the *Solaris Shortcut Keys* of this keyboard after enabling. When using a standard keyboard, these functions can be performed by using the key combinations listed below:

Key combination	Solaris Shortcut Key of the Sun keyboard
Ctrl+Alt+F2	Again
Ctrl+Alt+F3	Props
Ctrl+Alt+F4	Undo
Ctrl+Alt+F5	Front
Ctrl+Alt+F6	Copy
Ctrl+Alt+F7	Open
Ctrl+Alt+F8	Paste
Ctrl+Alt+F9	Find
Ctrl+Alt+F10	Cut
Ctrl+Alt+F11	Help
Ctrl+Alt+F12	Mute
Ctrl+Alt+NUM+	Loud
Ctrl+Alt+NUM-	Quiet
Ctrl+Alt+NUM*	Compose
Ctrl+Alt+Pause	Shutdown
Pause+A	Stop

Changing the timeout of the automatic input lock

NOTE: This function can only be (de)activated in the setup menu.

If a user makes inputs through keyboard or mouse, the *DVIVision* system automatically locks the input devices of the concurrent console. The lock is lifted if no input is being made at the active console within the adjusted timing of the input lock (default: 1 second).

After the lock has been lifted, both users can operate the computer again.

The timing of the input lock can be adjusted from 1 to 90 seconds.

How to set the timeout of the automatic input lock:

Setup menu

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **Console Access** row and press the **Enter** key.

3. Use the **arrow** keys to select the **Timeout** row.

4. Use the numerical keys of the keyboard to enter the desired value and press the **Enter** key.

5. Press the **Q** key to leave the *Console Access* menu.

6. Press the **S** key to save the settings.

Related topic:
- *Exclusive operation of the DVIVision system* on page 12

Authorising permanent console access

> **NOTE:** This function can only be (de)activated in the setup menu.

If the user makes no inputs at the active console during the adjusted timeout of the automatic input lock (default: 1 second), the default settings of the *DVIVision* system also permit to operate the system from the other console.

If the *Authorising permanent console access* function is activated in the setup menu, the users of the *DVIVision* system are enabled to permanently activate the input lock by pressing **Hotkey+PrtScr** (default: **Ctrl+PrtScr**).

After this key combination has been pressed, the input devices of the concurrent console are deactivated. By pressing the key combination again at the active console, both consoles are again able to operate the *DVIVision* system after the automatic input lock has elapsed.

If the permanent input lock is activated at one console, the *Scroll* LEDs are blinking on the keyboards of both users.

How to (de)activate the *Authorising permanent console access* function:

<table>
<tr><td rowspan="11">Setup menu</td><td>

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **Console Access** row and press the **Enter** key.

3. Use the **arrow** keys to select the **Permanent Access CPU** row to change this setting for the local console.

   Use the **arrow** keys to select the **Permanent Access CON** row to change this setting for the remote console.

4. Press the **Space** key (repeatedly) to (de)activate this function:

   Yes ‣ activation of the permanent input lock possible
   No ‣ activation of the permanent input lock not possible

5. Press the **Q** key to leave the *Console Access* menu.

6. After you selected the desired setting, press the **S** key to save your settings.

</td></tr>
</table>

Related topics:
- *Changing the timeout of the automatic input lock* on page 25
- *Changing the video mode of user consoles* on page 27

Changing the video mode of user consoles

> **NOTE:** This function can only be (de)activated in the setup menu.

In the standard configuration of the *DVIVision* system, the computer's video signal is put out at the monitor of the active console and at the monitor of the concurrent console.

By applying the *Changing the video mode of user consoles* function, the video signal at the concurrent user's monitor is disabled if the user enters data.

After finishing your inputs, the monitor at the concurrent console is reactivated after the automatic input lock has elapsed or the permanent input lock has been deactivated.

How to select the video mode of a user console:

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select the **Console Access** row and press the **Enter** key.

3. Use the **arrow** keys to select the **Videomode CPU** row to change this setting for the local console.

   Use the **arrow** keys to select the **Videomode CON** row to change this setting for the remote console.

4. Press the **Space** key (repeatedly) to select your video mode:

   Always On ‣ always display the video signal of the concurrent user
   Switch Off ‣ switch off video signal for inputs of the other user

5. Press the **Q** key to leave the *Console Access* menu.

6. Press the **S** key to save your settings.

Related topics:
- *Changing the timeout of the automatic input lock* on page 25
- *Authorising permanent console access* on page 26

Choosing the EDID mode

The KVM extender reads out EDID features (*Extended Display Identification Data*) of the monitor connected to the user module. These data are forwarded to the computer. Among these features are information about the preferred resolution and the supported monitor frequencies.

Use the setup menu of the KVM extender to choose between the following EDID modes:

▪ **Auto forward (Standard):** The EDID data of the monitor connected to the user module are read out when starting the KVM extender and are auto forwarded to the computer.

The integrated cache function ensures that the computer connected to the computer module can access the features of the remote monitor during the start-up. Even if the computer module or the user module are not connected or turned off, either the features of the last connected monitor or the default settings are still provided in the *DVIVision* system.

▪ **Keep stored EDID:** The EDID data of the monitor shown in the *Current EDID* column is stored and always used in this mode.

When connecting another monitor, the EDID data is *not* read in. Instead, the existing data is still used.

How to choose the EDID mode:

Setup menu	1. Use the terminal emulator to establish the connection to the *DVIVision* system. 2. Use the **arrow** keys to select the **EDID mode** row and press **Enter**. For each video channel of the KVM extender the menu displays the monitor name and device ID stored in the EDID data. 3. Use **arrow↑** or **arrow↓** to choose the video channel whose EDID mode you want to change. 4. Press the **Space** key (repeatedly) to select between the following options: **Auto forward** ‣ transmit EDID data of connected monitor **Keep stored EDID** ‣ store and use EDID data permanently 5. *Optional:* Use **arrow↑** or **arrow↓** to edit the EDID mode of another video channel. 6. Press **Q** to leave the menu. 7. Press **S** to save your settings.

Showing the last image after disconnection (Freeze)

> **NOTE:** This function can only be (de)activated in the setup menu.

If the cable connection between computer module and user module is interrupted during operation, the monitor at the user module displays no image when the standard setting of the KVM extender is applied.

Activate this function to display the last-received image at the user module until the connection has been re-established.

> **ADVICE:** The last image can be displayed in a coloured frame to highlight the interrupted connection.

How to select an option of the *Freeze* function:

Setup menu

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow keys** to select the row **Freeze Image**.

3. Three different display options are provided in case the connection is interrupted. Press the **Space** key (repeatedly) to select one of the following display options at the console monitor:

   Off ‣ show no image (standard)
   On ‣ show last image
   Inverted ‣ show last image and coloured frame

4. *Optional:* Use **arrow↑** or **arrow↓** to edit the EDID mode of another video channel.

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

Optimising the video image

The video signal is usually transmitted between the computer module and the user module in a compressed way. Thanks to this compression, the image on the console monitors are normally displayed without losses and judders.

The video data to be transmitted and the preset video settings can cause the following effects.

Tearing: The monitor image consists of two subsequent frames that are *partly* displayed. The lower part of the image shows a part of the old frame, the upper part shows a part of the new frame. At the point where both frames touch, the image appears to be "torn".

> **NOTE:** The HDIP mode (*High Dynamic Image Processing*) prevents the tearing effect and provides the best image quality even for moving images.

Studdering: The number of transmittable pixels is limited by the transmission bandwidth. If you have selected a high resolution and the image contents change fast, some image may be skipped. The video image may seem jerky.

By reducing the colour depth to 18 bits, you can maximise the number of pixels to be transmitted. Depending on the image contents, this may cause slight colour gradiations.

Latencies: The additional processing of the video signal cuase a short latency in the HDIP mode. This latency may be noticed during fast mouse movements. Deactivate the HDIP mode to avoid such latencies.

Use the setup menu to optimise the video image for each video channel. Optionally, you can use the setup keys to switch between the following profiles that apply to *all* video channels:

PROFILE	FEATURES	SETTINGS
Best video quality (Default)	▪ best video quality ▪ maximum colour depth ▪ short latency ▪ no tearing	▪ HDIP: on ▪ Colour depth: 24 bit
Accelerated desktop	▪ high video quality ▪ maximum colour depth ▪ short latency ▪ tearing possible	▪ HDIP: off ▪ Colour depth: 24 bit
Accelerated video images	▪ highest image refresh rate ▪ reduced colour depth ▪ short latency ▪ no tearing	▪ HDIP: on ▪ Colour depth: 24 bit
Best performance	▪ highest image refresh rate ▪ reduced colour depth ▪ shortest latency ▪ tearing possible	▪ HDIP: off ▪ Colour depth: 24 bit

How to change the settings to optimise the video quality:

Setup mode	1. Press **Hotkey+Backspace** (default: **Ctrl+Backspace**) to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.
	2. Press one of the following setup keys to activate the desired profile *for all video channels* of the KVM switch:
	F1 ‣ activate profile for *Best video quality*
	F2 ‣ activate profile for *Accelerated desktop*
	F3 ‣ activate profile for *Accelerated video images*
	F4 ‣ activate profile for *Best performance*

Setup menu	1. Use the terminal emulator to establish the connection to the *DVIVision* system.
	2. Use the **arrow** keys to select the row **Video Optimisation** and press **Enter**.
	3. *Optional:* Use the **arrow←** or **arrow→** keys to select the column of the video channel whose settings you want to edit.
	4. Use the **arrow↑** or **arrow↓** keys to select the row **HDIP** and press the **Space** key (repeatedly) to choose between the following options:
	on ‣ actiate *High Dynamic Image Processing*
	off ‣ deactivate *High Dynamic Image Processing*
	5. Use the **arrow↑** or **arrow↓** keys to select the row **Colour depth** and press the **Space** key (repeatedly) to choose between the following options:
	24b ‣ transmit images with a colour depth of 24 bit
	18b ‣ transmit images with a reduced colour depth of 18 bit
	6. *Optional:* Use the **arrow←** or **arrow→** keys to select the column of another video channel whose settings you want to edit.
	7. Press the **S** key to save your settings.

Activating or resetting a PS/2 mouse

> **NOTE:** A PS/2 mouse can only be activated or reset in the setup mode.

Compared to USB mouses, PS/2 mouses do not support hot plug technology. You can therefore insert the PS/2 plug during operation, but it may be possible that the computer does not detect the input device.

To enable or reset the PS/2 mouse, the *DVIVision* system can be used to send a special command to the computer.

Since the commands differ depending on the mouse type and the installed operating system, four different setup keys are provided.

How to activate or reset a PS/2 mouse:

<table>
<tr>
<td rowspan="2">Setup mode</td>
<td>

1. Press **Hotkey+Backspace** (default: **Ctrl+Backspace**) to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.

2. Press one of the following setup keys to activate or reset the PS/2 mouse:

    M ‣ activates the PS/2 mouse of a Linux computer
    I ‣ activates the PS/2 wheel mouse of a Linux computer
    E ‣ activates the PS/2 wheel mouse with additional keys of a Linux computer
    R ‣ resets the PS/2 mouse interface of a Windows computer

</td>
</tr>
</table>

Displaying the system's status information

> **NOTE:** The status information can only be viewed in the setup menu.

Detailed status information of the *DVIVision* system can be viewed in the setup menu. Therefore, the setup menu provides entries that are described in the following.

Show System Info: Lists different information (number of video channels, connection type of the input devices, etc.) about the *DVIVision* system.

> **NOTE:** The row *Console Access* shows which console (*CPU* or *CON*) currently operates the *DVIVision* system and if the permanent access (display in setup menu: *Permanent*) to the *DVIVision* system is activated.

Show Version Info: Shows version numbers of the different components of the *DVIVision* system.

Show Line Info: Shows features and data of the transmission cables.

Use the **R** and **L** keys to switch between the features of the remote (*remote*) and the local (*local*) module. The local module is always the module the data cable is connected to.

The **numerical keys** can be used to switch between the different channels of multi-channel devices.

Show Temperature Info: Shows temperature inside of the module.

Use the **R** and **L** keys to switch between the features of the remote and the local module. The local module is always the module the data cable is connected to.

Show Video Info: Shows features of the video signal.

The **numerical keys** can be used to switch between the different channels of multi-channel devices.

Show Monitor Info: Shows monitor features.

Use the **R** and **L** keys to switch between the features of the remote (*remote*) and the local (*local*) monitor. The local monitor is always the module to which the service cable is connected to.

How to display the status information in the terminal emulator:

<table>
<tr><td rowspan="5">Setup menu</td><td>

1. Use the terminal emulator to establish the connection to the *DVIVision* system.

2. Use the **arrow** keys to select one of the rows mentioned above.

3. Press **Enter** to display the information in the terminal emulation program.

   The displayed information can be updated by pressing the **U** key.

4. Press the **Q** key to return to the main menu.

</td></tr>
</table>

Resetting the default settings

This function resets the default settings of the *DVIVision* system. By performing this function, the default settings of the *DVIVision* system mentioned on page 13 are reactivated.

How to reset the default settings:

Setup mode	1. Press **Hotkey+Backspace** (default: **Ctrl+Backspace**) to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds*.
	2. Press the setup key listed below to reset the default settings:
	D ‣ resets the default settings

Setup menu	1. Use the terminal emulator to establish the connection to the *DVIVision* system.
	2. Use the **arrow** keys to select the **Set System Defaults** row.
	3. Press the **Enter** key to reset the default settings.
	4. Press the **Enter** key to respond to the prompt for confirmation, or cancel the process by pressing **Q**.

Enhanced configuration settings

> **IMPORTANT:** The settings described in this paragraph must only be changed when requested by the support team.

The enhanced configuration settings in the setup menu enable you to adjust special features of the *DVIVision* system to the specialties of your operating environment:

```
------ Special extended options ------
--- Check manual,  use with caution --
USB-HID Emulation:      Auto (default)
VidIn Noise Filter:      Off (default)
Set PLL bandwidth                  ...
Set Defaults for Spec. Options     ...
'Q': quit                 Space: Toggle
```

Selecting the emulation mode for input devices

> **NOTE:** This function can only be (de)activated in the setup menu.

The computer module either emulates PS/2 or USB input devices that are detected and used by the connected computer.

If a PS/2 interface (mouse or keyboard) of the computer module is connected to the computer, the PS/2 emulation is activated independently from a possible connection to the USB interface.

If, however, only the USB interface is connected to the computer, the USB emulation is applied. For this purpose, the computer is provided with a USB-HID (*Human Interface Device*).

If a special characteristic of your operating environment requires the USB-HID emulation to be permanently deactivated, the emulation of the input devices can be switched to the **PS/2 only** mode.

> **IMPORTANT:** In this case, establish a connection between the PS/2 interfaces of the computer module and the computer.
>
> If *-U* or *-ARU* variants are applied, the USB input devices can also be connected via transparent *USB 1.1* interfaces.

How to select the emulation mode for input devices:

1. Use the terminal emulation program to establish a connection to the *DVIVision* system.

2. Use the **arrow** keys to select the row **Special extended options** and press **Enter**.

3. Use the **arrow** keys to select the row **USB-HID Emulation**.

4. Press **Space** (repeatedly) to switch the USB-HID emulation:

   Auto ‣ device automatically controls emulation mode
   PS/2 only ‣ emulation of PS/2 input devices; USB-HID deactivated

5. Press **Q** to leave the *Special Extended Options* menu.

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

Using the noise filter

By default, the computer module analyses and compresses the computer's incoming video signal and transmits it to the user module. Due to this compression, the data volume to be transmitted can be considerably reduced.

In order to apply the compression, the image segments in the frames must not be changed.

The device drivers of some graphics cards produce image noises in the video signal: The colour values of frames the user perceives as evenly coloured differ slightly.

NOTE: The frames' colour values also change for "fixed images". As a result, the compression cannot be applied and all frames of the video signal are transmitted.

Due to the missing compression, a high-resolution video signal of a computer with such a device driver leads to a large data volume that is transmitted between computer module and user module. This might affect the performance of the *DVIVision* system.

Activate the low or high noise filter level if you experience performance losses. This way, the colour values are adjusted and the compression is possible.

NOTE: With *Multichannel* variants, the selected noise filter level applies for all video channels.

How to change the noise filter level:

<table>
<tr><td rowspan="3" style="writing-mode: vertical;">Setup mode</td><td>

1. Press the key combination **Hotkey+Backspace** (default: **Ctrl+Backspace***)* to activate the setup mode. If the hotkey delay is active, press the key combination for *seven seconds.*

2. Press one of the setup keys listed below to activate a noise filter level:

Y ‣ deactivated noise filter level (default))
X ‣ low noise filter level
C ‣ high noise filter level

</td></tr>
</table>

<table>
<tr><td rowspan="6" style="writing-mode: vertical;">Setup menu</td><td>

1. Use the terminal emulation program to establish a connection to the *DVIVision* system.

2. Use the **arrow** keys to select the row **Special extended options** and press **Enter**.

3. Use the **arrow** keys to select the row **Video Input Noise Filter**.

4. Press **Space** (repeatedly) to activate a noise filter level:

Off ‣ deactivated noise filter level (default)
Low ‣ low noise filter level
High ‣ high noise filter level

5. Press **Q** to leave the *Special Extended Options* menu.

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

</td></tr>
</table>

Support of DVI non-compliant image sources

NOTE: This function can only be (de)activated in the setup menu.

A resolution higher than 1600 x 1200 pixels causes stripes within the image if, for example, the screensaver of a *Mac mini* is displayed.

This affects the way the image is displayed on both the monitor of the computer module as well as the monitor of the user module.

NOTE: This factor is caused by weak or disturbed DVI signals of the connected computer.

The DVI signals of the *connected computer* that are transmitted to the *DVIVision* system are not DVI compliant.

To improve the image signal of computers that provide a DVI signal which is not DVI compliant, a special button is implemented in the setup menu. This button is used to modify the PLL bandwidth.

How to change the PLL bandwidth to support image sources that are not DVI compliant:

<div style="border:1px solid">

Setup menu

1. Use the terminal emulation program to establish a connection to the *DVIVision* system.

2. Use the **arrow** keys to select the row **Special extended options** and press **Enter**.

3. Use the **arrow** keys to select the row **Set PLL bandwidth** and press **Enter**.

4. *Optional:* If you apply a multichannel variant, use the **arrow keys** to move the cursor to the channel whose bandwidth you want to change.

5. Press **Space** (repeatedly) to select one of the following bandwidths:

   ‣ **4 MHz** (default)
   ‣ **3 MHz**
   ‣ **6 MHz**
   ‣ **5 MHz**

6. *Optional:* If necessary, repeat steps 3 and 4.

7. Press **Q** to leave the *Set PLL bandwidth* menu.

8. Press **Q** to leave the *Special Extended Options* menu.

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

</div>

Resetting the default values of the enhanced configuration settings

A special function provides the possibility to reset all configuration settings of the *Special extended options* menu to default values.

How to reset the default values of the enhanced configuration settings:

<div style="border:1px solid">

Setup menu

1. Use the terminal emulation program to establish a connection to the *DVIVision* system.

2. Use the **arrow** keys to select the row **Special extended options** and press **Enter**.

3. Use the **arrow** keys to select the row **Set Defaults for Spec. Options**.

4. Press **Enter** to reset the default settings.

5. Press **Enter** to confirm the appearing security request or cancel the function by pressing **Q**.

</div>

Monitoring

Various parametres (e. g. *status* and *diagnosis* information) of the KVM extender can be queried via a serial data connection.

These parametres are queried with a special protocol. This chapter explains the various commands as well as the replies of the KVM extender.

> **NOTE:** Communication with the KVM extender is carried out over the *Service* socket of the computer module (CPU).
>
> Use the provided service cable and the following connection settings to transmit data via this interface:
>
> - Bits per second: 38.400
> - Data bits: 8
> - Stop bits: 1

»Request ID«

All commands towards a KVM extender are to be sent using a **Request ID**. This is any unmodified string the KVM extender reproduces in its answer.

Listing the commands

Querying new events (GETLOG)

While the KVM extender is in operation, the last 32 events are logged. If the buffer for new events is occupied, older ones are overwritten with new events.

New events of the KVM extender can be retrieved with the **GETLOG** command.

> **Command:**
> ```
> <GETLOG ReqID="123"/>
> ```
>
> **Exemplary answer of the KVM extender:**
> ```
> <LOG Ver="1" ReqID="123">
> Cable disconnected
> </LOG>
> ```
>
> **Reply if buffer is empty:**
> ```
> <FAIL ReqID="123"/>
> ```

> **NOTE:** Calling up an event deletes this event in the buffer.

The following table shows the events logged by the KVM extendeder:

Notification	Event
DVI-Plug connected	connected DVI cable (computer side)
DVI-Plug disconnected	disconnected DVI cable (computer side)
DVI-Signal loss	no DVI signal
DVI-Signal ok	detected DVI signal
Monitor connected	established cable connection to monitor
Monitor disconnected	no cable connection to monitor
Remote-Unit Offline	interrupted connection to user module (CON)
Remote-Unit Online	established connection to user module (CON)
Screen Freezing active	active Freeze function
Screen Freezing inactive	inactive Freeze function
USB-Emulation active	established USB connection to computer
USB-Emulation inactive	interrupted USB connection to computer

Querying the status information (GETSTATUS)

The **GETSTATUS** command can be used to query various status information of the KVM extender.

Command:

```
<GETSTATUS ReqID="123"/>
```

Exemplary answer of the KVM extender:

```
<STATUS Ver="1" ReqID="123">
  <FreezingActive>NO</FreezingActive>
  <LocalVideoInput>OK</LocalVideoInput>
  <StatusLocal>OK</StatusLocal>
  <StatusRemote>FAIL</StatusRemote>
  <USBStatus Mode="TRANS">OK</USBStatus>
</STATUS>
```

The following table lists the different fields as well as the possible states:

Field	Description	Status
FreezingActive	active Freeze function	YES, NO
LocalVideoInput	valid video signal at computer module (CPU)	OK, FAIL
StatusLocal	status of computer module (CPU)	OK, FAIL
StatusRemote	status of user module (CON)	OK, FAIL
USBStatus Mode="TRANS"	status of transparent USB bus	OK, FAIL

NOTE: Only KVM extenders with USB 1.1 support monitor the status of the transparent USB bus.

For devices with USB 2.0 support the line **USBStatus Mode="Trans"** always displays **FAIL**.

Querying the diagnosis functions (GETDIAG)

The **GETDIAG** command can be used to query different diagnosis information of the KVM extender.

Command:

```
<GETDIAG ReqID="123"/>
```

Exemplary answer of the KVM extender:

```
<DIAG Ver="1" ReqID="123">
  <Resolution>1600x1200</Resolution>
  <TemperatureLocal>35</TemperatureLocal>
  <TemperatureRemote>37</TemperatureRemote>
</STATUS>
```

The following table lists the different fields as well as the possible states:

Field	Description	Value
Resolution	resolution of the incoming video signal in pixels	width × height
TemperatureLocal	temperature of computer module (CPU) in °C	rounded number
TemperatureRemote	temperature of user module (CON) in °C	rounded number

Querying firmware and monitor information (GETINVENTORY)

The **GETINVENTORY** command can be sued to query the firmware revisions of the KVM extender as well as information about the connected monitor.

Command:

```
<GETINVENTORY ReqID="123"/>
```

Exemplary answer of the KVM extender:

```
<INVENTORY Ver="1" ReqID="123">
  <FirmwareLocal>1.2.3</FirmwareLocal>
  <FirmwareRemote>1.2.3</FirmwareRemote>
  <MonitorManufacturer>Samsung</MonitorManufacturer>
  <MonitorModel>Syncmaster</MonitorModel>
  <MonitorSerial>H9XP4711123</MonitorSerial>
</INVENTORY>
```

The following table lists the different fields as well as the possible states:

Field	Description	Value
FirmwareLocal	firmware version of the computer module (CPU)	revision number
FirmwareRemote	firmware version of the user module (CON)	revision number
MonitorManufacturer	manufacturer of the monitor	read-out data of DDC
MonitorModel	model description of the monitor	read-out data of DDC
MonitorSerial	serial number of the monitor	read-out data of DDC

Rebooting the KVM extender (DOREBOOT)

Use the **DOREBOOT** command to reboot the computer module as well as the user module.

Command:

```
<DOREBOOT ReqID="123"/>
```

Reply directly before the KVM extender is rebooted:

```
<REBOOT ReqID="123"/>
```

Reply if the command failed:

```
<FAIL ReqID="123"/>
```

Further information

Recommendations for twisted pair cables

The transmission of all signals of the *DVIVision* system is carried out through one twisted pair cable (category 5e or better).

> **NOTE:** It is permitted to connect several segments of a cable connection with patch panels and connection ports. It is, however, not permitted to connect active componentss such as network switches, hubs or repeaters are not permitted.

The data transmission is reliable over a distance of at least 100 metres using a regular standard twisted pair cable (category 5e or better). The distance that can actually be bridged depends on the quality of the applied cable. High-quality S-STP cables with an AWG22 wire gauge coding can bridge a distance of up to 140 metres. Patch cables with an AWG26 wire gauge coding can only bridge a maximum of 80 metres.

In order to ensure a reliable operation even in environments with interferences, installation cables with at least AWG24 coding have to be used for lengths over 80 metres.

Wire gauge	Cable type	Category	Recommendation
AWG22	Installation	5e, 6 or 7	up to 140 m
AWG23	Installation	5e, 6 or 7	up to 130 m
AWG24	Installation	5e, 6 or 7	up to 120 m
AWG26/27	Patch cable	5e, 6 or 7	up to 80 m

Table 1: Recommended cable lengths depending on the wire gauge

> **NOTE:** The lengths that are mentioned in the table above must be interpreted as the sum of all segments between the devices.

The following cables achieved the best results during test operation:

- up to 140 metres: Kerpen MegaLine G12-150 S/F AWG22
- up to 100 metres: G&D K-C5-HR
- up to 80 metres: Dätwyler Uninet flex 4P, AWG26, S-STP

Special advices regarding the MC4 variant

Permitted device adjustments

Please mind the following advices regarding the proper installation and the minimum distances of the devices as well as the additional advices:

	Computer module (-MC4-CPU)	User module (-MC4-CON)
Permitted adjustments	▪ upright horizontal (prefered) ▪ left device side upright ▪ rear side upright	▪ upright horizontal (prefered) ▪ left device side upright ▪ rear side upright
Minimum distances	▪ **Device top and bottom side:** When installing several devices on top of each other please provide a distance of at least 2 cm every three devices. ▪ **Device bottom side:** If the device is standing on a table, for example, provide a free space of at least 7,9 mm (equals the height of the device stands). ▪ **Device sides:** at least 5 cm	▪ **Device top side:** at least 3 cm ▪ **Device bottom side:** at least 7,9 mm (equals the height of the device stands) ▪ **Device sides:** at least 5 cm
Air circulation	▪ Always ensure that the *right* side (and if necessary the bottom side) of the devices are cooled by air. ▪ Heated air must be able to stream away from the *left* side (and if necessary the top side).	▪ Always ensure that the sides and the bottom side are cooled by air. ▪ Heated air must be able to stream away from the sides and the top side.
Additional advices	▪ The incoming streaming air must be cooler than the permissible ambient temperature (see *Technical data* on page 53). ▪ Note the effects of heat sources (e. g. other devices) in the immediate vicinity of the KVM extender. ▪ Do not place the devices into closed, constricted spaces. ▪ Avoid to cover the ventilation openings.	

Temperature warnings

The temperature in the user module as well as in the computer module of the *DVIVision-MC4* variant is permanently moitored.

> **IMPORTANT:** To protect the device from overheating, the video signal of the channels 2 to 4 is switched off as soon as the temperature reaches the critical value!

Before the temperature reaches the critical value, the user is warned through several alarm signals:

Alarm level	Action
≥ 70 °C	Blinking Sys-LED at device.
≥ 71 °C	All four monitors of the user module display the image with a blinking frame.
≥ 72 °C	All four monitors of the user module display the image with a fast blinking frame.
≥ 73 °C	Video channels 2 to 4 are switched off; the monitors 2 to 4 display no image.
	The monitor of video channel 1 still displays the image with a fast blinking frame.

Support of any resolution

> **IMPORTANT:** Display modes that support *interlace* are not supported by the *DVIVision* system!

The *DVIVision* system generally supports all resolutions that can be transmitted through a single link interface according to the DVI specification 1.0.

This restriction mainly affects the pixel rate, which can reach from 25 MHz to 165 MHz. Therefore, resolutions between 640 × 480 pixels at 60 Hz and 1600 × 1200 pixels at 60 Hz are possible for the common timing standards by VESA DMT and VESA SMT. 1920 × 1200 pixels at 60 Hz is transmitted according to VESA CVT-RB.

Almost any refresh rate and resolution within the technical constraints are possible. The available display modes are largely dependent on the graphics card, the graphics driver, the operating system and the connected monitor.

The video data that are transmitted from the computer to the computer module (*DVIVision*-CPU) are transferred to the monitor of the remote console with the same timing. The signal's frequency and display position at the computer module therefore correspond to those of the graphics output.

> **NOTE:** While generating the video signal, some graphics cards differentiate between digital and analog output. Such graphics cards generate digitally output image signals with partly non-standardised timings. Such timings do not comply with the monitor's default to reduce the frequencies of the digital signals.
>
> Normally, this does not affect the *DVIVision* system and the digitally connected displays. Due to the non-standardised timing, analog monitors might not be able to display the image size and the image position properly.

Status displays

The LEDs on the front panel of both the computer module and the user module enable you to control the operational status of the *DVIVision* system at any time.

Computer module (*DVIVision-CPU*)

LED	Status	Meaning
K/M	on	The CPU input (PS/2 or USB) is active and ready for operation. A local keyboard was found.
	off	No voltage at PS/2 interface or USB bus.
	blinking	The CPU input (PS/2 or USB) is active and ready for operation. A local keyboard was not found.
	flickering	Keyboard and mouse inputs are being transmitted to the computer. The rhythm of the flickering is determined by the inputs of the user.
	flashing	Voltage is provided at the USB input of the computer module but the computer is not (yet) ready for operation.
Main	on	The main power supply provides the necessary voltage.
	off	The switch for the power supply is turned off or the connection of the device with the mains supply is not established. Check the connection of the IEC cable.
Red.	on	The optional power pack is connected and provides the required voltage (12 Volt).
	off	The optional power pack has not been (properly) connected.
Sys.	on	System ready for operation.
	slow blinking	Defective internal communication. Restart the device.
	blinking	Activated setup mode.
	fast blinking	only -MC4 multichannel variants: The temperature in the device exceeds the valid values (see page 45) or the fan is not working.
	cyclic blinking	The firmware that has been transmitted to the device by the update wizard is being tranmitted to all components of the system. This process might take several minutes.
Trans.	on	The communication with the user module has been successfully established.
	blinking	The communication with the user module could not be established.
Video	on	Stable image signal at video input.
	blinking	The video signal coming in from the computer could not be detected or its quality is insufficient to be processed by the system.

User module (*DVIVision-CON*)

LED	Status	Bedeutung
K/M	on	Keyboard (PS/2 or USB) was found.
	blinking	No keyboard (PS/2 or USB) was found.
Main	on	The main power supply provides the necessary voltage.
	off	The switch for the power supply is turned off or the connection of the device with the mains supply is not established. Check the connection of the IEC cable.
Red.	on	The optional power pack is connected and provides the required voltage (12 Volt).
	off	The optional power pack has not been (properly) connected.
Sys.	on	System ready for operation.
	slow blinking	Defective internal communication. Restart the device.
	blinking	Activated setup mode.
	fast blinking	only -MC4 multichannel variants: The temperature in the device exceeds the valid values (see page 45).
	cyclic flashing	The firmware that has been transmitted to the device by the update wizard is being tranmitted to all components of the system. This process might take several minutes.
Trans.	on	The communication with the computer module has been successfully established.
	blinking	The communication with the computer module could not be established.
Video	on	The incoming image signal at the video input of the computer module is being properly received by the user module.
	blinking	No image data are being received at the computer module.

The DVI-Power expansion

The DVI-Power expansion is provided for the *DVIVision-AR* and *-ARU* variants to control the *ATX-Power* and *Reset* buttons of the computer at the remote console.

Scope of delivery

The scope of delivery of the DVI-Power expansion includes the following items:

- G&D Power Card (slot card for installing in the computer)
- connection cable to connect G&D Power Card and computer module
- single-sided ready-made cable for connecting a panel to the user module
- 2 × two-pin connection cable (0,4 metres)
- 2 × two-pin extension cable (0,4 metres)

Functionality

The remote control of both the *ATX-Power* and the *Reset* function is carried out through a panel with two buttons. The panel is installed at the remote console.

NOTE: The panel to operate DVI-Power is *not* included in the scope of delivery of DVI-Power and has to be built by an expert.

The panel is connected to the system through a four-pole modular socket on the back panel of the user module (*DVIVision*-CON). The connection cable that is provided in the scope of delivery has to be fixed to the panel (see *Allocating the connection cable for the panel* on page 52).

Installation guidelines

Installing the G&D Power Card into the computer

At first, install the G&D Power Card into the computer:

1. Take the manual of the computer and of the motherboard that is installed within the computer.

2. Open the casing of the computer to gain access to the expansion slots.

3. Assemble the G&D Power Card of the DVI-Power expansion to a free expansion slot of the computer.

> **NOTE:** The G&D Power Card requires *no* slot at the motherboard of the computer. The installation only serves as assembly position for the ATX module at the back panel of the computer.

Connecting the signal lines to the slot card

In the following, the signal lines *ATX-Power* and *Reset* of the motherboard are connected to the pin bar of the G&D Power Card (see figure). A further connection at the computer casing guarantees the use of these buttons.

> **NOTE:** Write down the plug positions of the cables, which are leading from the *ATX-Power* button and the *Reset* button of the casing to the motherboard. Afterwards, disconnect the cables.
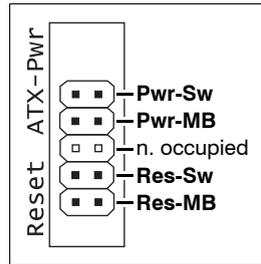
Pwr-Sw: Connect the *ATX-Power* button cable of the computer casing to these pins. In case the connection cable is not long enough, it can be extended with one of the extension cables.

Pwr-MB: Connect the pins you have written down before with the plug position of the *ATX-Power* button on the motherboard. Use one of the supplied connection cables for this purpose.

Res-Sw: Connect the *Reset* button cable of the computer casing to these pins. In case the connection cable is not long enough, it can be extended with one of the extension cables.

Res-MB: Connect the pins you have written down before with the plug position of the *Reset* button on the motherboard. Use one of the supplied connection cables for this purpose.

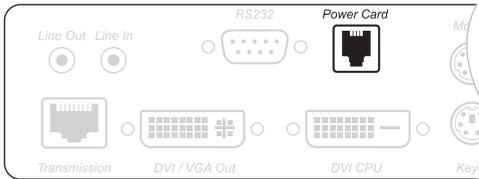## Connecting the G&D Power Card and the panel with *DVIVision*

Figure 8: Interface *Power Card* at the computer module (*DVIVision*-CPU)

Power Card: Connect this interface of the computer module to the interface on the back panel of the G&D Power Card
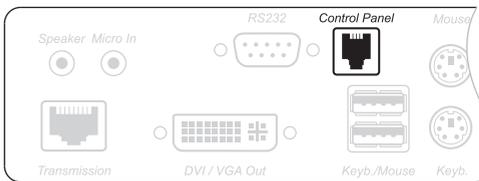
Figure 9: Interface *Control Panel* at the user module (*DVIVision*-CON)

Control Panel: Connect the panel cable to this interface at the user module.

Operating the expansion DVI-Power

The functions of the panel buttons correspond to the functions of both the *ATX-Power* and the *Reset* button at the computer casing.

NOTE: Depending on the BIOS setting of the computer, in some cases the panel's *ATX-Power* button has to be pressed for five seconds to turn off the computer.

If necessary, check and change the respective setting within the BIOS of the computer to deactivate the delay.

Allocating the connection cable for the panel

The connection cable that is provided in the scope of delivery has to be fixed to the panel. The following figure illustrates how the pins are assigned to the panel's functions:
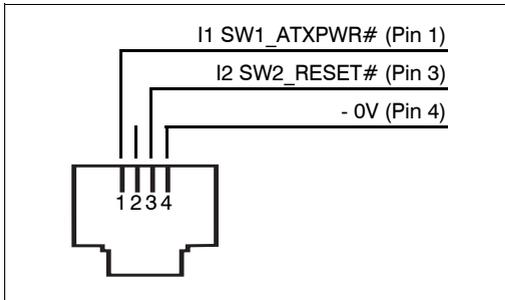

Figure 10: Pin assignment to the functions of the panel

To switch one of the *ATX-Power* or *Reset* signals, the signal has to be conductively connected to the shared minus contact (pin 4):
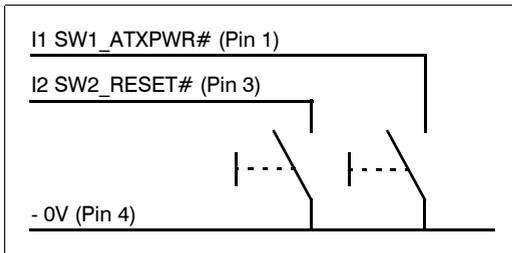

Figure 11: Basic circuit with buttons for ATX-Power and Reset

Technical data

General features of the DVIVision series

DVIVISION SERIES		
Interfaces to computer	Video:	‣ see specific features
	PS/2 keyboard/mouse:	2 × PS/2 socket
	USB keyboard/mouse:	1 × USB-B socket
	Audio: ‣ variants -AR and -ARU	3,5-mm jack plug (Line In) 3,5-mm jack plug (Line Out)
	USB 1.1: ‣ variants -ARU and -U	Shared transmission of the signals of USB devices as well as of keyboard and mouse via USB-B socket.
	RS232: ‣ variants -AR and -ARU	1 × RS232 socket
Interfaces for remote console	Monitor:	‣ see specific features
	PS/2 keyboard/mouse:	2 × PS/2 socket
	USB keyboard/mouse:	2 × USB-A socket
	Audio: ‣ variants -AR and -ARU	3,5-mm jack plug (Speaker) 3,5-mm jack plug (Micro In)
	USB 1.1: ‣ variants -ARU and -U	2 × USB-A socket
	RS232: ‣ variants -AR and -ARU	1 × RS232 socket
Interfaces for local console	Monitor:	‣ see specific features
	Keyboard/Mouse:	2 × PS/2 socket
Graphics	Colour depth:	24 bits
	Resolution @ 60 Hz:	max. 1920 × 1200 pixels
	Resolution @ 85 Hz:	max. 1280 × 1024 pixels
	Pixel rate:	25 MHz to 165 MHz
	Vertical frequency:	20 Hz to 100 Hz
	Horizontal frequency:	25 kHz to 130 kHz
Audio ‣ variants -AR & -ARU	Transmission type:	transparent, bi-directional
	Resolution:	24 bit digital, stereo
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz

DVIVISION SERIES		
USB 1.1 ‣ variants -ARU and -U	Specification:	USB 1.1
	Transmission type:	transparent
	Transmission rate:	max. 12 Mbit/s
	Supported devices:	high power devices (bis 500 mA)
RS232 ‣ variants -AR and -ARU	Transmission type:	transparent
	Transmission rate:	max. 115.200 bit/s
	Supported signals:	RxD, TxD, RTS, CTS, DTR, DSR, DCD
Update	Mode:	local service socket
	Interface:	2,5-mm jack plug
Main power supply	Type:	internal power pack
	Connection:	IEC plug (IEC-320 C14)
	Voltage:	AC100-240V/60-50Hz
Redundant power supply	Type:	external power pack
	Connection:	miniDIN-4 Power socket
	Voltage:	+12VDC

Specific features of single-channel devices

DVIVISION-CPU		
Interfaces for local console	Monitor:	1 × DVI-I socket
Interfaces to computer	Video:	1 × DVI-D socket
Interfaces for transmission	to user module:	1 × RJ45 socket
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm (Desktop) 19" × 1 HU × 210 mm (Rackmount)
	Weight:	approx. 1,3 kg
Operating environment	Temperature:	+5 to +45 °C
	Air humidity:	20% - 80 %, non-condensing

DVIVISION-CON		
Interfaces for remote console	Monitor:	1 × DVI-I socket
Interface for transmission	to computer module:	1 × RJ45 socket
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm (Desktop) 19" × 1 HU × 210 mm (Rackmount)
	Weight:	approx. 1,3 kg
Operating environment	Temperature:	+5 to +45 °C
	Air humidity:	20% - 80 %, non-condensing

Specific features of multi-channel devices

DVIVISION-MC2-CPU		
Interfaces for local console	Monitor:	2 × DVI-I socket
Interfaces to computer	Video:	2 × DVI-D socket
Interfaces for transmission	to user module:	2 × RJ45 socket
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	435 × 44 × 210 mm
	Weight:	approx. 3,1 kg
Operating environment	Temperature:	+5 to +40 °C
	Air humidity:	20% - 80 %, non-condensing

DVIVISION-MC2-CON		
Interfaces for remote console	Monitor:	2 × DVI-I socket
Interfaces for transmission	to computer module:	2 × RJ45 socket
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	435 × 44 × 210 mm
	Weight:	approx. 3,1 kg
Operating environment	Temperature:	+5 to +40 °C
	Air humidity:	20% - 80 %, non-condensing

DVIVISION-MC4-CPU		
Interfaces for local console	Monitor:	4 × DVI-I socket
Interfaces to computer	Video:	4 × DVI-D socket
Interfaces for transmission	to user module:	4 × RJ45 socket
Casing	Material:	anodised aluminium (top, sides) galvanized steel plate (bottom)
	Dimensions (W × H × D):	435 × 44 × 285 mm
	Weight:	approx. 3,4 kg
Operating environment	Temperature:	+5 to +35 °C
	Air humidity:	20% - 80 %, non-condensing

DVIVISION-MC4-CON		
Interfaces for remote console	Monitor:	4 × DVI-I socket
Interface for transmission	to computer module:	4 × RJ45 socket
Casing	Materials:	anodised aluminium (top, sides) galvanized steel plate (bottom)
	Dimensions (W × H × D):	435 × 44 × 285 mm
	Weight:	approx. 3,4 kg
Operating environment	Temperature:	+5 to +35 °C
	Air humidity:	20% - 80 %, non-condensing

Current and power consumption

Main power supply

Device variant	Current consumption	Power consumption(max.)
CPU	100-240V, 60-50Hz, 0.4-0.2A	14W@100VAC, 15W@240VAC
CON	100-240V, 60-50Hz, 0.4-0.2A	13W@100VAC, 14W@240VAC
U-CPU	100-240V, 60-50Hz, 0.4-0.2A	15W@100VAC, 15W@240VAC
U-CON	100-240V, 60-50Hz, 0.5-0.3A	26W@100VAC, 26W@240VAC
AR-CPU	100-240V, 60-50Hz, 0.4-0.2A	14W@100VAC, 15W@240VAC
AR-CON	100-240V, 60-50Hz, 0.4-0.2A	14W@100VAC, 15W@240VAC
ARU-CPU	100-240V, 60-50Hz, 0.4-0.2A	15W@100VAC, 16W@240VAC
ARU-CON	100-240V, 60-50Hz, 0.5-0.3A	27W@100VAC, 27W@240VAC
MC2-CPU	100-240V, 60-50Hz, 0.5-0.2A	23W@100VAC, 23W@240VAC
MC2-CON	100-240V, 60-50Hz, 0.4-0.2A	20W@100VAC, 21W@240VAC
MC2-U-CPU	100-240V, 60-50Hz, 0.5-0.2A	24W@100VAC, 24W@240VAC
MC2-U-CON	100-240V, 60-50Hz, 0.6-0.3A	33W@100VAC, 33W@240VAC
MC2-AR-CPU	100-240V, 60-50Hz, 0.5-0.2A	23W@100VAC, 24W@240VAC
MC2-AR-CON	100-240V, 60-50Hz, 0.4-0.2A	21W@100VAC, 22W@240VAC
MC2-ARU-CPU	100-240V, 60-50Hz, 0.5-0.2A	24W@100VAC, 24W@240VAC
MC2-ARU-CON	100-240V, 60-50Hz, 0.6-0.3A	34W@100VAC, 34W@240VAC
MC4-CPU	100-120V/210-240V, 60-50Hz, 0.9-0.4A	44W@100VAC, 44W@240VAC
MC4-CON	100-120V/210-240V, 60-50Hz, 0.7-0.3A	36W@100VAC, 36W@240VAC
MC4-U-CPU	100-120V/210-240V, 60-50Hz, 0.9-0.4A	45W@100VAC, 44W@240VAC
MC4-U-CON	100-120V/210-240V, 60-50Hz, 0.9-0.4A	43W@100VAC, 42W@240VAC
MC4-AR-CPU	100-120V/210-240V, 60-50Hz, 0.9-0.4A	45W@100VAC, 44W@240VAC
MC4-AR-CON	100-120V/210-240V, 60-50Hz, 0.7-0.3A	38W@100VAC, 37W@240VAC
MC4-ARU-CPU	100-120V/210-240V, 60-50Hz, 0.9-0.4A	46W@100VAC, 45W@240VAC
MC4-ARU-CON	100-120V/210-240V, 60-50Hz, 0.9-0.4A	45W@100VAC, 43W@240VAC

Redundant power supply

Device variant	Current consumption	Power consumption(max.)
CPU	12VDC/1.2A	11W@12VDC
CON	12VDC/1.2A	10W@12VDC
U-CPU	12VDC/1.2A	12W@12VDC
U-CON	12VDC/2.0A	21W@12VDC
AR-CPU	12VDC/1.2A	11W@12VDC
AR-CON	12VDC/1.2A	11W@12VDC
ARU-CPU	12VDC/1.2A	12W@12VDC
ARU-CON	12VDC/2.0A	22W@12VDC
MC2-CPU	12VDC/1.7A	19W@12VDC
MC2-CON	12VDC/1.5A	17W@12VDC
MC2-U-CPU	12VDC/1.7A	20W@12VDC
MC2-U-CON	12VDC/2.4A	28W@12VDC
MC2-AR-CPU	12VDC/1.7A	20W@12VDC
MC2-AR-CON	12VDC/1.5A	18W@12VDC
MC2-ARU-CPU	12VDC/1.8A	20W@12VDC
MC2-ARU-CON	12VDC/2.5A	28W@12VDC
MC4-CPU	12VDC/3.2A	37W@12VDC
MC4-CON	12VDC/2.6A	30W@12VDC
MC4-U-CPU	12VDC/3.3A	37W@12VDC
MC4-U-CON	12VDC/3.2A	36W@12VDC
MC4-AR-CPU	12VDC/3.2A	37W@12VDC
MC4-AR-CON	12VDC/2.7A	31W@12VDC
MC4-ARU-CPU	12VDC/3.3A	38W@12VDC
MC4-ARU-CON	12VDC/3.2A	37W@12VDC

A9200039