G&D Computer and Console Modules

EN Installation and Operation
DP-HR variants

A9200140-1.32

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.

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FCC Statement

The devices named in this manual comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) the devices may not cause harmful interference, and (2) the devices must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be deter-mined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Table of Contents

Chapter C: Generic HID

Chapter D: Extender mode

Safety instructions

Please read through the following safety guidelines before putting the G&D product into operation. The guidelines help to avoid damage to the product and prevent potential injuries.

Keep these safety guidelines ready to hand for all persons who use this product.

Observe all warnings and operating information given at the device or in this operating manual.

⚠ Disconnect all power sources

CAUTION: Shock hazard!

Before installation, ensure that the device has been disconnected from all power sources. Disconnect all power plugs and all power supplies of the device.

⚠ Débranchez toutes les sources d'alimentation

ATTENTION: Risque de choc électrique!

Avant l'installation, assurez-vous que l'appareil a été débranché de toutes les sources d'alimentation. Débranchez toutes les fiches d'alimentation et toutes les alimentations électrique de l'appareil.

⚠ Trennen Sie alle Spannungsversorgungen

VORSICHT: Risiko elektrischer Schläge!

Stellen Sie vor der Installation sicher, dass das Gerät von allen Stromquellen getrennt ist. Ziehen Sie alle Netzstecker und alle Spannungsversorgungen am Gerät ab.

⚠ Warning: electric shock

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

⚠ Ensure constant access to the devices' mains plugs

When installing the devices, ensure that the devices' mains plugs remain accessible at all time.

⚠ Do not cover the ventilation openings

For device variants with ventilation openings, it must always be ensured that the ventilation openings are not covered.

⚠ Ensure correct installation position for devices with ventilation openings

For reasons of electric safety, devices with ventilation openings must only be installed in an upright, horizontal position.

⚠ Do not insert any objects through the device's openings

Objects should never be inserted through the device's openings. Dangerous voltage could be present. Conductive foreign bodies can cause a short circuit, which can lead to fires, electric shocks or damage to your devices.

⚠ Avoid tripping hazards

Avoid tripping hazards while laying cables.

⚠ Use earthed voltage source

Only operate this device with an earthed voltage source.

⚠ Use exclusively the G&D power pack

Only operate this device with the power packs included in delivery or listed in this operating manual.

⚠ Do not make any mechanical or electrical alternations to the device

Do not make any mechanical or electrical alternations to this device. Guntermann & Drunck GmbH is not responsible for compliance with regulations in the case of a modified device.

⚠ Do not remove device cover

The cover may only be removed by a G&D service technician. Unauthorised removal voids the guarantee. Failure to observe this precautionary measure can result in injuries and damage to the device.

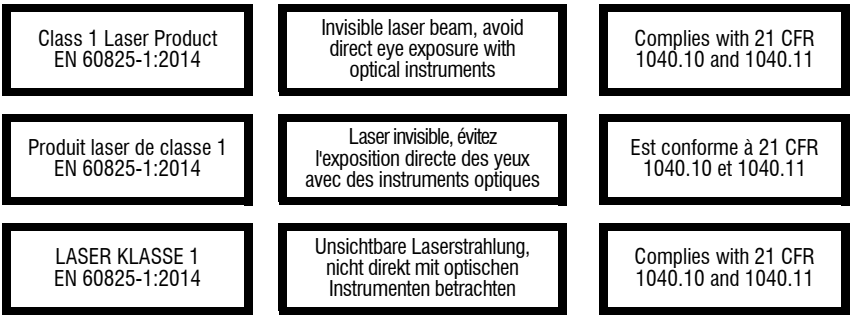
⚠ Operate the device exclusively in the intended field of application

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

Special advices for dealing with laser technology

The **Fiber** devices of the computer modules and console modules use components with laser technology which comply with laser class 1 or better.

They meet the requirements according to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.



Mind the following advices when dealing with laser beams:

⚠ Avoid direct eye exposure to beam

Never stare directly into the beam when wearing optical instruments!

⚠ Always connect optical connections or cover them with protection caps

Always cover the optical connections of the *Transmission* socket and the cable plugs with a connector or a protection cap.

⚠ Only use G&D certified transmission modules

It is not permitted to use fibre optic modules, which do not meet the requirements of laser class 1 in accordance to **EN 60825-1:2014**. By using such modules, the compliance with regulations and advices for the safe handling of laser technology cannot be guaranteed.

The guarantee of complying with all relevant instructions can only be given by applying original components. Therefore, the devices have to be operated with G&D certified transmission modules only.

A Computer modules

Computer module »DP-HR-CPU«

With **DP-HR-CPU** computer modules, you can connect a computer with **DisplayPort** graphics output to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

Users at the consoles of the matrix switch can access the computer module and operate the connected computer.

Package contents

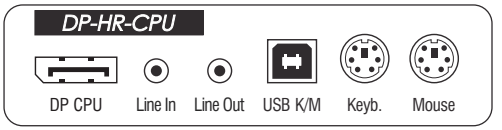
- 1 × Computer module **DP-HR-CPU**
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Category 5e (or better) twisted pair cable to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

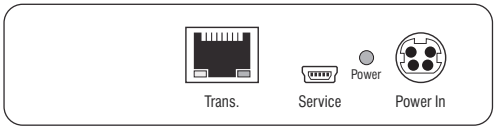
> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch



Trans.: Use a category 5e (or better) twisted pair cable to connect this interface to a *Dynamic Port* (RJ45) of a matrix switch.

> **ADVICE:** You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Insert the power pack's connection cable to this interface.
Connect the power cable to the power pack and a power socket.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU		
Interfaces to computer	Video:	1 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the counterpart	Interface:	1 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP/s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CPU		
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.6A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.39 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-UC«

With **DP-HR-CPU-UC** computer modules, you can connect a computer with **DisplayPort** graphics output to two *different* digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

At the consoles of both matrix switches, users can access a computer module to operate the connected computer.

Package contents

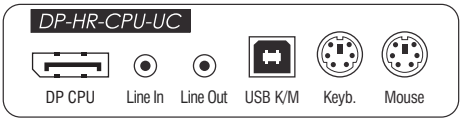
- 1 × **DP-HR-CPU-UC** computer module
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Category 5e (or better) patch cables to connect the computer module to two *different* matrix switches

Installation

Connecting the computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use an audio cable to connect the computer's *Line-Out* interface to this port.

Line Out: Use an audio cable to connect the computer's *Line-In* interface to this port.

> **NOTE:** Both keyboard and mouse signals can be transmitted to the computer using the PS/2 *or* the USB ports.

USB K/M: Use the USB device cable to connect one of the computer's USB ports to this port.

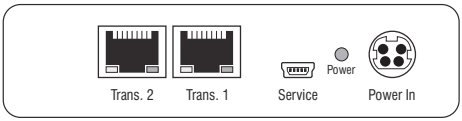
Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the purple PS/2 socket (keyboard) to this port.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the green PS/2 socket (mouse) of the computer to this port.

Connections to the matrix switches

> **IMPORTANT:** Only connect one *Trans.* interface of the computer module per matrix switch.

> **NOTE:** Use category 5e twisted pair cables (or better) to connect the devices.



Trans. 1: Connect this interface to a *Dynamic Port* (RJ45) of a matrix switch.

Trans. 2: Connect this interface to a *Dynamic Port* (RJ45) of another matrix switch.

ADVICE: You can also connect the computer module *directly* to up to two compatible console modules.

Power supply

Power In: Plug the power cable of the power pack in this interface. Then connect the power cable to the power pack and a power outlet.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The blinking Transmission LEDs signal the following operating statuses:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-UC		
Interfaces to computer:	Video:	1 × DisplayPort
	Keyboard and mouse signals:	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3.5 mm jack socket
Data transmission to counterparts	Interface:	2 × RJ45 sockets
	Transmission length	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP/s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CPU-UC		
Power supply	Type:	Power pack (12V/2A)
	Connection:	1 × Mini-DIN 4 socket
	Current consumption:	0.6A @ 12VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.39 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-MC2«

With **DP-HR-CPU-MC2** computer modules, you can connect a computer with **DisplayPort** graphics outputs (dual-head) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

Users at the consoles of the matrix switch can access the computer module and operate the connected computer.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of both of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

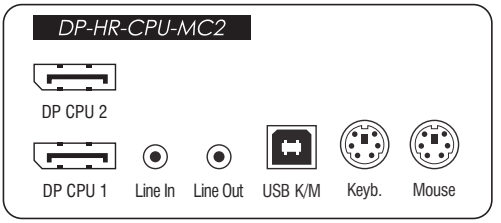
- 1 × Computer module **DP-HR-CPU-MC2**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

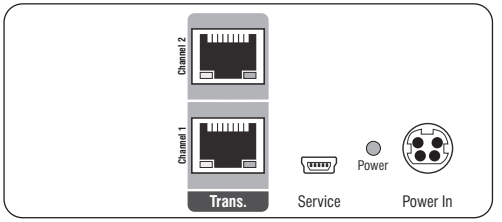
USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

NOTE: Only use category 5e (or better) twisted pair cables to connect the devices.



Trans.|Channel 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Trans.|Channel 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The computer module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the computer module for the first time, the matrix switch recognises the main channel and the computer module's additional channel. The channels are automatically added to a *channel group*.

NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-MC2		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the counterpart	Interface:	2 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CPU-MC2		
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 46 × 164 mm
	Weight:	Approx. 0.58 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-MC2-UC«

With **DP-HR-CPU-MC2** computer modules, you can connect a computer with **DisplayPort** graphics outputs (dual-head) to two *different* digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

At the consoles of both matrix switches, users can access a computer module to operate the connected computer.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of *both* of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

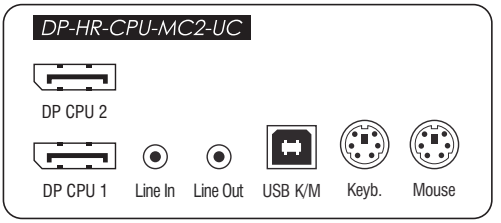
- 1 × Computer module **DP-HR-CPU-MC2-UC**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 4 × Category 5e (or better) twisted pair cables to connect the computer module to two *different* matrix switches

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

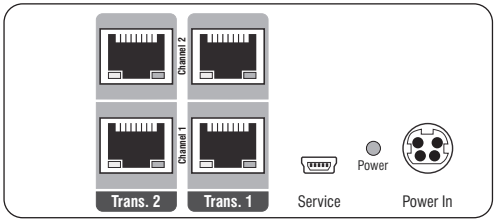
Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connections to the matrix switches

IMPORTANT: Connect only one of the computer module's *Trans.* interfaces for each matrix switch!

NOTE: Only use category 5e (or better) twisted pair cables to connect the devices.



Connecting the first matrix switch

Trans. 1 | Channel 1: Connect this interface to a *Dynamic Port* (RJ45) of the first matrix switch.

Trans. 1 | Channel 2: Connect this interface to another *Dynamic Port* (RJ45) of the first matrix switch.

Connecting the second matrix switch

Trans. 2 | Channel 1: Connect this interface to a *Dynamic Port* (RJ45) of the second matrix switch.

Trans. 2 | Channel 2: Connect this interface to another *Dynamic Port* (RJ45) of the second matrix switch.

ADVICE: You can also connect the computer module *directly* to up to two compatible console modules.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The computer module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the computer module for the first time, the matrix switch recognises the main channel and the computer module's additional channel. The channels are automatically added to a *channel group*.

NOTE: You can adjust any manually or automatically created channel group. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the front panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-MC2-UC		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Date transmission to counterparts	Interface:	4 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CPU-MC2-UC		
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1.2A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 46 × 164 mm
	Weight:	Approx. 0.55 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, EAC, FCC Class B, RoHS

Computer module »DP-HR-CPU-Fiber«

With **DP-HR-CPU-Fiber** computer modules, you can connect a computer with **DisplayPort** graphics output to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This computer module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the computer module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the computer module, the fiber port and the optical fibers are compatible with each other.

Users at the consoles of the matrix switch can access the computer module and operate the connected computer.

Package contents

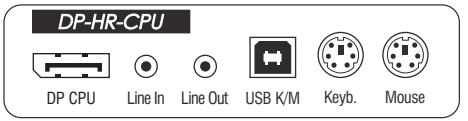
- 1 × Computer module **DP-HR-CPU-Fiber**
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Compatible optical fibre cable to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

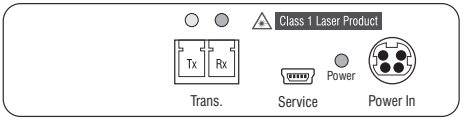
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Trans.|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Trans.|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Connect the cable of the power pack to this interface. Now connect the power cable to the power pack and a power socket.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The blinking LEDS on the back panel highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-FIBER		
Interfaces to computer	Video:	1 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the counterpart	Interface:	1 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CPU-Fiber(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CPU-Fiber(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CPU-Fiber(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CPU-FIBER		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.6A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.41 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-Fiber-UC«

With **DP-HR-CPU-Fiber-UC** computer modules, you can connect a computer with **DisplayPort** graphics output to two *different* digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This computer module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the computer module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the computer module, the fiber port and the optical fibers are compatible with each other.

At the consoles of both matrix switches, users can access a computer module to operate the connected computer.

Package contents

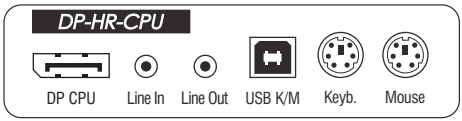
- 1 × Computer module **DP-HR-CPU-Fiber-UC**
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Compatible optical fibre cable to connect the computer module to two matrix switches

Installation

Connecting the computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

The devices use components with laser technology which comply with laser class 1.

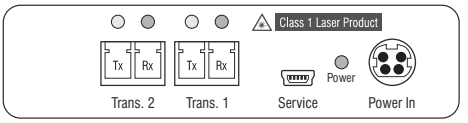
They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

IMPORTANT: For each matrix switch, connect only one *Trans.* interface of the computer module!



Trans. 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Trans. 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Rx : Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Connect the cable of the power pack to this interface. Now connect the power cable to the power pack and a power socket.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The blinking LEDS on the back panel highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-FIBER-UC		
Interfaces to computer	Video:	1 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to counterparts	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CPU-FIBER-UC		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.7A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.43 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-Fiber-MC2«

With **DP-HR-CPU-Fiber-MC2** computer modules, you can connect a computer with **DisplayPort** graphics outputs (dual-head) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This computer module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the computer module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the computer module, the fiber port and the optical fibers are compatible with each other.

Users at the consoles of the matrix switch can access the computer module and operate the connected computer.

Package contents

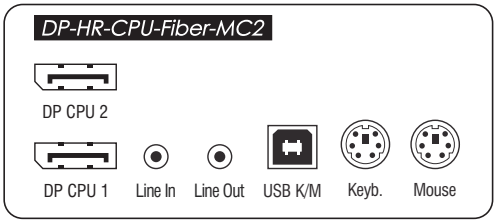
- 1 × Computer module **DP-HR-CPU-Fiber-MC2**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Compatible optical fibre cable to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

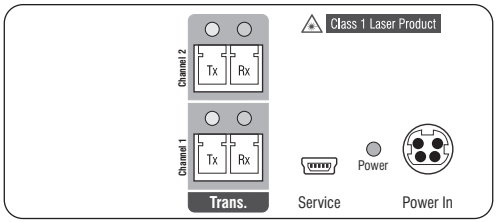
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Trans.|Channel 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Trans.|Channel 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Trans.|Channel 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Trans.|Channel 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The computer module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the computer module for the first time, the matrix switch recognises the main channel and the computer module's additional channel. The channels are automatically added to a *channel group*.

NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-FIBER-MC2		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the counterpart	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CPU-Fiber-MC2(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CPU-Fiber-MC2(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CPU-Fiber-MC2(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CPU-FIBER-MC2		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 46 × 164 mm
	Weight:	Approx. 0.61 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-Fiber-MC2-UC«

With **DP-HR-CPU-Fiber-MC2-UC** computer modules, you can connect a computer with two **DisplayPort** graphics outputs (dual-head) to two *different* digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This computer module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the computer module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the computer module, the fiber port and the optical fibers are compatible with each other.

At the consoles of both matrix switches, users can access a computer module to operate the connected computer.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of *both* of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

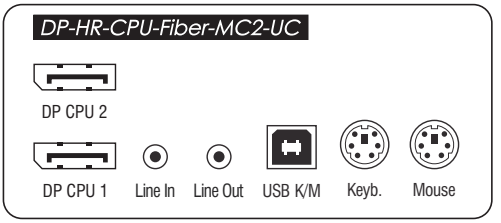
- 1 × Computer module **DP-HR-CPU-Fiber-MC2-UC**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 4 × Compatible optical fibre cable to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of an optional Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of an optional Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connections to the matrix switches

The devices use components with laser technology which comply with laser class 1.

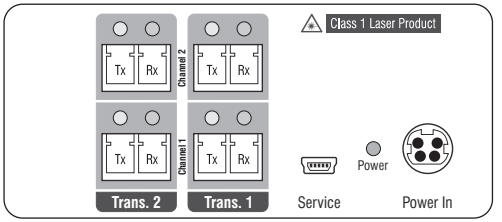
They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

IMPORTANT: For each matrix switch, connect only one *Trans.* interface of the computer module!



Connecting the first matrix switch

Trans. 1 | Channel 1 | Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1 | Channel 1 | Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Trans. 1 | Channel 2 | Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the first matrix switch.

Trans. 1 | Channel 2 | Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Connecting the second first matrix switch

Trans. 2|Channel 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Channel 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

Trans. 2|Channel 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the second matrix switch.

Trans. 2|Channel 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the computer module *directly* to up to two compatible console modules.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The computer module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the computer module for the first time, the matrix switch recognises the main channel and the computer module's additional channel. The channels are automatically added to a *channel group*.

NOTE: You can adjust any manually or automatically created channel group. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the front panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-FIBER-MC2-UC		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Date transmission to counterparts	Interface:	4 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CPU-Fiber-MC2-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CPU-Fiber-MC2-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CPU-Fiber-MC2-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CPU-FIBER-MC2-UC		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1.2A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 46 × 164 mm
	Weight:	Approx. 0.67 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, EAC, FCC Class B, RoHS

Computer module »DP-HR-CPU-DH«

With the **DP-HR-CPU-DH** computer module you can connect a computer with up to two **DisplayPort** graphics outputs (dual monitor) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 58.

Users at the consoles of the matrix switch can access the computer module and operate the connected computer.

ADVICE: At consoles with only one monitor, use the key combination **Alt+arrow right** to switch to the video stream of the computer's second video output (see page 183).

Package contents

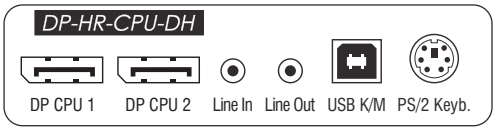
- 1 × Computer module **DP-HR-CPU-DH**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Category 5e (or better) twisted pair cable to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

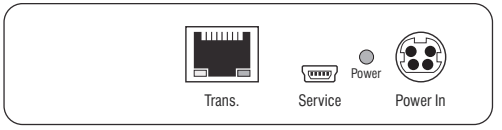
NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

PS/2 Keyb.: Use the optional PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Connection to the matrix switch

NOTE: Only use category 5e (or better) twisted pair cables to connect the devices.



Trans.: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket. The computer module starts as soon as it is supplied with power.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-DH		
Interfaces to computer	Video:	2 × Display Port
	Keyboard and mouse signals	1 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the counterpart	Interface:	1 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CPU-DH		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.6A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.38 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-DH-UC«

With the **DP-HR-CPU-DH-UC** computer module you can connect a computer with up to two **DisplayPort** graphics outputs (dual monitor) to two *different* digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 64.

At the consoles of both matrix switches, users can access a computer module to operate the connected computer.

ADVICE: At consoles with only one monitor, use the key combination **Alt+arrow right** to switch to the video stream of the computer's second video output (see page 183).

Package contents

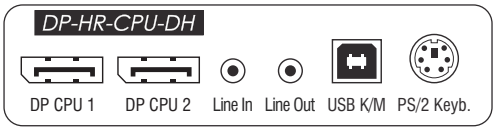
- 1 × Computer module **DP-HR-CPU-DH-UC**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the computer module to two *different* matrix switches

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

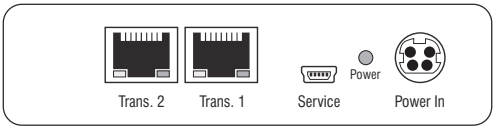
USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

PS/2 Keyb.: Use the optional PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Connections to the matrix switches

IMPORTANT: Connect only one of the computer module's *Trans.* interfaces for each matrix switch!

NOTE: Only use category 5e (or better) twisted pair cables to connect the devices.



Connecting the first matrix switch

Trans. 1: Connect this interface to a *Dynamic Port* (RJ45) of the first matrix switch.

Connecting the second matrix switch

Trans. 2: Connect this interface to a *Dynamic Port* (RJ45) of the second matrix switch.

ADVICE: You can also connect the computer module *directly* to up to two compatible console modules.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket. The computer module starts as soon as it is supplied with power.

Status displays

The Power LED on the front panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-DH-UC		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	1 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Date transmission to counterparts	Interface:	2 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CPU-DH-UC		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.8A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.39 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-Fiber-DH«

NOTE: This computer module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the computer module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the computer module, the fiber port and the optical fibers are compatible with each other.

With the **DP-HR-CPU-Fiber-DH** computer module you can connect a computer with up to two **DisplayPort** graphics outputs (dual monitor) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 70.

Users at the consoles of the matrix switch can access the computer module and operate the connected computer.

ADVICE: At consoles with only one monitor, use the key combination **Alt+arrow right** to switch to the video stream of the computer's second video output (see page 183).

Package contents

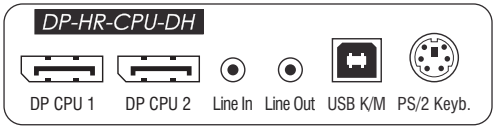
- 1 × Computer module **DP-HR-CPU-Fiber-DH**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Compatible optical fibre cable to connect the computer module to the matrix switch

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

PS/2 Keyb.: Use the optional PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Connection to the matrix switch

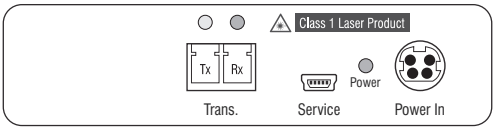
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Trans.|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Trans.|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the computer module *directly* to a compatible console module.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket. The computer module starts as soon as it is supplied with power.

Status displays

The Power LED on the back panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-FIBER-DH		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	1 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the counterpart	Interface:	1 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CPU-Fiber-DH(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CPU-Fiber-DH(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CPU-Fiber-DH(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz

DP-HR-CPU-FIBER-DH		
Video	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12 V/2 A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.7A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.4 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Computer module »DP-HR-CPU-Fiber-DH-UC«

NOTE: This computer module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

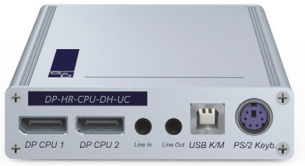
IMPORTANT: Both, the computer module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the computer module, the fiber port and the optical fibers are compatible with each other.

With the **DP-HR-CPU-Fiber-DH-UC** computer module you can connect a computer with up to two **DisplayPort** graphics outputs (dual monitor) to two *different* digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 77.

At the consoles of both matrix switches, users can access a computer module to operate the connected computer.

ADVICE: At consoles with only one monitor, use the key combination **Alt+arrow right** to switch to the video stream of the computer's second video output (see page 183).



Package contents

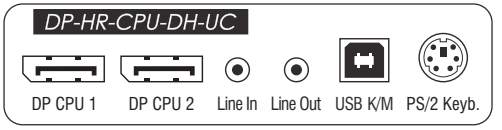
- 1 × Computer module **DP-HR-CPU-Fiber-DH-UC**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 2 × Audio cable
- 1 × Power pack (12V/2A, only with variants incl. PowerPack)
- 1 × Power cable (only with variants incl. PowerPack)
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Compatible optical fibre cable to connect the computer module to two *different* matrix switches

Installation

Connecting the computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

PS/2 Keyb.: Use the optional PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Connections to the matrix switches

The devices use components with laser technology which comply with laser class 1.

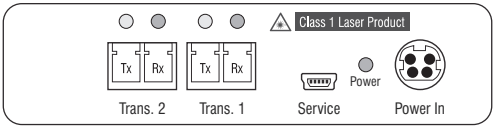
They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

IMPORTANT: For each matrix switch, connect only one *Trans.* interface of the computer module!



Connecting the first matrix switch

Trans. 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Connecting the second first matrix switch

Trans. 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the computer module *directly* to up to two compatible console modules.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket. The computer module starts as soon as it is supplied with power.

Status displays

The Power LED on the front panel of the computer module shows the status of the external power pack:

LED	Status	Meaning
Power	Lights up green	The external power pack is connected, and voltage of 12 Volt is available.
	Lights up blue	The external power pack is connected, and voltage of 12 Volt is available. The Ident. LED to quickly identify the device has been activated (for example, via the web application).
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No console module accesses the computer module.
		On	A console module accesses the computer module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The computer module is turned off.
		On	A console module accesses the computer module.
		Blinking	The connection to the counterpart could not be established.
		Flashing	The connection to the counterpart is established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-CPU-FIBER-DH-UC		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	1 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Date transmission to counterparts	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CPU-Fiber-DH-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CPU-Fiber-DH-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CPU-Fiber-DH-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz

DP-HR-CPU-FIBER-DH-UC		
Video	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	0.8A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 105 × 26 × 164 mm
	Weight:	Approx. 0.43 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

B Console modules

Console module »DP-HR-CON«

With **DP-HR-CON** console modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

Package contents

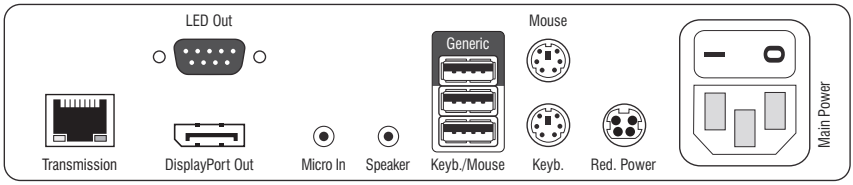
- 1 × **DP-HR-CON** console module
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Category 5e (or better) twisted pair cable to connect the console module to the matrix switch

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **NOTE:** Both keyboard and mouse signals can be transmitted to the computer using the PS/2 *or* the USB interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or USB mouse of the local console.

> **NOTE:** You can also combine PS/2 and USB devices, for example by connecting a USB mouse and a PS/2 keyboard.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you expanded the functional range of the matrix switch by purchasing the *TradeSwitch function*, connect the optional *TS-LED-2* (order number A6100041) to this interface.

Connection to the matrix switch

Transmission: Use a category 5e (or better) twisted pair cable to connect the *Transmission* interface to a *Dynamic Port* (RJ45) of the matrix switch.

> **NOTE:** You can also connect the console module *directly* to a compatible computer module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

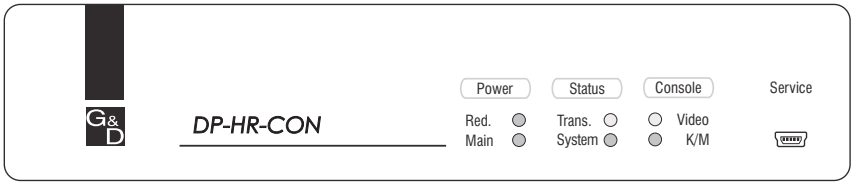
Start-up

Start the console module by pressing the *Main Power* button of the power pack.

> **ADVICE:** The active hotkey configuration is displayed during the *System Startup* of the matrix switch.

Status displays

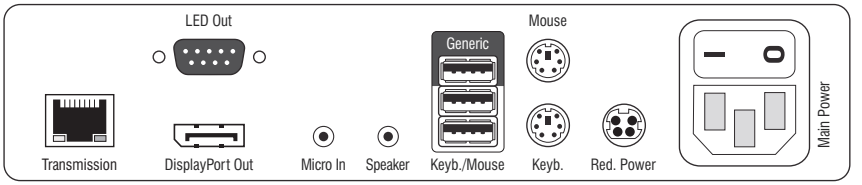
Front panel



The LEDs on the front panel of the console module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.

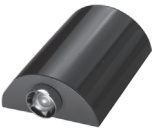
Back panel



The *Transmission* interface at the back panel of the console module provides additional status LEDs. The LEDs have the following meaning:

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a leader console are accessing the console module.

NOTE: Keyboard and mouse signals can only access another console module or a computer if you activated the *TradeSwitch function* for the matrix switch.

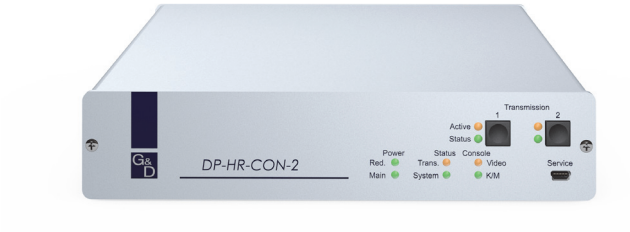
Technical data

DP-HR-CON		
Interfaces to console:	Video:	1 × DisplayPort
	Keyboard and mouse signals:	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to counterpart	Interface:	1 × RJ45 socket
	Transmission length:	Max. 140 meters
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CON		
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug(IEC-320 C14)
	Current consumption:	100-240VAC; 0.3A - 0.2A
Redundant power supply	Type:	External power pack (12V/2A)
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Current consumption:	1.1A @ 12VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.22 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-2«

With **DP-HR-CON-2** console modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to two digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series.



At the installed console, matrix switch users can access a computer module to operate the connected computer.

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

ADVICE: Instead of a matrix switch, you can also connect a compatible computer module to each of the two channels.

Package contents

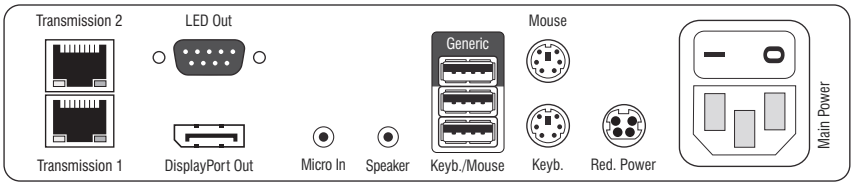
- 1 × **DP-HR-CON-2** console module
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the console module to two the matrix switches

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor/projector of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **HINWEIS:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or the USB mouse of the local console.

> **NOTE:** Mixed operation, for example connecting a USB mouse and a PS/2 keyboard is supported, too.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).

Connection to the matrix switch

NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

ADVICE: You can also connect the *Transmission* interface *directly* to a compatible computer module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

Start-up

Start the console module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch and the console module.

Switching

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

How to switch channels via buttons:

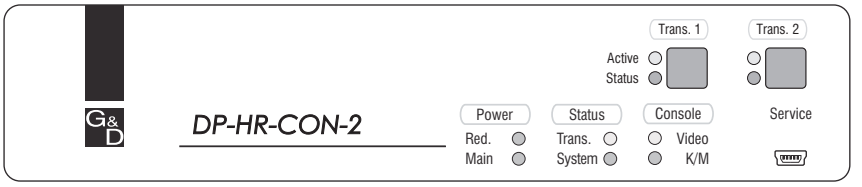
- Press the button of the desired channel to activate it.

How to switch channels via key combinations:

- On the console keyboard, press **local hotkey+Select key**.
  In the default settings, the select keys are **Alt+1** (channel 1) and **Alt+2** (channel 2).

Status displays

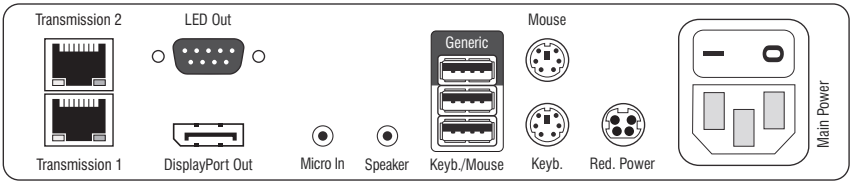
Front panel



The LEDs on the front panel of the console module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
Trans.	**Active**	On	Active channel.
		Off	Inactive channel.
	Status	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.

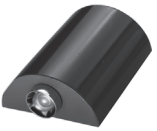
Back panel



The *Transmission* interface at the back panel of the console module provides additional status LEDs. The LEDs have the following functions:

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a leader console are accessing the console module.

NOTE: Keyboard and mouse signals can only access another console module or a computer if you purchased the *TradeSwitch feature* for the matrix switch.

Technical data

DP-HR-CON-2		
Interfaces to console	Video:	1 × DisplayPort
	Keyboard/mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	Tradeswitch-LED:	1 × D-SUB 9 scoket
Data transmission to the counterparts	Interface:	2 × RJ45 socket
	Transmission length:	Max. 140 meters
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio › DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CON-2		
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug (IEC-320 C14)
	Power input:	100-240 VAC; 0.3 A - 0.2 A
Redundant power supply ‣ optional	Type:	Portable power pack (12 V/2 A)
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Power input:	1.2 A @ 12 VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.28 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20 °C to +55 °C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-MC2«

With **DP-HR-CON-MC2** console modules, you can connect a dual-monitor console (two **DisplayPort** monitors, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

When using the console to access a computer module **DP-HR-CPU-MC2** connected to a dual-head computer, the monitors display the separate images of the graphics outputs.

When accessing a computer module with one graphics input only, only the first monitor displays an image.

> **ADVICE:** Instead of an **MC2** computer module, you can also connect a dual-head computer by using two separate computer modules **DP-HR-CPU**.
>
> In this case, add both computer modules in the web application to channel group.

Package contents

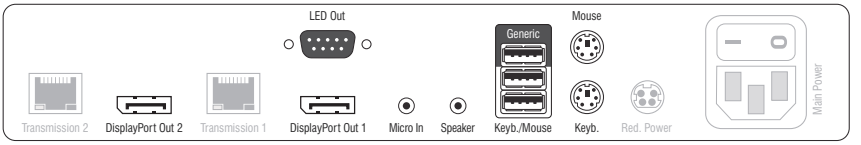
- 1 × Console module **DP-HR-CON-MC2**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the console module to a KVM matrix switch

Installation

Connecting console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console's PS/2 keyboard.

Mouse: Connect the console's PS/2 mouse.

Keyb./Mouse: Connect the console's USB keyboard and/or USB mouse.

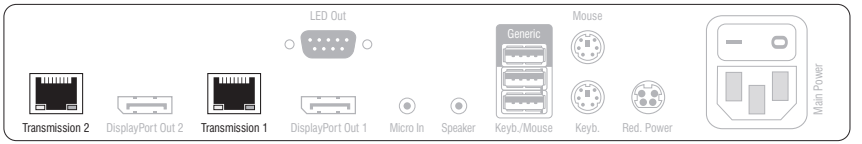
Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).

Connection to the matrix switch



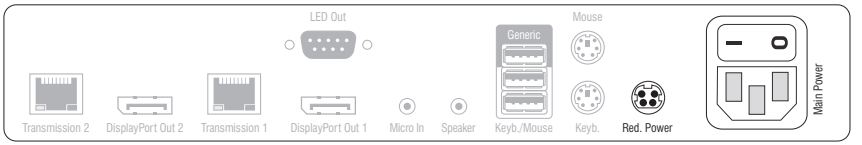
NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the console module *directly* to a compatible computer module.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

Startup

Turn on the console module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

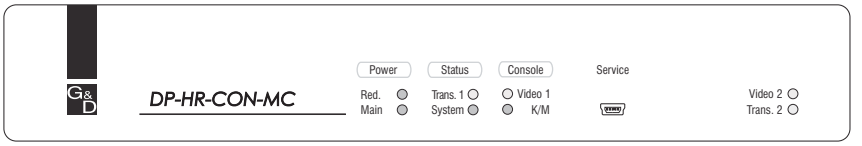
Automatic channel grouping

When operating the console module for the first time, the matrix switch recognises the main channel and the console module's additional channel. The channels are automatically added to a channel group.

NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

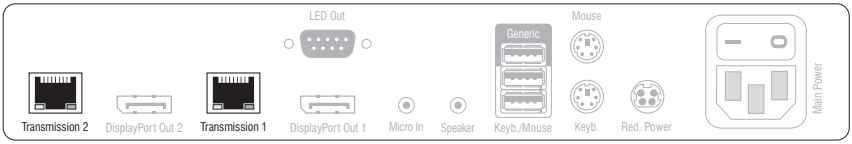
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.

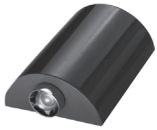
Back panel



The *Transmission* interfaces at the console module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.

NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-MC2		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to counterpart	Interfaces:	2 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CON-MC2		
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.4 A - 0.2 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1.5A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 270 × 44 × 210 mm
	Weight:	Approx. 1.51 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-MC4«

With **DP-HR-CON-MC4** console modules, you can connect a dual-monitor console (four **DisplayPort** monitors, keyboard, mouse and audio devices) to a matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

When using the console to access a multi-monitor computer with four graphics outputs, the separate images of the graphics outputs are displayed on the console monitors.

NOTE: Connecting a multi-monitor computer with four video outputs requires four computer modules of the **DP-HR-CPU** series or two computer modules of the **DP-HR-CPU-MC2** series.

In the web application, you can add the computer modules of the multi-monitor computers to a channel groups More information about this topic is given in the chapter *Expanding the system through port grouping* of the web application manual.

When accessing the system with a computer module with only one graphics input, only the first monitor shows an image.

Package contents

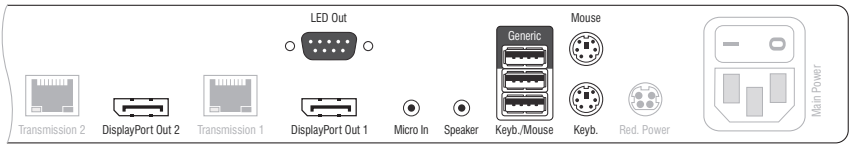
- 1 × Console module **DP-HR-CON-MC4**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 4 × Category 5e (or better) twisted pair cables to connect the console module to the matrix switch

Installation

Connecting the console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console PS/2 keyboard.

Mouse: Connect the console PS/2 mouse.

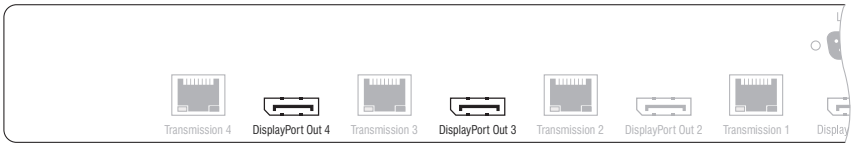
Keyb./Mouse: Connect the console USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

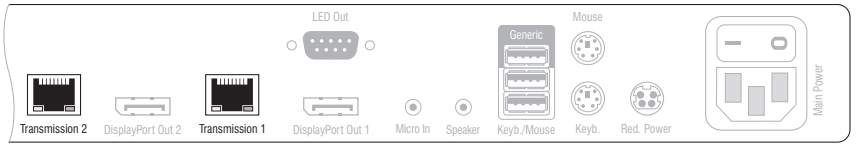
LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).



DisplayPort Out 3: Connect the third console monitor.

DisplayPort Out 4: Connect the fourth console monitor.

Connection to the matrix switch

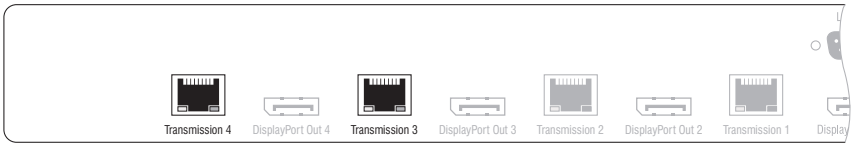


NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

ADVICE: You can also connect the console module directly to a compatible computer module.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

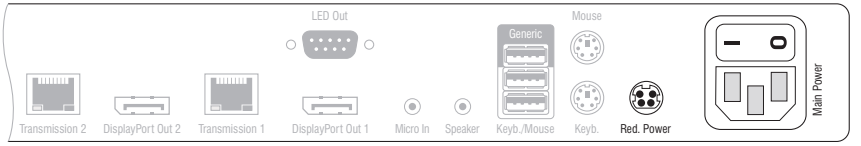


NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 3: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

Transmission 4: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

Startup

Turn on the console module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

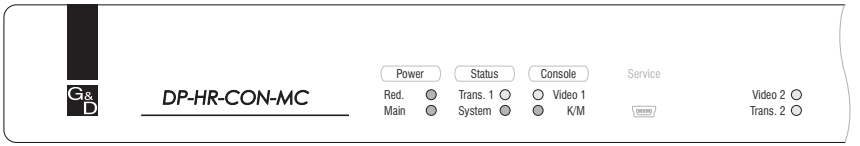
Automatic channel grouping

When operating the console module for the first time, the matrix switch recognises the main channel and the console module's additional channel. The channels are automatically added to a channel group.

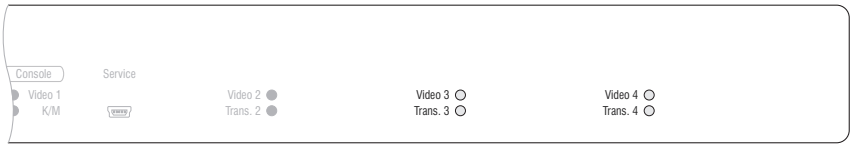
NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

Front panel

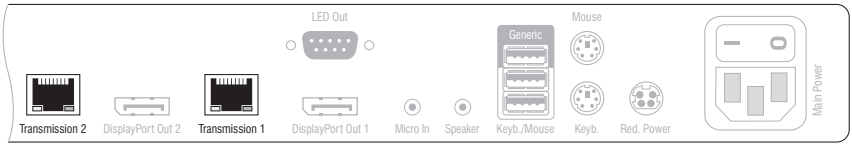


Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.



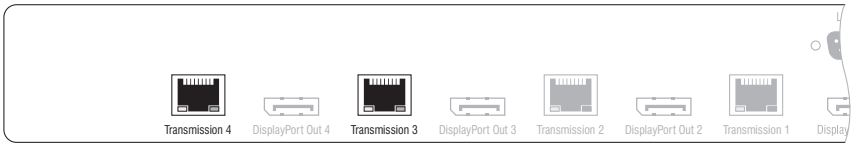
MC3	**Video 3**	On	Strong video signal atthird video input.
		Off	No signal at third video input, or the signal quality is too weak to be processed by the system.
	Trans. 3	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
MC4	**Video 4**	On	Strong video signal at fourth video input.
		Off	No signal at fourth video input, or the signal quality is too weak to be processed by the system.
	Trans. 4	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.

Back panel



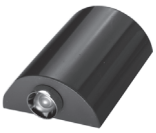
The *Transmission* interfaces at the console module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.



Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.

NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-MC4		
Interfaces to console	Video:	4 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to counterpart	Interfaces:	4 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz

DP-HR-CON-MC4		
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.3 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4-Buchse
	Power input:	12 VDC; 2.4A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 435 × 44 × 210 mm
	Weight:	Approx. 2.2 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, EAC, FCC Class B, RoHS

Console module »DP-HR-CON-Fiber«

With **DP-HR-CON-Fiber** console modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This console module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the console module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the console module, the fiber port and the optical fibers are compatible with each other.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

Package contents

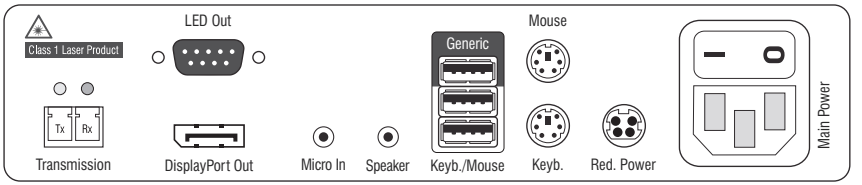
- 1 × **DP-HR-CON-Fiber** console module
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Compatible optical fibre cable to connect the console module to the matrix switch

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **NOTE:** Both keyboard and mouse signals can be transmitted to the computer using the PS/2 *or* the USB interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or USB mouse of the local console.

> **NOTE:** You can also combine PS/2 and USB devices, for example by connecting a USB mouse and a PS/2 keyboard.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you expanded the functional range of the matrix switch by purchasing the *TradeSwitch function*, connect the optional *TS-LED-2* (order number A6100041) to this interface.

Connection to the matrix switch

IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

Trans.|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Trans.|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

NOTE: You can also connect the console module *directly* to a compatible computer module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

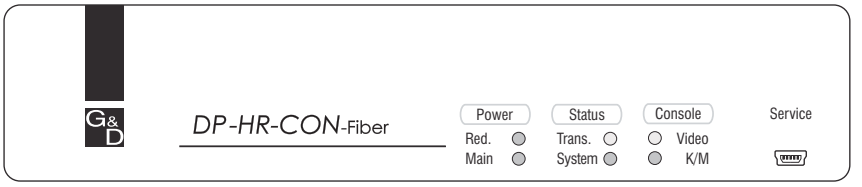
Start-up

Start the console module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch.

Status displays

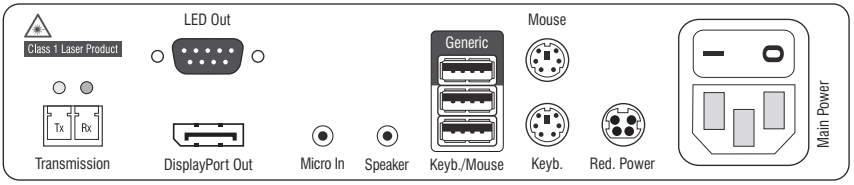
Front panel



The LEDs on the front panel of the console module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.

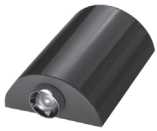
Back panel



The *Transmission* interface at the back panel of the console module provides additional status LEDs. The LEDs have the following meaning:

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a leader console are accessing the console module.

NOTE: Keyboard and mouse signals can only access another console module or a computer if you activated the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-FIBER		
Interfaces to console:	Video:	1 × DisplayPort
	Keyboard and mouse signals:	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the counterpart	Interface:	1 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CON-Fiber(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CON-Fiber(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CON-Fiber(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CON-FIBER		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug(IEC-320 C14)
	Current consumption:	100-240VAC; 0.3A - 0.2A
Redundant power supply	Type:	External power pack (12V/2A)
	Connection:	1 × Mini-DIN 4 socket(Power In)
	Current consumption:	1.2A @ 12VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.23 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-2-Fiber«

With **DP-HR-CON-2-Fiber** console modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to two digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This console module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the console module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the console module, the fiber port and the optical fibers are compatible with each other.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

ADVICE: Instead of a matrix switch, you can also connect a compatible computer module to each of the two channels.

Package contents

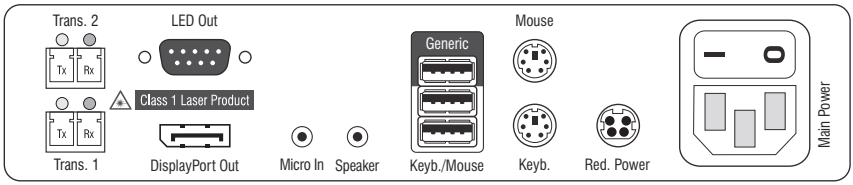
- 1 × **DP-HR-CON-2-Fiber** console module
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Compatible optical fibre cable to connect the console module to two matrix switches

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor/projector of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **HINWEIS:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or the USB mouse of the local console.

> **NOTE:** Mixed operation, for example connecting a USB mouse and a PS/2 keyboard is supported, too.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).

Connection to the matrix switches

IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

Trans. 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Trans. 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Rx : Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the *Transmission* interface *directly* to a compatible computer module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

Start-up

Start the console module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch and the console module.

Switching

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

How to switch channels via buttons:

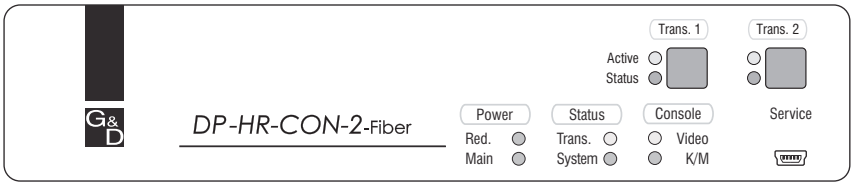
- Press the button of the desired channel to activate it.

How to switch channels via key combinations:

- On the console keyboard, press **local hotkey+Select key**.
  In the default settings, the select keys are **Alt+1** (channel 1) and **Alt+2** (channel 2).

Status displays

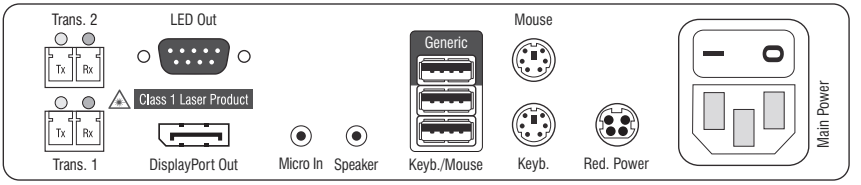
Front panel



The LEDs on the front panel of the console module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
Trans.	**Active**	On	Active channel.
		Off	Inactive channel.
	Status	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.

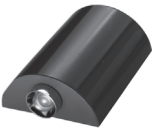
Back panel



The *Transmission* interface at the back panel of the console module provides additional status LEDs. The LEDs have the following functions:

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a leader console are accessing the console module.

NOTE: Keyboard and mouse signals can only access another console module or a computer if you purchased the *TradeSwitch feature* for the matrix switch.

Technical data

DP-HR-CON-2-FIBER		
Interfaces to console	Video:	1 × DisplayPort
	Keyboard/mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	Tradeswitch-LED:	1 × D-SUB 9 scoket
Data transmission to counterparts	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CON-2-Fiber(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CON-2-Fiber(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CON-2-Fiber(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CON-2-FIBER		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug (IEC-320 C14)
	Power input:	100-240 VAC; 0.3 A - 0.2 A
Redundant power supply ‣ optional	Type:	Portable power pack (12 V/2 A)
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Power input:	1.2A @ 12 VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20 °C to +55 °C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-Fiber-MC2«

With **DP-HR-CON-Fiber-MC2** console modules, you can connect a dual-monitor console (two **DisplayPort** monitors, keyboard, mouse and audio devices) to a matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series.

NOTE: This console module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the console module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the console module, the fiber port and the optical fibers are compatible with each other.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

When using the console to access a computer module **DP-HR-CPU-MC2** connected to a dual-head computer, the monitors display the separate images of the graphics outputs.

When accessing a computer module with one graphics input only, only the first monitor displays an image.

ADVICE: Instead of an **MC2** computer module, you can also connect a dual-head computer by using two separate computer modules **DP-HR-CPU**.

In this case, add both computer modules in the web application to channel group.

Package contents

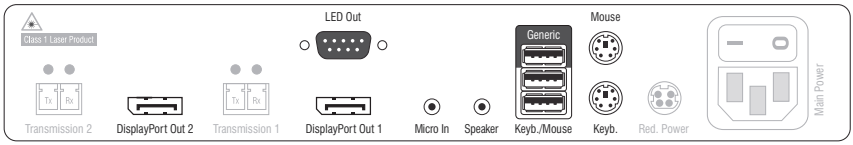
- 1 × Console module **DP-HR-CON-Fiber-MC2**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Compatible optical fibre cable to connect the console module to a KVM matrix switch

Installation

Connecting console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

NOTE: Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

NOTE: Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console's PS/2 keyboard.

Mouse: Connect the console's PS/2 mouse.

Keyb./Mouse: Connect the console's USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

IMPORTANT: With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).

Connection to the matrix switch

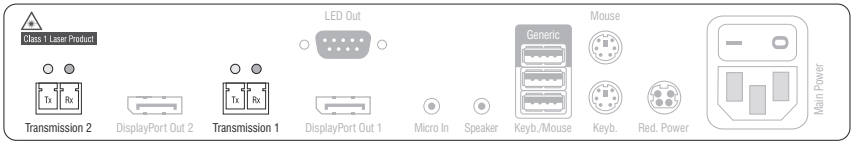
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Transmission 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

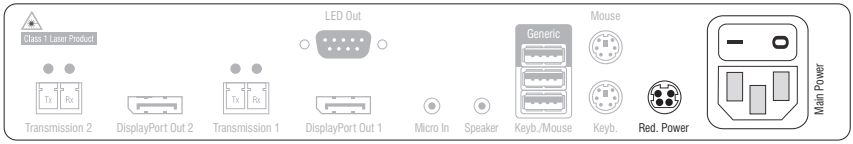
Transmission 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the console module *directly* to a compatible computer module.

Power supply



Main Power: Connect the supplied power cable. Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

Startup

Turn on the console module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

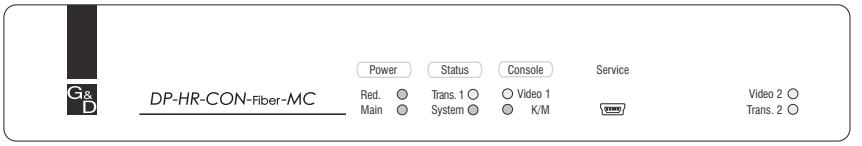
Automatic channel grouping

When operating the console module for the first time, the matrix switch recognises the main channel and the console module's additional channel. The channels are automatically added to a channel group.

NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

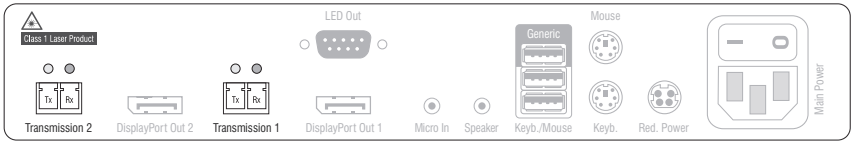
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.

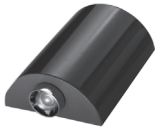
Back panel



The *Transmission* interfaces at the console module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.

NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-FIBER-MC2		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the counterpart	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CON-Fiber-MC2(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CON-Fiber-MC2(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CON-Fiber-MC2(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CON-FIBER-MC2		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.4 A - 0.2 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1.7A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 270 × 44 × 210 mm
	Weight:	Approx. 1.54 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-Fiber-MC4«

With **DP-HR-CON-Fiber-MC4** console modules, you can connect a dual-monitor console (four **DisplayPort** monitors, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Compact or ControlCenter-Digital* series.

NOTE: This console module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the console module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the console module, the fiber port and the optical fibers are compatible with each other.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

When using the console to access a multi-monitor computer with four graphics outputs, the separate images of the graphics outputs are displayed on the console monitors.

NOTE: Connecting a multi-monitor computer with four video outputs requires four computer modules of the **DP-HR-CPU** series or two computer modules of the **DP-HR-CPU-MC2** series.

In the web application, you can add the computer modules of the multi-monitor computers to a channel groups More information about this topic is given in the chapter *Expanding the system through port grouping* of the web application manual.

When accessing the system with a computer module with only one graphics input, only the first monitor shows an image.

Package contents

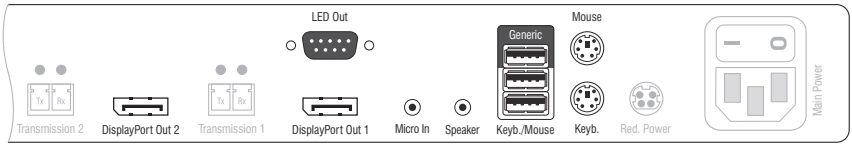
- 1 × Console module **DP-HR-CON-Fiber-MC4**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 4 × Compatible optical fibre cable to connect the console module to a KVM matrix switch

Installation

Connecting the console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console PS/2 keyboard.

Mouse: Connect the console PS/2 mouse.

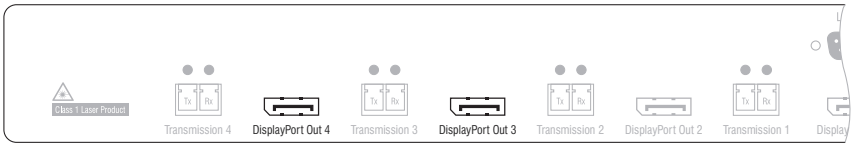
Keyb./Mouse: Connect the console USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).



DisplayPort Out 3: Connect the third console monitor.

DisplayPort Out 4: Connect the fourth console monitor.

Connection to the matrix switch

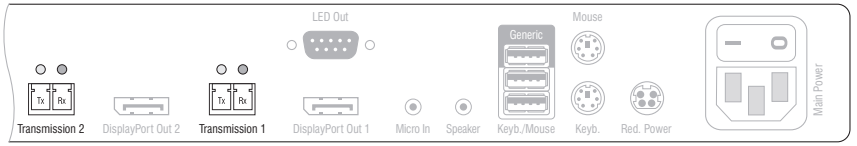
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

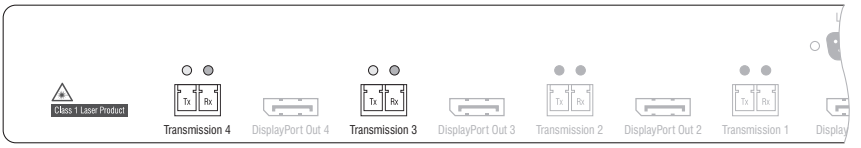


Transmission 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.



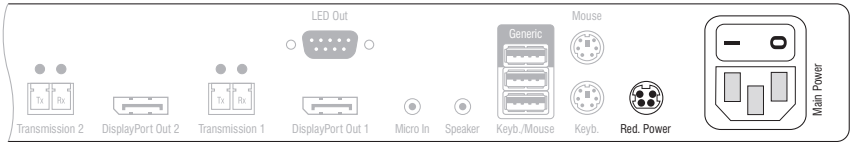
Transmission 3|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission 3|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 4|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 4|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

Startup

Turn on the console module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

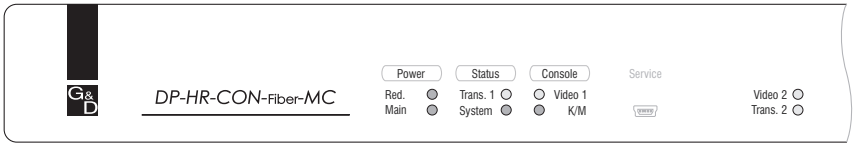
Automatic channel grouping

When operating the console module for the first time, the matrix switch recognises the main channel and the console module's additional channel. The channels are automatically added to a channel group.

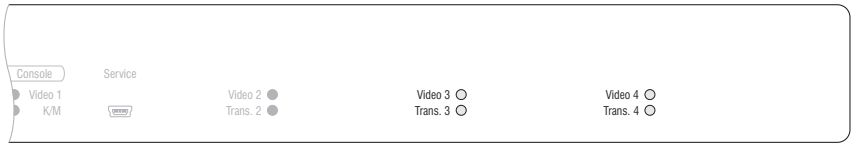
NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

Front panel

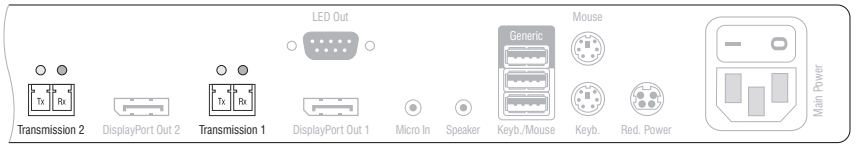


Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.



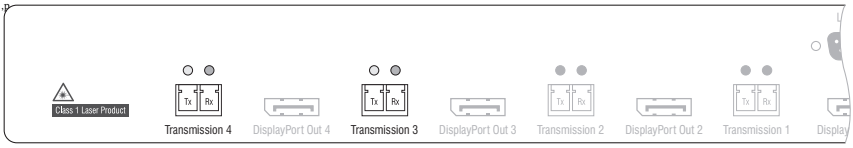
MC3	**Video 3**	On	Strong video signal at third video input.
		Off	No signal at third video input, or the signal quality is too weak to be processed by the system.
	Trans. 3	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
MC4	**Video 4**	On	Strong video signal at fourth video input.
		Off	No signal at fourth video input, or the signal quality is too weak to be processed by the system.
	Trans. 4	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.

Back panel



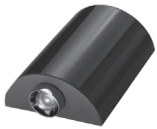
The *Transmission* interfaces at the console module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.



Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.

NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-FIBER-MC4		
Interfaces to console	Video:	4 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the matrix switch	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CON-Fiber-MC4(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CON-Fiber-MC4(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CON-Fiber-MC4(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 , 25 or 30 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CON-FIBER-MC4		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.3 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4-Buchse
	Power input:	2.7A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 435 × 44 × 210 mm
	Weight:	Approx. 2.37 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, EAC, FCC Class B, RoHS

Console module »DP-HR-CON-DH«

With **DP-HR-CON-DH** console modules, you can connect up to two **DisplayPort** monitors (dual-monitor), keyboard, mouse, microphone and speakers to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 148.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

NOTE: Accessing a computer module occupies the entire back channel (including **Micro In** and **USB 2.0** signal). Hence, these signals are not provided to the console modules that access the channel at a later point (multi user operation).

When using the console to access a computer module connected to a dual-head computer, the monitors display the separate images of the graphics outputs. When accessing a computer module with one graphics input only, only the first monitor displays an image.

Package contents

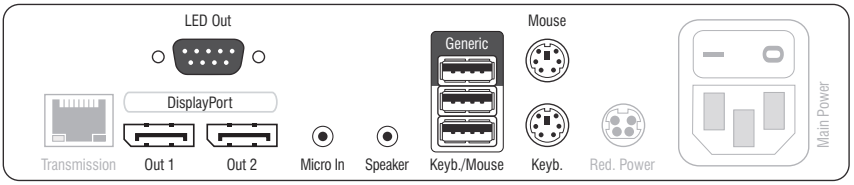
- 1 × Console module **DP-HR-CON-DH**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Category 5e (or better) twisted pair cable to connect the console module to a KVM matrix switch

Installation

Connecting console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

NOTE: Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

NOTE: Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console's PS/2 keyboard.

Mouse: Connect the console's PS/2 mouse.

Keyb./Mouse: Connect the console's USB keyboard and/or USB mouse.

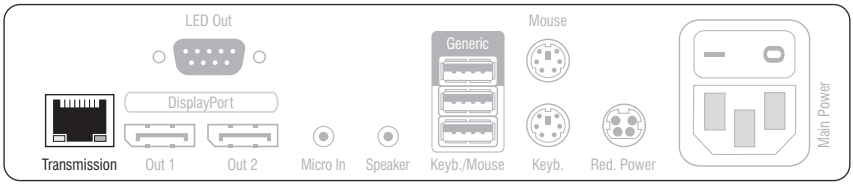
Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

IMPORTANT: With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).

Connection to the matrix switch

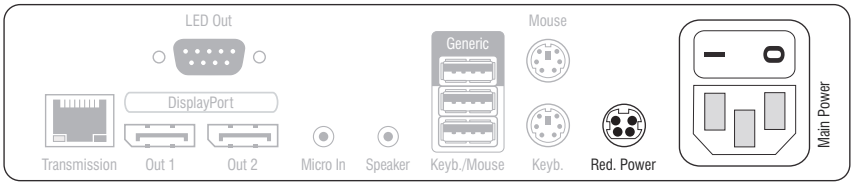


NOTE: Use category 5e (or better) twisted pair cable to connect the device.

Transmission: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the console module *directly* to a compatible computer module.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

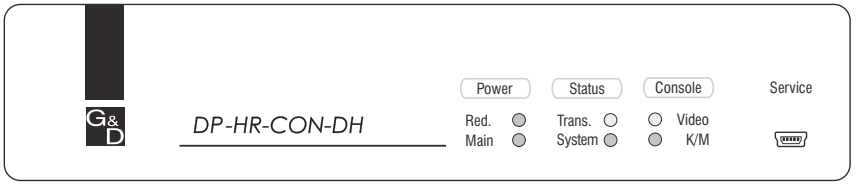
Startup

Turn on the console module after its installation. Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

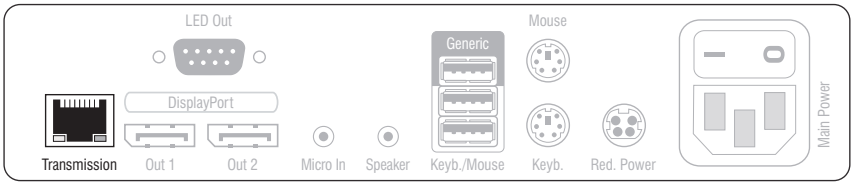
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.

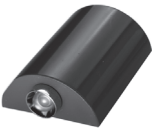
Back panel



The *Transmission* interface at the console module's back panel provides additional status LEDs.

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.

NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-DH		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to counterpart	Interfaces:	1 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CON-DH		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.3 A - 0.2 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1.2A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-2-DH«

With **DP-HR-CON-2-DH** console modules, you can connect up to two **DisplayPort** monitors (dual-monitor), keyboard, mouse, microphone and speakers to two digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 157.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

NOTE: Accessing a computer module occupies the entire back channel (including **Micro In** and **USB 2.0** signal). Hence, these signals are not provided to the console modules that access the channel at a later point (multi user operation).

When using the console to access a computer module connected to a dual-head computer, the monitors display the separate images of the graphics outputs. When accessing a computer module with one graphics input only, only the first monitor displays an image.

ADVICE: Instead of a matrix switch, you can also connect a compatible computer module to each of the two channels.

Package contents

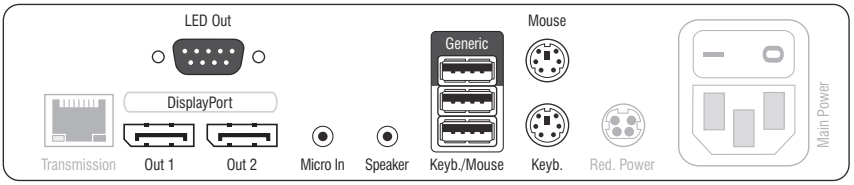
- 1 × **DP-HR-CON-2-DH** console module
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the console module to two the matrix switches

Installation

Connecting the console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

NOTE: Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

HINWEIS: Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or the USB mouse of the local console.

NOTE: Mixed operation, for example connecting a USB mouse and a PS/2 keyboard is supported, too.

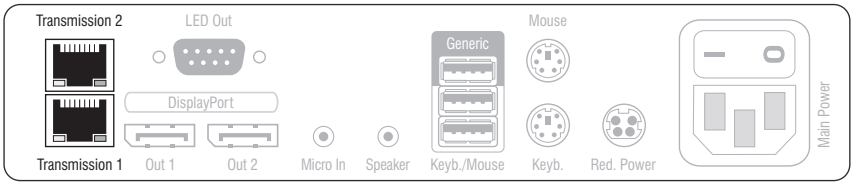
Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

IMPORTANT: With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).

Connection to the matrix switch



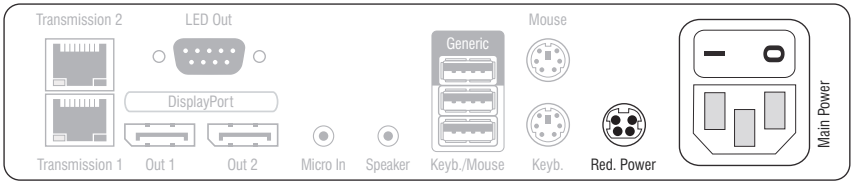
NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

ADVICE: You can also connect the *Transmission* interface *directly* to a compatible computer module.

Power supply



Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

Start-up

Turn on the console module after its installation. Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch and the console module.

Switching

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

How to switch channels via buttons:

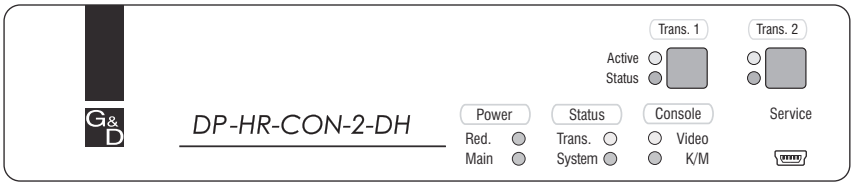
- Press the button of the desired channel to activate it.

How to switch channels via key combinations:

- On the console keyboard, press **local hotkey+Select key**.
  In the default settings, the select keys are **Alt+1** (channel 1) and **Alt+2** (channel 2).

Status displays

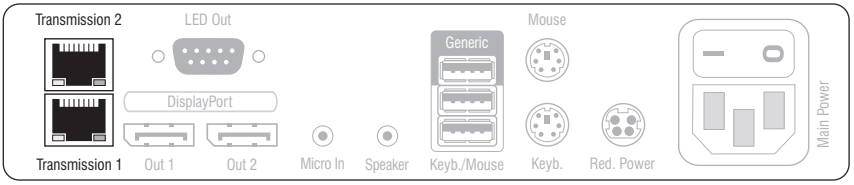
Front panel



The LEDs on the front panel of the console module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
Trans.	**Active**	On	Active channel.
		Off	Inactive channel.
	Status	On	The communication with the connected matrix switch or the computer module of this channel was established successfully.
		Off	The communication with a matrix switch or computer module of this active channel could not be established.

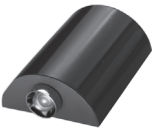
Back panel



The *Transmission* interface at the back panel of the console module provides additional status LEDs. The LEDs have the following functions:

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart.
		Flashing	Data connection to the counterpart established.
	Green	Off	No user is logged in at the console module.
		On	A user is logged in at the console module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a leader console are accessing the console module.

NOTE: Keyboard and mouse signals can only access another console module or a computer if you purchased the *TradeSwitch feature* for the matrix switch.

Technical data

DP-HR-CON-2-DH		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard/mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	Tradeswitch-LED:	1 × D-SUB 9 scoket
Data transmission to the counterparts	Interface:	2 × RJ45 socket
	Transmission length:	Max. 140 meters
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.
	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz

DP-HR-CON-2-DH		
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug (IEC-320 C14)
	Power input:	100-240 VAC; 0.3 A - 0.2 A
Redundant power supply ‣ optional	Type:	Portable power pack (12 V/2 A)
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Power input:	1.3A @ 12 VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20 °C to +55 °C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-Fiber-DH«

NOTE: This console module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the console module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the console module, the fiber port and the optical fibers are compatible with each other.

With **DP-HR-CON-Fiber-DH** console modules, you can connect up to two **DisplayPort** monitors (dual-monitor), keyboard, mouse, microphone and speakers to a digital matrix switch of the *ControlCenter-Compact* or *ControlCenter-Digital* by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 166.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

NOTE: Accessing a computer module occupies the entire back channel (including **Micro In** and **USB 2.0** signal). Hence, these signals are not provided to the console modules that access the channel at a later point (multi user operation).

When using the console to access a computer module connected to a dual-head computer, the monitors display the separate images of the graphics outputs. When accessing a computer module with one graphics input only, only the first monitor displays an image.

Package contents

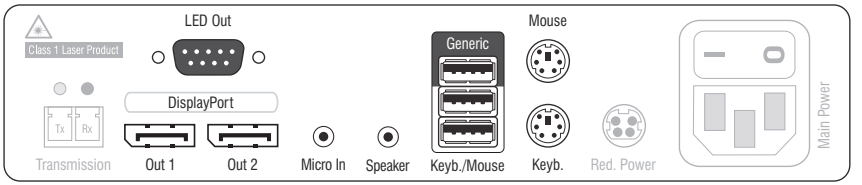
- 1 × Console module **DP-HR-CON-Fiber-DH**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 1 × Compatible optical fibre cable to connect the console module to a KVM matrix switch

Installation

Connecting console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console's PS/2 keyboard.

Mouse: Connect the console's PS/2 mouse.

Keyb./Mouse: Connect the console's USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).

Connection to the matrix switch

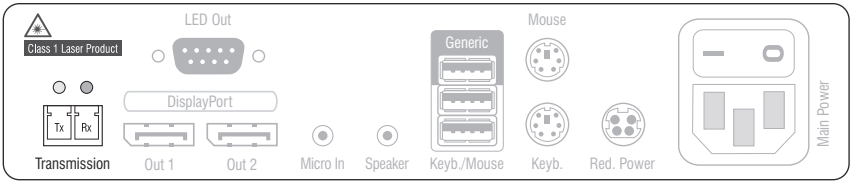
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

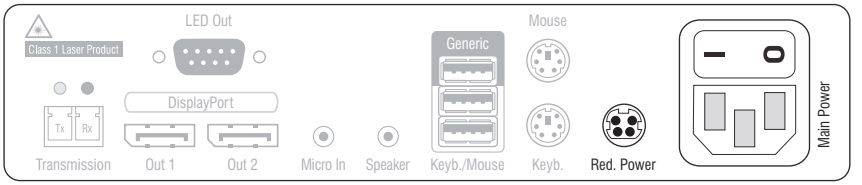


Transmission|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the console module *directly* to a compatible computer module.

Power supply



Main Power: Connect the supplied power cable. Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

Startup

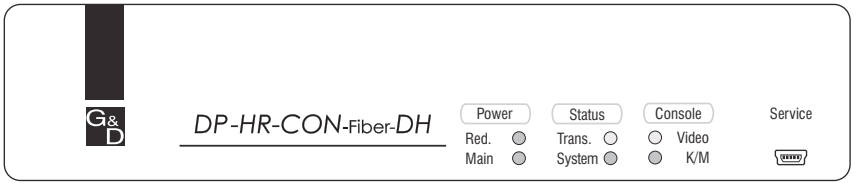
Turn on the console module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

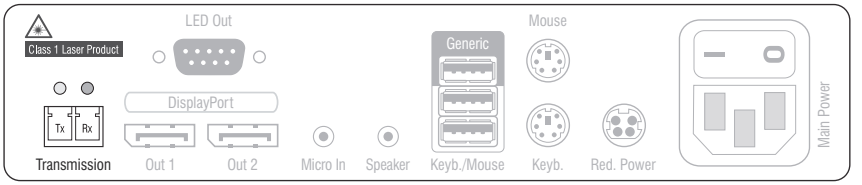
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.

Back panel

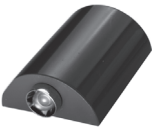


The *Transmission* interfaces at the console module's back panel provide additional status LEDs.

LED	Colour	Status	Meaning
Left	Yellow	Off	No connection to network.
		Blinking	Network connection to an end device.
Right	Green	On	A console module is accessing the computer module.
		Blinking	No communication with the counterpart.
		Flashing	Connection to the counterpart station established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.

TradeSwitch-LED

The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.



NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-FIBER-DH		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the counterpart	Interface:	1 × LC-Duplex socket
	Transmission distance:	▸ DP-HR-CON-Fiber-DH(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		▸ DP-HR-CON-Fiber-DH(S) Max. 5.000 Meter (9µ/125µ OS1)
		▸ DP-HR-CON-Fiber-DH(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		▸ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.

DP-HR-CON-FIBER-DH		
Video	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.3 A - 0.2 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4 socket
	Power input:	1.3A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.25 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

Console module »DP-HR-CON-2-Fiber-DH«

NOTE: This console module can be connected to a compatible fiber port of *ControlCenter-Compact* matrix switches or *ControlCenter-Digital* matrix switches (requires **CCD-I/O 16-Card-Fiber**).

IMPORTANT: Both, the console module and the fiber ports are available as *single-mode* variants or as *multimode* variants. Make sure that the port at the console module, the fiber port and the optical fibers are compatible with each other.

With **DP-HR-CON-2-Fiber-DH** console modules, you can connect up to two **DisplayPort** monitors (dual-monitor), keyboard, mouse, microphone and speakers to two digital matrix switches of the *ControlCenter-Compact* or *ControlCenter-Digital* series by using one cable only.

ADVICE: If you use the first video channel only, you are able to display resolutions up to 4096 × 2160 @ 30 Hz (4K). Using both video channels allows resolutions up to 1920 × 1200 @ 60 Hz. Detailed information about the supported resolutions is given in the chapter *Technical data* on page 175.

At the installed console, matrix switch users can access a computer module to operate the connected computer.

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

NOTE: Accessing a computer module occupies the entire back channel (including **Micro In** and **USB 2.0** signal). Hence, these signals are not provided to the console modules that access the channel at a later point (multi user operation).

When using the console to access a computer module connected to a dual-head computer, the monitors display the separate images of the graphics outputs. When accessing a computer module with one graphics input only, only the first monitor displays an image.

ADVICE: Instead of a matrix switch, you can also connect a compatible computer module to each of the two channels.

Package contents

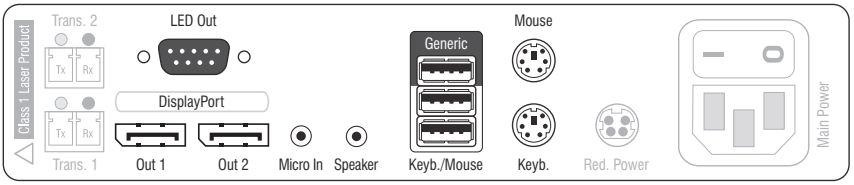
- 1 × Console module **DP-HR-CON-2-Fiber-DH**
- 1 × Power cable
- 1 × »Safety instructions« flyer

Required accessories

- 2 × Compatible optical fibre cable to connect the console module to two KVM matrix switches

Installation

Connecting the console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the console module's USB *or* PS/2 interfaces.

Keyb.: Connect the console PS/2 keyboard.

Mouse: Connect the console PS/2 mouse.

Keyb./Mouse: Connect the console USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 177 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active computer module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).

Connection to the matrix switch

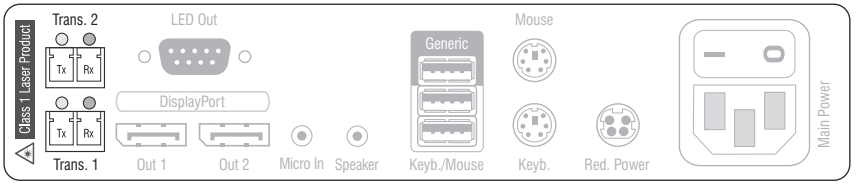
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements in accordance to **EN 60825-1:2014** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid direct eye exposure to beam* on page 3
- *Always connect optical connections or cover them with protection caps* on page 3
- *Only use G&D certified transmission modules* on page 3

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



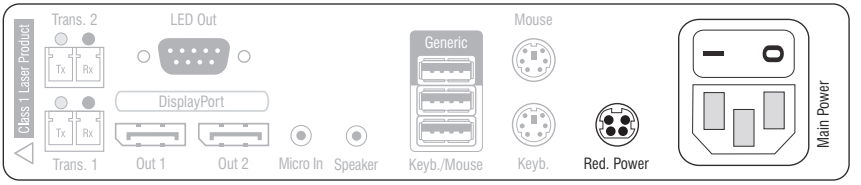
Transmission 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the console module with a second, redundant power supply.

Startup

Turn on the console module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

Switching

The buttons on the front panel of the console module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

How to switch channels via buttons:

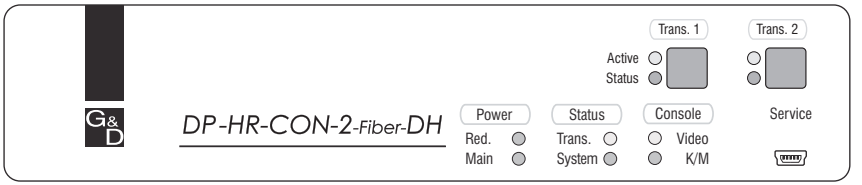
- Press the button of the desired channel to activate it.

How to switch channels via key combinations:

- On the console keyboard, press **local hotkey+Select key**.
  In the default settings, the select keys are **Alt+1** (channel 1) and **Alt+2** (channel 2).

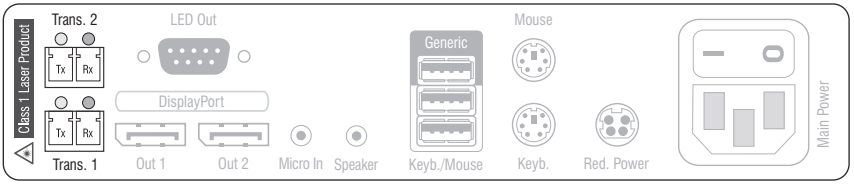
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and supplies 12 Volt.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack is turned on and supplies the required voltage.
		Off	The power pack is turned off or the connection to the mains could not be established.
Status	**Trans.**	On	The communication to the counterpart is established successfully.
		Off	The communication to the counterpart could not be established.
	System	Flashing	System is ready for operation or firmware update is executed.
		Off	Internal error
Console	**Video**	On	Strong video signal at video input.
		Off	No signal at video input, or the signal quality is too weak to be processed by the system.
	K/M	On	A local keyboard was detected.
		Off	No power at PS/2 interface or USB bus.
		Flashing	The CPU input (PS/2 or USB) is active and ready. A local keyboard was not detected.
Trans.	**Active**	On	Active channel.
		Off	Inactive channel.
	Status	On	The communication with the connected matrix switch or the computer module of this channel was established successfully.
		Off	The communication with a matrix switch or computer module of this active channel could not be established.

Back panel

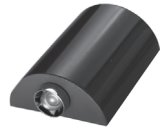


The *Transmission* interfaces at the console module's back panel provide additional status LEDs.

LED	Colour	Status	Meaning
Left	Yellow	Off	No connection to network.
		Blinking	Network connection to an end device.
Right	Green	On	A console module is accessing the computer module.
		Blinking	No communication with the counterpart.
		Flashing	Connection to the counterpart established. No console module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing console module. The flickering is defined by the user's entries.

TradeSwitch-LED

The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a leader console are switched to the console module.



NOTE: Keyboard and mouse signals can only be switched to another console module or computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-CON-2-FIBER-DH		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the counterpart	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DP-HR-CON-2-Fiber-DH(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DP-HR-CON-2-Fiber-DH(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DP-HR-CON-2-Fiber-DH(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 Bit
	Video bandwidth:	25 to 300 MP/s (Channel 1)
		25 to 165 MP/s (Channel 2)
		Max. 330 MP/s (total)
	Examplary resolutions:	Channel 1: ▪ 2048 × 2048 @ 60 Hz (2K×2K) ▪ 2048 × 2160 @ 60 Hz ▪ 2560 × 1600 @ 60 Hz ▪ 3840 × 2160 @ 30 Hz (Ultra HD) ▪ 4096 × 2160 @ 30 Hz (4K) ▪ 1920 × 1080 (50 or 60 Hz) ▪ 1440 × 576i (50 Hz) ▪ 1440 × 480i (60 Hz)
		Channel 2: ▪ 1920 × 1200 @ 60 Hz ▪ 1280 × 1024 @ 85 Hz ▪ 1080p60 (Full HD) ▪ 640 × 480 @ 60 Hz
		‣ Further VESA and CTA standardised resolutions possible within video bandwidth/pixel rate and horizontal/vertical frequency.

DP-HR-CON-2-FIBER-DH		
Video	Vertical frequency:	24 Hz to 120 Hz
	Horizontal frequency:	25 kHz to 135 kHz
	DDC/CI:	The device supports monitors with a DDC/CI function. The DDC information are transparently forwarded to the monitor to support a maximum number of monitors. However, the support cannot be guaranteed for all monitor models.
Audio ‣ DisplayPort Digital	Transmission type:	2 channel LPCM, stereo
	Resolutions:	16/20/24 bit
	Sampling rates:	up to 48 kHz
Audio	Transmission type:	transparent, bidirectional
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.4 A - 0.2 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4-Buchse
	Power input:	1.4A @ 12VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	Approx. 210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operating environment	Temperature:	+5 °C to +45 °C
	Air humidity:	20 % to 80 %, non-condensing
Storage environment	Temperature:	-20°C to +55°C
	Air humidity:	15 % to 85 %, non-condensing
Conformity		CE, UKCA, FCC class B, TAA, EAC, RoHS, WEEE, REACH

C Generic HID

In **Generic HID** mode, data of the USB input device connected to the **Generic** socket of the console module remains *unaltered* when transmitted to the active computer module.

The use of *Generic HID* devices is possible only after you enable the *Generic HID* mode of the console module and of the computer module.

> **NOTE:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

In *Generic HID* mode, you can connect USB hubs or USB composite devices to the **Generic** socket of the console module.

USB composite devices are USB devices that are connected to a computer via *one* USB cable, but consist of separate HID devices (e.g. keyboard/mouse or touchpad/mouse.

When connecting a USB hub or a USB composite device containing multiple USB devices, only the first of the connected HID devices can be used in *Generic HID* mode. The OSD informs you if other HID devices of the composite device or the hub are detected.

> **NOTE:** In *Multi User mode*, the *Generic HID* device is available to the first active console module. Once the console module logs off and another console module logs in, the *Generic HID* device of the now active console module becomes available.

Enabling/disabling the console module's Generic HID mode

How to enable/disable the console module's Generic HID mode:

1. Press **Ctrl**+**Num** (*default*) to open the on-screen display (OSD).
2. Press **F11** to open the *Configuration* menu.
3. Select **Console** and press **Enter**.

4. Select **Generic HID** and press **F8** to select one of the following options:

off:	Connect either a USB keyboard or a USB mouse to the console module's **Generic** interface.
on:	The data of any USB input device connected to the console module's **Generic** interface remains unaltered when transmitted to the active computer module.

IMPORTANT: To use the generic HID device, enable the USB HID mode **Generic HID** of the computer modules you want to access (see below).

5. Press **F2** to save your changes.

Enabling/disabling the computer module's Generic HID mode

USB computer modules support different USB input devices. You can use the special features of a USB input device after selecting the specific USB keyboard mode (see page 177).

As an alternative to the specific USB keyboard modes, you can use the **Generic HID** mode. In this mode, data of USB devices connected to the **Generic** interface remains unaltered when transmitted to the active computer module.

IMPORTANT: When connecting a USB hub or a USB composite device containing multiple USB devices, only the first of the connected HID devices can be used in **Generic HID** mode (see page 177).

How to select a USB keyboard mode:

1. Press **Ctrl+Num** (*default*) to open the OSD.
2. Press **F11** to open the *Configuration* menu.
3. Select **Target** and press **Enter**.
4. Select the computer module whose settings you want to change and press **F5**.

5. Select **USB keyboard** and press **F8** to select one of the following options.

Multimedia:	PC keyboard with additional multimedia keys (*default*)
Standard:	PC keyboard with standard keyboard layout
Generic:	Any USB input device

NOTE: USB computer modules additionally support certain USB input devices. After selecting the specific USB keyboard mode of such a device, you can use the special features of these USB input devices.

6. Click **OK** to save your changes.

D Extender mode

The console modules and the computer modules for the digital matrix switch can be operated in *extender mode*.

Connect a console module directly with a compatible computer module. Use the same cable types as for the connection of a matrix switch (see *Installation*).

The modules auto-recognise direct connections. The computer connected to the computer module is operated at the console module.

> **NOTE:** The modules can also be used with products from other product series in mixed operation.
>
> If you have questions about compatibility, please contact the support team.

Opening the OSD in extender mode

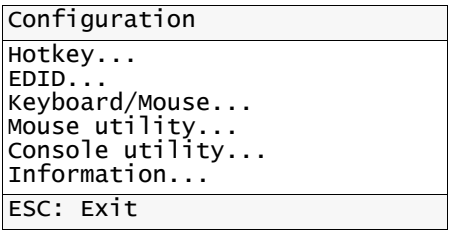
In extender mode, you can change the console module settings in the module's OSD.

> **NOTE:** When the modules are connected to a matrix switch, the modules are configured in the OSD of the matrix switch.
>
> The matrix switch manual describes the OSD settings.

You can use the configured hotkey to open the OSD at the console.

How to open the OSD:

1. Press **Alt+Num** (*default*) to open the OSD.



Configuration

With the console module's OSD, you can view and change the settings in extender mode.

Changing the hotkey to open the OSD

When in extender mode, press **Alt+Num** (*default*) to open the console module's local OSD.

> **NOTE:** The hotkey consists of at least one hotkey modifier key and an additional hotkey, which you can select from multiple options.

Both the **Alt** hotkey modifier key and the **Num** hotkey can be changed.

How to change the hotkey to open the OSD:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Hotkey** and press **Enter**.
3. Use the **arrow keys** to select *at least* one of the hotkey modifiers listed under **Modifier**. Then, press **F8**:

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift:	*Shift* key

4. Press **F8** to select one of the hotkeys listed under **Key**. The OSD can be opened by pressing the hotkey and the selected hotkey modifier(s) at the same time:

Num:	*Num* key
Pause:	*Pause* key
Insert:	*Insert* key
Delete:	*Delete* key
Home:	*Home* key
End:	*End* key
PgUp:	*Page Up* key
PgDn:	*Page Down* key
Space:	*Space* key

5. Press **F2** to save your settings.

Opening the OSD via double keypress

In addition to opening the OSD with the key combination **Alt+Num**, you can open the OSD by pressing a previously selected key twice.

How to define the key to open the OSD via double keypress:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Hotkey** and press **Enter**.
3. Select **OSD via 2x keypress** and press **F8** (repeatedly) to select one of the following options:

off:	Opening OSD via double keypress disabled (*default*)
Ctrl:	Open OSD by pressing *Ctrl* twice
Alt:	Open OSD by pressing *Alt* twice
Alt Gr:	Open OSD by pressing *Alt Gr* twice
Win:	Open OSD by pressing *Win* twice
Shift:	Open OSD by pressing *Shift* twice
Print:	Open OSD by pressing *Druck* twice

ADVICE: Press **Ctrl+F8** to show a list including all options. Select the desired option and press **Enter**.

4. Press **F2** to save your settings.

Key combination for video switching of the DH-CPU computer modules

When a user of a console with only one monitor connects to a computer with two video outputs on a **DH-CPU** computer module, the screen of the second video output *cannot* be displayed.

To switch to the video signal from the second video output of the computer, the **Select Stream** key combination is available for this application.

In the default setting you can switch between the video signal of the first and the second video output of the computer with the key combination **Alt+arrow right**.

You can change the key combination in the hotkey menu.

NOTE: Use the **Select Stream** function on a dual monitor workstation (on a **DH-CON** console module) to arrange the video signals from a computer with two video outputs (on a **DH-CPU** computer module) on the console monitors.

Each time you press the key combination **Hotkey+arrow left** or **Hotkey+arrow right**, the arrangement switches in ascending or descending order as shown below:

- Video 1/Video 2
- Video 2/Video 1
- Video 1/Video 1
- Video 2/Video 2

How change the key combination for the Select Stream function:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Hotkey** and press **Enter**.
3. Select **Select stream** and press **F8** to select one of the following options:

Cursor left,right:	Video switching with **Hotkey+arrow left** or **Hotkey+arrow right** (*default*)
Num+,Num-:	Video switching with **Hotkey+Num+** or **Hotkey+Num-**

4. Press **F2** to save your settings.

Changing the select keys

NOTE: *Select keys* can only be used and configured at console modules providing at least two channels (e. g. **DVI-CON-2**).

In the default settings, the select keys **1** and **2** are active to switch between the connected computer modules.

You can also select another set of select keys.

How to select another set of select keys:

1. Press the **Alt**+**Num** (*default*) hotkey to open the OSD.
2. Select **Hotkey** and press **Enter**.
3. Select **Selectkeys** and press **F8** to select one of the following options:

1, 2:	Activates select keys **1** and **2**
F1, **F2:**	Activates select keys **F1** and **F2**
NUM 1, NUM 2	Activates select keys **NUM 1** and **NUM 2**
A, **B:**	Activates select keys **A** and **B**

4. Press **F2** to save your settings.

Administrating EDID profiles

The EDID information (*Extended Display Identification Data*) of a monitor gives the graphics card of a connected computer information about various technical features of the device.

The EDID profile of the monitor that is connected to the console module, is not available at the computer module. Therefore, the computer module transmits a standard profile to the computer. The EDID information of the profile are optimised for the majority of available graphics cards.

ADVICE: In some cases it is recommended to send the EDID profile of the console monitor to the computer module. Now the connected computer receives the EDID data of the console monitor.

How to transmit the EDID profile of the connected monitor to the computer module:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **EDID** and press **Enter**.
3. Select **Send monitor's EDID** and press **Enter**.
4. Press **Esc** to close the EDID menu.

How to activate the G&D EDID profile:

NOTE: By activating this profile, you might delete a transmitted EDID profile.

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **EDID** and press **Enter**.
3. Select **Install default EDID** and press **Enter**.
4. Press **Esc** to close the EDID menu.

Activating the support of special PS/2 keyboards

The console module supports the additional keys of the follwoing PS/2 keyboards: *PixelPower Rapid Action*, *PixelPower Clarity (blue)* and *SKIDATA1.*

How to activate the support of special PS/2 keyboards:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **PS/2 Enh. keyboard** and press **F8** to select one of the following options:

no:	Standard keyboard
PixelPower RA:	Special *PixelPower Clarity (blue)* keyboard
PixelPower C:	Special *PixelPower Rapid Action* keyboard
SKIDATA1:	Special *SKIDATA1* keyboard

ADVICE: Press **Ctrl+F8** to show a list including all options. Select the desired option and press **Enter**.

4. Press **F2** to save your settings.

Adjusting 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 console module 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 select the scancode set of the PS/2 keyboard:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **PS/2 Scancode set** and press **F8** to select scancode sets **2** or **3**.
4. Press **F2** to save your settings.
5. Restart the console module to apply your changes.

Reinitialising USB input devices

After connecting a USB keyboard or mouse to the console module, the input devices are initialised and can be used immediately.

Some USB input devices require a reinitialisation of the USB connection. Enable the automatic reinitialisation of USB devices if a USB keyboard or mouse does not respond to your inputs during operation.

How to enable/disable the reinitialisation of USB devices:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.

3. Select the **USB Auto Refresh** entry and press **F8** to select the keyboard type:

off:	The status of the USB devices is **not** monitored. If communication to a USB device is interrupted, the device is **not** reinitialised
all:	The status of the USB devices is monitored. If communication to one USB device is interrupted, all devices are reinitialised.
only faulty:	The status of the USB devices is monitored. If communication to a USB devices is interrupted, this device is reinitialised.

4. Press **F2** to save your settings.

Opening the OSD by mouse

In the default settings of the matrix system, the OSD can only be called with the configured key combination.

If a Microsoft »IntelliMouse Explorer« or another compatible mouse with five keys is connected to the console console, you can call the OSD through the mouse keys four and five at the side of the mouse

How to (de)activate the mouse support to operate the OSD:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **OSD by mouse** and press **F8** to select one of the following options:

No:	OSD cannot be opened by mouse
Yes:	opens OSD via mouse keys 4 and 5 of a compatible mouse

4. Press **F2** to save your settings.

Choosing the USB keyboard mode

NOTE: This setting has only an impact if a USB cable connects the computer module to the target.

USB computer modules support different USB input devices. You can use the special features of a USB input device after selecting the specific USB keyboard mode.

- **USB keyboards:** In addition to the keys of standard keyboard layouts, the default USB keymode **PC Multimedia** supports several multimedia keys like **Loud** and **Quiet**.

With *Apple* or *Sun Keyboards*, you can apply special keymodes to use the special keys of these keyboards.

The following table lists the supported USB keyboards:

INPUT DEVICE	SETTING
PC keyboard with additional multimedia keys	‣ PC Multimedia
PC keyboard with standard keyboard layout	‣ PC Standard
Apple Keyboard with numeric keypad (A1243)	‣ Apple A1243
Sun Keyboard (German keyboard layout)	‣ SUN German
Sun Keyboard (American keyboard layout)	‣ SUN US

- **Displays and tablets:** You can operate computers connected to the computer module with one of the supported *displays* or *tablets*:

INPUT DEVICE	SETTING
HP 2310tk	‣ HP 2310t
iiyama T1931	‣ iiyama T1931
Wacom Cintiq 21UX	‣ Wacom Cint.21
Wacom Intuos3	‣ Wacom Int.3
Wacom Intuos4 S	‣ Wacom Int.4S
Wacom Intuos4 M	‣ Wacom Int.4M
Wacom Intuos4 L	‣ Wacom Int.4L
Wacom Intuos4 XL	‣ Wacom Int.4XL
Wacom Intuos5	‣ Wacom Int.5
Wacom Intuos Pro L	‣ Wacom Int. Pro L

▪ **Controller:** With **ShuttlePRO v2** multimedia controllers, you can operate audio and video programs. You can use a special USB keymode to operate computers connected to the computer module using the controller:

INPUT DEVICE	SETTING
Contour ShuttlePRO v2	‣ Contour SP2

▪ **LK463 compatible keyboard:** You can connect an LK463 compatible keyboard to the console modules of the KVM matrix system. The order of the 108 keys of these keyboards is the same as the OpenVMS keyboard layout.

A special USB keyboard mode guarantees that the keypress of a special key on this keyboard is forwarded to the computer:

INPUT DEVICE	SETTING
LK463 compatible keyboard	‣ LK463

How to select a USB keyboard mode:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **USB HID mode** and press **F8** to select one of the following options.

> **ADVICE:** Press **Ctrl+F8** to show a list including all options. Select the desired option and press **Enter**.

4. Press **F2** to save your settings.

How to use the special function of Sun keyboards on a standard keyboard:

> **IMPORTANT:** You can use the emulation of »Solaris Shortcut Keys« in the **SUN DE** and **SUN US** keyboard mode only.

If the computer module is provided with a *Sun Keyboard*, you can use *Solaris Shortcut Keys* after enabling their support.

When using a standard keyboard, you can perform these functions by using the key combinations listed below:

KEY COMBINATIONS	»SOLARIS SHORTCUT KEY« OF SUN KEYBOARDS
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

Support for servers of IBM's RS/6000 series

NOTE: This setting can only be edited with PS/2 versions of the computer modules.

Activate the support for UNIX servers of IBM's RS/6000 series in the *IBM RS/6000 support* menu if the computer is a server of this series.

How to (de)activate the special support for servers of IBM's RS/6000 series:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **IBM RS/6000 support** and press **F8** to select one of the following options:

Yes:	Support for servers of IBM's RS/6000 series is activated
No:	Support for servers of IBM's RS/6000 series is deactivated

4. Press **F2** to save your settings.

Enable/disable the startup without a keyboard

By default, console modules start without a keyboard. As an alternative, the console module can interrupt startup by showing a message regarding the missing keyboard. Once you connect a keyboard to the console module, the startup process continues.

How to enable/disable the startup of a console module without a keyboard:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select the **Keyboard required** entry and press **F8** to select one of the following options:

no:	Console module can be started without a keyboard (*default*).
yes:	Console module can be started only when a keyboard is connected.

4. Press **F2** to save your settings.

Activating or resetting a PS/2 mouse

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.

In order to activate or reset the PS/2 mouse, the matrix system can be used to send a special command to the computer connected to the computer module.

NOTE: Since the commands differ depending on the used mouse type and the installed operating system, four different functions are provided.

How to start and use the *Mouse utility* function:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Mouse utility** and press **Enter**.
3. Select one of the following functions and press **Enter**:

Reset Mouse:	Resets the PS/2 mouse interface of a Windows computer
Enable mouse (for Unix):	Activates the PS/2 mouse of a Linux computer
Enable Intelli:	Activates the PS/2 wheel mouse of a Linux computer
Enable Intelli-Explorer:	Activates the PS/2 wheel mouse with additional keys of a Linux computer

Resetting the default settings

This setting resets the default settings of the extender mode. All settings that have been changed by the user are reset.

How to reset the default settings of the extender mode:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Console utility** and press **Enter**.
3. Select **Set system defaults** and press **Enter**.

Showing status information

The OSD shows you information about the console module and the connected computer module.

Several menus provide you with the following information:

FIRMWARE INFO This menu shows information about the console module (console) and the computer module (target).	
ID:	Device ID
Version:	Installed firmware version
Device:	Type name
Firmware:	Name of installed firmware

HOTKEY	
Local Hotkey (Modifier+Key)	
Modifier:	Modifier key of key combination
Key:	Hotkey of key combination
Local OSD via 2x keypress	
Modifier:	Configured key to open the OSD via double keypress
Local selectkeys	
Keys:	Selected set of select keys:

HARDWARE INFORMATION	
Serial number:	Serial number of console module

How to show status information in the OSD:

1. Press the **Alt+Num** (*default*) hotkey to open the OSD.
2. Select **Information** and press **Enter**.
3. Use the **arrow keys** to select the desired menu item (see above).
4. Press **Enter** to show the desired information.
5. Press **Esc** to leave the menu.

NOTES

G&D. FEELS RIGHT.

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