Orion XTender ™

KVM Extender

INSTALLATION AND OPERATIONS MANUAL

ROSE ELECTRONICS

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LIMITED WARRANTY

Rose Electronics warrants the Orion XTender to be in good working order for one year from the date of purchase from Rose Electronics or an authorized dealer. Should this product fail to be in good working order at any time during this one-year warranty period, Rose Electronics will, at its option, repair or replace the Unit as set forth below. Repair parts and replacement units will be either reconditioned or new. All replaced parts become the property of Rose Electronics. This limited warranty does not include service to repair damage to the Unit resulting from accident, disaster, abuse, or unauthorized modification of the Unit, including static discharge and power surges.

Limited Warranty service may be obtained by delivering this unit during the one-year warranty period to Rose Electronics or an authorized repair center providing a proof of purchase date. If this Unit is delivered by mail, you agree to insure the Unit or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or its equivalent. You must call for a return authorization number first. Under no circumstances will a unit be accepted without a return authorization number. Contact an authorized repair center or Rose Electronics for further information.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

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NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their his own expense.

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Printed In the United States of America – 1.7

FCC/IC STATEMENTS, EU DECLARATION OF CONFORMITY

Product

Orion XTender

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

Operation is subject to the following two conditions:

1- This device may not cause harmful interference
2- This device must accept any interference received including interference that may cause undesired operation.

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

CE Statement

The product meets European Standard EMC:
EN-55022:2006 Class A
EN 61000-4-2:2001
EN 61000-4-3:2006
EN 61000-4-4:2004
EN 61000-4-5:2006

TABLE of CONTENTS

Contents **Page #**

Disclaimer 2
System Introduction 2
Features 2
Compatibility 3
Package contents 3
System Overview 5
Orion Xtender Models 6
Status 21
System Setup 37
Configuration 41
Operation 44
Service Information 52
Maintenance and Repair 52
Technical Support 52
Product Safety 53

Figures **Page #**

Figure 1. System Overview 5
Figure 2. Various Applications 29

INTRODUCTION

Disclaimer

While every precaution has been taken in the preparation of this manual, the manufacturer assumes no responsibility for errors or omissions. Neither does the manufacturer assume any liability for damages resulting from the use of the information contained herein. The manufacturer reserves the right to change the specifications, functions, or circuitry of the product without notice.

The manufacturer cannot accept liability for damages due to misuse of the product or other circumstances outside the manufacturer's control. The manufacturer will not be responsible for any loss, damage, or injury arising directly or indirectly from the use of this product.

System Introduction

Thank you for choosing the Rose Electronics® Orion XTender, a high-performance, long distance, multi-function digital KVM Extender. The product increases the distance between a source (computer, CPU) and its console (display, keyboard, mouse, and other peripheral devices). It is compatible with CATx (Twisted Pair) interconnect cables or fiber interconnect cables. The fiber models of the Orion XTender are especially suitable for environments with high electromagnetic activity, where electromagnetic interference can affect maximum distance and signal reliability.

The modular structure of the Orion XTender product family accommodates a variety of applications by offering the flexibility of customization. Each extender card can be installed in one of four unique frame assemblies: 2, 4, 6, or 21 cards per frame. The DVI extenders support high resolution video up to 1920 x 1200 and USB-HID signals for mice, keyboards or other USB pointing devices. A multi-stage compression algorithm maximizes data flow and provides a consistently clear image quality for HD video signals. Several options are available for each module, including analog or digital audio, USB 2.0, VGA inputs and RS232 serial data transports. Cable distances up to 460 ft (140 m) with CATx or 10 km with fiber cables are supported.

The system consists of two components: a Transmitter and a receiver. The Transmitter connects to a computer's DVI-D video output, USB keyboard and mouse ports, USB 2.0 device ports, audio input/output connectors and a serial port. The receiver can connect directly to DVI-D video displays, USB keyboards and mice, USB 2.0 devices, powered speakers, a microphone and/or serial device. Depending on the model, the Transmitter and receiver are connected with industry standard CATx or fiber cables.

Features

- Superior image quality at all supported resolutions
- Transfer of DVI signals over distances up to 32,800 ft (10 km) via fiber, and up to 460 ft 140 via CATx
- Supports all monitor resolutions up to 1920 x1200 @ 60Hz / 2048x1152 @ 60Hz
- Supports USB1.1/2.0 peripherals.
- Single-head and multi-head models available
- Four compact frame types are available: 2, 4, 6 or 21 cards per frame
- High mounting density using a 19" rack mount kit (up to 3 devices can be placed in a 19"/1U)
- All connectors on one side
- Power supply included
- Supports all operating systems
- Compatible with Orion X KVM Switches

Optional:

- Two further USB-HID connections
- USB 2.0 transparent
- Digital audio interface

- VGA input
- Redundant power supply (load sharing)
- Serial interface (RS232) with analog audio

Compatibility

Computers	PCs (all operating systems)
Displays	DVI-D video to 1.65 Gbit/sec/channel
Keyboards	All standard USB keyboards
Mouse	All standard USB mice
Serial	Compatible devices up to 19.2KBaud
Audio	Bi-directional CD quality stereo audio
USB	USB 2.0 devices

Table 1. Compatible Devices

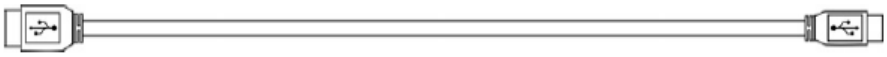
Package contents

Your extender package contains the following items:

- KVM Extender pair (Transmitter Unit and Receiver Unit) in the chassis
- 1x (redundant 2x) 5VDC international power supply unit per KVM Extender unit
- 1x (redundant 2x) country specific power cord
- Quick Setup

- DVI video cable (1.8 m, DVI-D male-to-male)

- USB cable (1.8 m, type A to type B)



If anything is missing, contact your dealer.

Optional:

Additional DVI, USB, Audio and Serial cables for CPU-to-Transmitter connections can be ordered separately. VGA to DVI converters are also available.

- VGA cable (1.8 m, VGA male to DVI-I male)

- Serial cable (1.8 m, D-Sub 9 male connector)

- Stereo jack cable (1.6 m, 3.5 mm male connector)

Additional content for upgrade module serial (RS422):

- Serial cable (1.8 m, D-Sub 9 male connector)

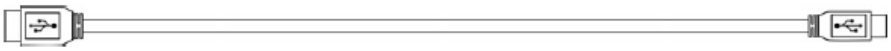
Additional content for upgrade module Digital Audio:

- RCA cable (2.5 m, Cinch male connector)

- TOSLINK cable (1.8 m, F05 male connector)

Additional content for upgrade module USB-HID:

- USB cable (1.8 m, USB type A to type B)

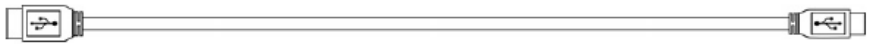


Additional content for upgrade module PS/2:

- 2x PS/2 cable (1.8 m, 6-pole connector)

Additional content for upgrade module USB 2.0 embedded:

- USB cable (1.8 m, USB type A to type B)

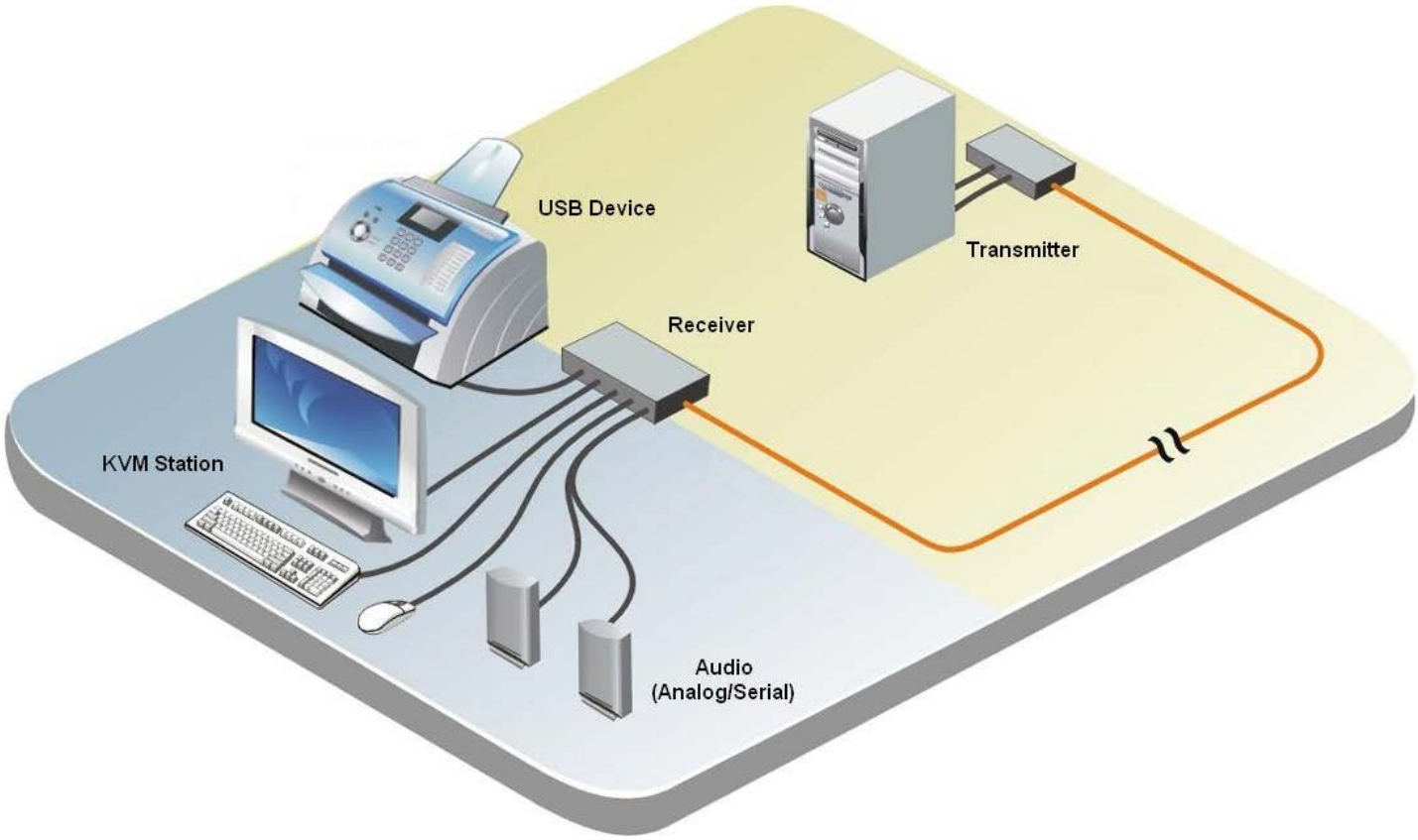


Additional content for upgrade module USB 2.0:

- USB cable (1.8 m, USB type A to type B)

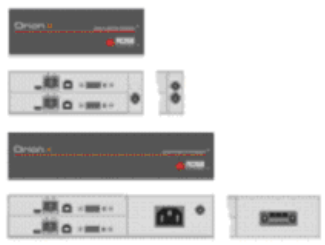
System Overview

The Orion XTender consists of at least one Transmitter module and one Receiver module. The Transmitter modules are installed in an XTender chassis (2-fold, 4-fold, 6-fold or 21-fold) at the local site. The Receiver modules are installed in a chassis at the remote site. The Transmitter module is connected directly to the source (computer, CPU) using the supplied cables. The Receiver module is connected to the console peripherals (monitor, keyboard and mouse). Transmitter and Receiver modules communicate through interconnect cables.



MODELS

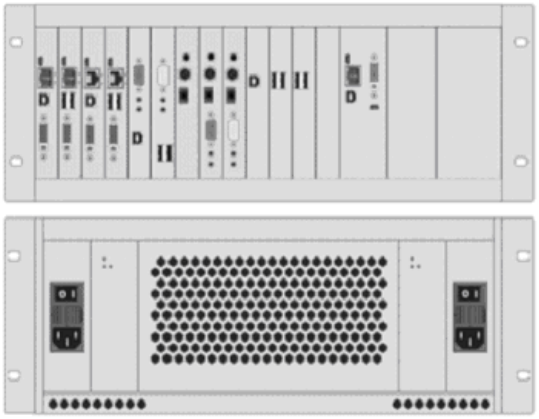
Orion Xtender Models



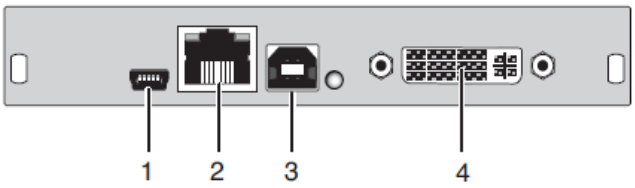
2-port Chassis
- Power supply
- Optional redundant power supply
- Internal power supply (12V/24V/48V)

4-port Chassis
- Power supply
- Optional redundant power supply

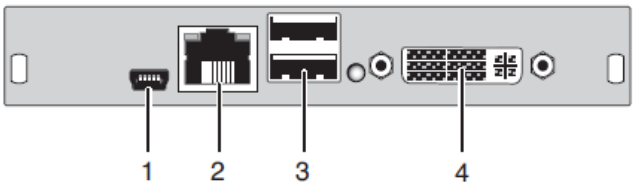
6-port Chassis
- Optional redundant power supply
- DC Power Supply (12V/24V/48V)



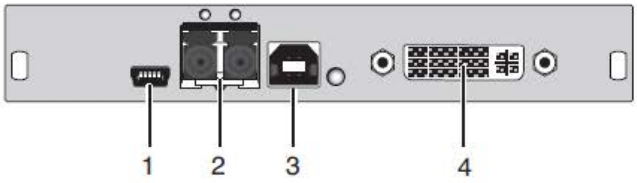
21-port Chassis
-19" / 3 or 4 RU, with internal power supply
optional second AC power supply
for redundancy (Power connectors on rear side)



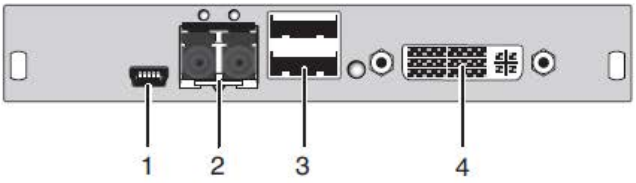
1 Service port
2 CATx port
3 To CPU: USB-HID
4 To CPU: DVI-D



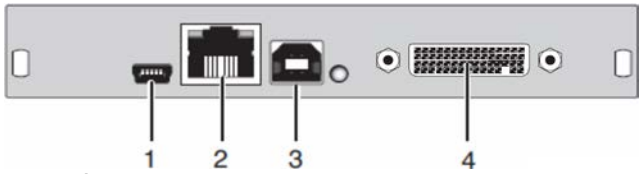
1 Service port
2 CATx port
3 To USB-HID devices
4 To DVI monitor



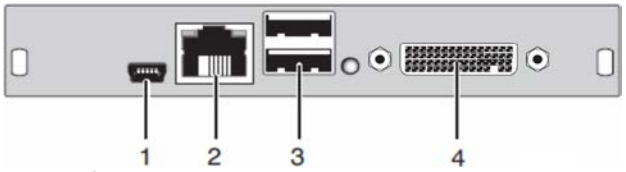
1 Service port
2 Fiber port
3 To CPU: USB-HID
4 To CPU: DVI-D



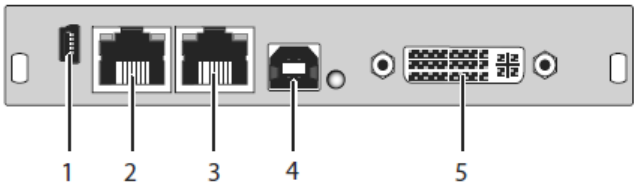
1 Service port
2 Fiber port
3 To CPU: USB-HID devices
4 To CPU: DVI-D devices



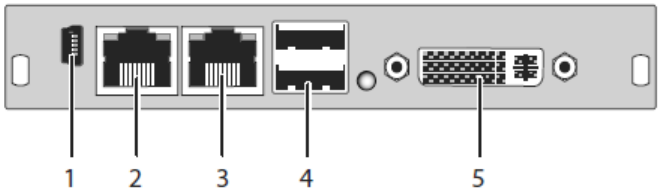
1 Service port
2 CATx port
3 To CPU: USB-HID
4 To CPU: DVI-D Dual-Link



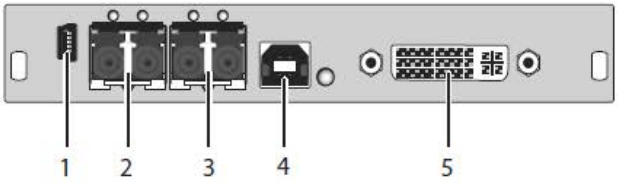
1 Service port
2 CATx port
3 To USB-HID devices
4 To DVI Dual-Link monitor



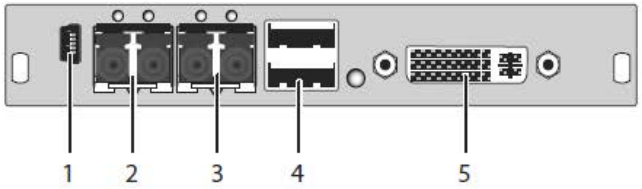
1 Service port
2 CATx port 1
3 CATx port 2
4 To CPU: USB-HID
5 To CPU: DVI-D



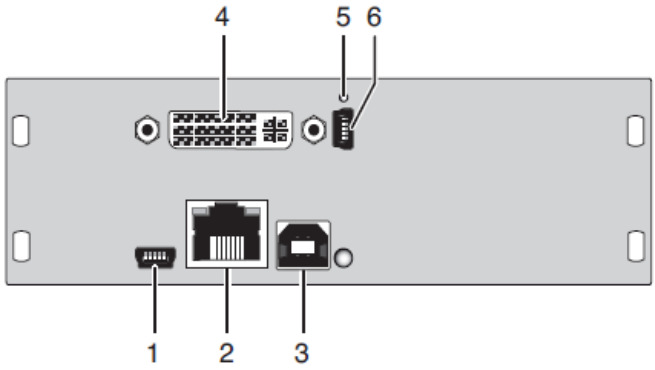
1 Service port
2 CATx port 1
3 CATx port 2
4 To USB-HID devices
5 To DVI monitor



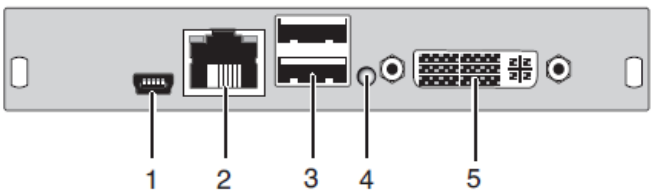
1 Service port
2 Fiber port 1
3 Fiber port 2
4 To CPU: USB-HID
5 To CPU: DVI-D



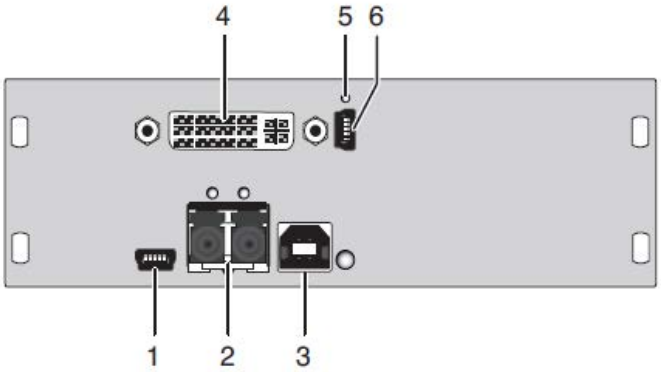
1 Service port
2 Fiber port 1
3 Fiber port 2
4 To USB-HID devices
5 To DVI monitor



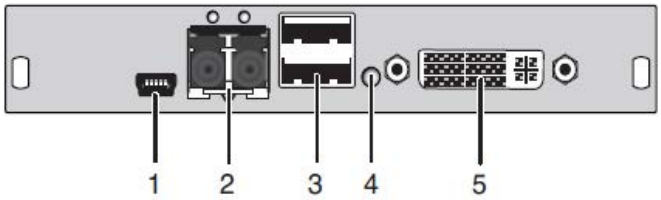
1 Service port (KVM)
2 CATx port
3 To CPU: USB-HID
4 To CPU: DVI-I (VGA / DVI)
5 IR Receiver for remote control
6 Service port (DVI-I)



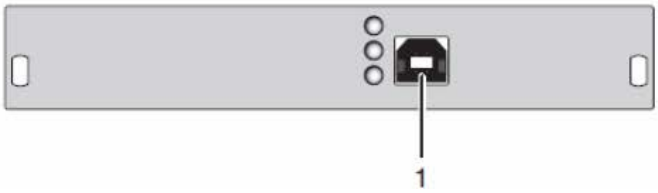
1 Service port
2 CATx port
3 To USB-HID devices
4 IR Receiver for remote control
5 To DVI monitor



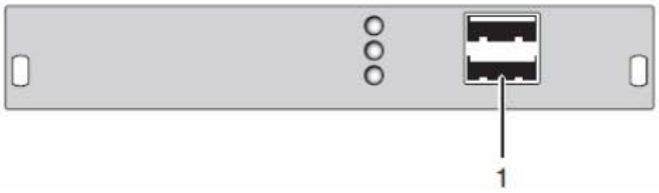
1 Service port (KVM)
2 CATx port
3 To CPU: USB-HID
4 To CPU: DVI-I (VGA / DVI)
5 IR Receiver for remote control
6 Service port (DVI-I)



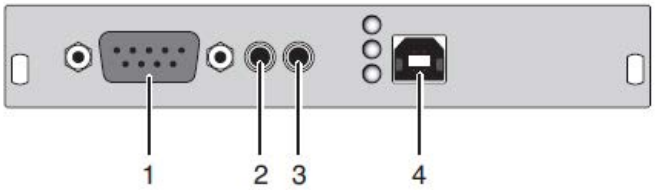
1 Service port
2 CATx port
3 To USB-HID devices
4 IR receiver for remote control
5 To DVI monitor



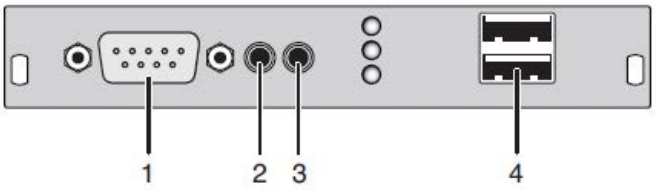
1 To CPU: USB-HID



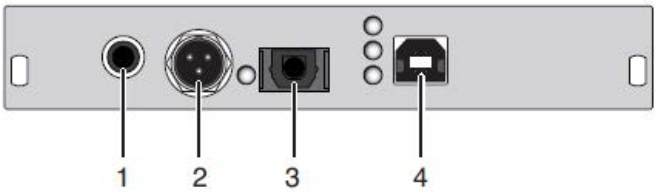
1 To USB-HID devices



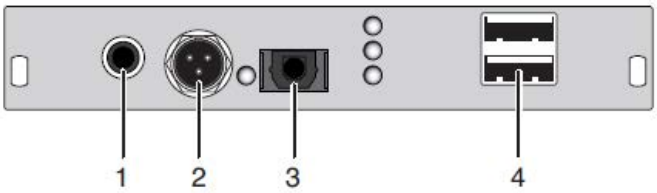
1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT
4 To CPU: USB-HID



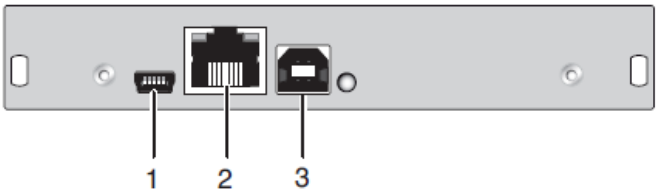
1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT
4 To USB-HID devices



1 S/PDIF input (RCA)
2 AES/EBU input (Mini-XLR)
3 S/PDIF input (TOSLINK)
4 To CPU: USB-HID

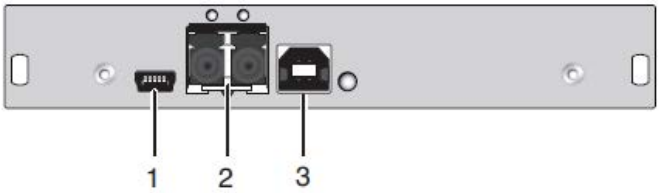


1 S/PDIF output (RCA)
2 AES/EBU output (Mini-XLR)
3 S/PDIF output (TOSLINK)
4 To USB-HID devices

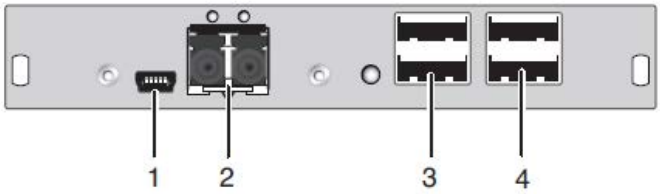


1 Service port
2 CATx port
3 To CPU: USB 2.0

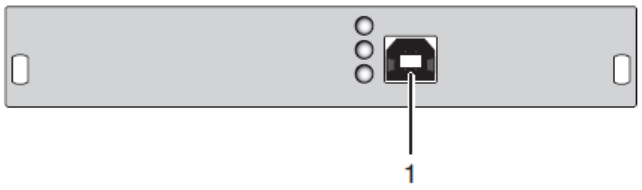
1 Service port
2 CATx port
3 To USB 2.0 devices



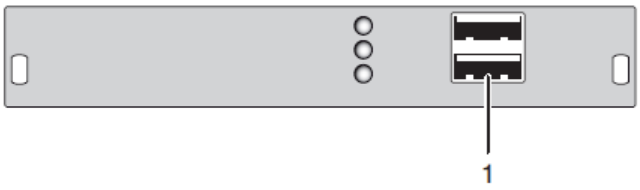
1 Service port
2 Fiber port
3 To CPU: USB 2.0



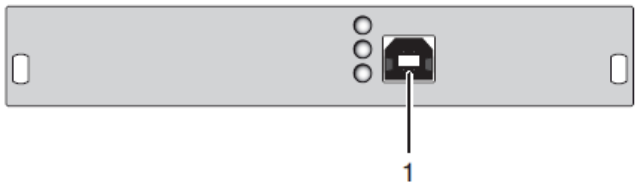
1 Service port
2 Fiber port
3 To USB 2.0 devices



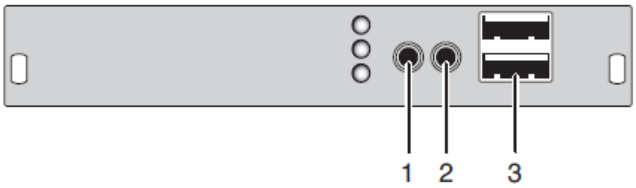
` 1 To CPU: USB 2.0



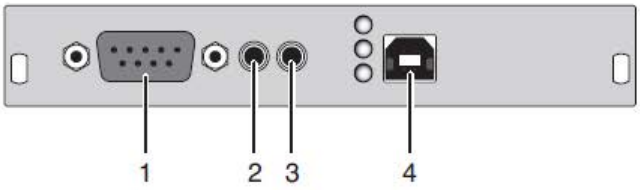
1 To USB 2.0 devices



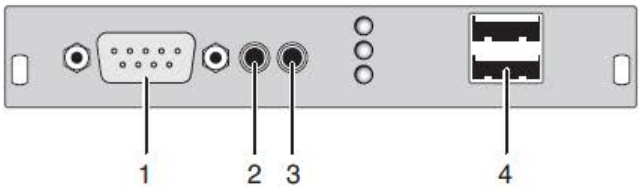
1 To CPU: USB 2.0



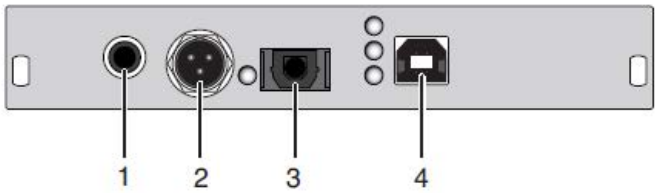
1 Audio IN
2 Audio OUT
3 To USB 2.0 devices



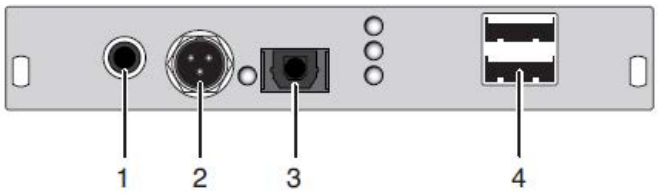
1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT
4 To CPU: USB 2.0



1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT
4 To USB 2.0 devices

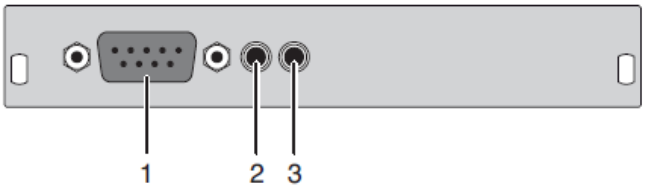


1 S/PDIF input (RCA)
2 AES/EBU input (Mini-XLR)
3 S/PDIF input (TOSLINK)
4 To CPU: USB 2.0

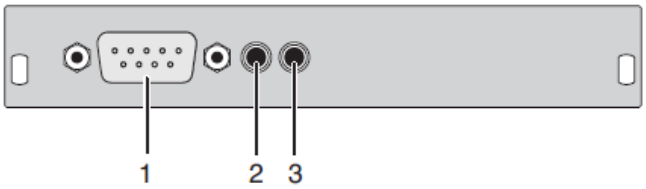


1 S/PDIF output (RCA)
2 AES/EBU output (Mini-XLR)
3 S/PDIF output (TOSLINK)
4 To USB 2.0 devices

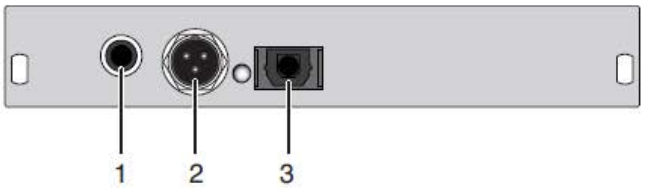
.



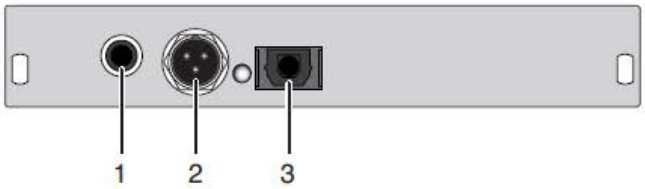
1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT



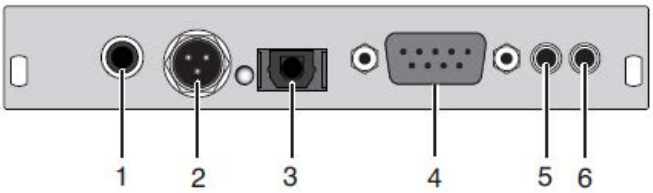
1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT



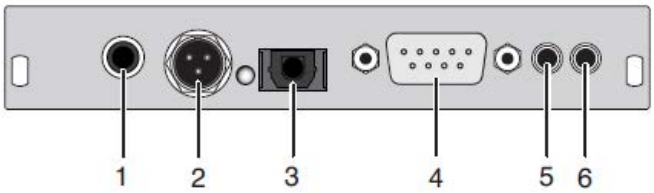
1 S/PDIF input (RCA)
2 AES/EBU input (Mini-XLR)
3 S/PDIF input (TOSLINK)



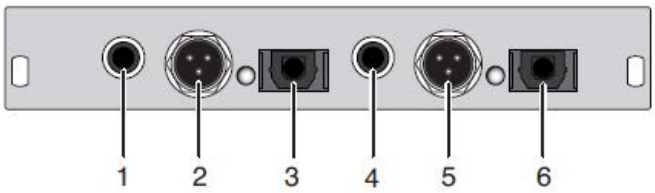
1 S/PDIF output (RCA)
2 AES/EBU output (Mini-XLR)
3 S/PDIF output (TOSLINK)



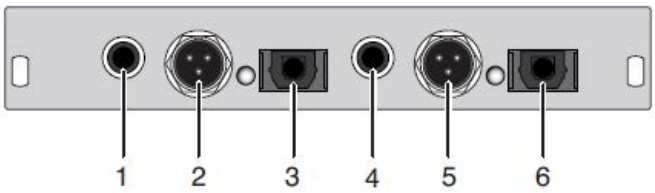
1 S/PDIF input (RCA)
2 AES/EBU input (Mini-XLR)
3 S/PDIF input (TOSLINK)
4 To serial (D-Sub 9)
5 Audio IN
6 Audio OUT



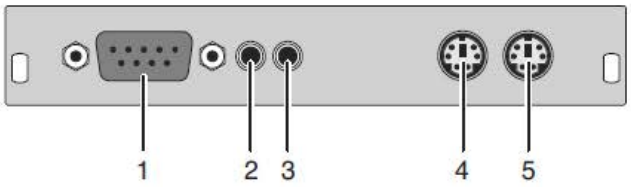
1 S/PDIF output (RCA)
2 AES/EBU output (Mini-XLR)
3 S/PDIF output (TOSLINK)
4 To serial (D-Sub 9)
5 Audio IN
6 Audio OUT



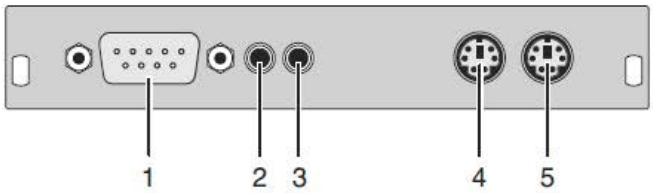
1 S/PDIF input (RCA)
2 AES/EBU input (Mini-XLR)
3 S/PDIF input (TOSLINK)
4 S/PDIF output (RCA)
5 AES/EBU output (Mini-XLR)
6 S/PDIF output (TOSLINK)



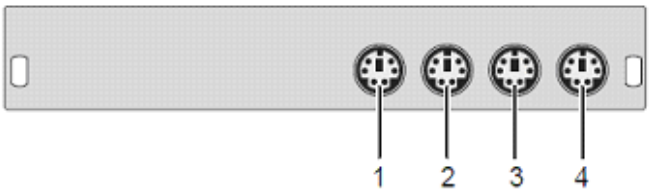
1 S/PDIF output (RCA)
2 AES/EBU output (Mini-XLR)
3 S/PDIF output (TOSLINK)
4 S/PDIF input (RCA)
5 AES/EBU input (Mini-XLR)
6 S/PDIF input (TOSLINK)



1 To serial (D-Sub 9)
2 Audio IN
3 Audio OUT
4 To CPU: PS/2 mouse
5 To CPU: PS/2 keyboard



1 To serial (D-Sub 9)
2 Analog Audio IN
3 Audio OUT
4 To PS/2 mouse
5 To PS/2 keyboard

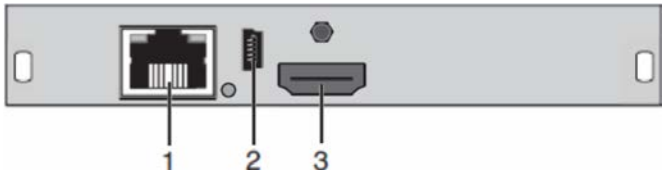


1 To local PS/2 mouse
2 To local PS/2 keyboard
3 To CPU: PS/2 mouse
4 To CPU: PS/2 keyboard

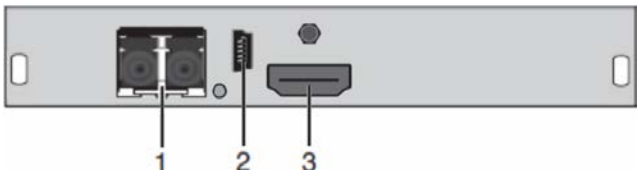
1 To PS/2 mouse
2 To PS/2 keyboard

1 To serial (D-Sub 9)

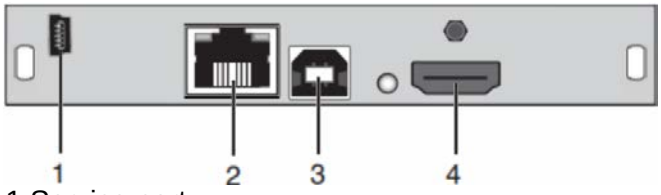
1 To serial (D-Sub 9)



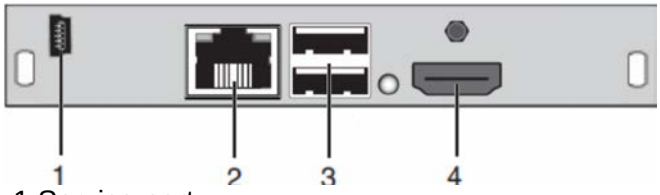
1 CATx port
2 Fiber port
3 CPU: USB-HID



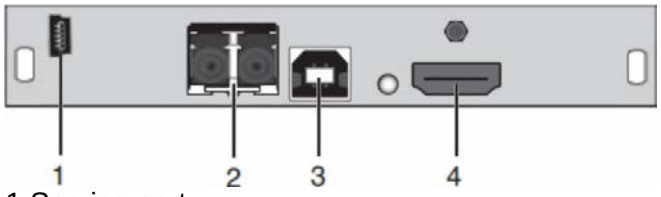
1 Fiber port
2 Fiber port
3 USB-HID devices



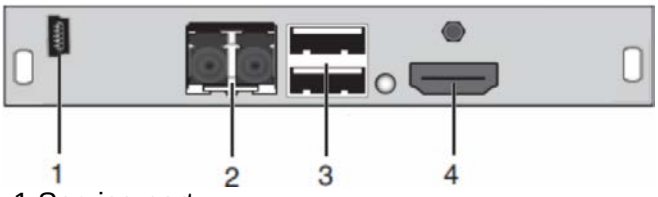
1 Service port
2 CATx port
3 CPU: USB-HID
4 CPU: HDMI



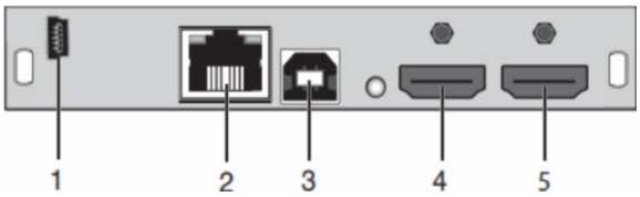
1 Service port
2 CATx port
3 USB-HID devices
4 HDMI



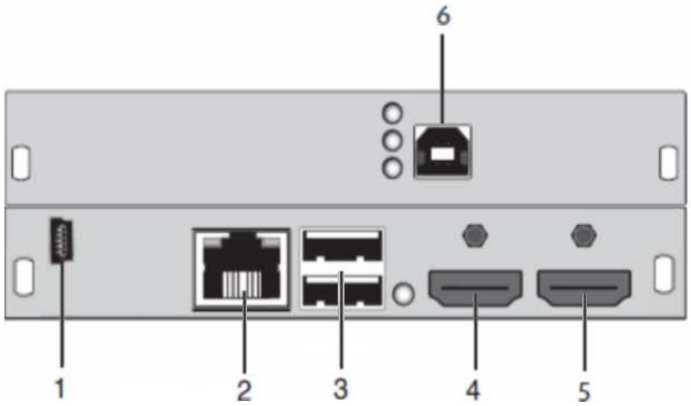
1 Service port
2 Fiber port
3 CPU: USB-HID
4 CPU: HDMI



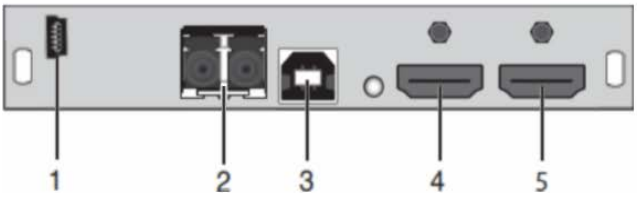
1 Service port
2 Fiber port
3 USB-HID devices
4 HDMI



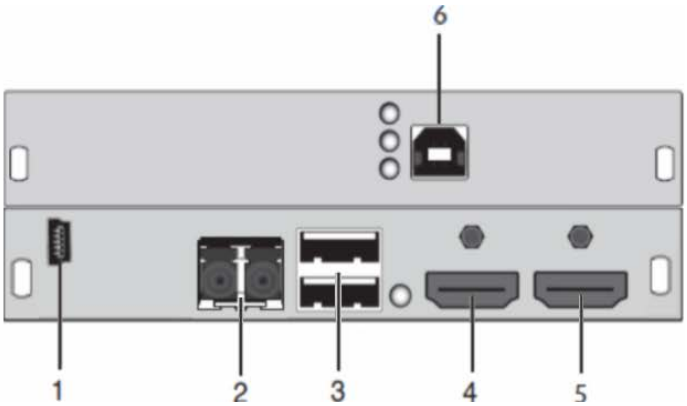
1 Service port
2 CATx port
3 CPU: USB-HID
4 CPU: HDMI 1
5 CPU: HDMI 2



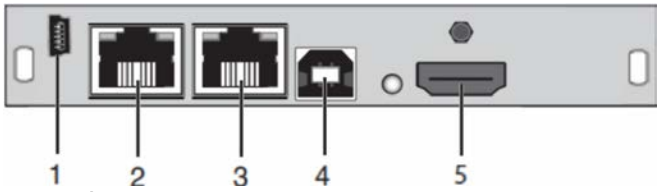
1 Service port
2 CATx port
3 To USB-HID devices
4 HDMI 1
5 HDMI 2
6 To CPU: USB 2.0



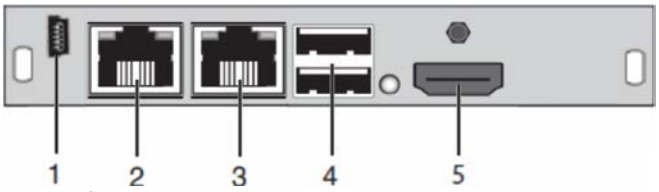
1 Service port
2 Fiber port
3 CPU: USB-HID
4 CPU: HDMI 1
5 CPU: HDMI 2



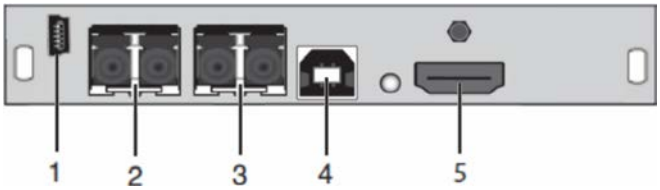
1 Service port
2 Fiber port
3 USB-HID devices
4 HDMI 1
5 HDMI 2
6 To CPU: USB 2.0



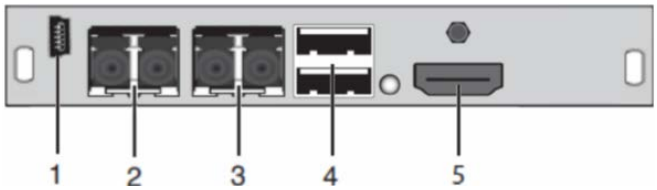
1 Service port
2 CATx port 1
3 CATx port 2
4 CPU: USB-HID
5 CPU: HDMI



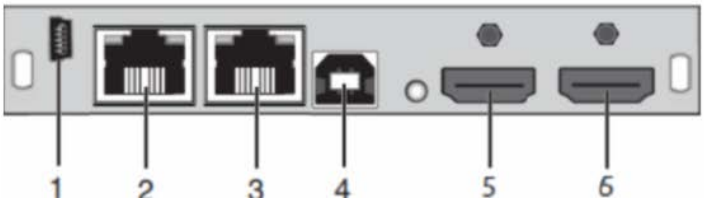
1 Service port
2 CATx port 1
3 CATx port 2
4 USB-HID
5 HDMI



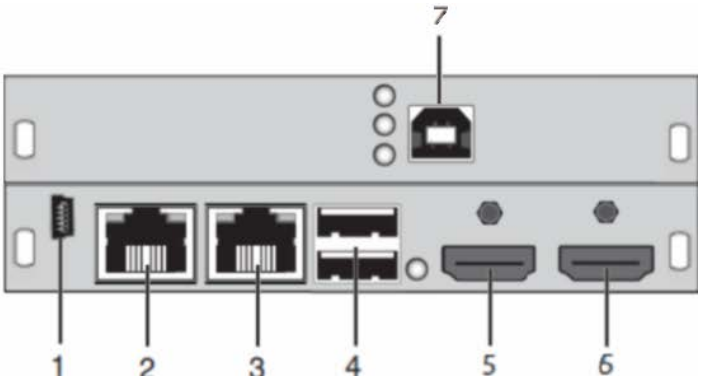
1 Service port
2 Fiber port 1
3 Fiber port 2
4 CPU: USB-HID
5 CPU: HDMI



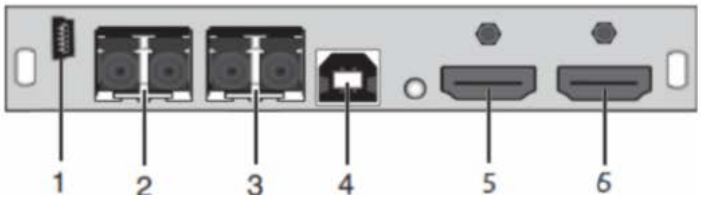
1 Service port
2 Fiber port 1
3 Fiber port 2
4 USB-HID
5 HDMI



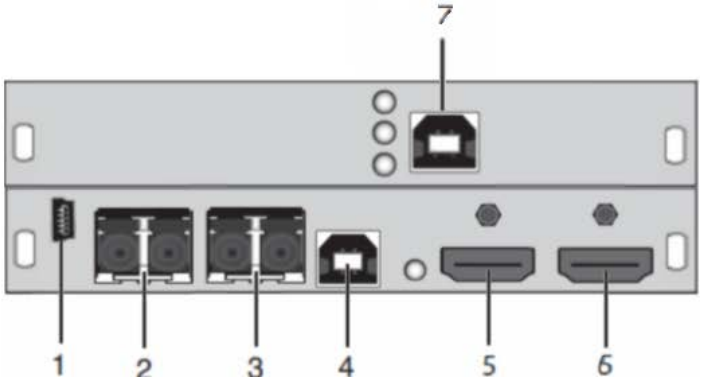
1 Service port
2 CATx port 1
3 CATx port 2
4 CPU: USB-HID
5 CPU: HDMI 1
6 CPU: HDMI 2



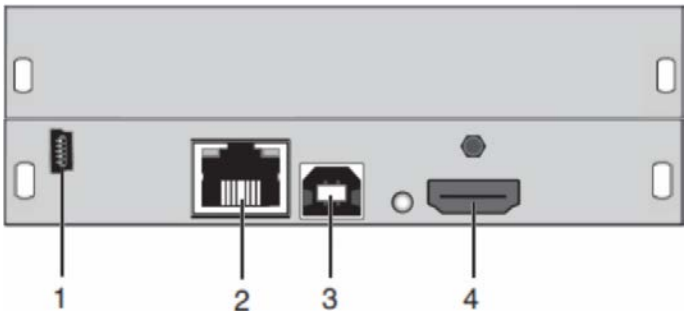
1 Service port
2 CATx port 1
3 CATx port 2
4 USB-HID
5 HDMI 1
6 HDMI 2
7 To CPU: USB 2.0



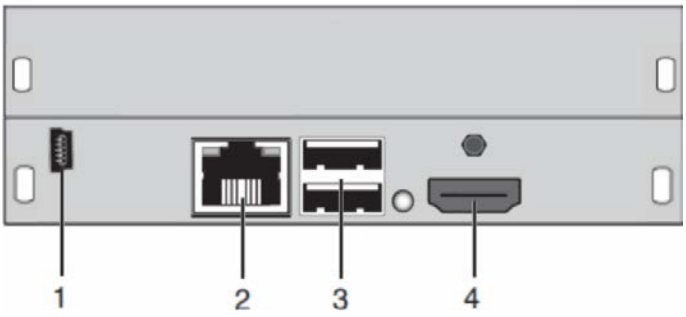
1 Service port
2 Fiber port 1
3 Fiber port 2
4 CPU: USB-HID
5 CPU: HDMI 1
6 CPU: HDMI 2



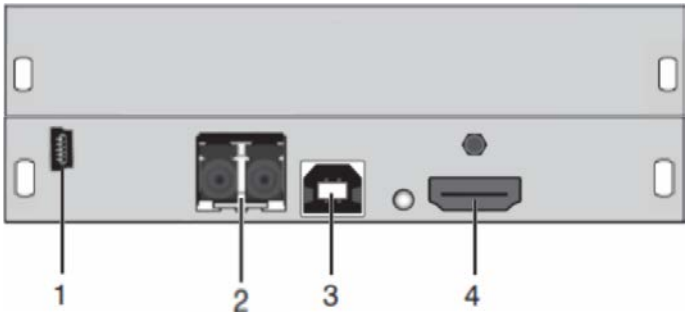
1 Service port
2 Fiber port 1
3 Fiber port 2
4 USB-HID devices
5 HDMI 1
6 HDMI 2
7 To CPU: USB 2.0



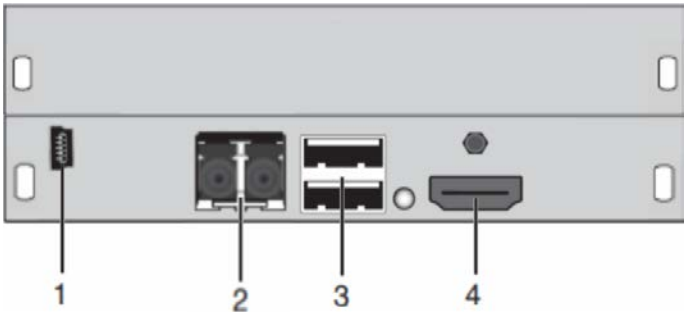
1 Service port
2 CATx port 1
3 CPU: USB-HID
4 CPU: HDMI



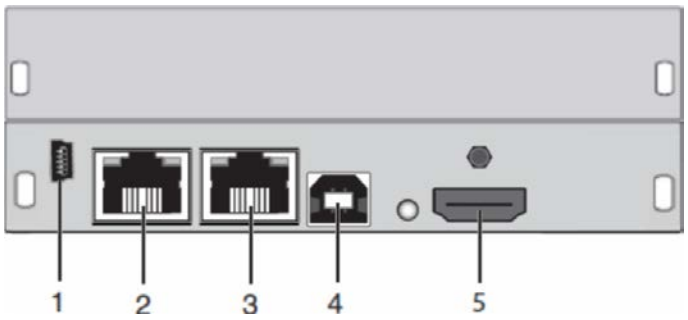
1 Service port
2 CATx port 1
3 USB-HID devices
4 HDMI



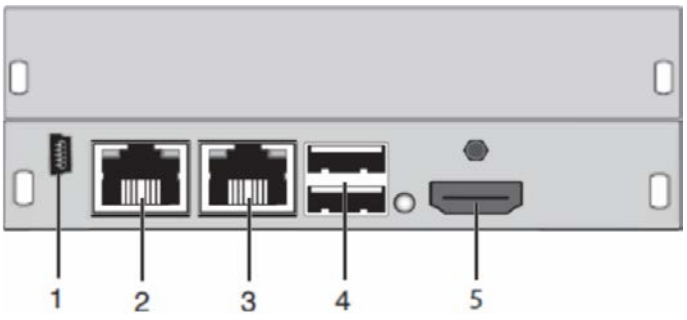
1 Service port
2 Fiber port 1
3 CPU: USB-HID
4 CPU: HDMI



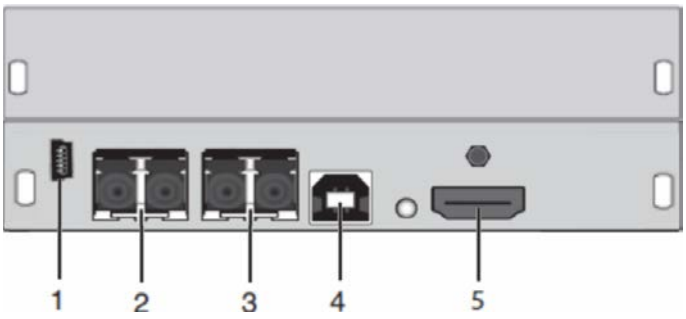
1 Service port
2 Fiber port 1
3 Fiber port 2
4 HDMI



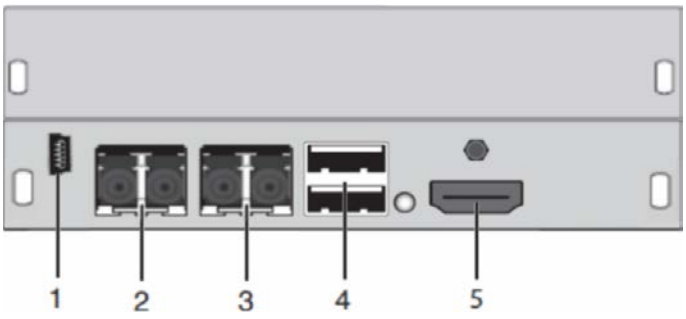
1 Service port
2 CATx port 1
3 CATx port 2
4 CPU: USB-HID
5 CPU: HDMI



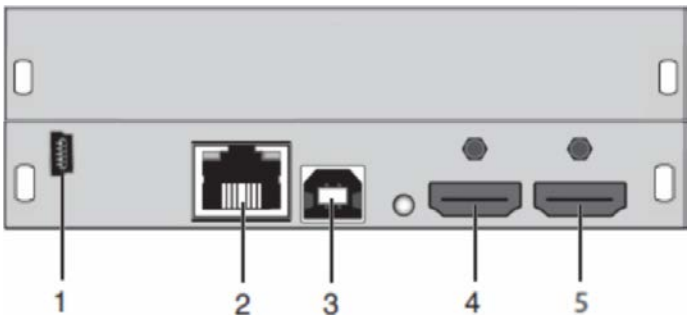
1 Service port
2 CATx port 1
3 CATx port 2
4 USB-HID
5 HDMI



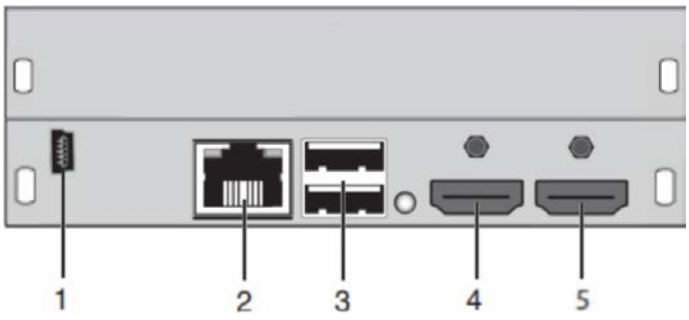
1 Service port
2 Fiber port 1
3 Fiber port 2
4 CPU: USB-HID
5 CPU: HDMI



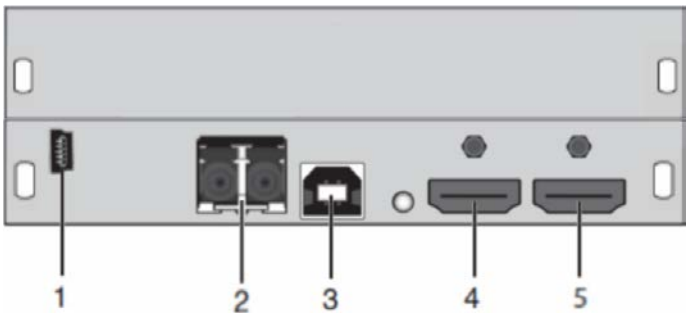
1 Service port
2 Fiber port 1
3 Fiber port 2
4 USB-HID
5 HDMI



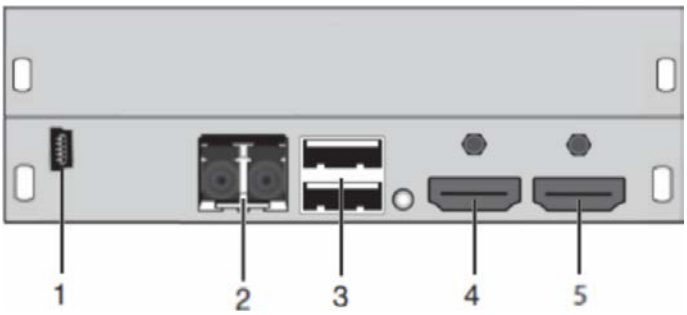
1 Service port
2 CATx port 1
3 CPU: USB-HID
4 CPU: HDMI 1
5 CPU: HDMI 2



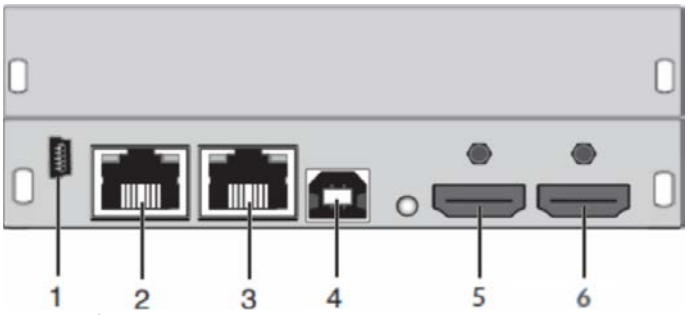
1 Service port
2 CATx port 1
3 CATx port 2
4 HDMI 1
5 HDMI 2



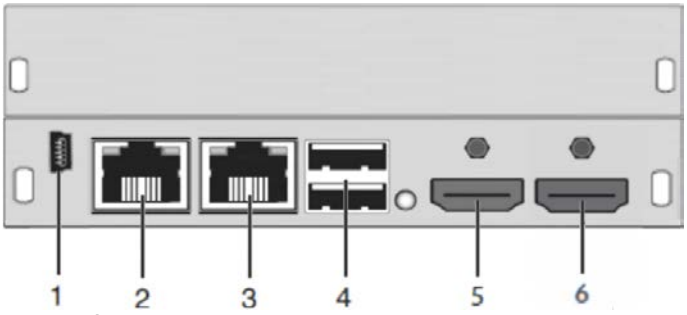
1 Service port
2 Fiber port 1
3 CPU: USB-HID
4 CPU: HDMI 1
5 CPU: HDMI 2



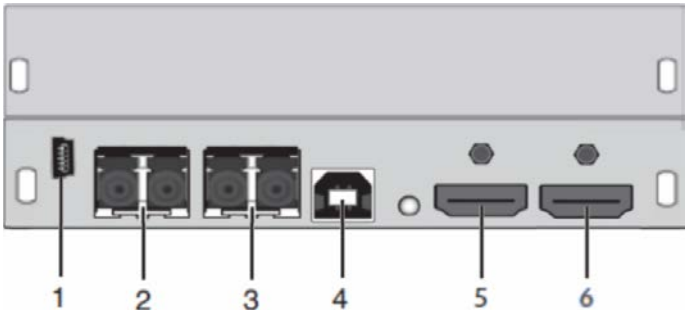
1 Service port
2 Fiber port 1
3 USB-HID
4 HDMI 1
5 HDMI 2



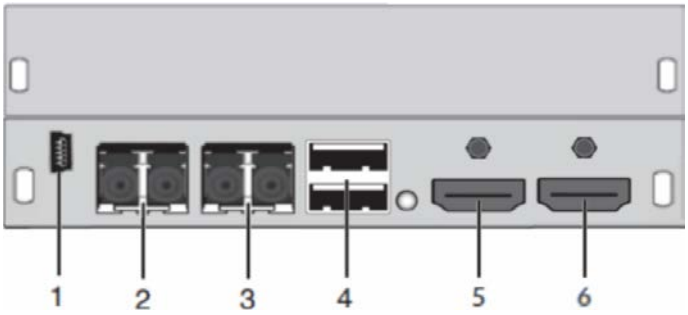
1 Service port
2 CATx port 1
3 CATx port 2
4 CPU: USB-HID
5 CPU: HDMI 1
6 CPU: HDMI 2



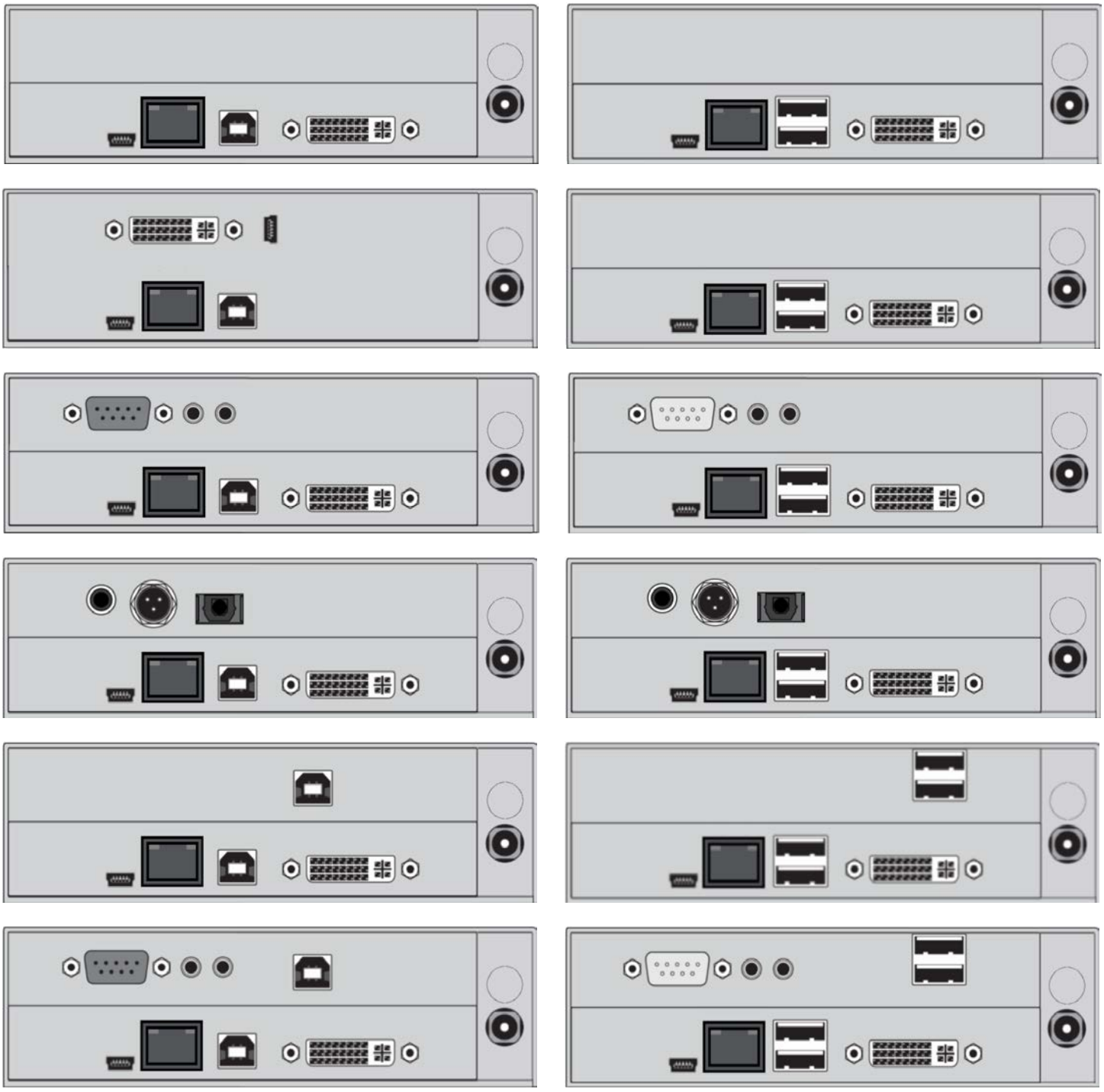
1 Service port
2 CATx port 1
3 CATx port 2
4 USB-HID
5 HDMI 1
6 HDMI 2

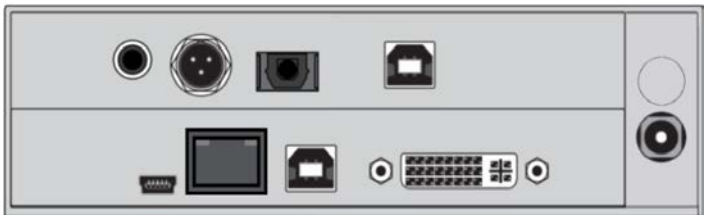


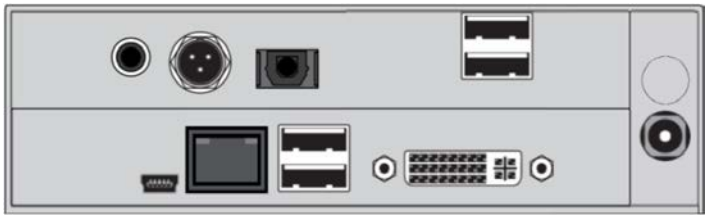
1 Service port
2 Fiber port 1
3 Fiber port 2
4 CPU: USB-HID
5 CPU: HDMI 1
6 CPU: HDMI 2

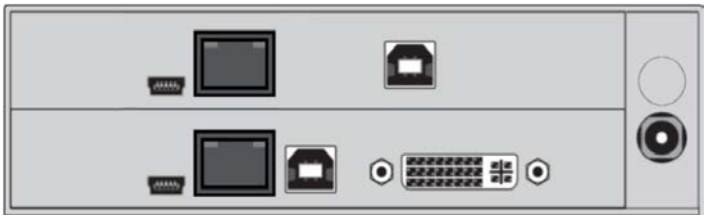


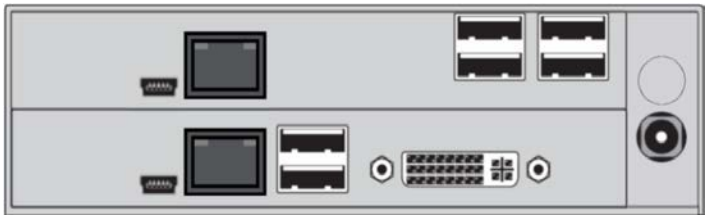
1 Service port
2 Fiber port 1
3 Fiber port 2
4 To USB-HID devices
5 HDMI 1
6 HDMI 2

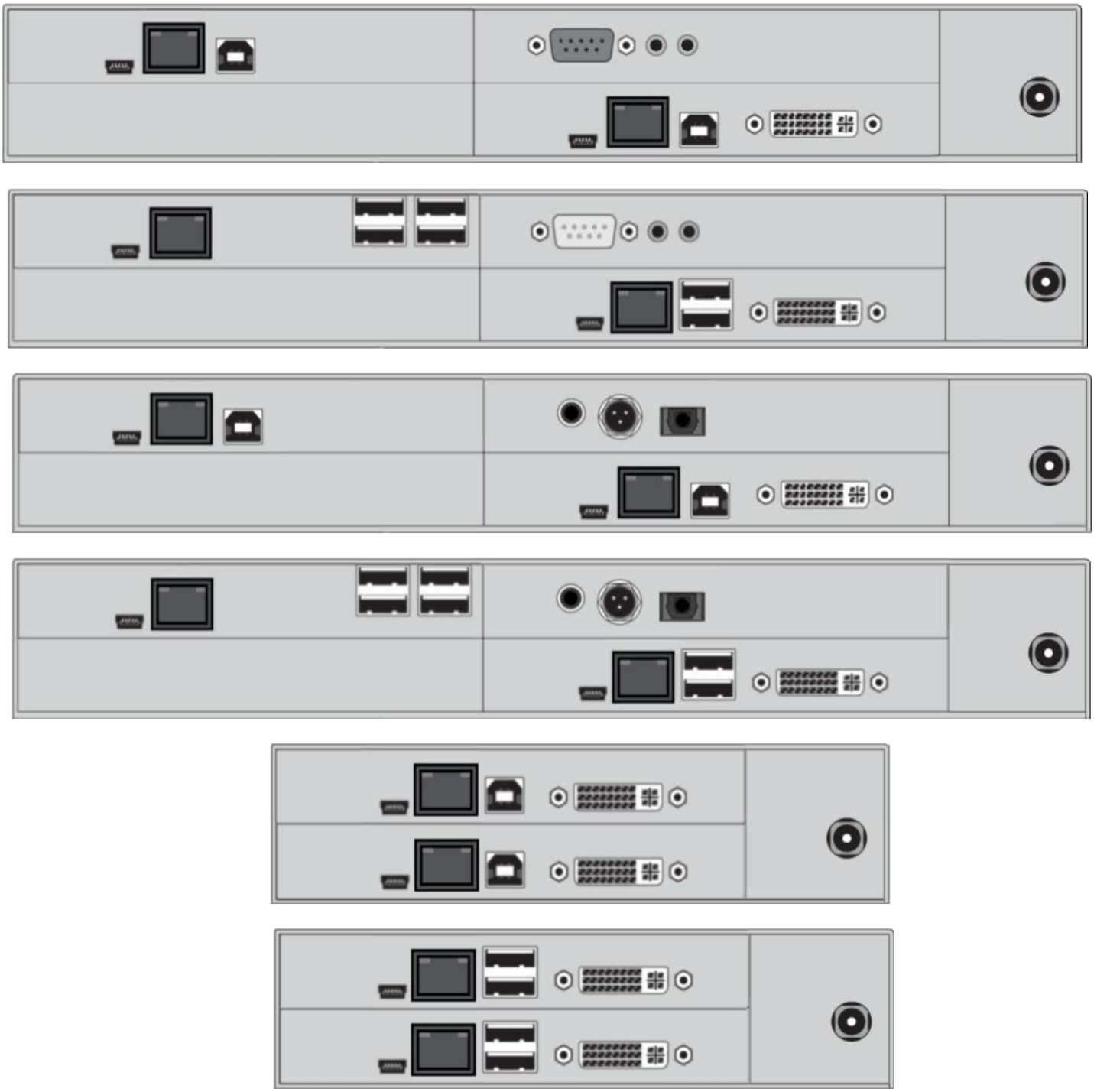


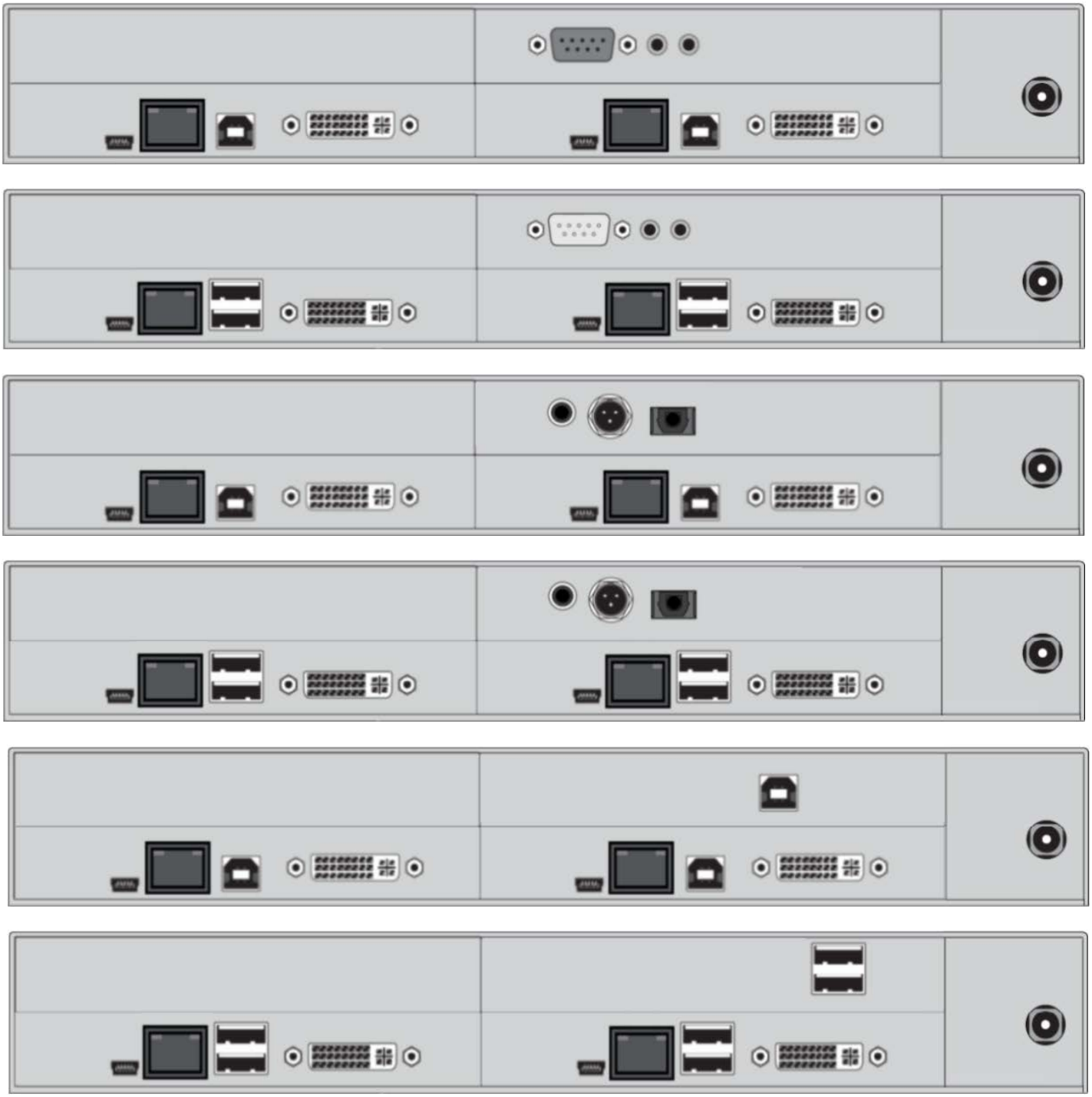


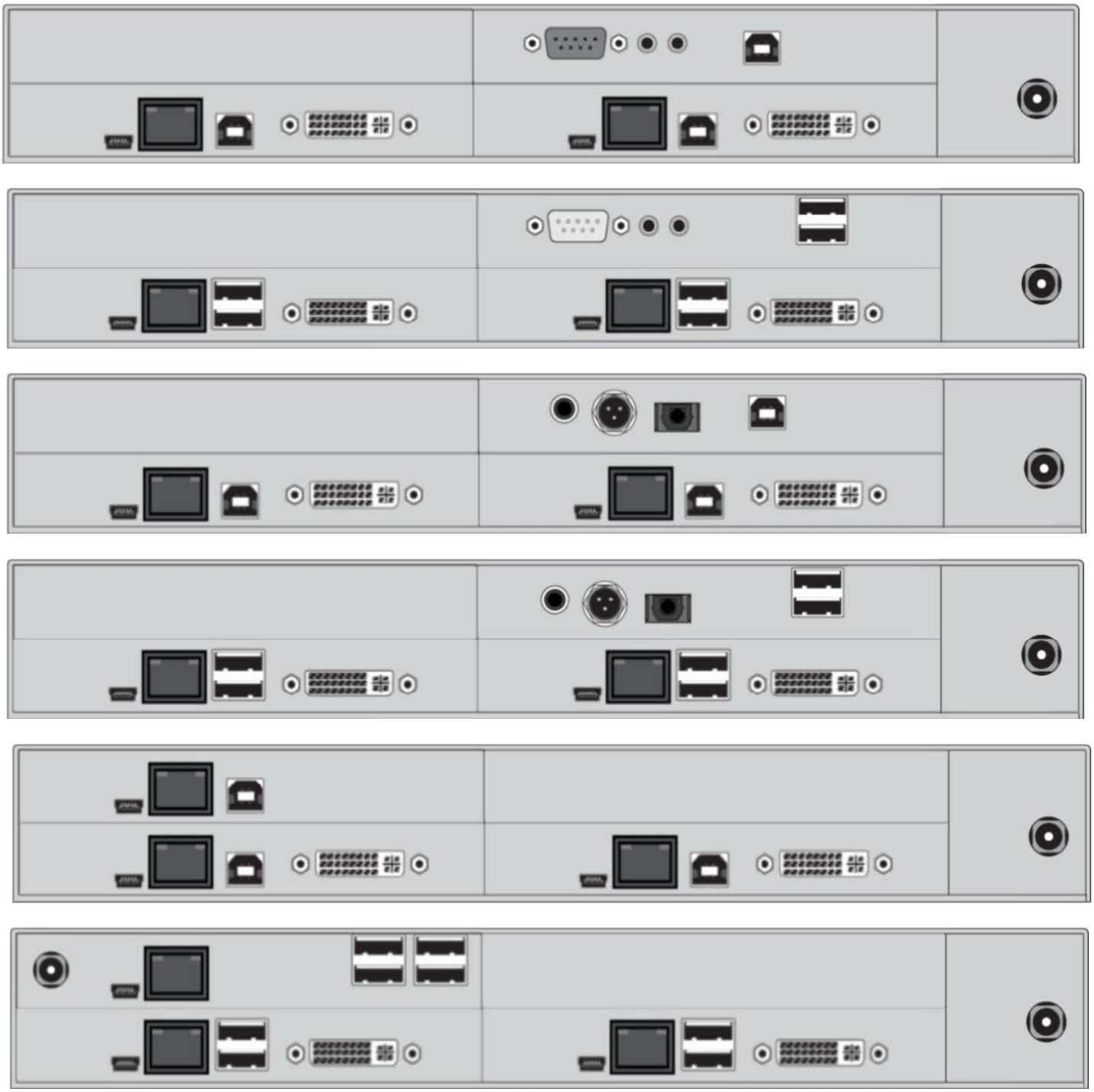


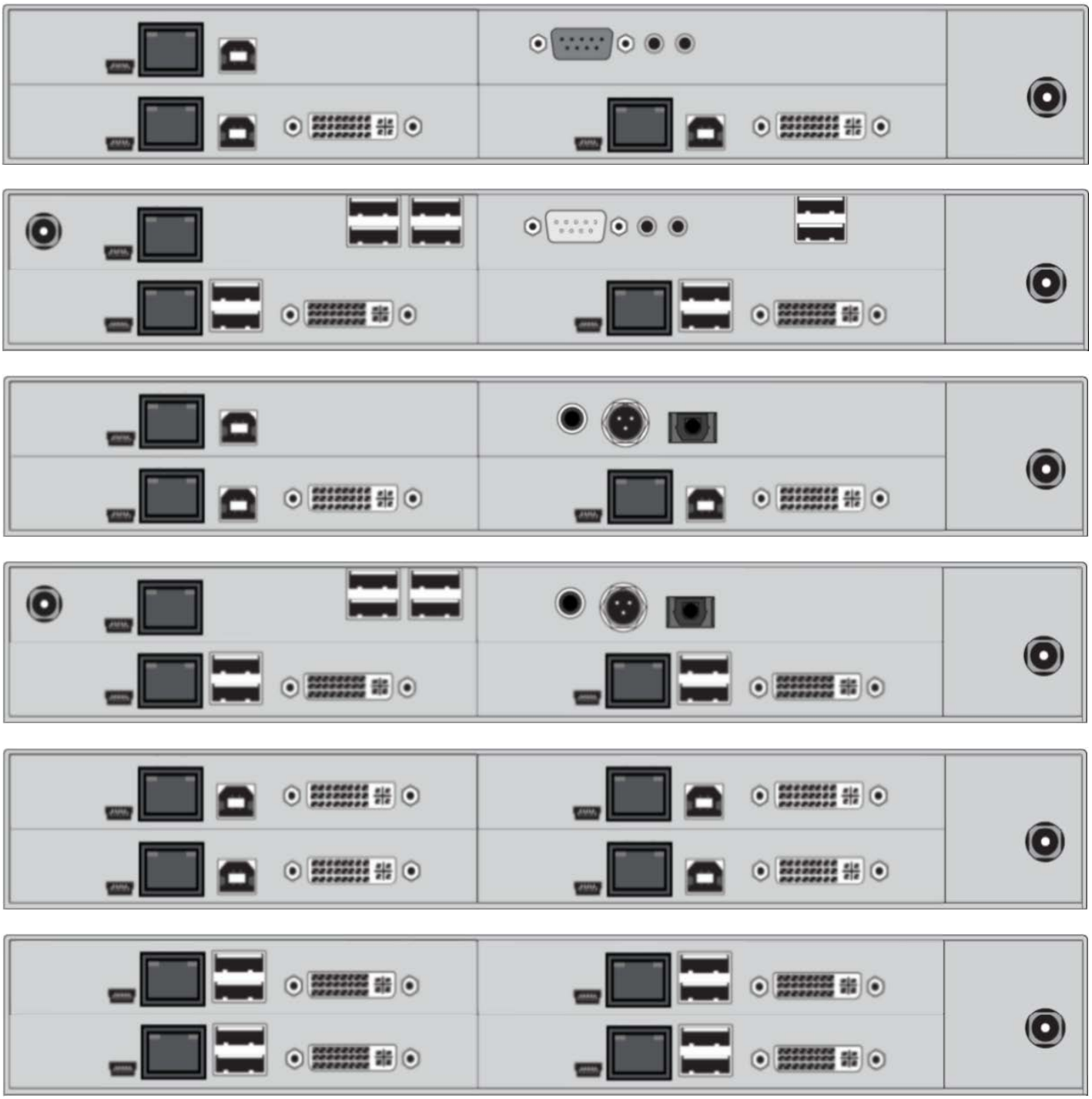


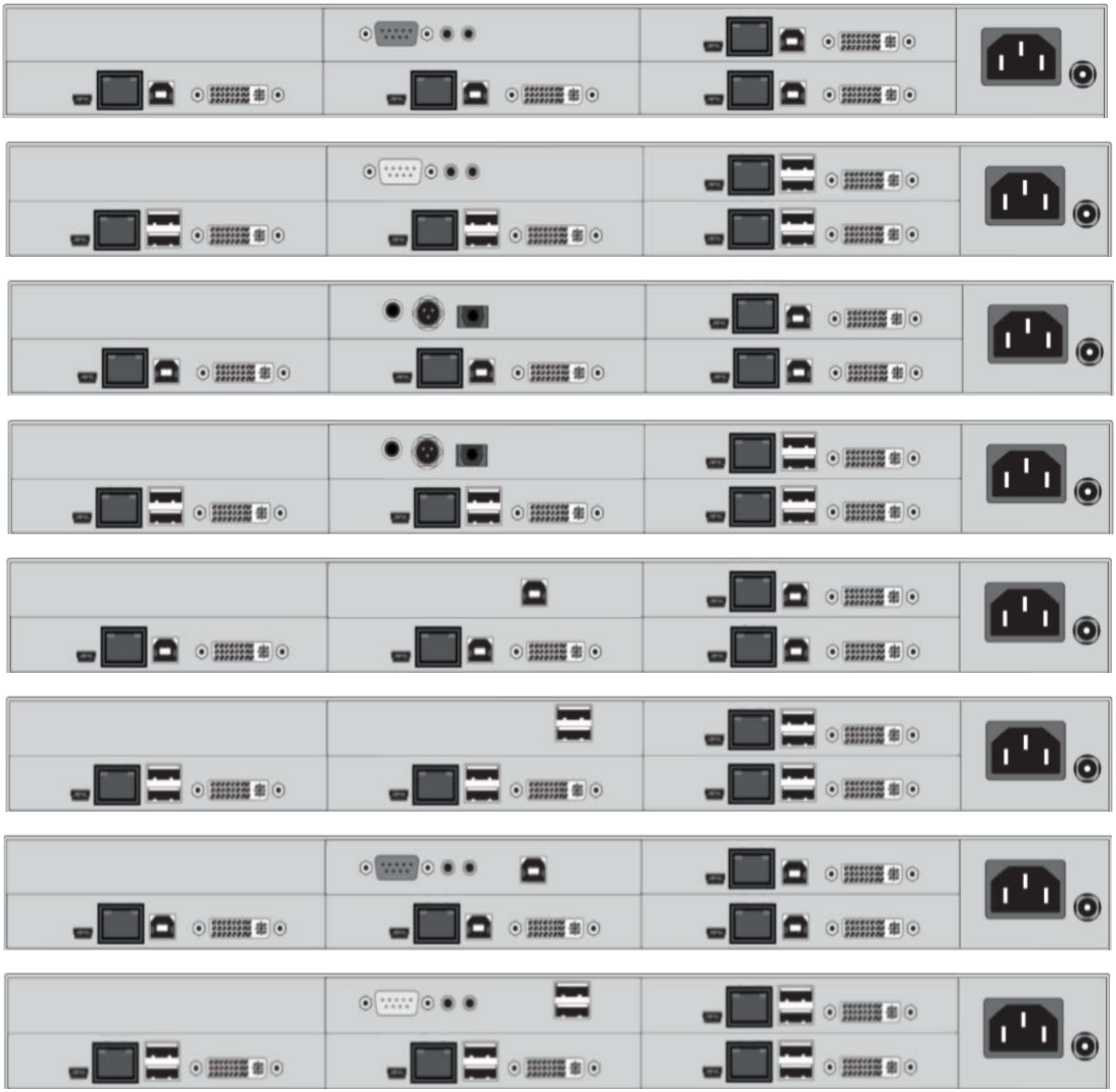


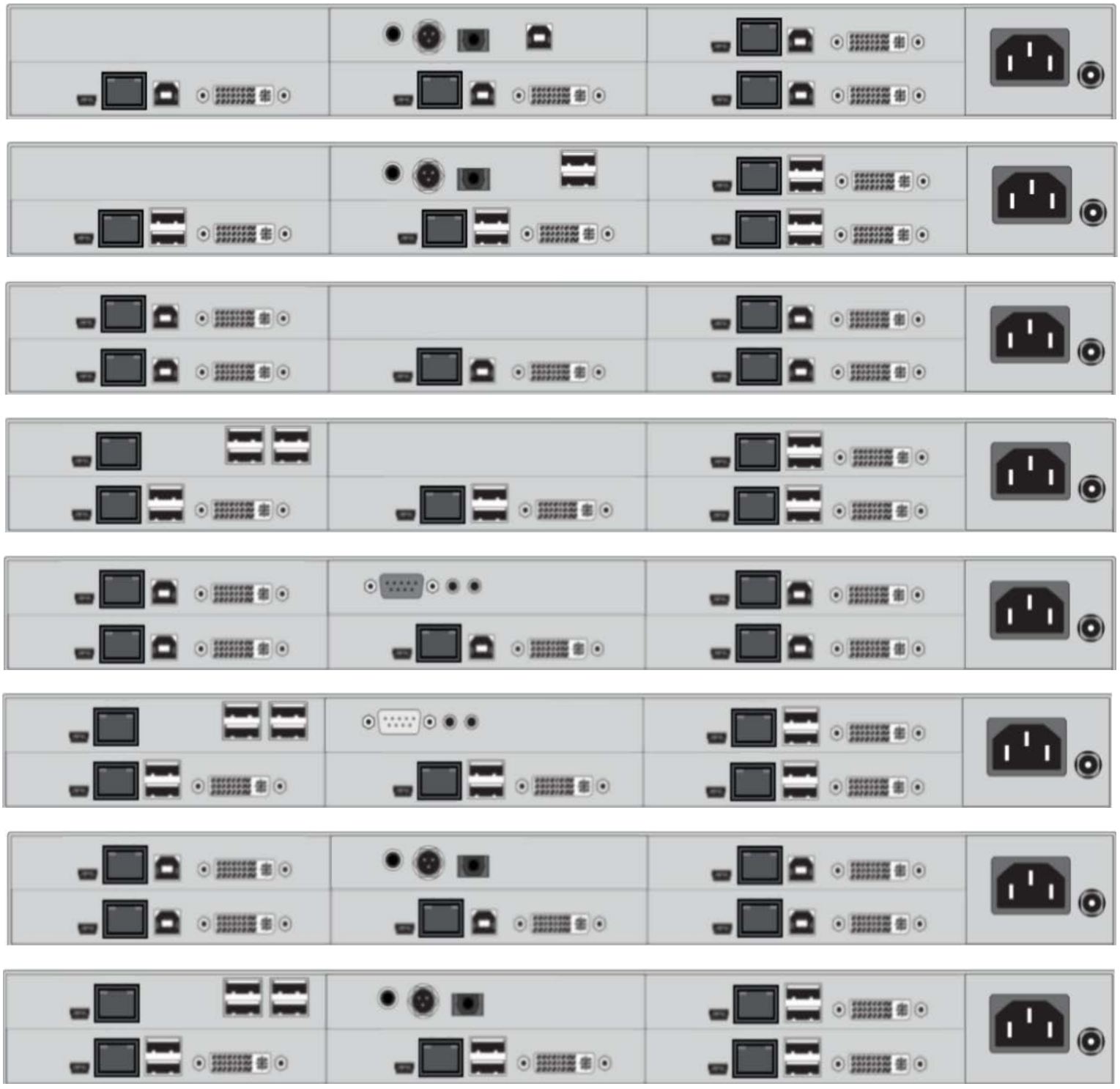








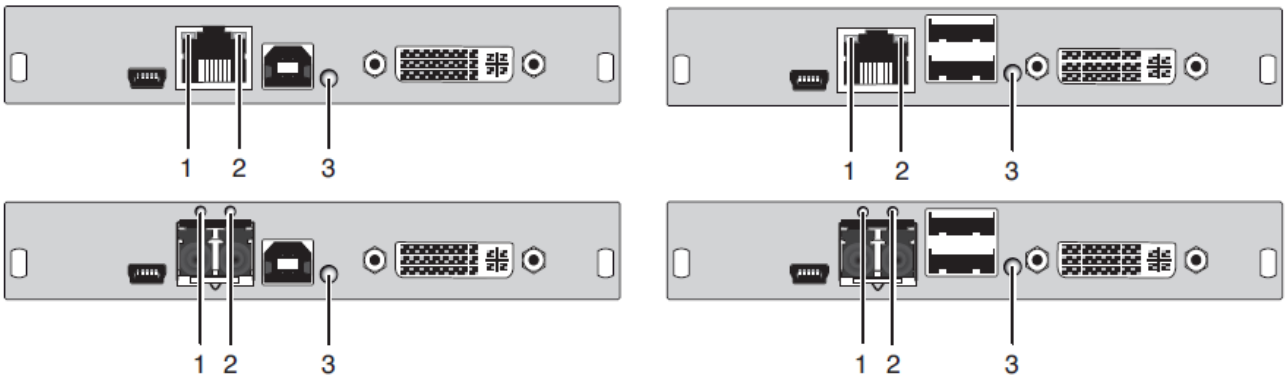




STATUS

Status LEDs

Status KVM Extender Module



The KVM Extender module is fitted with a multi color LED on both sides for overall status indication and with two further LEDs on the back side for indication of the connection status.

LED 1 and 2: Connection Status

Pos.	LED	Status	Description
1	**Failure LED** (green)	Off	Connection available
		On or Flashing	Connection failure (flashing for about 20 s following a connection failure)
2	**Status LED** (green)	Flashing	No connection via interconnect cable
		On	Connection available

LED 3: USB and Video Status

LED color		Description
Red		Device ready
Violet		Connection and USB signal (interconnect) available
Green		Connection and video signal available
Light Blue		Connection, USB and video signal available (operating status)

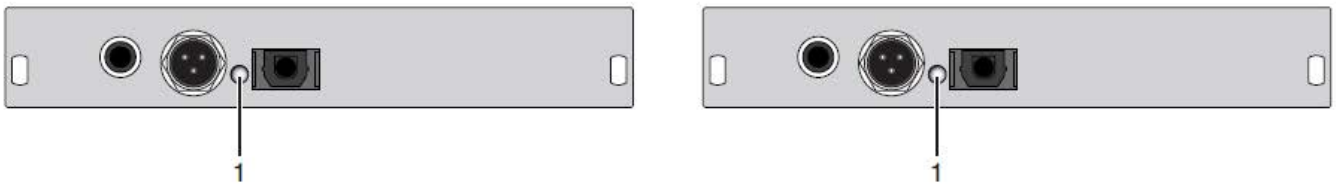
Status KVM Extender Module VGA / DVI-I

The KVM Extender module with VGA / DVI-I input is fitted with a multicolor LED on the front side of the Transmitter Unit for indication of connection status.

LED 1: Connection Status VGA / DVI-I

LED color		Description
Dark Red		No video signal; monitor not detected
Red		Video signal not supported; monitor not detected
Green		Video signal supported; monitor not detected
Blue		No video signal; monitor detected
Violet		Video signal not supported; monitor detected
Light Blue		Video signal supported; monitor detected

Status Upgrade Module Digital Audio

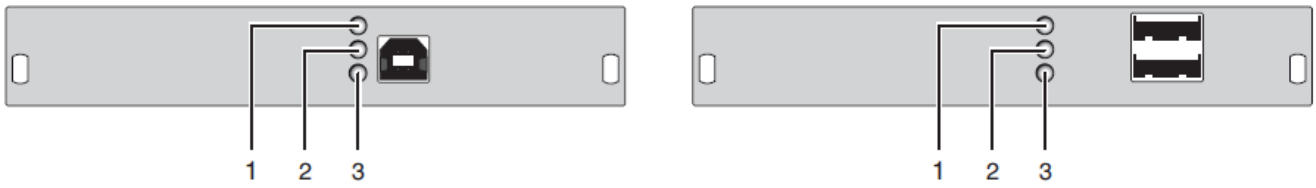


The upgrade module digital audio is fitted with a further multi-color LED on the rear side for indication of the connection status:

.

LED color		Description
Red		No signal
Light Blue		Trans. Unit: S/PDIF signal (RCA) available
Violet		Trans. Unit: AES/EBU signal (Mini-XLR) available
Blue		Trans. Unit: S/PDIF signal (TOSLINK) available
Green		Recv. Unit: Signal available

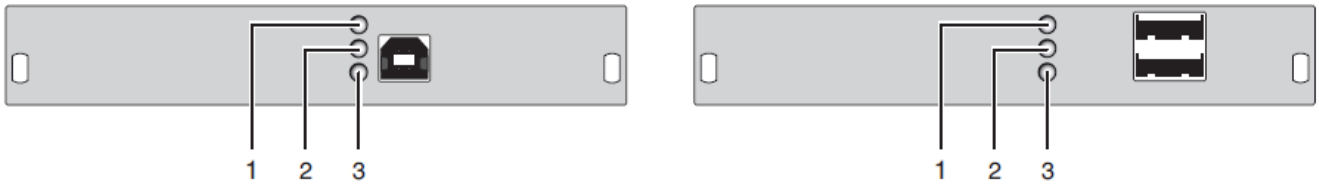
Status Upgrade Module USB-HID



The upgrade module USB-HID is fitted with three further LEDs on the rear side for indication of the connection status:

Pos.	LED	Status	Description
1, 2	**Device LED** (orange)	Off	No USB-HID device or not supported USB device connected
		Flashing fast	USB-HID device active
		On	USB-HID device ready or KVM Extender in command mode
3	**Status LED** (orange)	Off	• No power supply voltage • Trans. Unit: KVM Extender in command mode or no connection • Recv. Unit: Keyboard in command mode
		Flashing slowly	Recv. Unit: KVM Extender in command mode or no connection
		Flashing fast	Operating status

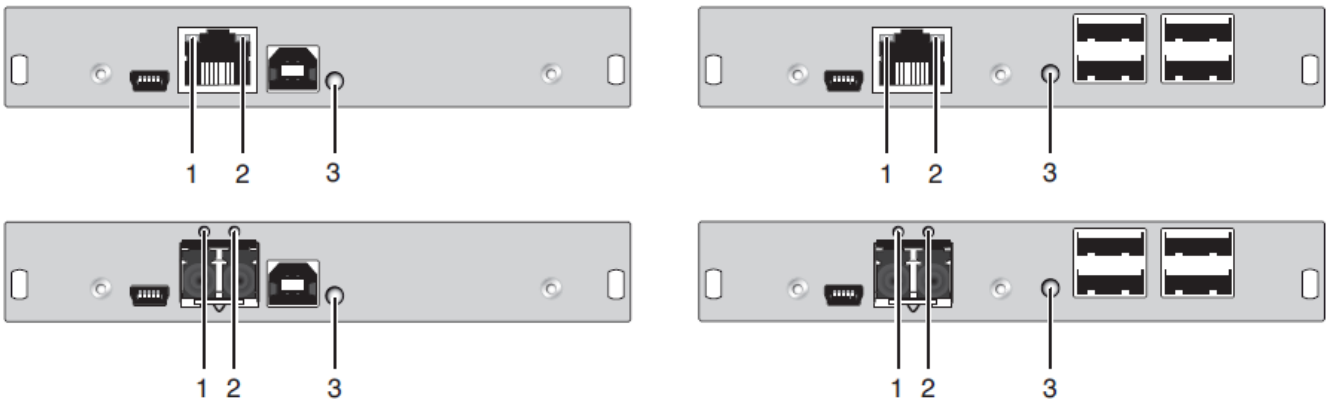
Status Upgrade module USB 2.0 embedded



The upgrade module USB 2.0 embedded is fitted with three further LEDs on the rear side for indication of the connection status:

Pos.	LED	Status	Description
1	**Status LED** (green)	Off	No USB 2.0 device connected
		Flashing slowly	USB 2.0 device connected
2	**Status LED** (green)	Off	No connection to source (computer, CPU) available
		Flashing slowly	• Connection to source (computer, CPU) available • No USB 2.0 device connected
		On	• Connection to source (computer, CPU) available • USB 2.0 device(s) connected
3	**Status LED** (green)	Off	No connection between Trans. and Recv. module
		On	Connection between Trans. and Recv. module available

Status Upgrade Module USB 2.0



The upgrade module USB 2.0 is fitted with a multi color LED on both sides for overall status indication and with two further LEDs on the back side for indication of the connection status.

Pos.	LED	Status	Description
1	**Failure LED** (green)	Off	Connection available
		On or Flashing	Connection failure (flashing for about 20 s following a connection failure)
2	**Status LED** (green)	Off	No connection via interconnect cable
		On	Connection available

LED 3: USB 2.0 Status

LED color		Description
Red		Device ready
Green		Only connection available, no USB 2.0 signal
Green / light blue flashing		Connection available, no USB 2.0 device connected
Light blue		Connection and USB 2.0 signal available (operating status)

SETUP

System Setup

First time users are recommended to setup the system with the Transmitter unit and the Receiver unit in the same room as a test setup. This will allow you to identify and solve any cabling problems, and experiment with your system more conveniently. Please verify that interconnect cables, interfaces, and handling of the devices comply with the requirements.

KVM Extender Setup

1. Switch off all devices.

Receiver Unit Installation

2. Connect your monitor(s), keyboard and mouse to the Receiver unit.

3. Connect the Receiver unit with the interconnect cable(s).

4. Connect the 5VDC power supply to the Receiver unit.

Transmitter Unit Installation

5. Connect the source (computer, CPU) to the supplied cables to the Transmitter unit. Please ensure the cables are not strained.

6. Connect the Transmitter unit to the interconnect cable(s).

7. Connect the 5VDC power supply to the Transmitter unit.

8. Power up the system.

To power up the system, the following sequence is recommended:

Monitor – Receiver unit – Transmitter unit – source.

Setup of Upgrade Modules

The modules can be hot plugged.

Upgrade Module Analog Audio / Serial:

1. Connect the audio source with the Transmitter unit (e.g. CPU audio output with Transmitter audio input, CPU audio input with Transmitter audio output).

2. Connect the audio output at the Receiver unit with headphones or suitable speakers.

3. Connect the audio input at the Receiver unit with a suitable microphone.

Upgrade Module Serial RS422:

1. Connect the CPU to the Transmitter unit by using the serial cable.

2. Connect the Receiver unit to the serial connector of the input device.

Upgrade Module Digital Audio:

1. Connect the digital audio source with Transmitter unit using the appropriate audio cable.

2. Connect the audio output of the Receiver unit with digital speakers or audio amplifiers.

If several active sources are connected, Mini-XLR input takes priority. The audio signal is available at all outputs.

Upgrade Module USB-HID:

1. Connect the CPU with the Transmitter unit (USB-HID 2).

2. Connect the USB-HID devices to the Receiver unit (Connect to USB-HID devices 2).

Upgrade Module PS/2:

1. Connect the CPU to a CPU unit via proved PS/2 cables for PS/2 devices.

2. Connect the PS/2.

Upgrade Module USB 2.0 Embedded:

1. Connect a CPU USB 2.0 port to the Transmitter unit (USB 2.0).

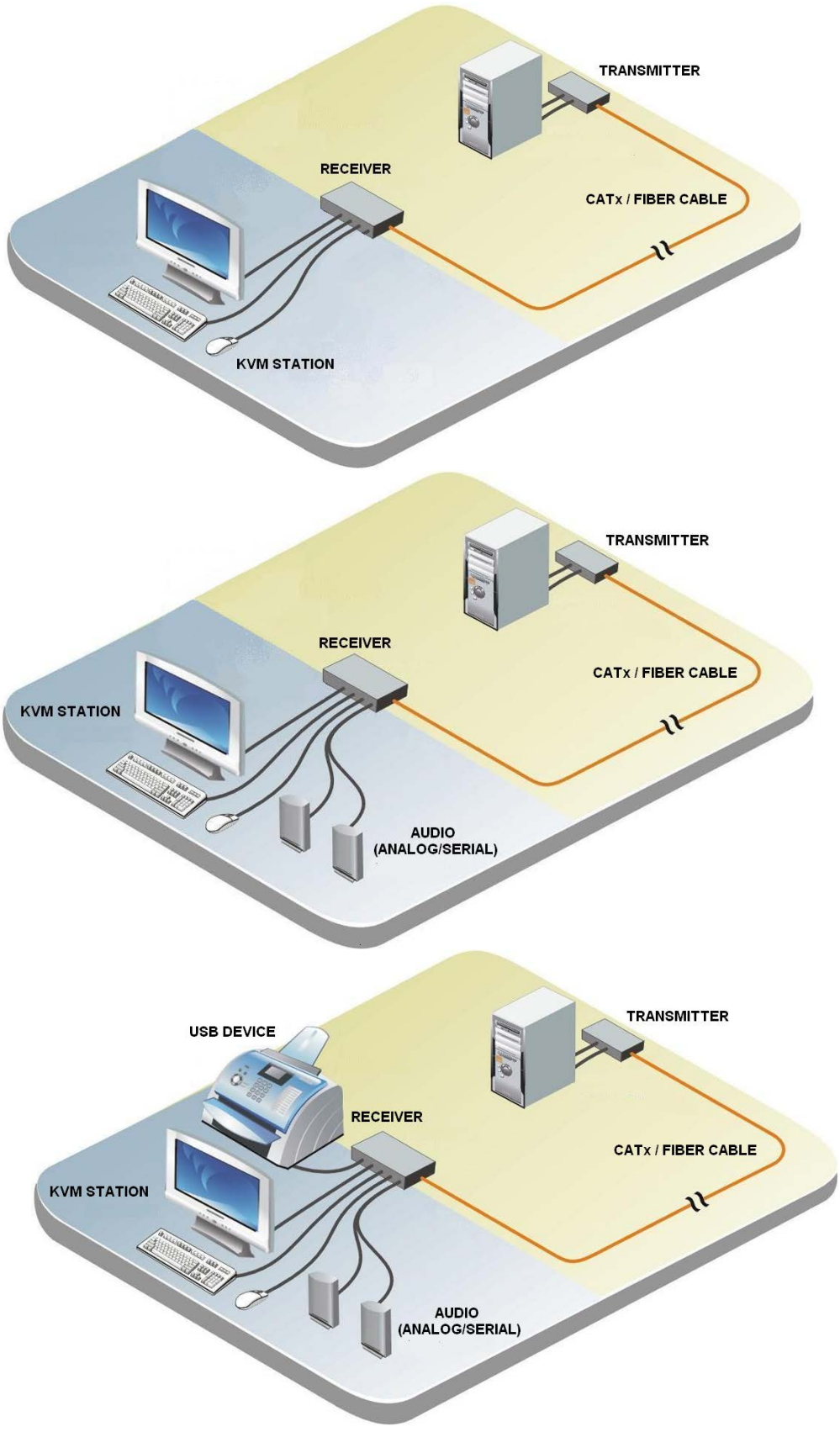
2. Connect the USB 2.0 devices to the Receiver unit (Connect to USB 2.0 devices).

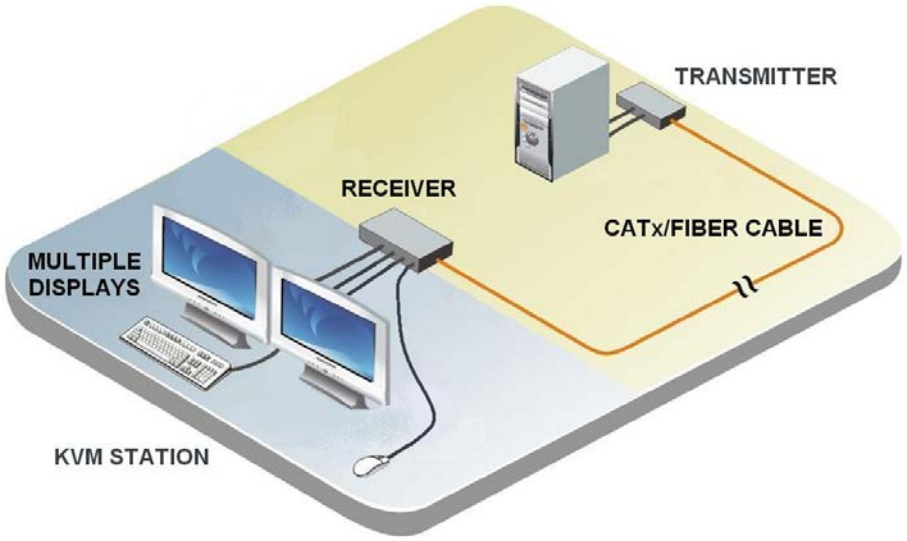
Upgrade Module USB 2.0:

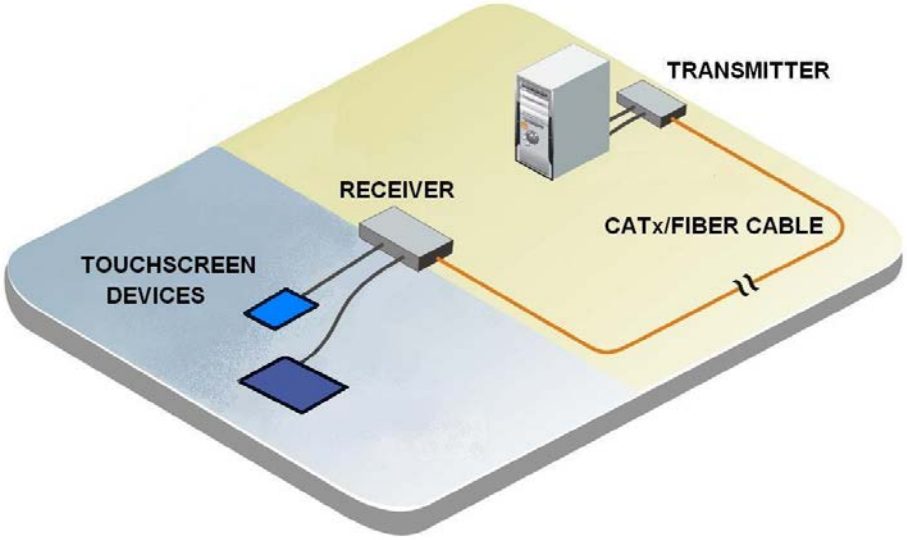
1. Connect a CPU USB 2.0 port to the Transmitter (USB 2.0).

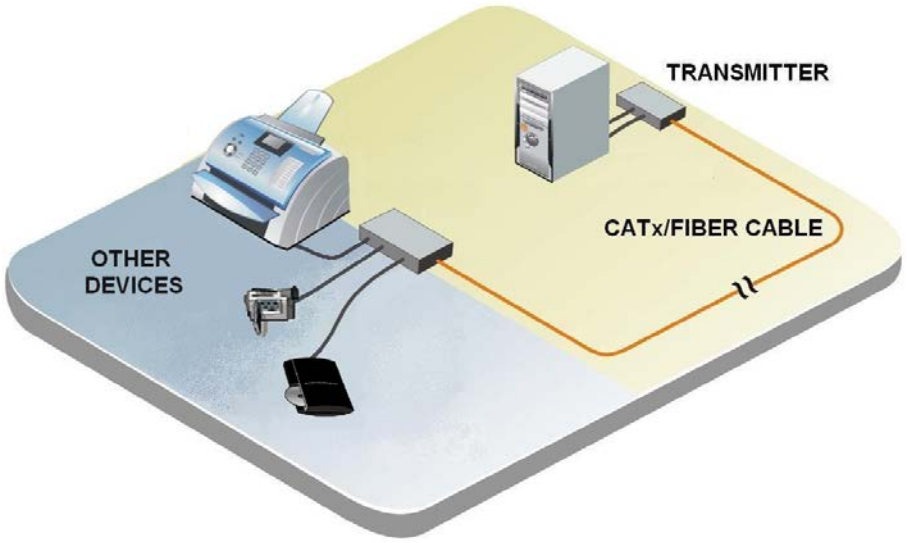
2. Connect the USB 2.0 devices to the Receiver unit (Connect to USB 2.0 devices).

Various Applications:




TRANSMITTER
RECEIVER
CATx/FIBER CABLE
MULTIPLE
DISPLAYS
KVM STATION


TRANSMITTER
RECEIVER
CATx/FIBER CABLE
TOUCHSCREEN
DEVICES


TRANSMITTER
CATx/FIBER CABLE
OTHER
DEVICES

CONFIGURATION

Configuration

Transmission Parameters

The device operates with a proprietary compression method. In default configuration, the device adapts dynamically to the monitor's resolution and image content. This configuration is suitable for almost all conditions and should only be modified if image quality is not fully satisfactory. In exceptional cases there can be dropped frames, loss of single pictures or color effects.

DDC Settings

By default, the device transmits the factory preset DDC information to the CPU. This information is suitable in most cases. The download of the DDC information of the console monitor can be performed during normal operation (See 'Operation' section below).

Uploading DDC Information

For special requirements, DDC information can be retrieved and uploaded as a binary file at both the Transmitter unit and the Receiver unit. Connect your computer with a USB mini cable to the service port of the Transmitter unit or Receiver unit. The data area of the unit is now accessible as a flash drive "Extender". Copy the binary file containing your specific DDC information to the flash drive of the Transmitter unit or Receiver unit. The current DDC information is replaced.

Retrieving DDC Information

Copy the file "DDC-EDID.bin" on the flash drive of the Transmitter unit to your computer. To open the binary file, you have to install suitable software, e.g. WinDDCwrite

Reset to Factory DDC Information

Delete the file called "DDC-EDID.bin" on the flash drive of the Transmitter unit.

Command Mode

During normal use, the console keyboard functions in the usual manner. However, for all KVM Extenders with USB-HID support, you can set the keyboard into a Command Mode by using a specific 'Hot Key' sequence. While in Command Mode, several functions are performed via keyboard commands. To exit Command Mode, press <Esc>. While in Command Mode, the LEDs **Shift** and **Scroll** on the console keyboard will flash. In Command Mode normal keyboard and mouse operation will cease. Only selected keyboard commands are available. If there is no keyboard command executed within 10 s after activating Command Mode, it will be automatically deactivated.

The following table lists the keyboard commands to enter:

Function	Keyboard Command
Enter Command Mode (default)	2x <Left Shift> / ('Hot Key')
Exit Command Mode	<Esc>
Change 'Hot Key' sequence	<current 'Hot Key'>, <c>, <new 'Hot Key' code>, <Enter> Until 2011-30-09: <Left Ctrl> + <Left Shift> + <c>, <'Hot Key' Code>, <Enter>

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

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

'Hot Key' Code	'Hot Key'
0	Freely selectable (from 2012-01-12)
2	2x <Scroll>
3	2x <Left Shift>
4	2x <Left Ctrl>
5	2x <Left Alt>
6	2x <Right Shift>
7	2x <Right Ctrl>
8	2x <Right Alt>

Set freely selectable 'Hot Key' (exemplary)

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

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

Reset 'Hot Key'

In order to set a 'Hot Key' back to default settings of the extender, press the key combination <Right Shift> + <Del> within 5 s after switching on the CTransmitter unit or plugging in a keyboard.

USB-HID Ghosting

This function allows storing the specific keyboard and mouse descriptors into the Transmitter unit. This permanent storage prevents the registration and deregistration process of keyboard and mouse on an operating system each time, if there is a shared use of a source (computer, CPU) by two or more consoles within a KVM matrix.

The following table lists the keyboard commands for the configuration of USB-HID Ghosting:

Function	Keyboard Command
Writing the device descriptions of the input devices connected to the Recv.Unit into the Trans. Unit. Activating the emulation in the Trans.Unit.	<'Hot Key'>, <h>, <w>, <Enter>
Activating the emulation of already stored device descriptions in the Trans.Unit.	<'Hot Key'>, <h>, <e>, <Enter>
Deactivating the emulation of active device descriptions in the Trans.Unit.The input devices connected to the Recv.Unit will be now passed transparently to the source (computer, CPU).	<'Hot Key', <h>, <d>, <Enter>
Deactivating the emulation of active device descriptions in the Trans.Unit.Deleting the descriptions out of the Trans.Unit. The input devices connected to the Recv.Unit will be now passed transparently to the source (computer, CPU).	<'Hot Key', <h>, <r>, <Enter>

Configuration File

The KVM Extender contains a configuration file (Config.txt) to set specific parameters and to read out device and video information. You can find it on the flash drive of the KVM Extender. The flash drive can be opened by a mini USB connection to a computer. The configuration file can be edited with all common text editors. The individual settings of the parameters are described in the respective chapters.

OPERATION

Operation

Download of DDC Information

By default, data from the internal DDC list is reported to the source (computer, CPU). If these settings do not lead to a satisfying result, the DDC information of the console monitor can be downloaded and stored internally. The devices have to be configured accordingly (see Chapter 5.2, Page 45).

On all KVM Extenders with USB-HID support, the user can load the DDC information of the console monitor via keyboard command under operating conditions.

1. Enter Command Mode with the 'Hot Key' (see Chapter 5.2, Page 45).

2. Press the key <a> to download the DDC information of the console monitor.

The screen goes black for a short time.

At the same time Command Mode is closed and the keyboard LEDs return to previous status. The video mode has been readjusted. Screen quality should be optimal. The CPU should now show the console monitor as the current screen, together with the available video resolutions. The DDC information of the console monitor was loaded once. Reloading is possible by repeating the operation.

Specifications

Interfaces

DVI-D Single Link

The video interface supports the DVI-D protocol. All signals that comply to DVI-D Single Link norm can be transmitted. This includes e.g. monitor resolutions such as 1920x1200@60Hz, Full HD (1080p) or 2K HD (up to 2048x1152). Data rate is limited to 165 MPixel/s.

DVI-I Single Link

The video interface supports the DVI-I protocol. All analog (VGA) or digital (DVI) signals that comply to DVI-I Single Link norm can be transmitted. This includes e.g. monitor resolutions such as 1920x1200@60Hz, Full HD (1080p) or 2K HD (up to 2048x1152). Data rate is limited to 165 MPixel/s.

USB-HID

Our devices with USB-HID interface support a maximum of two devices with USB-HID protocol. Each USB-HID port provides a maximum current of 100 mA.

Keyboard

Keyboard

The device is compatible with most USB keyboards. Certain keyboards with additional functions may require custom firmware to operate. Keyboards with an integral USB Hub (Mac keyboards e.g.) are also supported.

Mouse
The device is compatible with most 2-button, 3-button and scroll mice.

Other USB-HID devices

The proprietary USB emulation also supports certain other USB-HID devices, such as specific touch screens, graphic tablets, barcode scanners or special keyboards. Support cannot be guaranteed, however, for every USB-HID device.

Only two USB-HID devices are supported concurrently, such as keyboard and mouse or keyboard and touch screen. A hub is allowed, but it does not increase the number of HID devices allowed. To support other USB 'non-HID' devices, such as scanners, web cams or memory devices, choose our devices with transparent USB support.

PS/2

Our devices with PS/2 interface support the use of a PS/2 keyboard and mouse.

Keyboard

Compatible with most PS/2 keyboards, even with various special keyboards. Certain keyboards with additional functions can be run with special firmware.

Mouse

The device is compatible with most 2-button, 3-button and scroll mice.

USB 2.0 (transparent)

KVM Extender models with transparent USB 2.0 support allow the connection of **all** types of USB 2.0 devices (without restriction). USB 2.0 data transfer is supported, depending on the upgrade module, with USB high speed (max. 480 Mbit/s) or USB Full Speed (max. 12 Mbits).

Each USB 2.0 port provides a maximum current of 500 mA (high power).

RJ45 (Interconnect)

The communication of the CATx devices requires a 1000BASE-T connection. Connector wiring must comply with EIA/TIA-568-B (1000BASE-T), with RJ45 connectors at both ends. All four cable wire pairs are used.

Fiber SFP Type LC (Interconnect)

The communication of fiber devices is performed via Gigabit SFPs that have to be connected to suitable fibers fitted with connectors type LC. The correct function of the device can only be guaranteed with SFPs provided by the manufacturer. SFP modules can be damaged by electrostatic discharge (ESD).

☐Please consider ESD handling specifications.

Serial Interface

The serial interface option supports a full-duplex transmission with a real hardware handshake up to a Baud rate of 19,200 Baud. The CON Unit is cabled as DTE (Data Terminal Equipment, like CPU output) and can be connected directly to DCE devices (Data Communication Equipment).

☐A touch screen can be connected directly to the Receiver unit.

☐To connect to a serial printer (or any other DTE instead of DCE device), you need a null modem cable (crossed cable) between CON Unit and the device.

Operation of several devices:

The serial interface transmits 6 signals (3 for each direction). Normally, 4 of the 6 signals are handshake signals (in addition to RxD and TxD). The following configurations, however, can be realized using special adapter splitting cables:

☐Three single 2-wire transmissions

☐Two transmissions with a handshake signal

☐A serial mouse and a single 2-wire transmission

In this case, choose X-ON / X-OFF software handshake for traffic control at printer and PC.

Connection Format	DTE (Data Terminal Equipment)
Speed	Up to 19,200 Baud
Data Format	Format independent
Data Transmission	• RxD (Receive Data) • TxD (Transmit Data)
Traffic Control	The following signals are transmitted (hardware handshake): • RTS (Request To Send) • CTS (Clear To Send) • DTR (Data Terminal Ready) • DSR (Data Set Ready)

Analog Audio Interface

The analog audio option supports a bidirectional stereo audio transmission, in nearly CD quality.
The audio interface is a 'line level' interface and it is designed to transmit the signals of a sound card (or another 'line level' device) as well as to allow the connection of active speakers to the Receiver unit. Stereo audio can be transmitted bidirectionally at the same time.

Connection of a microphone:

Connect the microphone to the 'audio' input of the Receiver unit. There are two ways to establish this connection:

☐The output of the CPU Unit is connected with the microphone input of the sound card (red). Adjust the sound card to provide an additional amplification (20 dB).

☐The output of the CPU Unit is connected to the audio input of the sound card (blue). Choose this connection if the microphone has its own pre-amplifier. The CON Unit can do the pre-amplification of the microphone as well. Open the CON Unit, locate the 'MIC' jumper on the audio board and close the pins.

Specifications Analog Audio

Transmission Format	Digitized virtually CD quality audio (16 bit, 38.4 KHz)
Signal Level	Line-Level (5 Volt Pk-Pk maximum)
Input Impedance	47 KOhm
Connections Trans. Unit	2x 3.5 mm stereo jack plug (audio in & audio out)
Connections Recv. Unit	2x 3.5 mm stereo jack plug (audio in & audio out)

Specifications Analog Audio USB 2.0

Transmission Format	Digitized virtually CD quality audio, 16 bit (8, 11.025, 16, 22.05, 32, 44.1, 48 KHz)
Signal Level	Line-Level (5 Volt Pk-Pk maximum)
Input Impedance	20 KOhm
Connections Trans. Unit	1x USB type B female connector
Connections Recv. Unit	2x 3.5 mm stereo jack plug (audio in & audio out)

Serial Interface RS422

KVM Extenders with a serial interface RS422 (D-Sub 9) support a differential full duplex transmission up to a Baud rate of 115,200 Baud. The Transmitter unit is designed as controlling device and so can be for example connected directly to video or media servers. The Receiver unit is designed as a controlled device and so can be connected directly to remote controllers.`

Connection Format	Sony Standard
Speed	Up to 115,200 Baud
Data Format	Format independent
Data Transmission	• Rx + (Receive Data) • Rx – (Receive Data) • Tx + (Transmit Data) • Tx – (Transmit Data)

Digital Audio Interface

The digital audio option supports the unidirectional transmission of digital audio data. Up to three sources can be connected to the Transmitter unit. The active source is transmitted. If several sources are active, the XLR signal takes priority, otherwise the first active signal.

The three connectors on the receiver unit all concurrently provide digital audio. KVM Extender with digital audio option includes an in-built sample rate converter that allows to provide predefined sample frequencies at the output of the Receiver unit. The user can set directly the following parameters by using a configuration file:

☐Activate or deactivate sample rate converter in the Config.txt file on the flash drive of the KVM Extender.

☐If the sample rate converter is activated, the following characteristics are valid: 140 dB dynamic range and -120 dB total harmonic distortion + noise.

☐Set sample frequency of the sample rate converter by writing the parameter in a new line. The following sample frequencies are available:

– 32.0 kHz (write **SRC32000** in Config.txt file of the Transmitter unit)

– 44.1 kHz (write **SRC44100** in Config.txt file of the Transmitter unit)

– 48.0 kHz (write **SRC48000** in Config.txt file of the Transmitter unit)

– 96.0 kHz (write **SRC96000** in Config.txt file of the Transmitter unite)

Compatibility	AES/EBU, S/PDIF, EIAJ CP1201, IEC 60958
Standards	Dolby Digital, DTS, PCM
Bit Depth	24 bit
Sample Rate	32 to 96 kHz
Trans. Unit (Inputs)	• Mini-XLR (AES/EBU; symmetrical, lockable) • Coaxial (S/PDIF; RCA, Cinch) • Optical (S/PDIF; TOSLINK)
Recv. Unit (Outputs)	• Mini-XLR (AES/EBU; symmetrical, lockable) • Coaxial (S/PDIF; RCA, Cinch) • Optical (S/PDIF; TOSLINK)

Interconnect Cable

CATx

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

☐Avoid routing CATx cables along power cables.

☐If the site has 3-phase AC power, try to ensure that Transmitter unit and Transmitter unit are on the same phase. Tov maintain regulatory EMC compliance, correctly installed shielded CATx cable must be used throughout the interconnection link. To maintain regulatory EMC compliance, all CATx cables need to carry ferrites on both cable ends close to the device.

Type of Interconnect Cable

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

Cat X Solid-Core Cable AWG24	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG24. Connection according to EIA/TIA-568-B (1000BASE-T).
Cat X Patch Cable AWG26/8	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG26/8. Connection according to EIA/TIA-568-B (1000BASE-T).

The use of flexible cables (patch cables) type AWG26/8 are possible, however the maximum possible extension distance is halved.

Cat X Solid-Core Cable AWG24	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG24. Connection according to EIA/TIA-568-B (1000BASE-T).
Cat X Patch Cable AWG26/8	S/UTP (Cat 5e) cable according to EIA/TIA-568-B. Four pairs of wires AWG26/8. Connection according to EIA/TIA-568-B (1000BASE-T).

The use of flexible cables (patch cables) type AWG26/8 are possible, however the maximum possible extension distance is halved.

Maximum Acceptable Cable Length

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

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

Type of Interconnect Cable (Cable notations according to VDE)

Type of cable	Specifications
Single-mode 9µm	• Two fibers 9µm • I-V(ZN)H 2E9 (in-house patch cable) • I-V(ZN)HH 2E9 (in-house breakout cable) • I/AD(ZN)H 4E9 (in-house or outdoor breakout cable, resistant) • A/DQ(ZN)B2Y 4G9 (outdoor cable, with protection against rodents)
Multi-mode 50µm	• Two fibers 50µm • I-V(ZN)H 2G50 (in-house patch cable) • I/AD(ZN)H 4G50 (in-house or outdoor breakout cable, resistant)
Multi-mode 62.5µm	• Two fibers 62.5µm • I-V(ZN)HH 2G62,5 (in-house breakout cable) • A/DQ(ZN)B2Y 4G62,5 (outdoor cable, with protection against rodents)

Maximum Acceptable Cable Length

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

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

Connector	LC Connector

Supported Peripherals

USB-HID Devices

The KVM Extender will support most USB-HID devices, including the vast majority of keyboards and mice currently on the market. Many other kinds of HID devices such as bar-code scanners and touch screens may also be compatible.

It is not possible to guarantee support for all available USB-HID devices. In certain cases, custom firmware may be required. USB-HID (and other) devices that are not supported as standard will normally operate with our devices featuring transparent USB support. Please note that concurrent operation of more than two USB-HID devices is not possible even if you use a USB hub.

USB 2.0 Devices
KVM Extender models featuring a transparent USB 2.0 connection use Extreme USB Technology from Icron Technologies. This technology supports **all** types of USB 2.0 devices; however the manufacturer cannot guarantee compatibility with every device on the market. Please contact your dealer if any issues are found.

SERVICE INFORMATION

Service Information

Maintenance and Repair

This Unit does not contain any internal user-serviceable parts. In the event a Unit needs repair or maintenance, you must first obtain a Return Authorization (RA) number from Rose Electronics or an authorized repair center. This Return Authorization number must appear on the outside of the shipping container. See Limited Warranty for more information.

When returning a Unit, it should be double-packed in the original container or equivalent, insured and shipped to:

Rose Electronics
Attn: RA_____
10707 Stancliff Road
Houston, Texas 77099 USA

Technical Support

If you are experiencing problems, or need assistance in setting up, configuring or operating your product, consult the appropriate sections of this manual. If, however, you require additional information or assistance, please contact the Rose Electronics Technical Support Department at:

Phone: (281) 933-7673
E-Mail: TechSupport@rose.com
Web: www.rose.com

Technical Support hours are from: 8:00 am to 6:00 pm CST (USA), Monday through Friday.

Please report any malfunctions in the operation of this Unit or any discrepancies in this manual to the Rose Electronics Technical Support Department.

Product Safety

The Orion Quad has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the Orion Quad should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the Unit, read and follow these safety instructions.

Follow all instructions and warnings marked on this Unit.
Except where explained in this manual, do not attempt to service this Unit yourself.
Do not use this Unit near water.
Assure that the placement of this Unit is on a stable surface or rack mounted.
Provide proper ventilation and air circulation.
Keep power cord and connection cables clear of obstructions that might cause damage to them.
Use only power cords and connection cables designed for this Unit.
Use only a grounded (three-wire) electrical outlet.
Keep objects that might damage this Unit and liquids that may spill, clear from this Unit. Liquids and foreign objects might come in contact with voltage points that could create a risk of fire or electrical shock.
Operate this Unit only when the cover is in place.
Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from its electrical outlet before cleaning.
Unplug this Unit from the electrical outlet and refer servicing to a qualified service center if any of the following conditions occur:

- The power cord or connection cables are damaged or frayed.
- The Unit has been exposed to any liquids.
- The Unit does not operate normally when all operating instructions have been followed.
- The Unit has been dropped or the case has been damaged.
- The Unit exhibits a distinct change in performance, indicating a need for service.

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