Orion XTender

Modular CATx/Fiber Extender • 2/4/6/21-Card Chassis

ROSE.COM

Installation and Operation Manual

ROSE ELECTRONICS

10707 Stancliff Road
Houston, Texas 77099

Phone: (281) 933-7673
techsupport@rose.com

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.

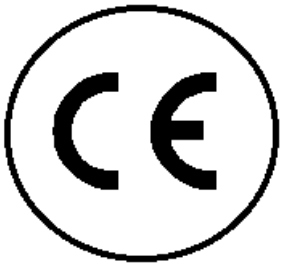
IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, YOUR SOLE REMEDY SHALL BE REPLACEMENT OR REPAIR AS PROVIDED ABOVE. IN NO EVENT WILL ROSE ELECTRONICS BE LIABLE TO YOU FOR ANY DAMAGES INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR THE INABILITY TO USE SUCH PRODUCT, EVEN IF ROSE ELECTRONICS OR AN AUTHORIZED DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

Copyright © Rose Electronics 2017. All rights reserved.
No part of this manual may be reproduced, stored in a retrieval system, or transcribed in any form or any means, electronic or mechanical, including photocopying and recording, without the prior written permission of Rose Electronics.

This is to certify that, when installed and used according to the instructions in this manual, together with the specified cables, the Orion XTender units listed in this manual are shielded against the generation of radio interferences in accordance with the application of Council Directive 2014/30/EU and 2014/35/EU as well as these standards:

EN 55022: 2010/AC:2011 (Class A)
EN 55024:2010 + A1:2015
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 61000-6-2:2005



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

The product safety of the devices is proven by their compliance with the following standards:

IEC 60950-1/A1:2010
EN 60950-1/A12:2011/A1:2010/A11:2009
UL 60950-1-2007
CAN/CSA-C22.2 60950-1-07

The manufacturer complies with the EU Directive 2012/19/EU on the prevention of waste electrical and electronic equipment (WEEE). The device labels carry a respective marking.

These devices comply with Directive 2011/65/EU of the European Parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2, RoHS II). The device labels carry a respective marking.

TABLE OF CONTENTS

Figures Page

Tables

Appendices Page

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 and HDMI extenders support high resolution video up to 1920 x 1200 @ 60 Hz, Full HD (1080p) and 2K HD (2048 x 1152). USB-HID signals for mice, keyboards or other USB pointing devices are also extended. A multi-stage compression algorithm maximizes data flow and provides a consistently clear image 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 transmission. Extension distances up to 460 ft (140 m) with CATx cables or 32808 ft (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 32,808 ft (10 km) over fiber cable, and up to 460 ft (140 m) over CATx cable
- Supports video resolutions up to 1920 x1200 @ 60Hz, Full HD (1080p) and 2K HD (2048x1152)
- Supports USB 1.1 and USB 2.0 peripherals.
- Multi-head video models available
- Four 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 supplies included
- Supports all operating systems
- Compatible with Orion X KVM Switches
- Available options include: 2 additional USB-HID connections, transparent USB 2.0, digital audio interface, VGA input, redundant power supply (load sharing), and serial interface (RS232) with analog audio

Compatibility

Computers	PCs (all operating systems)
Displays	DVI-D or HDMI 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

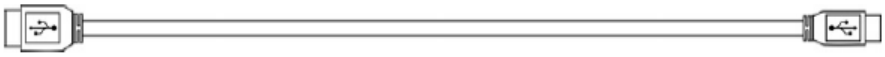
Package contents

- Orion XTender pair (Transmitter unit and Receiver unit)
- 1x 5VDC international power supply unit per unit, 2x for units with redundancy option
- 1x country specific power cord per unit, 2x for units with redundancy option
- Cables depending on options purchased, as described below; number of cables provided for each type match number of ports present on the units
- User manual

- *DVI Transmitters only:* 5.9 ft (1.8 m) DVI-D male to male video cable

- *HDMI Transmitters only:* 5.9 ft (1.8 m) HDMI male to male video cable

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



- *DVI Transmitters with VGA option only:* 5.9 ft (1.8 m) VGA cable VGA male to DVI-I male (replaces standard DVI-D cable)

- DVI and HDMI Transmitters with Analog Audio / Serial option only: 5.9 ft (1.8 m) Serial cable, D-Sub 9 male connector)

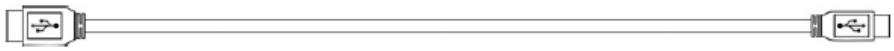
- DVI and HDMI Transmitters with Analog Audio / Serial option only: 5.25 ft (1.6 m) Stereo jack cable, 3.5 mm male connector

- DVI and HDMI Transmitters with RS422 Serial upgrade module only: 5.9 ft (1.8 m) Serial cable, D-Sub 9 male connector)

- DVI and HDMI Transmitters with Digital Audio upgrade module only: 8.2 ft (2.5 m) RCA cable, Cinch male connector

- DVI and HDMI Transmitters with digital Audio upgrade module only: 5.9 ft (1.8 m) TOSLINK cable, F05 male connector

- DVI and HDMI Transmitters with USB-HID upgrade module only: 5.9 ft (1.8 m) USB cable, Type A to Type B



- DVI and HDMI Transmitters with PS/2 upgrade module only: 2x 5.9 ft (1.8 m) PS/2 cable, 6-pin connector

- ▪ DVI and HDMI Transmitters with embedded USB 2.0 only: 5.9 ft (1.8 m) USB cable, Type A to Type B

- ▪ DVI and HDMI Transmitters with USB 2.0 upgrade module only: 5.9 ft (1.8 m) USB cable, Type A to Type B

If any of the above is missing, please contact Rose Electronics.

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

System Overview

The Orion XTender consists of at least one Transmitter unit and one Receiver unit. The Transmitter unit is installed at the local site, and the Receiver unit is installed at the remote site. At the local site, the Transmitter module is connected directly to the source (computer, CPU) using the supplied cables. The Receiver unit is connected to the console peripherals (monitor, keyboard and mouse) at the remote site. The Transmitter and Receiver units communicate through the interconnect cables (CATx or Fiber).

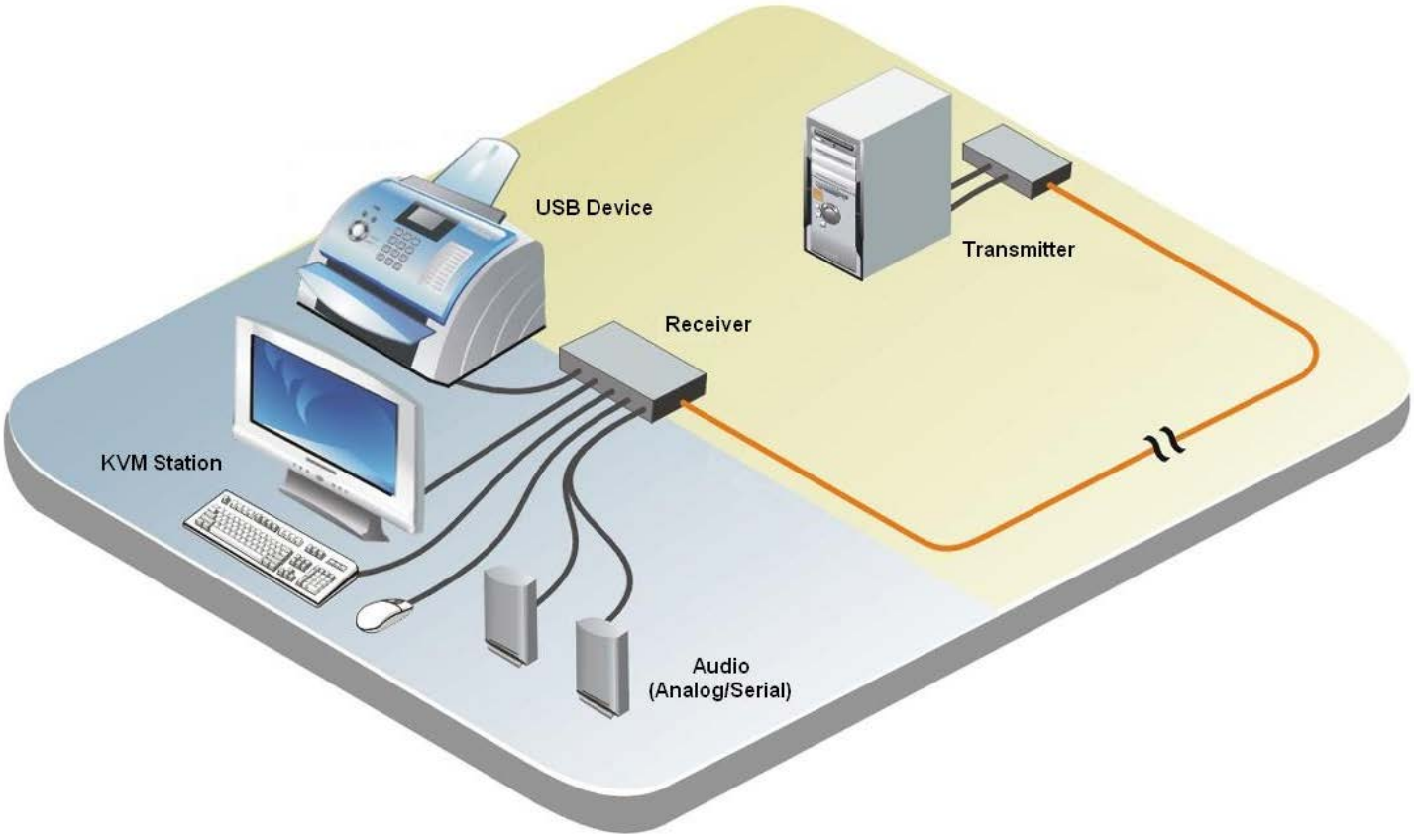


Figure 1.System Overview

Orion XTender Models

The Orion Xtender is a customizable product suitable for a wide variety of extension needs. Several types of cards are available which can be fitted in one of eight chassis types. The cards can be mixed and matched in a desired chassis to get the ideal combination for the user's requirements.

This section describes the available chassis types and cards that make up an Orion Xtender unit. Finally, some complete units are shown as well.

Orion Xtender Chassis Types

The Orion Xtender comes in a 2, 4, 6 or 21 card chassis. Each of these are also available with built-in redundant power supplies. The 21-card chassis features hot-swappable slots for the cards.

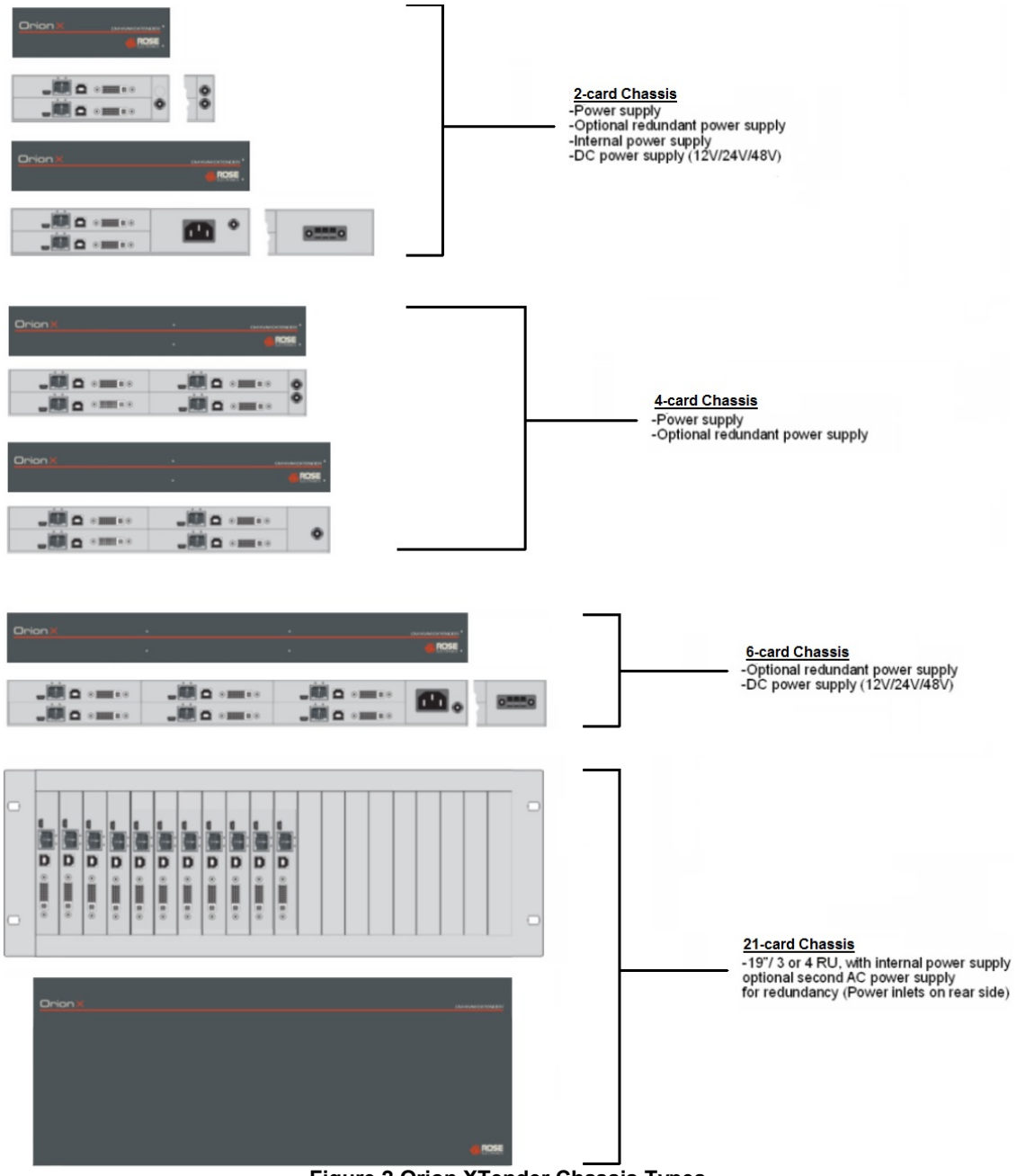


Figure 2.Orion XTender Chassis Types

Orion XTender Card Types

Orion XTender cards are available with DVI or HDMI video input and output.

DVI Cards

DVI cards come with a variety of options: 1 single-link DVI-D, 1 dual-link DVI-D, 2 single-link DVI-D, or 1 DVI-I (VGA option). All these cards are available with either CATx or single-mode fiber interconnects.

1 x Single-Link DVI-D Cards

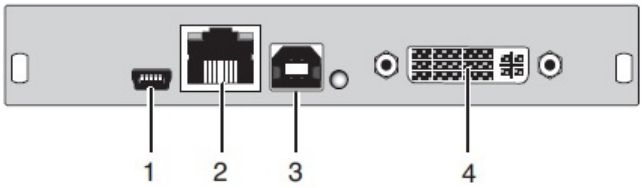
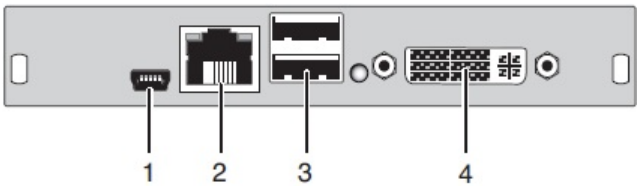
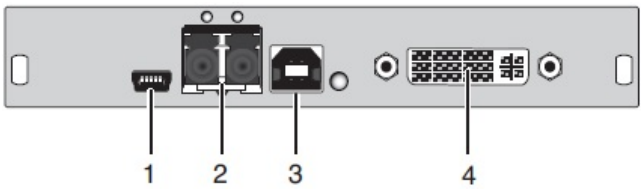
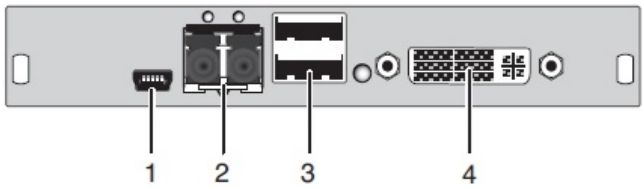
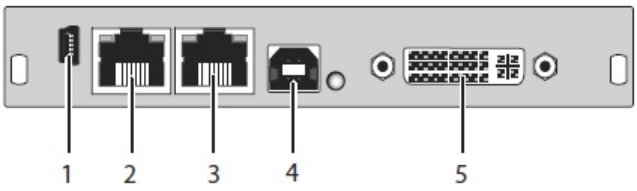
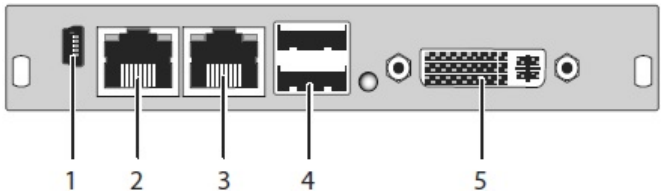
Transmitters	***Receivers***
I. **With USB HID, CATx**	
Part #: OEC-SLDTXUD1D/IRK	Part #: OEC-SRDTXUD1D/IRK
	
1. Service Port 2. CATx Port 3. To CPU: USB-HID 4. To CPU: DVI-D	1. Service port 2. CATx port 3. To USB-HID devices 4. To DVI monitor
II. **With USB HID, Fiber**	
Part #: OEC-SLDFSUD1D/IRK	Part #: OEC-SRDFSUD1D/IRK
	
1. Service Port 2. Fiber Port 3. To CPU: USB-HID 4. To CPU: DVI-D	1. Service port 2. Fiber port 3. To USB-HID devices 4. To DVI monitor
III. **With USB HID, Redundant Link, CATx**	
Part #: OEC-SLD2CUD1D/IRK	Part #: OEC-SRD2CUD1D/IRK
	
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 CPU: USB-HID 5. To DVI monitor

Figure 3.DVI Cards: 1 x Single-Link DVI-D Cards Part 1

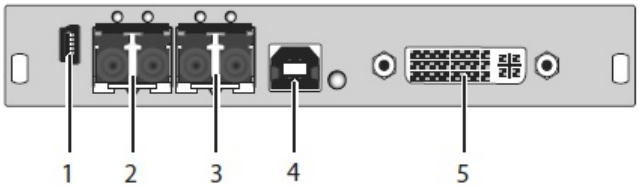
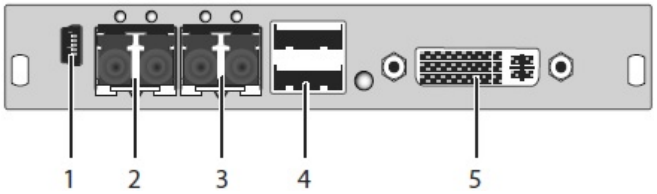
Transmitters	Receivers
IV. **With USB HID, Redundant Link, Fiber**	
Part #: OEC-SLD2SUD1D/IRK	Part #: OEC-SRD2SUD1D/IRK
	
1. Service port 2. Fiber port 1 3. Fiber port 2 4. To CPU: USB-HID 5. To CPU: DVI-D	1. Service port 2. Fiber port 1 3. Fiber port 2 4. To CPU: USB-HID 5. To DVI monitor

Figure 4. DVI Cards: 1 x Single-Link DVI-D Cards Part 2

1 x Dual-Link DVI-D Cards

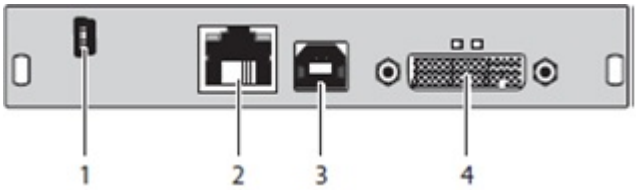
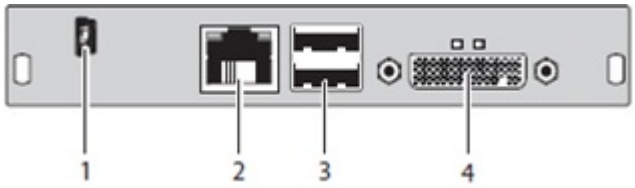
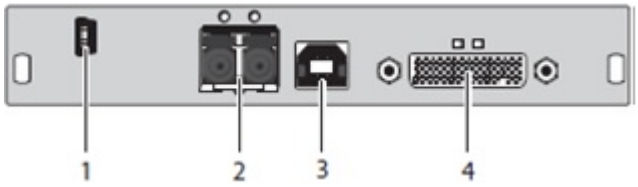
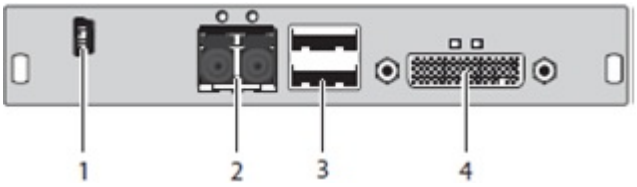
Transmitters	Receivers
I. **With USB HID, CATx**	
Part #: OEC-SLDTXUDL1/IRK	Part #: OEC-SRDTXUDL1/IRK
	
1. Service Port 2. CATx Port 3. To CPU: USB-HID 4. To CPU: DMS-59 to Dual-Link DVI	1. Service port 2. CATx port 3. To USB-HID devices 4. DMS-59 to Dual-Link DVI monitor
II. **With USB HID, Fiber**	
Part #: OEC-SLDFSUDL1/IRK	Part #: OEC-SRDFSUDL1/IRK
	
1. Service Port 2. Fiber Port 3. To CPU: USB-HID 4. To CPU: DMS-59 to Dual-Link DVI	1. Service port 2. Fiber port 3. To USB-HID devices 4. DMS-59 to Dual-Link DVI monitor

Figure 5. DVI Cards: 1 x Dual-Link DVI-D Cards

2 x Single-Link DVI-D Cards

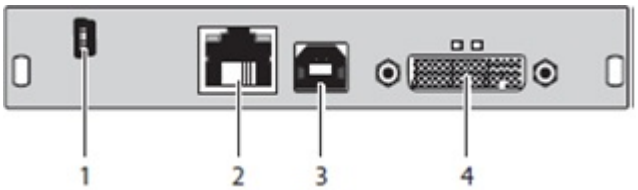
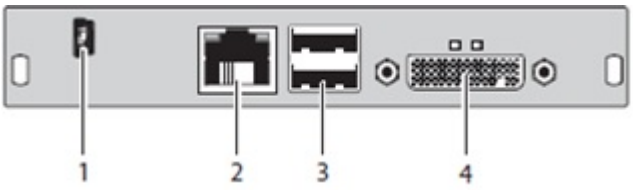
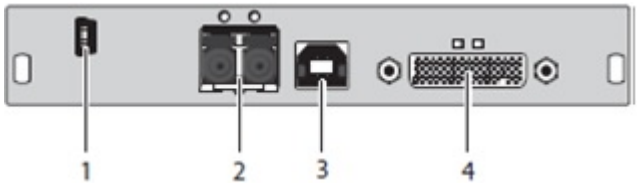
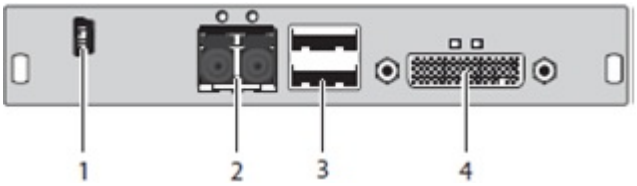
Transmitters	Receivers
I. **With USB HID, CATx**	
Part #: OEC-SLDTXUSL1/IRK	Part #: OEC-SRDTXUSL1/IRK
	
1. Service Port 2. CATx Port 3. To CPU: USB-HID 4. To CPU: DMS-59 to Dual-Head DVI	1. Service port 2. CATx port 3. To USB-HID devices 4. DMS-59 to Dual-Head DVI to 2 monitors
II. **With USB HID, Fiber**	
Part #: OEC-SLDFSUSL1/IRK	Part #: OEC-SRDFSUSL1/IRK
	
1. Service Port 2. Fiber Port 3. To CPU: USB-HID 4. To CPU: DMS-59 to Dual-Head DVI	1. Service port 2. Fiber port 3. To USB-HID devices 4. DMS-59 to Dual-Head DVI to 2 monitors

Figure 6. DVI Cards: 2 x Single-Link DVI-D Cards

1 x DVI-I (VGA) Cards

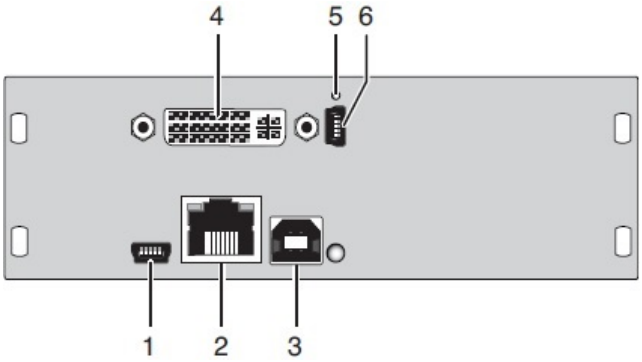
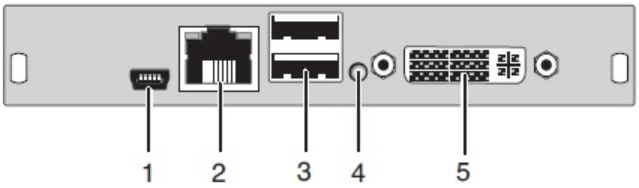
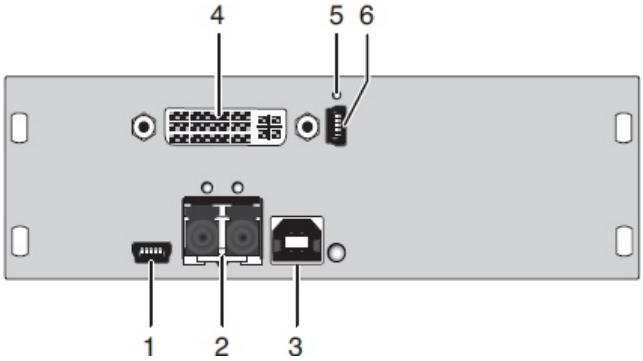
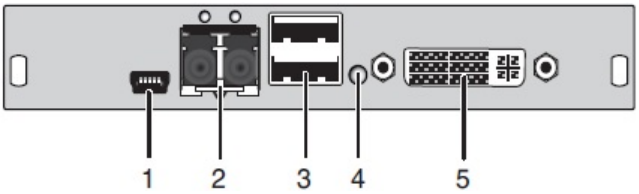
Transmitters	Receivers
I. **With USB HID, CATx**	
Part #: OEC-SLDTXUS1V/IRK	Part #: OEC-SRDTXUS1V/IRK
	
1. Service Port (KVM) 2. CATx Port 3. To CPU: USB-HID 4. To CPU: DVI-I (VGA / DVI) 5. IR remote control receiver 6. Service port (DVI-I)	1. Service port 2. CATx port 3. To USB-HID devices 4. IR remote control receiver 5. To DVI monitor
II. **With USB HID, Fiber**	
Part #: OEC-SLD2CUD1D/IRK	Part #: OEC-SRD2SUD1D/IRK
	
1. Service Port (KVM) 2. Fiber Port 3. To CPU: USB-HID 4. To CPU: DVI-I (VGA / DVI) 5. IR remote control receiver 6. Service port (DVI-I)	1. Service port 2. CATx port 3. To USB-HID devices 4. IR remote control receiver 5. To DVI monitor

Figure 7. DVI Cards: 1 x DVI-I (VGA) Cards

HDMI Cards

DVI cards come in a variety of options: video-only, video with USB HID, with local video out and with a redundant link. In addition, all these options are available with either CATx or single-mode fiber interconnects.

1 x HDMI Video-Only Cards

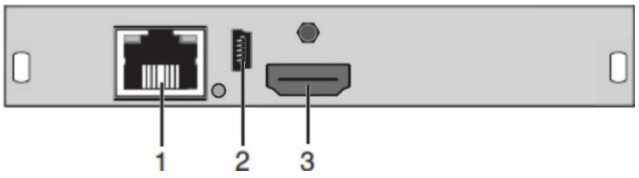
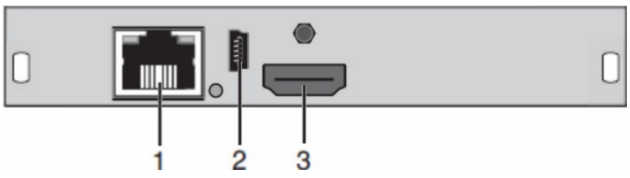
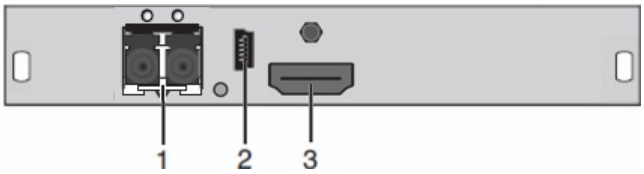
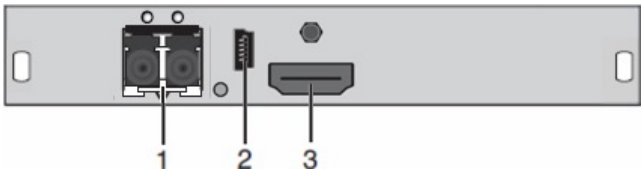
Transmitters	Receivers
I. **Video Only, CATx**	
Part #: OEC-SLDTX0H1H/IRK  1. CATx Port 2. Service Port 3. To CPU: HDMI	Part #: OEC-SRDTX0H1H/IRK  1. CATx Port 2. Service Port 3. To HDMI Monitor
II. **Video Only, Fiber**	
Part #: OEC-SLDFS0H1H/IRK  1. Fiber Port 2. Service Port 3. To CPU: HDMI	Part #: OEC-SRDFS0H1H/IRK  1. Fiber Port 2. Service Port 3. To HDMI Monitor

Figure 8.HDMI Video-Only Cards

1 x HDMI with USB HID Cards

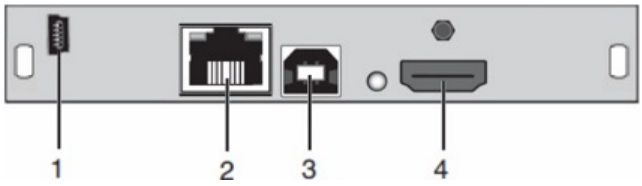
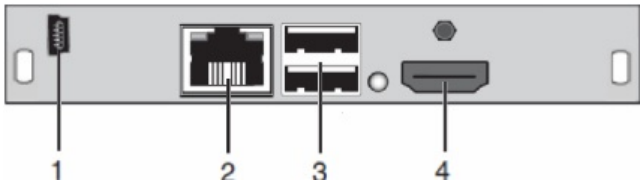
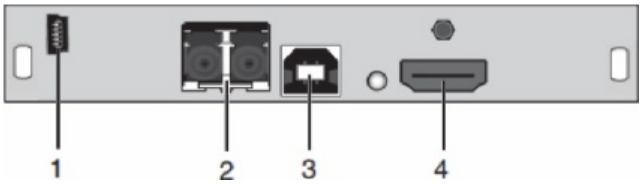
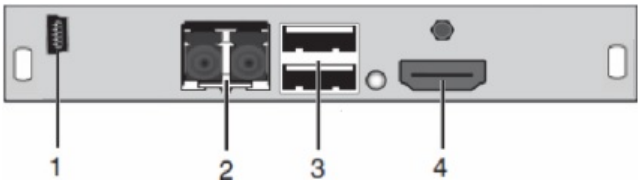
Transmitters	Receivers
I. **With USB HID, CATx**	
Part #: OEC-SLDTXUH1H/IRK	Part #: OEC-SRDTXUH1H/IRK
	
1. Service Port 2. CATx Port 3. CPU: USB-HID 4. To CPU: HDMI	1. Service Port 2. CATx Port 3. CPU: USB-HID 4. To HDMI Monitor
II. **With USB HID, Fiber**	
Part #: OEC-SLDFSUH1H/IRK	Part #: OEC-SRDFSUH1H/IRK
	
1. Service Port 2. Fiber Port 3. CPU: USB-HID 4. To CPU: HDMI	1. Service Port 2. CATx Port 3. CPU: USB-HID 4. To HDMI Monitor

Figure 9. HDMI Cards: 1 x HDMI with USB HID Cards

1 x HDMI with Redundant Link Cards

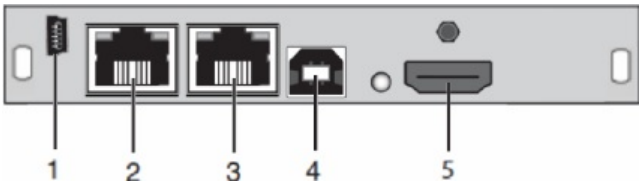
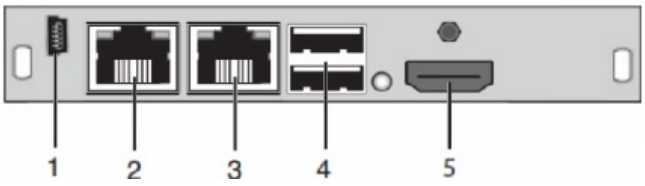
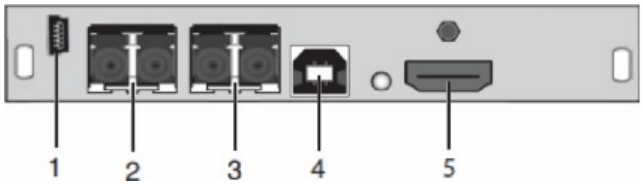
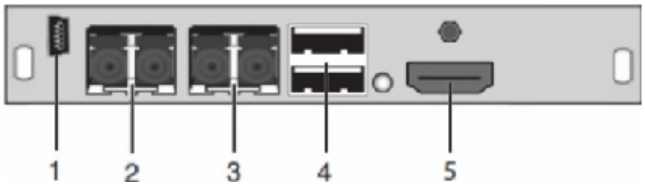
Transmitters	Receivers
I. **With USB HID and Redundant Link, CATx**	
Part #: OEC-DLD2CUH1H/IRK	Part #: OEC-SRD2CUH1H/IRK
	
1. Service Port 2. CATx Port1 3. CATx Port 2 4. CPU: USB-HID 5. To CPU: HDMI	1. Service Port 2. CATx Port 1 3. CATx Port 2 4. CPU: USB-HID 5. To HDMI Monitor
II. **With USB HID and Redundant Link, Fiber**	
Part #: OEC-SLD2SUH1H/IRK	Part #: OEC-SRD2SUH1H/IRK
	
1. Service Port 2. Fiber Port 1 3. Fiber Port 2 4. CPU: USB-HID 5. To CPU: HDMI	1. Service Port 2. Fiber Port 1 3. Fiber Port 2 4. CPU: USB-HID 5. To HDMI Monitor

Figure 10. HDMI Cards: 1 x HDMI with Redundant Link Cards

1 x HDMI with Local Video Out Cards

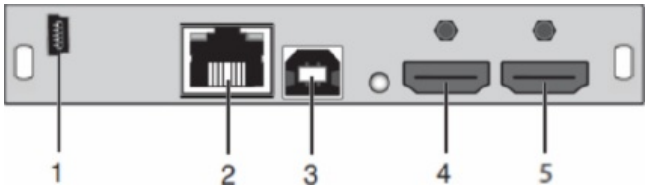
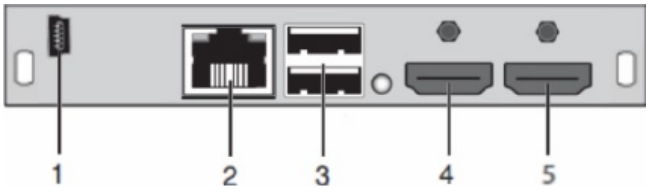
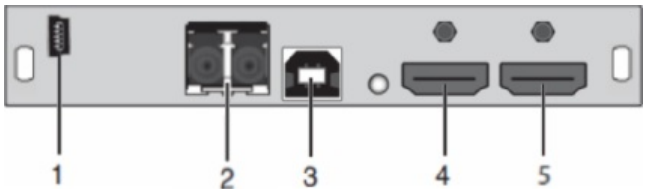
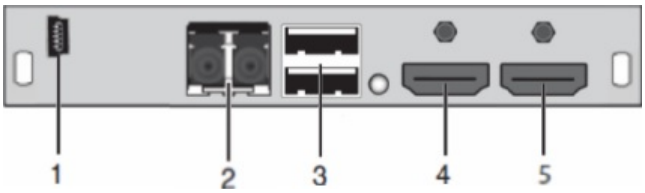
Transmitters	Receivers
I. With USB HID and Local Video Out, CATx	
Part #: OEC-DLDTXUH1H/IRK	Part #: OEC-DRDTXUH1HW/IRK
	
1. Service Port 2. CATx Port 3. CPU: USB-HID 4. CPU: HDMI 5. Local Output: HDMI	1. Service Port 2. CATx Port 3. USB-HID devices 4. HDMI Monitor 5. Local Input: HDMI
II. With USB HID and Local Video Out, Fiber	
Part #: OEC-DLDFSUH1H/IRK	Part #: OEC-DRDFSUH1HW/IRK
	
1. Service Port 2. Fiber Port 3. CPU: USB-HID 4. CPU: HDMI 5. Local Output: HDMI	1. Service Port 2. Fiber Port 3. USB-HID devices 4. HDMI Monitor 5. Local Input: HDMI

Figure 11. HDMI Cards: 1 x HDMI with Local Video Out Cards

1 x HDMI with Local Video Out and Redundant Link Cards

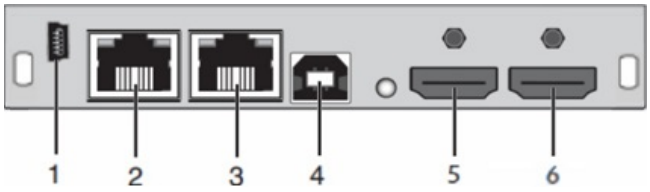
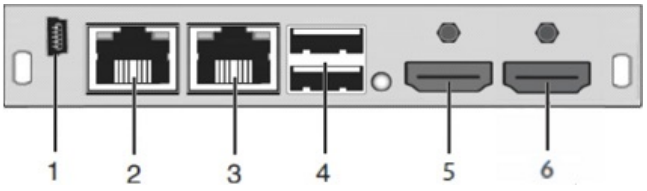
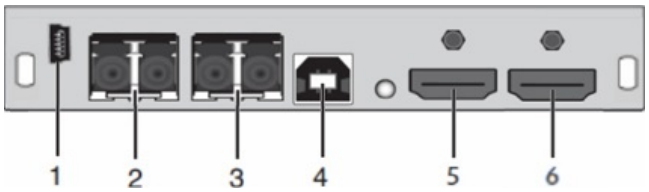
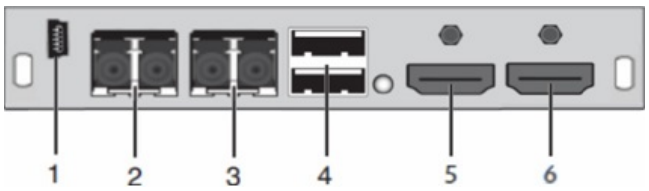
Transmitters	Receivers
I. **With USB HID, Local Video Out and Redundant Link, CATx**	
Part #: OEC-DLD2CUH1H/IRK	Part #: OEC-DRD2CUH1HW/IRK
	
1. Service Port 2. CATx Port 1 3. CATx Port 2 4. CPU: USB-HID 5. CPU: HDMI 6. Local Output: HDMI	1. Service Port 2. CATx Port 1 3. CATx Port 2 4. USB-HID devices 5. HDMI Monitor 6. Local Input: HDMI
II. **With USB HID, Local Video Out and Redundant Link, Fiber**	
Part #: OEC-DLD2SUH1H/IRK	Part #: OEC-DRD2SUH1HW/IRK
	
1. Service Port 2. Fiber Port 1 3. Fiber Port 2 4. CPU: USB-HID 5. CPU: HDMI 6. Local Output: HDMI	1. Service Port 2. Fiber Port 1 3. Fiber Port 2 4. USB-HID devices 5. HDMI Monitor 6. Local Input: HDMI

Figure 12. HDMI Cards: 1 x HDMI with Local Video Out and Redundant Link Cards

Standalone Upgrade Cards

Standalone Upgrade cards are cards that provide specific functionality. They have interconnect ports, and can be installed independently of other cards. The Orion Xtender has a USB 2.0 upgrade card with CATx or single-mode fiber interconnect.

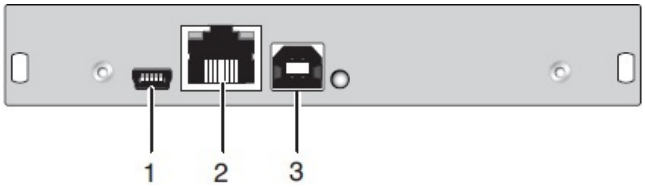
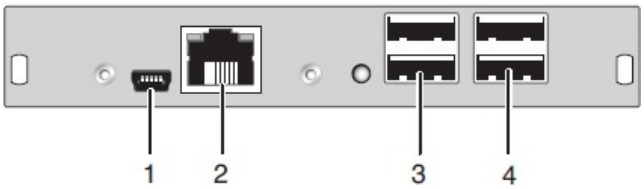
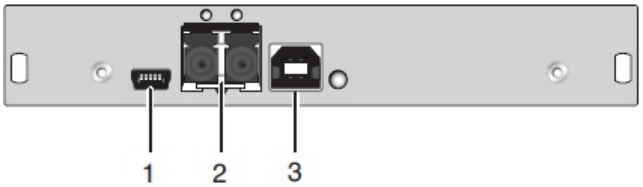
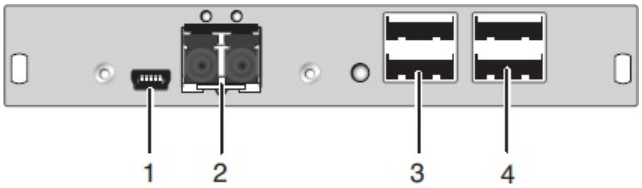
	Transmitters	*Receivers*
I.	**USB 2.0, CATx**	
	Part #: OEC-SL0TXT000/IRK	Part #: OEC-QR0TXT000/IRK
		
	1. Service Port 2. CATx Port 3. To CPU: USB 2.0	1. Service Port 2. CATx Port 3. To USB 2.0 devices
II.	**USB 2.0, Fiber**	
	Part #: OEC-SL0FST000/IRK	Part #: OEC-QR0FST000/IRK
		
	1. Service Port 2. Fiber Port 3. To CPU: USB 2.0	1. Service Port 2. Fiber Port 3. To USB 2.0 devices

Figure 13. Standalone Upgrade Cards: USB 2.0

Embedded Upgrade Cards

Embedded Upgrade cards are cards that provide additional functionality. Unlike the standalone Upgrade cards, they do not have interconnect ports, and are not meant to be used by themselves. They are stacked on top of the DVI and HDMI video cards to provide additional functionality such as analog audio, digital audio, USB 2.0, serial or PS/2. The available embedded upgrade cards are shown below.

Embedded Upgrade Cards with USB-HID

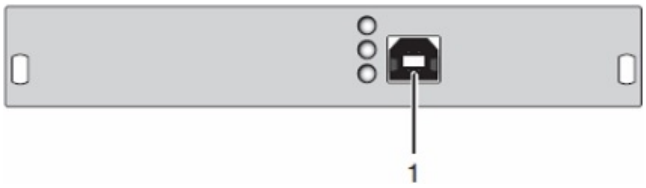
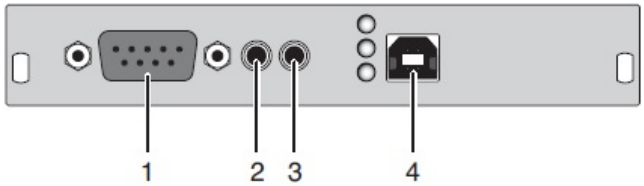
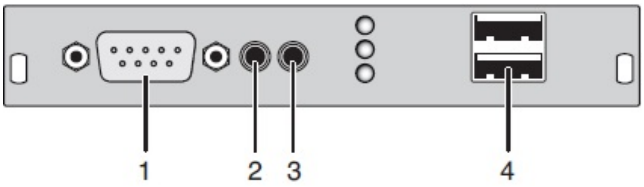
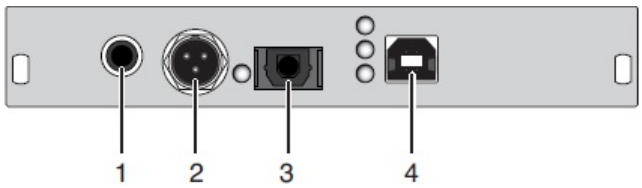
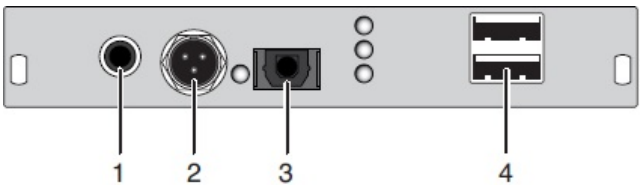
Transmitters	Receivers
I. USB-HID Only	
Part #: OEC-L1H	Part #: OEC-R1H
	
1. To CPU: USB-HID	1. To USB-HID devices
II. USB-HID with Analog Audio and Serial	
Part #: OEC-L1AS+1H	Part #: OEC-R1AS+1H
	
1. To Serial (D-Sub 9) 2. Audio IN 3. Audio OUT 4. To CPU: HID	1. To Serial (D-Sub 9) 2. Audio IN devices 3. Audio OUT devices 4. To USB-HID devices
III. USB-HID with Digital Audio	
Part #: OEC-L1DA+1H	Part #: OEC-R1DA+1H
	
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

Figure 14. Embedded Upgrade Cards with USB-HID

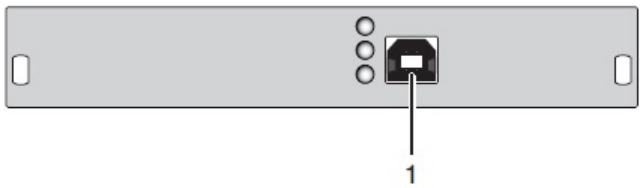
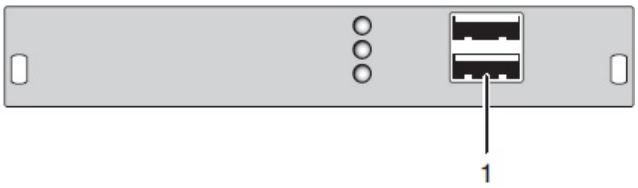
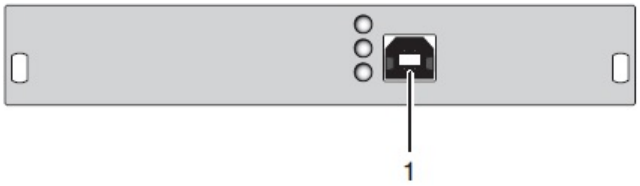
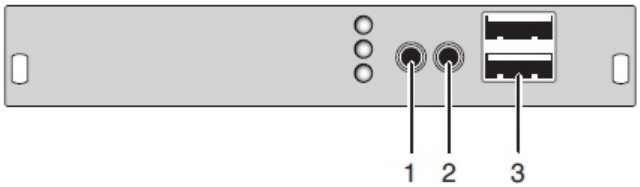
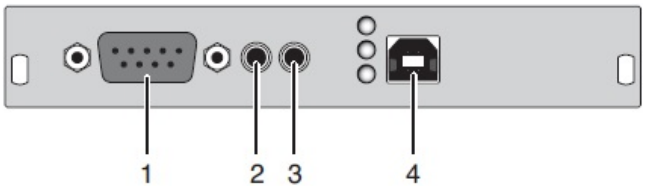
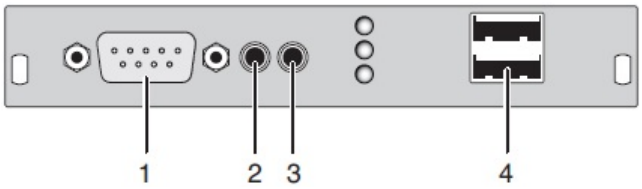
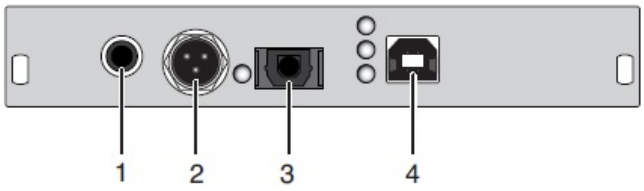
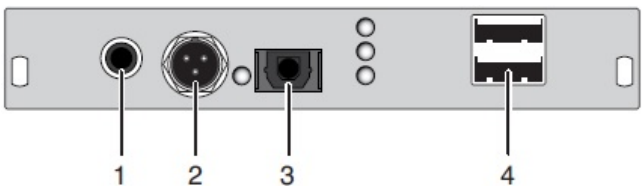
	Transmitters	***Receivers***
I.	**USB 2.0 Only**	
	Part #: OEC-L1E	Part #: OEC-R1E
		
	1. To CPU: USB 2.0	1. To USB 2.0 devices
II.	**USB 2.0 with USB Audio**	
	Part #: OEC-L1EA	Part #: OEC-R1EA
		
	1. To CPU: USB 2.0	1. Audio IN devices 2. Audio OUT devices 3. To USB 2.0 devices
	Note: When using USB audio within a KVM matrix, instant switching is not possible due to the deregistration and registration process of the USB audio.	
III.	**USB 2.0 with Analog Audio and Serial**	
	Part #: OEC-L1AS	Part #: OEC-R1AS
		
	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 devices 3. Audio OUT devices 4. To USB 2.0 devices
IV.	**USB 2.0 with Digital Audio**	
	Part #: OEC-L1DA+1E	Part #: OEC-R1DA+1E
		
	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

Figure 15. Embedded Upgrade Cards with USB 2.0

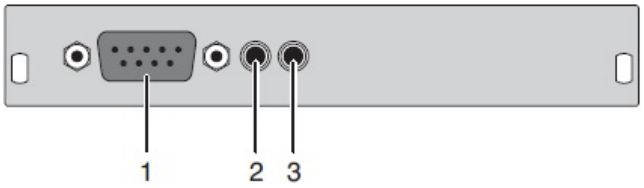
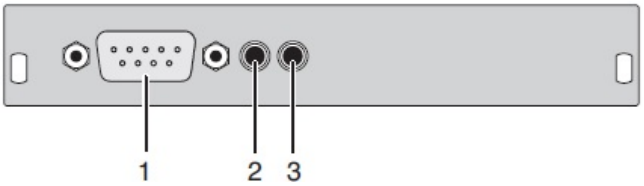
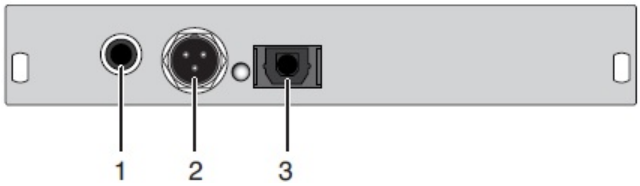
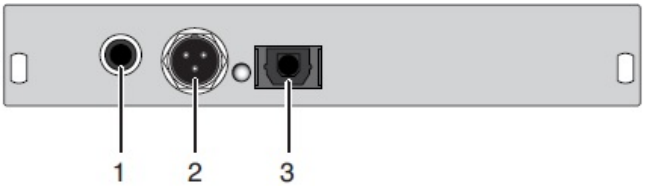
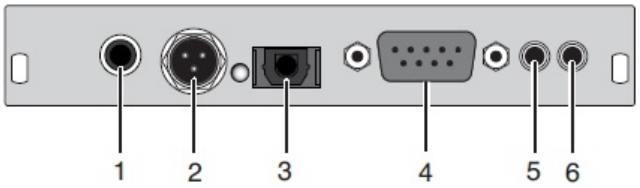
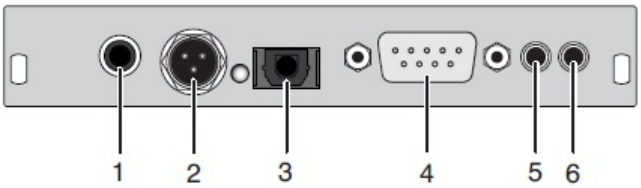
	Transmitters	***Receivers***
I.	**Analog Audio and Serial**	
	Part #: OEC-L1AS	Part #: OEC-R1AS
		
	1. To serial (D-Sub 9) 2. Audio IN 3. Audio OUT	1. To serial (D-Sub 9) 2. Audio IN 3. Audio Out
II.	**1 x Digital Audio**	
	Part #: OEC-L1DA	Part #: OEC-R1DA
		
	1. S/PDIF Input (RCA) 2. AES/EBU Input (Mini-XLR) 3. S/PDIF Input (TOSLINK)	1. S/PDIF Output (RCA) 2. AES/EBU Output (Mini-XLR) 3. S/PDIF Output (TOSLINK)
III.	**Analog Audio, Digital Audio and Serial**	
	Part #: OEC-L1DA+1AS	Part #: OEC-R1DA+1AS
		
	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

Figure 16. Embedded Upgrade Cards without USB Part 1

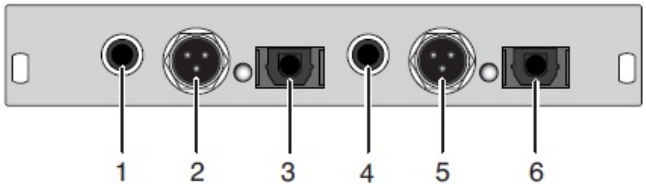
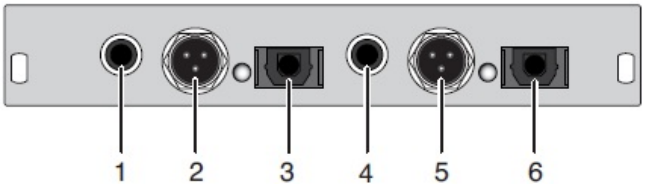
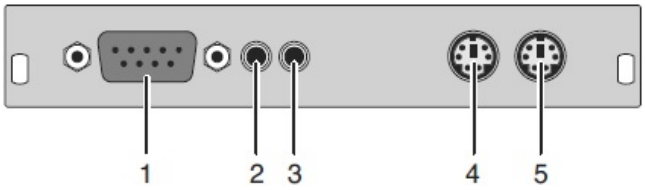
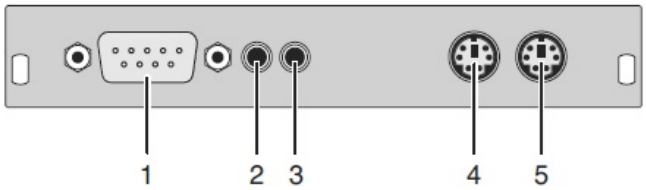
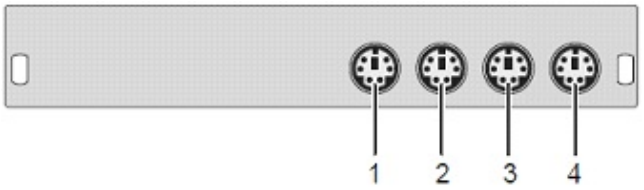
Transmitters	*Receivers*
IV. **2 x Digital Audio**	
Part #: OEC-L2DA	Part #: OEC-R2DA
	
1. S/PDIF Input (RCA) 2. AES/EBU Input (Mini-XLR) 3. S/PDIF Input (TOSLINK) 4. S/PDIF Output (RCA) 5. AES/EBU Output (Mini-XLR) 6. S/PDIF Output (TOSLINK)	4. S/PDIF Output (RCA) 5. AES/EBU Output (Mini-XLR) 6. S/PDIF Output (TOSLINK) 7. S/PDIF Input (RCA) 8. AES/EBU Input (Mini-XLR) 9. S/PDIF Input (TOSLINK)
II. **Analog Audio, Serial and PS/2**	
Part #: OEC-L1AS+PS	Part #: OEC-R1AS+PS
	
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. Audio IN 3. Audio OUT 4. To PS/2 mouse 5. To PS/2 keyboard
III. **PS/2**	
Part #: OEC-LPS	Part #: OEC-RPS
	
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

Figure 17. Embedded Upgrade Cards without USB Part 2

Orion Xtender Units

The Orion Xtender is an extremely flexible product. Any desired combination of the listed cards can be installed in a suitable chassis to provide the extender combination that best fits the user's needs.

This section shows the most commonly used configurations of DVI Orion Xtender units. Please contact Rose Electronics if none of the listed units meet the requirements.

Units with 2-Card Chassis

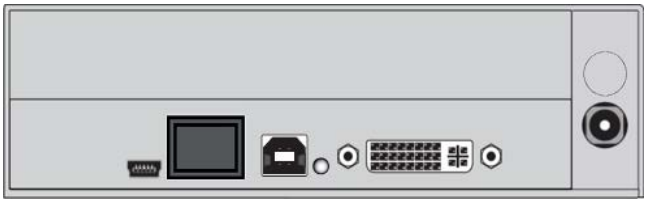
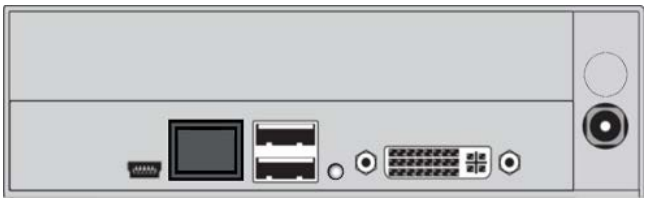
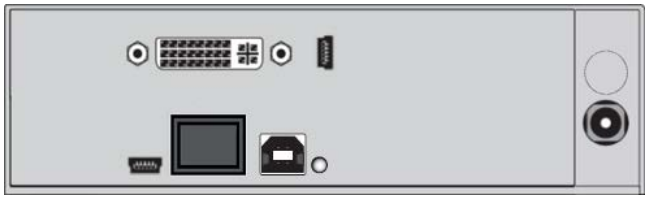
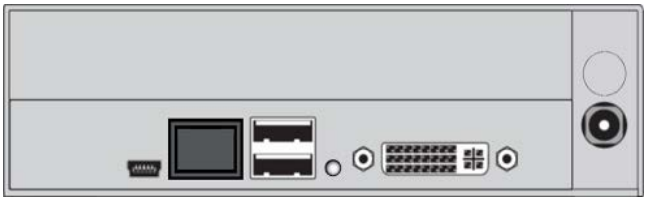
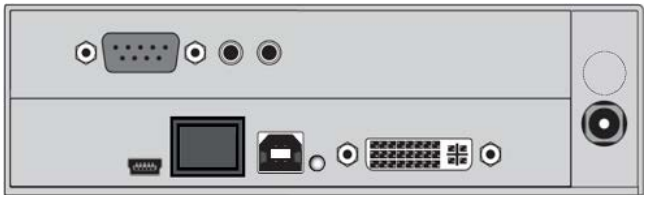
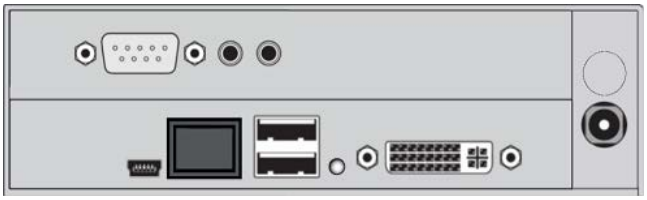
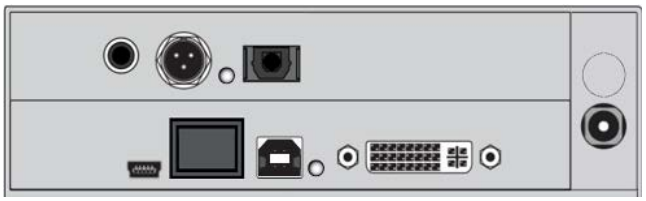
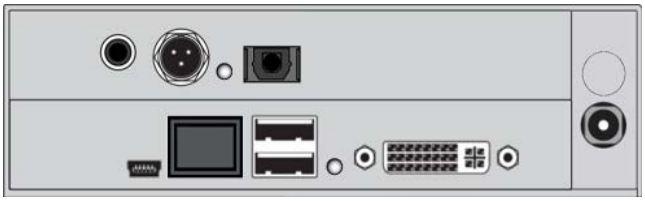
	Transmitters	Receivers
1.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID Part Numbers i. *CATx:* OT2-SLDTXUD1D ii. *Fiber:* OT2-SLDFSUD1D	Included Cards i. 1 x Single-Link DVI-D with USB HID Part Numbers i. *CATx:* OR2-SRDTXUD1D ii. *Fiber:* OR2-SRDFSUD1D
2.		
	Included Cards i. 1 x DVI-I (VGA) with USB HID Part Numbers i. *CATx:* OT2-SLDTXUD1V ii. *Fiber:* OT2-SLDFSUD1V	Included Cards i. 1 x DVI-I (VGA) with USB HID Part Numbers i. *CATx:* OR2-SRDTXUD1V ii. *Fiber:* OR2-SRDFSUD1V
3.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. Analog Audio and Serial Embedded Upgrade Card Part Numbers i. *CATx:* OT2-SLDTXUD1D/1AS ii. *Fiber:* OT2-SLDFSUD1D/1AS	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. Analog Audio and Serial Embedded Upgrade Card Part Numbers i. *CATx:* OR2-SRDTXUD1D/1AS ii. *Fiber:* OR2-SRDFSUD1D/1AS
4.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. 1 x Digital Audio Embedded Upgrade Card Part Numbers i. *CATx:* OT2-SLDTXUD1D/1DA ii. *Fiber:* OT2-SLDFSUD1D/1DA	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. 1 x Digital Audio Embedded Upgrade Card Part Numbers i. *CATx:* OR2-SRDTXUD1D/1DA ii. *Fiber:* OR2-SRDFSUD1D/1DA

Figure 18. Units with 2-Card Chassis Part 1

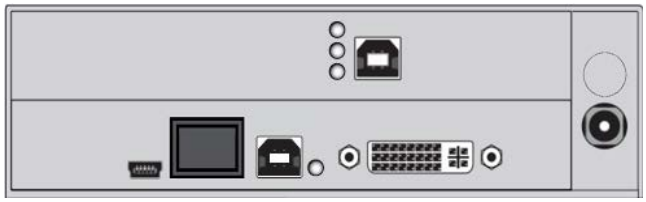
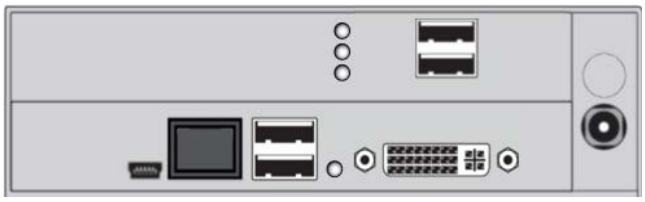
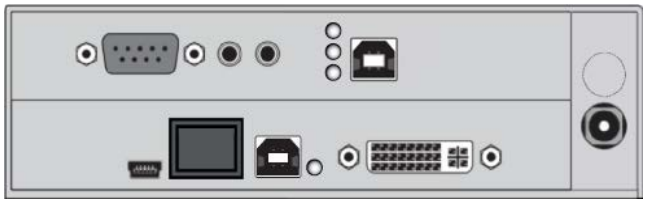
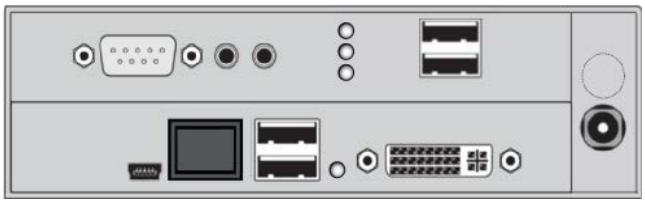
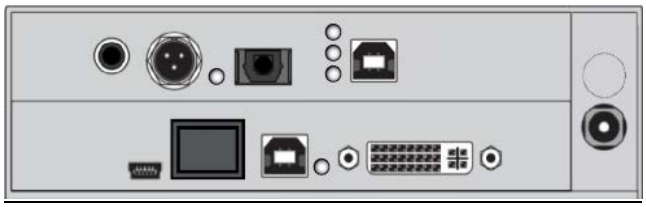
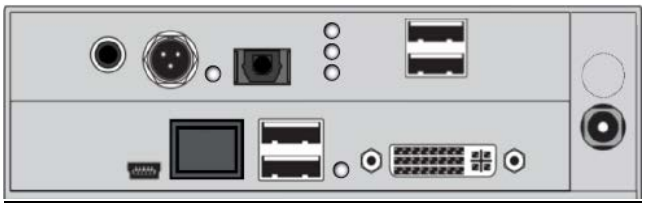
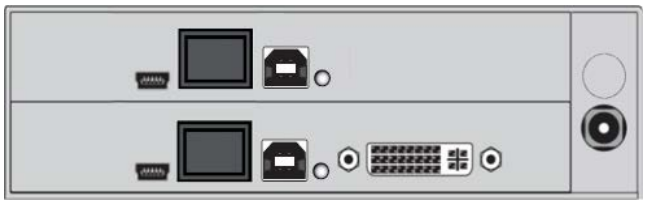
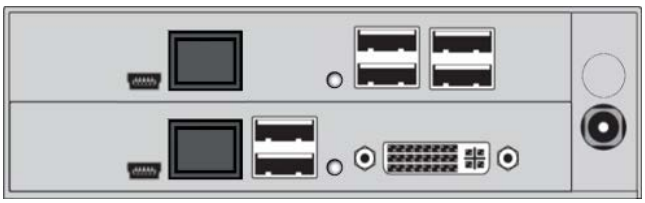
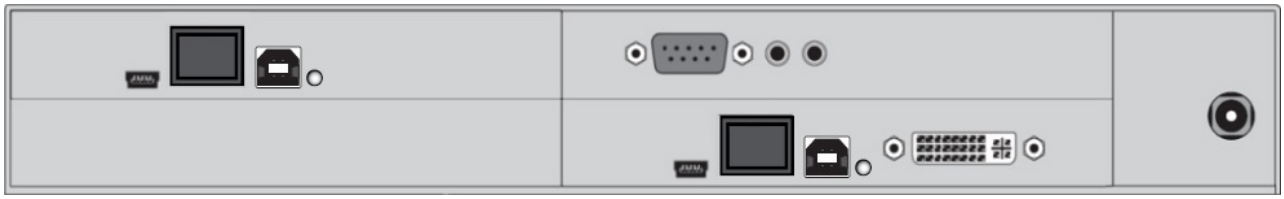
	Transmitters	Receivers
5.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 Only Embedded Upgrade Card Part Numbers i. *CATx:* OT2-SLDTXUD1D/1E ii. *Fiber:* OT2-SLDFSUD1D/1E	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 Only Embedded Upgrade Card Part Numbers i. *CATx:* OR2-SRDTXUD1D/1E ii. *Fiber:* OR2-SRDFSUD1D/1E
6.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 with Analog Audio and Serial Embedded Upgrade Card Part Numbers i. *CATx:* OT2-SLDTXUD1D/1E+1AS ii. *Fiber:* OT2-SLDFSUD1D/1E+1AS	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 with Analog Audio and Serial Embedded Upgrade Card Part Numbers i. *CATx:*OR2-SRDTXUD1D/1E+1AS ii. *Fiber:* OR2-SRDFSUD1D/1E+1AS
7.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 with Digital Audio Embedded Upgrade Card Part Numbers i. *CATx:* OT2-SLDTXUD1D/1E+1AS ii. *Fiber:* OT2-SLDFSUD1D/1E+1AS	Included Cards iii. 1 x Single-Link DVI-D with USB HID iv. USB 2.0 with Digital Audio Embedded Upgrade Card Part Numbers i. *CATx:*OR2-SRDTXUD1D/1E+1AS ii. *Fiber:* OR2-SRDFSUD1D/1E+1AS
8.		
	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 Standalone Upgrade Card Part Numbers i. *CATx:* OT2-SLDTXUD1D/1T ii. *Fiber:* OT2-SLDFSUD1D/1T	Included Cards i. 1 x Single-Link DVI-D with USB HID ii. USB 2.0 Standalone Upgrade Card Part Numbers i. *CATx:* OR2-SRDTXUD1D/1T ii. *Fiber:* OR2-SRDFSUD1D/1T

Figure 19. Units with 2-Card Chassis Part 2

Units with 4-Card Chassis

1.

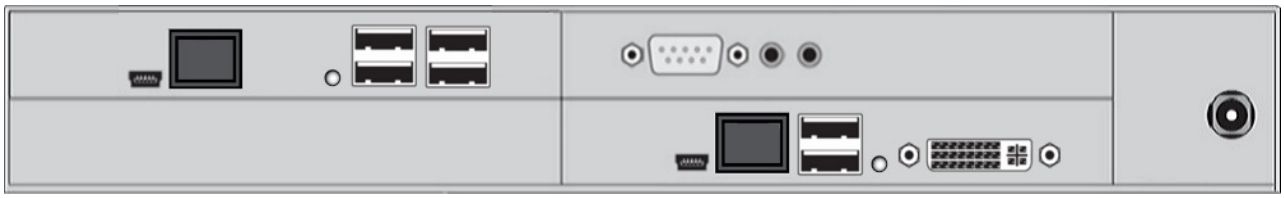
Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD1D/1T+1AS
ii. *Fiber:* OT4-SLDFSUD1D/1T+1AS

Receiver:



Part Numbers

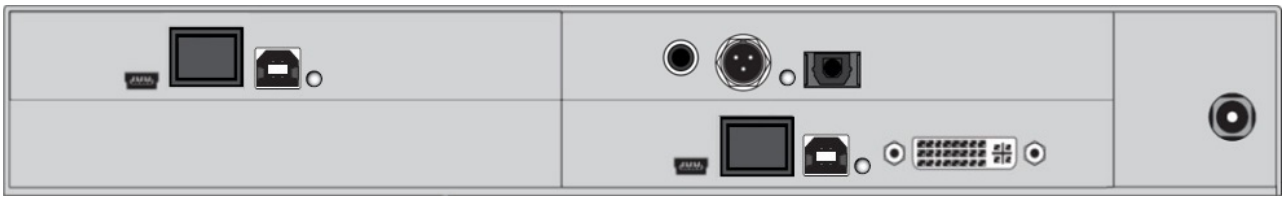
i. *CATx:* OR4-SRDTXUD1D/1T+1AS
ii. *Fiber:* OR4-SRDFSUD1D/1T+1AS

Included Cards

i. 1 x Single DVI-D with USB HID
ii. Analog Audio and Serial Embedded Upgrade Card
iii. USB 2.0 Standalone Upgrade Card

2.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD1D/1T+1DA
ii. *Fiber:* OT4-SLDFSUD1D/1T+1DA

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD1D/1T+1DA
ii. *Fiber:* OR4-SRDFSUD1D/1T+1DA

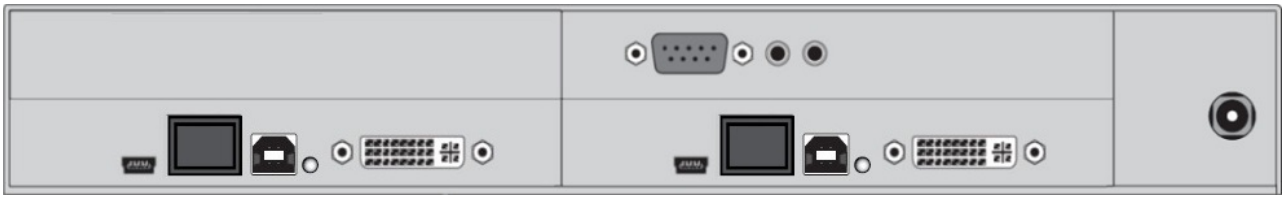
Included Cards

i. 1 x Single DVI-D with USB HID
ii. Digital Audio Embedded Upgrade Card
iii. USB 2.0 Standalone Upgrade Card

Figure 20. Units with 4-Card Chassis Part 1

3.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1AS
ii. *Fiber:* OT4-SLDFSUD2D/1AS

Receiver:

Part Numbers

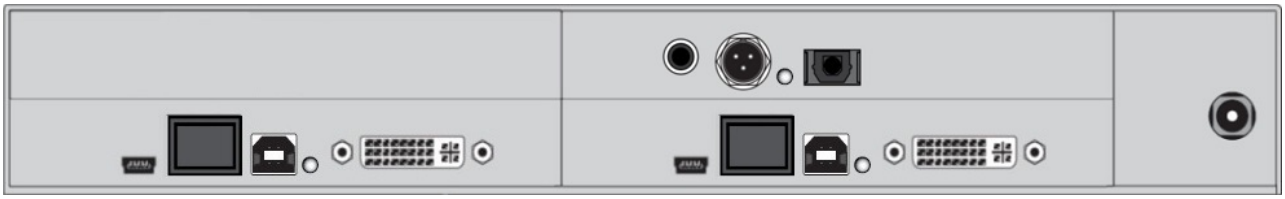
i. *CATx:* OR4-SRDTXUD2D/1AS
ii. *Fiber:* OR4-SRDFSUD2D/1AS

Included Cards

i. 2x [1 x Single DVI-D with USB HID]
ii. Analog Audio and Serial Embedded Upgrade Card

4.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1DA
ii. *Fiber:* +OT4-SLDFSUD2D/1DA

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD2D/1DA
ii. *Fiber:* OR4-SRDFSUD2D/1DA

Included Cards

i. 2 x [1 x Single DVI-D with USB HID]
ii. Digital Audio Embedded Upgrade Card

Figure 21. Units with 4-Card Chassis Part 2

5.

Transmitter:

Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1E
ii. *Fiber:* OT4-SLDFSUD2D/1E

Receiver:

Part Numbers

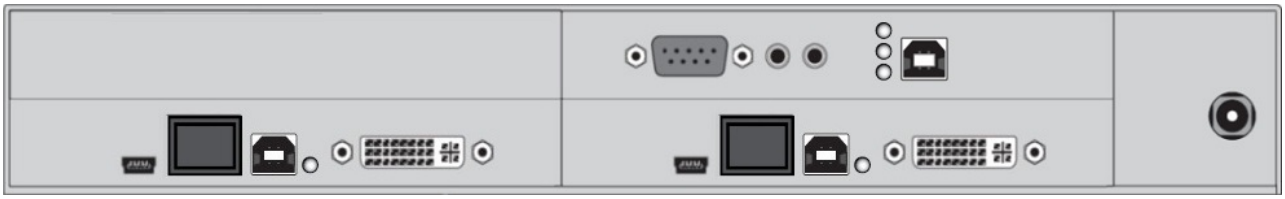
i. *CATx:* OR4-SRDTXUD2D/1E
ii. *Fiber:* OR4-SRDFSUD2D/1E

Included Cards

i. 2x [1 x Single DVI-D with USB HID]
ii. USB 2.0 Only Embedded Upgrade Card

6.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1E+1AS
ii. *Fiber:* +OT4-SLDFSUD2D/1E+1AS

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD2D/1E+1AS
ii. *Fiber:* OR4-SRDFSUD2D/1E+1AS

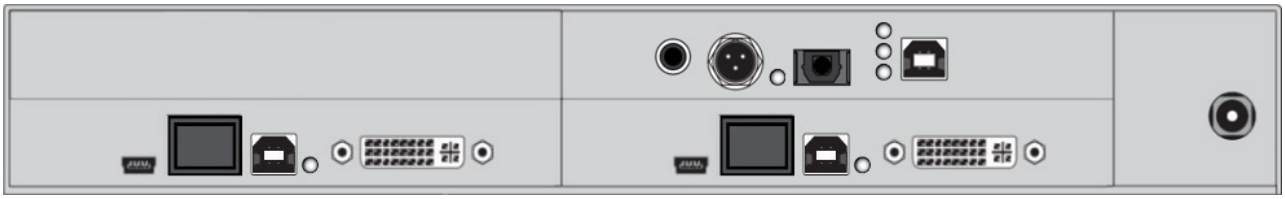
Included Cards

i. 2 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 with Analog Audio and Serial Embedded Upgrade Card

Figure 22. Units with 4-Card Chassis Part 3

7.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1E+1DA
ii. *Fiber:* OT4-SLDFSUD2D/1E+1DA

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD2D/1E+1DA
ii. *Fiber:* OR4-SRDFSUD2D/1E+1DA

Included Cards

i. 2x [1 x Single DVI-D with USB HID]
ii. USB 2.0 with Digital Audio Embedded Upgrade Card

8.

Transmitter:

Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1E+1AS
ii. *Fiber:* +OT4-SLDFSUD2D/1E+1AS

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD2D/1E+1AS
ii. *Fiber:* OR4-SRDFSUD2D/1E+1AS

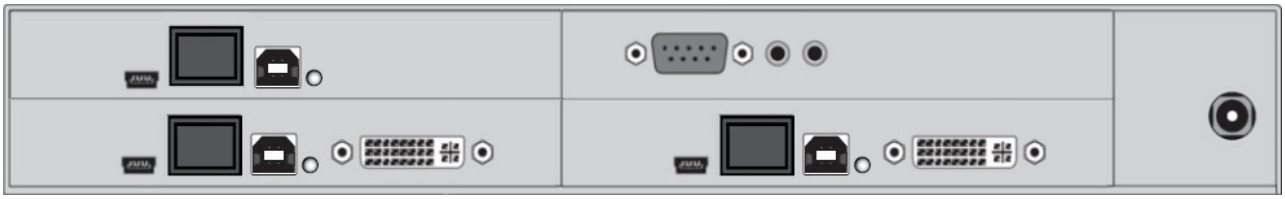
Included Cards

i. 2 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 Standalone Upgrade Card

Figure 23. Units with 4-Card Chassis Part 4

9.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1T+1AS
ii. *Fiber:* OT4-SLDFSUD2D/1T+1AS

Receiver:

Part Numbers

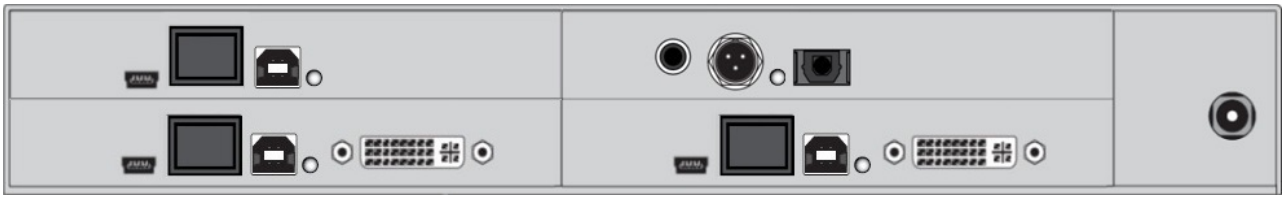
i. *CATx:* OR4-SRDTXUD2D/1T+1AS
ii. *Fiber:* OR4-SRDFSUD2D/1T+1AS

Included Cards

i. 2x [1 x Single DVI-D with USB HID]
ii. USB 2.0 Standalone Upgrade Card
iii. Analog Audio and Serial Embedded Upgrade Card

10.

Transmitter:



Part Numbers

i. *CATx:* OT4-SLDTXUD2D/1T+1DA
ii. *Fiber:* OT4-SLDFSUD2D/1T+1DA

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD2D/1T+1DA
ii. *Fiber:* OR4-SRDFSUD2D/1T+1DA

Included Cards

i. 2 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 Standalone Upgrade Card
iii. Digital Audio Embedded Upgrade Card

Figure 24. Units with 4-Card Chassis Part 5

11.

Transmitter:

Part Numbers

i. *CATx:* OT4-SLDTXUD4D
ii. *Fiber:* OT4-SLDFSUD4D

Receiver:

Part Numbers

i. *CATx:* OR4-SRDTXUD4D
ii. *Fiber:* OR4-SRDFSUD4D

Included Cards

i. 4x [1 x Single DVI-D with USB HID]

Figure 25. Units with 4-Card Chassis Part 6

Units with 6-Card Chassis

1.

Transmitter:

Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1AS
ii. *Fiber:* OT6-SLDFSUD4D/1AS

Receiver:

Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1AS
ii. *Fiber:* OR6-SRDFSUD4D/1AS

Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. Analog Audio and Serial Embedded Upgrade Card

2.

Transmitter:

Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1DA
ii. *Fiber:* OT6-SLDFSUD4D/1DA

Receiver:

Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1DA
ii. *Fiber:* OR6-SRDFSUD4D/1DA

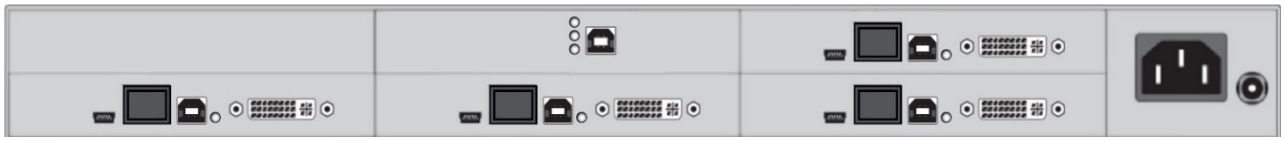
Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. Digital Audio Embedded Upgrade Card

Figure 26. Units with 6-Card Chassis Part 1

3.

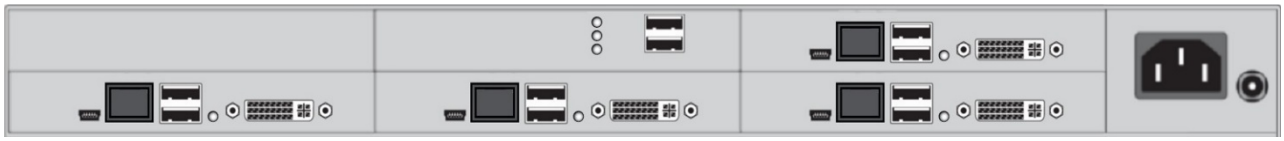
Transmitter:



Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1E
ii. *Fiber:* OT6-SLDFSUD4D/1E

Receiver:



Part Numbers

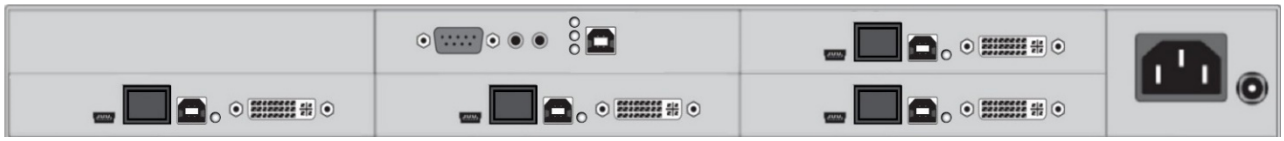
i. *CATx:* OR6-SRDTXUD4D/1E
ii. *Fiber:* OR6-SRDFSUD4D/1E

Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 Only Embedded Upgrade Card

4.

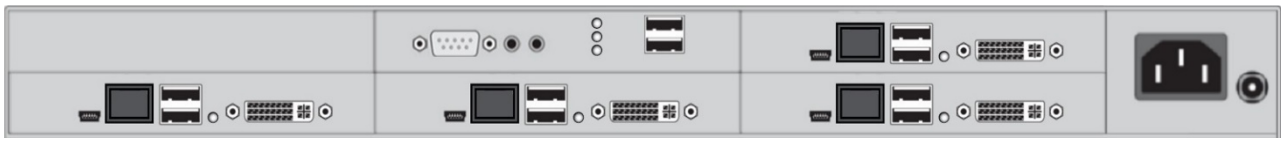
Transmitter:



Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1E+1AS
ii. *Fiber:* OT6-SLDFSUD4D/1E+1AS

Receiver:



Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1E+1AS
ii. *Fiber:* OR6-SRDFSUD4D/1E+1AS

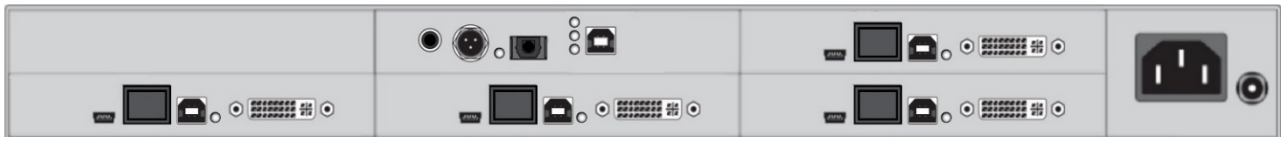
Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 with Analog Audio and Serial Embedded Upgrade Card

Figure 27. Units with 6-Card Chassis Part 2

5.

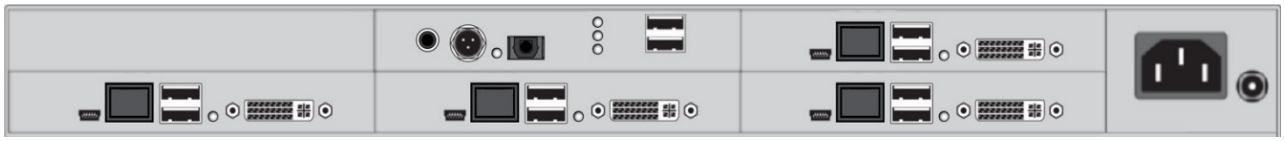
Transmitter:



Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1E+1DA
ii. *Fiber:* OT6-SLDFSUD4D/1E+1DA

Receiver:



Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1E+1DA
ii. *Fiber:* OR6-SRDFSUD4D/1E+1DA

Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 with Digital Audio Embedded Upgrade Card

6.

Transmitter:

Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1T
ii. *Fiber:* OT6-SLDFSUD4D/1T

Receiver:

Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1T
ii. *Fiber:* OR6-SRDFSUD4D/1T

Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. USB 2.0 Standalone Upgrade Card

Figure 28. Units with 6-Card Chassis Part 3

7.

Transmitter:

Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1E+1AS
ii. *Fiber:* OT6-SLDFSUD4D/1E+1AS

Receiver:

Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1E+1AS
ii. *Fiber:* OR6-SRDFSUD4D/1E+1AS

Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. Analog Audio and Serial Embedded Upgrade Card
iii. USB 2.0 Standalone Upgrade Card

8.

Transmitter:

Part Numbers

i. *CATx:* OT6-SLDTXUD4D/1T+1DA
ii. *Fiber:* OT6-SLDFSUD4D/1T+1DA

Receiver:

Part Numbers

i. *CATx:* OR6-SRDTXUD4D/1T+1DA
ii. *Fiber:* OR6-SRDFSUD4D/1T+1DA

Included Cards

i. 4 x [1 x Single DVI-D with USB HID]
ii. Digital Audio Embedded Upgrade Card
iii. USB 2.0 Standalone Upgrade Card

Figure 29. Units with 6-Card Chassis Part 4

Installation

It is recommended that first-time users initially set up the Orion Xtender system in a single room as a test setup. Doing so allows for identification and resolution of any cabling problems, and provides a more convenient way to experiment with the system.

Prior to installation, please verify that interconnect cables, interfaces, and handling of the devices comply with the system specifications laid out in Appendix A.

The installation of the Orion Xtender system has two parts; the Extender module set up, and the Upgrade Module(s) set up.

Extender Module Setup

The main component of the Extender module is the video card. This section describes the steps to set up the Extender module.

1. Switch off all devices.

Receiver Unit Installation

2. Connect the monitor(s), keyboard and mouse to the Receiver unit.
3. Plug the interconnect cable(s) into the Receiver unit.
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 source.

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 to 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 using the serial cable.
2. Connect the Receiver unit to the input device serial connector.

Upgrade Module Digital Audio:

1. Connect the digital audio source to the Transmitter unit using the appropriate audio cable.
2. Connect the audio output of the Receiver unit with digital speakers or audio amplifiers with digital input.

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 to 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 Transmitter unit using proven PS/2 cables.
2. Connect the PS/2 devices to the Receiver unit.

Upgrade Module USB 2.0 Embedded:

1. Connect a CPU's USB 2.0 port to the Transmitter unit (USB 2.0).
2. Connect the USB 2.0 devices to the Receiver unit.

Upgrade Module USB 2.0:

1. Connect a CPU's USB 2.0 port to the Transmitter (USB 2.0).
2. Connect the USB 2.0 devices to the Receiver unit.

Status LEDs

The Orion Xtender cards shown in the previous section are equipped with Status LEDs. These indicators provide a visual output of working and fault conditions. This section describes the various indicators and the conditions they represent.

Video Cards

The Status LEDs on the Single-Link DVI-D, Dual-Link DVI-D, DVI-I (VGA) and HDMI video cards are described here. Cards with redundant links merely have two sets of the same Status LEDs, one for each link.

All the video cards have three common LEDs. Each link port has two Status LEDs to indicate the connection status. In addition, they all have a multi-colored LED (LED 3 in the figures below), which indicates overall status. This LED is duplicated on the front panel of the unit as well (not shown below). On the Dual-Head / Dual-Link cards, there are two LEDs for the overall status on the rear panel (LEDs 3 and 4), one for each channel.

The DVI-I (VGA) card has an additional Status LED on the front panel of the Transmitter only, which indicates connection status. HDMI Receiver cards with Local Video In have an additional Status LED on the rear panel to indicate the status of the locally connected source (LED 4 on that card).

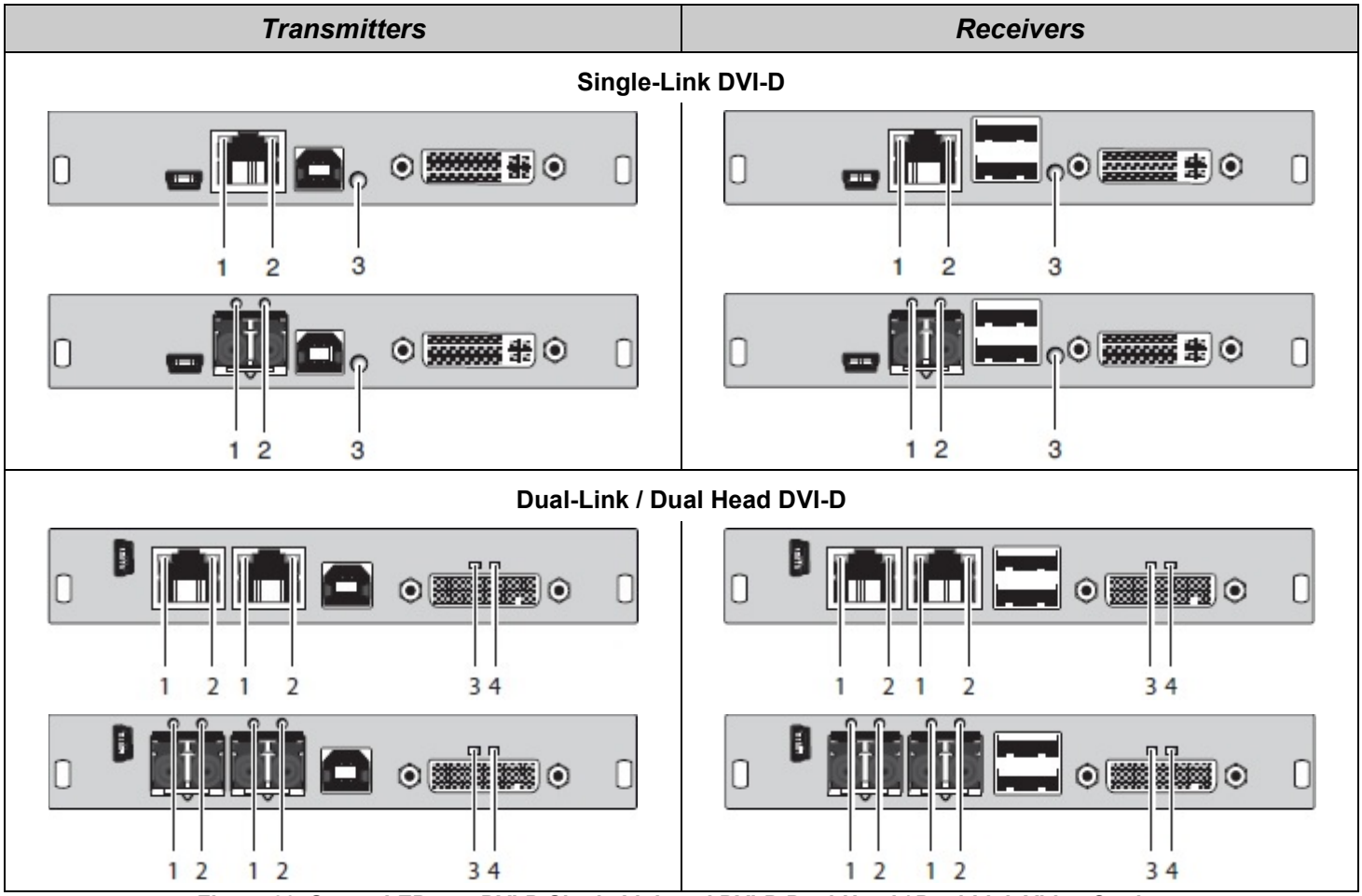


Figure 30. Status LEDs on DVI-D Single Link and DVI-D Dual-Head / Dual-Link Video Cards

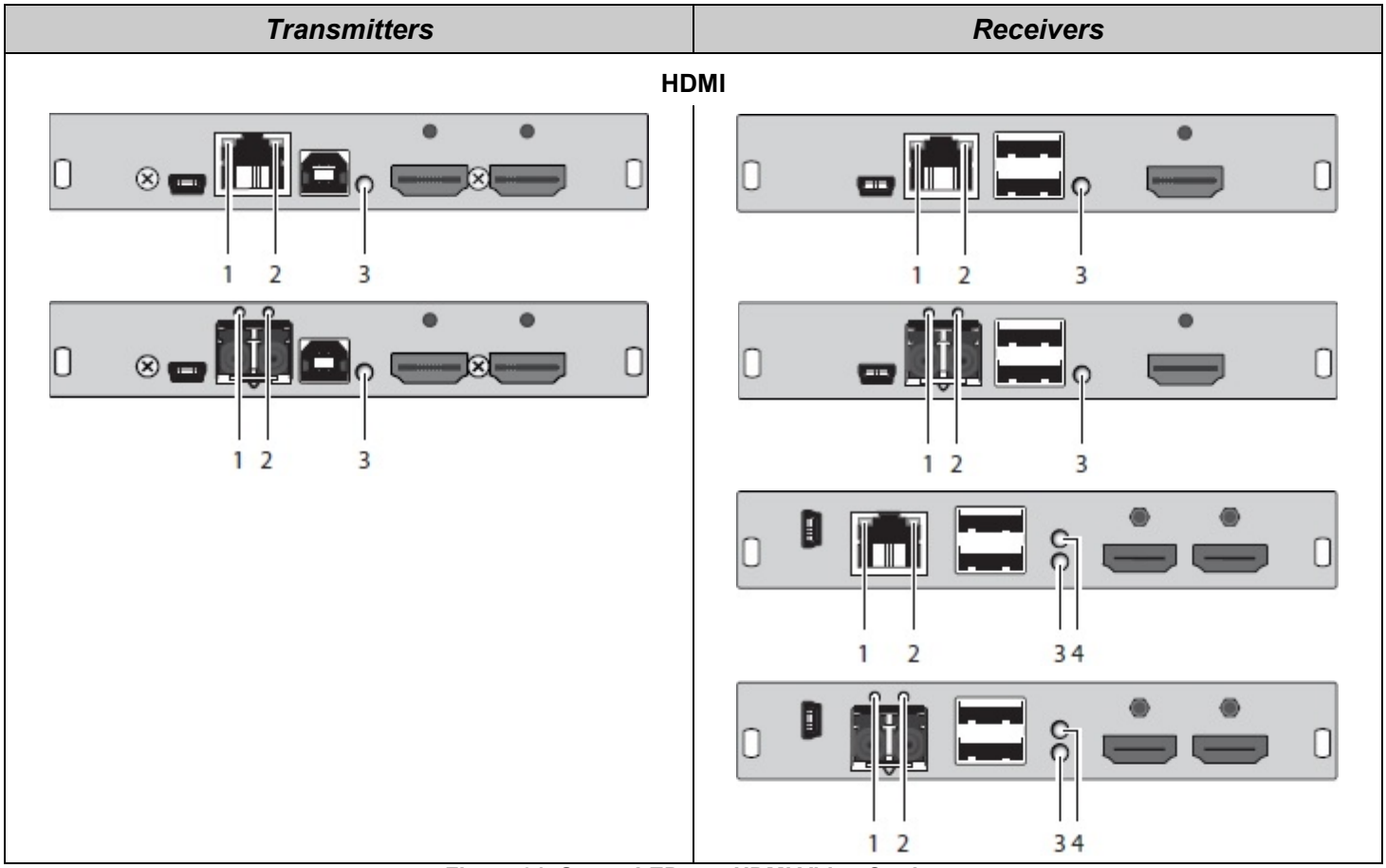


Figure 31. Status LEDs on HDMI Video Cards

LED #	LED Type	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

Table 2. Video Card LEDs: LED 1 and 2 - Connection 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)

Table 3.Video Card LEDs: LED 3 & 4 (on Dual-Head / Dual-Link Card Only) - USB and Video Status

LED Color		Description
Green		Video signal of locally connected source (computer, CPU) available
Light Blue		Video and USB signal switched from locally connected source (computer, CPU)

Table 4. HDMI Video Card LED: LED 4 - Locally Connected Source Status

Figure 32. Font Panel LED on DVI-I (VGA) Video Card

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

Table 5. DVI-I (VGA) Video Card: Front Panel Connection Status LED'

Embedded Upgrade Cards

Digital Audio Only Embedded Upgrade Card

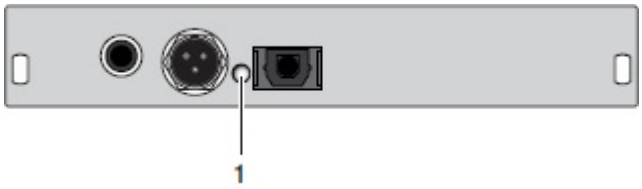
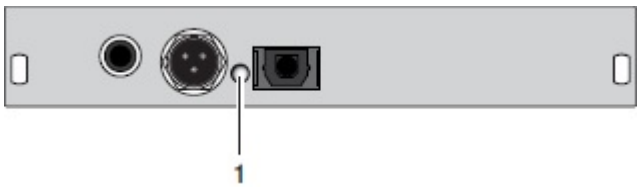
Transmitter	*Receiver*
	

Figure 33. Status LED on Digital Audio Only Embedded Upgrade Card

LED Color		Description
Red		No signal
Light Blue		*Static: CPU Unit: S/PDIF signal (RCA) available*
		Flashing: Digital noise
Violet		*Static: CPU Unit: AES/EBU signal (Mini-XLR) available*
		Flashing: Digital noise
Blue		*Static: CPU Unit: S/PDIF signal (TOSLINK) available*
		Flashing: Digital noise
Green		*Receiver:* Signal available

Table 6. Status LED 1 on Digital Audio Only Embedded Upgrade Card

USB-HID Only Embedded Upgrade Card

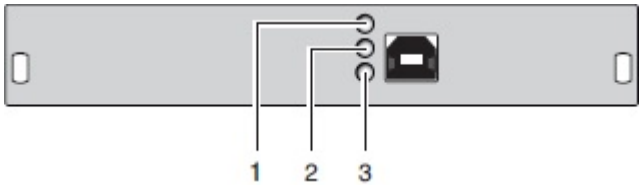
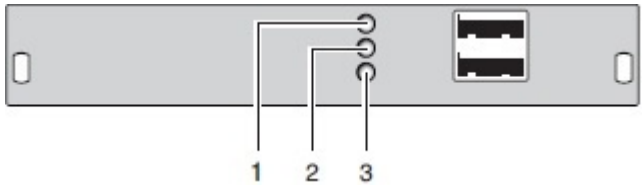
Transmitter	*Receiver*
	

Figure 34. Status LEDs on USB-HID Only Embedded Upgrade Card

LED #	Type	Status	Description
1,2	Device LED (orange)	Off	No USB-HID device or no 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 ▪ Transmitter: KVM Extender in command mode or no connection ▪ Receiver: Keyboard in command mode
		Flashing slowly	Receiver: KVM Extender in command mode or no connection
		Flashing fast	Operating status

Table 7. Status LEDs on USB-HID Only Embedded Upgrade Card

USB 2.0 Only Embedded Upgrade Card

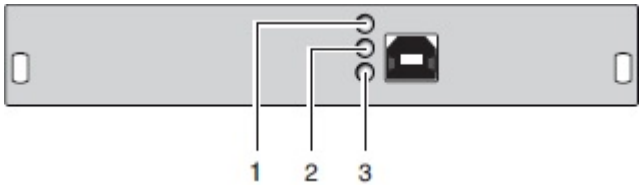
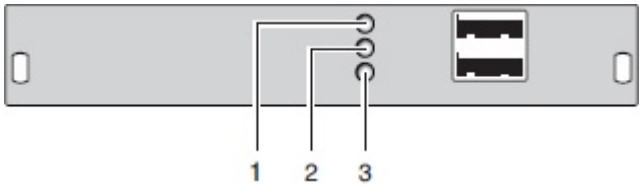
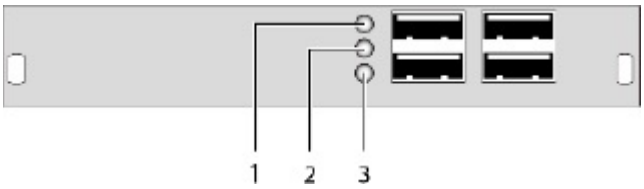
Transmitter	*Receiver*
	
	

Figure 35. Status LEDs on USB-2.0 Only Embedded Upgrade Card

LED #	Type	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 CON and CPU module
		On	Connection between Transmitter and Receiver available

Table 8. Status LEDs on USB 2.0 Only Embedded Upgrade Card

Standalone Upgrade Cards

The Status LEDs on the Standalone USB 2.0 Upgrade Card are described here. A new generation of the card is now available, and the Status LEDs indicate different conditions from the first generation cards. Both generations of the USB 2.0 Standalone Upgrade Card are described here.

The card has a multi-color LED on both the front and rear panels for overall status indication. In addition, there are two more LEDs on the rear panel which indicate the connection status.

First Generation USB 2.0 Standalone Upgrade Card

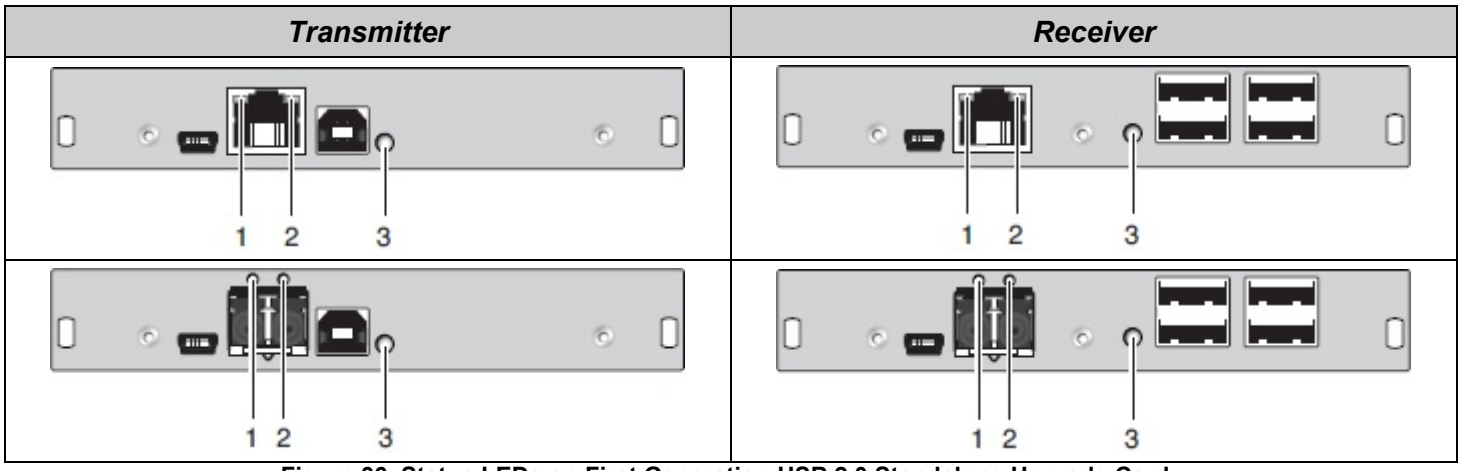


Figure 36. Status LEDs on First Generation USB 2.0 Standalone Upgrade Card

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

Table 9. Status LEDs 1 and 2 on First Generation USB 2.0 Standalone Upgrade Card

LED Color		Description
Red		Device ready
Green		Only connection available, no USB 2.0 signal
Blue		Connection available, no USB 2.0 device connected
Light Blue		Connection and USB 2.0 signal available (operating status)

Table 10.Status LED 3 on First Generation USB 2.0 Standalone Upgrade Card

Second Generation USB 2.0 Standalone Upgrade Card

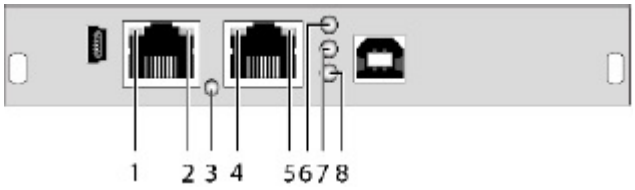
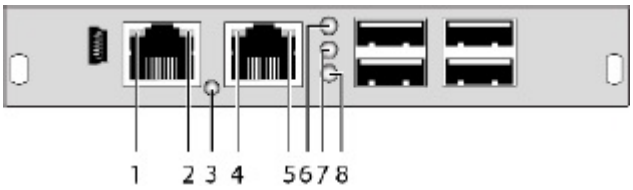
Transmitter	*Receiver*
	

Figure 37. Status LEDs on Second Generation USB 2.0 Standalone Upgrade Card

LED #	Type	Status	Description
1,4	Failure LED (green)	Off	Connection available
		On or Flashing	Connection failure (flashing for about 20 s following a connection failure)
2.5	Status LED (green)	Off	No connection via interconnect cable
		On	Connection available
6	Status LED (green)	Of	No USB 2.0 device connected
		Flashing Slowly	USB 2.0 device connected
7	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
9	Status LED (green)	Off	No connection between Transmitter and Receiver
		On	Connection between Transmitter and Receiver available

Table 11. Status LEDs 1-2, 4-9 on Second Generation USB 2.0 Standalone Upgrade Card

LED Color		Description
Red		Device ready, no Matrix connection
Violet		Connection to Matrix available
Green		USB 1.1 connection available
Light Blue		USB 2.0 connection available
Blue		Debug mode

Table 12. Status LED 3 on Second Generation USB 2.0 Standalone Upgrade Card

Operation

Operation of the Orion Xtender is very simple and straightforward. In most instances, once installed, no further configuration is needed. Certain functions are available for further customization, if desired. These functions are described in this section.

The files needed to configure the Orion Xtender units reside in the data area of the units. To access this area, connect the service port of the Transmitter or Receiver unit to a computer using a USB mini cable. The data area of the unit is now accessible as a flash drive "*Extender*".

Transmission Parameters

The Orion Xtender system uses its own unique compression. In usual circumstances, the Transmitter and Receiver units adapt dynamically to the monitor's resolution and image content. This configuration is suitable for almost all conditions.

In cases where the image quality is not satisfactory, there can be dropped frames, loss of single pictures or color effects. In this situation, the configuration may need to be modified. See the Configuration File section on page 50 for more details.

Command Mode

The Orion X has a Command Mode that allows users to perform several functions through keyboard commands during normal use.

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

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

If no keyboard command is executed within 10 seconds after activating Command Mode, the extender will automatically exit Command Mode.

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

Keyboard Command	Function
2x <Left Shift> (or 'Hot Key')	Enter Command Mode (default)
<Esc>	Exit Command Mode
<current 'Hot Key'>, <c>, <new 'Hot Key' code>, <Enter>	Change 'Hot Key' sequence

Table 13. Command Mode Operation

<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 choices.

'Hot Key' Code	'Hot Key'
0	Hot Key can be selected by user
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>

Table 14.Hot Key' Options

Set user-defined 'Hot Key'
When setting a user-defined 'Hot Key' (e.g. 2x<Space>), 'Hot Key' Code 0 is used. For example, to set <Space> as the 'Hot Key', the following keyboard sequence would be used:
<current 'Hot Key'>, <c>, <0>, <Space>, <Enter>.

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

DDC Settings

By default, data from the factory preset internal DDC information is communicated to the video source (computer, CPU). If these settings are not optimal for the display device, the DDC information of the console monitor can be downloaded and stored internally.

Alternately, for certain special requirements, the DDC information can be retrieved and uploaded as a binary file to both the CPU Unit and the CON Unit. Both these options are described below.

Downloading DDC Information from Console Monitor

On all KVM Extenders with USB-HID support, the user can load the DDC information of the console monitor using a keyboard command while the extenders are in operation.

1. Enter Command Mode with the 'Hot Key', as described above.
2. Press the <a> key to download the DDC information from the console monitor. The screen will go blank for a short time. Command Mode ends and the keyboard LEDs return to their previous states.
3. Restart the video source (computer, CPU). The video mode will be readjusted, and the screen quality should be optimal. The CPU should now show the console monitor as the current screen, together with its available video resolutions.

This operation can be repeated as necessary if the console monitor is changed.

Working with the DDC Information File

The DDC information file, "*DDC-EDID.bin*", can be found on the "*Extender*" flash drive, as described at the beginning of this section.

Retrieving DDC Information

Copy the "*DDC-EDID.bin*" file from the flash drive of the Transmitter unit to the computer. To open the binary file, a suitable software program, e.g. WinDDCwrite, should be installed. Care should be taken that valid information is entered in the file, or the unit may not function correctly.

Uploading DDC Information

Copy the modified "*DDC-EDID.bin*" file to the flash drive of the Transmitter unit or Receiver unit. This replaces the DDC information in the unit.

Reset to Factory DDC Information

Delete the "*DDC-EDID.bin*" file on the flash drive of the Transmitter unit. By deleting this file, the factory DDC Information is restored.

USB-HID Ghosting

The USB-HID Ghosting function allows specific keyboard and mice descriptors (device descriptions) to be permanently stored in the Transmitter. This eliminates the need to register and deregister the keyboard and mouse on an operating system each time there is a shared use of a source (computer, CPU) by two or more KVM consoles.

The following table lists the 'Hot Key' commands use to configure the USB-HID Ghosting function:

Keyboard Command	Function
<'Hot Key'>, <h>, <w>, <Enter>	Writes the device descriptors of the input devices connected to the Receiver into the Transmitter. Activates the emulation in the Transmitter.
<'Hot Key'>, <h>, <e>, <Enter>	Activates the emulation of already stored device descriptors in the Transmitter.
<'Hot Key'>, <h>, <r>, <Enter>	Deactivates the emulation of active device descriptors in the Transmitter. Removes the descriptors from the Transmitter. The input devices connected to the Receiver will be now passed transparently to the source (computer, CPU).
<'Hot Key'>, <h>, <d>, <Enter>	Deactivates the emulation of active device descriptors in the Transmitter. Descriptors are not removed from the Transmitter. The input devices connected to the Receiver will be now passed transparently to the source (computer, CPU).

Table 15. USB-HID Ghosting Hot Keys

Note: When using a USB composite device as a USB-HID input device, switching to a Transmitter with activated USB-HID Ghosting may result in limited functionality.

Configuration File

The Transmitter and Receiver contain a configuration file, "*Config.txt*", to set specific parameters and to read out device and video information. It can be found on the "*Extender*" flash drive, as described at the beginning of this section.

The configuration file can be edited with all common text editors.

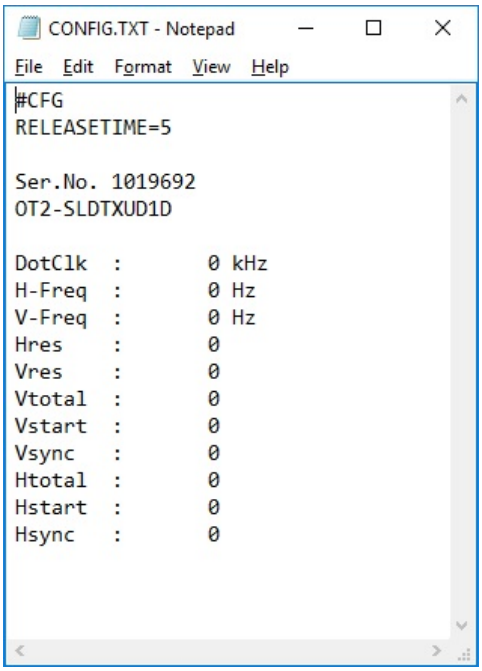


Figure 38. Sample Configuration File

Notes:

1. Once a parameter is modified, the extender must be restarted for the setting to take effect.
2. To ensure correct identification and acceptance of the parameters, the start command *#CFG* must be written in the first line of the "*Config.txt*" file.

Transmitter Settings

The following settings can be written to the configuration file of a Transmitter.

Setting	Function
DDC Management	
LOCKEDID	Activate DDC write protection
Digital Audio (only with digital audio upgrade module)	
SRC32000	Activate sample rate conversion, sample rate 32 kHz
SRC44100	Activate sample rate conversion, sample rate 44,1 kHz
SRC48000	Activate sample rate conversion, sample rate 48 kHz
SRC96000	Activate sample rate conversion, sample rate 96 kHz
SRC_NONE	Deactivate sample rate conversion
Compression	
MEDCPRATE	Activate medium compression rate
MINCPRATE	Activate low compression rate
MAXCPRATE	Activate high compression rate
ENADITHER	Activate dithering filter for Mac OS systems
Shared Operation	
RELEASETIME=n	Release timer n = 0...9 seconds for Mouse and Keyboard Connect; If setting not present = 2

Table 16. Transmitter Configuration File Settings

Receiver Settings

The following settings can be written to the configuration file of a Receiver

Setting	Function
1080p50Hz	Always display 50 Hz when using 1920x1080
DISEXTOSD	Deactivate extender OSD
ENAFRAME	Show orange colored frame when losing extender connection
ENAHOLDPIC	Show last transmitted picture highlighted by an orange colored frame when losing connection
ENALOSTMR	Activate LOS timer
ENADDCTX	Activate DDC transmission by unplugging and connecting the monitor back to the CON Unit
CENTERMODE	Simulate the native resolution of Dual-Link monitors by an additional black frame in order to enable Instant Switching (on models with Dual-Link cards only).
PARAM=V	Simultaneous output of DVI-D and VGA signal (on models with VGA cards only)
ENAAUDIO	Enable RS232 or RS422 and analog audio during video only connections
DISPLAY2	Show video channel 2 per default when switching to the respective Dual-Head unit (on models with Dual-Head cards only

Table 17. Receiver Configuration File Settings

Transmitter AND Receiver Settings

The following settings must be written to the configuration files of *both* Transmitter and Receiver.

Setting	Function
Local switching (only with HDMI extenders and local control by an USB-HID Receiver upgrade module)	
BLANKSCR	Activate dark switching between local and remote console by keyboard or mouse event
PRIVATEMODE	Activate switching of video and control between local and remote console by keyboard commands
USB 2.0 Embedded	
ENAUSB11	Activate USB 1.1 mode for USB 2.0 embedded upgrade modules (only with USB 2.0 embedded upgrade module)
DISUSBAUD	Disable USB audio codec
ENAMICAMP	Activate microphone amplifier

Table 18. Configuration File Settings Required by Both Transmitter and Receiver

Shared Operation of Redundant Interconnects on Transmitters

On Transmitters that have redundant interconnects, situations may arise where multiple Receivers simultaneously attempt to control the Transmitter by using the keyboard and/or mouse on the Receiver.

The Configuration File, described on page 50, specifies a *RELEASETIME* setting to resolve this situation. This setting specifies the length of time in seconds of keyboard and mouse inactivity after which another Receiver's keyboard and mouse can take control of the Transmitter.

Open the "*Config.txt*" file, which can be found on the "*Extender*" flash drive, as described in the beginning of this section. Activate the release time function by adding the *RELEASETIME=n* setting in the second line of the file, where *n* is the time in seconds before the Receiver gives up control. It can take a value from 0 to 9. For example, a setting of *RELEASETIME=5* sets the release time to 5 seconds.

If the *RELEASETIME* setting is not found in the file, it is set to 2 seconds by default. Use the *RELEASETIME=X* setting to deactivate this function.

Once the needed changes have been made, save the "*Config.txt*" file and reboot the unit so that they can take effect.

Note: When the Orion Xtender is used along with a KVM matrix switch, the *RELEASETIME* function is deactivated on the extenders, and is handled instead by the switch.

Shared Operation of Redundant Interconnects on Receivers

Conversely, when working with Receivers that have redundant interconnects, keyboard commands can be used to manually switch between two active connections. This is helpful to perform a 2:1 switching operation if there are different Transmitters connected to each interconnect.

The following keyboard commands are available to switch between the Transmitters.

Keyboard Command	Function
<'Hot Key'>, <k>, <1>, <Enter>	Switch to Transmitter on Receiver Interconnect Link 1
<'Hot Key'>, <k>, <2>, <Enter>	Switch to Transmitter on Receiver Interconnect Link 1

Table 19. Keyboard Commands for Shared Operation of Redundant Interconnects on Receivers

Troubleshooting the Orion Xtender System

If the Orion Xtender system does not function as expected, there are a few simple checks that can be made to determine the cause of the failure. This sections details the steps the user can take to resolve the problem. Should the difficulties persist, contact Rose Electronics Customer Support.

General Failures

Symptom	Diagnosis	Solution
Configuration file setting not active	Setting not set or saved	Write setting into "*Config.txt*"file and save changes
	Start Command *#CFG* not set	Write Start Command *#CFG* as the first line of the "*Config.txt*" file
	Configuration setting written incorrectly	Check for correct spelling and capitalization
	Extender not restarted after changes	Restart extender

Table 20. Troubleshooting General Failures

Blank Screen

The steps to troubleshoot this failure utilize the Status LEDs on the Video Cards, as described on page 40. The LEDs mentioned in the table below correspond to the Status LEDs shown in Figure 30. Status LEDs on DVI-D Single Link and DVI-D Dual-Head / Dual-Link Video Cards on the same page.

Symptom	Diagnosis	Solution
LED 3 off	Power Supply to the unit	Check Transformers and connection to the AC power
LED 1 or 2 off	Connection between Transmitter and Receiver	Check interconnect cables and connections
Transmitter: LED 3 Red or Yellow	No video signal detected by source (computer, CPU)	■ Check connection of video cable to source ■ Download DDC information from console monitors as described on page 48. Reboot source if necessary.
Receiver: LED 3 Red or Yellow	No monitor detected	Check connection, length and quality of the cable to monitor, and tighten cable thumbscrews
	No video signal detected from Transmitter	■ Check connection, length and quality of the interconnect cable between units ■ Download DDC information from console monitors as described on page 48. Reboot source if necessary.

Table 21. Troubleshooting Blank Screen at Receiver

Video Card USB HID Failure

The steps to troubleshoot this failure utilize the Status LEDs on the Video Cards, as described on page 40. The LEDs mentioned in the table below correspond to the Status LEDs shown in Figure 30. Status LEDs on DVI-D Single Link and DVI-D Dual-Head / Dual-Link Video Cards on the same page.

Symptom	Diagnosis	Solution
Shift and *Scroll* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
Transmitter: LED 3 Green or Violet	No USB connection to CPU	▪ Check connection of USB cable to CPU. Select another USB port if necessary ▪ Unplug USB from CPU and cycle power to the CPU. Re-plug USB cable to CPU.
Receiver: LED 3 Green or Violet	Problems with USB connection	▪ Check connection of USB cable to USB HID device ▪ Unplug video cable from Receiver and cycle power to it. Re-plug video cable to CPU.
USB device does not function	USB HID device is not supported	Contact Rose Electronics if necessary

Table 22. Troubleshooting Video Card USB HID Failure

Serial Connection Failure

Symptom	Diagnosis	Solution
Serial device not operational	Settings of the serial interface	Check baud rate and general settings
	No serial connection to CPU	Check connection through serial cable
	No serial connection to end device (e.g. touchscreen, keyboard)	▪ Check if the serial end device is turned on ▪ Check connection through serial cable
Touchscreen not operational	Hardware handshake	Change serial interface to XON / XOFF software handshake

Table 23. Troubleshooting Serial Connection Failure

Analog Audio Failure

Symptom	Diagnosis	Solution
Receiver: No signal at audio output	No audio connection to CPU or other audio source	▪ Connect analog audio source ▪ Check audio cable
	No signal	▪ Turn on analog audio source ▪ Activate analog audio output at CPU or other audio source
	No audio connection to audio sink (e.g. speakers)	▪ Connect analog audio sink and turn it on ▪ Check connection of audio cable
Transmitter: No signal at audio output (microphone)	No audio connection to audio source (microphone)	▪ Connect analog audio source (microphone) ▪ Check connection of audio cable
	No signal	▪ Turn on analog audio source ▪ Activate analog output at audio source
	No audio connection at audio sink (e.g. CPU	▪ Check connection to CPU ▪ Check connection of audio cable ▪ Check audio configuration

Table 24. Troubleshooting Analog Audio Failure

Digital Audio Failure

The steps to troubleshoot this failure utilize the Status LEDs on the Digital Audio Only Embedded Upgrade Card, as described on page 42. The LEDs mentioned in the table below correspond to the Status LEDs shown in Figure 33. Status LED on Digital Audio Only Embedded Upgrade Card on the same page.

Symptom	Diagnosis	Solution
Transmitter: LED 1 Red	No audio connection to CPU or other audio source	▪ Connect digital audio source ▪ Check connection of audio cable
	No signal	▪ Turn on digital audio source ▪ Enable digital output at CPU or other audio source
Receiver: LED 1 Red	No audio connection to audio sink (e.g. speakers)	▪ Connect digital audio sink ▪ Check connection of audio cable
	No signal	Check signal at Transmitter
No signal / LED 1 OK	Digital Silence at active audio source	▪ Check LEDs at Transmitter ▪ Check audio format ▪ Check audio input

Table 25.Troubleshooting Digital Audio Failure

USB HID Only Embedded Upgrade Card Failure

The troubleshooting of this failure requires the Status LEDs on the USB-HID Only Embedded Upgrade Card, as described on page 43. The LEDs mentioned in the table below correspond to the Status LEDs shown in Figure 34. Status LEDs on USB-HID Only Embedded Upgrade Card on the same page.

Symptom	Diagnosis	Solution
LED 1 / 2 off	Device at higher / lower USB HID port not detected	▪ Check connection of USB cable to USB HID device ▪ Connect USB HID device ▪ Contact Rose Electronics, if necessary
Transmitter: LED 3 off	Connection between Transmitter and Receiver	Check interconnect cables and connectors
Receiver: LED 3 off	Keyboard in Command Mode	Press the *Esc* key to exit Command Mode
Receiver: LED 3 flashing slowly	Connection between Transmitter and Receiver	Check interconnect cables and connectors
	Keyboard in Command Mode	Press the *Esc* key to exit Command Mode

Table 26.Troubleshooting USB HID Upgrade Module Failure

USB 2.0 Only Embedded Upgrade Card Failure

The steps to troubleshoot this failure utilize the Status LEDs on the USB 2.0 Only Embedded Upgrade Card, as described on page 44. The LEDs mentioned in the table below correspond to the Status LEDs shown in Figure 35. Status LEDs on USB-2.0 Only Embedded Upgrade Card on the same page.

Symptom	Diagnosis	Solution
Transmitter and Receiver: LED 3 off	No connection to CPU	▪ Check connection of USB cable to CPU; use another USB port if necessary ▪ Unplug USB from CPU and cycle power to the CPU. Re-plug USB cable to CPU
Transmitter and Receiver: LED 2 off	No connection between Transmitter and Receiver	Check interconnect cable and connectors
Transmitter and Receiver: LED 2 off and USB 2.0 device does not function	No USB 2.0 device	Connect USB 2.0 device
	USB 2.0 device is not supported	▪ Check installation at the CPU; ensure necessary drivers are installed ▪ New connection of the USB 2.0 device ▪ Contact Rose Electronics, if necessary

Table 27.Troubleshooting USB 2.0 Only Embedded Upgrade Card Failure

First Generation USB 2.0 Standalone Upgrade Card Failure

The steps to troubleshoot this failure utilize the Status LEDs on the First Generation USB 2.0 Standalone Upgrade Card, as described on page 45. The LEDs mentioned in the table below correspond to the Status LEDs shown in Figure 36. Status LEDs on First Generation USB 2.0 Standalone Upgrade Card on the same page.

Symptom	Diagnosis	Solution
Transmitter: All LEDs off	No connection to CPU	▪ Check connection of USB cable to CPU; use another USB port if necessary ▪ Unplug USB from CPU and cycle power to the CPU. Re-plug USB cable to CPU
Receiver: LED 3 Red	No connection between Transmitter and Receiver	Check interconnect cable and connectors
Receiver: LED 3 flashing Green / Light Blue and USB 2.0 device does not function	No USB 2.0 device	Connect USB 2.0 device
	USB 2.0 device is not supported	▪ Check installation at the CPU; ensure necessary drivers are installed ▪ New connection of the USB 2.0 device ▪ Contact Rose Electronics, if necessary

Table 28.Troubleshooting First Generation USB 2.0 Standalone Upgrade Card Failure

Safety

The Orion Xtender system, like all electronic equipment, 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.
Provide proper ventilation and air circulation.
Keep connection cables clear of obstructions that might cause damage to them.
Use only power cords, power adapter and connection cables designed for this Unit.
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.
Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from the power source before cleaning.
Remove power from the Unit and refer servicing to a qualified service center if any of the following conditions occur:

- The 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.

SERVICE AND TECHNICAL SUPPORT

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 Orion Xtender system, 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.

Appendix A – General Specifications

This section gives the general specifications for the Orion Xtender connectors, pinouts, cables and dimensions.

Interfaces

The different types of possible connections, and any restrictions on them, are discussed here.

DVI-D Single Link

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

DVI-D Dual Link

The video interface supports the DVI-D protocol. All signals that comply with DVI-D Dual Link specifications can be transmitted. This includes monitor resolutions up to 2560x2048@60Hz. The data rate is limited to 330 MPixel/s.

HDMI Single-Link

Video:

The audio / video interface can transmit monitor resolutions such as 1920x1200@60Hz, Full HD (1080p) or 2K HD (up to 2048x1152). Data rate is limited to 165 MPixel/s and 8 bit.

Audio

Various audio formats can be transmitted through the interface.

Standards	Stereo Linear Pulse Code Modulation (LPCM), DTS, DTS-HD (5.1), Dolby Digital, Dolby Digital Plus (5.1)
Bit Depth	16 to 24 bit
Sample Rate	32 to 192 kHz

Table 29. HDMI Audio Specifications

3D

The interface is compatible with 3D. So, the Side-by-Side and Top-and-Bottom 3D formats can be transmitted.

HDCP

HDCP coded content is currently not supported.

USB-HID

Orion XTender boards with a USB-HID interface support a maximum of two USB-HID devices. Each USB-HID port provides a maximum current of 100 mA.

Keyboard

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

Mouse

The extenders are compatible with most 2-button, 3-button, and wheel mice.

Other USB-HID devices

The custom USB emulation on the Orion Xtenders also supports other USB-HID devices, such as specific touch screens, graphic tablets, barcode scanners and special keyboards. However, support cannot be guaranteed for every USB-HID device.

Notes:

1. Only two USB-HID devices can be connected at a time, such as a keyboard and a mouse, or a keyboard and a touch screen. An external hub is allowed, but it does not increase the number of HID devices allowed.
2. To support other USB 'non-HID' devices, such as scanners, web cams or memory devices, choose boards with USB 2.0 (transparent) support.

PS/2

Boards with PS/2 connectors support the use of a PS/2 keyboard and mouse.

Keyboard

The units are compatible with most PS/2 keyboards, even with various special keyboards. Certain keyboards with additional functions can be run with special firmware.

Mouse

The units are compatible with most 2-button, 3-button, and wheel mice.

USB 2.0 (transparent)

Orion Xtender models with transparent USB 2.0 support 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 embedded (max. 36/100/480 Mbits, depending on the type of board).

Each embedded USB port provides a maximum current of 500 mA (high power). When using a USB high speed interface with 4 USB ports, 2 of the connectors provide a maximum of 500 mA (high power) and 2 connectors a maximum of 100 mA.

RJ45 (Interconnect)

Orion Xtenders models with CATx interconnects require 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)

Orion Xtender models with fiber interconnects operate through Gigabit SFPs, which have to be connected with suitable fibers fitted with LC-type connectors. Correct function of the extenders can only be guaranteed when the SFPs provided by Rose Electronics are used.

Note:
SFP modules can be damaged by electrostatic discharge (ESD). Please follow ESD handling specifications.

Serial Interface

The serial interface option supports full-duplex transmission with a real hardware handshake up to a Baud rate of 115,200 Baud. The Receiver is wired as DTE (Data Terminal Equipment, like CPU output) and can be connected directly to DCE devices (Data Communication Equipment).

- Serial touch screens can be connected directly to the Receiver unit.
- To connect to a serial printer (or other DTE device), you need a null modem cable (crossed cable) between the Receiver 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 XON / XOFF software handshake for traffic control at printer and PC.

Connection Format	DTE (Data Terminal Equipment)
Speed	Up to 115,200 baud
Data Format	Format independent
Data Transmission	▪ RxD (Receive Data) ▪ TxD (Transmit Data)
Traffic Control	The following signals are transmitted (handshake): ▪ RTS (Request To Send) ▪ CTS (Clear To Send) ▪ DTR (Data Terminal Ready) ▪ DSR (Data Set Ready)

Table 30. Serial Interface Specifications

RS422 Serial Interface

Orion Xtenders with a RS422 serial interface (D-Sub 9) support a differential full duplex transmission up to a Baud rate of 115,200 Baud. The Transmitter is designed as controlling device, and so can be connected directly to video or media servers. The Receiver 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
Traffic Control	▪ RX+ (Receive Data) ▪ RX- (Receive Data) ▪ TX+ (Transmit Data) ▪ TX- (Transmit Data)

Table 31. RS422 Serial Interface Specifications

Note:

The serial interface only supports one connected device per upgrade module.

Analog Audio Interface

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

Connecting 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 Transmitter Unit is connected to the microphone input of the sound card (red). Adjust the sound card to provide an additional amplification (20 dB).
- The output of the Transmitter Unit is connected to the audio input of the sound card (blue). Choose this connection if the microphone has its own pre-amplifier.

The Receiver Unit can also supply pre-amplification of a microphone. Open the Receiver Unit, locate the *MIC* jumper on the audio board and close the pins.

Transmission Format	Digitized virtually CD quality audio (16 bit, 38.4 KHz)
Signal Level	Line-Level (5 Volt Pk-Pk maximum)
Input Impedance	47 KΩ
Transmitter Connectors	2x 3.5 mm stereo jack plug (audio in & audio out)
Receiver Connectors	2x 3.5 mm stereo jack plug (audio in & audio out)

Table 32. Analog Audio Specifications

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

Table 33. Analog Audio USB 2.0 Specifications

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 simultaneously, the XLR signal takes priority; otherwise, the first active signal does. All three connectors on the Receiver concurrently provide digital audio.

Embedded Upgrade Cards with the digital audio option include a built-in sample rate converter which provides predefined sample frequencies at the Receiver's output. The user can directly set the following parameters by using the Configuration File as described on page 50.

- 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 the frequency of the sample rate converter by adding the *SRC* parameter. The following sample frequencies are available:
  - 32.0 kHz (add *SRC32000* in the *"Config.txt"* file of the Transmitter unit)
  - 44.1 kHz (add *SRC44100* in the *"Config.txt"* file of the Transmitter unit)
  - 48.0 kHz (add *SRC48000* in the *"Config.txt"* file of the Transmitter unit)
  - 96.0 kHz (add *SRC96000* in the *"Config.txt"* file of the Transmitter unit)
- Additionally, a delay can be set for converting the sample rate. The time is set in milliseconds and separated from the parameter for the sample rate by a semicolon (e.g. *SRC44100;12*). The following delays can be set up for the sample rates:
  - 32.0 kHz: 3 - 60 ms
  - 44.1 kHz: 2 - 44 ms
  - 48.0 kHz: 2 - 40 ms
  - 96.0 kHz: 1 - 20 ms
- To deactivate the sample rate converter, write *SRC_NONE* in the *"Config.txt"* file of the Transmitter unit.

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

Table 34. Digital Audio Specifications

Note:
For testing purposes it is possible to generate a sinus tone on the digital audio input module. In order to do so set Jumper 1 on the input module.

Interconnect Cable

The cables used to connect the Orion Xtender Transmitter and Receiver units are to each other, and to the Orion X and Orion XC matrix switches are described here.

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 Cat X cables near power cables.

Notes:

- To maintain regulatory EMC compliance, correctly installed shielded Cat X cable must be used throughout the interconnection link.
- To maintain regulatory EMC compliance, all Cat X cables should have ferrites installed on both cable ends close to the devices.

Type of Interconnect Cable

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

Type of Cable	Specifications
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).

Table 35.CATx Cable Specifications

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

Maximum Acceptable Cable Length

Cat X Installation Cable AWG24	460 ft (140 m)
Cat X Patch Cable AWG26/8	230 ft (70 m)

Table 36. Maximum Acceptable CATx Cable Lengths

Fiber

A point-to-point connection is necessary. Operation with multiple patch panels is allowed. Routing over active network components, such as Ethernet Hubs, Matrixes 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)

Table 37, Fiber Cable Specifications

Only use Single-mode connection cables for fiber connections that are based on 3G SFPs.

Maximum Acceptable Cable Length

Type of cable	Maximum Acceptable Cable Length
Single-mode 9µm	32,800 ft (10,000 m)
Single-mode 9µm XV	16,400 ft (5000 m)
Multi-mode 50µm (OM3)	3,280 ft (1,000 m)
Multi-mode 50µm	1,300 ft (400 m)
Multi-mode 62.5µm	650 ft (200 m)

Table 38. Maximum Acceptable Fiber Cable Lengths

If single-mode SFPs are used with multi-mode fiber cables, the maximum acceptable cable length can normally be increased.

Type of Connector: LC Connector

Supported Peripherals

This section describes the support for USB peripherals.

USB-HID Devices

Orion Xtenders with USB-HID support normal operation of 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 some cases, custom firmware may be required. USB-HID devices that do not operate correctly on extenders with USB-HID support will usually work correctly with the extenders featuring transparent USB 2.0 support.

USB 2.0 Devices

Orion Xtender models featuring a transparent USB 2.0 connection use a proprietary technology which supports most types of USB 2.0 and USB 1.1 devices. However, the manufacturer cannot guarantee compatibility with every device on the market. Please contact Rose Electronics if any issues are found.

Connector Pinouts

This section shows the pinouts for the connectors on the Orion Xtender cards. As there are a huge variety of cards, these pinouts apply to the cards with the specified connectors on them.

Video Connectors

DVI-D and DVI-I Single-Link Connector

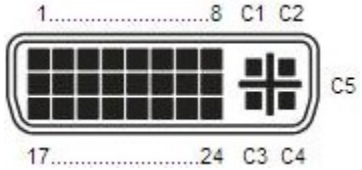


Figure 39. DVI-D and DVI-I Single-Link Connector Pinouts

DVI-D Single-Link Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	T.M.D.S data 2-	9	T.M.D.S data 1-	17	T.M.D.S data 0-
2	T.M.D.S data 2+	10	T.M.D.S data 1+	18	T.M.D.S data 0+
3	T.M.D.S data 2 GND	11	T.M.D.S data 1 GND	19	T.M.D.S data 0 GND
4	n.c.	12	n.c.	20	n.c.
5	n.c.	13	n.c.	21	n.c.
6	DDC Input (SCL)	14	+5VDC high impedance	22	T.M.D.S clock GND
7	DDC Output (SDA)	15	GND	23	T.M.D.S clock+
8	Internal use	16	Hot Plug recognition	24	T.M.D.S clock-
C1	Internal use			C3	Internal use
C2	n.c.	C5	GND	C4	Internal use

Table 39. DVI-D Single-Link Connector Pinouts

DVI-I Single-Link Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	T.M.D.S data 2-	9	T.M.D.S data 1-	17	T.M.D.S data 0-
2	T.M.D.S data 2+	10	T.M.D.S data 1+	18	T.M.D.S data 0+
3	T.M.D.S data 2 GND	11	T.M.D.S data 1 GND	19	T.M.D.S data 0 GND
4	n.c.	12	n.c.	20	n.c.
5	n.c.	13	n.c.	21	n.c.
6	DDC Input (SCL)	14	+5VDC high impedance	22	T.M.D.S clock GND
7	DDC Output (SDA)	15	GND	23	T.M.D.S clock+
8	V-sync	16	Hot Plug recognition	24	T.M.D.S clock-
C1	Red signal			C3	Blue signal
C2	Green signal	C5	GND	C4	H-sync

Table 40. DVI-D Single-Link Connector Pinouts

DMS-59 Dual-Link Connector

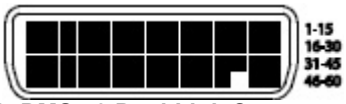


Figure 40. DMS-59 Dual-Link Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	21	RX5_U	41	GND
2	n.c.	22	GND	42	GND
3	n.c.	23	n.c.	43	GND
4	GND	24	GND	44	BRXC_N
5	5V DVI	25	RX2_P	45	BRXC_P
6	DDC SCL	26	RX2_N	46	GND
7	DDC SDA	27	RX1_P	47	n.c.
8	GND	28	RX1_N	48	n.c.
9	BDDC SDA	29	RX0_P	49	GND
10	BDDC SCL	30	RX0_N	50	n.c.
11	B5V DVI	31	RXC_P	51	n.c.
12	GND	32	RXC_N	52	GND
13	n.c.	33	GND	53	n.c.
14	n.c.	34	GND	54	GND
15	GND	35	GND	55	n.c.
16	RX3_P	36	HPD	56	n.c.
17	RX3_N	37	n.c.	57	GND
18	RX4_P	38	n.c	58	n.c.
19	RX4_N	39	n.c.	59	n.c.
20	RX5_P	40	BHPDT	60	GND

Table 41. DMS-59 Dual-Link Connector Pinouts

HDMI Connector

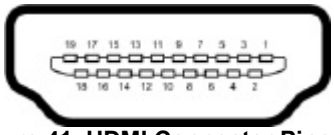


Figure 41, HDMI Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	T.M.D.S data 2 +	8	T.M.D.S data 0 GND	15	DDC Input (SCL)
2	T.M.D.S data 2 GND	9	T.M.D.S data 0 -	16	DDC Output (SDA)
3	T.M.D.S data 2 -	10	T.M.D.S clock +	17	DDC/CEC/HEC GND
4	T.M.D.S data 1 +	11	T.M.D.S clock GND	18	+5VDC high impedance
5	T.M.D.S data 1 GND	12	T.M.D.S clock -	19	Hot Plug recognition
6	DDC Input (SCL)	13	CEC		
7	T.M.D.S data 1 -	14	HEC data -		

Table 42. HDMI Connector Pinouts

HID Connectors

USB Type A Connector

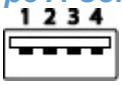


Figure 42.USB Type A Connector Pinouts

Pin	Signal	Color	Pin	Signal	Color
1	VCC (+5VDC)	Red	3	Data +	Green
2	Data –	White	4	GND	Black

Table 43. USB Type A Connector Pinouts

USB Type B Connector

Figure 43. USB Type B Connectors Pinouts

Pin	Signal	Color	Pin	Signal	Color
1	VCC (+5VDC)	Red	3	Data +	Green
2	Data –	White	4	GND	Black

Table 44. USB Type B Connector Pinouts

Mini USB Type B Connector

Figure 44. Mini USB Type B Connector

Pin	Signal	Color	Pin	Signal	Color
1	VCC (+5VDC)	Red	4	n.c.	–
2	Data –	White	5	GND	Black
3	Data +	Green			

Table 45. Mini USB Type B Connector Pinouts

PS/2 Connector

Figure 45. PS/2 Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	DATA	3	VCC (+ 5VDC)	5	n.c.
2	GND	4	CLK	6	n.c.

Table 46. PS/2 Connector Pinouts

Interconnect Connectors

RJ45 (CATx) Connector

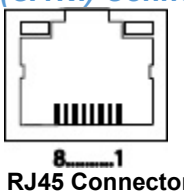


Figure 46. RJ45 Connector Pinouts

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

Table 47. RJ45 Connector Pinouts

Fiber SFP Type LC Connector

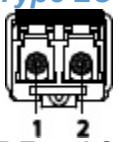


Figure 47. Fiber SFP Type LC Connector Pinouts

Diode	Signal	Diode	Signal
1	Data OUT	3	Data IN

Table 48. Fiber SFP Type LC Connector Pinouts

Power Supply Connector

Power Supply Connector

Figure 48. Power Supply Connector Pinouts

Pin	Signal	Pin	Signal
Inside	VCC (+5VDC)	Outside	GND

Table 49, Power Supply Connector Pinouts

Serial Connectors

D-Sub 9 (Serial) Connector for RS232 and RS422

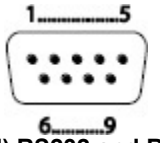


Figure 49. D-Sub 9 (Serial) RS232 and RS422 Connector Pinouts

D-Sub 9 (Serial) RS232 Connector Pinouts

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

Table 50. D-Sub 9 (Serial) RS232 Connector Pinouts

D-Sub 9 (Serial) RS422 Controlled Device Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	4	Tx-GND	7	RxB
2	RxA	5	n.c.	8	TxA
3	TxB	6	Rx-GND	9	n.c.

Table 51. D-Sub 9 (Serial) RS422 Controlled Device Connector Pinouts

D-Sub 9 (Serial) RS422 Controlling Device Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	4	Rx-GND	7	TxB
2	TxA	5	n.c.	8	RxA
3	RxB	6	Tx-GND	9	n.c.

Table 52. D-Sub 9 (Serial) RS422 Controlling Device Connector Pinouts

Analog and Digital Audio Connectors

3.5 / 6.35 mm Stereo Jack Plug

Figure 50. 3.5 / 6.35 mm Stereo Jack Plug Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Audio IN / OUT L	3	Audio IN / OUT R

Table 53. 3.5 / 6.35 mm Stereo Jack Plug Pinouts

RCA (Cinch) Connector

Figure 51. RCA (Cinch) Connector Pinouts

Pin	Signal	Pin	Signal
1	GND	2	Data IN / OUT L

Table 54. RCA (Cinch) Connector Pinouts

Mini-XLR Connector

Figure 52. Mini-XLR Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Data +	3	Data -

Table 55. Mini-XLR Connector Pinouts

TOSLINK Connector

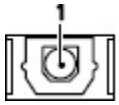


Figure 53. TOSLINK Connector Pinouts

Diode	Signal
1	Data IN / OUT

Table 56. TOSLINK Connector Pinouts

Appendix B – Part Numbers

Part Numbers for the Orion Xtender Chassis models are given here. The Part Numbers for Orion Xtender Cards can be found in the section Orion XTender Card Types found on page 12.

Chassis Part Number	Description
1OEE_CH02	Chassis for up to 2 boards, 1x external power supply unit
1OEE_CH03	Chassis for up to 2 boards, 1x internal power supply unit, accommodation for a redundant power supply unit (external)
1OEE_CH04	Chassis for up to 4 boards, 1x external power supply unit
1OEE_CH06	Chassis for up to 6 boards, 1x internal power supply unit, accommodation for a redundant power supply unit (external)
1OEE_CH07	Chassis for up to 6 boards, active backplane, 2x internal power supply unit (redundancy) with connectors on rear side
1OEE_CH21/RP	Chassis for up to 21 boards, 1x internal power supply unit, preparation for redundancy for a second power supply unit (internal)

Table 57.Orion Xtender Chassis Part Numbers

Appendix C – Power Supply

Power Supply requirements are described here.

AC Power Supply

Chassis Model	Maximum Current	Maximum Voltage	Voltage Frequency
1OEE_CH02	0.7 Amp max.	100-240 V	50/60 Hz
1OEE_CH06	1.4 Amp max.	100-240 V	47-63 Hz
1OEE_CH07	1.3 Amp max.	100-240 V	50/60 Hz
1OEE_CH21/RP	4 Amp max.	2x 100-240 V	50/60 Hz
1OEE_CH02	0.7 Amp max.	100-240 V	50/60 Hz

Table 58. Orion Xtender Chassis AC Power Supply Requirements

DC Power Supply

Chassis Model	Maximum Current	Maximum Voltage
1OEE_CH02	3 Amp	5 VDC
1OEE_CH03	5 Amp	5 VDC
1OEE_CH04	5 Amp	5 VDC
1OEE_CH06	12 Amp	5 VDC

Table 59. Orion Xtender Chassis DC Power Supply Requirements

Power Requirements Per Unit

Orion Xtender Units	
Single-Head devices	max. 0.8 Amp
Onboard DVI-I devices	max. 1.2 Amp
VGA	max. 1.7 Amp
Redundancy devices	max. 1.05 Amp
Orion Xtender Cards	
Analog Audio / Serial	max. 0.3 Amp
Serial(RS422)	max. 0.15 Amp
Balanced Audio	max 0.5 Amp
Digital Audio	max. 0.3 Amp
USB-HID	max. 0.3 Amp
PS/2	max. 0.65 Amp
USB 2.0 embedded	max. 1.1 Amp
USB 2.0	max. 2.5 Amp
Analog Audio / Serial	max. 0.3 Amp

Table 60. Orion Xtender Power Requirements

Appendix D – Environmental Conditions

Temperature and Humidity	
Operating Temperature	41°F to 113°F (5°C to 45°C)
Storage Temperature	–13°F to 140°F (–25°C to 60°C)
Relative Humidity	Max. 80% non-condensing
Noise Emission	
Sound Pressure Level (SPL)	max 0.21 dBA per fan (474-6FAN)
Heat Dissipation	
Thermal output	Corresponds to power consumption in Watt (W)

Table 61. Orion Xtender Environmental Specifications

Appendix E – Physical Specifications

The physical dimensions and weights of the Orion Xtender Chassis models are described here.

Physical Dimensions

Chassis Model	Extender Unit Size	Shipping Box Size
1OEE_CH02	5.7 in x 5.8 in x 1.7 in / 145 mm x 147 mm x 41 mm	8.3 in x 5.5 in x 6.5 in / 210 mm x 140 mm x 165 mm
1OEE_CH03	8.7 in x 5.8 in x 1.7 in / 221 mm x 147 mm x 41 mm	21.7 in x 14.4 in x 4.5 in / 550 mm x 365 mm x 115 mm
1OEE_CH04	11.5 in x 5.8 in x 1.7 in / 293 mm x 147 mm x 41 mm	21.7 in x 14.4 in x 4.5 in / 550 mm x 365 mm x 115 mm
1OEE_CH06	17.4 in x 5.8 in x 1.7 in / 442 mm x 147 mm x 41 mm	29.9 in x 14.4 in x 4.5 in / 760 mm x 365 mm x 115 mm
1OEE_CH07	17.4 in x 9.8 in x 1.7 in / 442 mm x 250 mm x 44 mm	21.7 in x 14.6 in x 6.1 in / 550 mm x 372 mm x 155 mm
1OEE_CH21/RP	19.0 in x 18.2 in x 6.9 in / 482 mm x 462 mm x 176 mm	25.4 in x 22.6 in x 14.5 in / 645 mm x 574 mm x 368 mm

Table 62. Orion Xtender Chassis Physical Dimensions

Shipping Weights

Chassis Model	Extender Unit Weight	Shipping Box Weight
1OEE_CH02	1.5 lb / 0.7 kg	5.5 lb / 2.5 kg
1OEE_CH03	2.4 lb / 1.1 kg	6.4 lb / 2.9 kg
1OEE_CH04	2.0 lb / 0.9 kg	7.5 lb / 3.5 kg
1OEE_CH06	4.2 lb / 1.9 kg	11.2 lb / 5.1 kg
1OEE_CH07	5.5 lb / 2.5 kg	7.7 lb / 3.5 kg
1OEE_CH21/RP	22.1 lb /10.0 kg	32.0 lb / 14.5 kg

Table 63. Orion Xtender Shipping Weights

ROSE.COM

WWW.ROSE.COM ▪ sales@rose.com ▪ (800) 333-9343

Rose Electronics ▪ 10707 Stancliff Road ▪ Houston, Texas 77099
Rose USA (281) 933-7673 ▪ Rose Europe +49 (0) 2454 969442
Rose Asia +65 6324 2322 ▪ Rose Australia +61 (0) 421 247083

ROSE ELECTRONICS

WWW.ROSE.COM