Orion XTender

Digital CATx or Fiber KVM Extender

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 extension system 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 the products during the one-year warranty period to Rose Electronics or an authorized repair center providing a proof of purchase date. If the products 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.

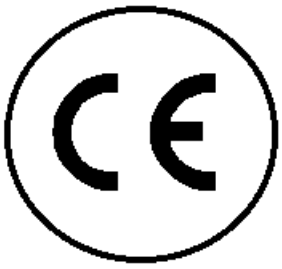
IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTIED ABOVE, YOUR SOLE REMEDY SHALL BE REPLACEMENT OR REPAIR AS PROVIDED ABOVE. IN NO EVENT WILL ROSE ELECTRONICS BE LIABLE TO YOU FOR ANY DAMAGES INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF 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.

DECLARATIONS OF CONFORMITY

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 55032:2015 + AC:2016 + A11:2020 + A1:2020
- EN 55035:2017/A11:2020
- EN IEC 61000-3-2:2019
- EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022
- EN 61000-6-2:2019



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 62368-1:2014
- EN 62368-1:2014/A11:207
- UL 62368-1:2014
- CAN/CSA-C22.2 No. 62368-1:2014

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

Contents

Disclaimer 1
System Introduction 1
Features 2
Compatibility 2
  General Compatibility 2
  Video Intercompatibility 3
  Audio Intercompatibility 4
  Interconnection Compatibility 5
Package contents 6
System Overview 7
Orion XTender Models 8
  Orion XTender Chassis Types 8
    Orion XTender 2-Card Chassis 8
    Orion XTender 4-Card Chassis 10
    Orion XTender 6-Card Chassis 10
    Orion XTender 21-Card Chassis 14
  Orion XTender Card Types 15
    Video Cards 15
      DVI Cards 15
      HDMI Cards 20
      DP Video Cards 31
    Option Cards 37
      Option Cards with Only USB HID or USB 2.0 Functionality 37
      Option Cards with RS-232 38
      Option Cards with RS-422 39
      Option Cards with Digital Audio 40
      Option Cards with Balanced Uni-Directional Analog Audio 41
      Receiver-Only Option Cards 42
      Unit-Independent Option Cards 43
  Orion XTender Units 44
    Units with 2-Card Chassis 44
    Units with 4-Card Chassis 46
    Units with 6-Card Chassis 47
    Units with 21-Card Chassis 49
Installation 50
  Installing or Swapping Out the Orion XTender Cards 50
    XTender Card Installation Considerations 51
    Slot Numbering 51
    Pre-Cursor Steps to XTender Card Installation 52
      Pre-Installation Steps for the 2-Card, 4-Card and 6-Card Mounting Chassis 52
      Pre-Installation Steps for the 2-Card and 6-Card Slide-In Chassis 53
      Pre-Installation Steps for the 21-Card Slide-In Chassis 53
    XTender Card Installation 53

Main Video Card Installation 54
Option Card Installation 61
USB 2.0 Only Option Card Installation 67
SNMP Option Card Installation 69
Fan Option Card Installation 69
Chassis Fan Installation 70
Power Supply Installation in a 21-Card Chassis 72
Installing a Redundant Power Supply Unit 72
Replacing a Redundant Power Supply Unit 73
Getting the Orion XTender Units Ready for Operation 74
Main Video Card Setup 74
Receiver Unit Installation 74
Transmitter Unit Installation 74
To Set Up a Point-to-Point Connection Between the Transmitter and Receiver Units 74
Setup of Option Cards 74
Option Card with USB HID 74
Option Card with USB 2.0 74
Option Cards with Serial RS-232 / RS-422 74
Option Cards with Analog Audio 74
Option Cards with Digital Audio 75
Option Cards with Balanced Analog Audio 75
Option Cards with GPIO 75
SNMP Option Card 76
Advanced Configuration of SNMP with the Java Tool 77
Status LEDs 78
Chassis 78
2-Card Chassis 78
OEE-CH02 78
OEE-CH02/RP, OEE-CH02/DP 78
OEE-CH03/RP, OEE-CH03/DP 79
OEE-CH03/D12, OEE CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48, OEE-CH03/D48/DP 79
OEE-CH05/RP, OEE-CH05/DP 80
OEE-CH05/S/RP, OEE-CH05/S/DP 80
OEE-CH05/SNMP/RP, OEE-CH05/SNMP/DP 81
4-Card Chassis 82
OEE-CH04 82
OEE-CH04/RP, OEE-CH04/DP 83
6-Card Chassis 83
OEE-CH06/RP, OEE-CH06/DP 83
OEE-CH06/D12, OEE-CH06/D12/DP, OEE-CH06/D24, OEE CH06/D24/DP, OEE-CH06/D48, OEE-CH06/D48/DP 84
OEE-CH07/DP, OEE-CH07/SFN/DP 84
OEE-CH08/BPB/DP, OEE-CH08/BPB/SFN/DP 85
OEE-CH08/BPB/SNMP/DP 85

21-Card Chassis 87
OEE-CH21/RP 87
OEE-CH21/DP 88
Video Cards 89
Orion XTender Card Front Panel LED 89
Link Status LEDs 89
Video and USB HID Status LEDs 91
DVI Card Status LEDs 91
HDMI Cards Status LEDs 96
DP Cards Status LEDs 97
USB 2.0 High Speed Extender Cards 104
Option Cards 105
USB 2.0 Only Option Card Status LEDs 105
USB HID Only Option Card Status LEDs 106
Digital Audio Only Embedded Upgrade Card Status LED 107
Balanced Analog Audio Option Card 107
SNMP Option Card 108
Fan Option Card 109
Configuring and Operating the Orion XTender 110
Operations with Keyboard Hotkeys 110
Command Mode 110
USB HID Ghosting 111
Downloading the EDID 112
Switching of Video Channels in Dual Head Mode (DP Only) 112
Switching Between Transmitters from a Receiver with Redundant Interconnect Links 113
Orion XTender Configuration Through the Service Port 113
EDID Configuration 114
Configuration File 114
Transmitter Settings 115
Receiver Settings 116
Transmitter and Receiver Settings 117
Option Cards 117
Transmission Parameters 118
Troubleshooting the Orion XTender System 119
General Failures 119
Blank Screen 119
DVI Cards 119
DVI-D Cards 119
DVI-I Transmitter-Receiver Pair Video Cards 122
DVI-I with Scaling Standalone Transmitter Card 124
HDMI Cards 125
HDMI 1.3, HDMI 1.4 Cards 125
HDMI 2.0 with HDCP Cards 126
DP Cards 126
DP 1.1 Single-Head Video Cards 127

DP 1.2 Cards 131
Video Card USB HID Error Conditions 132
DVI Cards 132
DVI-D Cards 132
DVI-I Transmitter-Receiver Pair Video Cards 134
DVI-I with Scaling Standalone Transmitter Cards 136
HDMI Cards 138
HDMI 1.3, HDMI 1.4 Cards 138
HDMI 2.0 with HDCP Cards 139
DP Cards 140
DP 1.1 Single-Head Video Cards 140
DP 1.1 Dual-Head Video Cards 142
DP 1.2 Cards 144
Option Card Error Conditions 145
Serial Connection 145
Analog Audio 145
Digital Audio Option Card 146
USB 2.0 Only Option Card 146
USB HID Only Option Card 147
Fan Option Card 147
SNMP Option Card 148
Loss of Access to SNMP Functions 148
Safety 149
Maintenance and Repair 150
Technical Support 150

Figures

Figure 1. System Overview 7
Figure 2. Orion XTender 2-Card Chassis Part 1 8
Figure 3. Orion XTender 2-Card Chassis Part 2 9
Figure 4. Orion XTender 4-Card Chassis 10
Figure 5. Orion XTender 6-Card Chassis Part 1 10
Figure 6. Orion XTender 6-Card Chassis Part 2 11
Figure 7. Orion XTender 6-Card Chassis Part 3 12
Figure 8. Orion XTender 21-Card Chassis 14
Figure 9. DVI-D Cards 15
Figure 10. DVI Cards: DVI-D Cards with Redundant Link 16
Figure 11. DVI-I Transmitter – Receiver Pairs 17
Figure 12. DVI-I Transmitter – Receiver Pairs with Redundant Link 18
Figure 13. DVI-I (VGA) Transmitter Cards with Scaling 19
Figure 14. HDMI 1.3 HD Video-Only Cards 20
Figure 15. HDMI 1.3 HD Cards 21
Figure 16. HDMI 1.3 HD Cards with Redundant Links 22
Figure 17. HDMI 1.3 HD Transmitter Cards with Local Video Output 23
Figure 18. HDMI 1.3 HD Transmitter Cards with Local Video Output and Redundant Link 24
Figure 19. HDMI 1.3 HD Receiver Cards with Local Video Input 25
Figure 20. HDMI 1.3 HD Receiver Cards with Local Video Input and Redundant Link 26
Figure 21. HDMI 1.4 UHD and UHD Plus Cards 27
Figure 22. HDMI 1.4 UHD Cards with Redundant Links 28
Figure 23. HDMI 2.0 UHD Plus Cards 29
Figure 24. HDMI 2.0 UHD Plus with Redundant Link Cards 30
Figure 25. DP 1.1 and DP 1.1 Plus Dual-Head Cards 31
Figure 26. DP 1.1 and DP 1.1 Plus Dual-Head Cards with Redundant Links 32
Figure 27. DP 1.2 Plus Cards 33
Figure 28. DP 1.2 Cards with OneLink Port Part 2 34
Figure 29. DP 1.2 Cards with a Redundant CATx Link Port 35
Figure 30. DP 1.2 Cards with a Redundant Fiber Link Port 36
Figure 31. Option Cards with Only USB HID or USB 2.0 Functionality 37
Figure 32. Option Cards with Serial RS-232 38
Figure 33. Option Cards with RS-422, Part 1 39
Figure 34. Option Cards with RS-422, Part 2 40
Figure 35. Option Cards with Digital Audio 40
Figure 36. Option Cards with Balanced Analog Audio 41
Figure 37. Push Button Option Card 42
Figure 38. GPIO Option Card 42
Figure 39. SNMP Option Card 43
Figure 40. Fan Option Card 43
Figure 41. Units with 2-Card Chassis, Part 1 44
Figure 42. Units with 2-Card Chassis, Part 2 45
Figure 43. Units with 4-Card Chassis 46
Figure 44. Units with 6-Card Chassis, Part 1 47

Figure 45. Units with 6-Card Chassis Part 2 48
Figure 46. Units with 21-Card Chassis 49
Figure 47. Slot Numbering on XTender Chassis 51
Figure 48. Location of Grounding Screw on a Mounting Chassis 52
Figure 49. Positioned Main Video Card with Connected Power Cable 54
Figure 50. Front Panel with Fastening Screws 54
Figure 51. Main Video Card with Grounding Screw 54
Figure 52. Main Card in Horizontal Guidance, Snapped in, 2-Card or 6-Card Chassis Backplane 55
Figure 53. Front Panel with Fastening Screws 55
Figure 54. Safety Nipple on Front Panel of 21-Card Chassis 56
Figure 55. Safety Nipple with Inserted Knurled Screw 56
Figure 56. Main Video Card in Horizontal Guidance, Snapped in, 21-Card Chassis Backplane 57
Figure 57. Positioning of Conduction Pads on HDMI 2.0 and DP 1.2 Cards 60
Figure 58. Main Video Card Bottom View with Labeled XPorts 61
Figure 59. Main Video Card Top View with Labeled XPorts 62
Figure 60. Option Card Mounted in a Mounting Chassis 63
Figure 61. Method 1: Option Card and Main Video Card Mounted in a Mounting Chassis 63
Figure 62. Option Card Connected to a Main Video Card Through XPort Adapters 64
Figure 63. Method 2: Option Card and Main Video Card Mounted in a Mounting Chassis 64
Figure 64. Option Card Mounted in a 2-Card or 6-Card Slide-In Chassis 65
Figure 65. Paired Main Video Card and Option Card Joined with a Connection Plate 66
Figure 66. Option Card Mounted in a 21-Card Slide-In Chassis 66
Figure 67. Main Video Card and Option Card mounted in a 21-card Slide-In Chassis 66
Figure 68. Allowed Positions for USB 2.0 Only Option Cards in a Mounting Chassis 67
Figure 69. Power Supply, USB 2.0 Only Option Card Via Power Cable in a Mounting Chassis 67
Figure 70. Removing Jumper from Between Pin 1 and Pin 3 on a USB 2.0 Only Option cad 68
Figure 71. SNMP Option Card Installed in a 21-Card Chassis 69
Figure 72. SNMP Option Card Installed in a 6-Card Chassis 69
Figure 73. Positioning the Chassis Fan for Installation 70
Figure 74. Positioning the Mounting Plate for the Chassis Fan 70
Figure 75. Fastening the Fan to the Chassis 71
Figure 76. Arrangement of Chassis Fan Power Cables 71
Figure 77. Removing the Blanking Plate from a 21-Card Chassis 72
Figure 78. Pull-Out Lever on the Power Supply Unit of a 21-Card Chassis 72
Figure 79. Locking Tab and Pull-Out Lever on Power Supply Unit of a 21-Card Chassis 73
Figure 80. GPIO Option Card with GPIO Set as an Output Interface 75
Figure 81. GPIO Option Card with GPIO Set as an Input Interface 76
Figure 82. Status LED on OEE-CH02 Chassis 78
Figure 83. Status LEDs on OEE-CH02/RP and OEE-CH02/DP Chassis 78
Figure 84. Power Status Indicators on OEE-CH03/RP and OEE-CH03/DP Chassis 79
Figure 85. Power Status Indicators on OEE-CH03/D12, OEE CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48 and OEE-CH03/D48/DP Chassis 79
Figure 86. Power Status Indicators on OEE-CH05/RP and OEE-CH05/DP Chassis 80
Figure 87. Power Status Indicators on OEE-CH05/S/RP and OEE-CH05/S/DP Chassis 80
Figure 88. Power Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis 81

Figure 89. Network Connection Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis 81
Figure 90. SNMP Function Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis 82
Figure 91. Status LED on OEE-CH04 Chassis 82
Figure 92. Status LED on OEE-CH04/RP and OEE-CH04/DP Chassis 83
Figure 93. Power Status Indicators on OEE-CH06/RP and OEE-CH06/DP Chassis 83
Figure 94. Power Status Indicators, OEE-CH06/D12, OEE-CH06/D24 and OEE CH06/D48 Chassis 84
Figure 95. Power Status Indicators on OEE-CH07/DP and OEE-CH07/SFN/DP Chassis 84
Figure 96. Power Status Indicators on OEE-CH08/BPB/DP and OEE-CH08/BPB/SFN/DP Chassis 85
Figure 97. Power Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis 85
Figure 98. Network Connection Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis 86
Figure 99. SNMP Function Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis 86
Figure 100. Power Status Indicators on OEE-CH21/RP Chassis 87
Figure 101. Status LEDs on OEE-CH21/DP Chassis 88
Figure 102. Front Panel LED on DVI-I (VGA) Video Card 89
Figure 103. Link Status LEDs on Video Cards 90
Figure 104. Video, USB HID, and Link Status LEDs: DVI-D XTenders 91
Figure 105. DVI-I Transmitter-Receiver Video, USB HID, and Link Status LED Locations 93
Figure 106. DVI-I Standalone Transmitter Video, USB HID, and Link LED Location 95
Figure 107. Status LED Locations on HDMI 1.3, 1.4 Video Cards 96
Figure 108. Status LED Locations on HDMI 2.0 with HDCP Video Cards 97
Figure 109. Video and USB HID Status LEDs: DP 1.1 and DP 1.2 Video Cards 97
Figure 110. USB 2.0 High Speed Extender Cards 104
Figure 111. USB 2.0 High Speed Extender Card: USB 2.0 Status LED 104
Figure 112. Status LEDs on USB 2.0 Only Option Card 105
Figure 113. Status LEDs on USB HID Only Option Card 106
Figure 114. Status LED on Digital Audio Only Option Card 107
Figure 115. Status LEDs on Balanced Analog Audio Option Card 107
Figure 116. Status LEDs on SNMP Option Card 108
Figure 117. Status LED on Fan Option Card 109
Figure 118. Orion XTender Configuration and Firmware Files on the XTender Unit 113
Figure 119. Sample Modification of a Config.txt File 114
Figure 120. Using Jumper 2 on the SNMP Option Card to Reset to Factory Defaults 148
Figure 121. DVI-D Connector Pinouts 162
Figure 122. DVI-I Connector Pinouts 163
Figure 123. HDMI 1.3 Connector Pinouts 163
Figure 124. HDMI 2.0 Connector Pinouts 164
Figure 125. DP 1.1 and 1.2 Connector Upstream Pinouts 164
Figure 126. DP 1.1 and 1.2 Connector Downstream Pinouts 165
Figure 127. Mini DP 1.1 and 1.2 Connector Upstream Pinouts 165
Figure 128. Mini DP 1.1 and 1.2 Connector Downstream Pinouts 166
Figure 129. USB Type A Connector Pinouts 167
Figure 130. USB Type B Connectors Pinouts 167
Figure 131. Mini USB Type B Connector 167

Figure 132. RJ45 Network Connector Pinouts 168
Figure 133. RJ45 SNMP Connector Pinouts 168
Figure 134. Fiber SFP Type LC Network Connector Pinouts 168
Figure 135. D-Sub 9 (Serial RS-232) DCE Connector, Transmitter Pinouts 169
Figure 136. D-Sub 9 (Serial RS-232) DTE Connector on Receiver Pinouts 169
Figure 137. D-Sub 9 (Serial RS-422) on Transmitter Pinouts 170
Figure 138. D-Sub 9 (Serial RS-422) on Receiver Pinouts 170
Figure 139. D-Sub 9 (GPIO) Connector Pinouts 170
Figure 140. 3.5 / 6.35 mm Stereo Jack Plug Pinouts 171
Figure 141. Phoenix Terminal Block, 6-pole Connector on Transmitter Pinouts 171
Figure 142. Phoenix Terminal Block, 6-pole Connector on Receiver Pinouts 171
Figure 143. RCA (Cinch) Connector Pinouts 172
Figure 144. Mini-XLR Connector Pinouts 172
Figure 145. TOSLINK Connector Pinouts 172
Figure 146. 2.5 mm Barrel Power Supply Connector Pinouts 172
Figure 147. C14 Power Supply Connector Pinouts 173
Figure 148. Kycon 4-Pole Power Supply Connector Pinouts 173
Figure 149. PCB 3-Pole Power Supply Connector Pinouts 173

Tables

Table 1. Compatible Devices 2
Table 2. Video Intercompatibility of Orion XTender Video Cards 3
Table 3. Audio Intercompatibility of Orion XTender Video Cards 4
Table 4. Audio Intercompatibility of Analog Audio Option Cards 5
Table 5. Interconnection Compatibility When Connected Point-to-Point 5
Table 6. Interconnection Compatibility When Connected Through a Matrix or Cross Repeater 5
Table 7. Interconnection Compatibility When Connected Through a Matrix with a Bridge Card 6
Table 8. Balanced Analog Audio Option Card Properties 41
Table 9. Chassis Type by Model 50
Table 10. Maximum HDMI 2.0 and DP 1.2 Cards Per Chassis Type, with Heat Dissipation Options 58
Table 11. Positions of HDMI 2.0 and DP 1.2 cards Per Chassis Type, with Heat Dissipation Options 59
Table 12. XPort Adapters on Option Cards 61
Table 13. GPIO Pin to DIP Switch Mapping 75
Table 14. Network Functions and Firewall Ports 76
Table 15. Power Status Indicators on OEE-CH02 Chassis 78
Table 16. Power Status Indicators on OEE-CH02/RP and OEE-CH02/DP Chassis 78
Table 17. Power Status Indicators on OEE-CH03/RP and OEE-CH03/DP Chassis 79
Table 18. Power Status Indicators on OEE-CH03/D12, OEE CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48 and OEE-CH03/D48/DP Chassis 79
Table 19. Power Status Indicators on OEE-CH05/RP and OEE-CH05/DP Chassis 80
Table 20. Power Status Indicators on OEE-CH05/S/RP and OEE-CH05/S/DP Chassis 80
Table 21. Power Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis 81
Table 22. Network Connection Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis 81

Table 23. SNMP Function Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis 82
Table 24. Power Status Indicators on OEE-CH04 Chassis 82
Table 25. Power Status Indicators on` OEE-CH04/RP and OEE-CH04/DP Chassis 83
Table 26. Power Status Indicators on OEE-CH06/RP and OEE-CH06/DP Chassis 83
Table 27. Power Status Indicators, OEE-CH06/D12, OEE-CH06/D24 and OEE CH06/D48 Chassis 84
Table 28. Power Status Indicators on OEE-CH07/DP and OEE-CH07/SFN/DP Chassis 84
Table 29. Power Status Indicators on OEE-CH08/BPB/DP and OEE-CH08/BPB/SFN/DP Chassis 85
Table 30. Power Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis 85
Table 31. Network Connection Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis 86
Table 32. SNMP Function Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis 86
Table 33. Power Status Indicators on OEE-CH21/RP Chassis 87
Table 34. Status LEDs, OEE-CH21/DP Chassis 88
Table 35. Front Panel Connection Status LED 89
Table 36. Video Card LEDs: CATx Link Status 90
Table 37. Video Card Link Status LEDs: Fiber 1G and 3G Link Status 90
Table 38. DVI-D Transmitter Video and USB HID Status LEDs: Point-to-Point Connection 91
Table 39. DVI-D Transmitter Video, USB HID, and Link Status LEDs: Matrix Connection 92
Table 40. DVI-D Receiver Video, USB HID, and Link Status LEDs: Point-to-Point Connection 92
Table 41. DVI-D Receiver Video, USB HID, and Link Status LEDs: Matrix Connection 92
Table 42. DVI-I Transmitter Video, USB HID, and Link Status LEDs: Point-to-Point Connection 93
Table 43. DVI-I Transmitter Video, USB HID, and Link Status LEDs: Matrix Connection 93
Table 44. DVI-I Receiver Video, USB HID, and Link Status LEDs: Point-to-Point Connection 94
Table 45. DVI-D Receiver Video, USB HID, and Link Status LEDs: Matrix Connection 94
Table 46. DVI-I Scaling Transmitter, Video, USB HID, and Link Status: Point-to-Point Connection 95
Table 47. DVI-I Scaling Transmitter Video, USB HID, and Link Status LED: Matrix Connection 95
Table 48. HDMI 1.3, 1.4 Video Card Video and USB HID Status LED 96
Table 49. HDMI 1.3, 1.4 Video Card Locally Connected Source Status LED 96
Table 50. HDMI 2.0 with HDCP Video Card: Video and USB HID Status LED 97
Table 51. HDMI 2.0 with HDCP Video Card: Locally Connected Source Status LED 97
Table 52. Single-Head DP 1.1 Transmitter Video and USB HID Status LEDs: Point-to-Point 98
Table 53. Single-Head DP 1.1 Receiver Video and USB HID Status LEDs: Point-to-Point Connection 98
Table 54. Single-Head DP 1.1 Transmitter Video and USB HID Status LEDs: Matrix Connection 99
Table 55. Single-Head DP 1.1 Receiver Video and USB HID Status LEDs: Matrix Connection 99
Table 56. Dual-Head DP 1.1 Transmitter Video and USB HID Status LEDs: Point-to-Point 100
Table 57. Dual-Head DP 1.1 Receiver Video and USB HID Status LEDs: Point-to-Point Connection 100
Table 58. Dual-Head DP 1.1Transmitter Video and USB HID Status LEDs: Matrix Connection 101
Table 59. Dual-Head DP 1.1 Video and USB HID Status LEDs: Matrix Connection 101
Table 60. DP 1.2 Transmitter Video and USB HID Status LEDs: Point-to-Point Connection 102
Table 61. DP 1.2 Receiver Video and USB HID Status LEDs: Point-to-Point Connection 102
Table 62. DP 1.2 Transmitter Video and USB HID Status LEDs: Matrix Connection 103
Table 63. Dual-Head DP 1.1 Receiver Video and USB HID Status LEDs: Matrix Connection 103
Table 64. USB 2.0 Only Option Card Status LEDs 105
Table 65. USB HID Only Option Card Status LEDs 106
Table 66. Digital Audio Only Option Card Status LED 107

Table 67. Balanced Analog Audio Option Card Status LEDs 107
Table 68. SNMP Option Card Status LEDs 1 and 2 108
Table 69. SNMP Option Card Status LEDs 3 and 4 108
Table 70. Fan Option Card Status LED 109
Table 71. Command Mode Operation 110
Table 72. Available Hotkey Codes to Change Hotkeys 110
Table 73. USB HID Ghosting Hot Key Commands 111
Table 74. Keyboard Commands to Switch Video Channels in Dual-Head Mode 112
Table 75. Keyboard Commands to Switch Between Video Channels on a Dual-Head Transmitter 113
Table 76. Transmitter Configuration File Settings 115
Table 77. Receiver Configuration File Settings 116
Table 78. Configuration File Settings Required by Both Transmitter and Receiver 117
Table 79. Digital Audio Configuration File Setting 117
Table 80. Balanced Audio Configuration File Setting 117
Table 81. Option Cards with Analog Audio Configuration File Settings 118
Table 82. Fan Option Card Configuration File Settings 118
Table 83. Troubleshooting General Failures 119
Table 84. Troubleshooting Blank Screen, DVI-D Cards Connected Point-to-Point 120
Table 85. Troubleshooting Blank Screen, DVI-D Cards, Matrix Connection 121
Table 86. Troubleshooting Blank Screen, DVI-I Transmitter-Receiver Pair, Point-to-Point 122
Table 87. Troubleshooting Blank Screen, DVI-I Transmitter-Receiver Pair, Matrix Connection 123
Table 88. Troubleshooting Blank Screen, DVI-I Standalone Card, Point-to-Point 124
Table 89. Troubleshooting Blank Screen, DVI-I Standalone Card, Matrix Connection 124
Table 90. Troubleshooting Blank Screen with HDMI 1.3 and HDMI 1.4 Cards 125
Table 91. Troubleshooting Blank Screen with HDMI 2.0 with HDCP Cards 126
Table 92. Troubleshooting Blank Screen, DP 1.1 Single-Head Cards, Point-to-Point 127
Table 93. Troubleshooting Blank Screen, DP 1.1 Single-Head Cards, Matrix Connection 128
Table 94. Troubleshooting Blank Screen, DP 1.1 Dual-Head Cards, Point-to-Point 129
Table 95. Troubleshooting Blank Screen, DP 1.1 Dual-Head Cards, Matrix Connection 130
Table 96. Troubleshooting Blank Screen with DP 1.2 Cards 131
Table 97. Troubleshooting DVI-D Video Card, USB HID Error, Point-to-Point 132
Table 98. Troubleshooting DVI-D Video Card, USB HID Error, Matrix Connection 133
Table 99. Troubleshooting DVI-I Transmitter-Receiver Pair, USB HID Error, Point-to-Point 134
Table 100. Troubleshooting DVI-I Transmitter-Receiver Pair, USB HID Error, Matrix Connection 135
Table 101. Troubleshooting DVI-I Standalone Transmitter, USB HID Error, Point-to-Point 136
Table 102. Troubleshooting DVI-I Standalone Transmitter, USB HID Error, Matrix Connection 137
Table 103. Troubleshooting HDMI 1.3, 1.4 Video Card, USB HID Error 138
Table 104. Troubleshooting HDMI 2.0 with HDCP Video Card, USB HID Error 139
Table 105. Troubleshooting DP 1.1 Single-Head Video Card, USB HID Error, Point-to-Point 140
Table 106. Troubleshooting DP 1.1 Single-Head Video Card, USB HID Error, Matrix Connection 141
Table 107. Troubleshooting DP 1.1 Dual-Head Video Card, USB HID Error, Point-to-Point 142
Table 108. Troubleshooting DP 1.1 Dual-Head Video Card, USB HID Error, Matrix Connection 143
Table 109. Troubleshooting DP 1.2 Video Card, USB HID Error 144
Table 110. Troubleshooting Serial Connection Error 145
Table 111. Troubleshooting Analog Audio Error 145

Table 112. Troubleshooting Digital Audio Error 146
Table 113. Troubleshooting USB HID Only Card Error 146
Table 114. Troubleshooting USB HID Only Card, USB Errors 147
Table 115. Troubleshooting Fan Option Card Error 147
Table 116. Troubleshooting SNMP Option Card Errors 148
Table 117. HDMI Audio Specifications 151
Table 118. DP 1.1 Video Specifications 152
Table 119. Mini DP 1.1 Video Specifications 152
Table 120. DP 1.1 Audio Specifications 152
Table 121. DP 1.2 Audio Specifications 153
Table 122. Analog Audio Specifications 155
Table 123. Analog Audio USB 2.0 Specifications 155
Table 124. Digital Audio Specifications 156
Table 125. Serial Interface Specifications 158
Table 126. RS-422 Serial Interface Specifications 159
Table 127. Link Bandwidth and Distance 160
Table 128. DVI-D Connector Pinouts 162
Table 129. DVI-I Connector Pinouts 163
Table 130. HDMI 1.3 Connector Pinouts 163
Table 131. HDMI 2.0 Connector Pinouts 164
Table 132. DP 1.1 and 1.2 Connector Upstream Pinouts 164
Table 133. DP 1.1 and 1.2 Connector Downstream Pinouts 165
Table 134. Mini DP 1.1 and 1.2 Connector Upstream Pinouts 165
Table 135. DP 1.1 and 1.2 Connector Downstream Pinouts 166
Table 136. USB Type A Connector Pinouts 167
Table 137. USB Type B Connector Pinouts 167
Table 138. Mini USB Type B Connector Pinouts 167
Table 139. RJ45 Network Connector Pinouts 168
Table 140. RJ45 SNMP Connector Pinouts 168
Table 141. Fiber SFP Type LC Network Connector Pinouts 168
Table 142. D-Sub 9 (Serial RS-232) DCE Connector on Transmitter Pinouts 169
Table 143. D-Sub 9 (Serial RS-232) DTE Connector on Receiver Pinouts 169
Table 144. D-Sub 9 (Serial) RS-422 Connector on Transmitter Pinouts 170
Table 145. D-Sub 9 (Serial) RS-422 Connector on Receiver Pinouts 170
Table 146. D-Sub 9 (GPIO) Connector Pinouts 170
Table 147. 3.5 / 6.35 mm Stereo Jack Plug Pinouts 171
Table 148. Phoenix Terminal Block, 6-pole Connector on Transmitter 171
Table 149. Phoenix Terminal Block, 6-pole Connector on Receiver 171
Table 150. RCA (Cinch) Connector Pinouts 172
Table 151. Mini-XLR Connector Pinouts 172
Table 152. TOSLINK Connector Pinouts 172
Table 153. 2.4 mm Barrel Power Supply Connector Pinouts 172
Table 154. C14 Power Supply Connector Pinouts 173
Table 155. Kycon 4-Pole Power Supply Connector Pinouts 173
Table 156. PCB 3-Pole Power Supply Connector Pinouts 173

Table 157. Part Numbers for Orion XTender Transmitter Units 175
Table 158. Part Numbers for Orion XTender Receiver Units 176
Table 159. Part Numbers for Option Cards in Orion XTender Units 177
Table 160. Part Numbers for Mounting Brackets and Accessories 177
Table 161. Chassis Part Numbers 178
Table 162. Transmitter Card Part Numbers Part 1 179
Table 163. Transmitter Card Part Numbers Part 2 180
Table 164. Transmitter Card Part Numbers Part 3 181
Table 165. Receiver Card Part Numbers Part 1 182
Table 166. Receiver Card Part Numbers Part 2 183
Table 167. Receiver Card Part Numbers Part 3 184
Table 168. Option Card Part Numbers 185
Table 169. Orion XTender Chassis Power Supply Requirements 186
Table 170. DVI Card Power Requirements 187
Table 171. HDMI Card Power Requirements 187
Table 172. DP Card Power Requirements 188
Table 173. Option Card Power Requirements 189
Table 174. Orion XTender Environmental Specifications 190
Table 175. Orion XTender Chassis Physical Dimensions 191
Table 176. Orion XTender Card Physical Dimensions 191
Table 177. Shipping Weights of Orion XTender Chassis 192
Table 178. Shipping Weights of DVI Cards 193
Table 179. Shipping Weights of DP Cards 193
Table 180. Shipping Weights of Transmitter-Receiver Pair Option Cards 194
Table 181. Shipping Weights of Standalone Option Cards 194

Appendices

Appendix A – General Specifications 151
Interfaces 151
Video Interfaces 151
DVI 151
HDMI 151
DP 152
USB Interfaces 153
USB -HID 153
Mini USB 153
USB 2.0 (Transparent) 154
Interconnect Interfaces 154
RJ45 154
Fiber SFP Type LC 154
Option Card Interfaces 155
Audio Interfaces 155
Serial Interfaces 158
GPIO 159
Link Bandwidth and Distance 160
Supported Peripherals 161
USB HID Devices 161
USB 2.0 Devices 161
Connector Pinouts 162
Video Connectors 162
DVI Connectors 162
HDMI Connectors 163
DP Connectors 164
USB Connectors 167
USB Type A Connector 167
USB Type B Connector 167
Mini USB Type B Connector 167
Interconnect Connectors 168
RJ45 Network (CATx) Connector 168
RJ45 SNMP Connector 168
Fiber SFP Type LC Network Connector 168
Option Card Connectors 169
Serial Connectors 169
Analog and Digital Audio Connectors 171
Power Supply Connectors 172
2.5 mm Barrel Connector 172
C14 Connector 173
Kycon 4-Pole Connector 173
PCB 3-Pole Connector 173
Appendix B – Part Numbers 174
Orion XTender Units 175

Transmitter Units 175
Receiver Units 176
Option Cards in XTender Units 177
Mounting Brackets and Accessories 177
Chassis Options 178
Part Numbers for Main Cards when Specified Without a Chassis 179
Transmitter Cards 179
Receiver Cards 182
Part Numbers for Option Cards when Specified Within a Chassis 185
Appendix C – Current Draw, Power Supply Voltage and Power Consumption 186
XTender Chassis Power Supply Requirements 186
DVI Card Power Requirements 187
HDMI Card Power Requirements 187
DP Card Power Requirements 188
Option Card Power Requirements 189
Appendix D – Environmental Conditions 190
Appendix E – Physical Dimensions 191
Physical Dimensions of Chassis 191
Physical Dimensions of Video and Option Cards 191
Appendix F – Shipping Weights 192
Shipping Weights of Chassis 192
Shipping Weights of DVI Cards 193
Shipping Weights of DP Cards 193
Shipping Weights of Option Cards 194

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, circuitry of the product, and manual content at any time 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. (See limited warranty.)

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. Higher transmission speeds between Transmitters and Receivers can be achieved by using units with 3G interconnect ports.

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 XTenders support high resolution video up to 1920 x 1200 @ 60 Hz for VGA (DVI-I) and DVI-D video, 4K60 for HDMI video, 4K60 for Single-Head DP video, and 1920 x1200 @ 60 Hz for each channel in Dual-Head DP video. A multi-stage compression algorithm maximizes data flow and provides a consistently clear image for HD video signals.

USB HID signals for mice, keyboards or other USB pointing devices are also extended. Several Option Cards that provide additional functionality to the Orion XTenders are available, including analog or digital audio, USB 2.0, RS-232 serial data transmission, GPIO, SNMP and fan cards. Extension distances of up to 460 ft (140 m) with CATx cables or up to 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 video output, USB keyboard and mouse ports, USB 2.0 device ports, audio input/output connectors and a serial port, if present. The Receiver connects to video displays that support the incoming video signal, as well as 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 video signals over distances up to 32,808 ft (10 km) using fiber cable, and up to 460 ft (140 m) using CATx cable
- Supports video resolutions up to 1920 x 1200 @ 60 Hz for VGA (DVI-I) and DVI-D video, 4K60 for HDMI video, 4K60 for Single-Head DP video and 1920 x 1200 @ 60 Hz for each channel in Dual-Head DP video
- Other interfaces available
  - USB 1.1 and 2.0 embedded, up to 50/100 Mbps
  - High-speed USB 2.0 on CATx or Fiber
  - Serial RS-232 and RS-422, up to 115.2Kbaud
  - Analog stereo microphone and speaker
  - Symmetrical audio v2
  - Digital audio with embedded USB 2.0 v2
  - GPIO
  - SNMP
  - Fan
- Multi-head video models available
- Four frame types are available: 2, 4, 6 or 21 cards per frame
- All connectors on one side
- Power supplies included
- Supports all operating systems
- Compatible with Orion X and Orion FX KVM Switches

Compatibility

General Compatibility

Computers	PCs (all operating systems)
Displays	VGA, DVI-D, HDMI, or DP displays
Keyboards	All standard USB keyboards
Mouse	All standard USB mice
Serial	RS-232 or RS-422 devices up to 19.2K or 115.2KBaud
Audio	See Audio Intercompatibility
USB	USB HID and USB 2.0 devices

Table 1. Compatible Devices

Video Intercompatibility

The different types of Orion XTender Video Cards use different firmware and technology. As a result, they are not completely compatible with each other. The following table lists video compatibility between them. Please note that “SH” has been used as shorthand to denote Single-Head Video and “DH” to denote Dual-Head Video.

			Receivers								
			DVI-D, DVI-I	HDMI 1.3, HDMI 1.4	HDMI 1.4 Plus	HDMI 2.0 Plus	DP 1.1	DP1.1	DP 1.1 Plus	DP 1.1 Plus	DP 1.2 Plus
			SH	SH	SH	SH	SH	DH	SH	DH	SH
Transmitters	DVI-D, DVI-I	SH	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
	HDMI 1.3, HDMI 1.4	SH	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
	HDMI 1.4 Plus	SH	No	No	Yes	Yes	No	No	Yes	Yes	Yes
	HDMI 2.0 Plus	SH	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
	DP 1.1	SH	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
	DP 1.1	DH	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
	DP 1.1 Plus	SH	No	No	Yes	Yes	No	No	Yes	Yes	Yes
	DP 1.1 Plus	DH	No	No	Yes	Yes	No	No	Yes	Yes	Yes
	DP 1.2 Plus	SH	No	No	Yes	Yes	No	No	Yes	Yes	Yes

Table 2. Video Intercompatibility of Orion XTender Video Cards

Notes:

1. The compatibility shown in the table above is based on the video/USB HID signal only, and not on the embedded signals like audio or USB 2.0.
2. Compatibility displayed is up to the maximum specified resolution of the console. No image is displayed when a Single-Link Receiver (say, the DP 1.1 Receiver OEC-SLDTXUDK1/IRK connected to 1080p monitor) is switched to a Dual Link Transmitter (say, the DP 1.1 Receiver OEC-SLDTXUDK1/IRK with a 4k30 video signal) unless the configuration is set up accordingly.
3. Compatible up to the maximum transmission speed and interface compatibility (See Audio Intercompatibility below).
4. When a Transmitter is connected to a Receiver with a different signal (for example, a DP 1.1 Receiver with a HDMI Transmitter), transmitting the EDID to the Transmitter will result in an error.

Audio Intercompatibility

The audio intercompatibility of the Orion XTender cards depend on the combination of Video Cards and Option Cards as shown in the table below. The following icons are used in the Audio Intercompatibility table to denote the various types of audio streams supported by the Orion XTenders.

- HDMI 1.3: 5.1-Channel LPCM digital audio, embedded/ HDMI 2.0: 2-Channel LPCM digital audio, embedded – 

- DP 1.1: 5.1-Channel LPCM digital audio, embedded/ DP 1.2: 2-Channel LPCM digital audio, embedded – 

- 5.1-Channel PCM digital audio – 

- Balanced audio – 

- 2-Channel analog audio + RS-232 (19.2 kBd) – 

- 2-Channel analog audio + RS-422 (115.2 kBd) – 

- 2-Channel analog audio + RS-232 (115.2 kBd) – 

HDMI 1.3, HDMI 1.4, DP 1.1 cards and their Plus versions support 5.1 channel digital audio, while HDMI 2.0 and DP 1.2 cards only support 2-channels.

		Receiver						
		HDMI	DisplayPort	Digital Audio	Balanced Audio	Analog Audio +RS232	Analog Audio RS232	Analog Audio RS422
Transmitter	HDMI	True Embedded Audio	True Embedded Audio	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card
	DisplayPort	True Embedded Audio	True Embedded Audio	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card
	Digital Audio	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	—	—
	Balanced Audio	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	Needs Audio Option Card	—	—
	Analog Audio +RS232	—	—	—	—	Needs Audio Option Card	—	—
	Analog Audio RS232	—	—	—	—	—	Needs Audio Option Card	Only Audio Content
	Analog Audio RS422	—	—	—	—	—	Only Audio Content	Needs Audio Option Card

Table 3. Audio Intercompatibility of Orion XTender Video Cards

Analog Audio Option Cards are not necessarily compatible with each other, since they may use different protocols. The following table lists the audio compatibility between them.

		Receiver	
		OEC-R1AS RS-232 @ 19.2 kBd	OEC-R1AS/115 RS-232 @ 115 kBd
Transmitter	OEC-L1AS RS-232 @ 19.2 kBd	Yes	No
	OEC-L1AS/115 RS-232 @ 115 kBd	No	Yes
	OEC-L1A422 RS-422 @ 115 kBd	No	Yes

Table 4. Audio Intercompatibility of Analog Audio Option Cards

Interconnection Compatibility

Link connections between the XTender units and the Orion X or Orion FX matrix switches can be CATx or Fiber. The board connectors support either 1G (1.25 Gbits/s) or 3G (3.125 Gbits/s) connections.

The compatibility between 1G and 3G connections differs on whether the XTender units are connected Point-to-Point, through a matrix or Orion Cross-Repeater or through an Orion X matrix with a Bridge card.

A Bridge Card is used with the matrix Orion X and Orion FX matrices to connect up to 8 Transmitters with 1G transmission speed (CATx Fiber). The transmission speed will be increased within the Bridge Card from 1G to 3G. The signals are transmitted to the backplane of the matrix and can be output to up to 8 Receivers connected to the matrix.

This function is only available in one direction: 1G Transmitter to Orion X or Orion FX with Bridge Card to 3G Receiver.

These permutations are shown in the tables below.

Point-to-Point Interconnection Between Orion XTender Cards

	CATX 1G	Fiber 1G	Fiber 3G
CATx 1G	Yes	No	No
Fiber 1G	No	Yes	No
Fiber 3G	No	No	Yes

Table 5. Interconnection Compatibility When Connected Point-to-Point

Interconnection of XTender Card Through a Matrix or Cross-Repeater

	CATX 1G	Fiber 1G	Fiber 3G
CATx 1G	Yes	Yes	No
Fiber 1G	Yes	Yes	No
Fiber 3G	No	No	Yes

Table 6. Interconnection Compatibility When Connected Through a Matrix or Cross Repeater

Interconnection of XTender Card Through a Matrix with a Bridge Card

	CATX 1G	Fiber 1G	Fiber 3G
CATx 1G	Yes	Yes	Yes
Fiber 1G	Yes	Yes	Yes
Fiber 3G	No	No	Yes

Table 7. Interconnection Compatibility When Connected Through a Matrix with a Bridge Card

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

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).

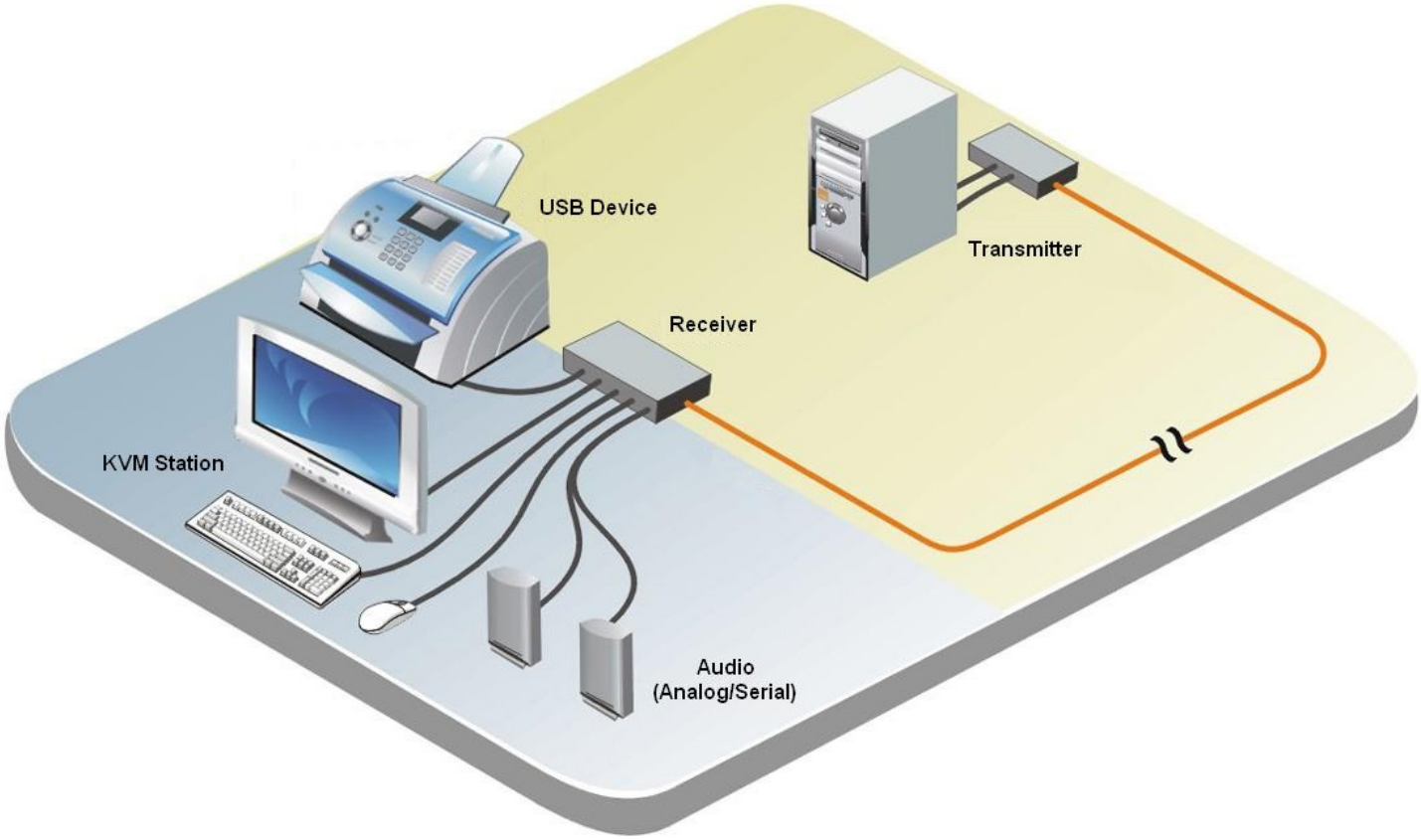


Figure 1. System Overview

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 four basic chassis sizes. XTender cards can be mixed and matched in a desired chassis to get the ideal combination for the user's requirements.

Orion XTender Chassis Types

The Orion XTender uses 2, 4, 6 or 21 card chassis. Several of these are also available with built-in redundant power supplies. The 21-card chassis features hot-swappable slots for the cards. The chassis options for the Orion XTender are shown below.

Orion XTender 2-Card Chassis

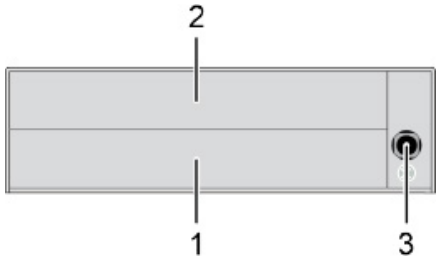
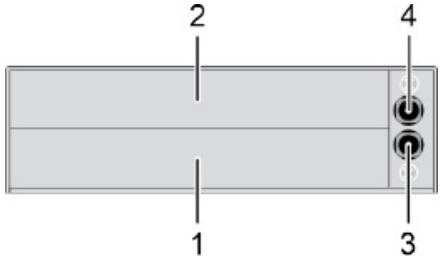
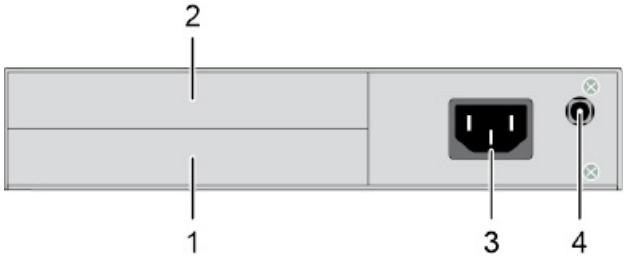
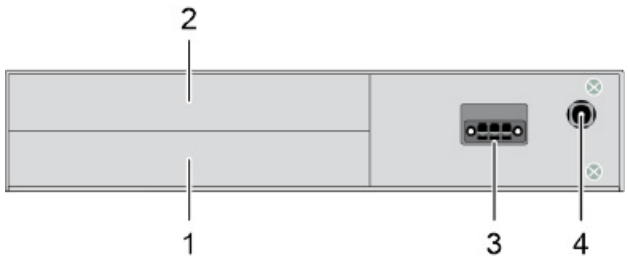
2-Card Chassis Part 1	
I. With Standard 5V DC Power Supply: OEE-CH02  1. Card Slot 1 2. Card Slot 2 3. DC Power Supply (5V) *1 x External Power Supply included.*	II. With Standard and Redundant 5V DC Power Supply: OEE-CH02/RP OEE-CH02/DP  1. Card Slot 1 2. Card Slot 2 3. DC Power Supply 1 (5V) 4. DC Power Supply 2 (5V) *1 x External Power Supply included. Use /DP option to order additional External Power Supply.*
III. With Standard IEC Power and Redundant 5V DC Power Supply: OEE-CH03/RP OEE-CH03/DP  1. Card Slot 1 2. Card Slot 2 3. AC Power Supply 4. DC Power Supply (5V) *1 x AC Power Cord included. Use /DP option to order additional External Power Supply.*	

Figure 2. Orion XTender 2-Card Chassis Part 1

2-Card Chassis Part 2

IV. With Terminal Block and Redundant 5V DC Power Supply:

a. With 12V DC Terminal Block
   OEE-CH03/D12
   OEE-CH03/D12/DP
b. With 24 V Terminal Block
   OEE-CH03/D24
   OEE-CH03/D24/DP
c. With 48V Terminal Block
   OEE-CH03/D48
   OEE-CH03/D48/DP



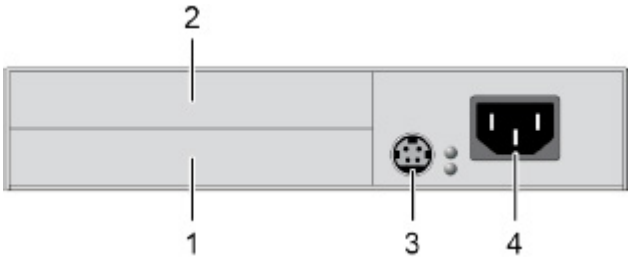
1. Card Slot 1
2. Card Slot 2
3. DC Power Supply 1 (12V, 24V or 48V)
4. DC Power Supply 2 (5V)

No External Power Supply or Power Cord included. Use /DP option to order one External Power Supply.

V. With Standard 5V DC Power Supply, Backplane:

OEE-CH05/RP

OEE-CH05/DP



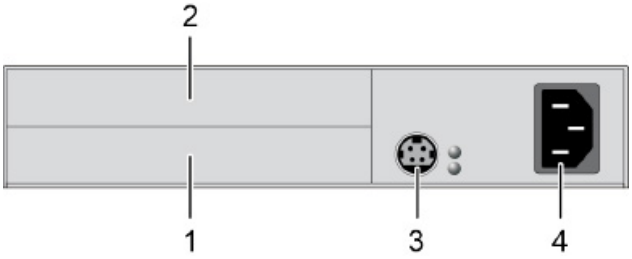
1. Card Slot 1
2. Card Slot 2
3. Card Slot 3
4. Card Slot 4
5. DC Power Supply (5V)

1 x AC Power Cord included. Use /DP option to order additional External Power Supply.

VI. With Standard IEC Power, Backplane, Hot Swappable, Quiet Fan:

OEE-CH05/S/RP

OEE-CH05/S/DP



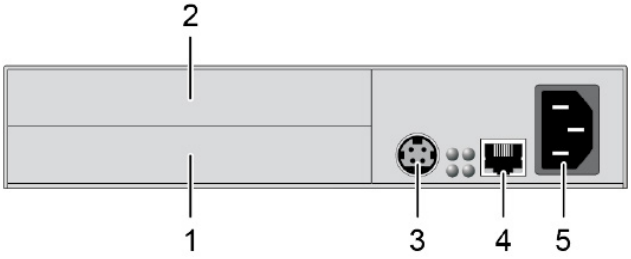
1. Card Slot 1
2. Card Slot 2
3. DC Power Supply (5V)
5. AC Power Supply

1 x AC Power Cord included. Use /DP option to order additional External Power Supply.

VII. With Standard IEC Power, Redundant 5V DC Power Supply, Backplane and Integrated IP Management:

OEE-CH05/SNMP/RP

OEE-CH05/SNMP/DP



1. Card Slot 1
2. Card Slot 2
3. DC Power Supply (5V)
4. Network
5. AC Power Supply

1 x AC Power Cord included. Use /DP option to order additional External Power Supply.

Figure 3. Orion XTender 2-Card Chassis Part 2

Excessive Current Draw

The 2-Card Chassis equipped with an internal power supply (shown with Standard IEC power in the figures above) do not have with a fuse on their primary side. Protection against excessive current draw must be provided by the electrical installation of the building.

Orion XTender 4-Card Chassis

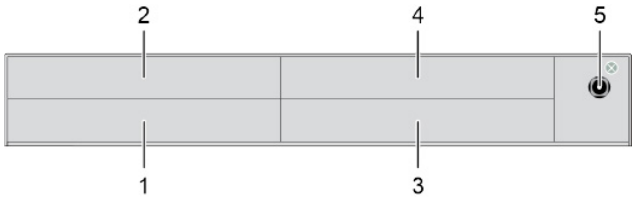
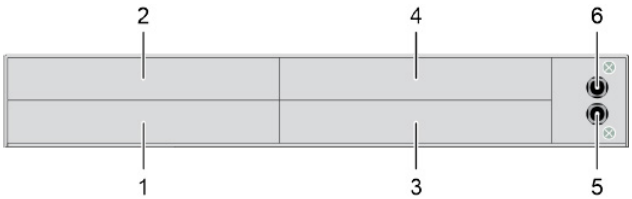
4-Card Chassis	
I. With Standard 5V DC Power Supply: OEE-CH04  1. Card Slot 1 2. Card Slot 2 3. Card Slot 3 4. Card Slot 4 5. DC Power Supply (5V) *1 x External Power Supply included.*	II. With Standard and Redundant 5V DC Power Supply: OEE-CH04/RP OEE-CH04/DP  1. Card Slot 1 2. Card Slot 2 3. Card Slot 3 4. Card Slot 4 5. DC Power Supply 1 (5V) 6. DC Power Supply 2 (5V) – Redundancy *1 x External Power Supply included. Use /DP option to order additional External Power Supply.*

Figure 4. Orion XTender 4-Card Chassis

Orion XTender 6-Card Chassis

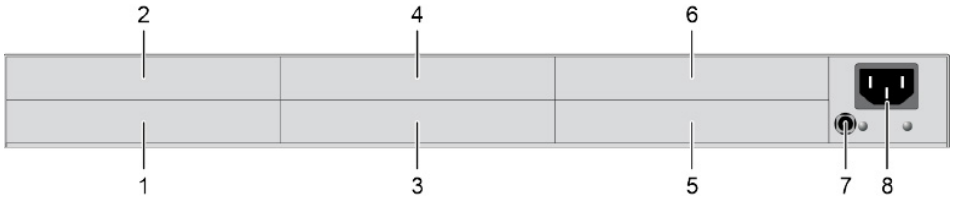
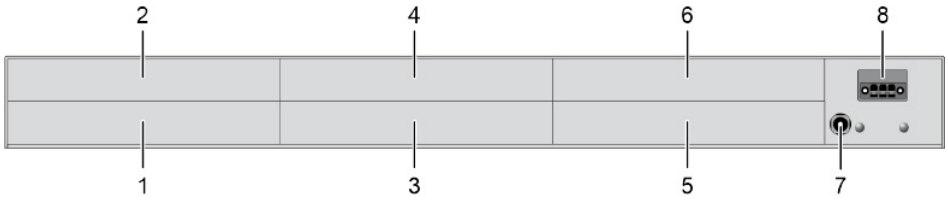
6-Card Chassis Part 1
I. With Standard and Redundant 5V DC Power Supply: OEE-CH06/RP OEE-CH06/DP    1. Card Slot 1 2. Card Slot 2 3. Card Slot 3 4. Card Slot 4 5. Card Slot 5 6. Card Slot 6 7. DC Power Supply (5V) 8. AC Power Supply *1 x AC Power Cord included. Use /DP option to order additional External Power Supply.*

Figure 5. Orion XTender 6-Card Chassis Part 1

6-Card Chassis Part 2

II. With Terminal Block and Redundant 5V DC Power Supply:

a. With 12V DC Terminal Block
   OEE-CH06/D12
   OEE-CH06/D12/DP
b. With 24 V Terminal Block
   OEE-CH06/D24
   OEE-CH06/D24/DP
c. With 48V Terminal Block
   OEE-CH06/D48
   OEE-CH06/D48/DP



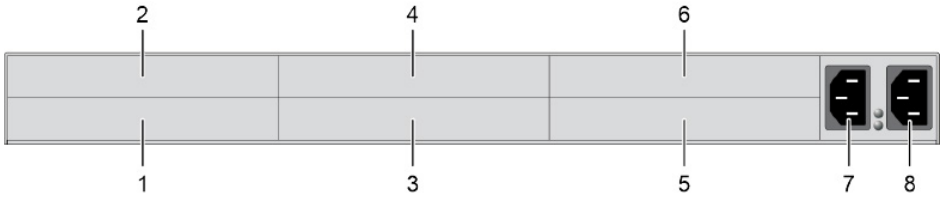
1. Card Slot 1
2. Card Slot 2
3. Card Slot 3
4. Card Slot 4
5. Card Slot 5
6. Card Slot 6
7. DC Power Supply 1 (12V, 24V or 48V)
8. DC Power Supply 2 (5V)

No External Power Supply or Power Cord included. Use /DP option to order one External Power Supply.

III. With Backplane with Redundant IEC Power, Hot Swappable, Front Mount, /SFN Option Provides a Silent Fan:

OEE-CH07/DP

OEE-CH07/SFN/DP



1. Card Slot 1
2. Card Slot 2
3. Card Slot 3
4. Card Slot 4
5. Card Slot 5
6. Card Slot 6
7. AC Power Supply 1
8. AC Power Supply 2

2 x AC Power Cords included.

Figure 6. Orion XTender 6-Card Chassis Part 2

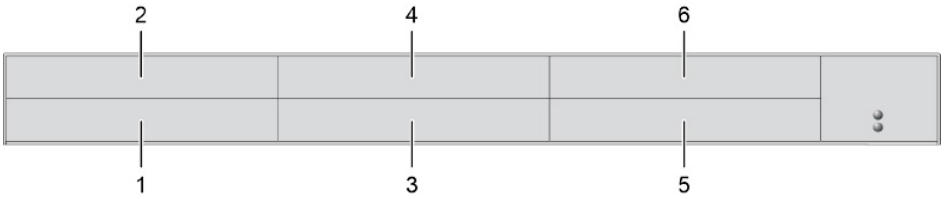
6-Card Chassis Part 3

IV. With Backplane with Redundant IEC Power, Hot Swappable, Rear Access to Power, /SFN Option Provides a Silent Fan:

OEE-CH08/BPB/DP

OEE-CH08/BPB/SFN/DP

Front Panel



1. Card Slot 1
2. Card Slot 2
3. Card Slot 3
4. Card Slot 4
5. Card Slot 5
6. Card Slot 6

Rear Panel

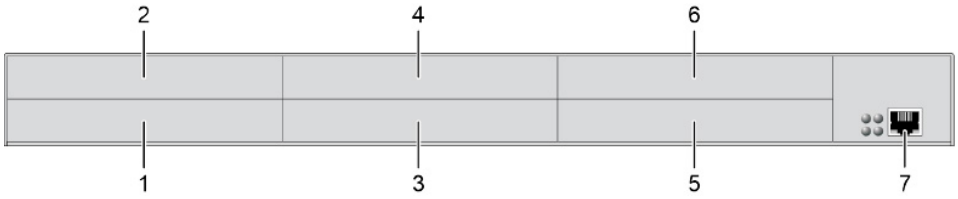
1. AC Power Supply 1
2. AC Power Supply 2
3. Grounding

2 x AC Power Cords included.

IV. With Backplane with Redundant IEC Power, Hot Swappable, Rear Access to Power and IP Management/SNMP:

OEE-CH08/BPB/SNMP/DP

Front Panel



1. Card Slot 1
2. Card Slot 2
3. Card Slot 3
4. Card Slot 4
5. Card Slot 5
6. Card Slot 6
7. Network

Rear Panel

1. AC Power Supply 1
2. AC Power Supply 2
3. Grounding

2 x AC Power Cords included.

Figure 7. Orion XTender 6-Card Chassis Part 3

Excessive Current Draw
The 2-Card Chassis equipped with an internal power supply (shown with Standard IEC power in the figures above) do not have with a fuse on their primary side. Protection against excessive current draw must be provided by the electrical installation of the building.

Power Supply Voltage Too Low
On the OOE-CH06 chassis and its /DP variant, the redundant power supply voltage can be connected up to a current of maximum 5 A (modules inclusive). If the power supply of the internal power supply unit fails, the device's power supply is assured through the 5 V external power supply unit. If the redundant power supply is not connected and the current is above 5 A, the unit will have supplied with sufficient power supply voltage and fails.

- Note the maximum current draw of the chassis (see Appendix C, XTender Chassis Power Supply Requirements).
- When the unit is used with a current of more than 5 A, use an external power supply unit. In this case, redundancy is not required.

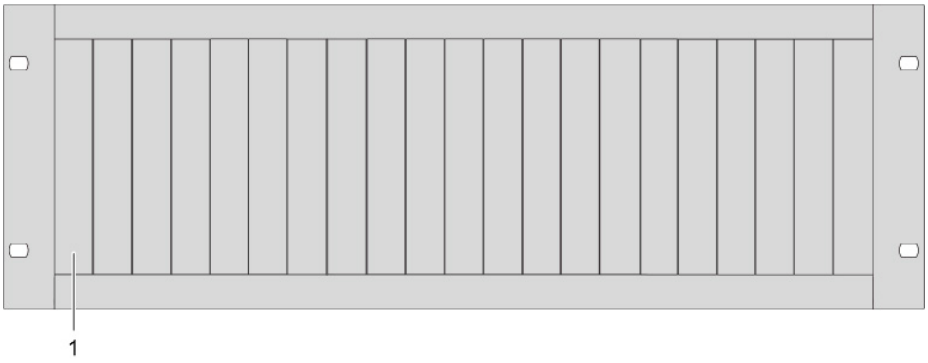
21-Card Chassis

IV. With Backplane with Redundant IEC Power, Hot Swappable, Rear Access to Power:

OEE-CH21/RP

OEE-CH21/DP

Front Panel

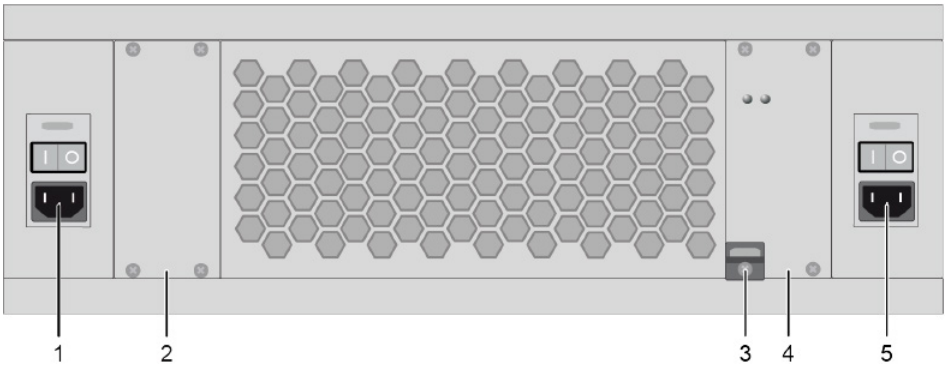


1. Card Slots 1 to 21 (from left to right)

Rear Panel

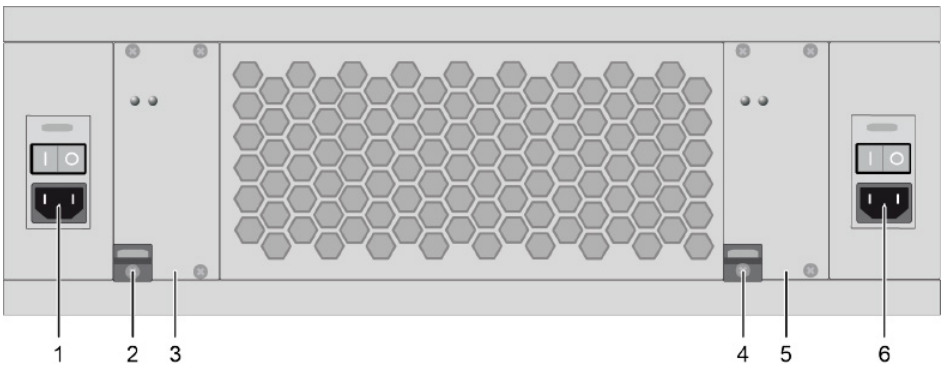
Both the OEE-CH21 chassis and its /DP variant come with both IEC sockets mounted. The difference is in how many Power Supply Units are in the chassis – 1 or 2. They can be distinguished from each other by whether there are two levers to pull out the Power Supply Units as in on the /DP variant, or one lever and one blind plate as in on the standard unit.

OEE-CH21/RP Rear Panel



1. AC Power Supply 2 (inactive)
2. Blind Plate covering Power Supply Unit 2
3. Pull-out Lever for Power Supply Unit 1
4. Power Supply Unit 1
5. AC Power Supply 1

OEE-CH21/DP Rear Panel



1. AC Power Supply 2 (Redundant)
2. Pull-out Lever for Power Supply Unit 2
3. Power Supply Unit 2 (Redundant)
4. Pull-out Lever for Power Supply Unit 1
5. Power Supply Unit 1
6. AC Power Supply 1

* 1 x AC Power Cord included for the standard unit; 2 x AC Power Cords included for the /DP variant

Figure 8. Orion XTender 21-Card Chassis

Orion XTender Card Types

Orion XTender cards come in several types. The majority are video cards. These can be DVI-D, DVI-I with VGA support, HDMI, DP video cards. With the exception of two HDMI video-only cards, all the video cards include USB HID ports. CATx or Fiber connectors are provided for linking. Option cards can be added to video cards, to provide support for protocols such as analog audio, serial RS-232, and embedded USB 2.0.

Video Cards

DVI Cards

DVI cards have either a DVI-D connector or a DVI-I connector, which also supports VGA signals. DVI-I cards also offer a scaling option to scale up to 1080p or 1920x1200 resolutions. CATx connectors (1G) or Fiber connectors (1G or 3G) are included for linking. Some cards are available with redundant link connectors.

DVI-D Cards

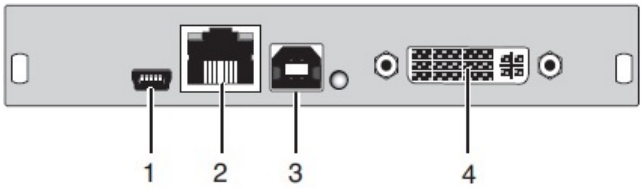
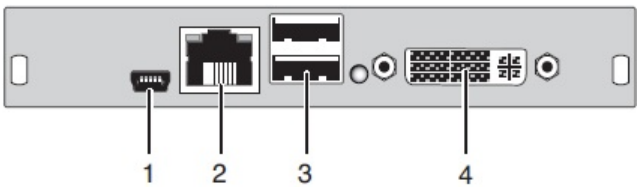
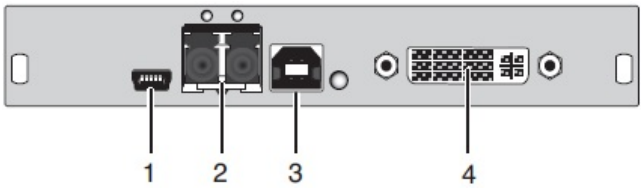
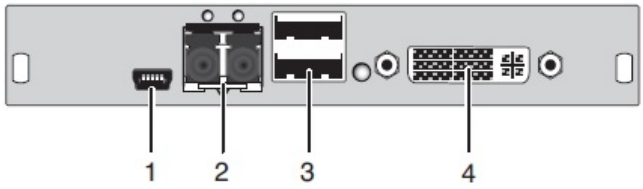
Transmitters	***Receivers***
I. **DVI-D, USB HID, and CATx 1G Connectors**	
DVI-D CATx 1G OEC-SLDTXUD1D/IRK	DVI-D CATx 1G OEC-SRDTXUD1D/IRK
	
1. Service Port 2. CATx 1G Connector 3. To CPU: USB HID 4. To CPU: DVI-D	1. Service port 2. CATx 1G Connector 3. To USB HID devices 4. To DVI display
II. **DVI-D, USB HID, and Fiber 1G Connectors**	
DVI-D Fiber 1G OEC-SLDFSUD1D/IRK	DVI-D Fiber 1G OEC-SRDFSUD1D/IRK
	
1. Service Port 2. Fiber 1G Connector 3. To CPU: USB HID 4. To CPU: DVI-D	1. Service port 2. Fiber 1G Connector 3. To USB HID devices 4. To DVI monitor

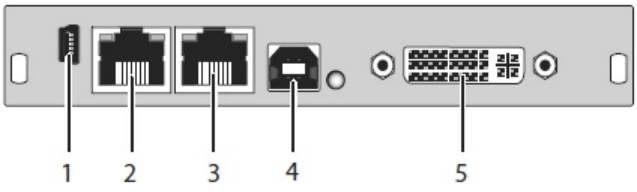
Figure 9. DVI-D Cards

DVI-D Cards with Redundant Links

Transmitters	Receivers

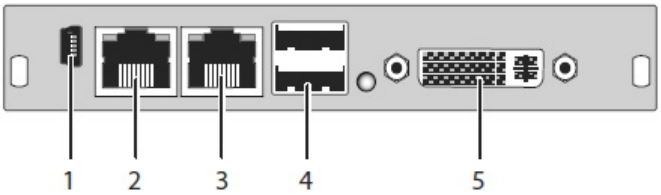
III. DVI-D, USB HID, and Redundant CATx 1G Connectors

DVI-D redundant CATx 1G
OEC-SLD2CUD1D/IRK



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

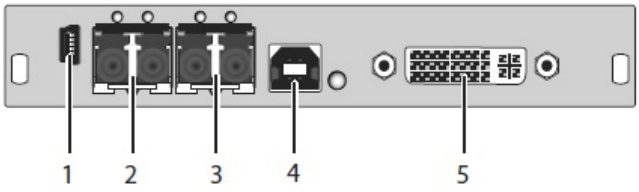
DVI-D redundant CATx 1G
OEC-SRD2CUD1D/IRK



1. Service port
2. CATx 1G Connector 1
3. CATx 1G Connector 2
4. To CPU: USB HID
5. To DVI monitor

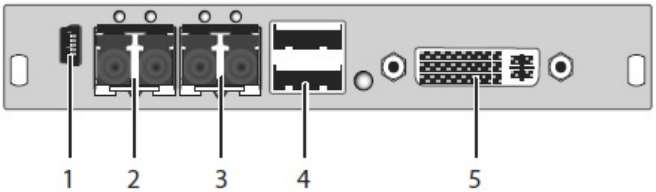
IV. DVI-D, USB HID, and Redundant Fiber 1G Connectors

DVI-D redundant Fiber 1G
OEC-SLD2SUD1D/IRK



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

DVI-D redundant Fiber 1G
OEC-SRD2SUD1D/IRK



1. Service port
2. Fiber 1G Connector 1
3. Fiber 1G Connector 2
4. To CPU: USB HID
5. To DVI monitor

Figure 10. DVI Cards: DVI-D Cards with Redundant Link

DVI-I (VGA) Cards

The DVI-I cards can be either a Transmitter-Receiver pair or a single dual-height Transmitter card. The dual-height Transmitter card can generate an on-screen display with menu options to scale the VGA input to any DVI output up to 2048×1152@60Hz, allowing it to be connected to a DVI Receiver.

DVI-I Transmitter – Receiver Pairs

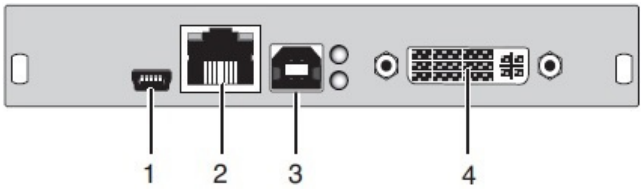
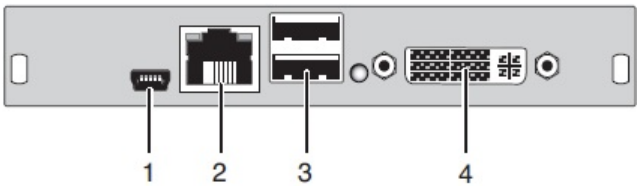
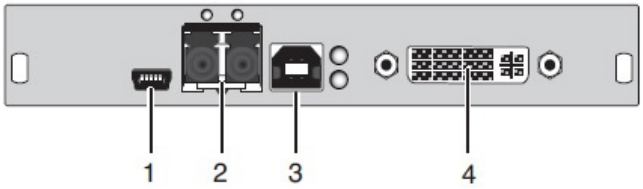
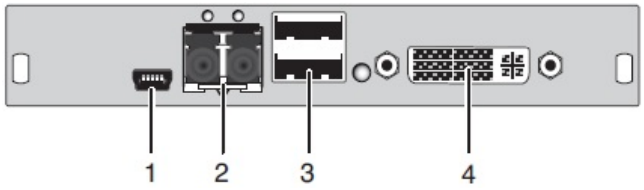
Transmitters	***Receivers***
I. DVI-I, USB HID, and CATx 1G Connectors	
DVI-I CATx 1G OEC-SLDTXUS1V/IRK  1. Service Port 2. CATx 1G Connector 3. To CPU: USB HID 4. To CPU: DVI-D or DVI-I	DVI-I CATx 1G OEC-SRDTXUS1V/IRK  1. Service port 2. CATx 1G Connector 3. To USB HID devices 4. To DVI-D or DVI-I monitor
II. DVI-I, USB HID, and Fiber 1G Connectors	
DVI-I Fiber 1G OEC-SLDFSUS1V/IRK  1. Service Port 2. Fiber 1G Connector 3. To CPU: USB HID 4. To CPU: DVI-D or DVI-I	DVI-I Fiber 1G OEC-SRDFSUS1V/IRK  1. Service port 2. Fiber 1G Connector 3. To USB HID devices 4. To DVI or DVI-I monitor

Figure 11. DVI-I Transmitter – Receiver Pairs

DVI-I Transmitter – Receiver Pairs with Redundant Link

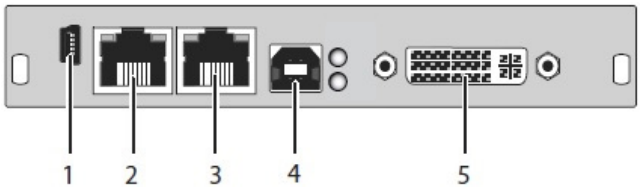
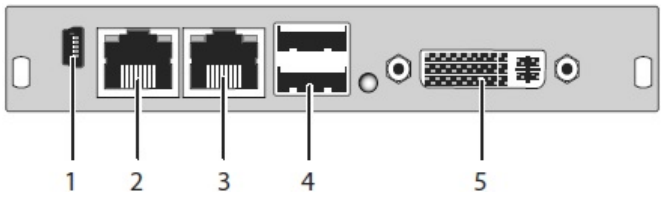
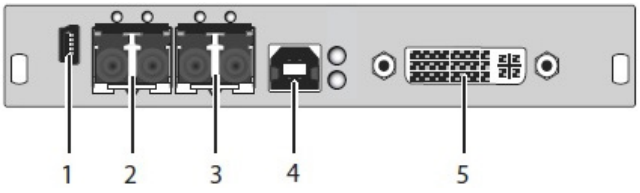
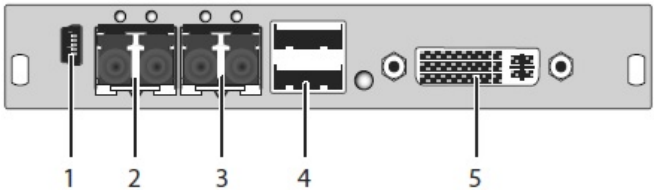
Transmitters	*Receivers*
III. DVI-I, USB HID, and Redundant CATx 1G Connectors	
DVI-I redundant CATx 1G OEC-SLD2CUS1V/IRK	DVI-I redundant CATx 1G OEC-SRD2CUS1V/IRK
	
1. Service port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. To CPU: USB HID 5. To CPU: DVI-D	1. Service port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. To CPU: USB HID 5. To DVI monitor
IV. DVI-I, USB HID, and Redundant Fiber 1G Connectors	
DVI-I redundant Fiber 1G OEC-SLD2SUS1V/IRK	DVI-I redundant Fiber 1G OEC-SRD2SUS1V/IRK
	
1. Service port 2. Fiber 1G Connector 1 3. Fiber 1G Connector 2 4. To CPU: USB HID 5. To CPU: DVI-D	1. Service port 2. Fiber 1G Connector 1 3. Fiber 1G Connector 2 4. To CPU: USB HID 5. To DVI monitor

Figure 12. DVI-I Transmitter – Receiver Pairs with Redundant Link

DVI-I Standalone Scaling Transmitter Cards

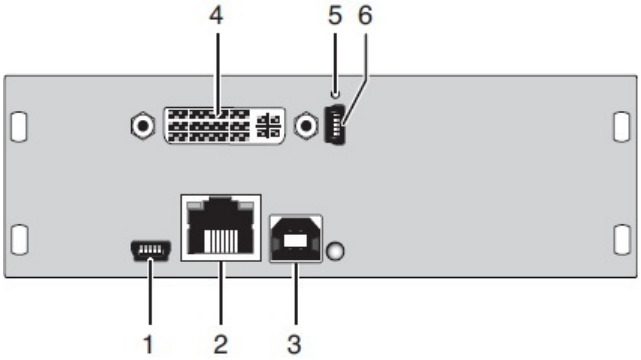
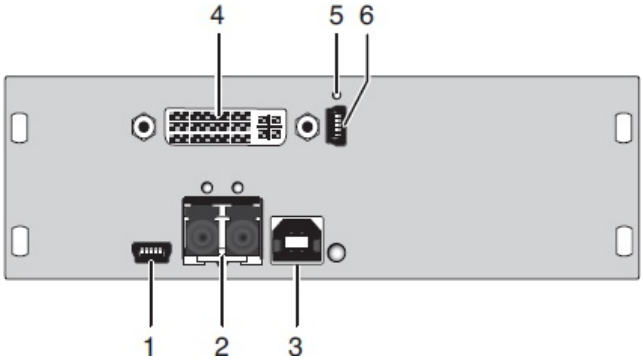
Transmitters
I. DVI-I, USB HID, CATx 1G Connectors, IR Port DVI-I CATx 1G Scaling OEC-SLDTXUD1V/IRK    1. Service Port 2. CATx 1G Connector 3. To CPU: USB HID 4. To CPU: DVI-I (VGA / DVI) 5. IR remote control receiver 6. Service port
II. DVI-I, USB HID, Fiber 1G Connectors, IR Port DVI-I Fiber 1G Scaling OEC-SLDFSUD1V/IRK    1. Service Port 2. Fiber 1G Connector 3. To CPU: USB HID 4. To CPU: DVI-I (VGA / DVI) 5. IR remote control receiver 6. Service port

Figure 13. DVI-I (VGA) Transmitter Cards with Scaling

HDMI Cards

HDMI video cards are available with a range of options. Most include USB HID and CATx 1G or fiber 1G or 3G link connectors. Some models have connectors for redundant links. Video-only models are also available (without redundant link connectors). These XTenders support either HDMI 1.3, HDMI 1.4 with HDCP, or HMDI 2.0 with HDCP 2.2 support.

HDMI 1.3 HD Video-Only Transmitter – Receiver Pairs

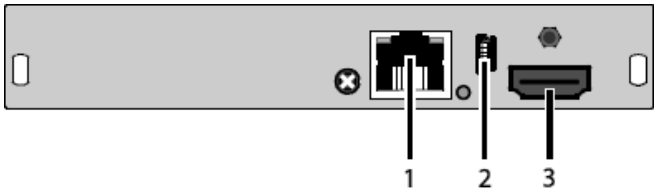
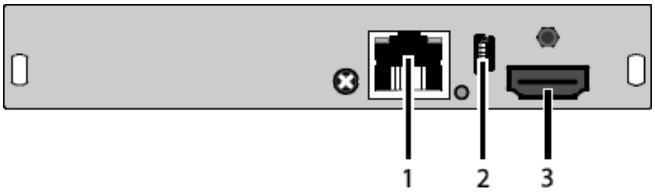
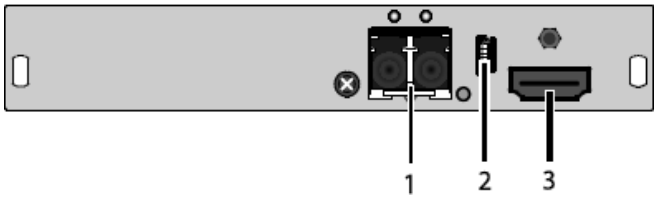
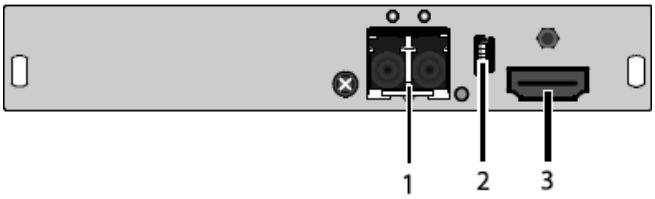
Transmitters	***Receivers***
I. HDMI 1.3 HD, CATx 1G Connectors	
HDMI 1.3 HD Video-Only CATx 1G OEC-SLDTX0H1H/IRK  1. CATx 1G Connector 2. Service Port 3. To CPU: HDMI	HDMI 1.3 HD Video-Only CATx 1G OEC-SRDTX0H1H/IRK  1. CATx 1G Connector 2. Service Port 3. To HDMI Monitor
II. HDMI 1.3 HD, Fiber 1G Connectors	
HDMI 1.3 HD Video-Only Fiber 1G OEC-SLDFS0H1H/IRK  1. Fiber 1G Connector 2. Service Port 3. To CPU: HDMI	HDMI 1.3 HD Video-Only Fiber 1G OEC-SRDFS0H1H/IRK  1. Fiber 1G Connector 2. Service Port 3. To HDMI Monitor

Figure 14. HDMI 1.3 HD Video-Only Cards

HDMI 1.3 HD Transmitter – Receiver Pairs

The HDMI 1.3 HD Orion XTender supports high-definition HDMI video signals up to 1920x1200, including 3D formats and digital audio. The cards have locking HDMI connectors, and are compatible with standard Orion DVI-D and DP XTender cards. The embedded audio output is compatible with the companion digital audio option cards.

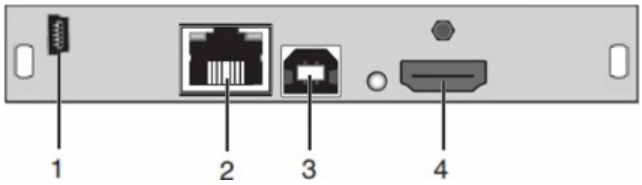
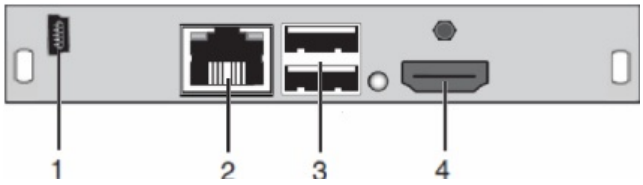
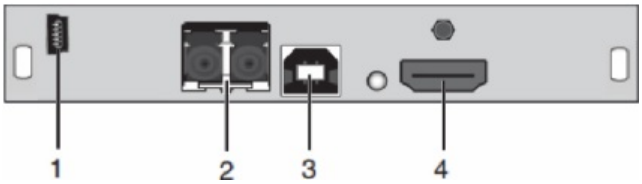
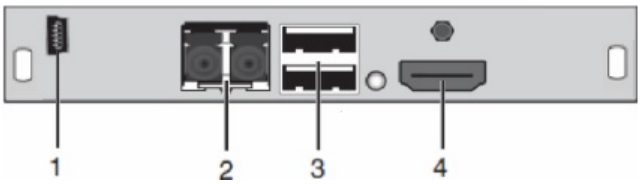
Transmitters	***Receivers***
I. **HDMI 1.3 HD, USB HID, and CATx 1G Connectors**	
HDMI 1.3 HD CATx 1G OEC-SLDTXUH1H/IRK  1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. To CPU: HDMI	HDMI 1.3 HD CATx 1G OEC-SRDTXUH1H/IRK  1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. To HDMI Monitor
II. **HDMI 1.3 HD, USB HID, and Fiber 1G Connectors**	
HDMI 1.3 HD Fiber 1G OEC-SLDFSUH1H/IRK  1. Service Port 2. Fiber 1G Connector 3. CPU: USB HID 4. To CPU: HDMI	HDMI 1.3 HD Fiber 1G OEC-SRDFSUH1H/IRK  1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. To HDMI Monitor

Figure 15. HDMI 1.3 HD Cards

HDMI 1.3 HD Cards with Redundant Link

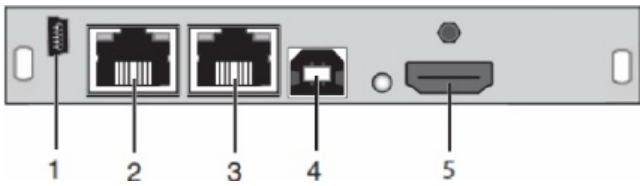
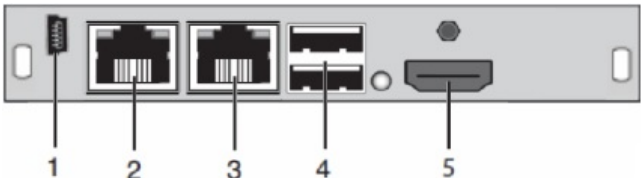
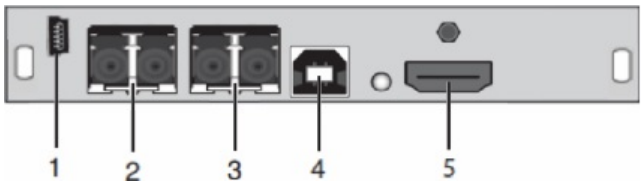
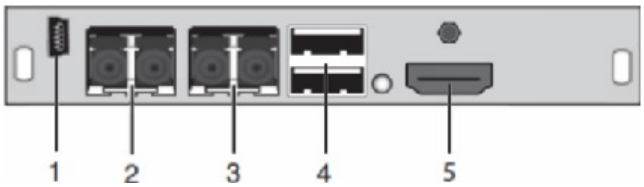
Transmitters	Receivers
I. HDMI 1.3 HD, USB HID, and Redundant CATx 1G Connectors	
HDMI 1.3 HD redundant CATx 1G OEC-SLD2CUH1H/IRK	HDMI 1.3 HD redundant CATx 1G OEC-SRD2CUH1H/IRK
	
1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. From CPU: HDMI	1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. To HDMI Monitor
II. HDMI 1.3 HD, USB HID and Redundant Fiber 1G Connectors	
HDMI 1.3 HD redundant Fiber 1G OEC-SLD2SUH1H/IRK	HDMI 1.3 HD redundant Fiber 1G OEC-SRD2SUH1H/IRK
	
1. Service Port 2. Fiber 1G Connector 1 3. Fiber 1G Connector 2 4. CPU: USB HID 5. From CPU: HDMI	1. Service Port 2. Fiber 1G Connector 1 3. Fiber 1G Connector 2 4. CPU: USB HID 5. To HDMI Monitor

Figure 16. HDMI 1.3 HD Cards with Redundant Links

HDMI 1.3 HD Transmitter and Receiver Cards with Local Video Input and Output

HDMI 1.3 HD cards are available with local HDMI output at the Transmitter, and local HDMI input at the Receiver. CATx 1G and Fiber 1G connectors provide interconnect links. Cards with redundant CATx or 1G fiber interconnect links are also available.

HDMI 1.3 HD Transmitter Cards with Local Video Output

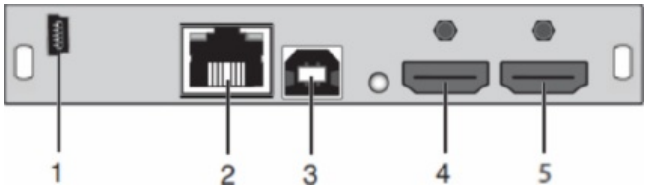
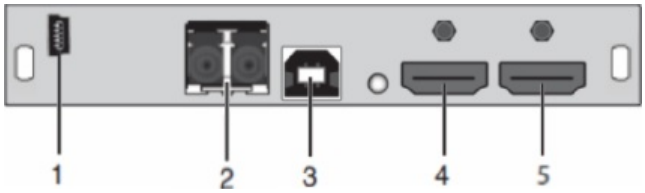
Transmitters
HDMI 1.3 HD (With Local Out), USB HID, and CATx 1G Connectors HDMI 1.3 HD Transmitter, local output, CATx 1G OEC-DLDTXUH1H/IRK    1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. From CPU: HDMI 5. Local Output to HDMI Monitor
HDMI 1.3 HD (With Local Out), USB HID, and Fiber 1G Connectors HDMI 1.3 HD Transmitter, local output, Fiber 1G OEC-DLDFSUH1H/IRK    1. Service Port 2. Fiber 1G Connector 3. CPU: USB HID 4. From CPU: HDMI 5. Local Output to HDMI Monitor I

Figure 17. HDMI 1.3 HD Transmitter Cards with Local Video Output

HDMI 1.3 HD Transmitter Cards with Local Video Output and Redundant Link

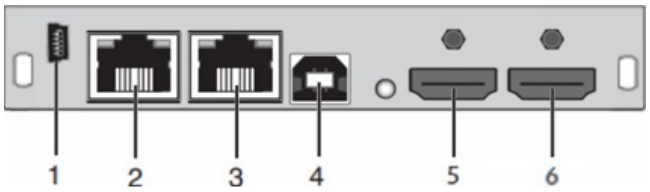
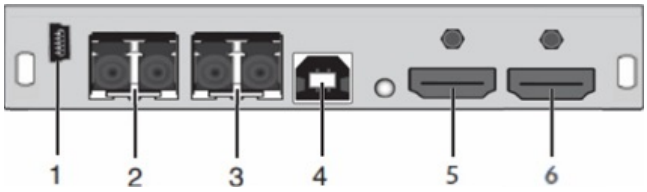
Transmitters
HDMI 1.3 HD (With Local Out), USB HID, and Redundant CATx 1G Connectors HDMI 1.3 HD Transmitter, local output, redundant CATx 1G OEC-DLD2CUH1H/IRK    1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. From CPU: HDMI 6. Local Output: HDMI
HDMI 1.3 HD (With Local Out), USB HID, and Redundant Fiber 1G Connectors HDMI 1.3 HD Transmitter, local output, redundant Fiber 1G OEC-DLD2SUH1H/IRK    1. Service Port 2. Fiber 1G Connector 1 3. Fiber 1G Connector 2 4. CPU: USB HID 5. From CPU: HDMI 6. Local Output: HDMI

Figure 18. HDMI 1.3 HD Transmitter Cards with Local Video Output and Redundant Link

HDMI 1.3 HD Receiver Cards with Local Video Input

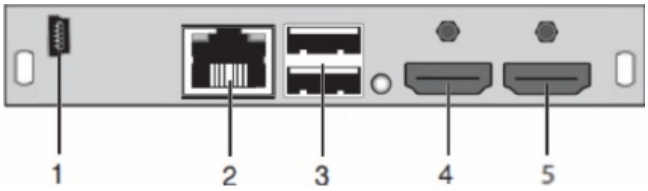
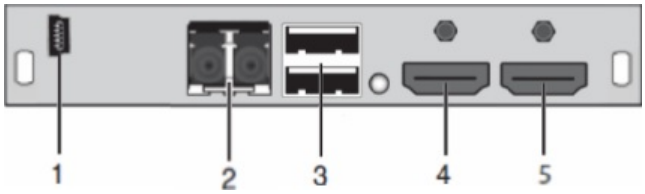
Receivers
HDMI 1.3 HD (With Local Input), USB HID, and CATx 1G Connectors HDMI 1.3 HD Receiver, local input, CATx 1G OEC-DRDTXUH1HW/IRK    1. Service Port 2. CATx 1G Connector 3. USB HID devices 4. HDMI Monitor 5. Local Input: HDMI
HDMI 1.3 HD (With Local Input), USB HID, and Fiber 1G Connectors HDMI 1.3 HD Receiver, local input, Fiber 1G OEC-DRDFSUH1HW/IRK    1. Service Port 2. Fiber 1G Connector 3. USB HID devices 4. HDMI Monitor 5. Local Input: HDMI

Figure 19. HDMI 1.3 HD Receiver Cards with Local Video Input

HDMI 1.3 HD Receiver Cards with Local Video Input and Redundant Link

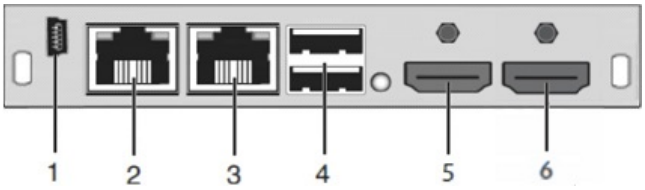
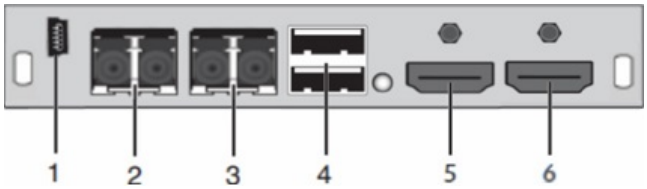
Receivers
HDMI 1.3 HD (With Local Input), USB HID, and Redundant CATx 1G Connectors HDMI 1.3 HD Receiver, local input, redundant CATx 1G OEC-DRD2CUH1HW/IRK    1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. USB HID devices 5. HDMI Monitor 6. Local Input: HDMI
HDMI 1.3 HD (With Local Input), USB HID, and Redundant Fiber 1G Connectors HDMI 1.3 HD Receiver, local input, redundant Fiber 1G OEC-DRD2SUH1HW/IRK    1. Service Port 2. Fiber 1G Connector 1 3. Fiber 1G Connector 2 4. USB HID devices 5. HDMI Monitor 6. Local Input: HDMI

Figure 20. HDMI 1.3 HD Receiver Cards with Local Video Input and Redundant Link

HDMI 1.4 UHD Cards and HDMI 1.4 UHD Plus Cards

The HDMI 1.4 UHD XTender cards support Ultra High Definition HDMI video signals up to 4K30, including 3D formats and digital audio. The embedded audio output is compatible with the companion digital audio option cards. The Plus models add a superior visually lossless video compression technique to the HDMI 1.4 UHD, for even higher fidelity video output. All HDMI 1.4 UHD and HDMI 1.4 UHD Plus Cards have a second full-size HDMI connector, for connecting a local monitor to the Transmitter or a local HDMI source to the Receiver.

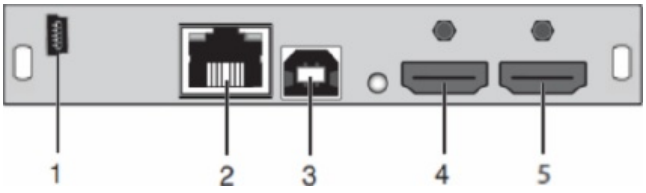
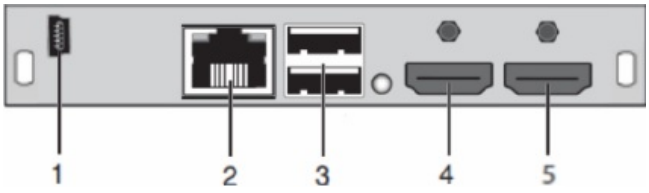
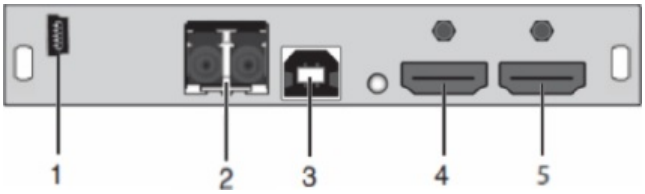
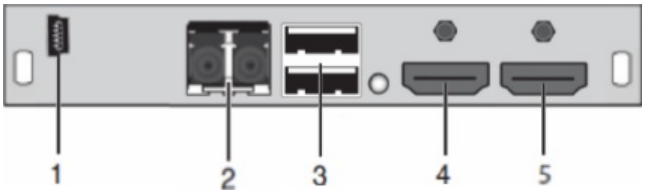
	Transmitters	***Receivers***
I.	**HDMI 1.4 UHD (With Local Video), USB HID, and CATx 1G Connectors**	
	HDMI 1.4 UHD CATx 1G OEC-DLDTXUHL1H/IRK HDMI 1.4 UHD Plus CATx 1G OEC-DLDTXUHU1H/IRK	HDMI 1.4 UHD CATx 1G OEC-DRDTXUHL1H/IRK HDMI 1.4 UHD Plus CATx 1G OEC-DRDTXUHU1H/IRK
		
	1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. From CPU: HDMI 5. Local Output: HDMI	1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. To HDMI Monitor 5. Local Input: HDMI
II.	**HDMI 1.4 UHD (With Local Video), USB HID, and Fiber 1G or 3G Connectors**	
	HDMI 1.4 UHD Fiber 1G OEC-DLDFSUHL1H/IRK HDMI 1.4 UHD Plus Fiber 1G OEC-DLDFSUHU1H/IRK HDMI 1.4 UHD Fiber 3G OEC-DLDF3UHL1H/IRK HDMI 1.4 UHD Plus Fiber 3G OEC-DLDF3UHU1H/IRK	HDMI 1.4 UHD Fiber 1G OEC-DRDFSUHL1H/IRK HDMI 1.4 UHD Plus Fiber 1G OEC-DRDFSUHU1H/IRK HDMI 1.4 UHD Fiber 3G OEC-DRDF3UHL1H/IRK HDMI 1.4 UHD Plus Fiber 3G OEC-DRDF3UHU1H/IRK
		
	1. Service Port 2. Fiber 1G or 3G Connector 3. CPU: USB HID 4. From CPU: HDMI 5. Local Output: HDMI	1. Service Port 2. Fiber 1G or 3G Connector 3. CPU: USB HID 4. To HDMI Monitor 5. Local Input: HDMI

Figure 21. HDMI 1.4 UHD and UHD Plus Cards

HDMI 1.4 UHD Cards and HDMI 1.4 UHD Plus Cards with Redundant Link

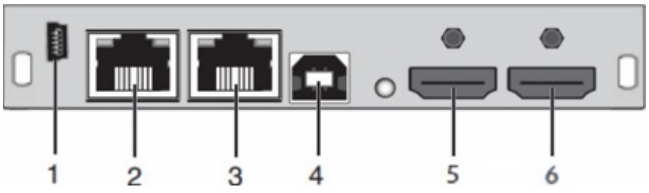
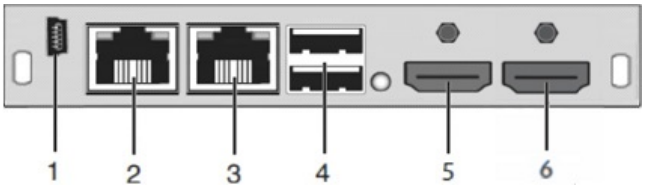
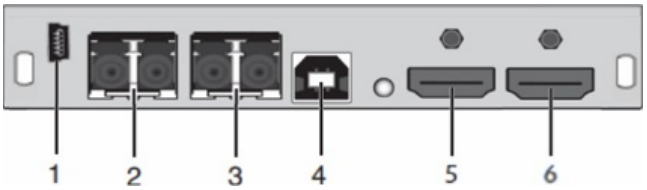
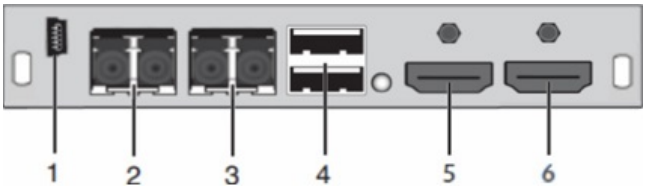
Transmitters	Receivers
I. HDMI 1.4 UHD (With Local Video), USB HID, and Redundant CATx 1G Connectors	
HDMI 1.4 UHD CATx 1G OEC-DLD2CUHL1H/IRK HDMI 1.4 UHD Plus CATx 1G OEC-DLD2CUHU1H/IRK	HDMI 1.4 UHD CATx 1G OEC-DRD2CUHL1H/IRK HDMI 1.4 UHD Plus CATx 1G OEC-DRD2CUHU1H/IRK
	
1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. From CPU: HDMI 6. Local Output: HDMI	1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. To HDMI Monitor 6. Local Input: HDMI
II. HDMI 1.4 UHD (With Local Video), USB HID and Redundant Fiber 1G or 3G Connectors	
HDMI 1.4 UHD Fiber 1G: OEC-DLD2SUHL1H/IRK HDMI 1.4 UHD Plus Fiber 1G: OEC-DLD2SUHU1H/IRK HDMI 1.4 UHD Fiber 3G OEC-DLDFRUHL1H/IRK HDMI 1.4 UHD Plus Fiber 3G: OEC-DLDFRUHU1H/IRK	HDMI 1.4 UHD Fiber 1G: OEC-DRD2SUHL1H/IRK HDMI 1.4 UHD Plus Fiber 1G: OEC-DRD2SUHU1H/IRK HDMI 1.4 UHD Fiber 3G OEC-DRDFRUHL1H/IRK HDMI 1.4 UHD Plus Fiber 3G: OEC-DRDFRUHU1H/IRK
	
1. Service Port 2. Fiber 1G or 3G Connector 1 3. Fiber 1G or 3G Connector 2 4. CPU: USB HID 5. From CPU: HDMI 6. Local Output: HDMI	1. Service Port 2. Fiber 1G or 3G Connector 1 3. Fiber 1G or 3G Connector 2 4. CPU: USB HID 5. To HDMI Monitor 6. Local Input: HDMI

Figure 22. HDMI 1.4 UHD Cards with Redundant Links

HDMI 2.0 UHD Plus Cards

The HDMI 2.0 UHD Plus XTenders support 4K Ultra HD resolutions. They also support HDCP 2.2. These extender cards come with a superior, visually lossless video compression technique with low latency and no frame drops in order to provide high-fidelity video output. The cards come equipped with a secondary local mini-HDMI port, for connecting a local monitor to the Transmitter or a local HDMI source to the Receiver. Cards with a redundant interconnect link are also available.

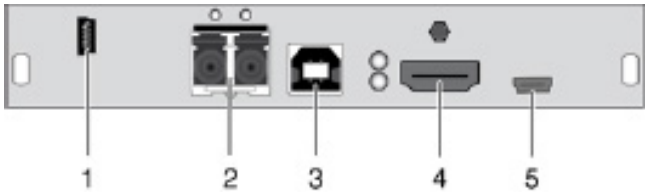
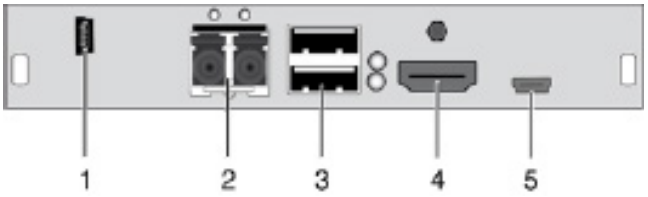
Transmitters	***Receivers***
I. HDMI 2.0 UHD Plus (With Local Video), USB HID, and CATx 1G or 3G Connectors	
HDMI 2.0 UHD Plus CATx 3G OEC-DLDT3UHX1H/IRK HDMI 2.0 UHD with JPEG XS CATx 1G OEC-DLDTXUHS1W/IRK	HDMI 2.0 UHD Plus CATx 3G OEC-DRDT3UHX1H/IRK HDMI 2.0 UHD with JPEG XS CATx 1G OEC-DRDTXUHS1W/IRK
Error! Objects cannot be created from editing field codes.	
1. Service Port 2. CATx 1G or 3G Connector 3. CPU: USB HID 4. From CPU: HDMI 5. Local Output: Micro HDMI	1. Service Port 2. CATx 1G or 3G Connector 3. USB HID devices 4. HDMI Monitor 5. Local Input: Micro HDMI
II. HDMI 2.0 UHD Plus (With Local Video), USB HID, Fiber 1G or 3G	
HDMI 2.0 UHD Plus Fiber 3G OEC-DLDF3UHX1H/IRK HDMI 2.0 UHD with JPEG XS Fiber 1G OEC-DLDFSUHS1W/IRK HDMI 2.0 UHD with JPEG XS Fiber 3G OEC-DLDF3UHS1W/IRK	HDMI 2.0 UHD Plus Fiber 3G OEC-DRDF3UHX1H/IRK HDMI 2.0 UHD with JPEG XS Fiber 1G OEC-DRDFSUHS1W/IRK HDMI 2.0 UHD with JPEG XS Fiber 3G OEC-DRDF3UHS1W/IRK
	
1. Service Port 2. Fiber 3G Port 3. CPU: USB HID 4. From CPU: HDMI 5. Local Output: Micro HDMI	1. Service Port 2. Fiber 3G Port 3. USB HID devices 4. HDMI Monitor 5. Local Input: Micro HDMI

Figure 23. HDMI 2.0 UHD Plus Cards

HDMI 2.0 UHD Plus Cards with Redundant Link

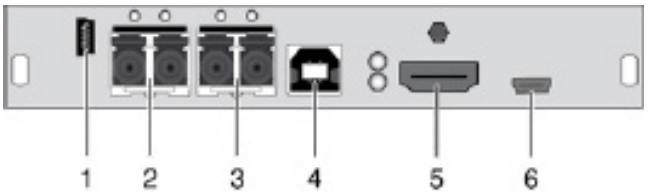
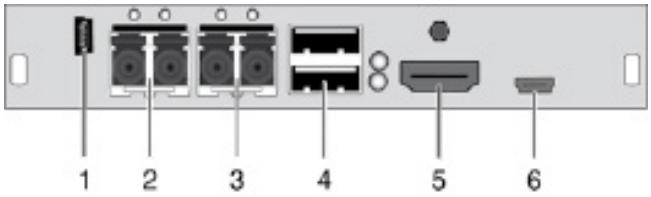
Transmitters	Receivers
I. HDMI 2.0 UHD Plus (With Local Video), USB HID, and Redundant CATx 1G or 3G Connectors	
HDMI 2.0 UHD Plus CATx 3G OEC-DLDTRUHX1H/IRK HDMI 2.0 UHD with JPEG XS CATx 1G OEC-DLD2CUHS1W/IRK	HDMI 2.0 UHD Plus CATx 3G OEC-DRDTRUHX1H/IRK HDMI 2.0 UHD with JPEG XS CATx 1G OEC-DRD2CUHS1W/IRK
	
1. Service Port 2. CATx 1G or 3G Connector 1 3. CATx 1G or 3G Connector 2 4. CPU: USB HID 5. From CPU: HDMI 2.0 6. Local Output: Micro HDMI	1. Service Port 2. CATx 1G or 3G Connector 1 3. CATx 1G or 3G Connector 2 4. USB HID devices 5. HDMI Monitor 6. Local Input: Micro HDMI
II. HDMI 2.0 UHD Plus (With Local Video), USB HID, and Redundant Fiber 1G or 3G Connectors	
HDMI 2.0 UHD Plus Fiber 3G: OEC-DLDFRUHX1H/IRK HDMI 2.0 UHD with JPEG XS Fiber 1G: OEC-DLD2SUHS1W/IRK HDMI 2.0 UHD with JPEG XS Fiber 3G: OEC-DLDFRUHS1W/IRK	HDMI 2.0 UHD Plus Fiber 3G: OEC-DRDFRUHX1H/IRK HDMI 2.0 UHD with JPEG XS Fiber 1G: OEC-DRD2SUHS1W/IRK HDMI 2.0 UHD with JPEG XS Fiber 3G: OEC-DRDFRUHS1W/IRK
	
1. Service Port 2. Fiber 1G or 3G Connector 1 3. Fiber 1G or 3G Connector 2 4. CPU: USB HID 5. From CPU: HDMI 2.0 6. Local Output: Micro HDMI	1. Service Port 2. Fiber 1G or 3G Connector 1 3. Fiber 1G or 3G Connector 2 4. USB HID devices 5. HDMI Monitor 6. Local Input: Micro HDMI

Figure 24. HDMI 2.0 UHD Plus with Redundant Link Cards

DP Video Cards

All DP video cards are equipped with two DP ports, allowing support for dual-head video and embedded audio. USB HID and one CATx or Fiber interconnect link is standard on all cards. Cards with optional redundant link are also available. Models support either DP 1.1 or 1.2 video protocols.

DP 1.1 and DP 1.1 Plus Dual-Head Cards

The DP 1.1 video card supports single-head video resolutions up to 4096x2160@30Hz or dual-head resolutions up to 1920x1200@60Hz. The DP 1.1 Plus card adds a superior, visually lossless video compression technique for even higher fidelity video output. This allows synchronous dual-head video transmission up to 60fps with low latency.

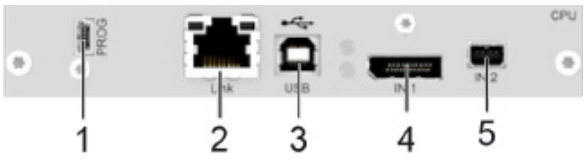
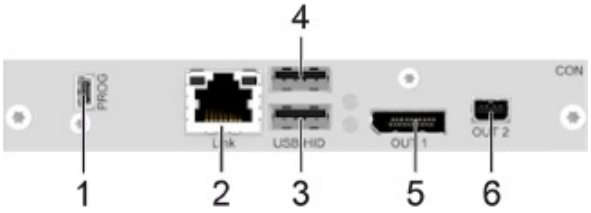
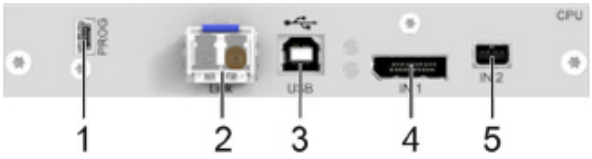
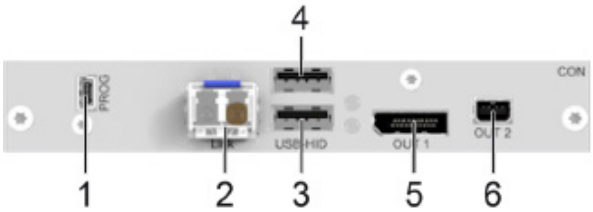
Transmitters	***Receivers***
I. DP 1.1 Dual-Head, USB HID, and CATx 1G Connectors (Supports 4K30 Single-Head Video or 1920x1200@60Hz Dual-Head Video)	
DP 1.1 Dual-Head CATx 1G OEC-SLDTXUDK1/IRK DP 1.1 Plus Dual-Head CATx 1G OEC-SLDTXUDU1/IRK	DP 1.1 Dual-Head CATx 1G OEC-SRDTXUDK1/IRK DP 1.1 Plus Dual-Head CATX 1G OEC-SRDTXUDU1/IRK
	
1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. From CPU: DP 1.1 Primary Input 5. From CPU: Mini-DP 1.1 Secondary Input	1. Service Port 2. CATx 1G Connector 3. USB HID devices 4. USB HID devices 5. To DP 1.1 Display, Primary Output 6. To DP 1.1 Display, Mini-DP 1.1 Secondary Output
II. DP 1.1 Dual-Head, USB HID, and Fiber 1G or 3G Connectors (Supports 4K30 Single-Head Video or 1920x1200@60Hz Dual-Head Video)	
DP 1.1 Dual-Head Fiber 1G OEC-SLDFSUDK1/IRK DP 1.1 Dual-Head Fiber 3G OEC-SLDF3UDK1/IRK DP 1.1 Plus Dual-Head Fiber 1G OEC-SLDFSUDU1/IRK DP 1.1 Plus Dual-Head Fiber 3G OEC-SLDF3UDU1/IRK	DP 1.1 Dual-Head Fiber 1G OEC-SRDFSUDK1/IRK DP 1.1 Dual-Head Fiber 3G OEC-SRDF3UDK1/IRK DP 1.1 Plus Dual-Head Fiber 1G OEC-SRDFSUDU1/IRK DP 1.1 Plus Dual-Head Fiber 3G OEC-SRDF3UDU1/IRK
	
1. Service Port 2. Fiber 1G or 3G Connector 3. CPU: USB HID 4. From CPU: DP 1.1 Primary Input 5. From CPU: Mini-DP 1.1 Secondary Input	1. Service Port 2. Fiber 1G or 3G Connector 3. USB HID devices 4. USB HID devices 5. To DP 1.1 Display, Primary Output 6. To DP 1.1 Display, Mini-DP 1.1 Secondary Output

Figure 25. DP 1.1 and DP 1.1 Plus Dual-Head Cards

DP 1.1 and DP 1.1 Plus Dual-Head Cards with Redundant Link

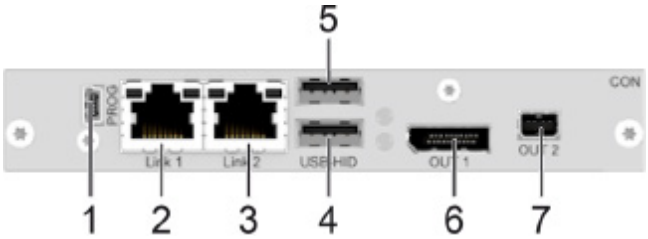
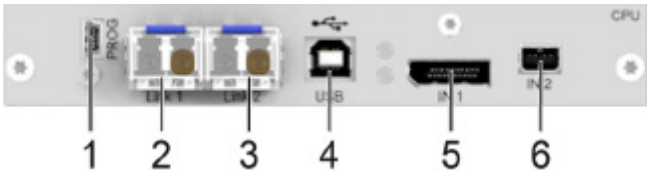
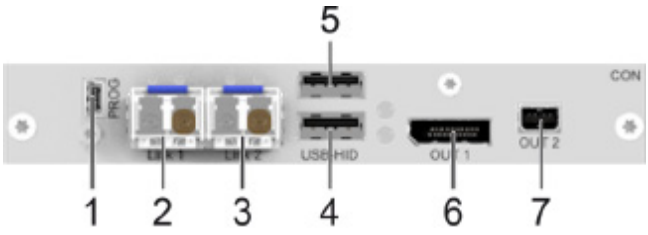
Transmitters	Receivers
I. DP 1.1 Dual-Head, USB HID, and Redundant CATx 1G Connectors Supports 4K30 Single-Head Video or 1920x1200@60Hz Dual-Head Video	
DP 1.1 Dual-Head redundant CATx 1G OEC-SLD2CUDK1/IRK DP 1.1 Plus Dual-Head redundant CATx 1G OEC-SLD2CUDU1/IRK	DP 1.1 Dual-Head redundant CATx 1G OEC-SRD2CUDK1/IRK DP 1.1 Dual-Head Plus redundant CATx 1G OEC-SRD2CUDU1/IRK
	
1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. From CPU: DP 1.1 Primary Input 6. From CPU: Mini-DP 1.1 Secondary Input	1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. USB HID devices 5. USB HID devices 6. To DP 1.1 Display, Primary Output 7. To DP 1.1 Display, Mini-DP 1.1 Secondary Output
II. DP 1.1 Dual-Head, USB HID, and redundant Fiber 1G or 3G Connectors Supports 4K30 Single-Head Video or 1920x1200@60Hz Dual-Head Video	
DP 1.1 Dual-Head redundant Fiber 1G OEC-SLD2SUDK1/IRK DP 1.1 Dual-Head redundant Fiber 3G OEC-SLDFRUDK1/IRK DP 1.1 Plus Dual-Head redundant Fiber 1G OEC-SLD2SUDU1/IRK DP 1.1 Plus Dual-Head redundant Fiber 3G OEC-SLDFRUDU1/IRK	DP 1.1 Dual-Head redundant Fiber 1G OEC-SRD2SUDK1/IRK DP 1.1 Dual-Head redundant Fiber 3G OEC-SRDFRUDK1/IRK DP 1.1 Plus Dual-Head redundant Fiber 1G OEC-SRD2SUDU1/IRK DP 1.1 Plus Dual-Head redundant Fiber 3G OEC-SRDFRUDU1/IRK
	
1. Service Port 2. Fiber 1G or 3G Connector 1 3. Fiber 1G or 3G Connector 2 4. CPU: USB HID 5. From CPU: DP 1.1 Primary Input 6. From CPU: Mini-DP 1.1 Secondary Input	1. Service Port 2. Fiber 1G or 3G Connector 1 3. Fiber 1G or 3G Connector 2 4. USB HID devices 5. USB HID devices 6. To DP 1.1 Display, Primary Output 7. To DP 1.1 Display, Mini-DP 1.1 Secondary Output

Figure 26. DP 1.1 and DP 1.1 Plus Dual-Head Cards with Redundant Links

Display 1.2 Plus, DP 1.2 Plus MST and DP 1.2 with JPEG XS

The DP 1.2 Plus video card provides high quality transmission of DP video up to 4K60 resolution with a 10-bit color depth. PCM audio up to 96kHz can be transferred over the DP interface. The DP 1.2 MST XTender enables the operation of a server with MST graphics output from a remotely located dual screen workstation including two DP monitors, keyboard, and mouse over a single CATx or fiber connection. The dual monitors are connected together via an MST daisy chain link. The visually lossless video codec provides a full color depth (True Color) of 24-bit. Both video cards support no frame drops, and 4:4:4 color sampling. The DP 1.2 with JPEG XS Xtender uses the JPEG XS video codec. This allows it to support resolutions up to 5120x2160@50Hz. It is available with CATx 1G link, as well as fiber 1G or 3G links. All standard digital audio formats are supported.

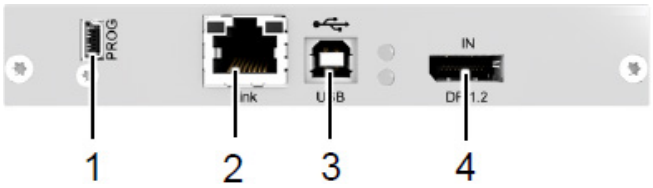
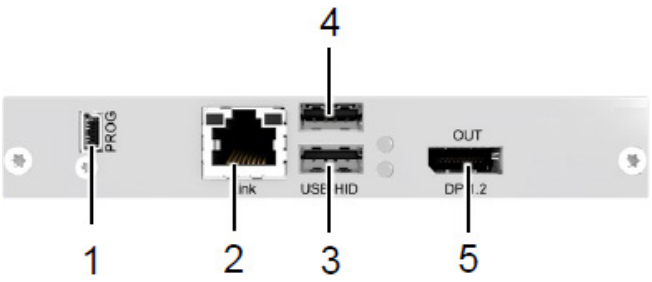
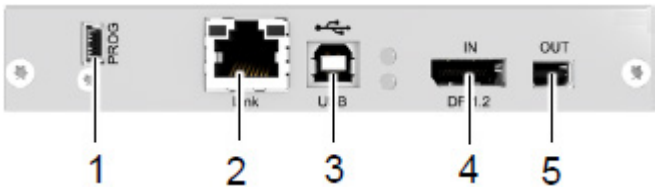
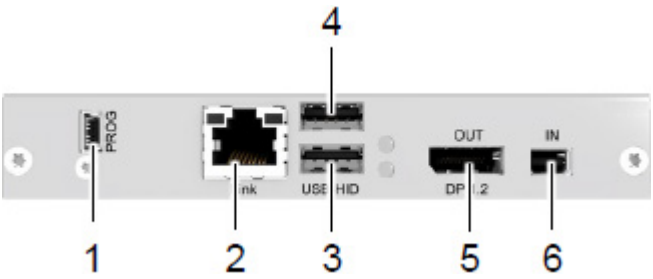
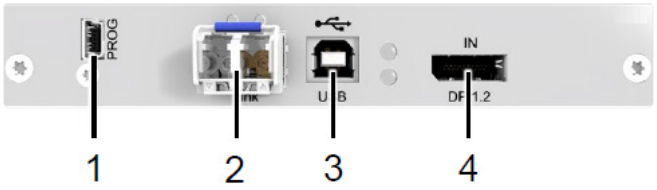
Transmitters	***Receivers***
I. DP 1.2 JPEG XS (No Local Video), USB HID, and CATx 1G Connectors	
DP 1.2 with JPEG XS CATx 1G OEC-SLDTXUDS1W/IRK  1. Service Port 2. CATx 1G Connector 3. CPU: USB HID 4. From CPU: DP 1.2 Input	DP 1.2 with JPEG XS CATx 1G OEC-SRDTXUDS1W/IRK  1. Service Port 2. CATx 1G Connector 3. USB HID devices 4. USB HID devices 5. To DP 1.2 Display
II. DP 1.2 Plus (With Local Video), USB HID, and CATx 1G or 3G Connectors	
DP 1.2 Plus CATx 3G: OEC-DLDT3UDX1/IRK DP 1.2 Plus MST CATx 3G OEC-DLDT3UDM1/IRK DP 1.2 with JPEG XS CATx 1G OEC-DLDTXUDS1W/IRK  1. Service Port 2. CATx 1G or 3G Connector 3. CPU: USB HID 4. From CPU: DP 1.2 Input 5. Local Output: Mini-DP 1.2	DP 1.2 Plus CATx 3G OEC-DRDT3UDX1/IRK DP 1.2 Plus MST CATX 3G OEC-DRDT3UDM1/IRK DP 1.2 with JPEG XS CATx 1G OEC-DRDTXUDS1W/IRK  1. Service Port 2. CATx 1G or 3G Connector 3. USB HID devices 4. USB HID devices 5. To DP 1.2 display 6. Local Input: Mini-DP 1.2

Figure 27. DP 1.2 Plus Cards

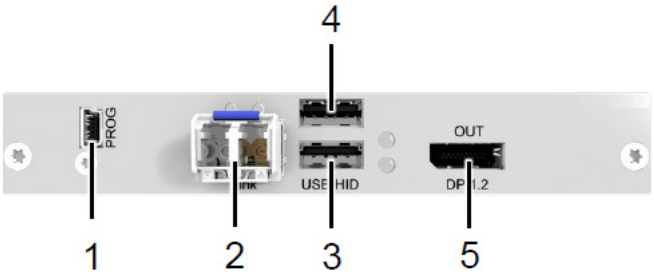
III. **DP 1.2 Plus (No Local Video), USB HID, and Fiber 1G or 3G Connectors**

DP 1.2 Plus Fiber 3G
OEC-SLDF3UDX1/IRK
DP 1.2 with JPEG XS Fiber 1G
OEC-SLDFSUDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector
3. CPU: USB HID
4. From CPU: DP 1.2 Input

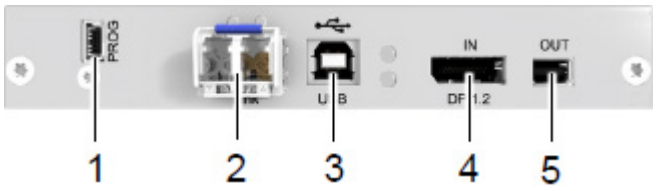
DP 1.2 Plus Fiber 3G
OEC-SRDF3UDX1/IRK
DP 1.2 with JPEG XS Fiber 1G
OEC-SRDFSUDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector
3. USB HID Devices
4. USB HID Devices
5. Output to DP 1.2 Display

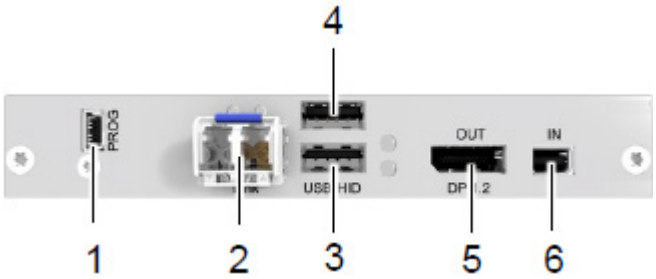
IV. **DP 1.2 Plus (With Local Video), USB HID, and Fiber 1G or 3G Connectors**

DP 1.2 Plus Fiber 3G
OEC-DLDF3UDX1/IRK
DP 1.2 Plus MST Fiber 3G
OEC-DLDF3UDM1/IRK
DP 1.2 with JPEG XS Fiber 1G
OEC-DLDFSUDS1W/IRK
DP 1.2 with JPEG XS Fiber 3G
OEC-DLDF3UDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector
3. CPU: USB HID
4. From CPU: DP 1.2 Input
5. Local Output: Mini-DP 1.2

DP 1.2 Plus Fiber 3G
OEC-DRDF3UDX1/IRK
DP 1.2 Plus MST Fiber 3G
OEC-DRDF3UDM1/IRK
DP 1.2 with JPEG XS Fiber 1G
OEC-DRDFSUDS1W/IRK
DP 1.2 with JPEG XS Fiber 3G
OEC-DRDF3UDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector
3. USB HID Devices
4. USB HID Devices
5. Output to DP 1.2 display
6. Local Input: Mini-DP 1.2

Figure 28. DP 1.2 Cards with OneLink Port Part 2

DP 1.2 Plus, DP 1.2 Plus MST Cards and DP 1.2 with JPEG XS with Redundant Links

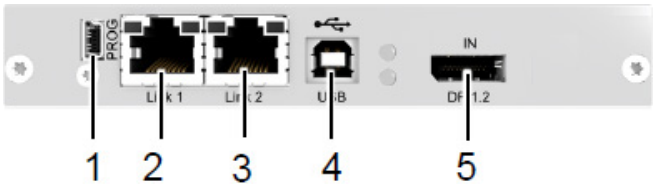
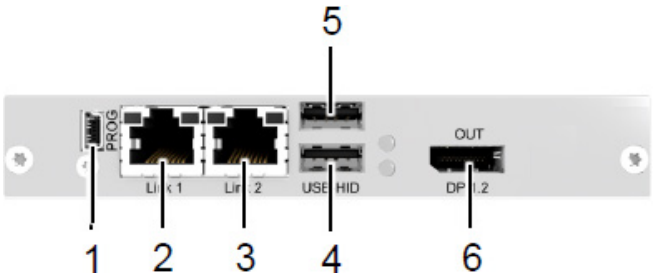
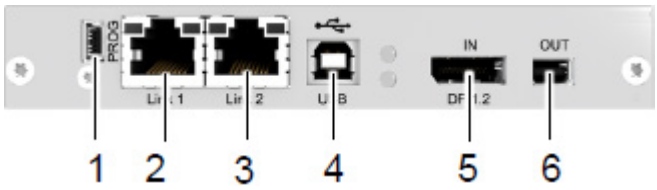
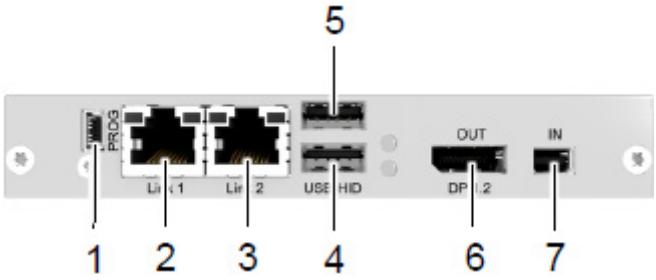
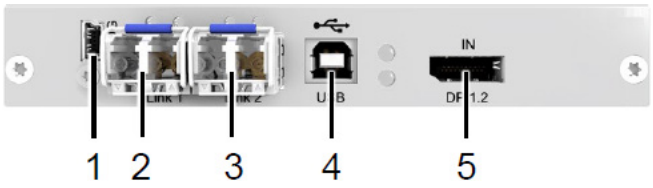
Transmitters	Receivers
I. DP 1.2 with JPEG-XS (No Local Video), USB HID, and redundant CATx 1G Connectors	
DP 1.2 with JPEG XS redundant CATx 1G OEC-SLD2CUDS1W/IRK	DP 1.2 with JPEG XS redundant CATx 1G OEC-SRD2CUDS1W/IRK
	
1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 2 4. CPU: USB HID 5. From CPU: DP 1.2 Input	1. Service Port 2. CATx 1G Connector 1 3. CATx 1G Connector 1 4. USB HID Devices 5. USB HID Devices 6. Output to DP 1.2 display
II. DP 1.2 (With Local Video), USB HID, and redundant CATx 1G or 3G Connectors	
DP 1.2 Plus redundant CATx 3G OEC-DLDTRUDX1/IRK DP 1.2 Plus MST redundant CATx 3G OEC-DLDTRUDM1/IRK DP 1.2 with JPEG XS redundant CATx 1G OEC-DLD2CUDS1W/IRK	DP 1.2 Plus redundant CATx 3G OEC-DRDTRUDX1/IRK DP 1.2 Plus MST redundant CATx 3G OEC-DRDTRUDM1/IRK DP 1.2 with JPEG XS redundant CATx 1G OEC-DRD2CUDS1W/IRK
	
1. Service Port 2. CATx 1G or 3G Connector 1 3. CATx 1G or 3G Connector 2 4. CPU: USB HID 5. From CPU: DP 1.2 Input 6. Mini-DP 1.2 Local Output	1. Service Port 2. CATx 1G or 3G Connector 1 3. CATx 1G or 3G Connector 2 4. USB HID Devices 5. USB HID Devices 6. Output to DP 1.2 display 7. Mini-DP 1.2 Local Input

Figure 29. DP 1.2 Cards with a Redundant CATx Link Port

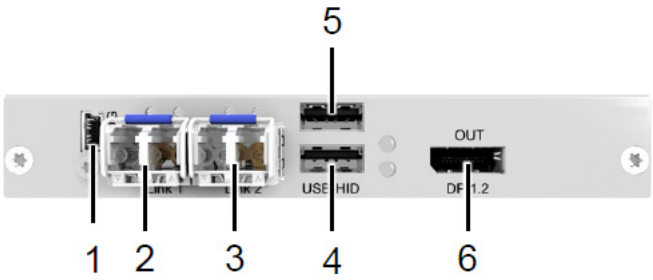
DP 1.2 Plus (No Local Video), USB HID, and redundant Fiber 1G or 3G Connectors

DP 1.2 Plus redundant Fiber 3G
OEC-SLDFRUDX1/IRK
DP 1.2 with JPEG XS redundant Fiber 1G
OEC-SLD2SUDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector 1
3. Fiber 1G or 3G Connector 2
4. CPU: USB HID
5. From CPU: DP 1.2 Input

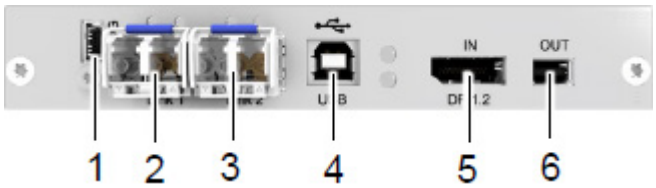
DP 1.2 Plus redundant Fiber 3G
OEC-SRDFRUDX1/IRK
DP 1.2 with JPEG XS redundant Fiber 1G
OEC-SRD2SUDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector 1
3. Fiber 1G or 3G Connector 2
4. USB HID Devices
5. USB HID Devices
6. Output to DP 1.2 display

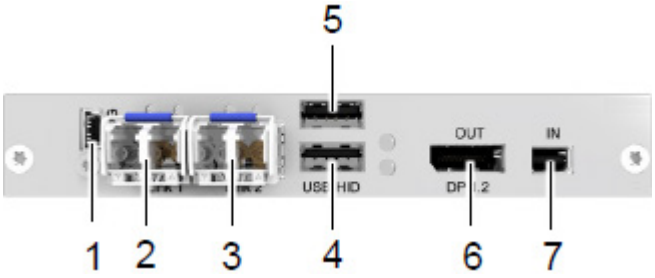
IV. DP 1.2 (With Local Port), and USB HID, Fiber 1G or 3G with Redundant Link

DP 1.2 Plus Fiber 3G
OEC-DLDFRUDX1/IRK
DP 1.2 Plus MST Fiber 3G
OEC-DLDFRUDM1/IRK
DP 1.2 with JPEG XS Fiber 1G
OEC-DLD2SUDS1W/IRK
DP 1.2 with JPEG XS Fiber 3G
OEC-DLDFRUDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector 1
3. Fiber 1G or 3G Connector 2
4. CPU: USB HID
5. From CPU: DP 1.2 Input
6. Mini-DP 1.2 Local Output

DP 1.2 Plus Fiber 3G
OEC-DRDFRUDX1/IRK
DP 1.2 Plus MST Fiber 3G
OEC-DRDFRUDM1/IRK
DP 1.2 with JPEG XS Fiber 1G
OEC-DRD2SUDS1W/IRK
DP 1.2 with JPEG XS Fiber 3G
OEC-DRDFRUDS1W/IRK



1. Service Port
2. Fiber 1G or 3G Connector 1
3. Fiber 1G or 3G Connector 2
4. USB HID Devices
5. USB HID Devices
6. Output to DP 1.2 display
7. Mini-DP 1.2 Local Input

Figure 30. DP 1.2 Cards with a Redundant Fiber Link Port

Option Cards

Orion XTender Option Cards add additional functionality to Video Cards, such as analog audio, digital audio, USB HID, USB 2.0, Serial RS-232 and RS-422. They physically connect to the top of a Video Card and rely on the Video Card's link to pass information. The only option card which has its own link is the SNMP card, which is used in the management of Orion switches.

Option Cards with Only USB HID or USB 2.0 Functionality

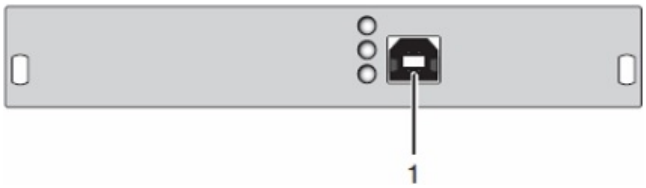
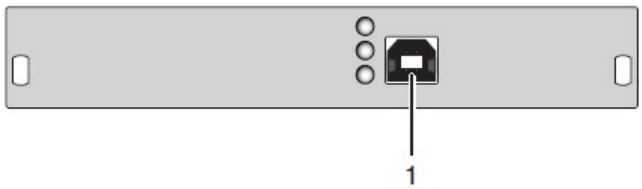
Transmitters	***Receivers***
I. **USB HID**	
USB HID Only Option Card OEC-L1H  1. To CPU: USB HID	USB HID Only Option Card OEC-R1H  1. USB HID devices
II. **USB 2.0, Flex Speed Up to 50/100 Mbps**	
USB 2.0 Only Option Card OEC-L1F  1. To CPU: USB 2.0 (Up to 50/100 Mbit/s)	USB 2.0 Only Option Card OEC-R1F  1. USB 2.0 Devices (Up to 50/100 Mbit/s) 2. USB 2.0 Devices (Up to 50/100 Mbit/s)

Figure 31. Option Cards with Only USB HID or USB 2.0 Functionality

Option Cards with RS-232

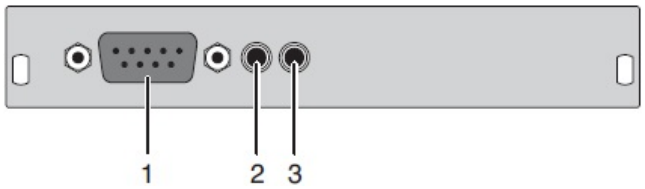
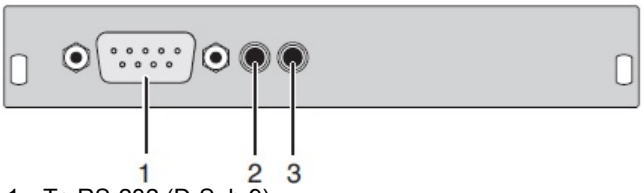
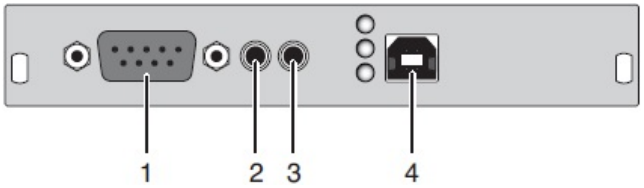
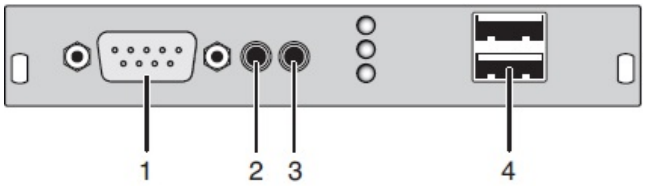
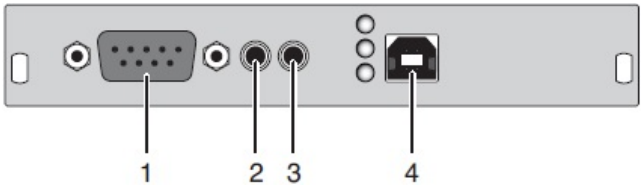
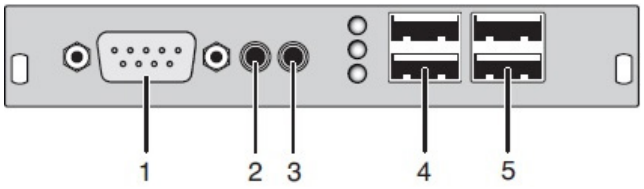
Transmitters	*Receivers*
I. Bi-Directional Analog Stereo Audio + RS-232 19.2 kBd or 115.2 kBd	
Analog Audio + RS-232 19.2 kBd Option Card OEC-L1AS Analog Audio + RS-232 115 kBd Option Card OEC-L1AS/115	Analog Audio + RS-232 19.2 kBd Option Card OEC-R1AS Analog Audio + RS-232 115 kBd Option Card OEC-R1AS/115
	
1. To RS-232 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT	1. To RS-232 (D-Sub 9) 2. Audio IN devices 3. Audio Out devices
II. Bi-Directional Analog Stereo Audio + RS-232 19.2 kBd + USB HID	
Analog Audio + RS-232 19.2 kBd + USB HID Option Card OEC-L1AS+1H	Analog Audio + RS-232 19.2 kBd + USB HID Option Card OEC-R1AS+1H
	
1. To RS-232 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT 4. CPU USB	1. To RS-232 (D-Sub 9) 2. Audio IN devices 3. Audio OUT devices 4. USB HID devices
III. Bi-Directional Analog Stereo Audio + RS-232 19.2 kBd or 115.2 kBd + Embedded USB 2.0, Flex Speed to 50/100 Mbps	
Analog Audio + RS-232 19.2 kBd + USB 2.0 Option Card OEC-L1AS+1F Analog Audio + RS-232 115.2 kBd + USB 2.0 Option Card OEC-L1AS/115+1F	Analog Audio + RS-232 19.2 kBd + USB 2.0 Option Card OEC-R1AS+1F Analog Audio + RS-232 115.2 kBd + USB 2.0 Option Card OEC-R1AS/115+1F
	
1. To RS-232 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT 4. To CPU USB 2.0 (Up to 50/100 Mbit/s)	1. To RS-232 (D-Sub 9) 2. Audio IN devices 3. Audio OUT devices 4. USB 2.0 devices (Up to 50/100 Mbit/s) 5. USB 2.0 devices (Up to 50/100 Mbit/s)
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.	

Figure 32. Option Cards with Serial RS-232

Option Cards with RS-422

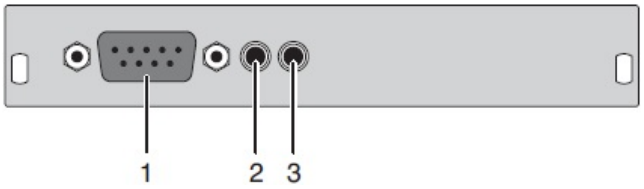
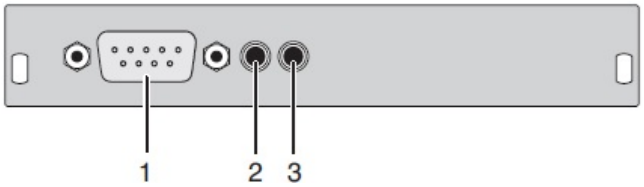
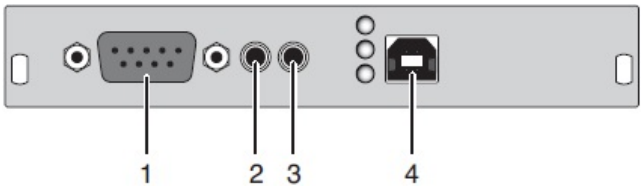
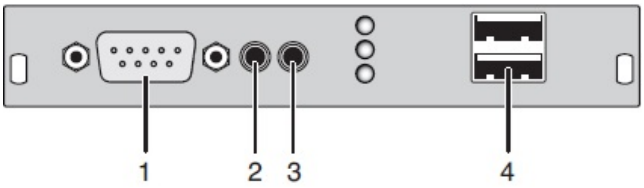
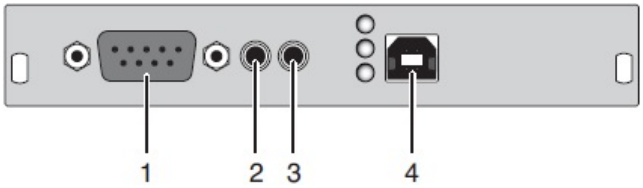
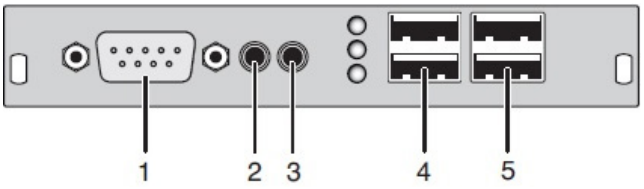
Transmitters	*Receivers*
I. Bi-Directional Analog Stereo Audio + RS-422	
Analog Audio + RS-422 Option Card OEC-L1A422	Analog Audio + RS-422 Option Card OEC-R1A422
	
1. To RS-422 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT	1. To RS-422 (D-Sub 9) 2. Audio IN devices 3. Audio Out devices
II. Bi-Directional Analog Stereo Audio + RS-422 + USB HID	
Analog Audio + RS-422 + USB HID Option Card: OEC-L1A422+1H	Analog Audio + RS-2422 + USB HID Option Card: OEC-R1A422+1H
	
1. To RS-422 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT 4. CPU USB HID	1. To RS-422 (D-Sub 9) 2. Audio IN devices 3. Audio OUT devices 4. USB HID devices
III. Bi-Directional Analog Stereo Audio + RS-422 + Embedded USB 2.0, Flex Speed to 50/100 Mbps	
Analog Audio + RS-422 + USB 2.0 Option Card: OEC-L1A422+1F	Analog Audio + RS-422 + USB 2.0 Option Card: OEC-R1A422+1F
	
1. To RS-422 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT 4. CPU USB 2.0	1. To RS-422 (D-Sub 9) 2. Audio IN devices 3. Audio OUT devices 4. USB 2.0 devices (Up to 50/100 Mbit/s) 5. USB 2.0 devices (Up to 50/100 Mbit/s)

Figure 33. Option Cards with RS-422, Part 1

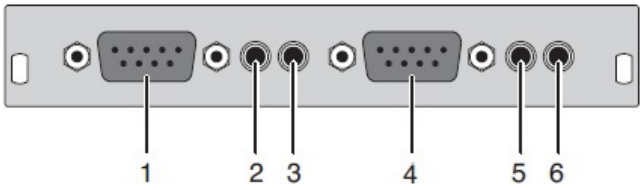
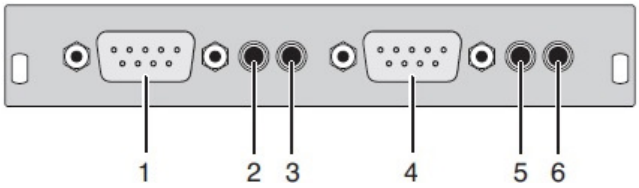
	Transmitters	*Receivers*
I.	**Dual Bi-Directional Analog Stereo Audio + Dual RS-422**	
	Dual Analog Audio + Dual RS-422 Option Card OEC-L2A422	Dual Analog Audio + Dual RS-422 Option Card OEC-R2A422
		
	1. To RS-422 (D-Sub 9) 2. CPU Audio IN 3. CPU Audio OUT 4. To RS-422 (D-Sub 9) 5. CPU Audio IN 6. CPU Audio OUT	1. To RS-422 (D-Sub 9) 2. Audio IN devices 3. Audio Out devices 4. To RS-422 (D-Sub 9) 5. Audio IN devices 6. Audio OUT devices

Figure 34. Option Cards with RS-422, Part 2

Option Cards with Digital Audio

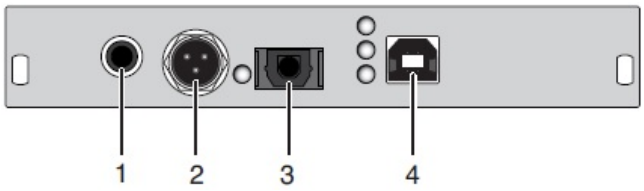
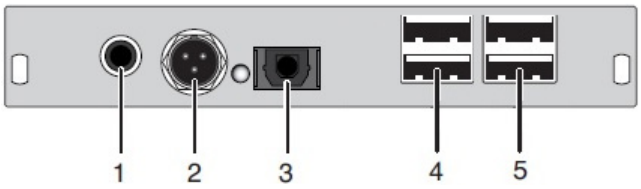
I.	**Uni-Directional Digital Audio with S/PDIF, Mini-XLR, TOSLINK + Embedded USB 2.0, Flex Speed to 50/100 Mbps**	
	Digital Audio + USB 2.0 Option Card OEC-L1DA+1F	Digital Audio + USB 2.0 Option Card OEC-R1DA+1F
		
	1. S/PDIF Input (RCA) 2. AES/EBU Input (Mini-XLR) 3. S/PDIF Input (TOSLINK) 4. CPU USB 2.0	1. S/PDIF Output (RCA) 2. AES/EBU Output (Mini-XLR) 3. S/PDIF Output (TOSLINK) 4. USB 2.0 devices (Up to 50/100 Mbit/s) 5. USB 2.0 devices (Up to 50/100 Mbit/s)

Figure 35. Option Cards with Digital Audio

Option Cards with Balanced Uni-Directional Analog Audio

The Balanced Analog Audio Option Cards extend the balanced audio without the need of extra interconnect cables. The audio signals are transmitted within the KVM stream of the video cards in the XTender. Two-channel mono or single-channel stereo audio are supported. Line level or Mic level audio sources are supported. The Option Cards have controls to phantom power a condenser microphone or pre-amplify a microphone. Audio sample rates can be set, with the default being 48.0 kHz. The outputs on the Receiver Cards are connected to active loudspeakers.

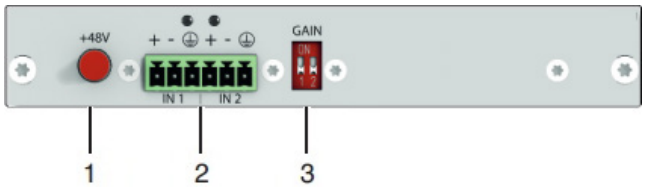
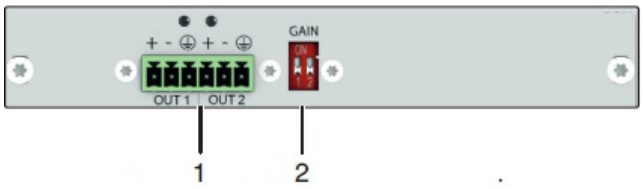
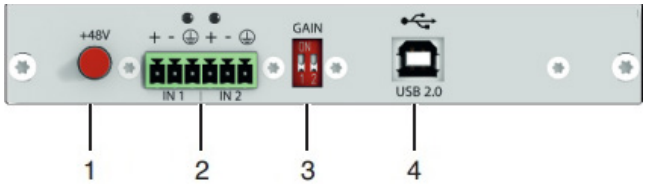
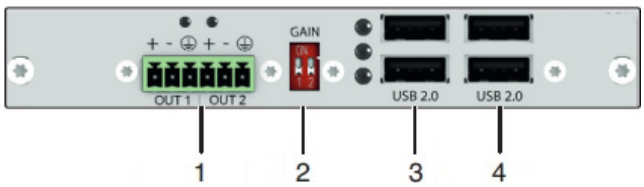
Transmitters	***Receivers***
I. **Balanced Analog Audio with Terminal Block and Pre-Amp**	
Balanced Analog Audio Option Card OEC-L1AB	Balanced Analog Audio Option Card OEC-R1AB
	
1. 48V Phantom Power 2. 6-pin Phoenix Socket 3. DIP Switch for Pre-Amplification	1. 6-pin Phoenix Socket 2. Not in use
II. **Balanced Analog Audio with Terminal Block and Pre-Amp + Embedded USB 2.0, Flex Speed to 50/100 Mbps**	
Balanced Analog Audio + USB 2.0 Option Card OEC-L1AB+1F	Balanced Analog Audio + USB 2.0 Option Card OEC-R1AB+1F
	
1. 48V Phantom Power 2. 6-pin Phoenix Socket 3. DIP Switch for Pre-Amplification 4. CPU USB 2.0	1. 6-pin Phoenix Socket 2. Not in use 3. USB 2.0 devices (Up to 50/100 Mbit/s) 4. USB 2.0 devices (Up to 50/100 Mbit/s)

Figure 36. Option Cards with Balanced Analog Audio

Balanced Analog Audio Card Properties:

Input /Output: 6-Pin Phoenix Socket	Pin 1 Polarity: +	Pin 2 Polarity: –	Pin 3 Polarity: GND
	Pin 4 Polarity: +	Pin 5 Polarity: –	Pin 6 Polarity: GND
Signal Level	Input: Max. 6,4 dBu balanced (Gain: 0 dB) Max. 0,44 dBu unbalanced (Gain: 0 dB)	Output: 8,1 dBu (balanced) 2,1 dBu (unbalanced)	
Phantom Power	+48VDC		
Preamplification	10 dB default		
Bit Depth	24 bit		
Sample Rate	32 bis 192 kHz adjustable		

Table 8. Balanced Analog Audio Option Card Properties

Receiver-Only Option Cards

The Receiver-Only Option Cards only can be mounted on Receiver units.. They include the following types of cards:

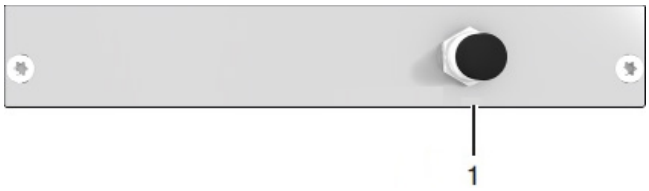
- a push button Option Card to display the OSD on a Receiver unit with no keyboard
- two Option Cards with configurable GPIO In/Out

Push Button Option Card (Receiver Only)

I. Push Button Only

Push Button Option Card:

OEC-R1PB



1. Push Button

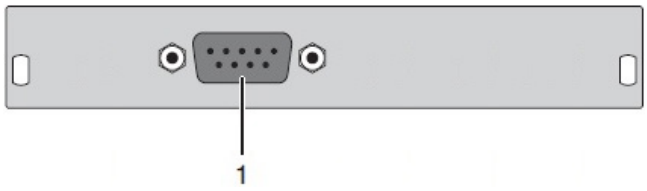
Figure 37. Push Button Option Card

GPIO Option Cards (Receiver Only)

I. GPIO Only

I. GPIO Option Card:

OEC-R1GPIO

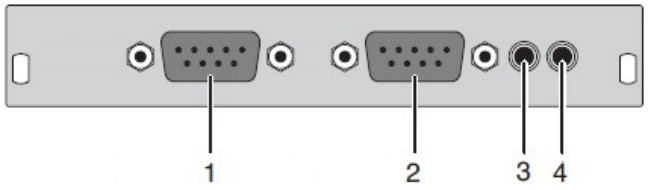


1. GPIO Socket

II. GPIO + Bi-Directional Analog Stereo Audio + RS-232

GPIO + Analog Audio+ RS-232 Option Card:

OEC-R1GPIO+1AS



1. GPIO Socket
2. To RS-232 (D-Sub 9)
3. Audio IN
4. Audio OUT

Figure 38. GPIO Option Card

Unit-Independent Option Cards

The Unit-Independent Option Cards can be mounted on either Transmitter or Receiver units. When mounted on a Transmitter or a Receiver, they do not need to be paired on the other end. They include the following types of cards:

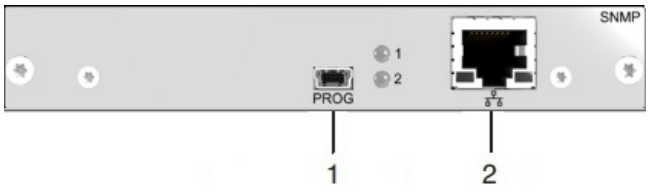
- a monitoring module with SNMP and Ethernet connection for 6-card Slide-In Chassis and 21-Card Chassis only
- a Fan module

SNMP Option Card

I. SNMP Only

SNMP Option Card:

OEC-1SNMP



1. Service Port
2. CATx Port for Network Connection

Figure 39. SNMP Option Card

SNMP operation is described in the Orion X and Orion FX manuals.

Fan Option Card (Receiver Only)

I. Fan Option Card:

OEC-1FN

1. Service Port

Figure 40. Fan Option Card

The Fan Option Card can be installed in any slot in the chassis. However, in order to ensure proper ventilation, it is recommended that the Fan Option Card be installed in the upper slots of a chassis.

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 displays some of the possible configurations of Orion XTender units. While the configurations displayed here show a one-to-one correspondence for the cards in the Transmitter and the Receiver units, this is not necessary. The cards can be combined in different combinations, subject to the restrictions described in the Compatibility section on page 2. Please contact Rose Electronics to discuss the best configuration that meets the system requirements.

Units with 2-Card Chassis

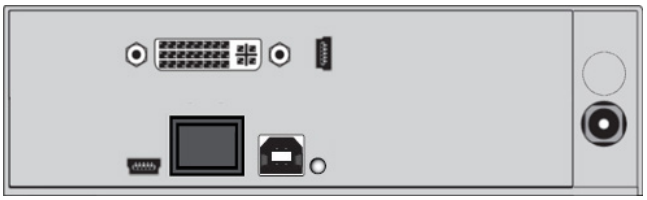
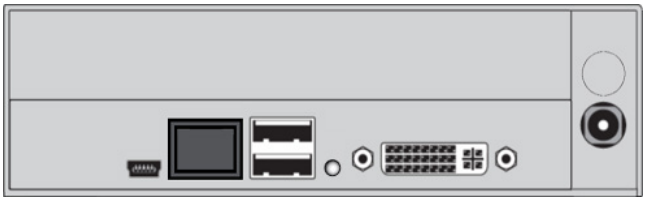
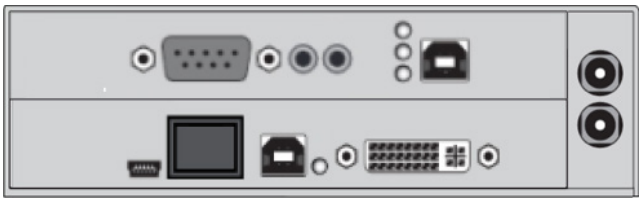
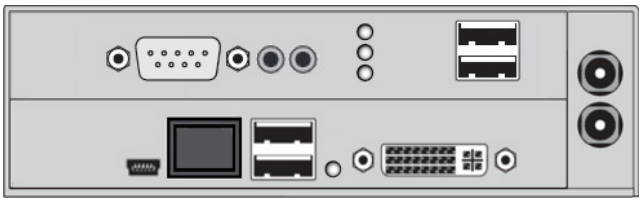
Transmitters	***Receivers***
1.  Part Numbers Chassis: OEE-CH02 a. Video Cards: i. Dual-Height DVI-I / VGA *CATx:* OEC-SLDTXUD1V/IRK *Fiber:* OEC-SLDFSUD1V/IRK	 Part Numbers Chassis: OEE-CH02 a. Video Cards: i. DVI-I /VGA *CATx:* OEC-SRDTXUS1V/IRK *Fiber:* OEC-SRDFSUS1V/IRK
2.  Part Numbers Chassis: OEE-CH02/RP or OEE-CH02/DP a. Video Cards: i. DVI-D *CATx:* OEC-SLDTXUD1V/IRK *Fiber:* OEC-SLDFSUD1V/IRK b. Option Cards i. Analog Audio + RS-232 + USB HID OEC-L1AS+1H	 Part Numbers Chassis: OEE-CH02/RP or OEE-CH02/DP a. Video Cards: ii. DVI-D *CATx:* OEC-SRDTXUD1V/IRK *Fiber:* OEC-SRDFSUD1V/IRK c. Option Cards i. Analog Audio + RS-232 + USB HID OEC-R1AS+1H
3.  Part Numbers Chassis: OEE-CH03, OEE-CH03/DP a. Video Cards: i. HDMI 1.3 Video-Only *CATx:* OEC-SLDTX0H1H/IRK *Fiber:* OEC-SLDFS0H1H/IRK	 Part Numbers Chassis: OEE-CH03 or OEE-CH03/DP a. Video Cards: i. HDMI 1.3 Video-Only *CATx:* OEC-SRD2CUH1H/IRK *Fiber:* OEC-SRD2SUH1H/IRK b. Option Cards: i. GPIO Card OEC-R1GPIO

Figure 41. Units with 2-Card Chassis, Part 1

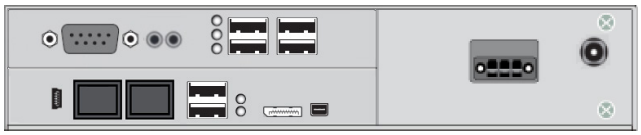
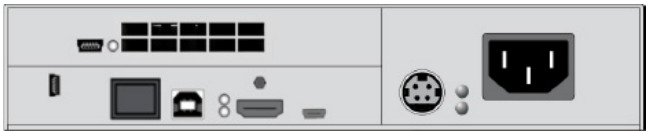
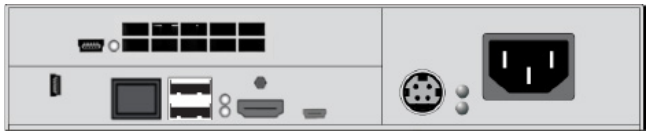
	Transmitters	Receivers
4.	 Part Numbers Chassis: OEE-CH03/D12, OEE-CH03/D24, OEE-CH03/D48 a. Video Cards: i. DP 1.1 Dual-Head with Redundant Link *CATx 1G:* OEC-SLD2CUDK1/IRK *Fiber 1G:* OEC-SLD2SUDK1/IRK *Fiber 3G:* OEC-SLDFRUDK1/IRK b. Option Cards: i. RS-422 with Analog Audio and USB 2.0 OEC-L1A422+1F	 Part Numbers Chassis: OEE-CH03/D12, OEE-CH03/D24, OEE-CH03/D48 a. Video Cards: i. DP 1.1 Dual-Head with Redundant Link *CATx 1G:* OEC-SRD2CUDK1/IRK *Fiber 3G:* OEC-SRD2SUDK1/IRK *Fiber 3G:* OEC-SRDFRUDK1/IRK b. Option Cards: i. RS-422 with Analog Audio and USB 2.0 Option Card: OEC-L1A422+1F
5.	 Part Numbers Chassis: OEE-CH05/BPF, OEE-CH05/BPF/DP a. Video Cards*:* i. HDMI 2.0 Plus with Local Video Out *CATx 3G:* OEC-DLDT3UHX1H/IRK *Fiber 3G:* OEC-DLDF3UHX1H/IRK b. Option Cards: i. Fan Option Card OEC-1FN	 Part Numbers Chassis: OEE-CH05/BPF, OEE-CH05/BPF/DP a. Video Cards*:* a. HDMI 2.0 Plus with Local Video Input *CATx 3G:* OEC-DLDT3UHX1H/IRK *Fiber 3G:* OEC-DLDF3UHX1H/IRK b. Option Cards: i. Fan Option Card OEC-1FN
6.	 Part Numbers Chassis: OEE-CH05/BPF/S a. Video Cards: i. DP 1.1 Plus Dual-Head with Redundant Link *CATx 1G:* OEC-SLD2CUDU1/IRK *Fiber 1G:* OEC-SLD2SUDU1/IRK *Fiber 3G:* OEC-SLDFRUDU1/IRK b. Option Cards: i. Digital Audio with USB 2.0 OEC-L1DA+1F	 Part Numbers Chassis: OEE-CH05/BPF/S a. Video Cards: i. DP 1.1 Plus Dual-Head with Redundant Link *CATx 1G:* OEC-SRD2CUDU1/IRK *Fiber 1G:* OEC-SRD2SUDU1/IRK *Fiber 3G:* OEC-SRDFRUDU1/IRK b. Option Cards i. Digital Audio with USB 2.0 OEC-R1DA+1F
7a.	 Part Numbers Chassis: OEE-CH05/BPF/SNMP a. Video Cards: i. DP 1.2 Plus with Local Out and Redundant Link *CATx 3G:* OEC-DLDT3UDX1/IRK *Fiber 3G:* OEC-DLDF3UDX1/IRK ii. HDMI 1.4 with Local Video Out *CATX 1G:* OEC-DLDTXUHL1/IRK *Fiber 1G:* OEC-DLDFSUHL1/IRK *Fiber 3G:* OEC-DLDF3UHL1/IRK	 Part Numbers Chassis: OEE-CH05/BPF/SNMP a. Video Cards: i. DP 1.2 Plus with Local Input and Redundant Link *CATx 3G:* OEC-DRDT3UDX1/IRK *Fiber 3G:* OEC-DRDF3UDX1/IRK ii. HDMI 1.4 with Local Video In *CATX 1G:* OEC-DRDTXUHL1/IRK *Fiber 1G:* OEC-DRDFSUHL1/IRK *Fiber 3G:* OEC-DRDF3UHL1/IRK

Figure 42. Units with 2-Card Chassis, Part 2

Units with 4-Card Chassis

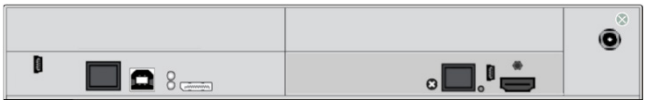
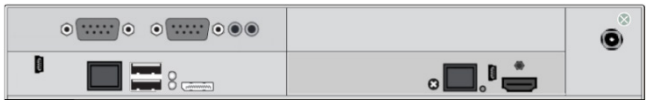
	Transmitters	***Receivers***
1.	 Part Numbers Chassis: OEE-CH04 a. Video Cards: i. DP 1.2 Plus *Fiber 3G:* OEC-SLDF3UDX1/IRK ii. HDMI 1.3 Video Only *CATx 1G:* OEC-SLDTX0H1H/IRK *Fiber 1G:* OEC-SLDFS0H1H/IRK	 Part Numbers Chassis: OEE-CH04 a. Video Cards: i. DP 1.2 Plus *Fiber 3G:* OEC-SLDF3UDX1/IRK ii. HDMI 1.3 Video Only *CATx 1G:* OEC-SLDTX0H1H/IRK *Fiber 1G:* OEC-SLDFS0H1H/IRK b. Option Cards i. GPIO + Analog Audio + RS-232 OEC-R1GPIO+1AS
2.	 Part Numbers Chassis: OEE-CH04/RP, OEE-CH04/DP a. Video Cards: i. DP 1.2 Plus MST *CATx 3G:* OEC-DLDT3UDM1/IRK *Fiber 3G:* OEC-DLDF3UDM1/IRK ii. DVI-I/VGA *CATx 1G:* OEC-SLDTXUD1V/IRK *Fiber 1G:* OEC-SLDFSUD1V/IRK b. Option Cards: i. Balanced Analog Audio OEC-L1AB	 Part Numbers Chassis: OEE-CH04/RP, OEE-CH04/DP a. Video Cards: i. DP 1.2 Plus MST *CATx 3G:* OEC-DLDT3UDM1/IRK *Fiber 3G:* OEC-DLDF3UDM1/IRK ii. DVI-D *CATx 1G:* OEC-SRDTXUD1D/IRK *Fiber 1G:* OEC-SRDFSUD1D/IRK b. Option Cards: i. Balanced Analog Audio OEC-R1AB

Figure 43. Units with 4-Card Chassis

Units with 6-Card Chassis

	Transmitters	***Receivers***
1.	 <u>Part Numbers</u> Chassis: OEE-CH06/RP, OEE-CH06/DP a. Video Cards: i. DP 1.2 with JPEG XS Codec and Redundant Link *CATx 1G:* OEC-DLD2CUDS1W/IRK *Fiber 1G:* OEC-DLD2SUDS1W/IRK *Fiber 3G:* OEC-DLDFRUDS1W/IRK ii. DP 1.1 Dual-Head *CATx 1G:* OEC-SLDTXUDK1/IRK *Fiber 1G:* OEC-SLDFSUDK1/IRK *Fiber 3G:* OEC-SLDF3UDK1/IRK iii. HDMI 1.4 *CATx 1G:* OEC-DLDTXUHL1H/IRK *Fiber 1G:* OEC-DLDFSUHL1H/IRK *Fiber 3G:* OEC-DLDF3UHL1H/IRK b. Option Cards: i. Analog Audio + RS-232 + USB HID OEC-L1AS+1H ii. Fan Card OEC-1FN	 <u>Part Numbers</u> Chassis: OEE-CH06/RP, OEE-CH06/DP b. Video Cards: iii. DP 1.2 with JPEG XS Codec and Redundant Link *CATx 1G:* OEC-DRD2CUDS1W/IRK *Fiber 1G:* OEC-DRD2SUDS1W/IRK *Fiber 3G:* OEC-DRDFRUDS1W/IRK iv. DP 1.1 Dual-Head *CATx 1G:* OEC-SRDTXUDK1/IRK *Fiber 1G:* OEC-SRDFSUDK1/IRK *Fiber 3G:* OEC-SRDF3UDK1/IRK v. HDMI 1.4 *CATx 1G:* OEC-DRDTXUHL1H/IRK *Fiber 1G:* OEC-DRDFSUHL1H/IRK *Fiber 3G:* OEC-DRDF3UHL1H/IRK c. Option Cards: i. Analog Audio + RS-232 + USB HID OEC-R1AS+1H ii. Fan Card OEC-1FN
2.	 <u>Part Numbers</u> Chassis: OEE-CH06/D12, OEE-CH06/D24, OEE-CH06/D48 a. Video Cards: i. DVI-I (VGA) with Redundant Link *CATx 1G:* OEC-SLD2CUS1V/IRK *Fiber 1G:* OEC-SLD2SUS1V/IRK ii. HDMI 1.3 FHD with Local Out and Redundant Link *CATx 1G:* OEC-DLD2CUH1H/IRK *Fiber 1G:* OEC-DLD2SUH1H/IRK iii. HDMI 1.4 Plus with Local Out *CATx 1G:* OEC-DLDTXUHU1H/IRK *Fiber 1G:* OEC-DLDFSUHU1H/IRK *Fiber 3G:* OEC-DLDF3UHU1H/IRK b. Option Cards: i. Analog Audio + RS232 OEC-L1AS	 <u>Part Numbers</u> Chassis: OEE-CH06/RP, OEE-CH06/DP a. Video Cards: i. DVI-I (VGA) with Redundant Link *CATx 1G:* OEC-SRD2CUS1V/IRK *Fiber 1G:* OEC-SRD2SUS1V/IRK ii. HDMI 1.3 FHD with Local Out and Redundant Link *CATx 1G:* OEC-DRD2CUH1H/IRK *Fiber 1G:* OEC-DRD2SUH1H/IRK iii. HDMI 1.4 Plus with Local Out *CATx 1G:* OEC-DRDTXUHU1H/IRK *Fiber 1G:* OEC-DRDFSUHU1H/IRK *Fiber 3G:* OEC-DRDF3UHU1H/IRK b. Option Cards: i. Analog Audio + RS232 OEC-R1AS

Figure 44. Units with 6-Card Chassis, Part 1

Transmitters	Receivers
3.  Part Numbers Chassis: OEE-CH07/BPF/DP, OEE-CH07/BPF/DP/SFN a. Video Cards: i. DP 1.1 Dual-Head with Redundant Link *CATx 1G:* OEC-SLD2CUDK1/IRK *Fiber 1G:* OEC-SLD2SUDK1/IRK *Fiber 3G:* OEC-SLDF3UDK1/IRK ii. DP 1.2 Plus with MST *CATx 3G:* OEC-DLDT3UDM1/IRK *Fiber 3G:* OEC-DLDF3UDM1/IRK b. Option Cards: i. Analog Audio + RS422 x 2 OEC-L2A422 ii. Fan Card OEC-1FN iii. SNMP Card OEC-1SNMP	 Part Numbers Chassis: OEE-CH07/BPF/DP, OEE-CH07/BPF/DP/SFN a. Video Cards: i. DP 1.1 Dual-Head with Redundant Link *CATx 1G:* OEC-SRD2CUDK1/IRK *Fiber 1G:* OEC-SRD2SUDK1/IRK *Fiber 3G:* OEC-SRDF3UDK1/IRK ii. DP 1.2 Plus with MST *CATx 3G:* OEC-DRDT3UDM1/IRK *Fiber 3G:* OEC-DRDF3UDM1/IRK b. Option Cards: i. Analog Audio + RS422 x 2 OEC-L2A422 ii. Fan Card OEC-1FN
4.  Part Numbers Chassis: OEE-CH07/BPB/DP, OEE-CH07/BPB/DP/SFN a. Video Cards: i. HDMI 1.3 Video Only Card *CATx 1G:* OEC-SLDTX0H1H/IRK *Fiber 1G:* OEC-SLDFS0H1H/IRK ii. HDMI 2.0 with Redundant Link *CATx 3G:* OEC-DLDTRUHX1H/IRK *Fiber 3G:* OEC-DLDFRUHX1H/IRK iii. DVI-D with Redundant Link *CATx 1G:* OEC-SLD2CUD1D/IRK *Fiber 1G:* OEC-SLD2SUD1D/IRK b. Option Cards: i. Analog Audio + RS232 115.2K OEC-L1AS/115 b. USB 2.0 Only Option Card OEC-L1F	 Part Numbers Chassis: OEE-CH07/BPB/DP, OEE-CH07/BPB/DP/SFN a. Video Cards: i. HDMI 1.3 Video Only Card *CATx 1G:* OEC-SRDTX0H1H/IRK *Fiber 1G:* OEC-SRDFS0H1H/IRK ii. HDMI 2.0 with Redundant Link *CATx 3G:* OEC-DRDTRUHX1H/IRK *Fiber 3G:* OEC-DRDFRUHX1H/IRK iii. DVI-D with Redundant Link *CATx 1G:* OEC-SRD2CUD1D/IRK *Fiber 1G:* OEC-SRD2SUD1D/IRK b. Option Cards: i. Analog Audio + RS232 115.2K OEC-R1AS/115 ii. Fan Card OEC-1FN
5.  Part Numbers Chassis: OEE-CH08/BPB/DP/SNMP a. Video Cards: i. DP 1.2 with JPEG XS Card with Local Out *CATx 1G:* OEC-DLDTXUDS1W/IRK *Fiber 1G:* OEC-DLDFSUDS1W/IRK *Fiber 3G:* OEC-DLDF3UDS1W/IRK ii. DP 1.1 Dual-Head *CATx 1G:* OEC-SLDTXUDK1/IRK *Fiber 1G:* OEC-SLDFSUDK1/IRK *Fiber 3G:* OEC-SLDF3UDK1/IRK iii. HDMI 2.0 *CATx 3G:* OEC-DLDT3UHX1H/IRK *Fiber 3G:* OEC-DLDF3UHX1H/IRK b. Option Cards: i. Analog Audio with RS422 and USB 2.0 Card OEC-L1A422+1F ii. Digital Audio with USB 2.0 Card OEC-L1DA+1F iii. Balanced Analog Audio Card OEC-L1AB	 Part Numbers Chassis: OEE-CH08/BPB/DP/SNMP a. Video Cards: i. DP 1.2 with JPEG XS Card with Local Out *CATx 1G:* OEC-DRDTXUDS1W/IRK *Fiber 1G:* OEC-DLDFSUDS1W/IRK *Fiber 3G:* OEC-DLDF3UDS1W/IRK ii. DP 1.1 Dual-Head *CATx 1G:* OEC-SRDTXUDK1/IRK *Fiber 1G:* OEC-SRDFSUDK1/IRK *Fiber 3G:* OEC-SRDF3UDK1/IRK iii. HDMI 2.0 *CATx 3G:* OEC-DRDT3UHX1H/IRK *Fiber 3G:* OEC-DRDF3UHX1H/IRK b. Option Cards: i. Analog Audio + RS422 and USB 2.0 Card OEC-R1A422+1F ii. Digital Audio with USB 2.0 Card OEC-R1DA+1F iii. Balanced Analog Audio Card OEC-R1AB

Figure 45. Units with 6-Card Chassis Part 2

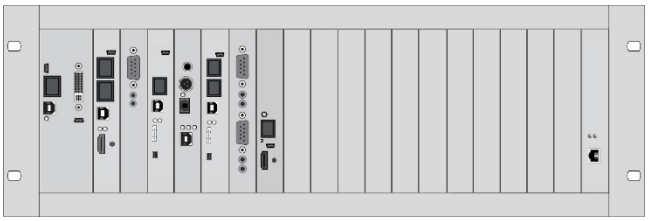
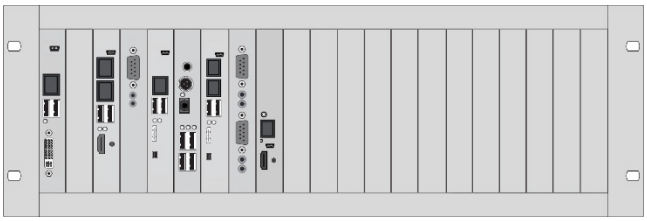
Transmitters	Receivers
5. 	
Part Numbers Chassis: OEE-CH21/RP, OEE-CH21/DP a. Video Cards: i. Dual-Height DVI-I / VGA *CATx 1G:* OEC-SLDTXUD1V/IRK *Fiber 1G:* OEC-SLDFSUD1V/IRK ii. HDMI 1.3 with Redundant Link and No Local Out *CATx 1G:* OEC-SLD2CUH1H/IRK *Fiber 1G:* OEC-SLD2SUH1H/IRK iii. DP 1.2 with JPEG XS Card with Local Out *CATx 1G:* OEC-DLDTXUDS1W/IRK *Fiber 1G:* OEC-DLDFSUDS1W/IRK *Fiber 3G:* OEC-DLDF3UDS1W/IRK iv. DP 1.1 Dual Head with Redundant Link *CATx 1G:* OEC-SLD2CUDK1/IRK *Fiber 1G:* OEC-SLD2SUDK1/IRK *Fiber 3G:* OEC-SLDFRUDK1/IRK v. HDMI 1.3 Video Only Card *CATx 1G:* OEC-SLDTX0H1H/IRK *Fiber 1G:* OEC-SLDFS0H1H/IRK b. Option Cards: i. Analog Audio with RS232Card OEC-L1AS ii. Digital Audio with USB 2.0 Card OEC-L1DA+1F iii. Analog Audio + RS422 x 2 OEC-L2A422 iv. SNMPCard OEC-1SNMP	Part Numbers Chassis: OEE-CH21/RP, OEE-CH21/DP a. Video Cards: i. DVI-D Card *CATx 1G:* OEC-SRDTXUD1D/IRK *Fiber 1G:* OEC-SRDFSUD1D/IRK ii. HDMI 1.3 with Redundant Link and No Local Out *CATx 1G:* OEC-SRD2CUH1H/IRK *Fiber 1G:* OEC-SRD2SUH1H/IRK. iii. DP 1.2 with JPEG XS Card with Local Out *CATx 1G:* OEC-DRDTXUDS1W/IRK *Fiber 1G:* OEC-DRDFSUDS1W/IRK *Fiber 3G:* OEC-DRDF3UDS1W/IRK iv. DP 1.1 Dual Head with Redundant Link *CATx 1G:* OEC-SRD2CUDK1/IRK *Fiber 1G:* OEC-SRD2SUDK1/IRK *Fiber 3G:* OEC-SRDFRUDK1/IRK v. HDMI 1.3 Video Only Card *CATx 1G:* OEC-SRDTX0H1H/IRK *Fiber 1G:* OEC-SRDFS0H1H/IRK b. Option Cards: i. Analog Audio + RS232 Card OEC-R1AS ii. Digital Audio with USB 2.0 Card OEC-R1DA+1F iii. Analog Audio + RS422 x 2 OEC-L2A422

Figure 46. Units with 21-Card Chassis

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, 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 Main Card set up, and the Option Card(s) set up.

Installing or Swapping Out the Orion XTender Cards

The Orion XTender units can be ordered either as a complete unit with all the ordered cards pre-installed, or the chassis and XTender cards may be ordered separately.

However, on a later occasion, a card may have to be swapped out due to evolving system needs or a reduction in performance of an installed card. This section details the steps to install or swap out Orion XTender cards.

On the other hand, if setting up a unit that came with all the cards pre-installed, please skip ahead to the following section, Getting the Orion XTender Units Ready for Operation on page 74.

Prior to beginning work on installing or swapping out XTender cards, please ensure that the following ESD specifications are met.

- The workplace incorporates ESD safety precautions.
- The use of an ESD wristlet is highly recommended.
- Only use tools that do not build up an ESD charge.

XTender card installation varies depending on whether the chassis is a Mounting Chassis or a Slide-In Chassis. In a Slide-In Chassis, the XTender cards can be hot-swapped, allowing the XTender unit to continue operating as the card is being swapped in or out. To facilitate this, Slide-In Chassis have a backplane where the XTender cards can be slid in during installation.

The table below indicates whether each chassis model is a Mounting or Slide-In Chassis.

2-Card Chassis	
Mounting Chassis	OEE-CH02, OEE-CH02/RP, OEE-CH02/DP, OEE-CH03/RP, OEE-CH03/DP, OEE-CH03/D12, OEE-CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48, OEE-CH03/D48/DP
Slide-In Chassis	OEE-CH05/RP, OEE-CH05/DP, OEE-CH05/S/RP, OEE-CH05/S/DP, OEE-CH05/SNMP/RP, OEE-CH05/SNMP/DP
4-Card Chassis	
Mounting Chassis	OEE-CH04, OEE-CH04/RP, OEE-CH04/DP
6-Card Chassis	
Mounting Chassis	OEE-CH06/RP, OEE-CH06/DP, OEE-CH06/D12, OEE-CH06/D12/DP, OEE-CH06/D24, OEE-CH06/D24/DP, OEE-CH06/D48, OEE-CH06/D48/DP
Slide-In Chassis	OEE-CH07/DP, OEE-CH07/SFN/DP, OEE-CH08/BPB/DP, OEE-CH08/BPB/SFN/DP, OEE-CH08/BPB/SNMP/DP
21-Card Chassis	
Slide-In Chassis	OEE-CH21/RP, OEE-CH21/DP

Table 9. Chassis Type by Model

XTender Card Installation Considerations

- When a 2-card, 4-card or a 6-card Slide-In unit is ordered with cards pre-installed, all the required fasteners come assembled in the unit.
- In order to install cards ordered separately from a 6-card Mounting Chassis, internal power cables are required. Please contact Rose Electronics if the cables were not shipped along with cards.
- When ordering an Option Card to be installed in a 21-card chassis, please specify this when ordering. A connection plate for marking the Video Main Card to the Option Card will be provided free of charge.
- A chassis fan (Part Number RM-OEE-FAN) can only be installed on a 2-Card or 6-Card Slide-In Chassis.
- A SNMP card can only be installed in Slot 21 of a 21-card chassis or Slot 5 of a 6-card Slide-In Chassis. However, it cannot be installed on the OEE-CH08/BPB/SNMP/DP chassis, which already has SNMP functionality built into the chassis.
- The USB 2.0 Standalone Option Card, OEC-L1F for the Transmitter and OEC-R1F for the Receiver, can only be mounted in Slot 2 of a Mounting Chassis. No such restriction exists in the case of a Slide-In Chassis, it can occupy any available slot.

Slot Numbering

On a 2-card, 4-card and 6-card chassis, the slots are numbered from bottom left to top right. On a 21-card chassis, the slots are numbered from left to right. This is displayed in the image below

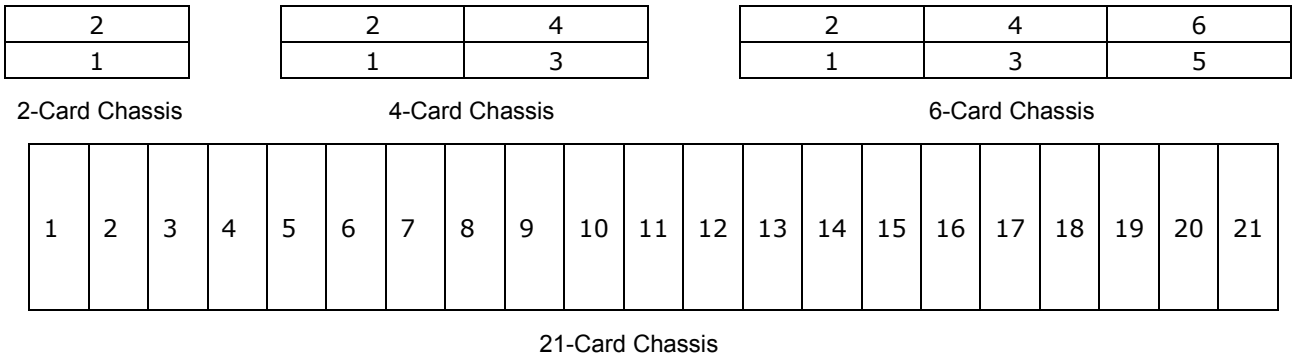


Figure 47. Slot Numbering on XTender Chassis

The Main Video Cards are installed on the bottom of a 2-card, 4-card and 6-card chassis so that the slots immediately above them can be assigned to Option Cards. On a 21-card chassis, the Main Video Cards are mounted to the left of the Option Cards.

Pre-Cursor Steps to XTender Card Installation

Some steps have to be performed initially to prepare the chassis before the XTender Card can be installed in the chassis. Installation varies depending on the type of chassis. These steps for each type of installation are outlined below.

Pre-Installation Steps for the 2-Card, 4-Card and 6-Card Mounting Chassis

1. Power down the unit, and disconnect all cables from it.
2. Remove the unit from its place of installation, say, a rack, and move to a workplace that fulfills all necessary ESD requirements.
3. If necessary, wait until the unit has cooled down.
4. Remove the cover of the chassis using a TORX 10 screwdriver.
5. Remove the mounting screw of the module or blanking plate to be replaced using a TORX 10 screwdriver.
6. When installing a Main Video Card in one of the lower slots, remove the grounding screw at the bottom of the chassis using a TORX 8 screwdriver.

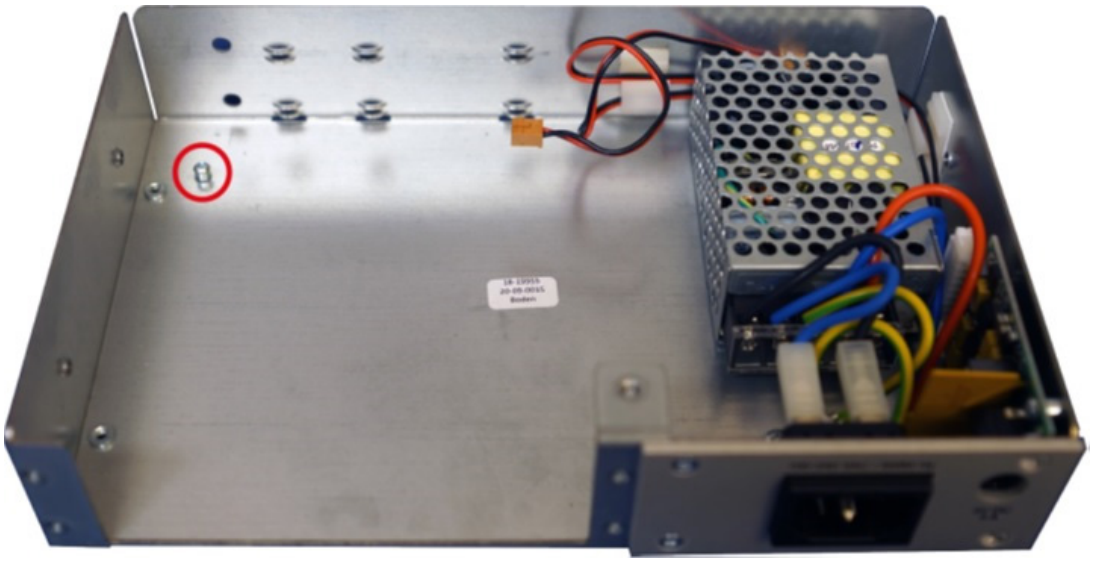


Figure 48. Location of Grounding Screw on a Mounting Chassis

7. Remove the module to be replaced or the blind plate at the slot where the card installation is to take place.
8. Store all disassembled connection elements in a dust-free and dry environment until they are needed again.

Pre-Installation Steps for the 2-Card and 6-Card Slide-In Chassis

Follow the steps below to make the initial steps to replace a Main Video Card.

1. Disconnect all cables from the mounted card that is being replaced.
2. Remove the mounting screw of the card or blanking plate to be replaced using a TORX 10 screwdriver.
3. Remove the module to be replaced or the blind plate of the slot to be equipped.
4. Store all disassembled connection elements in a dust-free and dry environment until they are needed again.

Follow the steps below to make the initial steps to replace or install a Chassis Fan in a 6-Cards Slide-In Chassis.

1. Power down the unit, and disconnect all cables from it.
2. Remove the unit from its place of installation, say, a rack, and move to a workplace that fulfills all necessary ESD requirements.
3. If necessary, wait until the unit has cooled down.
4. Remove the cover of the chassis using a TORX 10 screwdriver.

Pre-Installation Steps for the 21-Card Slide-In Chassis

1. Disconnect all cables from the mounted card that is being replaced.
2. Loosen the knurled screw on the front panel of the card or blanking plate to be replaced by hand.
3. Remove the module to be replaced or the blind plate of the slot to be equipped.
4. Remove the knurled screw on the front panel of the removed module or blind plate by hand.
5. Remove the safety nipple on the front panel by pressing the nipple together on the inside and sliding it out.
6. Store all disassembled connection elements in a dust-free and dry environment until they are needed again.

XTender Card Installation

XTender card installation varies on whether a Main Video Card, an Option Card, a USB 2.0 Standalone Card or a SNMP card is being installed. Special considerations are also needed for HDMI 2.0 and DisplayPort 1.2 Main Video Cards. Each of these, along with steps to install a chassis fan, are described in this section. It is expected that all the pre-installation steps described in the previous section have already been completed.

Main Video Card Installation

This section details the installation of the Main Video Cards. Special attention is given to HDMI 2.0 and DP 1.2 cards, which require addition considerations due to their heat dissipation needs.

Main Video Card Installation in a 2-Card, 4-Card or 6-Card Mounting Chassis

1. Insert the Main Video Card into the guides on the rear panel of the chassis, sliding the LED through the hole in the rear panel of the chassis.
2. Plug the cable connector of one of the internal power cables of a power supply unit into the multi-pin connector as shown in the following figure.

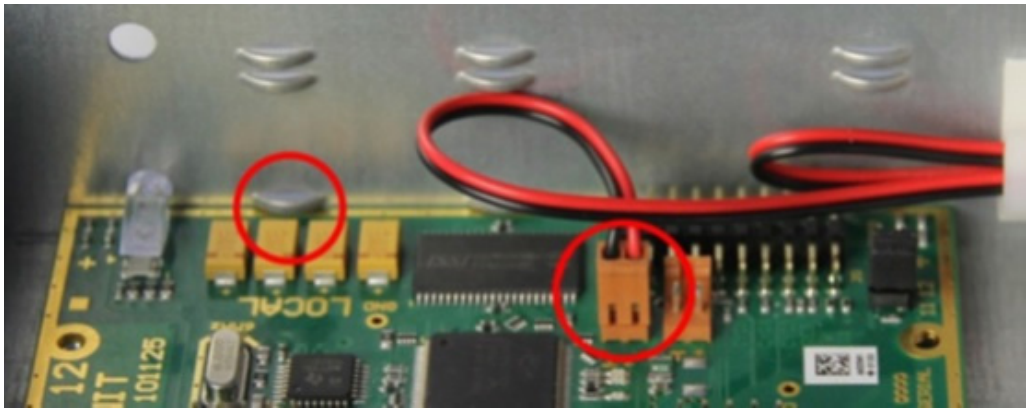


Figure 49. Positioned Main Video Card with Connected Power Cable

3. Slightly tighten the previously removed screws using a Torx 10 screwdriver, but do not fix them yet.

Figure 50. Front Panel with Fastening Screws

4. Fix the Main Video Card to the chassis bottom with the previously removed grounding screw using a Torx 8 screwdriver.

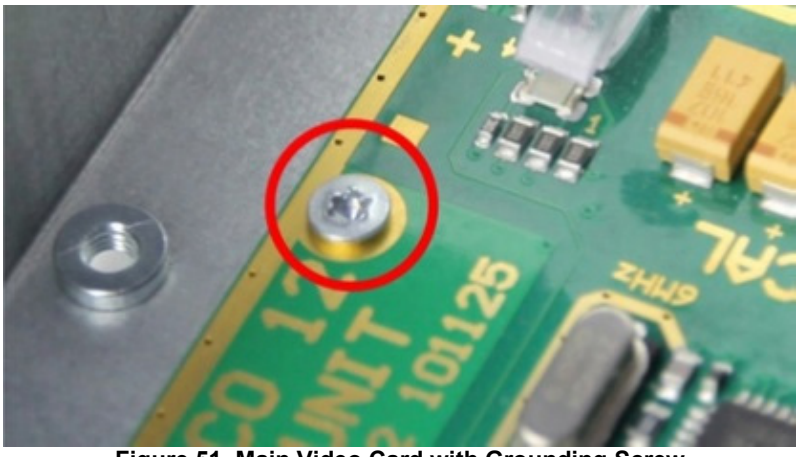


Figure 51. Main Video Card with Grounding Screw

5. Tighten the fastening screws on the front panel using a Torx 10 screwdriver.
6. Remount the chassis cover to the chassis with the previously removed mounting screws using a Torx 10 screwdriver.
7. Connect the chassis to the AC power source with at least one power cable and check the functionality of the installed Main Video Card.
8. Reassemble the chassis in the original installation location (say, a rack).
9. Restore the previously removed cables to the chassis and the unchanged cards and required cables to the newly installed Main Video Card.

Main Video Card Installation in a 2-Card or 6-Card Slide-In Chassis

1. Place the extender module in the horizontal guidance on the chassis and push the Main Video Card into the chassis.
2. Ensure that the connector pins are correctly plugged into the backplane and snap into place, and that the front panel of the Main Video Card is fully seated against the chassis.

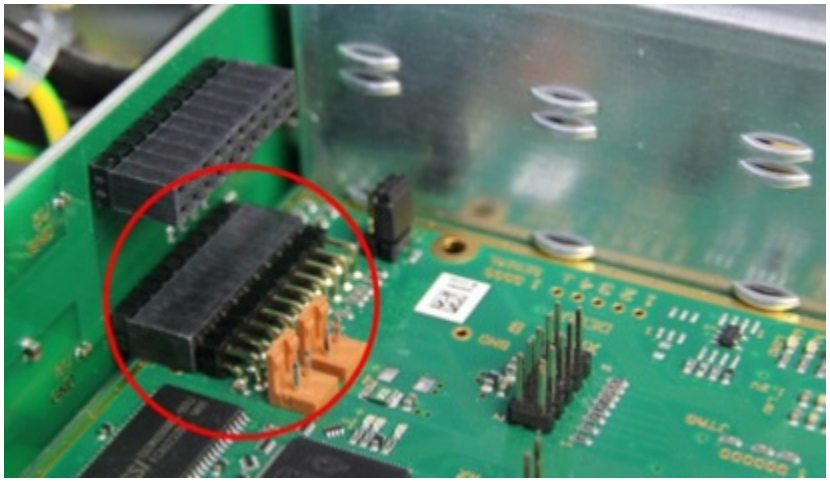


Figure 52. Main Card in Horizontal Guidance, Snapped in, 2-Card or 6-Card Chassis Backplane

3. Tighten the previously removed screws using a Torx 10 screwdriver.

Figure 53. Front Panel with Fastening Screws

4. Connect the required cables to the newly installed Main Video Card and check its functionality.

Main Video Card Installation in a 21-Card Slide-In Chassis

1. Push the safety nipples through the boreholes of the front panel and press them into the front panel until they snap into place.

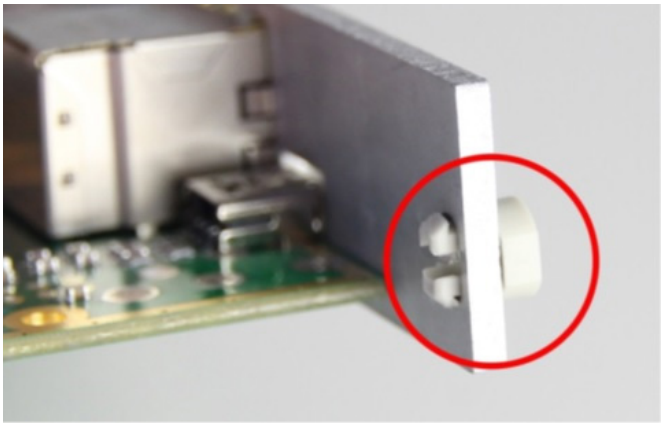


Figure 54. Safety Nipple on Front Panel of 21-Card Chassis

2. Insert the knurled screws into the nipples.

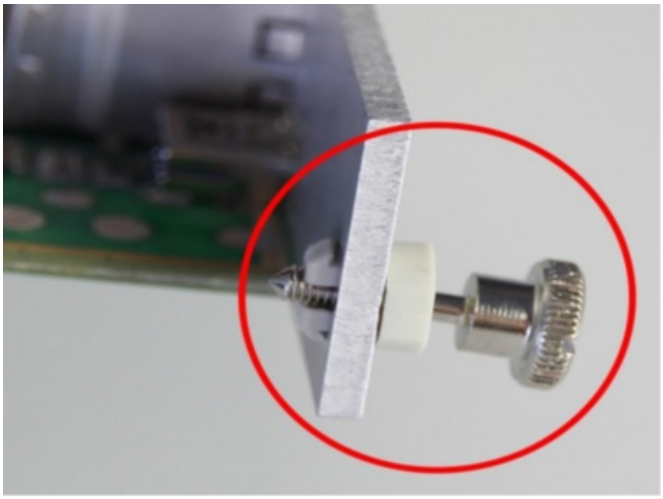


Figure 55. Safety Nipple with Inserted Knurled Screw

3. Place the Main Video Card in the lower and upper guidance rails of the chassis and push it completely into the chassis.

4. Ensure that the connector pins are correctly plugged into the backplane and snap into place, and that the front panel of the Main Video Card is fully seated against the chassis.

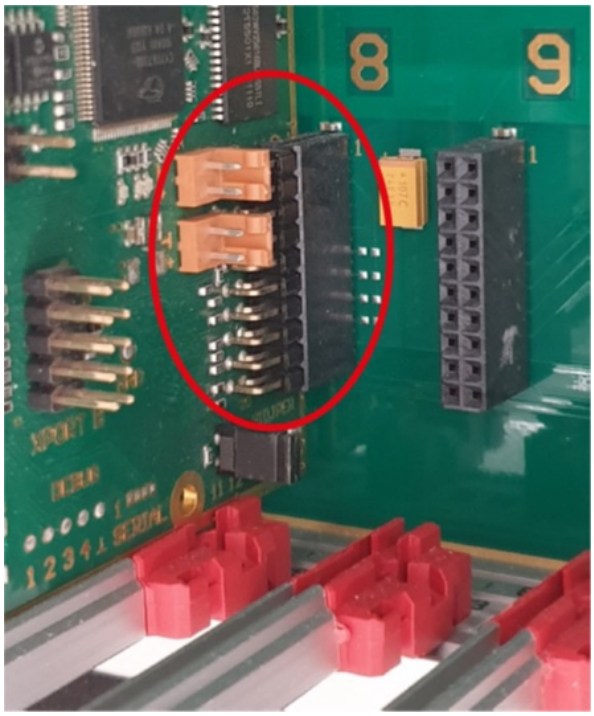


Figure 56. Main Video Card in Horizontal Guidance, Snapped in, 21-Card Chassis Backplane

5. Tighten the knurled screw by hand or a slotted screwdriver.
6. Connect the required cables to the newly installed Main Video Card and check its functionality.

Special Considerations for Installation of HDMI 2.0 and DP 1.2 Main Video Cards

DP 1.2 and HDMI 2.0 Main Video Cards generate more heat when operating. Accordingly, they require the observance of certain installation rules to enable sufficient thermal cooling so as to guarantee their long service life. Non-compliance with these installation rules will void the warranty claims.

The following options are provided to ensure sufficient ventilation or cooling of the DP 1.2 and HDMI 2.0 Main Video Cards:

- Installation of a fan cartridge module: always in one of the upper slots
- Installation of a chassis fan
- Applying conduction pads to these Main Video Cards

Each of these options is covered below.

Installation Options

The table below lists the number of HDMI 2.0 and DP 1.2 Main Video Cards that can be installed in each chassis type based on the heat dissipation option used. Please note that "#M" has been used as shorthand to denote Number of Main Card (HDMI 2.0 or DP 1.2 Cards) and "# O" to denote Number of Option Cards that can be installed in the chassis type.

Chassis Type	With Additional Fan Option Cards OEC-1FN		With Additional Chassis Fan RM-OEE-FAN		With Default Integrated Ventilation		With Additional Conduction Pads	
	# M	# O	# M	# O	# M	# O	# M	# O
OEE-CH02	—	—	—	—	—	—	—	—
OEE-CH02/RP OEE-CH02/DP	—	—	—	—	—	—	—	—
OEE-CH03/RP OEE-CH03/DP	1	0	—	—	—	—	1	1
OEE-CH03/D12 OEE-CH03/D12/DP OEE-CH03/D24 OEE-CH03/D24/DP OEE-CH03/D48 OEE-CH03/D48/DP	1	0	—	—	—	—	1	1
OEE-CH05/RP OEE-CH05/DP	1	0	1	1	—	—	—	—
OEE-CH05/S/RP OEE-CH05/S/FP	1	0	—	—	1	1	—	—
OEE-CH05/SNMP/RP OEE-CH05/SNMP/DP	1	0	1	1	—	—	—	—
OEE-CH04	—	—	—	—	—	—	—	—
OEE-CH04/RP OEE-CH04/DP	—	—	—	—	—	—	—	—
OEE-CH06/RP OEE-CH06/DP	2	2	—	—	—	—	2	2
OEE-CH06/D12 OEE-CH06/D12/DP OEE-CH06/D24 OEE-CH06/D24/DP OEE-CH06/D48 OEE-CH06/D48/DP	2	2	—	—	—	—	2	2
OEE-CH07/DP	3	2	3	3	—	—	—	—
OEE-CH07/SFN/DP	3	2	—	—	3	3	—	—
OEE-CH08/BPB/DP	3	2	3	3	—	—	—	—
OEE-CH08/BPB/SFN/DP	2	2	—	—	3	3	—	—
OEE-CH08/BPB/SNMP/DP								
OEE-CH21/RP OEE-CH21/DP	—	—	—	—	*	*	—	—

Legend:

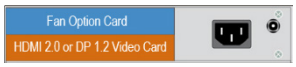
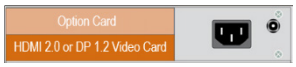
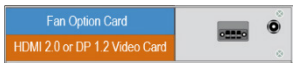
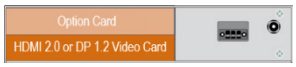
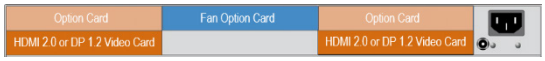
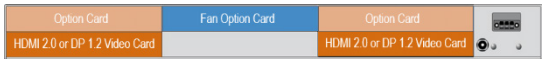
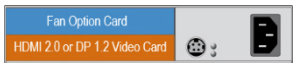
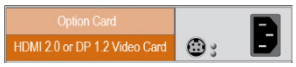
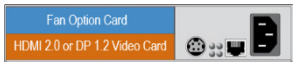
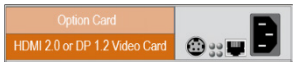
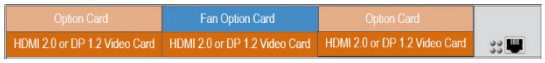
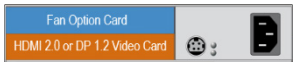
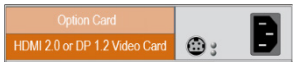
— HDMI 2.0 and DP 1.2 cards cannot be installed in the chassis when equipped with the specified heat dissipation option

* Please contact Rose Electronics for assistance in determining the maximum number of HDMI 2.0 or DP 1.2 cards that can be installed in a 21-card chassis

Table 10. Maximum HDMI 2.0 and DP 1.2 Cards Per Chassis Type, with Heat Dissipation Options

Mounting Options

The table below shows allowed mounting positions for HDMI 2.0 and DP 1.2 Main Video Cards and Option Cards in each chassis type based on the heat dissipation options present.

	With Additional Fan Option Card OEC-1FN	With Additional Conduction Pads
OEE-CH03/RP OEE-CH03/DP		
OEE-CH03/D12 OEE-CH03/D12/DP OEE-CH03/D24 OEE-CH03/D24/DP OEE-CH03/D48 OEE-CH03/D48/DP		
OEE-CH06/RP OEE-CH06/DP		
OEE-CH06/D12 OEE-CH06/D12/DP OEE-CH06/D24 OEE-CH06/D24/DP OEE-CH06/D48 OEE-CH06/D48/DP		
	With Additional Fan Option Card OEC-1FN	**With Additional Chassis Fan RM-OEE-FAN**
OEE-CH05/RP OEE-CH05/DP		
OEE-CH05/SNMP/RP OEE-CH05/SNMP/DP		
OEE-CH07/DP		
OEE-CH08/BPB/DP		
OEE-CH08/BPB/SNMP/DP		
	With Additional Fan Option Card OEC-1FN	**With Integrated Chassis Fan**
OEE-CH05/S/RP OEE-CH05/S/DP		
OEE-CH07/SFN/DP		
OEE-CH08/BPB/SFN/DP		

* Please contact Rose Electronics for assistance in determining the allowed mounting positions of HDMI 2.0 or DP 1.2 cards in a 21-card chassis

Table 11. Positions of HDMI 2.0 and DP 1.2 cards Per Chassis Type, with Heat Dissipation Options

Conduction Pads

Conduction Pads are applied to the HDMI 2.0 and DP 1.2 in order to cool them during operation. When these cards are ordered separately from the chassis, conduction pads are also shipped with each card. The conduction pads must be stuck to the HDMI 2.0 or DP 1.2 cards as follows.

1. Peel off the film on the adhesive surface of the thermal pads.
2. Apply the thermal pads to the underside of the HDMI 2.0 or DP 1.2 as shown in the following figures:

   On Cards with CATx Link: 1x blue heat conduction pad, 2x pink heat conduction pads

   On Cards with Fiber Link: 1x blue conduction pad,1x pink conduction pad

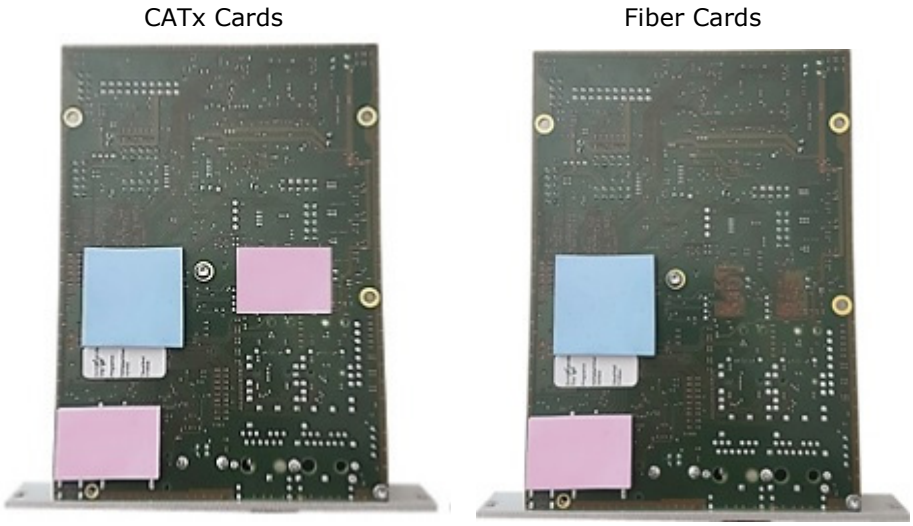


Figure 57. Positioning of Conduction Pads on HDMI 2.0 and DP 1.2 Cards

Option Card Installation

Option Cards receive their power through the XPorts on the Main Video Cards. An exception to this is the USB 2.0 Standalone Receiver Card, which requires its own power supply. The XPorts are labeled on the PCB.

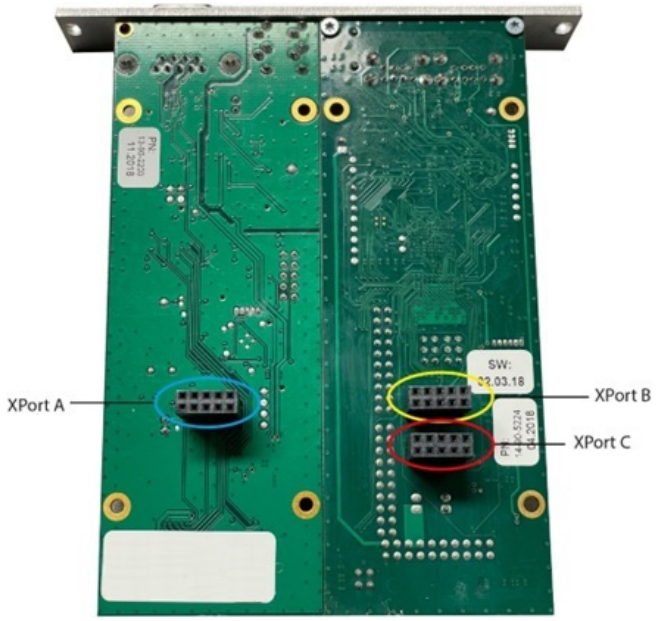


Figure 58. Main Video Card Bottom View with Labeled XPorts

When an Option Card is ordered, it comes with up to 2 XPort adapters. The table below displays which XPort adapters are present on each type of Option Card.

Option Card	XPort A	XPort B	XPort C
All Audio Option Cards: ▪ Analog Audio with RS232 ▪ Analog Audio with RS422 ▪ Digital Audio ▪ Balanced Analog Audio	Yes	No	No
USB HID Option Card	No	Yes	No
USB 2.0 Only Option Card	No	Yes	Yes

Table 12. XPort Adapters on Option Cards

Option Card Installation in a 2-Card, 4-Card or 6-Card Mounting Chassis

Since an Option Card is seated on a Main Video Card, installation of an Option Card in a Mounting Chassis can occur in one of two ways.

- The Main Video Card stays installed in the chassis - This makes installation of the Option Card easier since the Grounding Screw holds the Main Video Card in place, allowing the Option Card to be more easily fixed in the guides.
- The Main Video Card is first extracted from the chassis - Installation is harder this way, as without the Grounding Screw, simultaneous fixing of both cards in the guides is harder.

Method 1: Main Video Card Stays Installed in the Mounting Chassis

1. Remove the XPort adapters from the Option Card.
2. Plug the required adapters on the XPorts to be used as laid out in Table 12 above.

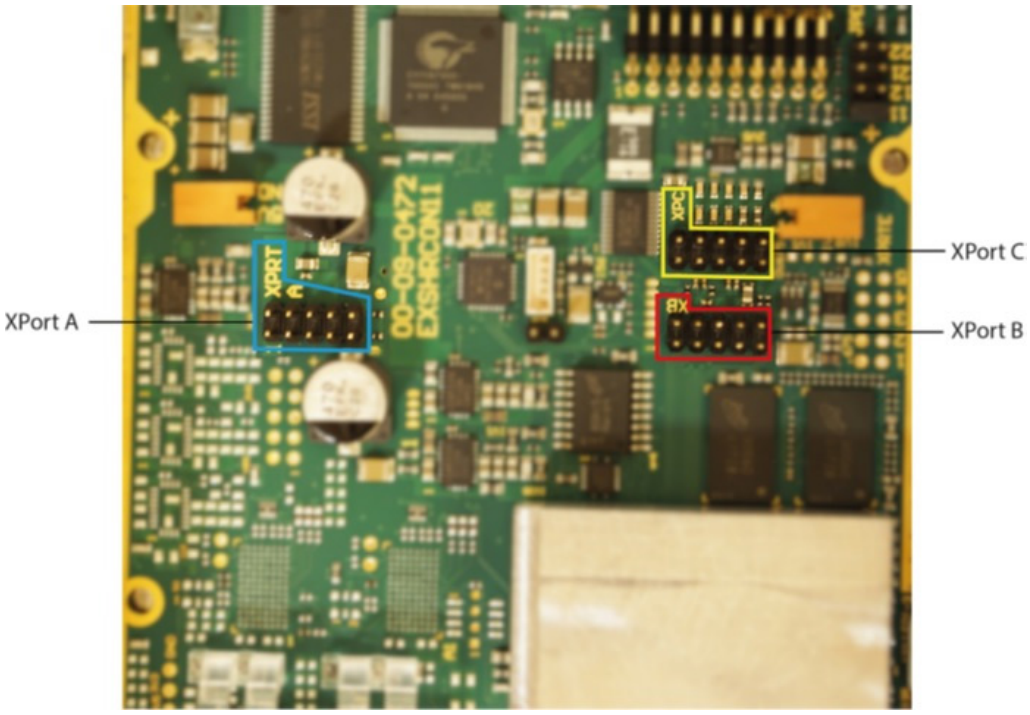


Figure 59. Main Video Card Top View with Labeled XPorts

3. Insert the Option Card above a Main Video Card into the Mounting Chassis.
4. Insert the Option Card into the guides of the chassis' rear panel.
5. Press lightly against the rear panel and carefully lower the Option Card onto the XPort adapters below.
6. Ensure that the pin headers of the Option Card are correctly inserted into the XPort adapters.
7. Press the Option Card down onto the Main Video Card in the areas near XPorts to connect the two cards completely.

8. If the Option Card is a USB 2.0 Only card, plug the connector of one of the internal power cables of the power supply unit into the multi-pin connector on the USB 2.0 Only Option Card. This is shown on the right side of the figure below.

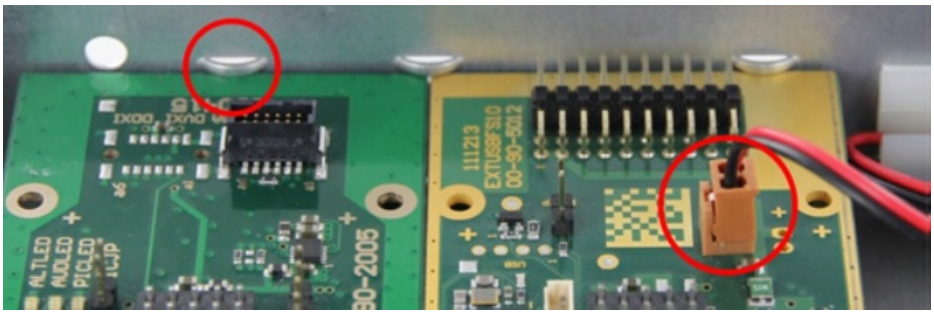


Figure 60. Option Card Mounted in a Mounting Chassis

9. Fasten the front panel of the Option Card to the chassis with the previously removed fastening screws using a Torx 10 screwdriver.

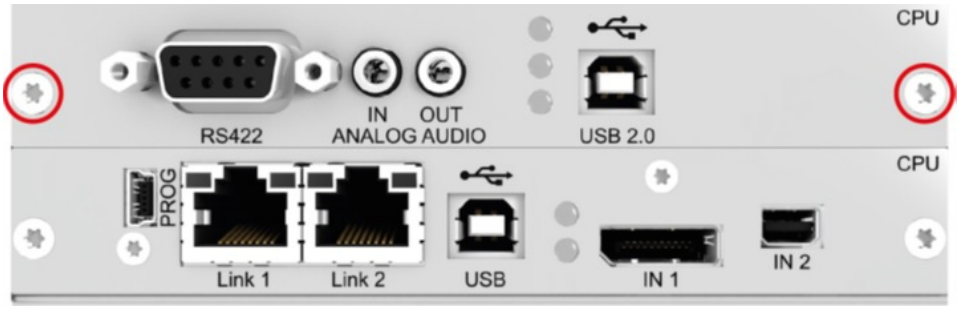


Figure 61. Method 1: Option Card and Main Video Card Mounted in a Mounting Chassis

10. Remount the chassis cover to the chassis with the previously removed mounting screws using a Torx 10 screwdriver.
11. Connect the chassis to the AC power source with at least one power cable and check the functionality of the installed Option Card.
12. Reassemble the chassis in the original installation location (say, a rack).
13. Restore the previously removed cables to the chassis and the unchanged cards and required cables to the newly installed Option Card.

Method 2: Main Video Card is First Removed from the Mounting Chassis

1. Dismount the Main Video from the Mounting Chassis onto which the Option Card is to be mounted.
2. Plug the required adapters on the XPorts to be used as laid out in Table 12 above.

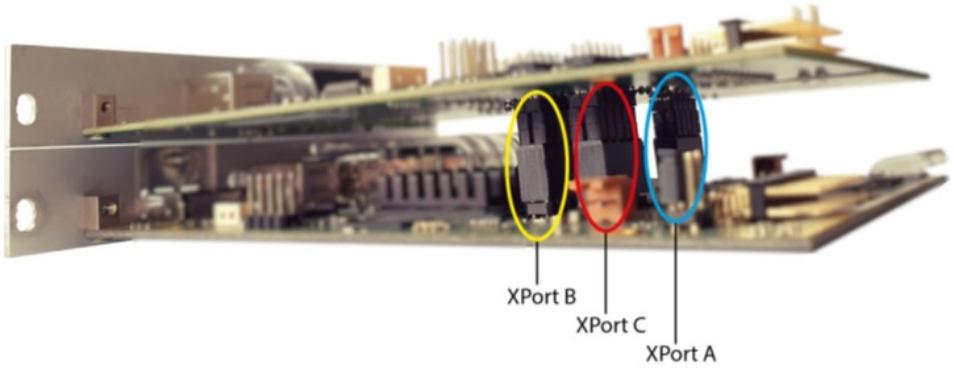


Figure 62. Option Card Connected to a Main Video Card Through XPort Adapters

3. Insert the Main Video Card and the Option Card simultaneously into the guides on the chassis rear panel, sliding the LED through the hole in the chassis rear panel.
4. Fasten the front panels of both cards to the chassis with the previously removed fastening screws using a Torx 10 screwdriver.

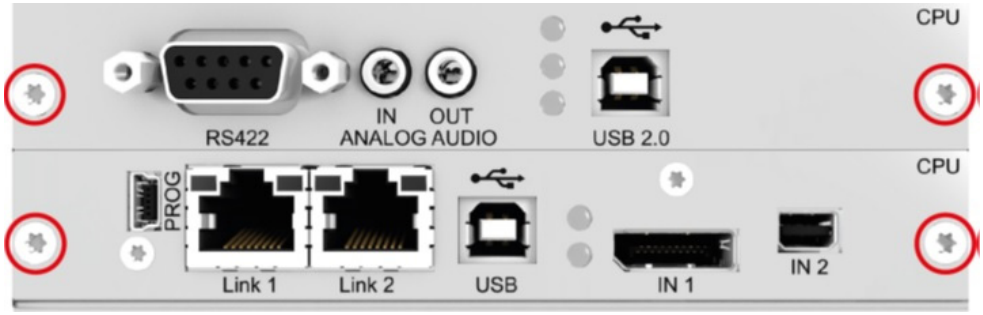


Figure 63. Method 2: Option Card and Main Video Card Mounted in a Mounting Chassis

5. Remount the chassis cover to the chassis with the previously removed mounting screws using a Torx 10 screwdriver.
6. Connect the chassis to the AC power source with at least one power cable and check the functionality of the installed add-on module.
7. Reassemble the chassis in the original installation location (say, a rack).
8. Restore the previously removed cables to the chassis and the unchanged cards and required cables to the newly installed Option Card.

Option Card Installation in a 2-Card or 6-Card Slide-In Chassis

1. Since an Option Card must be mounted on a Main Video Card, first dismount the Main Video Card from the chassis.
2. Plug the required adapters on the XPorts to be used as laid out in Table 12 above. Figure 62 above displays the Main Video Card and Option Card connected through the XPort adapters.
3. Insert the Main Video Card and the Option Card simultaneously into the upper and lower guides on the side of chassis and push both cards completely into the chassis.
4. Ensure that the connector pins are correctly plugged into the backplane and snap into place, and that the front panel of the extender module is fully seated against the chassis.
5. If mounting a USB 2.0 Only Option Card, power is also supplied from the backplane. Otherwise, the Option Cards get their required power from the Main Video Card through the XPort adapters.

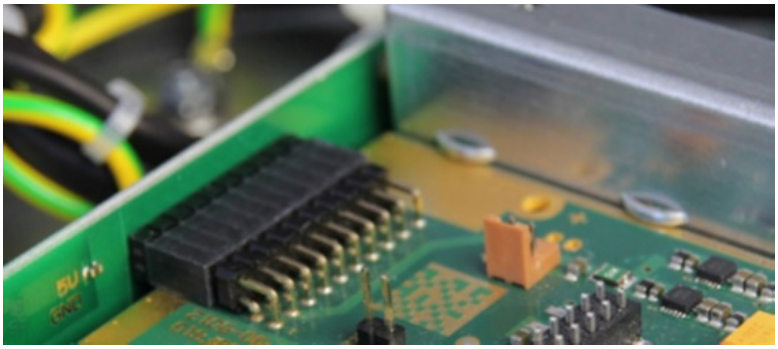


Figure 64. Option Card Mounted in a 2-Card or 6-Card Slide-In Chassis

6. Fasten the front panels of both cards to the chassis with the previously removed fastening screws using a Torx 10 screwdriver.
7. Connect the required cables to the Main Video Card the newly installed Option Card and check the Option Card's functionality.

Option Card Installation in a 21-Card Slide-In Chassis

1. Since an Option Card must be mounted on a Main Vide Card, first dismount the Main Video Card from the chassis.
2. Plug the required adapters on the XPorts to be used as laid out in Table 12 above. Figure 62 above displays the Main Video Card and Option Card connected through the XPort adapters.
3. Push the safety nipples through the boreholes of the front panel and press them into the front panel until they snap into place. See Figure 54.
4. Insert the knurled screws into the nipples. See Figure 55.
5. Remove one of the two knurled screws and position the connecting plate between the Main Video Card and the Option Card.

6. Insert the knurled screw into the safety nipple. The connecting plate serves to visually clarify that the Main Video Card and Option Card are paired.

Figure 65. Paired Main Video Card and Option Card Joined with a Connection Plate

7. Insert the Main Video Card and the Option Card simultaneously into the upper and lower guides on the side of chassis and push both cards completely into the chassis.
8. Ensure that the connector pins are correctly plugged into the backplane and snap into place, and that the front panels of the cards are fully seated against the chassis.
9. If mounting a USB 2.0 Only Option Card, power is also supplied from the backplane. Otherwise, the Option Cards get their required power from the Main Video Card through the XPort adapters.

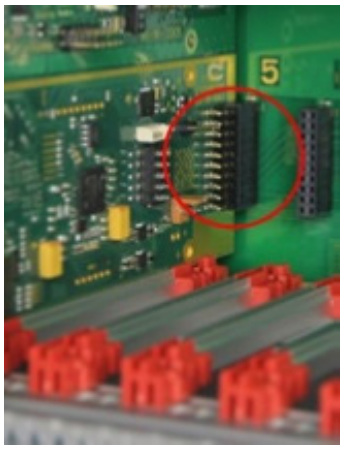


Figure 66. Option Card Mounted in a 21-Card Slide-In Chassis

10. Tighten the knurled screw by hand or with a slotted screwdriver.

Figure 67. Main Video Card and Option Card mounted in a 21-card Slide-In Chassis

11. Connect the required cables to the Main Video Card the newly installed Option Card and check the Option Card's functionality.

USB 2.0 Only Option Card Installation

The USB 2.0 Only Option Card comes with a jumper between Pin 1 and Pin 3 on the backplane connector. This is kept in place when mounting the Option Card in a Mounting Chassis, and removed when mounting in a Slide-In Chassis.

A USB 2.0 Only Option Card can only be installed in Slot 2 in a Mounting Chassis, as shown in the image below.

2
1

2-Card Chassis

2	4
1	3

4-Card Chassis

2	4	6
1	3	5

6-Card Chassis

Figure 68. Allowed Positions for USB 2.0 Only Option Cards in a Mounting Chassis

Since a Slide-In Chassis comes equipped with a backplane, the USB 2.0 Only Option Card can be mounted in any slot.

USB 2.0 Only Option Card Installation in a 2-Card, 4-Card or 6-Card Mounting Chassis

1. Plug the power cables from the chassis power supply unit into the multi-pin connector of the USB 2.0 Only Option Card. Observe the cable colors.

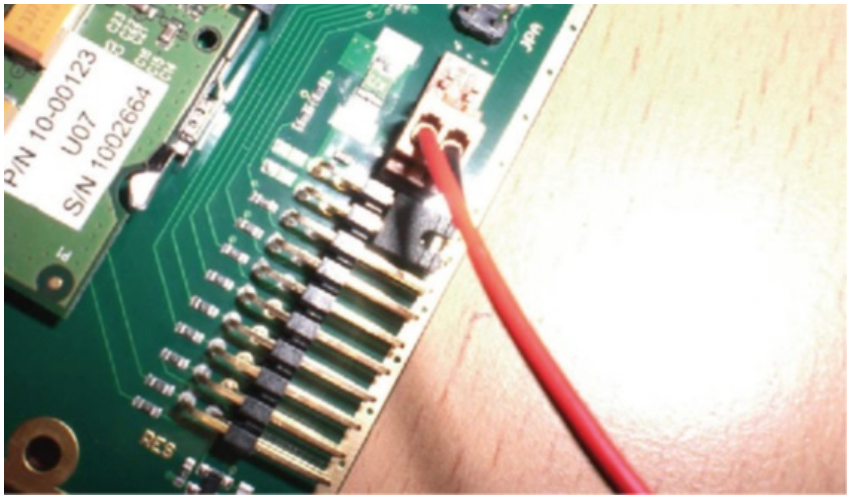


Figure 69. Power Supply, USB 2.0 Only Option Card Via Power Cable in a Mounting Chassis

2. Insert the USB 2.0 Only Option Card into the guides of slot 2 on the rear panel of the chassis.
3. Ensure that the USB 2.0 Option Card is correctly seated in the chassis guides.
4. Fasten the front panel of the USB 2.0 Only Option Card to the chassis with the previously removed fastening screws using a Torx 10 screwdriver.
5. Connect the chassis to the AC power source with at least one power cable and check the functionality of the installed USB 2.0 Only Option Card.
6. Reassemble the chassis in the original installation location (say, a rack).
7. Restore the previously removed cables to the chassis and the unchanged cards and required cables to the newly installed Option Card.

USB 2.0 Only Option Card Installation in a 2-Card or 6-Card Slide-In Chassis

1. Remove the jumper from between Pin 1 and Pin 3 on the backplane connector of the USB 2.0 Option Card.

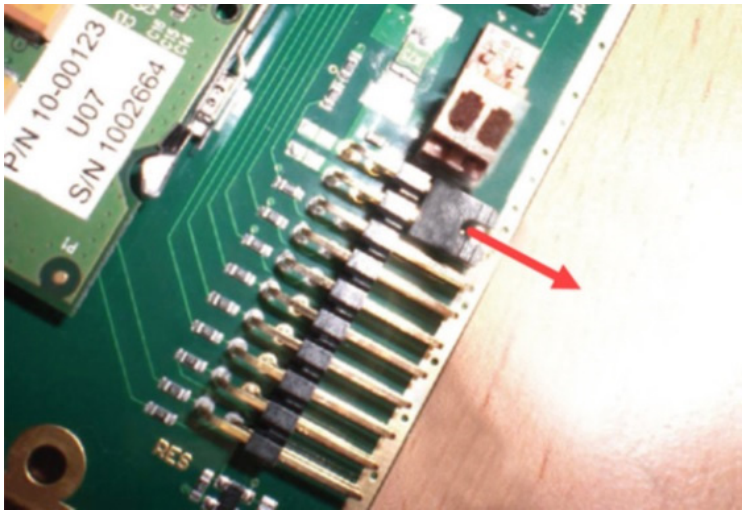


Figure 70. Removing Jumper from Between Pin 1 and Pin 3 on a USB 2.0 Only Option cad

2. Insert the USB 2.0 Only Option Card simultaneously into the side guides of the chassis and push the card completely into the chassis.
3. Ensure that the connector pins are correctly plugged into the backplane and snap into place, and that the front panel of the extender module is fully seated against the chassis.
4. Fasten the front panel of the USB 2.0 Only Option Card to the chassis with the previously removed fastening screws using a Torx 10 screwdriver.
5. Connect the required cables to the newly installed USB 2.0 Only Option Card and check its functionality.

USB 2.0 Only Option Card Installation in a 21-Card Slide-In Chassis

1. Remove the jumper from between Pin 1 and Pin 3 on the backplane connector of the USB 2.0 Option Card. See Figure 70 above.
2. Push the safety nipples through the boreholes of the front panel and press them into the front panel until they snap into place. See Figure 54.
3. Insert the knurled screws into the nipples. See Figure 55.
4. Insert the USB 2.0 Only Option Card into the upper and lower guides on the side of chassis and push it completely into the chassis.
5. Ensure that the connector pins are correctly plugged into the backplane and snap into place, and that the front panel of the USB 2.0 Only Option Card is fully seated against the chassis. See Figure 66.
6. Tighten the knurled screw by hand or with a slotted screwdriver.
7. Connect the required cables to the installed USB 2.0 Only Option Card and check its functionality.

SNMP Option Card Installation

A SNMP Option Card can only be installed in Slot 21 of a 21-card chassis or Slot 5 of a 6-card Slide-In Chassis. However, it cannot be installed on the OEE-CH08/BPB/DP/SNMP chassis, which already has SNMP functionality built into the chassis.

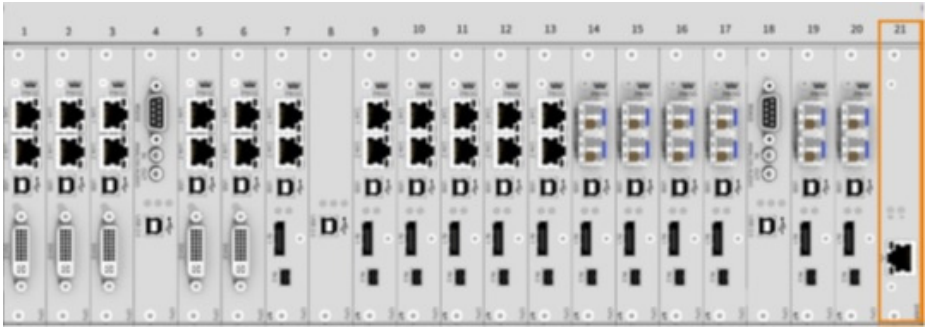


Figure 71. SNMP Option Card Installed in a 21-Card Chassis

Figure 72. SNMP Option Card Installed in a 6-Card Chassis

The installation of an SNMP Option Card follows the method to install a Main Video Card in a Slide-In Chassis as described on page 55 and page 56.

Fan Option Card Installation

The installation of a Fan Option Card follows the method to install a Main Video Card in a Mounting Chassis as described on page 54 or in a Slide-In Chassis as described on page 55 and page 56.

Chassis Fan Installation

When a chassis fan is ordered, it comes with the following package contents.

- Fan (40 x 40 mm), including power cables
- Mounting plate
- 4x Countersunk head screws (M3 x 25)

Please check the package for completeness, and contact Rose Electronics if something is missing.

1. Place the fan with the label facing outwards from the chassis. Ensure that both power cables of the fan are led towards the backplane.

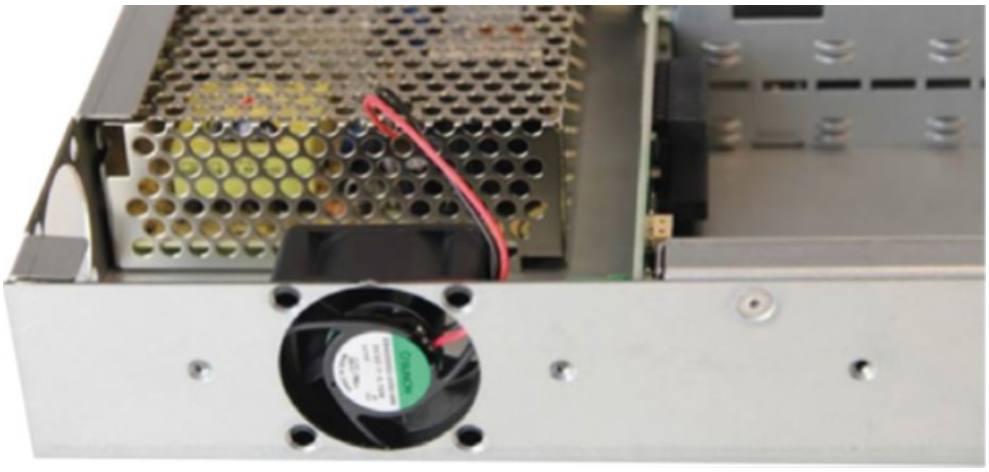


Figure 73. Positioning the Chassis Fan for Installation

2. Place the mounting plate with the smooth surface facing the fan.

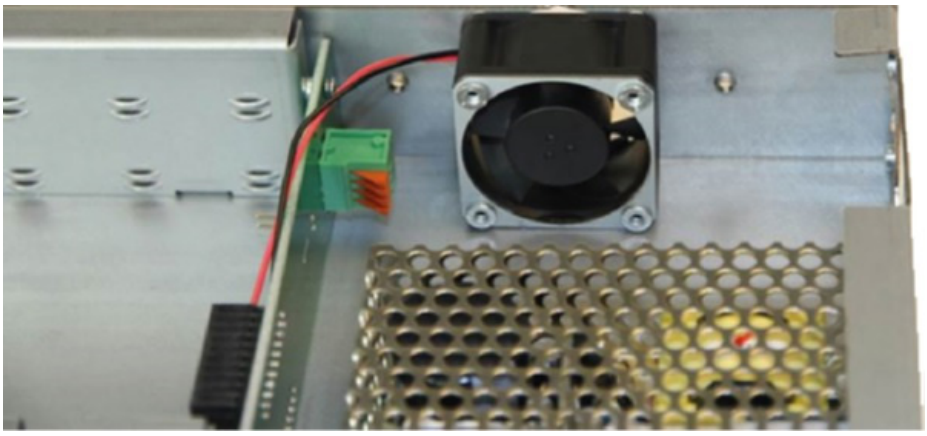


Figure 74. Positioning the Mounting Plate for the Chassis Fan

3. Mount the 4 screws to the outside of the chassis.

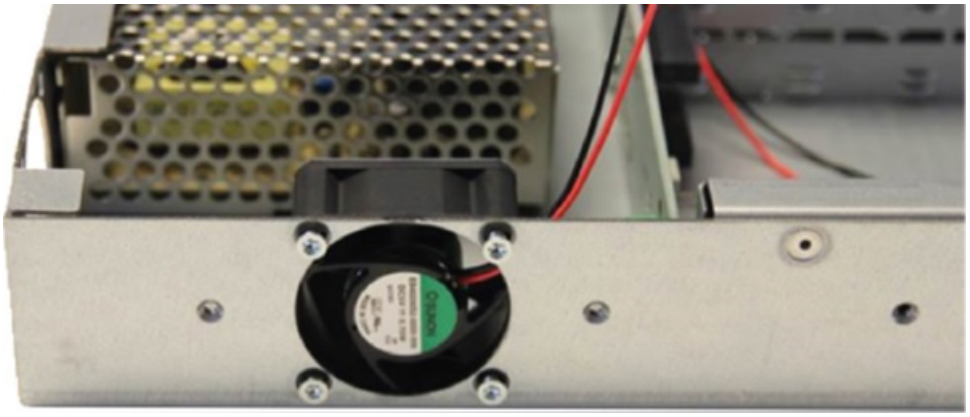


Figure 75. Fastening the Fan to the Chassis

4. Insert the red cable into the opening at the top of the terminal strip until the snap position is reached. At that point, the buttons can be pressed manually to lock the cable into place.
5. Insert the black cable into the second opening from the top of the terminal strip until the snap position is reached. At that point, the buttons can be pressed manually to lock the cable into place.

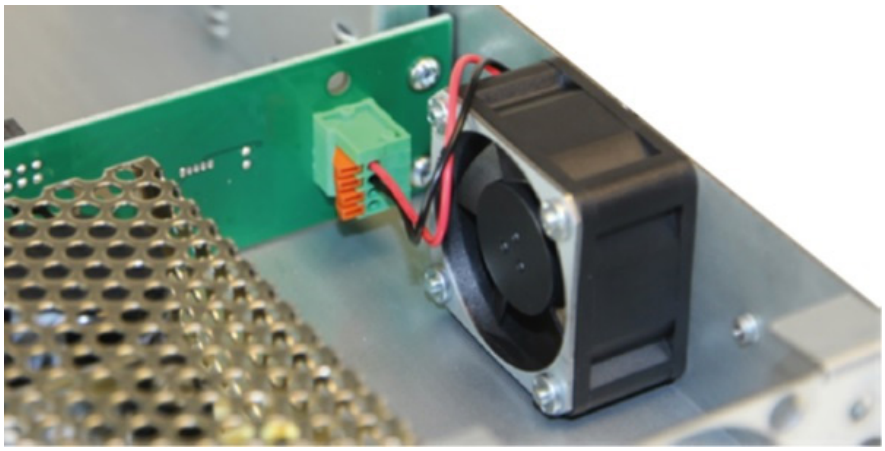


Figure 76. Arrangement of Chassis Fan Power Cables

6. Put the cover back on the chassis.
7. Connect the chassis to the AC power source with at least one power cable and check the functionality of the installed Chassis Fab.
8. Reassemble the chassis in the original installation location (say, a rack).
9. Restore the previously removed cables to the chassis and the cards.

Power Supply Installation in a 21-Card Chassis

The steps below detail how to install a redundant power supply or to replace a power supply on a 21-card chassis.

Installing a Redundant Power Supply Unit

Please note that mounting the power supply unit is easier if the ventilation grille is removed beforehand.

1. Loosen the screws of the blanking plate with a cross-headed screwdriver and remove the blanking plate.

Figure 77. Removing the Blanking Plate from a 21-Card Chassis

2. Store the removed blanking plate in a dust-free and dry place for possible reuse.
3. Push the pull-out lever on the power supply unit down and push the power supply unit completely into the chassis. Ensure that the front panel is flush and that the sealing on the front panel does not protrude.
4. Push the pull-out lever upwards when inserting the power supply unit.

Figure 78. Pull-Out Lever on the Power Supply Unit of a 21-Card Chassis

5. Use a cross-headed screwdriver to tighten the 4 fastening screws on the power supply unit.
6. Apply power to the unit.
7. Check the LED status of the power supply unit for proper function. LED status for a 21-card chassis is described on page 87.

Replacing a Redundant Power Supply Unit

1. Loosen the screws of the power supply unit to be replaced with a cross-headed screwdriver.
2. Press down the locking tab (labeled 1 in the figure below) on the power supply unit and keep it pressed.
3. Push the pull-out lever (labeled 2 in the figure below) down and pull the power supply unit out of the chassis.

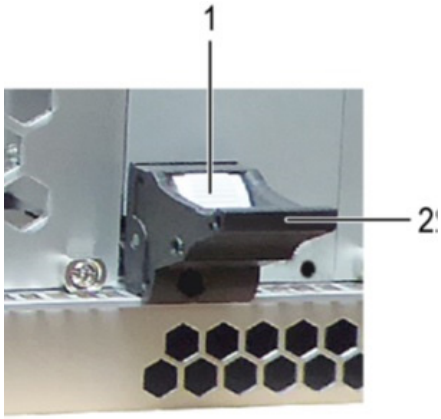


Figure 79. Locking Tab and Pull-Out Lever on Power Supply Unit of a 21-Card Chassis

4. Install a new power supply unit as described in the previous section.

Getting the Orion XTender Units Ready for Operation

Main Video Card Setup

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

1. Switch off all devices.

Receiver Unit Installation

1. Connect the monitor(s), keyboard and mouse to the Receiver unit.
2. Connect the 5VDC power supply to the Receiver unit.

Transmitter Unit Installation

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

To Set Up a Point-to-Point Connection Between the Transmitter and Receiver Units

1. Connect the CATx or Fiber interconnect cables between the Transmitter and Receiver.
2. Power up the system using the following recommended sequence:
   Monitor → Receiver unit → Transmitter unit → Source
3. Boot up the source and verify that everything works as expected.

Setup of Option Cards

The Orion XTender Option Cards can be hot plugged.

Option Card with USB HID

1. Connect the source to the USB HID port of the Transmitter unit.
2. Connect the USB HID devices to the USB HID ports on the Receiver unit

Option Card with USB 2.0

1. Connect a source's USB 2.0 ports to the USB 2.0 ports on the Transmitter.
2. Connect the USB 2.0 devices to the USB 2.0 ports on the Receiver unit.

Option Cards with Serial RS-232 / RS-422

1. Connect the serial port of the source to the Transmitter unit.
2. Connect the Receiver unit to the input device's serial port.

Option Cards with Analog Audio

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 headphones or speakers to the audio output at the Receiver.
3. Connect a microphone to the audio input at the Receiver.

Option Cards with Digital Audio

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

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

Option Cards with Balanced Analog Audio

1. Connect the balanced audio source to the appropriate audio input pins of the Transmitter.
2. Connect the appropriate audio output pins of the Receiver Unit to active speakers or an audio amplifier connected to speakers.

Option Cards with GPIO

The GPIO ports on the Orion XTender GPIO Option Cards are configured with DIP switches located inside the chassis. The DIP switches are connected to the GPIO pins as below.

DIP Switch	GPIO Pin	DIP Switch	GPIO Pin	DIP Switch	GPIO Pin
1	1	2	2	—	3
3	4	4	5	5	6
6	7	7	8	8	9

Table 13. GPIO Pin to DIP Switch Mapping

Based on the position of the DIP switches, the GPIO Option Card can function in one of two ways:

- as an output interface for LED connection in Multi-Screen Control (5V, 137 mA per channel)
- as an input interface for push button connection (Macros, Favorites, Keys)

The GPIO Option Cards are shipped with all the DIP switches set to the bottom (input interface)

GPIO as an Output Interface for LED Connection in Multi-Screen Control

To act as an output interface, all DIP Switches for the GPIO must be set to the UP position as shown in the image below.

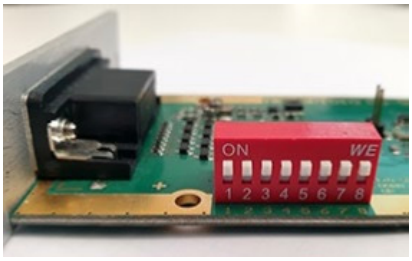


Figure 80. GPIO Option Card with GPIO Set as an Output Interface

Additional configuration can set up in the Orion X or Orion FX matrix switches. The GPIO setting has to be set to *MSC Switch (default)* in the *CON Device Settings* (matrix configuration) to have it indicate the active console (mouse position) by an LED. Please refer to the Orion X or Orion FX manual for more information.

GPIO as an Input Interface for Push Button Connection

To act as an input interface with the functionality of up to eight push buttons, all DIP Switches for the GPIO must be set to the DOWN position as seen in the image below.

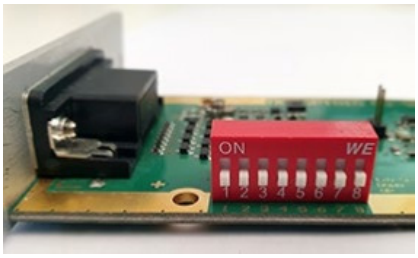


Figure 81. GPIO Option Card with GPIO Set as an Input Interface

The GPIO setting for each of the eight inputs are set individually in the *CON Device settings* (matrix switch configuration). It can be one of the following three options.

- Macro: Invoke a macro.
- Favorite: Switch the current CON to a favorite CPU device in Full Access mode.
- Key: Send a keyboard key to the connected CPU. This operation also requires the presence of OEC-L1H USB HID card (see Figure 31.)

Please refer to the Orion X or Orion FX manual for more information.

In addition, certain firmware versions are required to send a keyboard key to the CPU Device.

- Matrix firmware F04.00.200717 or newer
- GPIO firmware F01.03.200723 or newer
- OEC-L1H with HIDCPU firmware V04.03
- Redesigned hardware on the GPIO Option Cards

SNMP Option Card

The SNMP Option Card can only be installed in Slot 21 of a 21-card chassis or Slot 5 of a 6-card chassis as shown in figure 72 and 73.

1. Mount the SNMP Option Card in the specified slot of the 21-card or 6-card chassis.
2. Connect the chassis to power and apply power.
3. Connect the SNMP module to the TCP/IP network with a CATx cable

SNMP Network and Firewall Releases

The following ports are used by the Orion XTenders depending on the configuration. They must not be blocked at the security gateway when the respective functions are to be used.

Function	Port
DNS	53
SNTP	123 / UDP
SNMP	161 / 162 / Both UDP
Syslog	514 / UDP
API	5555 / TCP (5565 for SSL)
Broadcast	5556 / UDP (5566 for SSL)

Table 14. Network Functions and Firewall Ports

Advanced Configuration of SNMP with the Java Tool

1. Install the Java Tool. If the Java Tool is not available, please contact Rose Electronics.
2. Start the Java Tool and connect to the SNMP Option Card. The SNMP Option Card has the following default settings:
   - IP address: 192.168.100.99
   - Username: admin
   - Password: admin
3. Select System > Network > SNMP in the task area of the Java Tool.
4. Set the desired IP address for the SNMP Option Card and the parameters to be monitored, and then restart the SNMP Option Card.
   Notes:
   a. After the advanced configuration is complete of the system, it is recommended to save the configuration under *Remote Save…* and then restart the SNMP Option Card by selecting *Device* > *Advanced Service* > *Restart SNMP Board*.
   b. After changing the IP address and restarting the SNMP card, the new IP address is required to connect to the card with the Java Tool.
5. Integrate the SNMPv3 module into the existing SNMP infrastructure using the provided MIB file.
   Note: If a MIB file is not available, contact Rose Electronics.

Status LEDs

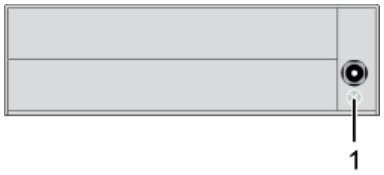
The Orion XTender units are equipped with Status LEDs. These indicators provide a visual output of working and fault conditions. This section describes the various indicators and the conditions they represent.

Chassis

Each Orion XTender chassis type has its own status indicators identifying the availability of power to the unit. These statuses displayed by these indicators are shown below.

2-Card Chassis

OEE-CH02



1. LED for Power Supply

Figure 82. Status LED on OEE-CH02 Chassis

LED Color		Description
Green		Power Available
Off		No Power Available

Table 15. Power Status Indicators on OEE-CH02 Chassis

OEE-CH02/RP, OEE-CH02/DP

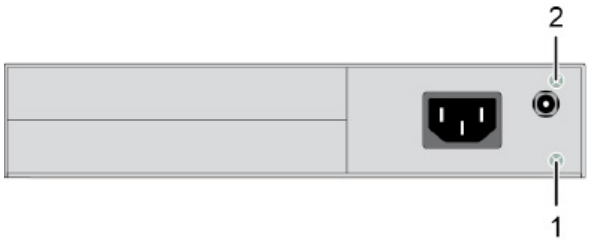
1. LED for Power Supply 1 2. LED for Power Supply 2

Figure 83. Status LEDs on OEE-CH02/RP and OEE-CH02/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 16. Power Status Indicators on OEE-CH02/RP and OEE-CH02/DP Chassis

OEE-CH03/RP, OEE-CH03/DP



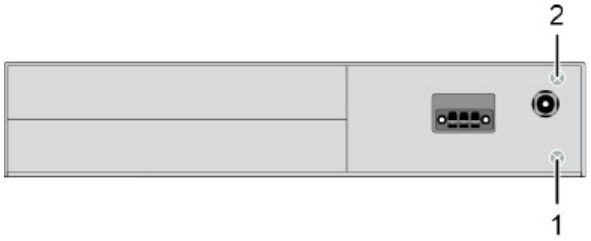
1. LED for Power Supply 1 2. LED for Power Supply 2

Figure 84. Power Status Indicators on OEE-CH03/RP and OEE-CH03/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 17. Power Status Indicators on OEE-CH03/RP and OEE-CH03/DP Chassis

OEE-CH03/D12, OEE CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48, OEE-CH03/D48/DP



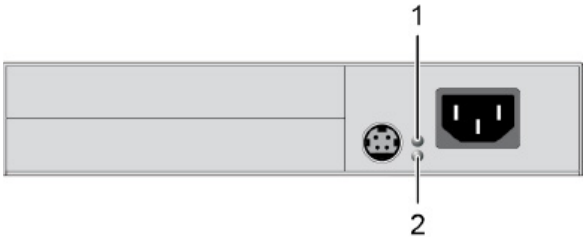
1. LED for Power Supply 1 2. LED for Power Supply 2

Figure 85. Power Status Indicators on OEE-CH03/D12, OEE CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48 and OEE-CH03/D48/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 18. Power Status Indicators on OEE-CH03/D12, OEE CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48 and OEE-CH03/D48/DP Chassis

OEE-CH05/RP, OEE-CH05/DP



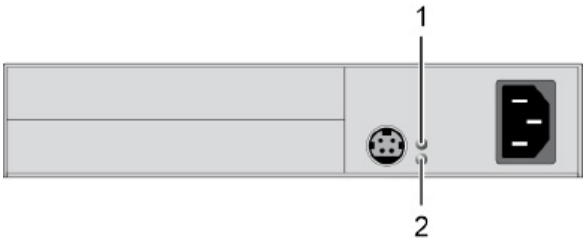
1. LED for Power Supply 1 2. LED for Power Supply 2

Figure 86. Power Status Indicators on OEE-CH05/RP and OEE-CH05/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 19. Power Status Indicators on OEE-CH05/RP and OEE-CH05/DP Chassis

OEE-CH05/S/RP, OEE-CH05/S/DP



1. LED for Power Supply 1 2. LED for Power Supply 2

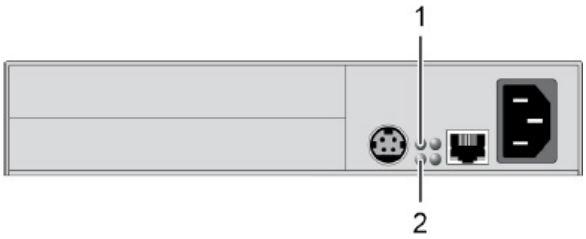
Figure 87. Power Status Indicators on OEE-CH05/S/RP and OEE-CH05/S/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 20. Power Status Indicators on OEE-CH05/S/RP and OEE-CH05/S/DP Chassis

OEE-CH05/SNMP/RP, OEE-CH05/SNMP/DP

Power Status Indicators



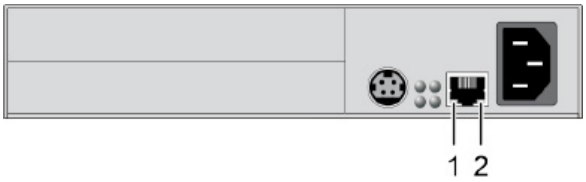
1. LED for Power Supply 1 2. LED for Power Supply 2

Figure 88. Power Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 21. Power Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis

Network Connection Status Indicators



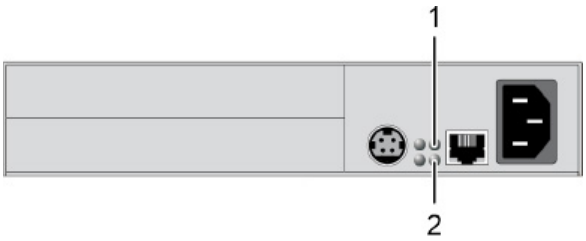
1. LED for Network Activity 2. LED 2 for Network Activity

Figure 89. Network Connection Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis

LED 1 Color		LED 2 Color		Status
Off		Off		No Network Connection Available
Off		Flashing Green		Network Connection Available, No Data Traffic
Flashing Orange		Green		Network Connection Available, Data Traffic Active

Table 22. Network Connection Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis

SNMP Function Status Indicators



1. LED 1 for SNMP Function 2. LED 2 for SNMP Function

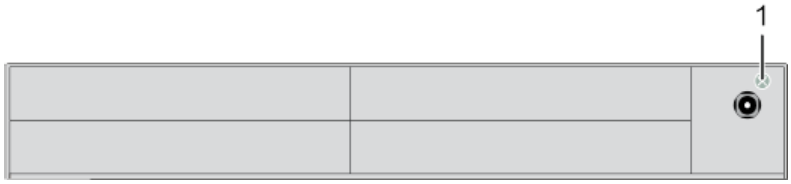
Figure 90. SNMP Function Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis

LED 1 Color		LED 2 Color		Status
Off		Off		Device Off, No Power Available
Red		Red		Controller board Not Running, Manual Cycling of Power Required
Red		Green		Initialization in Progress
Flashing Red		Green		Operating Mode, No Network Connection Available
Flashing Green		Blue		Programming Mode (MAC Address and Serial Interface)
Green		Blue		Bootloader Process Running
Flashing Green		Green		Operating Mode, Network Connection Available

Table 23. SNMP Function Status Indicators on OEE-CH05/SNMP/RP and OEE-CH05/SNMP/DP Chassis

4-Card Chassis

OEE-CH04



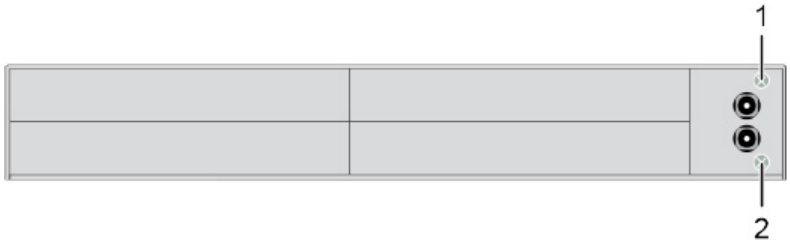
1. LED for Power Supply

Figure 91. Status LED on OEE-CH04 Chassis

LED Color		Description
Green		Power Available
Off		No Power Available

Table 24. Power Status Indicators on OEE-CH04 Chassis

OEE-CH04/RP, OEE-CH04/DP



1. LED for Power Supply 1 2. LED for Power Supply 2

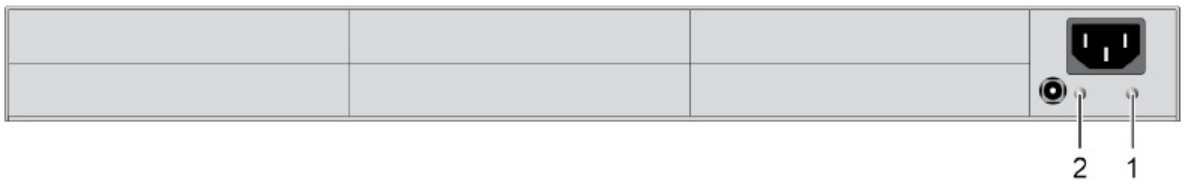
Figure 92. Status LED on OEE-CH04/RP and OEE-CH04/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 25. Power Status Indicators on` OEE-CH04/RP and OEE-CH04/DP Chassis

6-Card Chassis

OEE-CH06/RP, OEE-CH06/DP



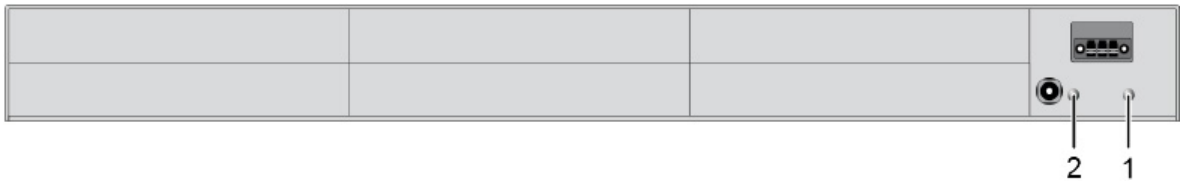
1. LED for Power Supply 1 2. LED for Power Supply 2

Figure 93. Power Status Indicators on OEE-CH06/RP and OEE-CH06/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 26. Power Status Indicators on OEE-CH06/RP and OEE-CH06/DP Chassis

OEE-CH06/D12, OEE-CH06/D12/DP, OEE-CH06/D24, OEE CH06/D24/DP, OEE-CH06/D48, OEE-CH06/D48/DP



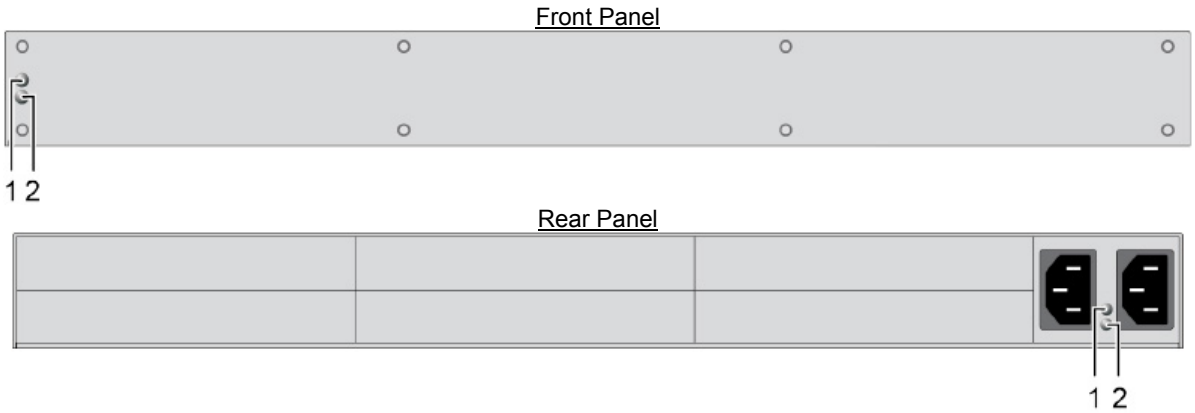
1. LED for Power Supply 1
2. LED for Power Supply 2

Figure 94. Power Status Indicators, OEE-CH06/D12, OEE-CH06/D24 and OEE CH06/D48 Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 27. Power Status Indicators, OEE-CH06/D12, OEE-CH06/D24 and OEE CH06/D48 Chassis

OEE-CH07/DP, OEE-CH07/SFN/DP



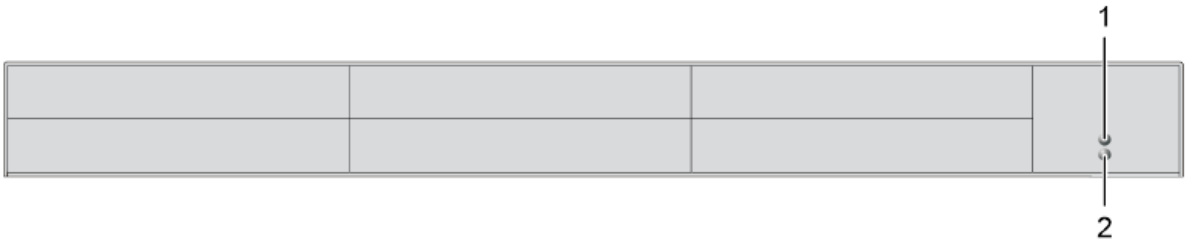
1. LED for Power Supply 1
2. LED for Power Supply 2

Figure 95. Power Status Indicators on OEE-CH07/DP and OEE-CH07/SFN/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 28. Power Status Indicators on OEE-CH07/DP and OEE-CH07/SFN/DP Chassis

OEE-CH08/BPB/DP, OEE-CH08/BPB/SFN/DP



1. LED for Power Supply 1
2. LED for Power Supply 2

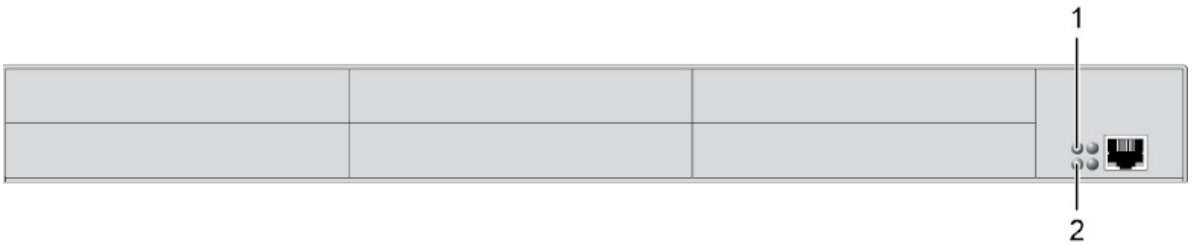
Figure 96. Power Status Indicators on OEE-CH08/BPB/DP and OEE-CH08/BPB/SFN/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 29. Power Status Indicators on OEE-CH08/BPB/DP and OEE-CH08/BPB/SFN/DP Chassis

OEE-CH08/BPB/SNMP/DP

Power Status Indicators



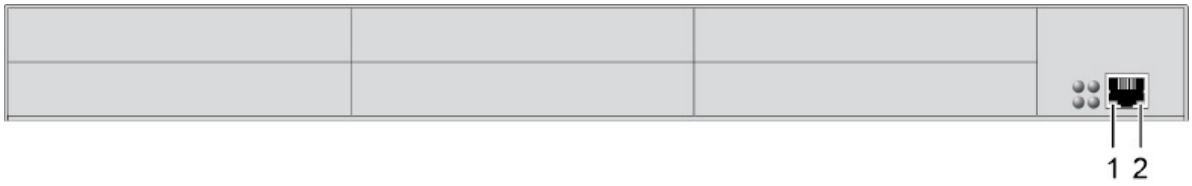
1. LED for Power Supply 1
2. LED for Power Supply 2

Figure 97. Power Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis

LED 1 Color		LED 2 Color		Status
Green		Green		Redundant Power Available
Green		Red		Redundant Power Not Available
Red		Green		Redundant Power Not Available
Off		Off		No Power Available

Table 30. Power Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis

Network Connection Status Indicators



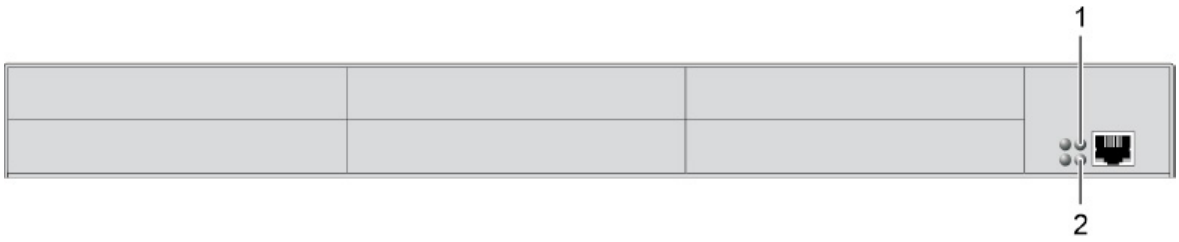
1. LED for Network Activity
2. LED 2 for Network Activity

Figure 98. Network Connection Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis

LED 1 Color		LED 2 Color		Status
Off		Off		No Network Connection Available
Off		Flashing Green		Network Connection Available, No Data Traffic
Flashing Orange		Green		Network Connection Available, Data Traffic Active

Table 31. Network Connection Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis

SNMP Function Status Indicators



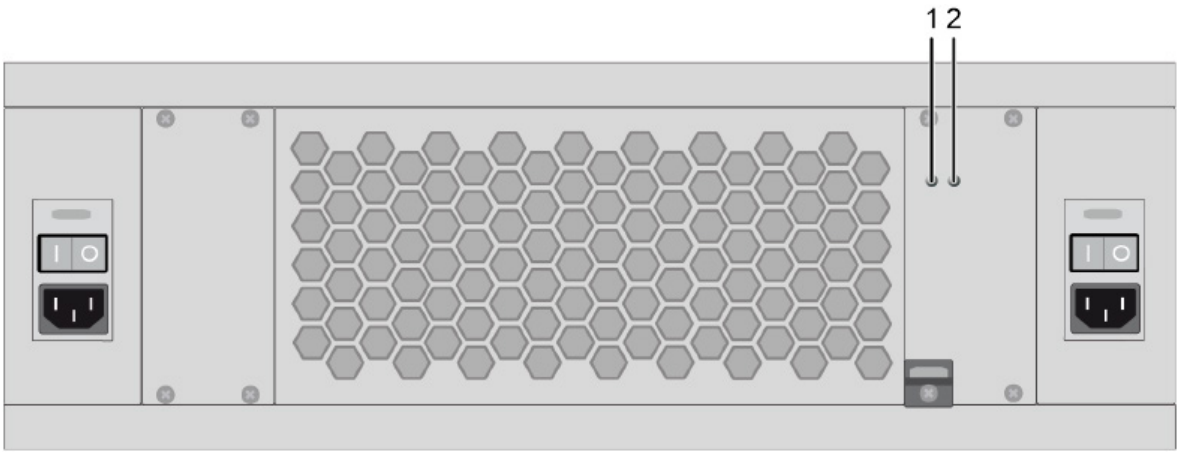
1. LED 1 for SNMP Function
2. LED 2 for SNMP Function

Figure 99. SNMP Function Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis

LED 1 Color		LED 2 Color		Status
Off		Off		Device Off, No Power Available
Red		Red		Controller board Not Running, Manual Cycling of Power Required
Red		Green		Initialization in Progress
Flashing Red		Green		Operating Mode, No Network Connection Available
Flashing Green		Blue		Programming Mode (MAC Address and Serial Interface
Green		Blue		Bootloader Process Running
Flashing Green		Green		Operating Mode, Network Connection Available

Table 32. SNMP Function Status Indicators on OEE-CH08/BPB/SNMP/DP Chassis

OEE-CH21/RP



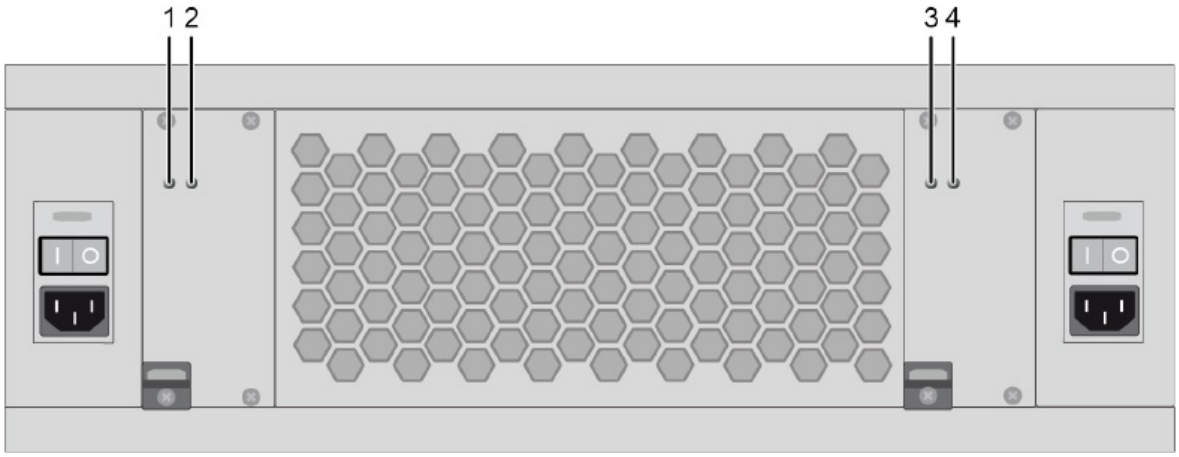
1. Status LED for Power Supply 1
2. Fault LED for Power Supply 1

Figure 100. Power Status Indicators on OEE-CH21/RP Chassis

LED 1 Color		LED 2 Color		Status
Green		Off		Power Available
Green		Red		▪ The input voltage at the power supply unit is too low ▪ The output voltage of the power supply unit is too high ▪ Power supply has exceeded temperature limits.
Off		Off		▪ No power available at power supply ▪ No redundant power supply unit installed

Table 33. Power Status Indicators on OEE-CH21/RP Chassis

OEE-CH21/DP



1. Status LED for Redundant Power Supply
2. Fault LED for Redundant Power Supply
3. Status LED for Main Power Supply
4. Fault LED for Main Power Supply

Figure 101. Status LEDs on OEE-CH21/DP Chassis

LED 1, 3 Color		LED 2, 4 Color		Status
Green		Off		Power Available
Green		Red		▪ The input voltage at the power supply unit is too low ▪ The output voltage of the power supply unit is too high ▪ Power supply has exceeded temperature limits.
Off		Off		▪ No power available at power supply ▪ No redundant power supply unit installed

Table 34. Status LEDs, OEE-CH21/DP Chassis

Video Cards

The Video Cards have several status LEDs that display the connection status at the CATx or Fiber interconnect ports, other LEDs to indicate video and USB status, and a single LED on the front of some chassis types that displays the PCB status.

Orion XTender Card Front Panel LED

The XTender Status LED on the front panel of some video cards display the video and USB status.

Figure 102. Front Panel LED on DVI-I (VGA) Video Card

LED Color		Description
Dark Red		Video processor in failure status (e.g. incorrect firmware on card)
Red		No video signal available, no USB HID connection available
Green		Video signal available, no USB HID connection available
Violet		No video signal available, USB HID connection available
Light Blue		Video signal available, USB HID connection available

Table 35. Front Panel Connection Status LED

Link Status LEDs

The Link Status LEDs display the status of the connection between the Transmitter and the Receiver. These LEDs are part of the CATx or Fiber connectors, and their purpose is the same on all video cards. The description below shows the video cards with redundant interconnect links. Cards with a single link connector have a single set of LEDs.

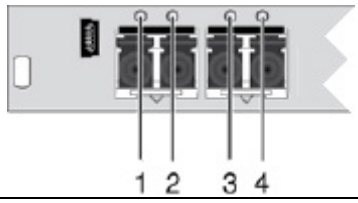
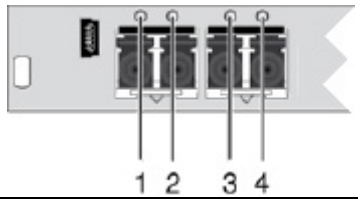
Transmitters	Receivers
CATx Interconnect Link Status LEDs for DVI, HDMI and DP Video Cards	
	
Fiber Interconnect Link Status LEDs for DVI, HDMI and DP Video Cards	
	
1,3 – Failure LEDs 2, 4 – Status LEDs	

Figure 103. Link Status LEDs on Video Cards

CATx Link Status LEDs

LED 1, 3 Color		LED 2, 4 Color		Description
Off		Green		Link Available
Off		Flashing Green		Link Not Available
Flashing Green		Green		Link Connection Failure – Flashes for approximately 20s following a connection failure

Table 36. Video Card LEDs: CATx Link Status

Fiber 1G And 3G Link Status LEDs

LED 1, 3 Color		LED 2, 4 Color		Description
Off		Green		Link Available
Off		Flashing Red		Link Not Available
Flashing Red		Green		Link Connection Failure – Flashes for approximately 20s following a connection failure

Table 37. Video Card Link Status LEDs: Fiber 1G and 3G Link Status

Video and USB HID Status LEDs

All video cards have Status LEDs that display Video and USB status. The number of Status LEDs and what they indicate varies from card to card. This section describes the video and USB status indicators on each video card. The accompanying tables identify the colors of the Status LEDs and their meaning. Absence of Video, USB HID or Link can be due to an error condition. Please check the Troubleshooting the Orion XTender System section on page 119 on how to resolve these errors.

DVI Card Status LEDs

The Video, USB HID, and Link Status indicators for DVI-D and DVI-I video cards are covered here. The LEDs give different indications based on whether the DVI XTenders are connected Point-to-Point or to a Matrix.

DVI-D Video Cards Status LEDs

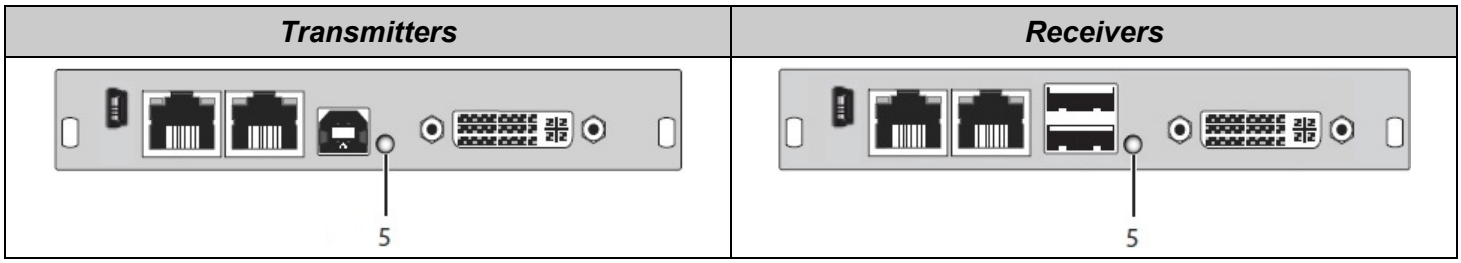


Figure 104. Video, USB HID, and Link Status LEDs: DVI-D XTenders

DVI-D Transmitter Status LEDs: Point-to-Point Connection:

Transmitter LED 5 Color		Link	Video	USB HID
Red		No	No	No
Violet		Yes	No	No
Flashing Green / Yellow		No	Yes	No
Green		Yes	Yes	No
Light Blue		Yes	Yes	Yes

Table 38. DVI-D Transmitter Video and USB HID Status LEDs: Point-to-Point Connection

DVI-D Transmitter Status LEDs: Matrix Connection:

Transmitter LED 5 Color		Link to Matrix	Device Switched	Video	USB HID
Red		No	No	No	No
Violet*		Yes	Maybe	No	No
Flashing Green / Yellow		No	No	Yes	No
Green		Yes	Yes	Yes	No
Light Blue		Yes	Yes	Yes	Yes

Table 39. DVI-D Transmitter Video, USB HID, and Link Status LEDs: Matrix Connection

*When LED 5 lights up violet, it indicates a link to the matrix, but the device may not have switched.

DVI-D Receiver Status LEDs: Point-to-Point Connection

Receiver LED 5 Color		Link	Video	USB HID
Flashing Red / Violet		No	No	No
Violet		Yes	No	No
Flashing Green / Light Blue		Yes	Yes	No
Light Blue		Yes	Yes	Yes

Table 40. DVI-D Receiver Video, USB HID, and Link Status LEDs: Point-to-Point Connection

DVI-D Receiver Status LEDs: Matrix Connection

Receiver LED 5 Color		Link to Matrix	Device Switched	Video	USB HID
Flashing Red / Violet		No	No	No	No
Violet		Yes	Yes	No	No
Flashing Green / Light Blue*		Yes	Maybe	Maybe	No
Light Blue		Yes	Yes	Yes	Yes

Table 41. DVI-D Receiver Video, USB HID, and Link Status LEDs: Matrix Connection

*When LED 5 lights up with flashing green / light blue, it indicates a link to the matrix, but the device may not have switched and video may or may not be present.

DVI-I Transmitter-Receiver Pair Video Cards Status LEDs – Point-to-Point Connection

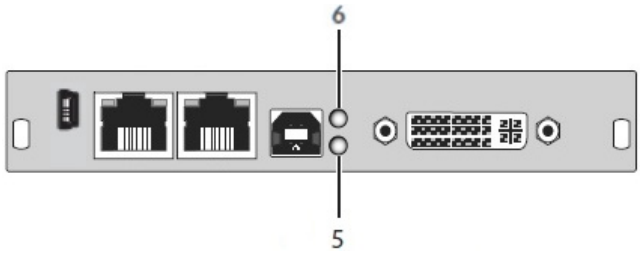
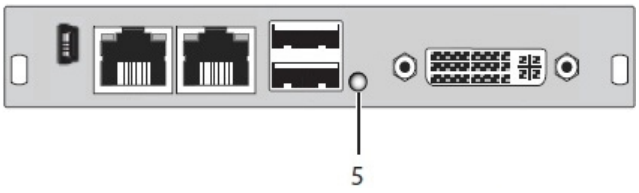
Transmitters	Receivers
	

Figure 105. DVI-I Transmitter-Receiver Video, USB HID, and Link Status LED Locations

DVI-I Transmitter Status LEDs: Point-to-Point Connection

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Video	USB HID
Red		Red		No	No	No
Violet		Violet		Yes	No	No
Yellow		Flashing Green / Yellow		No	Yes	No
Yellow		Green		Yes	Yes	No
White		Light Blue		Yes	Yes	Yes

Table 42. DVI-I Transmitter Video, USB HID, and Link Status LEDs: Point-to-Point Connection

DVI-I Transmitter Status LEDs: Matrix Connection

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Device Switched	Video	USB HID
Red		Red		No	No	No	No
Violet*		Violet*		Yes	Maybe	No	No
Yellow		Flashing Green / Yellow		No	No	Yes	No
Yellow		Green		Yes	Yes	Yes	No
White		Light Blue		Yes	Yes	Yes	Yes

Table 43. DVI-I Transmitter Video, USB HID, and Link Status LEDs: Matrix Connection

*When LEDs 5 and 6 light up violet, it indicates a link to the matrix, but the device may not have switched.

DVI-I Receiver Status LEDs: Point-to-Point Connection

Receiver LED 5 Color		Link	Video	USB HID
Flashing Red / Violet		No	No	No
Violet		Yes	No	No
Flashing Green / Light Blue		Yes	Yes	No
Light Blue		Yes	Yes	Yes

Table 44. DVI-I Receiver Video, USB HID, and Link Status LEDs: Point-to-Point Connection

DVI-I Receiver Status LEDs: Matrix Connection

Receiver LED 5 Color		Link to Matrix	Device Switched	Video	USB HID
Flashing Red / Violet		No	No	No	No
Violet		Yes	Yes	No	No
Flashing Green / Light Blue*		Yes	Maybe	Maybe	No
Light Blue		Yes	Yes	Yes	Yes

Table 45. DVI-D Receiver Video, USB HID, and Link Status LEDs: Matrix Connection

*When LED 5 lights up with flashing green / light blue, it indicates a link to the matrix, but the device may not have switched and video may or may not be present.

DVI-I with Scaling Standalone Transmitter Cards Status LED

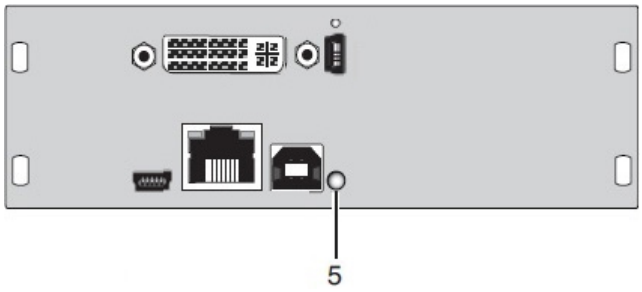


Figure 106. DVI-I Standalone Transmitter Video, USB HID, and Link LED Location

DVI-I with Scaling Standalone Transmitter Status LED: Point-to-Point Connection

DVI-I Standalone Transmitter LED 5 Color		Link	Video	USB HID
Flashing Green / Yellow*		Only Link or No Link	Only Video or No Video	No
Green		Yes	Yes	No
Light Blue		Yes	Yes	Yes

Table 46. DVI-I Scaling Transmitter, Video, USB HID, and Link Status: Point-to-Point Connection

*When LED 5 lights up with flashing green / yellow, it indicates **one** of the following: the presence of a link, the presence of video, or the absence of both. USB HID will not be present.

DVI-I with Scaling Standalone Transmitter Status LED: Matrix Connection

Receiver LED 5 Color		Link to Matrix	Device Switched	Video	USB HID
Flashing Green / Yellow*		Maybe	Maybe	Maybe	No
Green		Yes	Yes	Yes	No
Light Blue		Yes	Yes	Yes	Yes

Table 47. DVI-I Scaling Transmitter Video, USB HID, and Link Status LED: Matrix Connection

*When LED 5 lights up with flashing green / light blue, it indicates **one** of the following: only a link to the matrix, a link to matrix and the device getting switched, or only video being present. USB HID will not be present.

HDMI Cards Status LEDs

The Video and USB HID Status indicators for all HDMI video cards are covered here.

HDMI 1.3, 1.4 Video Cards Status LEDs

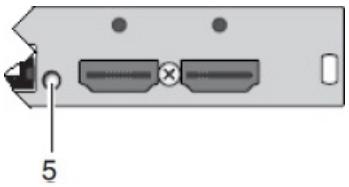
Transmitters	Receivers
	
	

Figure 107. Status LED Locations on HDMI 1.3, 1.4 Video Cards

LED 5 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 48. HDMI 1.3, 1.4 Video Card Video and USB HID Status LED

LED 6 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 49. HDMI 1.3, 1.4 Video Card Locally Connected Source Status LED

HDMI 2.0 with HDCP Cards Status LEDs

On the HDMI 2.0 with HDCP Cards, LED 5 indicates Video and USB HID Status for Link.

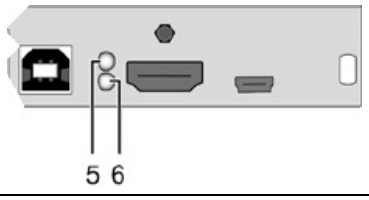
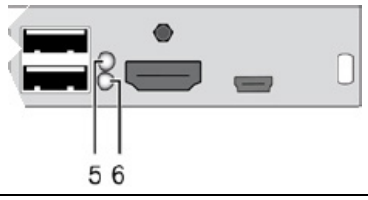
Transmitter	*Receiver5*
	

Figure 108. Status LED Locations on HDMI 2.0 with HDCP Video Cards

LED 5 and 6 Color		Description
Red		Device ready
Violet		Connection and USB signal (interconnect) available
Flashing Green / Light Blue*		Connection and video signal available
Light Blue		Connection, USB and video signal available (operating status)

Table 50. HDMI 2.0 with HDCP Video Card: Video and USB HID Status LED

LED 6 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 51. HDMI 2.0 with HDCP Video Card: Locally Connected Source Status LED

DP Cards Status LEDs

Since DP 1.1 video cards can be either single-head or dual-head, the status indications vary for each. They also vary based on whether the DP 1.1 video cards are connected Point-to-Point or to a Matrix. If video is present, the Status LEDs will also indicate whether the Transmission Rate is RBR (Reduced Bit Rate) or HBR (High Bit Rate). More information on the Transmission Rates can be found in Appendix A found on page 152 .

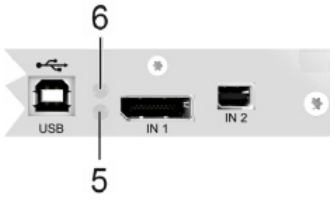
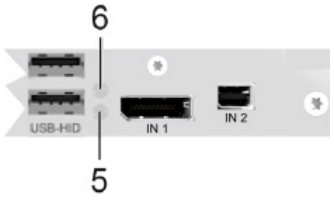
Transmitters	*Receivers*
	

Figure 109. Video and USB HID Status LEDs: DP 1.1 and DP 1.2 Video Cards

DP 1.1 Single-Head Video Card Status LEDs

The two Video and USB HID Status LEDs indicate different things depending on whether they are connected Point-to-Point or to a Matrix.

Single-Head DP 1.1 Transmitter Status LEDs: Point-to-Point Connection:

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Video with Resolution	USB HID
Red		Red		No	No	No
Violet		Violet		Yes	No	No
Green*		Red*		Maybe	RBR	No
Green*		Green*		Maybe	HBR	No
Light Blue		Violet		Yes	RBR	Yes
Light Blue		Light Blue		Yes	HBR	Yes

Table 52. Single-Head DP 1.1 Transmitter Video and USB HID Status LEDs: Point-to-Point

*When LED 5 lights Green and LED 6 lights Red or Green, a link may or may not have been established between the Transmitter and the Receiver.

Single-Head DP 1.1 Receiver Status LEDs: Point-to-Point Connection:

Receiver LED 5 Color		Receiver LED 6 Color		Link	Video with Resolution	USB HID
Flashing Red / Violet		Flashing Red / Violet		No	No	No
Violet		Violet		Yes	No	No
Flashing Green / Light Blue		Flashing Red / Violet		Yes	RBR	No
Flashing Green / Light Blue		Flashing Green / Light Blue		Yes	HBR	No
Light Blue		Violet		Yes	RBR	Yes
Light Blue		Light Blue		Yes	HBR	Yes

Table 53. Single-Head DP 1.1 Receiver Video and USB HID Status LEDs: Point-to-Point Connection

Single-Head DP 1.1 Transmitter Status LEDs: Matrix Connection:

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Device Switched	Video with Resolution	USB HID
Red		Red		No	No	No	No
Violet*		Violet*		Maybe	Yes	No	No
Green△		Red△		Maybe	Maybe	RBR	No
Green△		Green△		Maybe	Maybe	HBR	No
Light Blue		Violet*		Yes	Yes	RBR	Yes
Light Blue		Light Blue		Yes	Yes	HBR	Yes

Table 54. Single-Head DP 1.1 Transmitter Video and USB HID Status LEDs: Matrix Connection

*When LEDs 5 and 6 light up Violet, there may or may not be a link to the matrix, but the device will have switched.
△When LEDs 5 and 6 light up Green and Red, or Green and Green, there may and may not be a link to the matrix, and the device may or may not have switched.

Single-Head DP 1.1 Receiver Status LEDs: Matrix Connection:

Receiver LED 5 Color		Receiver LED 6 Color		Link	Device Switched	Video with Resolution	USB HID
Flashing Red / Violet		Flashing Red / Violet		No	No	No	No
Flashing Green / Light Blue*		Flashing Red / Violet*		Yes	Maybe	No or RBR	No
Violet		Violet		Yes	Yes	No	No
Flashing Green / Light Blue		Flashing Green / Light Blue		Yes	Yes	HBR	No
Light Blue		Violet		Yes	Yes	RBR	Yes
Light Blue		Light Blue		Yes	Yes	HBR	Yes

Table 55. Single-Head DP 1.1 Receiver Video and USB HID Status LEDs: Matrix Connection

*When LEDs 5 flashes Green and Blue, and LED 6 flashes Red and Violet, there will be a link to the Matrix, but the device may or may not have been switched and there will either be no video or RBR video.

DP 1.1 Dual-Head Video Card Status LEDs

Dual-Head DP 1.1 Transmitter Status LEDs: Point-to-Point Connection:

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Video with Resolution / Channel	USB HID
Red		Red		No	No	No
Violet		Violet		Yes	No	No
Green*		Red*		Maybe	RBR Channel 1	No
Red*		Green*		Maybe	RBR Channel 2	No
Green*		Green8		Maybe	HBR Channel 1 / 2 x RBR	No
Light Blue		Violet		Yes	RBR Channel 1	Yes
Violet		Light Blue		Yes	RBR Channel 2	Yes
Light Blue		Light Blue		Yes	HBR Channel 1 / 2 x RBR	Yes

Table 56. Dual-Head DP 1.1 Transmitter Video and USB HID Status LEDs: Point-to-Point

*A link between the Transmitter may or may not be present, but video is present at the indicated Transmission Rate.

Dual-Head DP 1.1 Receiver Status LEDs: Point-to-Point Connection:

Receiver LED 5 Color		Receiver LED 6 Color		Link	Video with Resolution / Channel	USB HID
Flashing Red / Violet		Flashing Red / Violet		No	No	No
Violet		Violet		Yes	No	No
Flashing Green / Light Blue*		Flashing Red / Violet*		Yes	RBR Channel 1	No
Flashing Red / Violet*		Flashing Green / Light Blue*		Yes	RBR Channel 2	No
Flashing Green / Light Blue*		Flashing Green / Light Blue*		Yes	HBR Channel 1 / 2 x RBR	No
Light Blue		Violet		Yes	RBR Channel 1	Yes
Violet		Light Blue		Yes	RBR Channel 2	Yes
Light Blue		Light Blue		Yes	HBR Channel 1 / 2 x RBR	Yes

Table 57. Dual-Head DP 1.1 Receiver Video and USB HID Status LEDs: Point-to-Point Connection

*A link between the Transmitter may or may not be present, but video is present at the indicated Transmission Rate.

Dual-Head DP 1.1 Transmitter Status LEDs: Matrix Connection:

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Device Switched	Video with Resolution / Channel	USB HID
Red		Red		No	No	No	No
Violet*		Violet*		Maybe	Yes	No	No
Green△		Red△		Maybe	Maybe	RBR Channel 1	No
Red△		Green△		Maybe	Maybe	RBR Channel 2	No
Green△		Green△		Maybe	Maybe	HBR Channel 1 / 2 x RBR	No
Light Blue		Violet		Yes	Yes	RBR Channel 1	Yes
Violet*		Light Blue		Yes	Yes	RBR Channel 2	Yes
Light Blue		Light Blue		Yes	Yes	HBR Channel 1 / 2 x RBR	Yes

Table 58. Dual-Head DP 1.1Transmitter Video and USB HID Status LEDs: Matrix Connection

*When LEDs 5 and 6 light up Violet, there may or may not be a link to the matrix, but the device will have switched.
△When LEDs 5 and 6 light up as indicated, there may or may not be a link to the matrix, and the device may or may not have switched.

Dual-Head DP 1.1 Receiver Status LEDs: Matrix Connection:

Receiver LED 5 Color		Receiver LED 6 Color		Link	Device Switched	Video with Resolution / Channel	USB HID
Flashing Red / Violet		Flashing Red / Violet		No	No	No	No
Violet		Violet		Yes	Yes	No	No
Flashing Green / Light Blue*		Flashing Red / Violet*		Yes	Maybe	No or RBR Channel 1	No
Flashing Red / Violet*		Flashing Green / Light Blue		Yes	Yes	RBR Channel 2	No
Flashing Green / Light Blue*		Flashing Green / Light Blue*		Yes	Yes	HBR Channel 1 / 2 x RBR	No
Light Blue		Violet		Yes	Yes	RBR Channel 1	Yes
Violet		Light Blue		Yes	Yes	RBR Channel 2	Yes
Light Blue		Light Blue		Yes	Yes	HBR Channel 1 / 2 x RBR	Yes

Table 59. Dual-Head DP 1.1 Video and USB HID Status LEDs: Matrix Connection

*Either only a link between the Transmitter and the Matrix is present OR there is a link to the Matrix with the device getting switched, and video present at the indicated Transmission Rate.

DP 1.2 Video Cards

The Status Indicators for DP 1.2 Transmitters and Receivers are listed below.

DP 1.2 Transmitter Status LEDs: Point-to-Point Connection:

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Video with Resolution	USB HID
Red		Red		No	No	No
Violet		Violet		Yes	No	No
Green*		Red*		Maybe	RBR	No
Green*		Green*		Maybe	HBR	No
Light Blue		Violet		Yes	RBR	Yes
Light Blue		Light Blue		Yes	HBR	Yes

Table 60. DP 1.2 Transmitter Video and USB HID Status LEDs: Point-to-Point Connection

*When LED 5 lights up Green and LED 6 lights up either Red or Green, there may or may not be a link between the Transmitter and the Receiver. There will be video as indicated, but no USB HID.

DP 1.2 Receiver Status LEDs: Point-to-Point Connection:

Receiver LED 5 Color		Receiver LED 6 Color		Link	Video with Resolution / Channel	USB HID
Flashing Red / Violet		Flashing Red / Violet		No	No	No
Violet		Violet		Yes	No	No
Flashing Green / Light Blue*		Flashing Red / Violet*		Yes	RBR	No
Flashing Green / Light Blue*		Flashing Green / Light Blue*		Yes	HBR	No
Light Blue		Violet		Yes	RBR	Yes
Light Blue		Light Blue		Yes	HBR	Yes

Table 61. DP 1.2 Receiver Video and USB HID Status LEDs: Point-to-Point Connection

DP 1.2 Transmitter Status LEDs: Matrix Connection:

Transmitter LED 5 Color		Transmitter LED 6 Color		Link	Device Switched	Video with Resolution / Channel	USB HID
Red		Red		No	No	No	No
Violet*		Violet*		Maybe	Yes	No	No
Green△		Red△		Maybe	Maybe	RBR	No
Green△		Green△		Maybe	Maybe	HBR	No
Light Blue		Violet		Yes	Yes	RBR	Yes
Light Blue		Light Blue		Yes	Yes	HBR	Yes

Table 62. DP 1.2 Transmitter Video and USB HID Status LEDs: Matrix Connection

*When LEDs 5 and 6 light up Violet, there may or may not be a link to the matrix, but the device will have switched.
△When LEDs 5 lights up Green and LED 6 lights up Red or Green, there may and may not be a link to the matrix, and the device may or may not have switched, but video is present at the indicated Transmission Rate.

Dual-Head DP 1.1 Receiver Status LEDs: Matrix Connection:

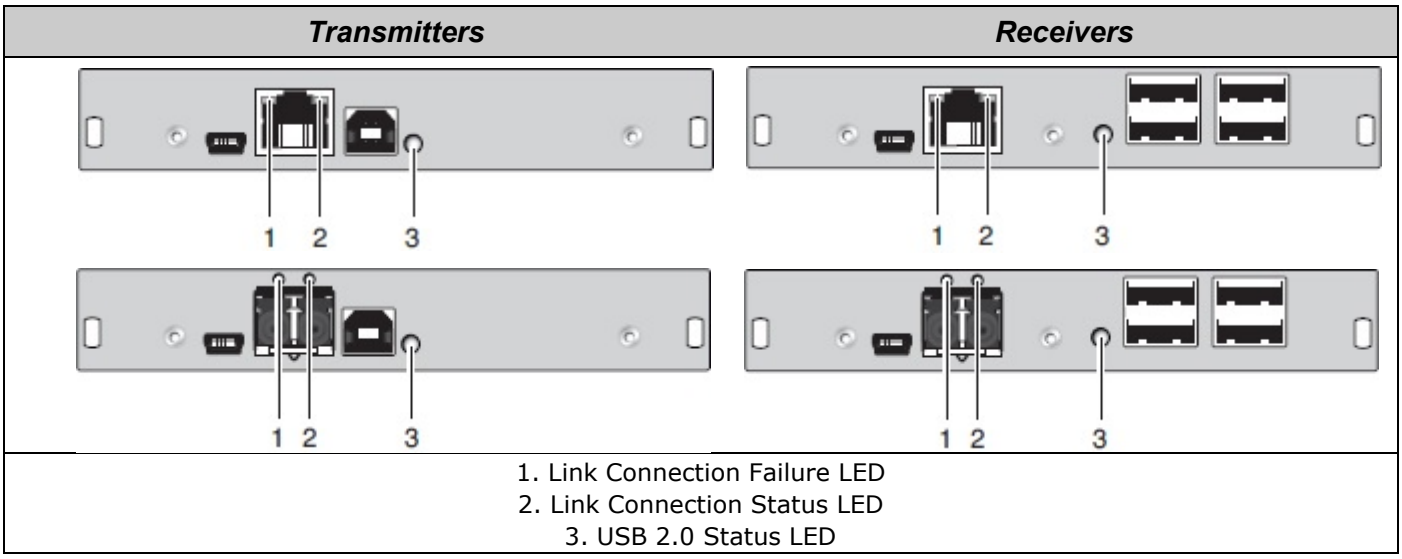
Receiver LED 5 Color		Receiver LED 6 Color		Link	Device Switched	Video with Resolution / Channel	USB HID
Flashing Red / Violet		Flashing Red / Violet		No	No	No	No
Violet		Violet		Yes	Yes	No	No
Flashing Green / Light Blue*		Flashing Red / Violet*		Yes	Maybe	No or RBR	No
Flashing Green / Light Blue*		Flashing Green / Light Blue*		Yes	Yes	HBR	No
Light Blue		Violet		Yes	Yes	RBR	Yes
Light Blue		Light Blue		Yes	Yes	HBR	Yes

Table 63. Dual-Head DP 1.1 Receiver Video and USB HID Status LEDs: Matrix Connection

*Either only a link between the Transmitter and the Matrix is present OR there is a link to the Matrix with the device getting switched, and video present at the indicated Transmission Rate.

USB 2.0 High Speed Extender Cards

The Orion XTender USB 2.0 High Speed cards have a USB 2.0 port and either a CATx or 1G Fiber interconnect port. They operate at USB 2.0 high speed.



1. Link Connection Failure LED
2. Link Connection Status LED
3. USB 2.0 Status LED

Figure 110. USB 2.0 High Speed Extender Cards

Link Status LEDs have been discussed on page 89 of this manual. The USB 2.0 Status LED is discussed below.

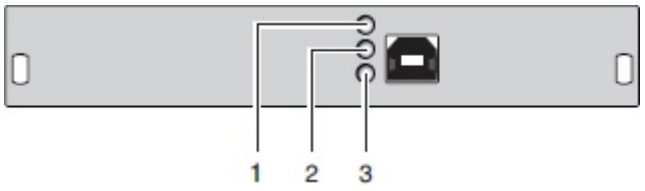
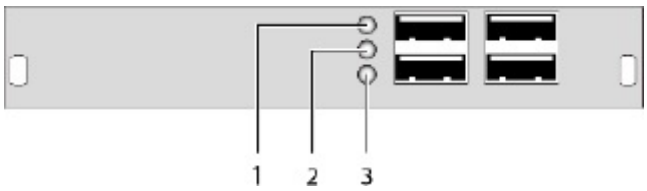
LED 3 Color		Description
Red		Link not present; USB-2.0 signal not present
Green		Transmitter: Link present; USB-2.0 signal not present
Light Blue		Link and USB 2.0 signal present (Operating condition)

Figure 111. USB 2.0 High Speed Extender Card: USB 2.0 Status LED

Option Cards

Each Option Card has its own set of Status LEDs that is independent of the Status LEDs on the Video Cards. They describe the status conditions specific to the functionality of the Options Cards. On the USB HID Only and USB 2.0 Only Option Cards, the status is described by a combination of the status indicators on both the Transmitter and the Receiver.

USB 2.0 Only Option Card Status LEDs

Transmitter	***Receiver***
	

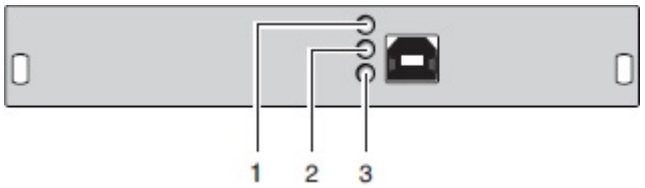
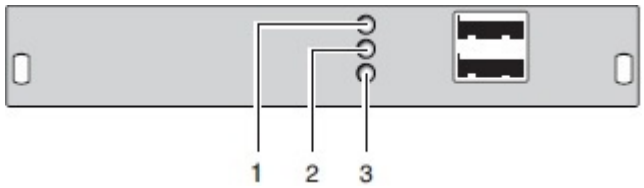
1. USB 2.0 Status LED
2. Connect Status LED
3. Link Status LED

Figure 112. Status LEDs on USB 2.0 Only Option Card

	Transmitter		Receiver		Description
LED 1	Off		Off		USB 2.0 link between Transmitter and Receiver not available
LED 2	Off		Off		
LED 3	Green Flashing		Green Flashing		
LED 1	Off		Off		▪ USB 2.0 link between Transmitter and Receiver available ▪ USB connection between Transmitter and source not available
LED 2	Off		Off		
LED 3	Green		Green		
LED 1	Green Flashing		Green Flashing		▪ USB 2.0 link between Transmitter and Receiver available ▪ USB connection between Transmitter and source available
LED 2	Green		Green		
LED 3	Green		Green		

Table 64. USB 2.0 Only Option Card Status LEDs

USB HID Only Option Card Status LEDs

Transmitter	Receiver
	

1. USB HID 1 Status LED
2. USB HID2 Status LED
3. Link Status LED

Figure 113. Status LEDs on USB HID Only Option Card

	Transmitter		Receiver		Description
LED 1	Off		Off		▪ Link between Option Card and extender module available ▪ No link between Transmitter and source available ▪ No USB HID device or unsupported USB device connected
LED 2	Off		Off		
LED 3	Red Flashing Slowly		Red Flashing Slowly		
LED 1	Off		Off		▪ Link connection between Option Card and extender module, and between Transmitter and source available ▪ No USB HID device or unsupported USB device connected
LED 2	Off		Off		
LED 3	Red Flashing Fast		Red Flashing Fast		
LED 1	Off		Off		▪ Link between Option Card and extender module, and between Transmitter and source available ▪ Keyboard connected to USB HID port 1 or 2
LED 2	Red		Red		
LED 3	Red Flashing Fast		Red Flashing Fast		
LED 1	Red		Red		▪ Link between Option Card and extender module, and between Transmitter and source available ▪ Mouse connected to USB HID port 1 or 2
LED 2	Off		Off		
LED 3	Red Flashing Fast		Red Flashing Fast		
LED 1	Off		Off		▪ Link connection between Option Card and extender module, and between Transmitter and source available. ▪ Keyboard connected to USB HID port 1 or 2. ▪ Keyboard input active.
LED 2	Red		Red Flashing Fast		
LED 3	Red Flashing Fast		Red Flashing Fast		
LED 1	Red		Red Flashing Fast		▪ Link connection between Option Card and extender module, and between Transmitter and source available. ▪ Keyboard connected to USB HID port 1 or 2. ▪ Keyboard input active.
LED 2	Off		Off		
LED 3	Red Flashing Fast		Red Flashing Fast		

Table 65. USB HID Only Option Card Status LEDs

Digital Audio Only Embedded Upgrade Card Status LED

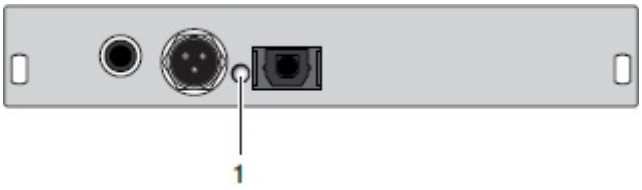
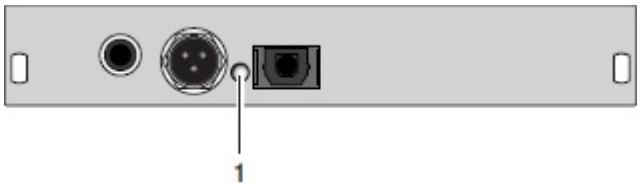
Transmitter	Receiver
	

Figure 114. Status LED on Digital Audio Only Option Card

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

Table 66. Digital Audio Only Option Card Status LED

Balanced Analog Audio Option Card

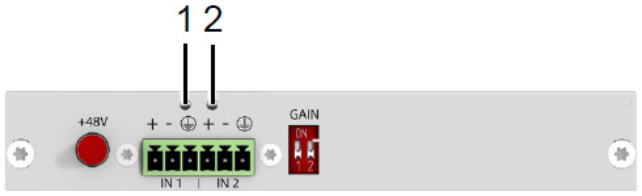
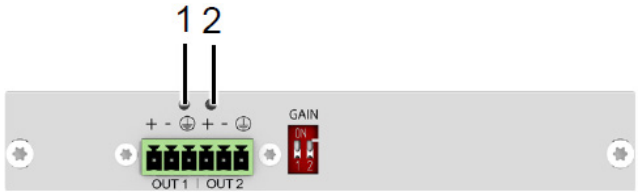
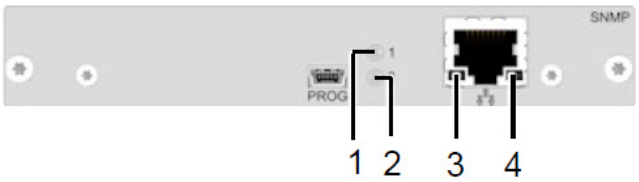
Transmitter	Receiver
	
1. Status LED for Input 1 2. Status LED for Input 1	1. Status LED for Output 1 2. Status LED for Output 1

Figure 115. Status LEDs on Balanced Analog Audio Option Card

LED 1and 2 Color		Description
Green		Audio signal present
Orange		Audio signal too high

Table 67. Balanced Analog Audio Option Card Status LEDs



1. SNMP Status LED 1
2. SNMP Status LED 2
3. Link status LED
4. Network Activity Status LED

Figure 116. Status LEDs on SNMP Option Card

LED	Color		Description
1	White		SNMP module is in registration process
	Flashing Blue		Registration of the SNMP module has started
	Flashing Red		Registration in progress
	Flashing Green		Operating condition
	Green		SNMP module de-registered
2	White		SNMP module is in registration process

Table 68. SNMP Option Card Status LEDs 1 and 2

Note: Due to variations in LED type, White might also appear as Light Purple or Light Blue.

LED	Color		Description
3	Off		No network connection or No data transfer
	Orange On		Network connection present, Data transfer active
4	Off		No network connection present
	Green Flashing		Network connection present

Table 69. SNMP Option Card Status LEDs 3 and 4

Fan Option Card

1. Status LED 1

Figure 117. Status LED on Fan Option Card

LED 1Color		Description
Red		Failure – Fan is not operable
Green		Fan runs with reduced speed until 104°F (40°C). (See Fan Option Card Configuration Setting on page 118.)
Light Blue		Operating Condition

Table 70. Fan Option Card Status LED

Configuring and Operating the Orion XTender

Operation of the Orion XTender is very straightforward. In most instances, once installed, no further configuration is needed. Certain functions are available for further customization, if desired. These functions include setting up configuration parameters, accessing and updating the EDID and setting up USD HID Ghosting.

Some operations are performed by means of keyboard hotkeys. Others are accomplished by modifying configuration files present on all XTender units, which are accessed through the Service Ports on the units. Both of these methods are described below.

Operations with Keyboard Hotkeys

Using a keyboard connected to an Orion XTender unit, some operations as described below can be performed.

Command Mode

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

To enter Command Mode, use a hotkey sequence at a keyboard plugged in at the Receiver. While in Command Mode, **Caps Lock** and **Scroll Lock** LEDs on the console keyboard will flash repeatedly. Normal keyboard and mouse operation will also 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 exit Command Mode, and to change the hotkey sequence. The default hotkey is the **Left Shift**.

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

Table 71. 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 following hotkey codes are used to change the hotkey.

Hotkey Codes	Hotkey
0	Any key other than <Esc>, <Del>, <Backspace> or <Enter>
2	2 x <Scroll Lock>
3	2 x <Left Shift> (Default)
4	2 x <Left Ctrl>
5	2 x <Left Alt>
6	2 x <Right Shift>
7	2 x <Right Ctrl>
8	2 x <Right Alt>

Table 72. Available Hotkey Codes to Change Hotkeys

When a hotkey is changed at a Receiver, the change is only effective for that Receiver.

Below are two examples on how to change the hotkey.

- To change the hotkey to 2 x<Left Alt>: *<Current Hotkey> <c> <5> <Enter>*
- To change the hotkey to 2 x <Space>: *<Current Hotkey> <c> <0> <Space> <Enter>*

Please note that the keyboard commands are mapped to the positions of the keys on the keyboard used to set up the hotkey. Keyboard mapping tables may vary for country-specific layouts. For example, if <a> was set as the hotkey when using a US QWERTY keyboard, on connecting a French AZERTY keyboard to the Receiver, the user would need to press *2 x <q>* instead of *2 x <a>*.

To reset the Command Mode hotkey to the factory setting of *2 x <Left Shift>*, press *<Right Shift> + <Del>* within 5 seconds of powering up the Receiver or plugging in a keyboard.

USB HID Ghosting

The USB HID Ghosting function allows specific keyboard and mice USB 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 73. USB HID Ghosting Hot Key Commands

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.

As in the case of Command Mode, the keyboard commands are mapped to the positions of the keys on a QWERTY keyboard. For example, to invoke the command to write the device descriptors on a French AZERTY keyboard, the user would have to type *<'Hot Key'>, <h>, <z>, <Enter>* instead of *<'Hot Key'>, <h>, <w>, <Enter>*. If the hotkey is also affected by the keyboard mapping, the user will have to press the appropriate key twice to activate the hotkey.

Downloading the EDID

When the Orion XTender is first used, the factory default EDID is reported to the source. This might not be ideal in all circumstances. In this situation, it is possible to download the EDID from the monitor connected to the Receiver and store it in the Transmitter. On XTender units with USB HID, this can be done using keyboard commands, as shown below.

1. Enter the hotkey to enter Command Mode, as described above. The Caps Lock and Scroll LEDs start flashing.
2. Press <*a*> to load the EDID of the monitor on the Receiver into the Transmitter. The screen will go blank for a short time and the LEDs on both the Transmitter and the Receiver flash briefly. Command Mode is ended and the keyboard LEDs revert to their normal state.
3. Restart the source. It will adjust the output video using the information of the connected monitor. The video displayed should be optimal, and the list of available resolutions will be those of the connected monitor.

The EDID can be reloaded by repeating this process when the monitor connected to the Receiver is changed.

As in the case of Command Mode, the keyboard commands are mapped to the positions of the keys on a QWERTY keyboard. For example, to invoke the command to write the device descriptors on a French AZERTY keyboard, the user would have to type <*'Hot Key'*> + <*q*> instead of <*'Hot Key'*> + <*a*>. If the hotkey is also affected by the keyboard mapping, the user will have to press the appropriate key twice to activate the hotkey.

Switching of Video Channels in Dual Head Mode (DP Only)

Transmitters connected in dual-head mode can be switched using keyboard commands if the following conditions are met.

- The dual head Transmitter is connected to a dual-head source.
- There is an active connection between the dual head Transmitter and a single head Receiver, either point-to-point or through a matrix.
- Same connection speed – 1G or 3G

Entering the following keyboard commands at the keyboard connected to the Receiver, the user is able to switch between the video channels.

Keyboard Command	Function
<Hotkey>, <d>, <1>, <Enter>	Switch to video channel 1 of the dual-head Transmitter
<Hotkey>, <d>, <2>, <Enter>	Switch to video channel 2 of the dual-head Transmitter

Table 74. Keyboard Commands to Switch Video Channels in Dual-Head Mode

Switching Between Transmitters from a Receiver with Redundant Interconnect Links

When a Receiver with redundant interconnect links is connected to Transmitters with different sources, the following keyboard commands can be used to switch between the sources.

Keyboard Command	Function
<Hotkey>, <k>, <1>, <Enter>	Switch to the Transmitter on Interconnect Port 1
<Hotkey>, <k>, <2>, <Enter>	Switch to the Transmitter on Interconnect Port 2

Table 75. Keyboard Commands to Switch Between Video Channels on a Dual-Head Transmitter

When the Transmitters and the Receiver are connected in point-to-point mode, it is not possible for keyboards connected on Option Cards with USB HID to perform this operation. It is possible when the XTender units are connected through a matrix.

Orion XTender Configuration Through the Service Port

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 named with an eight-digit number. This directory contains the configuration file Config.txt, the EDID and the firmware files.

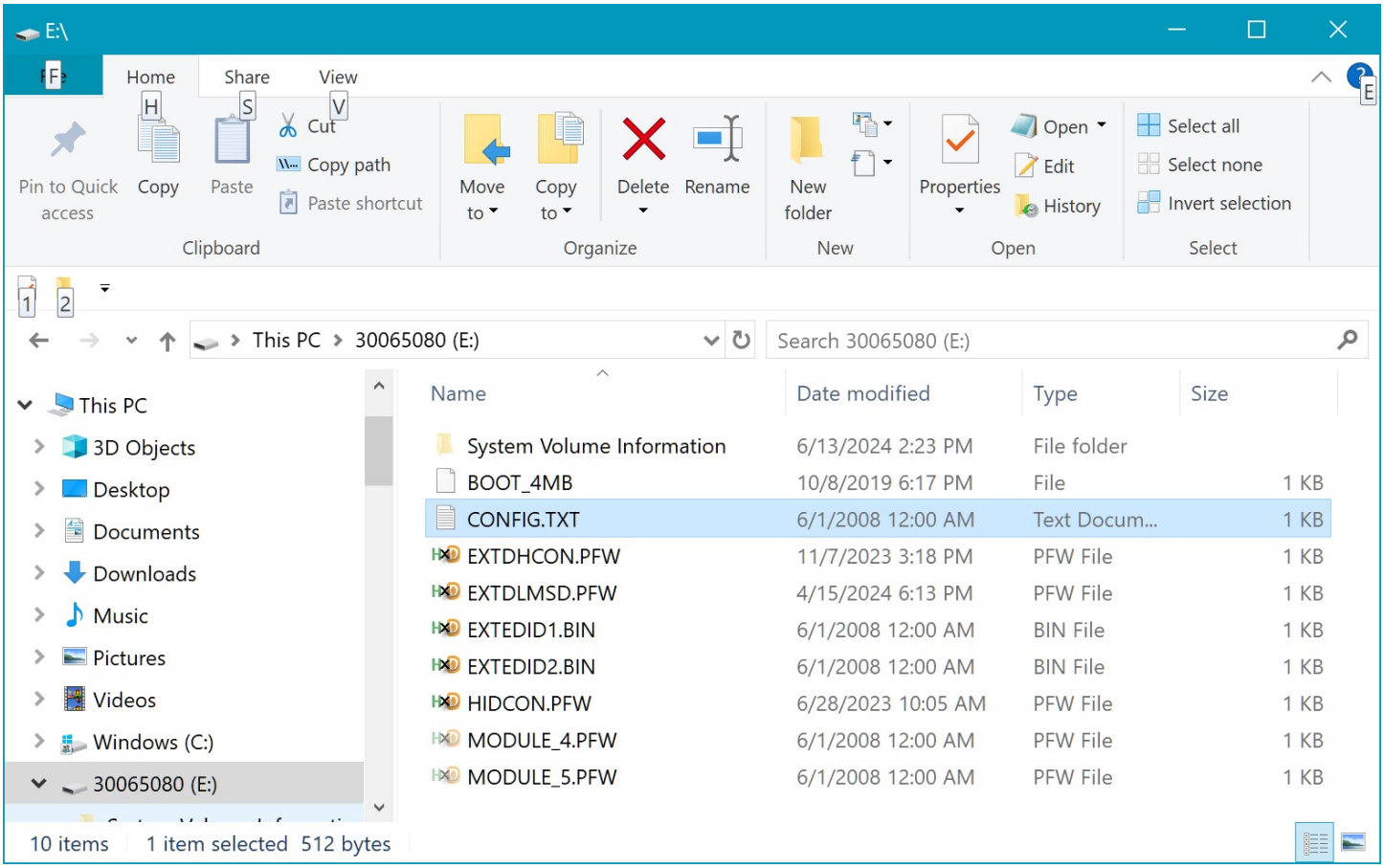


Figure 118. Orion XTender Configuration and Firmware Files on the XTender Unit

EDID Configuration

For specific requirements, the EDID can be retrieved and uploaded as a binary file to both the Transmitter and the Receiver. The DDC information file, "*EXTEDID.bin*", is one of the configuration files found on the XTender unit. On a dual-head DP unit, there will be two DDC information files, *"EXTEDID1.bin"* and *"EXTEDID2.bin"*, one for each port.

Retrieving DDC Information

Copy the "*EXTEDID.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 "*EXTEDID.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 "*EXTEDID.bin* " file on the flash drive of the Transmitter unit. The factory DDC Information will be automatically restored.

Configuration File

The Transmitter and Receiver contain a configuration file, "*Config.txt*", to set specific parameters and to read out device and video information.

The configuration file can be edited with all common text editors. However, the following rules must be followed to ensure that the modified parameters take effect correctly.

1. *#CFG* must be the first line of the configuration file.
2. Each parameter must be on a separate line in the configuration file.
3. The XTender unit must be restarted for the modified parameters to take effect.

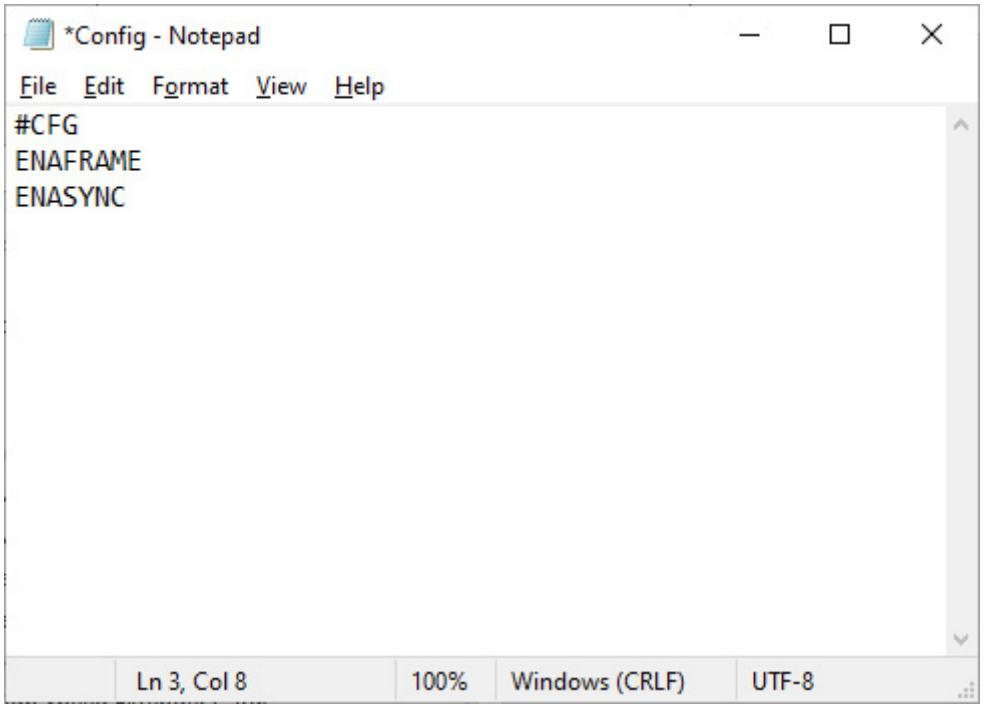


Figure 119. Sample Modification of a Config.txt File

To ensure that configuration file is edited correctly, please follow the steps outlined below when modifying the file.

1. Open the Config.txt file in a text editor.
2. Ensure that *#CFG* is written in the first line of the file.
3. Add a line break after the *#CFG*.
4. Add the parameter(s) in all caps in the line below #CFG (one line per parameter).
5. Add a line break after each parameter.
6. Delete everything that follows the entered parameter(s), including blanks and blank lines.
7. Save the Config.txt file.
8. Manually power off the XTender unit.
9. Power on the XTender unit to restart it.

When the XTender unit powers up, the parameters will be applied to the unit.

Transmitter Settings

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

Setting	Function	Applicable To
EDID Management		
LOCKEDID	Activate EDID write protection	All Orion XTender Transmitters
WREDID2	Writes EDID 2 (only needed for manual update through the Service Port)	Only Dual-Head DP Transmitters
Compression		
MEDCPRATE	Activate medium compression rate	All Orion XTender Transmitters
MINCPRATE	Activate low compression rate	
MAXCPRATE	Activate high compression rate	
ENADITHER	Activate dithering filter for Mac OS systems	
Shared Operation		
KBDCON	Activates keyboard connect	Only Orion XTender Transmitters with Redundant Links
MOUCON	Activates mouse connect	
RELEASETIME=n	Release timer n = 0...9 seconds for Mouse and Keyboard Connect; If setting not present = 2 RELEASETIME=X deactivates the shared operation	

Table 76. Transmitter Configuration File Settings

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

RELEASETIME parameter in the configuration file is used 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. 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 the parameter 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.

Receiver Settings

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

Setting	Function	Applicable To
Output Settings		
DISEXTOSD	Deactivate extender OSD	All Orion XTender Receivers
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	
1080P50HZ	Always display at 50Hz when using 1920x1080	All HDMI Receivers
ENADVI	Output a DVI signal if DVI monitors are connected and the automatic monitor detection does not work	Only HDMI 1.3 and 1.4 Receivers
ENAHDMI	Output a HDMI signal if HDMI monitors are connected and the automatic monitor detection does not work	
PARAM=V	Simultaneous output of DVI-D and VGA signal, when connected to a DVI-I Transmitter	Only HDMI 2.0 Receivers
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).	Only Dual-Head DP and HDMI 2.0 Receivers
DISPLAY2	Show video channel 2 by default when connected to a single-head Transmitter	
ENATEMPOSD	Display chip temperature by OSD	Only DP 1.2 Receivers
Redundancy		
DISRED	When this parameter is set, disables redundancy on the Receiver	Only Orion XTender Receivers with Redundant Links
ENAREDFRM	Enables colored frame (default: blue) when using the redundant link on the Receiver	

Table 77. 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	Applicable To
ENASYNC	Sends a synchronization signal to adjust the pixel clock between the Transmitter and the Receiver	All Orion XTender Transmitters and Receivers
Local Switching		
BLANKSCR	Turn screen dark when switching between the local and the remote connection on the Receiver through a keyboard or mouse event	All HDMI Transmitters and Receivers having local control through a USB HID Option Card
PRIVATEMODE	Activate switching of video and control between the local and remote connection on the Receiver using keyboard commands	

Table 78. Configuration File Settings Required by Both Transmitter and Receiver

Option Cards

Option Cards have configuration settings as well, which are written in the configuration files of the Transmitter, Receiver or in both. These are described below.

Digital Audio Option Card Configuration Settings

Setting	Function	Written To
SRC32000	Use sample rate of 32 kHz	Transmitter Configuration File
SRC44100	Use sample rate of 44.1 kHz	
SRC48000	Use sample rate of 48 kHz	
SRC88200	Use sample rate of 88.2 kHz	
SRC96000	Use sample rate of 96 kHz	
SRC176400	Use sample rate of 176.4 kHz	
SRC192000	Use sample rate of 192 kHz	
SRC_NONE	Turns off sample rate conversion	
SRCXXXXX;X	Apply a delay of X milliseconds in sampling, *e.g.* SRC32000;8 This means a sample rate of 32 kHz, with a delay of 8 milliseconds. If this information exceeds the FIFO size, the highest possible value is set	

Table 79. Digital Audio Configuration File Setting

Balanced Audio Option Card Configuration Settings

Setting	Function	Written To
SRC32000	Use sample rate of 32 kHz	Transmitter Configuration File
SRC44100	Use sample rate of 44.1 kHz	
SRC96000	Use sample rate of 96 kHz	

Table 80. Balanced Audio Configuration File Setting

Option Cards with Analog Audio (see pages 38 to 40) Configuration Settings

Setting	Function	Written To
ENAAUDIO	Enable RS-232 or RS-422 and analog audio during Video-only connections	Receiver Configuration File

Table 81. Option Cards with Analog Audio Configuration File Settings

Fan Option Card Configuration Settings

The Fan Option Card has its own configuration file, accessed through its Service Port in the same manner as the video cards. See Orion XTender Configuration Through the Service Port on page 113. In this case, the mini-USB cable is connected to the Service Port of the Fan Option Card.

Setting	Function	Written To
LOWSPEED	Reduce the fan speed until the temperature reaches 104°F (40°C). The fan LED lights up green. If the temperature exceeds 104°F (40°C), the fan runs at full speed and the fan LED lights up light blue.	Fan Option Card Configuration File

Table 82. Fan Option Card Configuration File Settings

GPIO Option Card Configuration Settings

The GPIO Option Card has no settings that are written to configuration files.

SNMP Option Card Configuration Settings

All SNMP Option Card settings are modified through the Java Tool. Please refer to the Orion X and Orion FX manuals for descriptions on how to use the Java Tool to set up and operate SNMP on the Orion SNMP XTenders.

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 114 for more details.

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 section details the steps the user can take to resolve the problem. Should the difficulties persist, contact Rose Electronics Technical 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 83. Troubleshooting General Failures

Blank Screen

The steps to troubleshoot this failure utilize the Status LEDs on the Video cards. As each type of video card has its own set of Status LEDs, the indications vary from card type to card type. The section below describes the indications on each type of video card.

DVI Cards

The troubleshooting tips below apply to all the types of DVI cards, including DVI-D, DVI-I Transmitter-Receiver Pairs and DVI-I with Scaling Standalone Transmitter cards.

DVI-D Cards

The tables below reference the Status LEDs for DVI-D cards as shown in Figure 103 on page 90 and Figure 104 on page 91.

Point-to-Point Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
Link Status LED 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 lights up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 lights up Violet	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 Flashing Green/Yellow	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Receiver: LED 5 Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 lights up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 84. Troubleshooting Blank Screen, DVI-D Cards Connected Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
Link Status LEDs 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 lights up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 lights up Violet	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 Flashing Green/Yellow	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
Receiver: LED 5 Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 lights up Green/Light Blue	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 lights up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 85. Troubleshooting Blank Screen, DVI-D Cards, Matrix Connection

DVI-I Transmitter-Receiver Pair Video Cards

The tables below reference the Status LEDs for DVI-I Video Cards Transmitter-Receiver Pair cards as shown in Figure 103 on page 90 and Figure 105 on page 93.

Point-to-Point Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
Link Status LEDs 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LEDs 5 and 6 light up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LEDs 5 and 6 light up Violet	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 flashing green/yellow and LED 6 lights up yellow	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Receiver: LED 5 Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 lights up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 86. Troubleshooting Blank Screen, DVI-I Transmitter-Receiver Pair, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
Link Status LEDs 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 and 6 light up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Violet	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 flashing Green/Yellow and LED 6 lights up Yellow	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Transmitter not switched to Receiver	Switch the Transmitter to a Receiver
Receiver: LED 5 Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 lights up Green/Light Blue	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 lights up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 87. Troubleshooting Blank Screen, DVI-I Transmitter-Receiver Pair, Matrix Connection

DVI-I with Scaling Standalone Transmitter Card

The tables below reference the Status LEDs for DVI-I Standalone Transmitter Cards as shown in Figure 103 on page 90 and Figure 106 on page 95.

Point-to-Point Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 5 Flashing Green / Yellow	No link between Transmitter and Receiver or no video	▪ Check interconnect cables ▪ Check connection of video cable to source ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary
LED 5 Green	No USB connection with computer	▪ Check USB cable connection

Table 88. Troubleshooting Blank Screen, DVI-I Standalone Card, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 5 flashing Green / Yellow	No link between Transmitter and Receiver / Receiver not switched to Transmitter	▪ Check interconnect cable to Matrix ▪ Check connection of video cable to source ▪ Reboot source if necessary ▪ Switch the Receiver to a Transmitter
LED 3 Green	No USB connection with computer	▪ Check USB cable connection

Table 89. Troubleshooting Blank Screen, DVI-I Standalone Card, Matrix Connection

HDMI Cards

The troubleshooting tips below apply to all the types of HDMI cards – HDMI 1.3, HDMI 1.4 and HDMI 2.0 with HDCP video cards.

HDMI 1.3, HDMI 1.4 Cards

The table below references the Status LEDs for HDMI 1.3 and HDMI 1.4 cards as shown in Figure 103 on page 90 and Figure 107 on page 96.

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
Link Status LEDs 1/3 on flashing or LED 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 3 Red	No video signal or USB detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the USB connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 3 Red	No video signal detected from Transmitter	▪ Check connection, length and quality of interconnect cables between the units. ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 90. Troubleshooting Blank Screen with HDMI 1.3 and HDMI 1.4 Cards

HDMI 2.0 with HDCP Cards

The table below references the Status LEDs for HDMI 2.0 with HDCP cards as shown in Figure 103 on page 90 and Figure 108 on page 97.

Symptom	Diagnosis	Solution
LED 5,6 off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 1/3 on or LED 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the link connectors
Transmitter: LED 5,6 Red	No video signal or USB detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the USB connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5,6 red	No monitor detected	▪ Check connection, length and quality of cable to monitor ▪ Tighten cable thumbscrews
	No video signal detected from Transmitter	▪ Check connection, length and quality of interconnect cables between the units. ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 91. Troubleshooting Blank Screen with HDMI 2.0 with HDCP Cards

DP Cards

The troubleshooting tips below apply to all the types of DP cards – DP 1.1 Single-Head, DP 1.1 Dual-Head and DP 2.0 cards.

All the tables below reference the Status LEDs for DP cards as shown in Figure 103 on page 90 and Figure 109 on page 97.

DP 1.1 Single-Head Video Cards

The Status Indicators are different when the video cards are connected point-to-point and when they are connected through a matrix. Both scenarios are covered below.

Point-to-Point Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 and 6 light up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5and 6 light up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5lights up Green and LED 6 lights up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 and 6 light up Green	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Receiver: LED 5 and 6 Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 and 6 light up Violet	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 92. Troubleshooting Blank Screen, DP 1.1 Single-Head Cards, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 1 through 4 Flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 lights up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 lights up Green and LED 6 lights up RED OR LED 5 and 6 light up Green	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
Receiver: LED 5 and 6Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 Flashing Green/Light Blue and LED 6 Flashing Red/Violet	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 and 6 light up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 93. Troubleshooting Blank Screen, DP 1.1 Single-Head Cards, Matrix Connection

The Status Indicators are different when the video cards are connected point-to-point and when they are connected through a matrix. Both scenarios are covered below.

Point-to-Point Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 and 6 light up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Violet	No video signal detected from source	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Red and Green each	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 and 6 light up Green	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Receiver: LED 5 and 6 light up Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5and 6 light up Violet	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 94. Troubleshooting Blank Screen, DP 1.1 Dual-Head Cards, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 1 through 4 Flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 lights up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Red and Green each OR LED 5 and 6 light up Green	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
Receiver: LED 5 and 6 Flashing Red/Violet	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 Flashing Green/Light Blue and LED 6 Flashing Red/Violet	Receiver not switched to Transmitter	Switch the Receiver to a Transmitter
	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5 and 6 light up Violet	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 95. Troubleshooting Blank Screen, DP 1.1 Dual-Head Cards, Matrix Connection

DP 1.2 Cards

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
LED 1/3 or 2/4 flashing	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter: LED 5 and 6 light up Red	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
	No video signal detected from source (computer, CPU)	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Transmitter: LED 5 and 6 light up Red and Green once each	No link between Transmitter and Receiver	▪ Check interconnect cables ▪ Check the connectors
Transmitter and Receiver: LED 5 and 6 light up Violet	No video signal detected	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.
Receiver: LED 5and 6 light up Violet	No video signal detected from Transmitter	▪ Check connection of video cable to source ▪ Check the connectors ▪ Download DDC information from console monitors as described on page 112. ▪ Reboot source if necessary.

Table 96. Troubleshooting Blank Screen with DP 1.2 Cards

Video Card USB HID Error Conditions

The steps to troubleshoot this failure utilize the Status LEDs on the Video cards. As each type of video card has its own set of Status LEDs, the indications vary from card type to card type. This section describes the indications on each type of video card.

DVI Cards

The troubleshooting tips below apply to all the types of DVI cards – DVI-D, DVI-I Transmitter-Receiver Pairs and DVI-I with Scaling Standalone Transmitter cards.

DVI-D Cards

The tables below reference the Status LEDs for DVI-D cards as shown in Figure 104 on page 91.

Point-to-Point Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LED 5 lights up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LED 5 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 97. Troubleshooting DVI-D Video Card, USB HID Error, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LED 5 lights up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Device switched in Video-Only mode	Change access mode from Video-Ony to Full Access
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LED 5 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Device switched in Video-Only mode	Change access mode from Video-Ony to Full Access
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 98. Troubleshooting DVI-D Video Card, USB HID Error, Matrix Connection

DVI-I Transmitter-Receiver Pair Video Cards

The tables below reference the Status LEDs for DVI-I Video Cards Transmitter-Receiver Pair cards as shown in Figure 105 on page 93.

Point-to-Point Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LED 5 lights up Green and LED 6 lights up Yellow	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LED 5 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 99. Troubleshooting DVI-I Transmitter-Receiver Pair, USB HID Error, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LED 5 lights up Green and LED 6 lights up Yellow	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Device switched in Video-Only mode	Change access mode from Video-Ony to Full Access
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LED 5 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Device switched in Video-Only mode	Change access mode from Video-Ony to Full Access
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 100. Troubleshooting DVI-I Transmitter-Receiver Pair, USB HID Error, Matrix Connection

DVI-I with Scaling Standalone Transmitter Cards

The tables below reference the Status LEDs for DVI-I Standalone Transmitter Cards as shown in Figure 106 on page 95.

Point-to-Point Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
LED 5 lights up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 101. Troubleshooting DVI-I Standalone Transmitter, USB HID Error, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are flashing	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
Transmitter: LED 5 lights up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Device switched in Video-Only mode	Change access mode from Video-Ony to Full Access
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 102. Troubleshooting DVI-I Standalone Transmitter, USB HID Error, Matrix Connection

HDMI Cards

The troubleshooting tips below apply to all the types of HDMI cards – HDMI 1.3, HDMI 1.4 and HDMI 2.0 with HDCP video cards.

HDMI 1.3, HDMI 1.4 Cards

The tables below reference the Status LEDs for HDMI 1.3 and HDMI 1.4 cards as shown in Figure 107 on page 96.

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are flashing	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
Transmitter: LED 5 lights up Green or Violet	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
Receiver: LED 5 lights up Green or Violet	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the video and power cables, first connect the power cable, then connect the video cable, and restart the Receiver
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary

Table 103. Troubleshooting HDMI 1.3, 1.4 Video Card, USB HID Error

HDMI 2.0 with HDCP Cards

The table below references the Status LEDs for HDMI 2.0 with HDCP cards as shown in Figure 108 on page 97.

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are flashing	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
Transmitter: LEDs 5 and 6 light up Green or Violet	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
Receiver: LED 5 and 6 light up Green or Violet	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the video and power cables, first connect the power cable, then connect the video cable, and restart the Receiver
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary

Table 104. Troubleshooting HDMI 2.0 with HDCP Video Card, USB HID Error

DP Cards

The troubleshooting tips below apply to all the types of DP cards – DP 1.1 Single-Head, DP 1.1 Dual-Head and DP 2.0 cards.

All the tables below reference the Status LEDs for DP cards as shown in Figure 109 on page 97.

DP 1.1 Single-Head Video Cards

The Status Indicators are different when the single-head video cards are connected point-to-point and when they are connected through a matrix. Both scenarios are covered below.

Point-to-Point Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LED 5 lights up Green and LED 6 lights up Red	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Transmitter: LEDs 5 and 6 light up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LED 5 flashing Green/Light Blue and LED 6 flashing Red/Violet	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5 and 6 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 105. Troubleshooting DP 1.1 Single-Head Video Card, USB HID Error, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LEDs 5 and 6 flashing Red and Green once each	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Transmitter: LEDs 5 and 6 light up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5 and 6 flashing Green/Light Blue Red/Violet once each	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5 and 6 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 106. Troubleshooting DP 1.1 Single-Head Video Card, USB HID Error, Matrix Connection

DP 1.1 Dual-Head Video Cards

The Status Indicators are different when dual-head video cards are connected point-to-point and when they are connected through a matrix. Both scenarios are covered below.

Point-to-Point Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LEDs 5 and 6 flash Red and Green once each	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Transmitter: LEDs 5 and 6 light up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5and 6 flashing Green/Light Blue and Red/Violet once each	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5 and 6 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 107. Troubleshooting DP 1.1 Dual-Head Video Card, USB HID Error, Point-to-Point

Matrix Connection

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Transmitter: LEDs 5 and 6 flashing Red and Green once each	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Transmitter: LEDs 5 and 6 light up Green	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5 and 6 flashing Green/Light Blue Red/Violet once each	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LEDs 5 and 6 flashing Green/Light Blue	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Change access mode from Video-Ony to Full Access	Device switched in Video-Only mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 108. Troubleshooting DP 1.1 Dual-Head Video Card, USB HID Error, Matrix Connection

DP 1.2 Cards

Symptom	Diagnosis	Solution
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Receiver: LED 5 flashing Green/Light Blue and LED 6 flashing Red/Violet (Resolution > 1920x1200)	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control
Receiver: LED 5 flashing Green/Light Blue and LED 6 lights up Light Blue (Resolution ≤ 1920x1200)	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
	Shared operation of a redundant Transmitter	Move the mouse or press a key to get back USB HID control

Table 109. Troubleshooting DP 1.2 Video Card, USB HID Error

Option Card Error Conditions

Troubleshooting failures on the various types of Option Cards on the Orion XTender system are covered below.

Serial Connection

Symptom	Diagnosis	Solution
Serial device not operational	Settings of the serial interface are wrong	Check baud rate and general settings
	No serial connection to the source available	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 110. Troubleshooting Serial Connection Error

Analog Audio

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

Table 111. Troubleshooting Analog Audio Error

Digital Audio Option Card

The table below references the Status LEDs for Digital Audio cards as shown in Figure 114 on page 107.

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 between the Transmitter and the audio source
	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 between the Transmitter and the audio source
	No signal	▪ Check signal at Transmitter
No signal: Transmitter: LED 1 lights up Green Receiver: LED 1 is flashing	Digital Silence at active audio source	▪ Check audio format as shown in Table 66 on page 107. ▪ Check the mute setting ▪ Change audio input

Table 112. Troubleshooting Digital Audio Error

USB 2.0 Only Option Card

The table below references the Status LEDs for USB 2.0 Only cards as shown in Figure 112 on page 105.

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
	When connecting to a matrix, no USB HID available	Exit the OSD
USB 2.0 device does not function	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
USB 2.0 device does not function: Transmitter and Receiver: LEDs 1 and 2 are off	No connection between Transmitter and Receiver	▪ Check the interconnect cable ▪ Check the connectors

Table 113. Troubleshooting USB HID Only Card Error

USB HID Only Option Card

The table below references the Status LEDs for USB HID Only cards as shown in Figure 113 on page 106.

Symptom	Diagnosis	Solution
All LEDs are off	No power to the unit	▪ Check power supply units ▪ Check connection to the AC power
Caps Lock and *Scroll Lock* keyboard LEDS are blinking	Keyboard is in Command Mode	Press the *Esc* key to exit Command Mode
USB device does not function: Transmitter and Receiver: LED 1/2 off	No USB HID device detected	▪ Check the connection of the USB HID cable to the USB HID device ▪ Connect a USB HID device ▪ Contact Rose Electronics if necessary
	Unsupported USB device	▪ Check the USB device's compatibility to the Orion XTender ▪ New connection of the USB HID device ▪ Contact Rose Electronics if necessary
	No USB HID connection to the source available	▪ Check the connection of the USB cable to the source, select another USB HID port if necessary. ▪ Remove the USB and power cables, first connect the power cable, then connect the USB cable, and restart the Transmitter
	Problems with the USB HID connection at the Receiver	▪ Check the connection of the USB HID cable to the USB HID device. ▪ Remove the USB HID and power cables, connect the power cable, then connect the USB cable, and restart the Receiver
Receiver: LED 3 flashing slowly	No connection between Transmitter and Receiver	▪ Check the interconnect cable ▪ Check the connectors

Table 114. Troubleshooting USB HID Only Card, USB Errors

Fan Option Card

The table below references the Status LEDs for Fan Option Cards as shown in Figure 117 on page 109.

Symptom	Diagnosis	Solution
LED 1 lights up Red	Fan is inoperable	▪ Check the firmware version ▪ The fan is defective ▪ Contact Rose Electronics if necessary

Table 115. Troubleshooting Fan Option Card Error

SNMP Option Card

The table below references the Status LEDs for SNMP Option Cards as shown in Figure 116 on page 108.

Symptom	Diagnosis	Solution
LED 1 or LED 2 off	No SNMP host	▪ Connect the SNMP host ▪ Check the network cable and connectors
No network connection	No connection between SNMP card and SNMP host	Check network cable and connectors
	Incorrect firewall settings	Release ports for the firewall as shown in Table 14 on page 76

Table 116. Troubleshooting SNMP Option Card Errors

Loss of Access to SNMP Functions

A scenario can arise where the administrator password or IP address had been forgotten, leading to loss of access to the SNMP functions. In this case, the SNMP Option Card can be reset to factory defaults through a jumper setting.

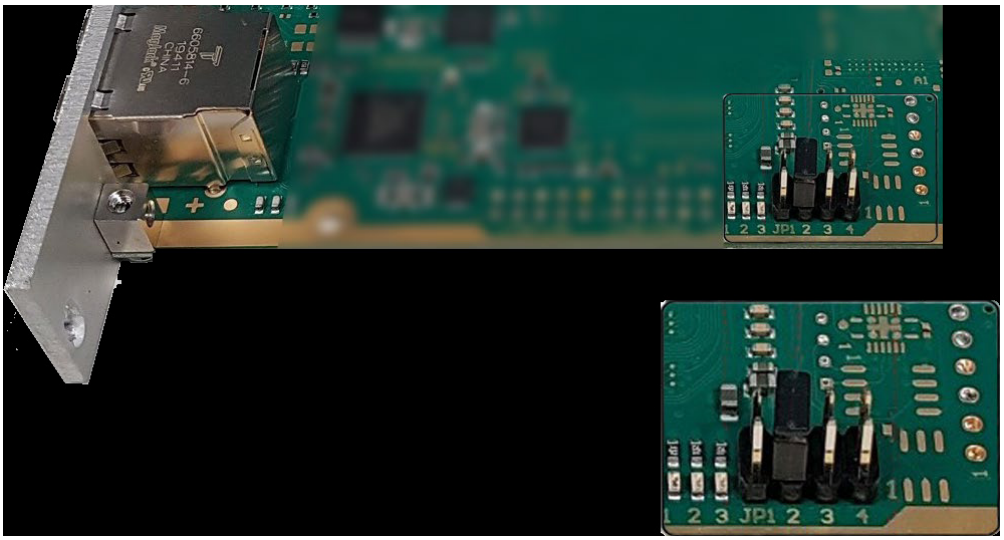


Figure 120. Using Jumper 2 on the SNMP Option Card to Reset to Factory Defaults

1. Disconnect power from the SNMP Option Card.
2. Set Jumper 2.
3. Apply power to the SNMP Option Card.
4. Wait for 2 minutes.
5. Disconnect power from the SNMP Option Card.
6. Remove the Jumper from pin 2.
7. Apply power to the SNMP Option Card.

The SNMP Option Card will have been reset to factory defaults, including the administrator password and the network configuration.

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

The products do 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 products 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 the products 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.

Video Interfaces

This section details the specifications of the video interfaces.

DVI

DVI-D and DVI-I video specifications are described here. The DVI-I video interface applies to both the Transmitter-Receiver pair and the Standalone Transmitter card options.

DVI-D Single Link

The video interface supports the DVI-D protocol. All analog or digital signals that comply with the DVI-I Single Link specifications can be transmitted. This includes monitor resolutions such as 1920x1200@60Hz, Full HD (1080p60) or 2K HD (up to 2048x1152 @ 60 Hz). 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.

HDMI

The HDMI protocol supports transmission of audio along with video. Both video and audio specifications supported by the HDMI protocol are given below.

HDMI 1.3 Video

The video interface supports the HDMI 1.3 single-link protocol. 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.

HDMI 2.0 Video

The video interface supports the HDMI 2.0 standard. All signals that comply with this standard can be transmitted. This includes monitor resolutions up to 4096x2160@60Hz (4K DCI) or 3840x2160@60Hz (UHD). Data rate is limited to 21,6 Gbit/s. The bit depth is 30 bit (4:4:4).

Audio

Various audio formats can be transmitted through the HDMI 1.3 and 2.0 interfaces.

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 117. HDMI Audio Specifications

DP

The DP protocol supports transmission of audio along with video. The Orion XTender DP 1.1 and 1.2 cards both have a full-size DP port as well as a Mini DP port. The video and audio specifications vary based on the type of card and the type of port.

DP 1.1 Video

The video interface supports the DP 1.1 standard. The transmission rates for single-head and dual-head connections vary based on whether the connected monitor has normal or reduced blanking.

Dual-head operation is only possible with the RBR transmission rate. If the primary channel (DP) is controlled in dual-head mode using the HBR transmission rate, no picture will be displayed on the secondary channel (Mini DP).

The transmission rates DP 1.1 and Mini DP 1.1 on the Orion XTenders are given below.

DP 1.1

Operating Mode	Resolution with Frame Rate	Effective Data Rate	Color Depth	Transmission Rate
Single-Head operation (Primary Channel)	1920 x 1080 @ 120 Hz (reduced blanking)	5.97 Gbit/s	8-bit (4:4:4)	HBR
	1920 x 1200 @ 60 Hz (normal blanking)	3.32 Gbit/s		
	1920 x 1200 @ 120 Hz (reduced blanking)	6.64 Gbit/s		
	2560 x 1440 @ 60 Hz (normal blanking)	5.31 Gbit/s		
	3840 x 2160 @ 30 Hz - UHD (reduced blanking)	5.97 Gbit/s		
	4096 x 2160 @ 30 Hz - 4K DCI (reduced blanking)	6.37 Gbit/s		
Single-Head or Dual-Head Operation (Primary Channel)	1920 x 1080 @ 60 Hz (reduced blanking)	2.96 Gbit/s	8-bit (4:4:4)	RBR
	1920 x 1200 @ 60 Hz (reduced blanking)	3.32 Gbit/s		

Table 118. DP 1.1 Video Specifications

Mini DP 1.1

Operating Mode	Resolution with Frame Rate	Effective Data Rate	Color Depth	Transmission Rate
Single-Head operation (Secondary Channel)	1920 x 1080 @ 60 Hz (reduced blanking)	2.96 Gbit/s	8-bit (4:4:4)	HBR
	1920 x 1200 @ 60 Hz (reduced blanking)	3.32 Gbit/s		
Dual-Head Operation (Secondary Channel)	1920 x 1080 @ 60 Hz (reduced blanking)	2.96 Gbit/s	8-bit (4:4:4)	RBR
	1920 x 1200 @ 60 Hz (reduced blanking)	3.32 Gbit/s		

Table 119. Mini DP 1.1 Video Specifications

DP 1.1 Audio

Various audio formats can be transmitted through the DP 1.1 interface. The Mini DP 1.1 interface does not support audio transmission.

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 120. DP 1.1 Audio Specifications

DP 1.2 Video

The video interface supports the DP 1.2 standard. All signals that comply with this standard can be transmitted. This includes monitor resolutions up to 4096 x 2160 @ 60Hz. Data rate is limited to the effective bandwidth of 17.28 Gbit/s in High Bit Rate 2 (HBR2) mode. The bit depth is 30 bit (4:4:4). This applies to both DP 1.2 and Mini DP 1.2.

DP 1.2 Audio

Various audio formats can be transmitted through the DP 1.2 interface. This applies to both DP 1.2 and Mini DP 1.2.

Standards	Stereo Linear Pulse Code Modulation (LPCM)
Bit Depth	16 to 24 bit
Sample Rate	32 to 192 kHz

Table 121. DP 1.2 Audio Specifications

USB Interfaces

The various USB interfaces present on the Orion XTenders are described here.

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. In certain cases, such devices can be operated with special firmware

Notes:

1. A situation may arise where the USB HID signals may need to be extended either at the Transmitter or the Receiver, for example, due to mounting requirements. In such a scenario, it is recommended that either the 10ft (3m) USB A-A (CAB-USBAA010) or the 10 ft (3m) USB A-B (CAB-USBAB10) be used. The compatibility to other extension cables cannot be guaranteed.
2. 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 can be used, but it does not increase the number of HID devices supported.
3. To support other USB 'non-HID' devices, such as scanners, web cams or memory devices, choose boards with USB 2.0 (transparent) support.

Mini USB

The Mini-USB interface enables a customer specified communication with the extender modules. The firmware could also be updated using this interface.

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 (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.

Interconnect Interfaces

This section deals with the specifications of the CATx RJ45 and the Fiber interconnect interfaces.

RJ45

Cat X devices offer a 1000BASE-T interface to establish an interconnection between Cat X devices. All four wire pairs are used in both directions. The cabling is suitable for a full duplex operation. For the cable connection to a source (computer, CPU), a crossed network cable (cross cable) has to be used.

SNMP Only: For the cable connection to a source (computer, CPU), a crossed network cable (cross cable) has to be used.

Fiber SFP Type LC

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.

Option Card Interfaces

The specifications for the various interfaces on the Option Cards are described in this section.

Audio Interfaces

This section details the various audio interfaces found on the Orion XTender cards.

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 both directions 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 *MICJP* pins on the audio board and close the pins with a jumper.

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
Output Impedance	270 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 122. 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 (0.43 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 123. 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.

Orion XTender cards with the digital audio option include a built-in sample rate converter which provides predefined sample frequencies at the Receiver's output.

The following digital audio settings can be modified by the user by setting the respective parameters in the Configuration File as described on page 114.

- Activate or deactivate sample rate converter in the Config.txt file on the flash drive of the XTender. If the sample rate converter is activated, the following characteristics are valid:
  - 140 dB dynamic range
  - -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.

Digital Audio Specification

Compatibility	AES/EBU, S/PDIF, EIAJ CP1201, IEC 60958
Standards	Stereo Linear Pulse Code Modulation (LPCM), DTS, DTS-HD (5.1), Dolby Digital, Dolby Digital Plus (5.1)
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 124. Digital Audio Specifications

Balanced Audio

Orion XTender cards equipped with a balanced audio interface support unidirectional 2-channel mono or 1-channel stereo transmission at studio quality.

The audio interface is at the same time a 'Line-Level' and 'Mic-Level' interface. It is designed to transmit the signals of a microphone or mixing desk with a high tolerance for interferences, even at larger distances. In addition, active speakers can be connected at the Receiver.

Each audio input port contains a 6-pole Phoenix terminal block and can be used symmetrically or asymmetrically.

Microphone connection and/or Speaker connection

To connect a microphone to the console, a Transmitter card with audio input must be installed in the Receiver Unit. additionally, if a loudspeaker is to be connected to the console, a Receiver card with audio output is required.

Phantom Power of a Microphone

Phantom power is used for condenser microphones in order to operate the internal electronic components. The provided voltage is 48V DC.

Phantom power can only be activated on the audio input side (Transmitter card). The microphone has to be connected to the audio input of the Transmitter card.

To activate phantom power, the switch on the Transmitter has to be pressed and clicked into the pressed position.

Damage to audio output devices from phantom power

If audio output devices (e.g., loudspeakers) are operated with phantom power, unexpected damage can occur to the devices. Use phantom power only for microphones.

Pre-amplification of a Microphone

The balanced audio interface offers the option for pre-amplification of a microphone at the audio input of the Transmitter card. The pre-amplification can be activated for each audio channel separately.

To activate the pre-amplification, the dip switch of the respective audio channel (1 for the left and 2 for the right channel) has to be set to the ON position on the Transmitter card.

The default pre-amplification setting is 10 dB. The pre-amplification setting can be set in the configuration file of the XTender unit with the balanced audio card. To do so, the GAIN parameter must be entered into a new line. The setting can be configured in single steps between 10 and 65 dB. For example:

- 36 dB (enter GAIN=36 in Config.txt file)
- 48 dB (enter GAIN=48 in Config.txt file)

Serial Interfaces

The Orion XTender supports RS-232 and RS 422 serial interfaces. They are described below.

RS-232 Serial

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), a null modem cable (crossed cable) must be connected 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	OEC-L1AS, OEC-R1AS, OEC-L1AS+1F, OEC-R1AS+1F: Up to 19,200 baud OEC-L1AS/115, OEC-R1AS/115, OEC-L1AS+1F/115, OEC-R1AS+1F/115: Up to 115,200 baud *(See* Option Cards with RS-232 *on page 38)*
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 125. Serial Interface Specifications

RS-422 Serial Interface

Orion XTenders with a RS-422 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 126. RS-422 Serial Interface Specifications

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

GPIO

The GPIO interface can be set up both as an input and as an output as described on page 75.

With the GPIO Option Card set as input interface, an external switching solution (dry contact) with up to eight push buttons can be connected. When a push button is pressed, the corresponding function will be performed.

Alternatively, when the GPIO Option Card is set as output interface, up to eight LEDs can be connected to indicate the active console (mouse position) through an LED.

The electrical specification for each channel (each LED) is 5 V and provides a maximum of 137 mA (1.1 A in total for the whole GPIO add-on module). All 8 LEDs share the +5 V pin. The -5 V connectors of the LEDs are connected to the corresponding ground pin of the GPIO Option Card.

Link Bandwidth and Distance

Port Type	Bandwidth
CATx 1G / Fiber 1G	1.25 Gbit/s CATx 3G / Fiber 3G (1000BASE-T)
CATx 3G / Fiber 3G	3.125 Gbit/s (2.5GBASE-T)
Port Type	**Distance**
CATx 1G [1,2]	460 ft (140 m)
CATx 3G [1,2]	328 ft (100 m)
Fiber 1G SM module [3]	SM OS1/OS2: 32,808 ft (10 km) MM OM3: 984 ft (300 m) Estimated
Fiber 1G MM module [4]	MM OM1: 721 ft (220 m) MM OM3: 1804 ft (550 m)
Fiber 3G SM module	SM OS1/OS2: 16,404 ft (5 km)

Notes:

(1) CAT5e cabling is rated for 1000BASE-T and can also handle 2.5GBASE-T over shorter runs. Consider using CAT6 cable for longer runs..

(2) When using AWG26/28 CATx stranded wire patch cables, the maximum extension distance is decreased by an estimated 50%.

(3) Fiber 1G single-mode SFP module supplied is type LX 310nm, which supports both single-mode and multi-mode OM3 or higher. Increased multi-mode distance can be achieved with a mode conditioning cable. Test with multi-mode before installation.

(4) Fiber 1G multi-mode SFP module supplied is type SX 850nm, which supports legacy OM1 cable and longer distance with OM3 than single-mode SFP module. No mode conditioning cable is required.

(5) There are further unspecified options for the fiber SFP modules such as long haul, bidirectional, or CWDM. Please contact the Rose sales department for more information.

Table 127. Link Bandwidth and Distance

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.

Note:
The concurrent operation of more than two USB HID devices is not possible even if a USB hub is used.

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 rds, these pinouts apply to the cards with the specified connectors on them.

Video Connectors

The pinouts for the various types of the video connectors on Orion XTender cards are shown below.

DVI Connectors

DVI-D Connector

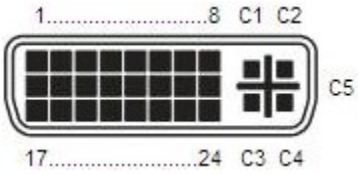


Figure 121. DVI-D Connector Pinouts

DVI-D 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	Shield T.M.D.S data 2/4	11	Shield T.M.D.S data 1/3	19	Shield T.M.D.S data 0/5
4	T.M.D.S data 4 –	12	T.M.D.S data 3 –	20	T.M.D.S data 5 –
5	T.M.D.S data 4 +	13	T.M.D.S data 3 +	21	T.M.D.S data 5 +.
6	DDC Clock	14	+5 V DC	22	Shield T.M.D.S clock
7	DDC Data	15	GND	23	T.M.D.S clock +
8	Not connected	16	Hot Plug recognition	24	T.M.D.S clock –
C1	Not connected	C3	Not connected	C5	Not connected
C2	Not connected	C4	Not connected		

Table 128. DVI-D Connector Pinouts

DVI-I Connector

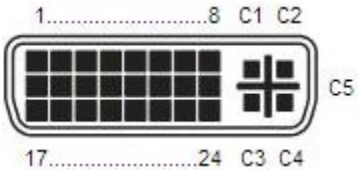


Figure 122. DVI-I Connector Pinouts

DVI-I 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	Shield T.M.D.S data 2/4	11	Shield T.M.D.S data 1/3	19	Shield T.M.D.S data 0/5
4	T.M.D.S data 4 –	12	T.M.D.S data 3 –	20	T.M.D.S data 5 –
5	T.M.D.S data 4 +	13	T.M.D.S data 3 +	21	T.M.D.S data 5 +.
6	DDC Clock	14	+5 V DC	22	Shield T.M.D.S clock
7	DDC Data	15	GND	23	T.M.D.S clock +
8	Analog vertical sync (VSync)	16	Hot Plug recognition	24	T.M.D.S clock –
C1	Analog Red	C3	Analog Blue	C5	Analog GND (analog Red. Green, Blue return)
C2	Analog Green	C4	Analog horizontal sync (HSync)		

Table 129. DVI-I Connector Pinouts

HDMI Connectors

HDMI 1.3 Connector

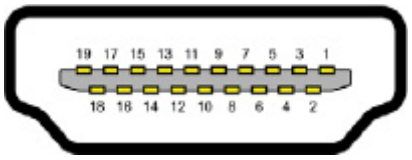


Figure 123. HDMI 1.3 Connector Pinouts

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	T.M.D.S data 1 –	13	CEC		
7	T.M.D.S data 0 +	14	HEC data –		

Table 130. HDMI 1.3 Connector Pinouts

HDMI 2.0 Connector

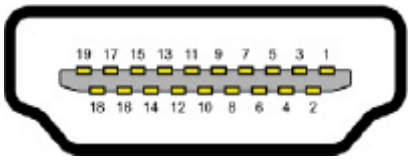


Figure 124. HDMI 2.0 Connector Pinouts

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 131. HDMI 2.0 Connector Pinouts

DP Connectors

DP 1.1 and 1.2 – Upstream

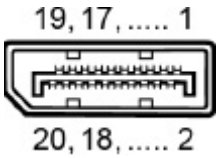


Figure 125. DP 1.1 and 1.2 Connector Upstream Pinouts

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	ML_Lane 0 (p)	6	ML_Lane 1 (n)	11	GND	16	GND
2	GND	7	ML_Lane 2 (p)	12	ML_Lane 3 (n)	17	AUX_CH (n)
3	ML_Lane 0 (n)	8	GND	13	CONFIG 1	18	Hot Plug Detect
4	ML_Lane 1 (p)	9	ML_Lane 2 (n)	14	CONFIG 2	19	Power Out Return
5	GND	10	ML_Lane 3 (p)	15	AUX_CH (p)	20	Power out (+3.3 V/0.5 A)

Table 132. DP 1.1 and 1.2 Connector Upstream Pinouts

DP 1.1 and 1.2 – Downstream

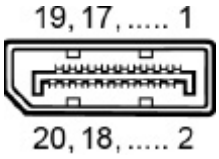


Figure 126. DP 1.1 and 1.2 Connector Downstream Pinouts

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	ML_Lane 3 (n)	6	ML_Lane 2 (p)	11	GND	16	GND
2	GND	7	ML_Lane 1 (n)	12	ML_LANE 0 (p)	17	AUX_CH (n)
3	ML_Lane 3 (p)	8	GND	13	CONFIG 1/GND	18	Hot Plug Detect
4	ML_Lane 2 (n)	9	ML_Lane 1 (p)	14	CONFIG 2/GND	19	Power Out Return
5	GND	10	ML_Lane 0 (n)	15	AUX_CH (p)	20	Not connected

Table 133. DP 1.1 and 1.2 Connector Downstream Pinouts

Mini DP 1.1 and 1.2 – Upstream

Figure 127. Mini DP 1.1 and 1.2 Connector Upstream Pinouts

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	6	CONFIG2	11	ML_Lane 1 (n)	16	AUX_CH (p)
2	Hot Plug Detect	7	GND	12	ML_Lane 3 (n)	17	ML_Lane 2 (n)
3	ML_Lane 0 (p)	8	GND	13	GND	18	AUX_CH (n)
4	CONFIG1	9	ML_Lane 1 (p)	14	GND	19	Power Out Return
5	ML_Lane 0 (n)	10	ML_Lane 3 (p)	15	ML_Lane 2 (p)	20	Not connected

Table 134. Mini DP 1.1 and 1.2 Connector Upstream Pinouts

Mini DP 1.1 and 1.2 – Downstream

Figure 128. Mini DP 1.1 and 1.2 Connector Downstream Pinouts

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	6	CONFIG2	11	ML_Lane 1 (n)	16	AUX_CH (p)
2	Hot Plug Detect	7	GND	12	ML_LANE 0 (p)	17	ML_Lane 2 (n)
3	ML_Lane 3 (n)	8	GND	13	GND	18	AUX_CH (n)
4	CONFIG1	9	ML_Lane 1 (p)	14	GND	19	Power Out Return
5	ML_Lane 3 (p)	10	ML_Lane 0 (n)	15	ML_Lane 2 (p)	20	Power out (+3.3 V/0.5 A)

Table 135. DP 1.1 and 1.2 Connector Downstream Pinouts

USB Type A Connector

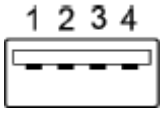


Figure 129. USB Type A Connector Pinouts

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

Table 136. USB Type A Connector Pinouts

USB Type B Connector

Figure 130. USB Type B Connectors Pinouts

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

Table 137. USB Type B Connector Pinouts

Mini USB Type B Connector

Figure 131. Mini USB Type B Connector

Pin	Signal	Color	Pin	Signal	Color
1	+5VDC	Red	4	Not Connected	–
2	Data –	White	5	GND	Black
3	Data +	Green			

Table 138. Mini USB Type B Connector Pinouts

RJ45 Network (CATx) Connector

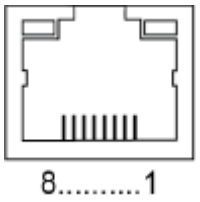


Figure 132. RJ45 Network Connector Pinouts

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 139. RJ45 Network Connector Pinouts

RJ45 SNMP Connector

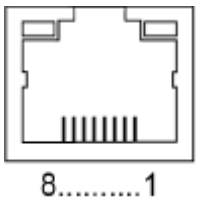


Figure 133. RJ45 SNMP Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	D1+	3	D2+	5	Not Connected	7	Not Connected
2	D1–	4	Not Connected	6	D2–	8	Not Connected

Table 140. RJ45 SNMP Connector Pinouts

Fiber SFP Type LC Network Connector

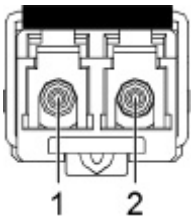


Figure 134. Fiber SFP Type LC Network Connector Pinouts

Diode	Signal	Diode	Signal
1	Data OUT	2	Data IN

Table 141. Fiber SFP Type LC Network Connector Pinouts

Serial Connectors

D-Sub 9 (Serial RS-232) DCE Connection Transmitter

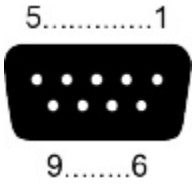


Figure 135. D-Sub 9 (Serial RS-232) DCE Connector, Transmitter Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	Not Connected	4	DSR (in)	7	CTS (in)
2	TxD (out)	5	GND	8	RTS (out)
3	RxD (in)	6	DTR (out)	9	Not connected

Table 142. D-Sub 9 (Serial RS-232) DCE Connector on Transmitter Pinouts

D-Sub 9 (Serial RS-232) DTE Connector on Receiver

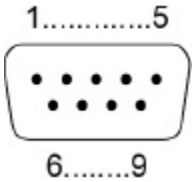


Figure 136. D-Sub 9 (Serial RS-232) DTE Connector on Receiver Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	Not Connected	4	DTR (out)	7	RTS (in)
2	RxD (in)	5	GND	8	CTS (out)
3	TxD (out)	6	DSR (out)	9	Not connected

Table 143. D-Sub 9 (Serial RS-232) DTE Connector on Receiver Pinouts

D-Sub 9 (Serial RS-422) Connector on Transmitter

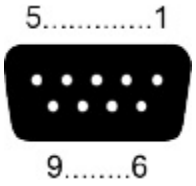


Figure 137. D-Sub 9 (Serial RS-422) on Transmitter Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	4	Tx-GND	7	Rx(B)+ (in)
2	Rx(A)– (in)	5	Not connected	8	Tx(A)– (out)
3	Tx(B)+ (out)	6	Rx-GND	9	GND

Table 144. D-Sub 9 (Serial) RS-422 Connector on Transmitter Pinouts

D-Sub 9 (Serial RS-422) Connector on Receiver

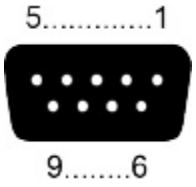


Figure 138. D-Sub 9 (Serial RS-422) on Receiver Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	4	Rx-GND	7	Tx(B)+ (out)
2	Tx(A)- (out)	5	Not connected	8	Rx(A)– (in)
3	Rx(B)+ (in)	6	Tx-GND	9	GND

Table 145. D-Sub 9 (Serial) RS-422 Connector on Receiver Pinouts

D-Sub 9 (GPIO) Connector

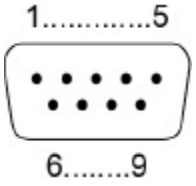


Figure 139. D-Sub 9 (GPIO) Connector Pinouts

Pin	Signal	Control	Pin	Signal	Control
1	1	OUT for LED 1, ground	6	3	OUT for LED 3, ground
2	1	IN from push button 1	7	3	IN from push button 3
3	–	+5V DC	8	4	OUT for LED 4, ground
4	2	OUT for LED 2, ground	9	4	IN from push button 4
5	2	IN from push button 2			

Table 146. D-Sub 9 (GPIO) Connector Pinouts

Analog and Digital Audio Connectors

3.5 / 6.35 mm Stereo Jack Plug

Figure 140. 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 147. 3.5 / 6.35 mm Stereo Jack Plug Pinouts

Phoenix Terminal Block, 6-pole Connector on Transmitter

Figure 141. Phoenix Terminal Block, 6-pole Connector on Transmitter Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	IN 1, +	3	IN 1, GND	5	IN 2, –
2	IN 1, –	4	IN 2, +	6	IN 2, GND

Table 148. Phoenix Terminal Block, 6-pole Connector on Transmitter

Phoenix Terminal Block, 6-pole Connector on Receiver

Figure 142. Phoenix Terminal Block, 6-pole Connector on Receiver Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	OUT 1, +	3	OUT 1, GND	5	OUT 2, –
2	OUT 1, –	4	OUT 2, +	6	OUT 2, GND

Table 149. Phoenix Terminal Block, 6-pole Connector on Receiver

RCA (Cinch) Connector

Figure 143. RCA (Cinch) Connector Pinouts

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

Table 150. RCA (Cinch) Connector Pinouts

Mini-XLR Connector

Figure 144. Mini-XLR Connector Pinouts

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

Table 151. Mini-XLR Connector Pinouts

TOSLINK Connector

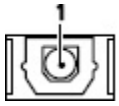


Figure 145. TOSLINK Connector Pinouts

Diode	Signal
1	Data IN / OUT

Table 152. TOSLINK Connector Pinouts

Power Supply Connectors

2.5 mm Barrel Connector

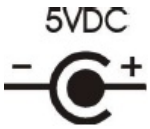


Figure 146. 2.5 mm Barrel Power Supply Connector Pinouts

Pin	Signal	Pin	Signal
Inside	+5V DC	Outside	GND

Table 153. 2.4 mm Barrel Power Supply Connector Pinouts

C14 Connector

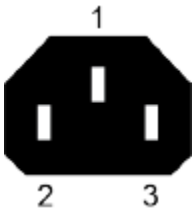


Figure 147. C14 Power Supply Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	Live	2	GND	3	Neutral

Table 154. C14 Power Supply Connector Pinouts

Kycon 4-Pole Connector

Figure 148. Kycon 4-Pole Power Supply Connector Pinouts

Pin	Signal	Pin	Signal
1	+5V DC	3	GND
2	NC	4	HP/GND

Table 155. Kycon 4-Pole Power Supply Connector Pinouts

PCB 3-Pole Connector

Figure 149. PCB 3-Pole Power Supply Connector Pinouts

Pin	Signal	Pin	Signal	Pin	Signal
1	+	2	–	3	GND

Table 156. PCB 3-Pole Power Supply Connector Pinouts

Appendix B – Part Numbers

The Orion XTender is a highly configurable product with many possible variations. The part numbering system is described below. Product part numbers consist of a chassis and power options with one or more main Transmitter or Receiver cards installed into the chassis with zero or more option cards. The variations of the main card as listed in Table 157, Table 158, and Table 162 through Table 167 consist of the following.

- A Transmitter or a Receiver card
- One interconnect link or with a redundant link
- Media type: CATx, Fiber 1G, or Fiber 3G
- Regular or high-performance video; these are not-compatible with one another
- Video type:
  - 11 variations of standard performance (not compatible with high performance models)
  - 4 variations of high performance (not compatible with standard performance models)

To generate the part number, the following six components must be specified:

1. The main card part number from Table 157, Table 158, and Table 162 through Table 167
2. The number of main cards (b)
3. The option card part number from Table 159
4. The number of option cards (c)
5. The chassis size (a) from Table 161
6. The power options (p) from Table 161

The part number is then formulated from these components as follows.

Chassis	—	Main Card	/	Option Card	/	Power Option
Part number from Table 157and Table 158 a = Chassis size from Table 161 b = Number of main cards				Part number from Table 159 c = Number of option cards		Power option (p) from Table 161

Stacking part numbers

When it is required that different styles of main cards or option cards be present, append the second type of main card or option card to the first type of card separated by a /.

Orion XTender: 21-Card Rack Chassis

The Orion XTender 21-card chassis is 4U high. When installed in a computer rack, it saves considerable rack space compared to the individual Orion 2/4/6 card chassis. It also significantly reduces the power consumption for an equivalent number of stand-alone Transmitter or Receiver chassis.

Any combination of Orion XTender main card and option cards can be installed in the chassis, subject to the restrictions mentioned in the Installation section on page 50,up to a maximum of 21 cards. Each Orion XTender Option Card needs to be installed adjacent to an Orion Main Video Card. Blanking plates are available for covering unused chassis slots. Their part numbers are shown in Table 160.

Orion XTender Units

Transmitter Units

Card Type	High-Performance##	Part Number		
		CATx	Fiber 1G	Fiber 3G
DVI-D		OTa-SLDTXUDbD	OTa-SLDFSUDbD	OTa-SLDF3UDbD
DVI-I (VGA)		OTa-SLDTXUSbV	OTa-SLDFSUSbV	—
DVI-I (VGA) scaling*		OTa-SLDTXUDbV	OTa-SLDFSUDbV	OTa-SLDF3UDbV
DP 1.1 Dual-port		OTa-SLDTXUDKb	OTa-SLDFSUDKb	OTa-SLDF3UDKb
DP 1.1 Plus	Yes	OTa-SLDTXUDUb	OTa-SLDFSUDUb	OTa-SLDF3UDUb
DP 1.2 Plus	Yes	—	—	OTa-SLDF3UDXb
DP 1.2 Plus Local video	Yes	OTa-DLDT3UDXb	—	OTa-DLDF3UDXb
DP 1.2 Plus MST	Yes	OTa-DLDT3UDMb	—	OTa-DLDF3UDMb
HDMI		OTa-SLDTXUHbH	OTa-SLDFSUHbH	—
HDMI video only**		OTa-SLDTX0HbH	OTa-SLDFS0HbH	—
HDMI local video		OTa-DLDTXUHbH	OTa-DLDFSUHbH	—
HDMI remote PC***		Not available		
HDMI 1.3 Plus	Yes	OTa-SLDTXUHUb	OTa-SLDFSUHUb	OTa-SLDF3UHUb
HDMI 2.0 Plus	Yes	OTa-DLDT3UHXbH	—	OTa-DLDF3UHXbH
USB 2.0		OTa-SLDTXU000b	OTa-SLDFSU000b	—
With Redundant Link				
DVI-D		OTa-SLD2CUDbD	OTa-SLD2SUDbD	—
DVI-I (VGA)		OTa-SLD2CUSbV	OTa-SLD2SUSbV	—
DVI-I (VGA) scaling		Not available with a redundant link port		
DP 1.1 Dual-port		OTa-SLD2CUDKb	OTa-SLD2SUDKb	OTa-SLDFRUDKb
DP 1.1 Plus	Yes	OTa-SLD2CUDUb	OTa-SLD2SUDUb	OTa-SLDFRUDUb
DP 1.2 Plus	Yes	—	—	OTa-SLDFRUDXb
DP 1.2 Plus Local video	Yes	OTa-DLDTRUDXb	—	OTa-DLDFRUDXb
DP 1.2 Plus MST	Yes	OTa-DLDTRUDMb	—	OTa-DLDFRUDMb
HDMI		OTa-SLD2CUHbH	OTa-SLD2SUHbH	—
HDMI video only**		Not available		
HDMI local video		OTa-DLD2CUHbH	OTa-DLD2SUHbH	—
HDMI remote PC***		Not available		
HDMI 1.3 Plus	Yes	OTa-SLD2CUHUbH	OTa-SLD2SUHUbH	OTa-SLDFRUHUbH
HDMI 2.0 Plus	Yes	OTa-DLDTRUHXbH	—	OTa-DLDFRUHXbH

* Full height DVI-I(VGA) card cannot support any option cards
** HDMI video only card does not support option cards
*** This function requires a top card with USB to support USB HID or USB 2.0
Enhanced video performance, typically lossless video, display without delay or frame drops in the highest resolutions

Table 157. Part Numbers for Orion XTender Transmitter Units

Receiver Units

Card Type	High-Performance##	Part Number		
		CATx	Fiber 1G	Fiber 3G
DVI-D		ORa-SRDTXUDbD	ORa-SRDFSUDbD	ORa-SRDF3UDbD
DVI-I (VGA)		ORa-SRDTXUSbV	ORa-SRDFSUSbV	—
DVI-I (VGA) scaling*		DVI-I, DbV is not available as a Receiver unit, use SbV		
DP 1.1 Dual-port		ORa-SRDTXUDKb	ORa-SRDFSUDKb	ORa-SRDF3UDKb
DP 1.1 Plus	Yes	ORa-SRDTXUDUb	ORa-SRDFSUDUb	ORa-SRDF3UDUb
DP 1.2 Plus	Yes	—	—	ORa-SRDF3UDXb
DP 1.2 Plus Local video	Yes	ORa-DRDT3UDXb	—	ORa-DRDF3UDXb
DP 1.2 Plus MST	Yes	ORa-DRDT3UDMb	—	ORa-DRDF3UDMb
HDMI		ORa-SRDTXUHbH	ORa-SRDFSUHbH	—
HDMI video only**		ORa-SRDTX0HbH	ORa-SRDFS0HbH	—
HDMI local video		Not available		
HDMI remote PC***		ORa-DRDTXUHbW	ORa-DRDFSUHbW	—
HDMI 1.3 Plus	Yes	ORa-SRDTXUHUb	ORa-SRDFSUHUb	ORa-SRDF3UHUb
HDMI 2.0 Plus	Yes	ORa-DRDT3UHXbH	—	ORa-DRDF3UHXbH
USB 2.0		ORa-QRDTXU000b	ORa-QRDFSU000b	—
With Redundant Link				
DVI-D		ORa-SRD2CUDbD	ORa-SRD2SUDbD	—
DVI-I (VGA)		ORa-SRD2CUSbV	OTa-SRD2SUSbV	—
DVI-I (VGA) scaling		Not available with a redundant link port		
DP 1.1 Dual-port		ORa-SRD2CUDKb	ORa-SRD2SUDKb	ORa-SRDFRUDKb
DP 1.1 Plus	Yes	ORa-SRD2CUDUb	ORa-SRD2SUDUb	ORa-SRDFRUDIb
DP 1.2 Plus	Yes	—	—	ORa-SRDFRUDXb
DP 1.2 Plus Local video	Yes	ORa-DRDTRUDXb	—	ORa-DRDFRUDXb
DP 1.2 Plus MST	Yes	ORa-DRDTRUDMb	—	ORa-DRDFRUDMb
HDMI		ORa-SRD2CUHbH	ORa-SRD2SUHbH	—
HDMI video only**		Not available		
HDMI local video		Not available		
HDMI remote PC***		ORa-DRD2CUHbW	ORa-DRD2SUHbW	—
HDMI 1.3 Plus	Yes	ORa-SRD2CUHUbH	ORa-SRD2SUHUb	ORa-SRDFRUHUb
HDMI 2.0 Plus	Yes	ORa-DRDTRUHXbH	—	ORa-DRDFRUHXbH

* Full height DVI-I(VGA) card cannot support any option cards
** HDMI video only card does not support option cards
*** This function requires a top card with USB to support USB HID or USB 2.0
Enhanced video performance, typically lossless video, display without delay or frame drops in the highest resolutions

Table 158. Part Numbers for Orion XTender Receiver Units

Option Cards in XTender Units

Part Number	Description
cH	USB HID
cF	Embedded USB 2.0, flex speed, four USB-A device ports on Receiver, up to 50/100 Mbps
cAS	Analog Audio + RS-232
cAS+cH	Analog Audio + RS-232 + USB HID
cAS+cF	Analog Audio + RS-232 + Embedded USB 2.0, flex speed with four USB-A device ports on Receiver
cASF/115	Analog Audio + RS-232 serial up to 115,000baud, embedded USB 2.0, 4× USB-A device ports on Receiver
cAS/115	Analog Audio + RS-232 serial up to 115,000baud
cA422	Analog Audio + RS-422
c2A422	Dual Analog Audio + Dual RS-422 (2A422)
cA4+cH422	Analog Audio + RS-422 + USB HID
cA4+cF422	Analog Audio + RS-422 + Embedded USB 2.0, flex speed with four USB-A device ports on Receiver
cDA+cF	Digital Audio, unidirectional digital audio S/P-DIF, Mini-XLR, TOS-L, 4x embedded USB 2.0, 50/100 Mbps FDX
cAB	Balanced symmetrical analog audio with phantom power, terminal block and pre-amp
cAB+cF	Balanced symmetrical analog audio with phantom power, terminal block and pre-amp, embedded USB 2.0, 4× USB-A device ports, up to 50/100Mbps
cPB	Push button for displaying OSD on Receiver unit for user with no keyboard
cGPIO	GPIO, with 8 configurable GPIO In/Out
cGPIO+cAS	GPIO, with 8 configurable GPIO In/Out + analog audio + RS-232 serial
cSNMP	Monitoring module with SNMP, Ethernet, and RS-232 for CH07 and CH21 chassis only

Table 159. Part Numbers for Option Cards in Orion XTender Units

Mounting Brackets and Accessories

Part Number	Description
RM-OEE-02/19	19” rackmount kit for chassis size 2
RM-OEE-03/19	19” rackmount kit for chassis size 3
RM-OEE-04/19	19” rackmount kit for chassis size 4
RM-OEE-06/19	19” rackmount kit for chassis size 6 and 7
RM-OEE-TRAY/19	Rackmount Tray, 1U 19”, for 2, 4, or 6 card chassis
RM-UDDR-1U	Under desk mounting brackets, for 2, 4, or 6 card chassis. “L” shaped bracket fits either side of the Orion chassis
RM-UDDR-1U/K1	Under desk mounting brackets, for 2, 4, or 6 card chassis. “L” shaped bracket fits either side of the Orion chassis, includes 1 set of green color DIN-Rail mounting clips
OEE-CP01	1 slot blanking plate for the 2, 4, or 6 card chassis
OEE-CP01/CH21	1 slot blanking plate for 21-card chassis
OEE-CP02/CH21	2 slot blanking plate for 21-card chassis
OEE-CP04/CH21	4 slot blanking plate for 21-card chassis
FAN-OEE-CH07	Optional fan for chassis size 7, may be required, contact Rose

Table 160. Part Numbers for Mounting Brackets and Accessories

Chassis Options

Chassis options are described in detail on pages 8 through 14. Please refer there for chassis diagrams.

Part Number	Number of Cards	Number of Power Cables Included
OEE-CH02	2	1 x External Power Supply
OEE-CH02/RP	2	1 x External Power Supply
OEE-CH02/DP	2	2 x External Power Supplies
OEE-CH03/RP	2	1 x AC Power Cord
OEE-CH03/DP	2	1 AC Power Cord; 1 x External Power Supply
OEE-CH03/D12	2	No Power Cords or External Power Supply
OEE-CH03/D12/DP	2	1 x External Power Supply
OEE-CH03/D24	2	No Power Cords or External Power Supply
OEE-CH03/D24/DP	2	1 x External Power Supply
OEE-CH03/D48	2	No Power Cords or External Power Supply
OEE-CH03/D48/DP	2	1 x External Power Supply
OEE-CH05/RP	2	1 x AC Power Cord
OEE-CH05/DP	2	1 AC Power Cord; 1 x External Power Supply
OEE-CH05/S/RP	2	1 x AC Power Cord
OEE-CH05/S/DP	2	1 AC Power Cord; 1 x External Power Supply
OEE-CH05/SNMP/RP	2	1 x AC Power Cord
OEE-CH05/SNMP/DP	2	1 AC Power Cord; 1 External Power Supply
OEE-CH04	4	1 x External Power Supply
OEE-CH04/RP	4	1 x External Power Supply
OEE-CH04/DP	4	2 x External Power Supplies
OEE-CH06/RP	6	1 x AC Power Cord
OEE-CH06/DP	6	1 x AC Power Cord; 1 x External Power Supply
OEE-CH06/D12	6	No Power Cords or External Power Supply
OEE-CH06/D12/DP	6	1 x External Power Supply
OEE-CH06/D24	6	No Power Cords or External Power Supply
OEE-CH06/D24/DP	6	1 x External Power Supply
OEE-CH06/D48	6	No Power Cords or External Power Supply
OEE-CH06/D48/DP	6	1 x External Power Supply
OEE-CH07/DP	6	2 x AC Power Cord
OEE-CH07/SFN/DP	6	2 x AC Power Cord
OEE-CH08/BPB/DP	6	2 x AC Power Cord
OEE-CH08/BPB/SFN/DP	6	2 x AC Power Cord
OEE-CH08/BPB/SNMP/DP	6	2 x AC Power Cord
OEE-CH21/RP	21	1 x Installed Power Supply; 1 x AC Power Cord
OEE-CH21/DP	21	2 x Installed Power Supplies; 2 x AC Power Cords

Table 161. Chassis Part Numbers

Part Numbers for Main Cards when Specified Without a Chassis

Main card options are described in detail on pages 15 through 36. Please refer there to the figures for the cards.

Transmitter Cards

Transmitter Card Type	Part Number	USB Type	Interconnect Link	Redundant Link	Special Feature
DVI: DVI-D DVI-I (VGA)	**DVI-D, Transmitter-Receiver Pair**				
	OEC-SLDTXUD1D/IRK	HID	1G CATx		Single Link, 1920×1200
	OEC-SLDFSUD1D/IRK	HID	1G Fiber		Single Link, 1920×1200
	OEC-SLD2CUD1D/IRK	HID	1G CATx	Yes	Single Link, 1920×1200
	OEC-SLD2SUD1D/IRK	HID	1G Fiber	Yes	Single Link, 1920×1200
	DVI-I (VGA), Transmitter-Receiver Pair				
	OEC-SLDTXUS1V/IRK	HID	1G CATx		DVI-I /VGA
	OEC-SLDFSUS1V/IRK	HID	1G Fiber		DVI-I /VGA
	OEC-SLD2CUS1V/IRK	HID	1G CATx	Yes	DVI-I /VGA
	OEC-SLD2SUS1V/IRK	HID	1G Fiber	Yes	DVI-I /VGA
	DVI-I (VGA), VGA Scaling, Dual-Height, Transmitter Card Only				
	OEC-SLDTXUD1V/IRK	HID	1G CATx		1920×1200
	OEC-SLDFSUD1V/IRK	HID	1G Fiber		1920×1200
	OEC-SLDF3UD1V/IRK	HID	3G Fiber		1920×1200
HDMI Part 1: HDMI 1.3 FHD, HDMI 1.4 UHD, HDMI 1.4 UHD Plus	**HDMI 1.3 FHD, Video Only, Transmitter-Receiver Pair**				
	OEC-SLDTX0H1H/IRK	N.A.	1G CATx		Video Only, 1920×1200
	OEC-SLDFS0H1H/IRK	N.A.	1G Fiber		Video Only, 1920×1200
	HDMI 1.3 FHD, Transmitter-Receiver Pair, No Local Out				
	OEC-SLDTXUH1H/IRK	HID	1G CATx		Single Link, 1920×1200
	OEC-SLDFSUH1H/IRK	HID	1G Fiber		Single Link, 1920×1200
	OEC-SLD2CUH1H/IRK	HID	1G CATx	Yes	Single Link, 1920×1200
	OEC-SLD2SUH1H/IRK	HID	1G Fiber	Yes	Single Link, 1920×1200
	HDMI 1.3 FHD, Transmitter Card Only, With Full-Size HDMI Local Out Port				
	OEC-DLDTXUH1H/IRK	HID	1G CATx		Local HDMI out
	OEC-DLDFSUH1H/IRK	HID	1G Fiber		Local HDMI out
	OEC-DLD2CUH1H/IRK	HID	1G CATx	Yes	Local HDMI out
	OEC-DLD2SUH1H/IRK	HID	Fiber	Yes	Local HDMI out
	HDMI 1.4 UHD, Transmitter-Receiver Pair, With Full-Size HDMI Local Out Port				
	OEC-DLDTXUHL1H/IRK	HID	1G CATx		HDMI 1.4, Local Output
	OEC-DLDFSUHL1H/IRK	HID	1G Fiber		HDMI 1.4, Local Output
	OEC-DLDF3UHL1H/IRK	HID	3G Fiber		HDMI 1.4, Local Output
	OEC-DLD2CUHL1H/IRK	HID	1G CATx	Yes	HDMI 1.4, Local Output
	OEC-DLD2SUHL1H/IRK	HID	1G Fiber	Yes	HDMI 1.4, Local Output
	OEC-DLDFRUHL1H/IRK	HID	3G Fiber	Yes	HDMI 1.4, Local Output
	HDMI 1.4 UHD Plus, Transmitter-Receiver Pair, With Full-Size HDMI Local Out Port				
	OEC-SLDTXUHU1H/IRK	HID	1G CATx		HDMI 1.4 Plus, Local Output
	OEC-SLDFSUHU1H/IRK	HID	1G Fiber		HDMI 1.4 Plus, Local Output
	OEC-SLDF3UHU1H/IRK	HID	3G Fiber		HDMI 1.4 Plus, Local Output
	OEC-SLD2CUHU1H/IRK	HID	1G CATx	Yes	HDMI 1.4 Plus, Local Output
	OEC-SLD2SUHU1H/IRK	HID	1G Fiber	Yes	HDMI 1.4 Plus, Local Output
	OEC-SLDFRUHU1H/IRK	HID	3G Fiber	Yes	HDMI 1.4 Plus, Local Output

Table 162. Transmitter Card Part Numbers Part 1

Transmitter Card Type	Part Number	USB Type	Interconnect Link	Redundant Link	Special Feature
HDMI Part 2: HDMI 2.0 UHD Plus HDMI 2.0 with JPEG XS	**HDMI 2.0 UHD Plus with HDCP 2.2, Transmitter-Receiver Pair, With Micro-HDMI Local Out Port**				
	OEC-DLDT3UHX1H/IRK	HID	3G CATx		4K60 Video, Local Output
	OEC-DLDF3UHX1H/IRK	HID	3G Fiber		4K60 Video, Local Output
	OEC-DLDTRUHX1H/IRK	HID	3G CATx	Yes	4K60 Video, Local Output
	OEC-DLDFRUHX1H/IRK	HID	3G Fiber	Yes	4K60 Video, Local Output
	HDMI 2.0 UHD with HDCP 2.2 and JPEG XS Codec, Transmitter-Receiver Pair, With Micro-HDMI Local Out Port				
	OEC-DLDTXUHS1W/IRK	HID	1G CATx		4K/5K@60 Video, HDCP
	OEC-DLDFSUHS1W/IRK	HID	1G Fiber		4K/5K@60 Video, HDCP
	OEC-DLDF3UHS1W/IRK	HID	3G Fiber		4K/5K@60 Video, HDCP
	OEC-DLD2CUHS1W/IRK	HID	1G CATx	Yes	4K/5K@60 Video, HDCP
	OEC-DLD2SUHS1W/IRK	HID	1G Fiber	Yes	4K/5K@60 Video, HDCP
	OEC-DLDFRUHS1W/IRK	HID	3G Fiber	Yes	4K/5K@60 Video, HDCP
DP Part 1: DP 1.1 DP 1.1 Plus DP 1.2 Plus DP 1.2 Plus MST	**DP 1.1 Dual-Head Transmitter-Receiver Pair**				
	OEC-SLDTXUDK1/IRK	HID	1G CATx		4K30 SH / 1920x1200 DH
	OEC-SLDFSUDK1/IRK	HID	1G Fiber		4K30 SH / 1920x1200 DH
	OEC-SLDF3UDK1/IRK	HID	3G Fiber		4K30 SH / 1920x1200 DH
	OEC-SLD2CUDK1/IRK	HID	1G CATx	Yes	4K30 SH / 1920x1200 DH
	OEC-SLD2SUDK1/IRK	HID	1GFiber	Yes	4K30 SH / 1920x1200 DH
	OEC-SLDFRUDK1/IRK	HID	3G Fiber	Yes	4K30 SH / 1920x1200 DH
	DP 1.1 Plus Dual-Head Transmitter-Receiver Pair				
	OEC-SLDTXUDU1/IRK	HID	1G CATx		4K30 SH/1920x1200 DH,Plus
	OEC-SLDFSUDU1/IRK	HID	1G Fiber		4K30 SH/1920x1200 DH,Plus
	OEC-SLDF3UDU1/IRK	HID	3G Fiber		4K30 SH/1920x1200 DH,Plus
	OEC-SLD2CUDU1/IRK	HID	1G CATx	Yes	4K30 SH/1920x1200 DH,Plus
	OEC-SLD2SUDU1/IRK	HID	1GFiber	Yes	4K30 SH/1920x1200 DH,Plus
	OEC-SLDFRUDU1/IRK	HID	3G Fiber	Yes	4K30 SH/1920x1200 DH,Plus
	DP 1.2 Plus Transmitter-Receiver Pair, No Local Out				
	OEC-SLDF3UDX1/IRK	HID	3G Fiber		4K60
	OEC-SLDFRUDX1/IRK	HID	3G Fiber	Yes	4K60
	DP 1.2 Plus Transmitter-Receiver Pair, With Mini-DP Local Out				
	OEC-DLDT3UDX1/IRK	HID	3G CATx		4K60, Local Out, Plus
	OEC-DLDF3UDX1/IRK	HID	3G Fiber		4K60, Local Out, Plus
	OEC-DLDTRUDX1/IRK	HID	3G CATx	Yes	4K60, Local Out, Plus
	OEC-SLDFRUDX1/IRK	HID	3G Fiber	Yes	4K60, Local Out, Plus
	DP 1.2 Plus MST Transmitter-Receiver Pair, With Mini-DP Local Out				
	OEC-DLDT3UDM1/IRK	HID	3G CATx		4K/60, Local Output, MST
	OEC-DLDF3UDM1/IRK	HID	3G Fiber		4K/60, Local Output, MST
	OEC-DLDTRUDM1/IRK	HID	1G CATx	Yes	4K/60, Local Output, MST
	OEC-DLDFRUDM1/IRK	HID	3G Fiber	Yes	4K/60, Local Output, MST

Table 163. Transmitter Card Part Numbers Part 2

Transmitter Card Type	Part Number	USB Type	Interconnect Link	Redundant Link	Special Feature
DP Part 2: DP 1.2 with JPEG XS Codec	**DP 1.2 With JPEG XS Codec, Transmitter-Receiver Pair, No Local Out**				
	OEC-SLDTXUDS1W/IRK	HID	1G CATx		4K/5K@60 Video
	OEC-SLDFSUDS1W/IRK	HID	1G Fiber		4K/5K@60 Video
	OEC-SLD2CUDS1W/IRK	HID	1G CATx	Yes	4K/5K@60 Video
	OEC-SLD2SUDS1W/IRK	HID	1G Fiber	Yes	4K/5K@60 Video
	DP 1.2 With JPEG XS Codec, Transmitter-Receiver Pair, With Mini-DP Local Out				
	OEC-DLDTXUDS1W/IRK	HID	1G CATx		4K/5K@60 Video, Local Out
	OEC-DLDFSUDS1W/IRK	HID	1G Fiber		4K/5K@60 Video, Local Out
	OEC-DLDF3UDS1W/IRK	HID	3G Fiber		4K/5K@60 Video, Local Out
	OEC-DLD2CUDS1W/IRK	HID	1G CATx	Yes	4K/5K@60 Video, Local Out
	OEC-DLD2SUDS1W/IRK	HID	1G Fiber	Yes	4K/5K@60 Video, Local Out
	OEC-DLDFRUDS1W/IRK	HID	3G Fiber	Yes	4K/5K@60 Video, Local Out

Table 164. Transmitter Card Part Numbers Part 3

Receiver Cards

Receiver Card Type	Part Number	USB Type	Interconnect Link	Redundant Link	Special Feature
DVI: DVI-D DVI-I (VGA)	**DVI-D, Transmitter-Receiver Pair**				
	OEC-SRDTXUD1D/IRK	HID	1G CATx		Single Link, 1920×1200
	OEC-SRDFSUD1D/IRK	HID	1G Fiber		Single Link, 1920×1200
	OEC-SRD2CUD1D/IRK	HID	1G CATx	Yes	Single Link, 1920×1200
	OEC-SRD2SUD1D/IRK	HID	1G Fiber	Yes	Single Link, 1920×1200
	DVI-I (VGA), Transmitter-Receiver Pair				
	OEC-SRDTXUS1V/IRK	HID	1G CATx		DVI-I /VGA
	OEC-SRDFSUS1V/IRK	HID	1G Fiber		DVI-I /VGA
	OEC-SRD2CUS1V/IRK	HID	1G CATx	Yes	DVI-I /VGA
	OEC-SRD2SUS1V/IRK	HID	1G Fiber	Yes	DVI-I /VGA
HDMI Part 1: HDMI 1.3 FHD, HDMI 1.4 UHD, HDMI 1.4 UHD Plus	**HDMI 1.3 FHD, Video Only, Transmitter-Receiver Pair**				
	OEC-SRDTX0H1H/IRK	N.A.	1G CATx		Video Only, 1920×1200
	OEC-SRDFS0H1H/IRK	N.A.	1G Fiber		Video Only, 1920×1200
	HDMI 1.3 FHD, Transmitter-Receiver Pair, No Local In				
	OEC-SRDTXUH1H/IRK	HID	1G CATx		Single Link, 1920×1200
	OEC-SRDFSUH1H/IRK	HID	1G Fiber		Single Link, 1920×1200
	OEC-SRD2CUH1H/IRK	HID	1G CATx	Yes	Single Link, 1920×1200
	OEC-SRD2SUH1H/IRK	HID	1G Fiber	Yes	Single Link, 1920×1200
	HDMI 1.3 FHD, Receiver Card Only, With Full-Size HDMI Local In Port				
	OEC-DRDTXUH1H/IRK	HID	1G CATx		Local HDMI In
	OEC-DRDFSUH1H/IRK	HID	1G Fiber		Local HDMI In
	OEC-DRD2CUH1H/IRK	HID	1G CATx	Yes	Local HDMI In
	OEC-DRD2SUH1H/IRK	HID	Fiber	Yes	Local HDMI In
	HDMI 1.4 UHD, Transmitter-Receiver Pair, With Full-Size HDMI Local In Port				
	OEC-DRDTXUHL1H/IRK	HID	1G CATx		HDMI 1.4, Local Input
	OEC-DRDFSUHL1H/IRK	HID	1G Fiber		HDMI 1.4, Local Input
	OEC-DRDF3UHL1H/IRK	HID	3G Fiber		HDMI 1.4, Local Input
	OEC-DRD2CUHL1H/IRK	HID	1G CATx	Yes	HDMI 1.4, Local Input
	OEC-DRD2SUHL1H/IRK	HID	1G Fiber	Yes	HDMI 1.4, Local Input
	OEC-DRDFRUHL1H/IRK	HID	3G Fiber	Yes	HDMI 1.4, Local Input
	HDMI 1.4 UHD Plus, Transmitter-Receiver Pair, With Full-Size HDMI Local In Port				
	OEC-DRDTXUHU1H/IRK	HID	1G CATx		HDMI 1.4 Plus, Local Input
	OEC-DRDFSUHU1H/IRK	HID	1G Fiber		HDMI 1.4 Plus, Local Input
	OEC-DRDF3UHU1H/IRK	HID	3G Fiber		HDMI 1.4 Plus, Local Input
	OEC-DRD2CUHU1H/IRK	HID	1G CATx	Yes	HDMI 1.4 Plus, Local Input
	OEC-DRD2SUHU1H/IRK	HID	1G Fiber	Yes	HDMI 1.4 Plus, Local Input
	OEC-DRDFRUHU1H/IRK	HID	3G Fiber	Yes	HDMI 1.4 Plus, Local Input

Table 165. Receiver Card Part Numbers Part 1

Receiver Card Type	Part Number	USB Type	Interconnect Link	Redundant Link	Special Feature
HDMI Part 2: HDMI 2.0 UHD Plus HDMI 2.0 with JPEG XS	**HDMI 2.0 UHD Plus with HDCP 2.2, Transmitter-Receiver Pair, With Micro-HDMI Local In Port**				
	OEC-DRDT3UHXIH/IRK	HID	3G CATx		4K60 Video, Local Input
	OEC-DRDF3UHXIH/IRK	HID	3G Fiber		4K60 Video, Local Input
	OEC-DRDTRUHX1H/IRK	HID	3G CATx	Yes	4K60 Video, Local Input
	OEC-DRDFRUHX1H/IRK	HID	3G Fiber	Yes	4K60 Video, Local Input
	HDMI 2.0 UHD with HDCP 2.2 and JPEG XS Codec, Transmitter-Receiver Pair, With Micro-HDMI Local In Port				
	OEC-DRDTXUHS1W/IRK	HID	1G CATx		4K/5K@60 Video, HDCP
	OEC-DRDFSUHS1W/IRK	HID	1G Fiber		4K/5K@60 Video, HDCP
	OEC-DRDF3UHS1W/IRK	HID	3G Fiber		4K/5K@60 Video, HDCP
	OEC-DRD2CUHS1W/IRK	HID	1G CATx	Yes	4K/5K@60 Video, HDCP
	OEC-DRD2SUHS1W/IRK	HID	1G Fiber	Yes	4K/5K@60 Video, HDCP
	OEC-DRDFRUHS1W/IRK	HID	3G Fiber	Yes	4K/5K@60 Video, HDCP
DP Part 1: DP 1.1 DP 1.1 Plus DP 1.2 Plus DP 1.2 Plus MST	**DP 1.1 Dual-Head Transmitter-Receiver Pair**				
	OEC-SRDTXUDK1/IRK	HID	1G CATx		4K30 SH / 1920x1200 DH
	OEC-SRDFSUDK1/IRK	HID	1G Fiber		4K30 SH / 1920x1200 DH
	OEC-SRDF3UDK1/IRK	HID	3G Fiber		4K30 SH / 1920x1200 DH
	OEC-SRD2CUDK1/IRK	HID	1G CATx	Yes	4K30 SH / 1920x1200 DH
	OEC-SRD2SUDK1/IRK	HID	1GFiber	Yes	4K30 SH / 1920x1200 DH
	OEC-SRDFRUDK1/IRK	HID	3G Fiber	Yes	4K30 SH / 1920x1200 DH
	DP 1.1 Plus Dual-Head Transmitter-Receiver Pair				
	OEC-SRDTXUDU1/IRK	HID	1G CATx		4K30 SH/1920x1200 DH,Plus
	OEC-SRDFSUDU1/IRK	HID	1G Fiber		4K30 SH/1920x1200 DH,Plus
	OEC-SRDF3UDU1/IRK	HID	3G Fiber		4K30 SH/1920x1200 DH,Plus
	OEC-SRD2CUDU1/IRK	HID	1G CATx	Yes	4K30 SH/1920x1200 DH,Plus
	OEC-SRD2SUDU1/IRK	HID	1GFiber	Yes	4K30 SH/1920x1200 DH,Plus
	OEC-SRDFRUDU1/IRK	HID	3G Fiber	Yes	4K30 SH/1920x1200 DH,Plus
	DP 1.2 Plus Transmitter-Receiver Pair, No Local In				
	OEC-SRDF3UDX1/IRK	HID	3G Fiber		4K60
	OEC-SRDFRUDX1/IRK	HID	3G Fiber	Yes	4K60
	DP 1.2 Plus Transmitter-Receiver Pair, With Mini-DP Local In				
	OEC-DRDT3UDX1/IRK	HID	3G CATx		4K60, Local In, Plus
	OEC-DRDF3UDX1/IRK	HID	3G Fiber		4K60, Local In, Plus
	OEC-DRDTRUDX1/IRK	HID	3G CATx	Yes	4K60, Local In, Plus
	OEC-SRDFRUDX1/IRK	HID	3G Fiber	Yes	4K60, Local In, Plus
	DP 1.2 Plus MST Transmitter-Receiver Pair, With Mini-DP Local In				
	OEC-DRDT3UDM1/IRK	HID	3G CATx		4K/60, Local Input, MST
	OEC-DRDF3UDM1/IRK	HID	3G Fiber		4K/60, Local Input, MST
	OEC-DRDTRUDM1/IRK	HID	1G CATx	Yes	4K/60, Local Input, MST
	OEC-DRDFRUDM1/IRK	HID	3G Fiber	Yes	4K/60, Local Input, MST

Table 166. Receiver Card Part Numbers Part 2

Receiver Card Type	Part Number	USB Type	Interconnect Link	Redundant Link	Special Feature
DP Part 2: DP 1.2 with JPEG XS Codec	**DP 1.2 With JPEG XS Codec, Transmitter-Receiver Pair, No Local In**				
	OEC-SRDTXUDS1W/IRK	HID	1G CATx		4K/5K@60 Video
	OEC-SRDFSUDS1W/IRK	HID	1G Fiber		4K/5K@60 Video
	OEC-SRD2CUDS1W/IRK	HID	1G CATx	Yes	4K/5K@60 Video
	OEC-SRD2SUDS1W/IRK	HID	1G Fiber	Yes	4K/5K@60 Video
	DP 1.2 With JPEG XS Codec, Transmitter-Receiver Pair, With Mini-DP Local In				
	OEC-DRDTXUDS1W/IRK	HID	1G CATx		4K/5K@60 Video, Local In
	OEC-DRDFSUDS1W/IRK	HID	1G Fiber		4K/5K@60 Video, Local In
	OEC-DRDF3UDS1W/IRK	HID	3G Fiber		4K/5K@60 Video, Local In
	OEC-DRD2CUDS1W/IRK	HID	1G CATx	Yes	4K/5K@60 Video, Local In
	OEC-DRD2SUDS1W/IRK	HID	1G Fiber	Yes	4K/5K@60 Video, Local In
	OEC-DRDFRUDS1W/IRK	HID	3G Fiber	Yes	4K/5K@60 Video, Local In

Table 167. Receiver Card Part Numbers Part 3

Part Numbers for Option Cards when Specified Within a Chassis

Option card type are described in detail on pages 37 through 43. Please refer there for figures of the cards.

Transmitter	Receiver	Description
OEC-L1H	OEC-R1H	USB HID
OEC-L1F	OEC-R1F	Embedded USB 2.0, flex speed, four USB-A device ports on the Receiver, up to 50/100Mbps
OEC-L1AS	OEC-R1AS	Analog Audio + RS-232
OEC-L1AS+1H	OEC-R1AS+1H	Analog Audio + RS-232 + USB HID
OEC-L1AS+1F	OEC-R1AS+1F	Analog Audio + RS-232 + Embedded USB 2.0, flex speed, four USB-A Receiver device ports, up to 50/100Mbps
OEC-L1AS/115	OEC-R1AS/115	Analog Audio + RS-232 serial up to 115,000baud
OEC-L1AS/115+1F	OEC-R1AS/115+1F	Analog Audio + RS-232 serial up to 115,000baud, + Embedded USB 2.0, four USB-A Receiver device ports, up to 50/100Mbps
OEC-L1A422	OEC-R1A422	Analog Audio + RS-422
OEC-L1A422+1H	OEC-R1A4+1H	Analog Audio + RS-422 + USB HID
OEC-L1A422+1F	OEC-R1A4+1F	Analog Audio + RS-422 + Embedded USB 2.0, flex speed, four USB-A Receiver device ports up to 50/100Mbps
OEC-L2A422	OEC-R2A422	Dual Analog Audio + Dual RS-422
OEC-L1AB	OEC-R1AB	Balanced analog audio with terminal block and pre-amp
OEC-LIAB+1F	OEC-R1AB+1F	Balanced analog audio with terminal block, pre-amp + 4x USB 2.0 embedded 50/100Mbps
OEC-L1DA+1F	OEC-R1DA+1F	Digital Audio, unidirectional digital audio S/P-DIF, Mini-XLR, TOS-L + Embedded USB 2.0, four USB-A Receiver device ports, up to 50/100Mbps
OEC-L1AB	OEC-R1AB	Balanced symmetrical analog audio with phantom power, terminal block and pre-amp
OEC-L1AB+1F	OEC-R1AB+1F	Balanced symmetrical analog audio with phantom power, terminal block and pre-amp, + Embedded USB 2.0, flex speed, four USB-A Receiver device ports, up to 50/100Mbps
Single-Unit Option Cards		
N.A.	OEC-R1PB	Push button for displaying OSD on Receiver unit for user with no keyboard
N.A.	OEC-R1GPIO	GPIO option with up to 8 configurable GPIO In/In on Receiver unit
N.A.	OEC-R1GPIO+1AS	GPIO option with up to 8 configurable GPIO In/In, analog audio + RS-232 on Receiver unit
OEC-1FN	OEC-1FN	Fan module. Occupies 1 card slot in any chassis
OEC-1SNMP	OEC-1SNMP	Monitoring module with SNMP, Ethernet, and RS-232 for CH07 and CH21 chassis only

Table 168. Option Card Part Numbers

Appendix C – Current Draw, Power Supply Voltage and Power Consumption

When considering the power draw of the extender and add-on modules, the power requirements of any connected peripherals should also be taken into account. In order to avoid overheating the power supply units and electrical components, the following requirements must be met.

- When a redundant power supply unit is used, the maximum supplied current must not exceed the value of one of the two power supply units so that the heat can be effectively dissipated.
- Do NOT exceed the recommended maximum current supply of the chassis as detailed in the table below.

XTender Chassis Power Supply Requirements

Part Number	Power Supply Unit 1	Power Supply Unit 2	Max. Recommended Power Supply
OEE-CH02	5 V DC, 3 Amp	n/a	5 V DC, 2,4 Amp
OEE-CH02/RP, OEE-CH02/DP	5 V DC, 3 Amp	5 V DC, 3 Amp	5 V DC, 2,4 Amp
OEE-CH03/RP, OEE-CH03/DP	100 V to 240 V AC, 50/60 Hz, 0.7 Amp	5 V DC, 5 Amp	5 V DC, 4 Amp
OEE-CH03/D12, OEE-CH03/D12/DP	9.2 V to 18 V/12 V DC, 1.9 Amp	5 V DC, 3 Amp	5 V DC, 2.4 Amp
OEE-CH03/D24, OEE-CH03/D24/DP	18 V to 36 V/24 V DC, 0.9 Amp	5 V DC, 3 Amp	5 V DC, 2.4 Amp
OEE-CH03/D48, OEE-CH03/D48/DP	36 V to 72 V/48 V DC, 0.45 Amp	5 V DC, 3 Amp	5 V DC, 2.4 Amp
OEE-CH05/RP, OEE-CH05/DP, OEE-CH05/S/RP, OEE-CH05/S/DP, OEE-CH05/SNMP/RP, OEE-CH05/SNMP/DP	100 V to 240 V AC, 50/60 Hz, 0.7 Amp	5 V DC, 5 Amp	5 V DC, 4 Amp
OEE-CH04	5 V DC, 5 Amp	n/a	5 V DC, 4 Amp
OEE-CH04/RP OEE-CH04/DP	5 V DC, 5 Amp	5 V DC, 5 Amp	5 V DC, 4 Amp
OEE-CH06/RP, OEE-CH06/DP	100 V to 240 V AC,50/60 Hz, 1.5 Amp	5 V DC, 5 Amp	5 V DC, 6 Amp
OEE-CH06/D12, OEE-CH06/D12/DP	9 V to 18 V/12 V DC, 4.5 Amp	5 V DC, 5 Amp	5 V DC, 4 Amp
OEE-CH06/D24, OEE-CH06/D24/DP	18 V to 36 V/24 V DC, 2.5 Amp	5 V DC, 5 Amp	5 V DC, 4 Amp
OEE-CH06/D48, OEE-CH06/D48/DP	36 V to 72 V/48 V DC, 1.1 Amp	5 V DC, 5 Amp	5 V DC, 4 Amp
OEE-CH07/DP, OEE-CH07/SFN/DP, OEE-CH08/BPB/DP, OEE-CH08/BPB/SFN/DP, OEE-CH08/BPB/SNMP/DP	100 V to 240 V AC, 50/60 Hz, 1.3 Amp	100 V to 240 V AC, 50/60 Hz, 1.3 Amp	5 V DC, 8 Amp
OEE-CH21/RP	100 V to 240 V AC, 50/60 Hz, 4 Amp	n/a	5 V DC, 32 Amp
OEE-CH21/DP	100 V to 240 V AC, 50/60 Hz, 4 Amp	100 V to 240 V AC, 50/60 Hz, 4 Amp	5 V DC, 32 Amp

Table 169. Orion XTender Chassis Power Supply Requirements

Notes:

- If the connected extender modules exceed a current draw of 6 Amp, the various OEE-CH07 and OEE-CH08 chassis require a fan. The OEC-SFN Fan Option Card is recommended.
- If the connected extender modules exceed a current draw of 2.5 Amp, the various OEE-CH05 chassis require. The OEC-SFN Fan Option Card is recommended.

DVI Card Power Requirements

Transmitter Part Number	Maximum Current Draw	Maximum Power Consumption	Receiver Part Number	Maximum Current Draw	Maximum Power Consumption
DVI-D Cards					
OEC-SLDTXUD1D/IRK	760 mA	4.6 W	OEC-SRDTXUD1D/IRK	910 mA	5.6 W
OEC-SLD2CUD1D/IRK	1,110 mA	6.5 W	OEC-SRD2CUD1D/IRK	1,190 mA	7.4 W
OEC-SLDFSUD1D/IRK	690 mA	4.6 W	OEC-SRDFSUD1D/IRK	820 mA	4.6 W
OEC-SLD2SUD1D/IRK	890 mA	5.6 W	OEC-SRD2SUD1D/IRK	980 mA	5.6 W
DVI-I Cards					
OEC-SLDTXUD1V/IRK	1,790 mA	10.2 W	—	N.A.	N.A.
OEC-SLDFSUD1V/IRK	1,740 mA	10.2 W	—	N.A.	N.A.
OEC-SLDF3UD1V/IRK	1,890 mA	11.1 W	—	N.A.	N.A.
OEC-SLDTXUS1V/IRK	1,120 mA	6.5 W	OEC-SRDTXUS1V/IRK	920 mA	5.6 W
OEC-SLD2CUS1V/IRK	1,440 mA	8.3 W	OEC-SRD2CUS1V/IRK	1,190 mA	7.4 W
OEC-SLDFSUS1VD/IRK	1,010 mA	5.6 W	OEC-SRDFSUS1V/IRK	840 mA	4.6 W
OEC-SLD2SUS1V/IRK	1,200 mA	7.4 W	OEC-SRD2SUS1V/IRK	980 mA	5.6 W

Table 170. DVI Card Power Requirements

HDMI Card Power Requirements

HDMI 1.3, 1.4	▪ Single-Head Extenders: Maximum 700 mA ▪ Video Only Devices: Maximum 600 mA ▪ Redundancy Devices: Maximum 1,300 mA
HDMI 2.0	▪ Transmitter Maximum: 1,180 mA ▪ Transmitter Redundant Maximum: 1,320 mA ▪ Receiver Maximum: 1,780 mA ▪ Receiver Redundant Maximum: 1,920 mA

Table 171. HDMI Card Power Requirements

DP Card Power Requirements

Transmitter Part Number	Maximum Current Draw	Maximum Power Consumption	Receiver Part Number	Maximum Current Draw	Maximum Power Consumption
DP 1.1 Cards					
OEC-SLDTXUDK1/IRK	1050 mA	4.8W	OEC-SRDTXUDK1/IRK	1300 mA	6.0 W
OEC-SLDFSUDK1/IRK	1050 mA	4.8W	OEC-SRDFSUDK1/IRK	1300 mA	6.0 W
OEC-SLDF3UDK1/IRK	1150 mA	5.3 W	OEC-SRDF3UDK1/IRK	1490 mA	6.9W
OEC-SLD2CUDK1/IRK	1200 mA	5.5W	OEC-SRD2CUDK1/IRK	1450 mA	6.7 W
OEC-SLD2SUDK1/IRK	1200 mA	5.5 W	OEC-SRD2SUDK1/IRK	1450 mA	6.7 W
OEC-SLDFRUDK1/IRK	1300 mA	6.0 W	OEC-SRDFRUDK1/IRK	1640 mA	7.5@
DP 1.1 Plus Cards					
OEC-SLDTXUDU1/IRK	850 mA	3.9 W	OEC-SRDTXUDU1/IRK	1350 mA	6.2 W
OEC-SLDFSUDU1/IRK	950 mA	4.4 W	OEC-SRDFSUDU1/IRK	1450 mA	6.7 W
OEC-SLDF3UDU1/IRK	1150 mA	5.3 W	OEC-SRDF3UDU1/IRK	1490 mA	6.9 W
OEC-SLD2CUDU1/IRK	1000 m A	4.6 W	OEC-SRD2CUDU1/IRK	1500 mA	6.9 W
OEC-SLD2SUDU1/IRK	1100 mA	5.1 W	OEC-SRD2SUDU1/IRK	1600 mA	7.4 W
OEC-SLDFRUDU1/IRK	1300 mA	6.0 W	OEC-SRDFRUDU1/IRK	1640 mA	7.5 W
DP 1.2 Cards					
OEC-DLDT3UDX1/IRK	1900 mA		OEC-DRDT3UDX1/IRK	2600 mA	
OEC-DLDF3UDX1/IRK	1250 mA		OEC-DRDF3UDX1/IRK	1500 mA	
OEC-DLDTRUDX1/IRK	2100 mA		OEC-DRDTRUDX1/IRK	2800 mA	
OEC-DLDFRUDX1/IRK	1400 mA		OEC-DRDFRUDX1/IRK	1650 mA	

Table 172. DP Card Power Requirements

Option Card Power Requirements

The current draw indicated here is per function part on an Option Card. Up to two function parts can be combined on one Option Card, one on the left and one on the right. The current draw of an Option Card is thus composed of the combined current draw of the two function parts. For example, the maximum current draw for the analog audio with USB HID Transmitter Option Card (OEC-L1AS+1H) is 160 mA.

	Transmitter Card		Receiver Card	
Function Part	**Maximum Current Draw**	**Maximum Power Consumption**	**Maximum Current Draw**	**Maximum Power Consumption**
Analog audio (RS-232)	70 mA	0.3 W	70 mA	0.3 W
Analog audio (RS-422)	70 mA	0.3 W	70 mA	0.3 W
Digital audio	100 mA	0.5 W	100 mA	0.5 W
Symmetrical audio	500 mA	2.3 W	370 mA	1.7 W
USB 2.0 embedded (up to 36 Mbit/s)	90 mA	0.4 W	170 mA	0.8 W
USB 2.0 embedded (up to 50/100 Mbit/s)	110 mA	0.5 W	290 mA	1.3 W
USB 2.0 stand-alone, Cat X (480 Mbit/s)	490 mA	3 W	530 mA	4 W
USB 2.0 embedded, fiber (480 Mbit/s)	420 mA	3 W	400 mA	3 W
USB HID	90 mA	0.4 W	280 mA	1.3 W
GPIO	10 mA	0 W	—	—
OEC-SFN Fan Option Card	220 mA	1.0W	—	—
OEC-1SNMP SNMP Option Card	—	—	510 mA	2.4 W

Table 173. Option Card 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
Altitude	
Operating Altitude	Max. 8,200 ft (2.5 km)
Noise Emission	
Sound Pressure Level (SPL)	max 43 dBA per fan (OEC-SFN)
Heat Dissipation	
Thermal Input	Corresponds to power consumption in Watt (W)

Table 174. Orion XTender Environmental Specifications

Appendix E – Physical Dimensions

The shipping weights of the various Orion XTender Chassis, Video and Option Cards are described here.

Physical Dimensions of Chassis

Chassis Model	Unit Size	Dimension of the shipping box, including. accessories
OEE_CH02, OEE-CH02/RP OEE-CH02/DP	5.7 in x 5.8 in x 1.7 in / 145 mm x 147 mm x 44 mm	**Transmitters:** 10.0 in x 14.4 in x 4.5 in / 253 mm x 194 mm x 113 mm **Receivers** 10.6 in x 8.6 in x 2.6 in / 270 mm x 219 mm x 67 mm
OEE-CH03/RP, OEE-CH03/DP, OEE-CH03/D12, OEE-CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48, OEE-CH03/D48/DP	8.7 in x 5.8 in x 1.7 in / 221 mm x 147 mm x 44 mm	
OEE-CH05/RP, OEE-CH05/DP, OEE-CH05/S/RP, OEE-CH05/S/DP OEE-CH05/SNMP/RP, OEE-CH05/SNMP/DP	8.7 in x 7.2 in x 1.7 in / 221 mm x 182 mm x 44 mm	
OEE-CH04, OEE-CH04/RP, OEE-CH04/DP	11.7 in x 5.8 in x 1.7 in / 296 mm x 147 mm x 44 mm	17.5 in x 9.5 in x 4.3 in / 445 mm x 240 mm x 110 mm
OEE-CH06/RP, OEE-CH06/DP, OEE-CH06/D12, OEE-CH06/D12/DP, OEE-CH06/D24, OEE-CH06/D24/DP, OEE-CH06/D48, OEE-CH06/D48/DP	17.4 in x 5.8 in x 1.7 in / 442 mm x 147 mm x 44 mm	
OEE-CH07/DP, OEE-CH07/SFN/DP, OEE-CH08/BPB/DP, OEE-CH08/BPB/SFN/DP, OEE-CH08/BPB/SNMP/DP	17.4 in x 10.6 in x 1.7 in / 442 mm x 270 mm x 44 mm	21.5 in x 14.5 in x 5.6 in / 545 mm x 368 mm x 143 mm
OEE_CH21/RP, OEE_CH21/DP	19.0 in x 18.2 in x 6.9 in / 482 mm x 462 mm x 176 mm	24.8 in x 22.1 in x 13.4 in / 630 mm x 560 mm x 340 mm

Table 175. Orion XTender Chassis Physical Dimensions

Physical Dimensions of Video and Option Cards

All Orion XTender Cards	5.1 in x 0.8 in x 5.7 in / 129 mm x 20 mm x 145 mm

Table 176. Orion XTender Card Physical Dimensions

Appendix F – Shipping Weights

The shipping weights of the various Orion XTender Chassis, Video and Option Cards are described here.

Shipping Weights of Chassis

Chassis Model	Max. weight of fully equipped chassis	Max. weight of shipping box with fully equipped chassis including accessories*
OEE_CH02	1.8 lbs / 0.8 kg	5.5 lbs / 2.5 kg
OEE-CH02/RP, OEE-CH02/DP	2.2 lbs / 1.0 kg	6.0 lbs / 2.7 kg
OEE-CH03/RP, OEE-CH03/DP, OEE-CH03/D12, OEE-CH03/D12/DP, OEE-CH03/D24, OEE-CH03/D24/DP, OEE-CH03/D48, OEE-CH03/D48/DP	3.1 lbs / 1.4 kg	6.2 lbs / 2.8 kg
OEE-CH05/RP, OEE-CH05/DP, OEE-CH05/S/RP, OEE-CH05/S/DP	3.8 lbs / 1.7 kg	7.1 lbs / 3.2 kg
OEE-CH05/SNMP/RP, OEE-CH05/SNMP/DP	4.0 lbs / 1.8 kg	7.3 lbs / 3.3 kg
OEE-CH04	3.3 lbs / 1.5 kg	7.5 lbs / 3.4 kg
OEE-CH04/RP, OEE-CH04/DP	3.8 lbs / 1.7 kg	7.9 lbs / 3.6 kg
OEE-CH06/RP, OEE-CH06/DP, OEE-CH06/D12, OEE-CH06/D12/DP, OEE-CH06/D24, OEE-CH06/D24/DP, OEE-CH06/D48, OEE-CH06/D48/DP	5.3 lbs / 2.4 kg	9.9 lbs / 4.5 kg
OEE-CH07/DP, OEE-CH07/SFN/DP, OEE-CH08/BPB/DP, OEE-CH08/BPB/SFN/DP, OEE-CH08/BPB/SNMP/DP	9.5 lbs / 4.3 kg	17.4 lbs / 7.9 kg
OEE_CH21/RP	22.7 lbs / 10.3 kg	45.2 lbs / 20.5 kg
OEE_CH21/DP	22.7 lbs / 10.3 kg	48.1 lbs / 21.8 kg
* Add up to 0.4 lbs (0.2 kg) for each cable included in the Receiver shipping boxes depending on the ordered video and Option Cards.		

Table 177. Shipping Weights of Orion XTender Chassis

Shipping Weights of DVI Cards

Transmitter Part Number	Max Weight	Receiver Part Number	Max Weight
DVI-D Cards			
OEC-SLDTXUD1D/IRK	0.21 lbs / 95 g	OEC-SRDTXUD1D/IRK	0.21 lbs / 95 g
OEC-SLD2CUD1D/IRK	0.21 lbs / 95 g	OEC-SRD2CUD1D/IRK	0.21 lbs / 95 g
OEC-SLDFSUD1D/IRK	0.21 lbs / 95 g	OEC-SRDFSUD1D/IRK	0.21 lbs / 95 g
OEC-SLD2SUD1D/IRK	0.21 lbs / 95 g	OEC-SRD2SUD1D/IRK	0.21 lbs / 95 g
OEC-SLDF3UD1D/IRK	0.21 lbs / 95 g	OEC-SRDF3UD1D /IRK	0.21 lbs / 95 g
DVI-I Cards			
OEC-SLDTXUD1V/IRK	0.43 lbs / 195 g	—	N.A.
OEC-SLDFSUD1V/IRK	0.43 lbs / 195 g	—	N.A.
OEC-SLDF3UD1V/IRK	0.43 lbs / 195 g	—	N.A.
OEC-SLDTXUS1V/IRK	0.27 lbs / 120 g	OEC-SRDTXUS1V/IRK	0.27 lbs / 120 g
OEC-SLD2CUS1V/IRK	0.28 lbs / 125 g	OEC-SRD2CUS1V/IRK	0.28 lbs / 125 g
OEC-SLDFSUS1VD/IRK	0.28 lbs / 125 g	OEC-SRDFSUS1V/IRK	0.28 lbs / 125 g
OEC-SLD2SUS1V/IRK	0.28 lbs / 125 g	OEC-SRD2SUS1V/IRK	0.28 lbs / 125 g

Table 178. Shipping Weights of DVI Cards

Shipping Weights of DP Cards

Transmitter Part Number	Max Weight	Receiver Part Number	Max Weight
DP 1.1 Cards			
OEC-SLDTXUDK1/IRK	0.27 lbs / 120 g	OEC-SRDTXUDK1/IRK	0.27 lbs / 120 g
OEC-SLDFSUDK1/IRK	0.24 lbs / 110 g	OEC-SRDFSUDK1/IRK	0.24 lbs / 110 g
OEC-SLDF3UDK1/IRK	0.24 lbs / 110 g	OEC-SRDF3UDK1/IRK	0.24 lbs / 110 g
OEC-SLD2CUDK1/IRK	0.27 lbs / 120 g	OEC-SRD2CUDK1/IRK	0.27 lbs / 120 g
OEC-SLD2SUDK1/IRK	0.25 lbs / 115 g	OEC-SRD2SUDK1/IRK	0.25 lbs / 115 g
OEC-SLDFRUDK1/IRK	0.38 lbs / 170 g	OEC-SRDFRUDK1/IRK	0.38 lbs / 170 g
DP 1.1 Plus Cards			
OEC-SLDTXUDU1/IRK	0.27 lbs / 120 g	OEC-SRDTXUDU1/IRK	0.27 lbs / 120 g
OEC-SLDFSUDU1/IRK	0.24 lbs / 110 g	OEC-SRDFSUDU1/IRK	0.24 lbs / 110 g
OEC-SLDF3UDU1/IRK	0.24 lbs / 110 g	OEC-SRDF3UDU1/IRK	0.24 lbs / 110 g
OEC-SLD2CUDU1/IRK	0.27 lbs / 120 g	OEC-SRD2CUDU1/IRK	0.27 lbs / 120 g
OEC-SLD2SUDU1/IRK	0.25 lbs / 115 g	OEC-SRD2SUDU1/IRK	0.26 lbs / 116 g
OEC-SLDFRUDU1/IRK	0.38 lbs / 170 g	OEC-SRDFRUDU1/IRK	0.38 lbs / 170 g

Table 179. Shipping Weights of DP Cards

Shipping Weights of Option Cards

Transmitter Option Card Part Number	Max Weight	Receiver Option Card Part Number	Max Weight
OEC-L1F	0.20 lbs / 90 g	OEC-R1F	0.20 lbs / 90 g
OEC-L1H	0.19 lbs / 85 g	OEC-R1H	0.19 lbs / 85 g
OEC-L1AS	0.19 lbs / 85 g	OEC-R1AS	0.19 lbs / 85 g
OEC-L1AS/115	0.19 lbs / 85 g	OEC-R1AS/115	0.19 lbs / 85 g
OEC-L1AS+1H	0.17 lbs / 75 g	OEC-R1AS+1H	0.17 lbs / 75 g
OEC-L1AS+1F	0.27 lbs / 120 g	OEC-R1AS+1F	0.27 lbs / 120 g
OEC-L1ASF/115	0.27 lbs / 120 g	OEC-R1ASF/115	0.27 lbs / 120 g
OEC-L1A422	0.19 lbs / 85 g	OEC-R1A422	0.19 lbs / 85 g
OEC-L1A422+1H	0.17 lbs / 75 g	OEC-R1A422+1H	0.17 lbs / 75 g
OEC-L1A422+1F	0.24 lbs / 110 g	OEC-L1A422+1F	0.24 lbs / 110 g
OEC-L2A422	0.24 lbs / 110 g	OEC-R2A422	0.24 lbs / 110 g
OEC-L1DA+1F	0.20 lbs / 90 g	OEC-R1DA+1F	0.20 lbs / 90 g
OEC-L1AB	0.21 lbs / 95 g	OEC-R1AB	0.21 lbs / 95 g
OEC-L1AB+1F	0.13 lbs / 60 g	OEC-R1AB+1F	0.13 lbs / 60 g

Table 180. Shipping Weights of Transmitter-Receiver Pair Option Cards

Part Number	Max Weight
OEC-R1GPIO	0.23 lbs / 105 g
OEC-R1GPIO+1AS	0.21 lbs / 95 g
OEC-1SNMP	0.22 lbs / 100 g
OEC-SFN	0.13 lbs / 60 g

Table 181. Shipping Weights of Standalone Option Cards

ROSE.COM

WWW.ROSE.COM ▪ sales@rose.com ▪ (281) 933-7673

Rose Electronics ▪ 10707 Stancliff Road ▪ Houston, Texas 77099
Rose USA (281) 933-7673 ▪ Rose Europe +49 (0) 1762 6730896
Rose Asia +65 9632 6616 ▪ Rose Australia +61 (0) 421 247083

ROSE ELECTRONICS

WWW.ROSE.COM