Orion XT Cross Repeater

Modular CATx/Fiber Converter/Repeater

ROSE.COM

Installation
and
Operation Manual

ROSE ELECTRONICS

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LIMITED WARRANTY

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

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

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

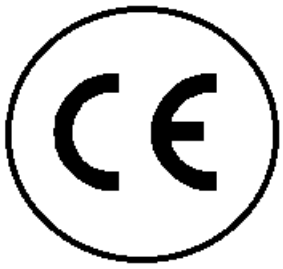
IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTIED ABOVE, YOUR SOLE REMEDY SHALL BE REPLACEMENT OR REPAIR AS PROVIDED ABOVE. IN NO EVENT WILL ROSE ELECTRONICS BE LIABLE TO YOU FOR ANY DAMAGES INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF 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, the Units listed described here are shielded against the generation of radio interferences in accordance with the application of Council Directives 2014/30/EU and 2014/30/EU, as well as these standards:

- EN 55022: 2010/AC:2011 (Class A)
- EN 55024:2010 + A1:2015
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 61000-6-2:2005
- EN 60950-1:2006/A2:2013



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

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

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

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

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

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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 Orion XT Cross Repeater. It is the result of Rose Electronics commitment to providing state-of-the-art solutions for today's demanding workplace. The Orion XT Cross Repeater is an extender for increasing the transmission distance of Orion Xtender as well as Orion X and XC digital signals. Some models also have the ability to convert between CATx electronic signals and fiber optical signals.

Both fiber and CATx ports are bi-directional, automatically configuring as inputs or outputs. High quality signal processing and amplification eliminate signal degradation and transmission artifacts.

CATx to CATx repeaters extend digital signal transmission distances by 460ft (140m). Single-mode fiber to fiber repeaters extend the transmission distance by 32,808ft (10,000m). Orion XT Cross Repeaters with both fiber and CATx ports allow extension of CATx Orion X systems between floors in a building or between two buildings, converting automatically between electrical and optical signals.

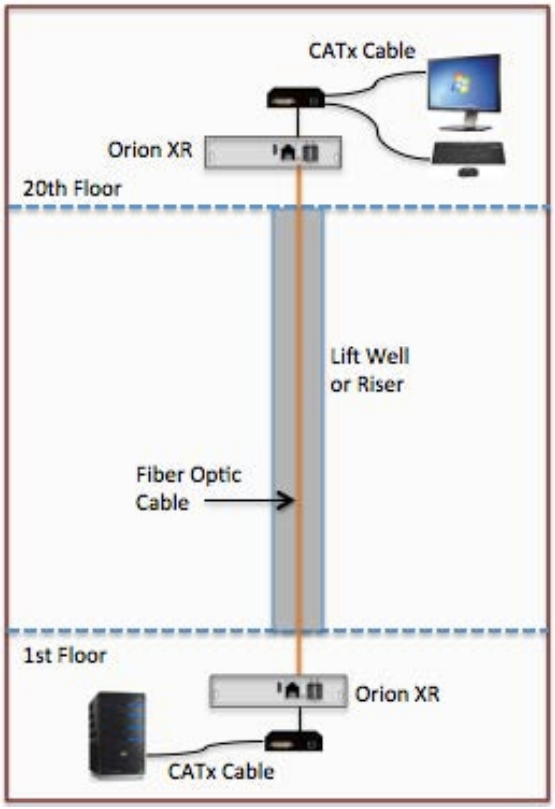


Figure 1. Cross-conversion of CATx and Fiber Signals Allow Extension to Great Distances

Features

- Extends Orion X signals by 460ft (140m) on either side of the unit over CATx cable
- Extends Orion X signals by 32,808ft (10,000m) on either side of the unit over single-mode fiber cable
- All ports are bidirectional and automatically configure as inputs or outputs
- Available in CATx-only, fiber-only and mixed CATx and fiber models
- Available in single repeater models for a single digital signal and dual repeater models to extend two digital signals
- Mixed CATx and fiber models automatically convert between electrical and optical signals
- Compatible with all Orion Xtenders and Orion X and XC matrix Switches
- Each Cross Repeater card installs in an Orion Xtender chassis, available in 2, 4, 6, and 21 card sizes
- High quality signal processing and amplification eliminate signal degradation and transmission artifacts
- Single-mode fiber ports also accept multimode fiber cables with LC type fiber connectors

Package Contents

The package contents consist of the following:

- Orion XT Cross Receiver installed in the Orion Xtender chassis
- Power supply or cord (depending upon model)
- Manual

System Overview

An Orion XT Cross Repeater is used to increase the maximum cabling distance between the components of Orion Xtender or Orion X or XC matrix systems. It is available as pure CATx or fiber repeater models, or as combination CATx and fiber models (cross repeaters) for converting between electrical and optical signals.

Some of the possible applications for the Orion X Cross Repeater are shown below.

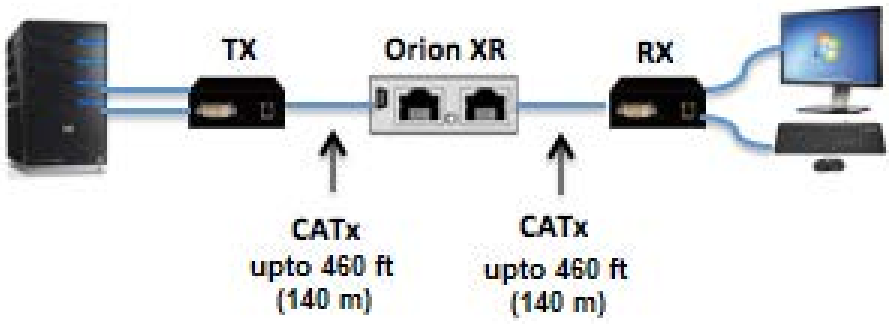


Figure 2. A Single CATx/CATx Repeater Doubles Extension Distance

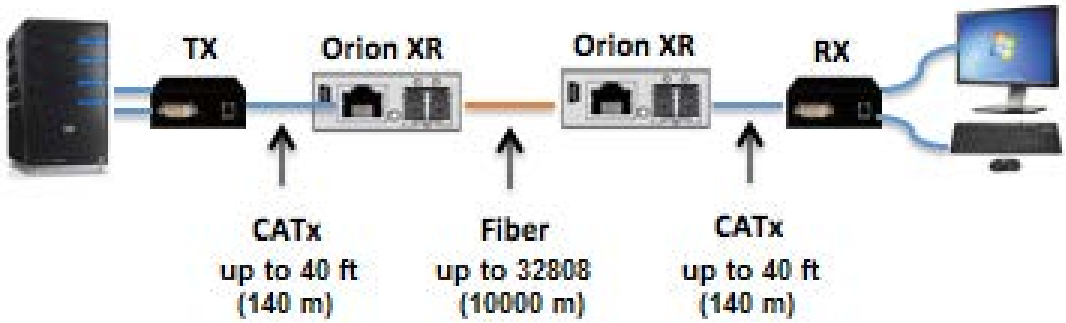


Figure 3. Two CATx/Fiber Repeaters Allow Extension to Greater Distances

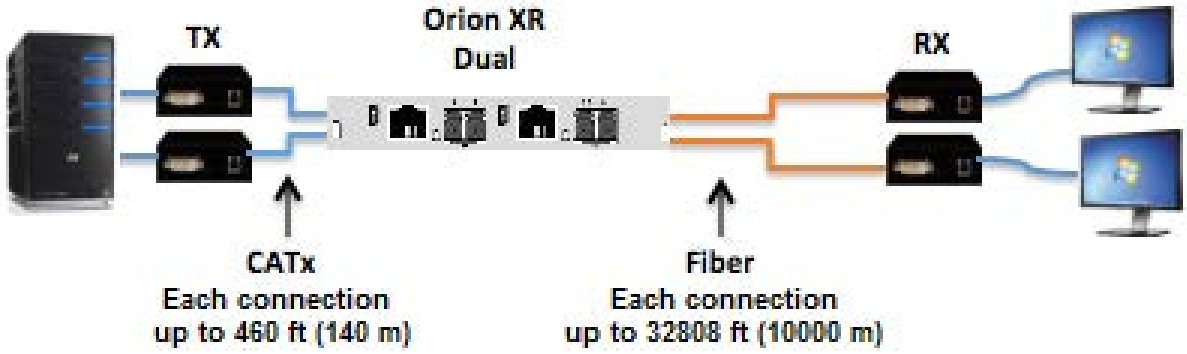


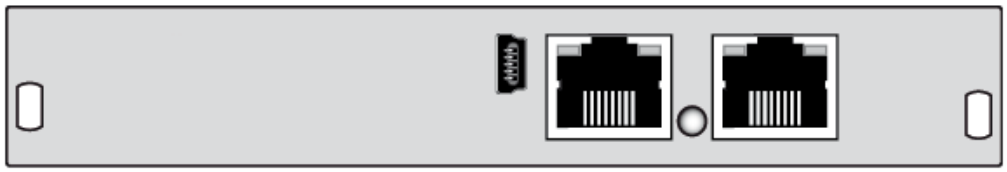
Figure 4. Dual CATx/Fiber Repeater Allows One Unit to Connect Two Sets of Extenders

Orion XT Models

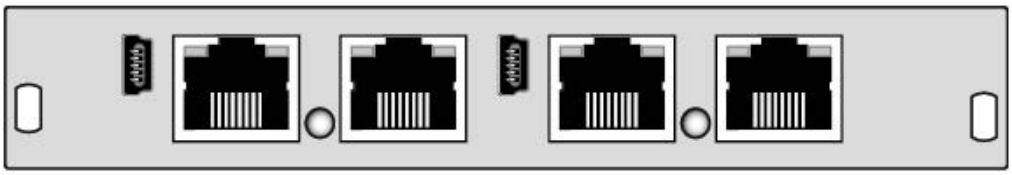
An Orion XT Cross Repeater consists of at least one Cross Repeater card in an Orion Xtender chassis.

Orion XT Plug-in Card

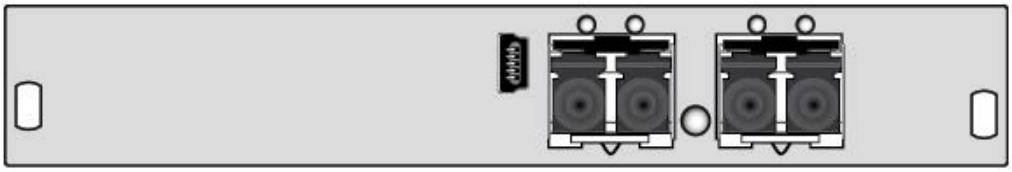
Cards are available in six models as shown below.



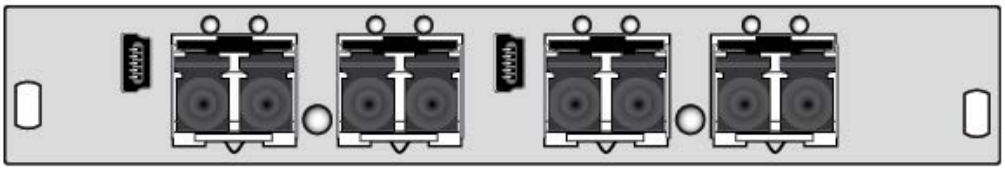
CATx: Single Port. CATx IN, CATx OUT



CATx: Dual Port. CATx IN, CATx OUT

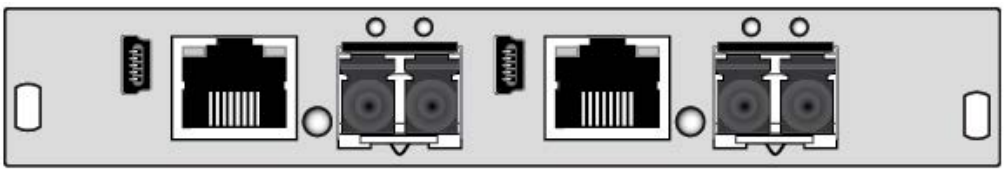


Fiber: Single Port. Fiber IN, Fiber OUT



Fiber: Dual Port. Fiber IN, Fiber OUT

CATx / Fiber: Single Port. CATx or Fiber IN/OUT



CATx / Fiber: Dual Port. CATx or Fiber IN/OUT

Figure 5. Orion XT Cross Repeater models

Orion XT Chassis

Each card occupies 1 card slot in an Orion Xtender chassis, available in 2, 4, 6, and 21 card sizes, as shown below.

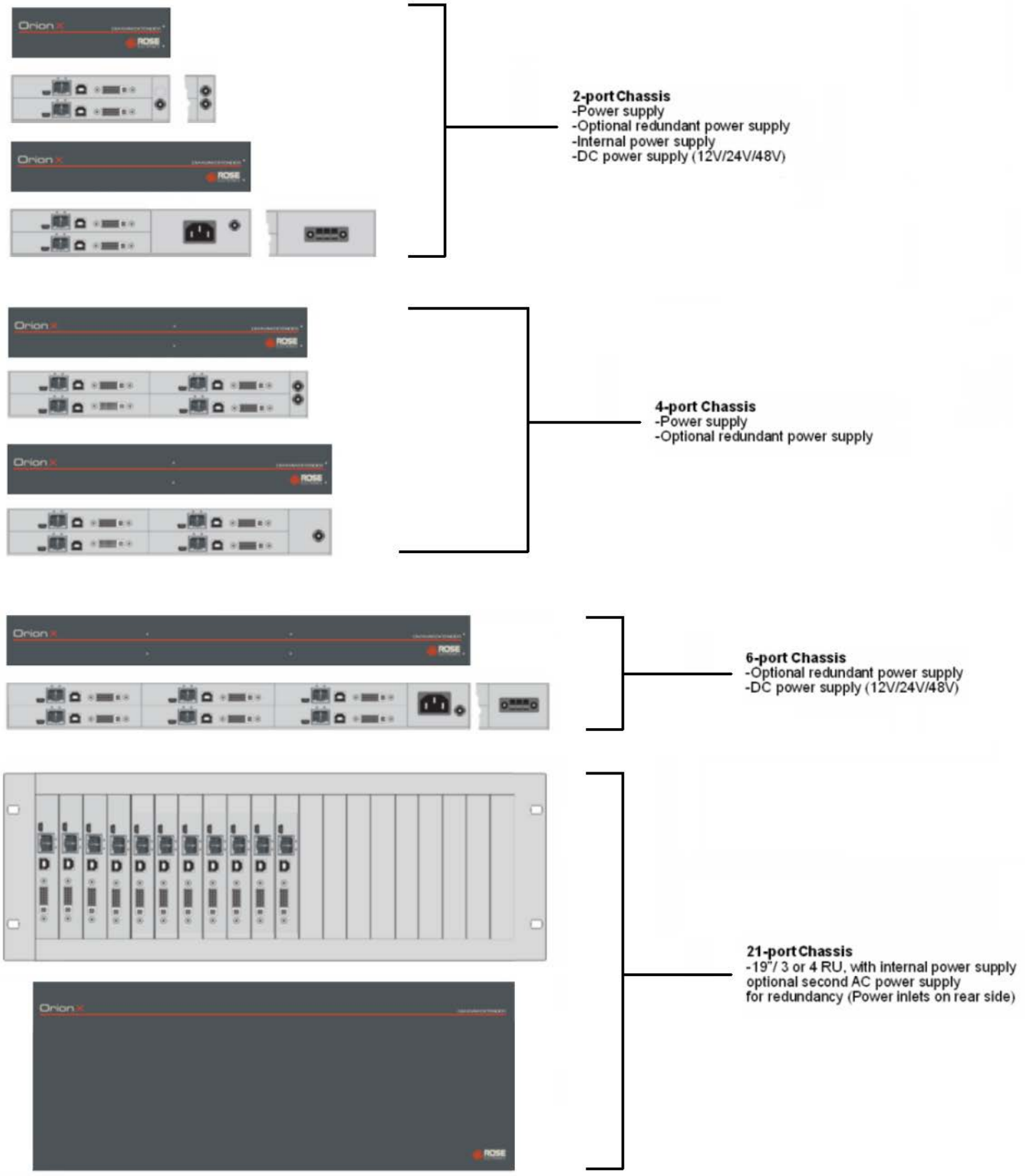


Figure 6. Orion Xtender Chassis Models

INSTALLATION AND OPERATION

Installation

Installation of the Orion XT Cross Repeater is very simple.

1. Ensure that power is disconnected from Orion XT Cross Receiver and all Orion X equipment.
2. Connect the appropriate interconnect (CATx or fiber) cables between the Orion XT and the input and output Orion X equipment to be extended.
3. Connect the chassis to the power supply.
4. Apply power to the system.

Configuration

The Orion XT Cross Repeater does not require any configuration and is ready for use as received. The ports are bi-directional and will function automatically as inputs or outputs, depending upon the signals connected to them.

Operation

The Orion XT Cross Repeater does not have any adjustable operating modes and is ready for use as received.

Status LEDs

The Orion XT Cross Repeater modules are fitted with a multi-color LED for overall status indication and two further LEDs above each connector for indication of the connection status.

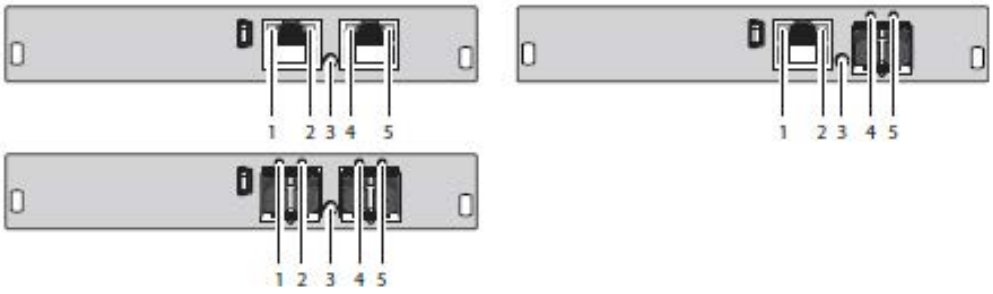


Figure 7. LED locations

LED 1/4 and 2/5: Connection Status

Pos.	LED	Status	Description
1 & 4	**Failure LED** (green)	Off	Connection available
		On or Flashing	Connection failure (flashing for about 20 s following a connection failure)
2 & 5	**Status LED** (green)	Flashing	No connection via interconnect cable
		On	Connection available

LED 3: Device Status

LED color		Description
Red		Device ready
Violet		Link 1 (left connector) available, Link 2 (right connector) not detected
Green		Link 2 (right connector) available, Link 1 (left connector) not detected
Light Blue		Link 1 (left connector) and Link 2 (right connector) available

Figure 8. Status LEDs

Safety

The Orion XT Cross Repeater, 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 MAINTENANCE

Maintenance and Repair

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

See Limited Warranty for more information.

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

Rose Electronics

Attn: RA _____

10707 Stancliff Road

Houston, Texas 77099 USA

Technical Support

If you are experiencing problems, or need assistance installing your Orion XT Cross Receiver, consult the appropriate section of this manual. If, however, you require additional information or assistance, please contact the Rose Electronics Technical Support Department at:

Phone: (281) 933-7673

E-mail: TechSupport@rose.com

Web: www.rose.com

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

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

APPENDICES

Appendix A — Specifications

Part Numbers	Description
OX2-CNV-01CC	CATx / CATx, single port, 2 card chassis
OX2-CNV-01SC	CATx / Fiber, single port, 2 card chassis
OX2-CNV-01SS	Fiber / Fiber, single port, 2 card chassis
OX2-CNV-02CC	CATx / CATx, dual port, 2 card chassis
OX2-CNV-02SC	CATx / Fiber, dual port, 2 card chassis
OX2-CNV-02SS	Fiber / Fiber, dual port, 2 card chassis
Chassis Dimensions (W x D x H)	
2 card	5.7” x 5.8” x 1.6” (145 x 147 x 41 mm)
4 card	11.5” x 5.8” x 1.6” (293 x 147 x 41 mm)
6 card	17.4” x 5.8” x 1.6” (442 x 147 x 41 mm)
Chassis Power Requirements	
2 card	5 Volts / 3 Amps
4 card	5 Volts / 5 Amps
6 card	5 Volts / 8 Amps
Interconnect Cable Requirements	
CATx RJ45 EIA/TIA 568-B 1000Base-T	Shielded solid core CATx5e/6/7, AWG 24 Cat X Patch Cable AWG 26/8 Use ferrites at both ends
Fiber SFP Single-mode Type LC	Single-mode 9µm, 2 fibers Multi-mode 50µm, 2 fibers Multi-mode 62.5µm, 2 fibers
Cable Distances	
CATx 24 AWG	460 ft (140 m)
CATx 26/28 AWG	230 ft (70 m)
Fiber MM 62.5µm	656 ft (200 m)
Fiber MM 50µm	1312 ft (400 m)
Fiber MM 50µm OM3	3280 ft (1000 m)
Fiber SM 9µm	32,808 ft (10,000 m)
LED	
Connection fail	On = Connection failure
Connection status	On = Connection available
Device status	Red=device ready Blue=Link 1 available, Link 2 not detected Green=Link 2 available, Link 1 not detected Light Blue= Link 1 and Link 2 available
Environmental	
Operating Temp	41°F to 113°F (5°C to 45°C)
Storage Temp	-13°F to 140°F (-25°C to 60°C)
Humidity	0% to 80% relative, non-condensing
Approvals	CE, UL, CUL, FCC Class A, ROHS2, WEEE

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