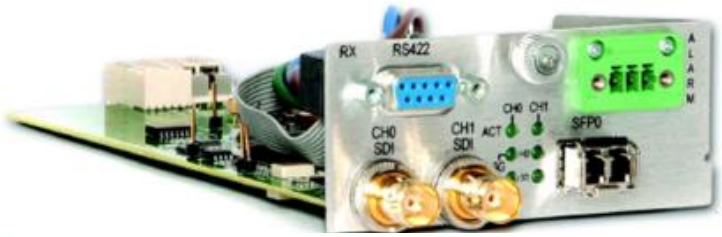
thinklogical®

Q-Series

High Reliability, Rack-Space Saving,
Video Extension Solutions

Q-Series SDIXtreme 3G+ Modules

For use in the Q-4300, Q-2300 & Q-1300 Chassis



PRODUCT MANUAL

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Q-Series Chassis & Modules

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Thinklogical, LLC®
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We, the Thinklogical team, are committed to understanding and exceeding our customers' requirements, the first time and every time.

Thinklogical, LLC is the leading manufacturer and provider of fiber optic and CATx KVM, video, audio, and peripheral extension and switching solutions used in video-rich, big-data computing environments.

Thinklogical offers the only fiber-optic KVM matrix switches in the world that are accredited to the Common Criteria EAL4, TEMPEST SDIP 24 Level B, and NATO NIAPC Evaluation Scheme: GREEN and the U.S. DoD DISA JITC UCR 2013 APL information assurance standards. And Thinklogical Velocity products are the first system with both KVM and video matrix switching capabilities to be placed on the Unified Capabilities Approved Product List (UC APL) under the Video Distribution System (VDS) category.

Governments, entertainment, scientific and industrial customers worldwide rely on Thinklogical's products and solutions for security, high performance, continuous operation and ease of integration. Thinklogical products are designed and manufactured in the USA and are certified to the ISO 9001-2008 standard.

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Information Assurance

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Thinklogical is headquartered in Milford, Connecticut and is privately held by Riverside Partners, LLC, Boston, MA (http://www.riversidepartners.com). For more information about Thinklogical products and services, please visit www.thinklogical.com.

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Note and Warning Symbols

Throughout this manual you will notice certain symbols that bring your attention to important information. These are **Notes** and **Warnings**. Examples are shown below.

Note: Important Notes appear in blue text preceded by a yellow exclamation point symbol, as shown here.

A note is meant to call the reader's attention to **helpful** information at a point in the text that is relevant to the subject being discussed.

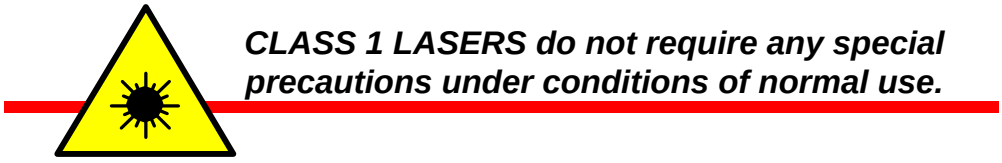
Warning! All Warnings appear in red text, followed by blue text, and preceded by a red stop sign, as shown here.

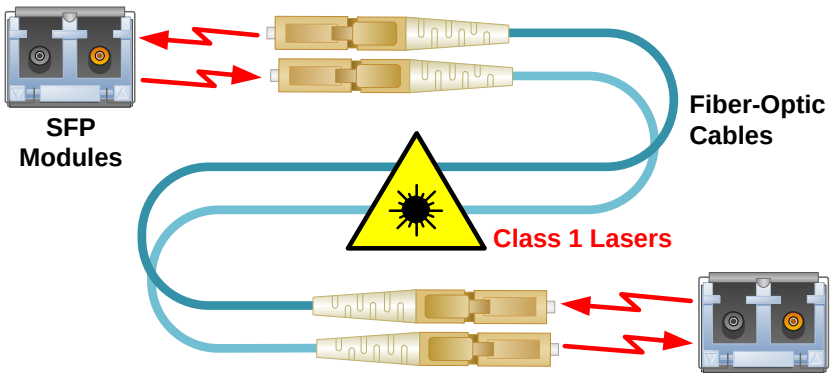
A warning is meant to call the reader's attention to **critical** information at a point in the text that is relevant to the subject being discussed.

BEFORE STARTING ANY PROCEDURE, IT IS RECOMMENDED THAT YOU READ THE INSTRUCTIONS THOROUGHLY!

Class 1 Laser Information

Q-Series Extenders and Matrix Switches, like all Thinklogical® products, are designed and identified as **Class 1 LASER products.** This means the maximum permissible exposure (MPE) cannot be exceeded when viewing the laser with the naked eye or with the aid of typical magnifying optics (e.g. telescope or microscope).





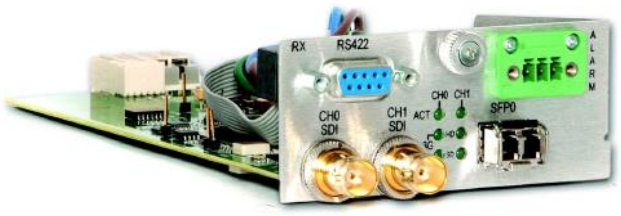
Introduction

1.1. Product Overview

The Q-Series SDIXtreme 3G+ Fiber Extension System is a compact, total system solution providing industry leading performance for broadcast quality SDI over fiber transmission. Depending on the application, the Q-Series SDI Fiber Extension System can distribute uncompressed broadcast quality signals over **single mode fiber** up to 40 km (24 miles) and up to 1000 meters over **multi-mode fiber**. In addition, this fiber-based transport system gives users the assurance that each signal is immune to video pathological signals over the entire length of the fiber interconnect while supporting all pathological patterns at all rates.

The Q-Series SDIXtreme 3G+ Fiber Extension System is fully compatibility with Thinklogical's VX and HDX Router line of products and provides reliable media conversion for a wide variety of applications. It is an ideal solution for Pro A/V, broadcast and corporate studio applications, including video production and editing, sports tele-production, field production, cross-town fiber links, cross-campus production, pre-fibered venues, courtesy feeds and many more.

Each module can be used in our stand-alone Q-1300 Chassis or, for more extensive applications, our two-module Q-2300 chassis or our four-module Q-4300 chassis, which each support any combinations of transmitters and receivers.



1.2. System Features

The reliability of our Q-Series Extenders stems from the quality of their design and construction, with advanced integrated re-clocking circuitry designed into the components. Equalized and re-driven SDI loop-through is optional on the transmitter. These key features assure that **the signal is equalized and re-clocked prior to fiber transmission,** thereby retaining all of the signal's initial parameters and allowing for pristine, re-clocked SDI outputs on the receiver.

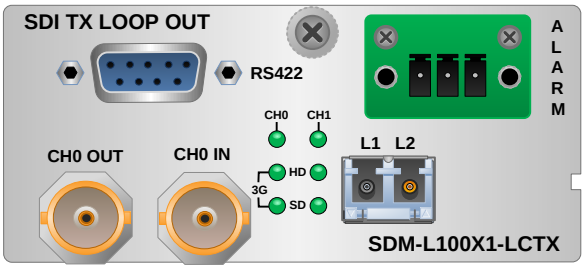
All SDI interface modules are hot-swappable and each has its own RS-422 port for remote camera control (such as pan, tilt and zoom) and access to video and audio players/recorders.

Installation possibilities are expanded with built-in support for either **multi-mode or single mode fiber**, making this a convenient and cost effective solution to combat the restrictions inherent in the distribution of uncompressed, broadcast quality video signals over long distances. In addition, the standard SFP+ optics (with LC connectors) are hot swappable/ pluggable.

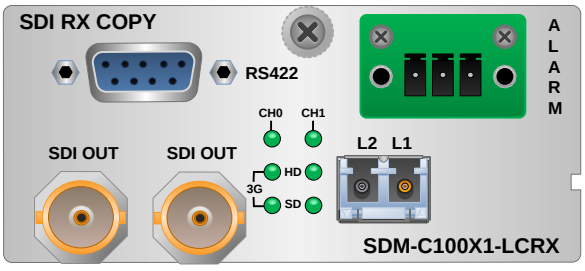
All models are connected by fiber optic cables (*see Paragraph 2, page 9*) to provide communications to and from the transmitter. The transmitter unit connects to the video source with 50Ω BNC cables. The receiver unit provides an interface to the monitor(s) or other viewing device(s).

Key Features of the Q-Series SDIXtreme 3G+ Modules

- **H:** 1.650” (41.91 mm) x **D:** 6.366” (45.8cm) x **W:** 3.693” (44.5cm), **10 Watts** per unit.
- Requires one, two or three fiber-optic cables, depending on the application.
- No RF interference.
- Extends SDI signals over a single fiber. Each fiber supports SD, HD or 3G signals. (See the *Signal Support Matrix* on page 16 for available support configurations.)
- Supports 3G/HD/SD SDI inputs with embedded audio and ancillary data.
- RS-422 serial port (Ideal for remote camera operations requiring pan, tilt and zoom.)
- MRTS technology Gbps distributes uncompressed broadcast quality signals over single mode fiber up to 40 km. (24 miles) and up to 1000 meters over multi-mode fiber.
- SMPTE 424M, 292M, 259M, 372M, 425 level A and B compliant.
- Multi-standard operation from 270 Mbit/s to 3 Gbit/s.
- Signals are recovered and re-clocked on the receiver.
- Flawless image quality with no frame dropping.
- Local video port on some transmitters.
- Equalized and re-clocked SDI loop through on certain transmitter models.
- Cable equalization on inputs and cable drivers on outputs to ensure signal integrity.
- Supports pathological patterns at all rates.
- Support for standard 2.97 (3G), 1.485 (HD), .270 (SD), and fractional 1/1.001 rates.
- Compatible with all Thinklogical VX and HDX Routers.
- Auto detects input video format and displays the format on module LEDs.
- All physical connections to the product use industry-standard connectors. All cables are commercially available.
- Each module can be used in our stand-alone Q-1300 Chassis, our two-module Q-2300 chassis or our four-module Q-4300 chassis.
- Can combine Transmitters and Receivers in one chassis.
- Simple plug and play.



TX: One Input with Loop Out, One SFP



RX: One SFP, Two SDI Outputs

1.2.1. The Q-Series Chassis Line

Q-4300 Chassis: (VQS-004300) Supports up to four DVI, RGB/DVI or SDI Q-Series modules. Dual interface and current sharing power supplies. Desktop or 19" rack-mount.

Q-2300 Chassis: (VQS-002300) Supports up to two DVI, RGB/DVI or SDI Q-Series modules. Desktop or 19" rack-mount.

Q-1300 Chassis: (VQS-001300) Supports one DVI, RGB/DVI or SDI Q-Series module. Desktop only.

The Q-4300 Chassis includes the following features:

Desktop/Rack-mount unit can accommodate up to 4 modules in any combination of transmitter or receiver. Features include:

- Hot swappable power supplies to minimize down time
- Current sharing power supplies
- Hot swappable modules
- Front LCD panel status monitoring and control
- Fully compatible with all of Thinklogical's VXRouter line of products.
- Simple plug and play

The Q-2300 Chassis includes the following features:

Desktop unit can accommodate up to 2 modules in any combination of transmitter or receiver. Features include:

- Hot swappable modules
- Front LCD panel status monitoring and control
- Fully compatible with all of Thinklogical's VXRouter line of products.
- Simple plug and play
- 19" Rack-mounts available

The Q-1300 Chassis includes the following features:

Desktop unit can accommodate any one Q-Series transmitter or receiver module. Features include:

- Hot swappable module
- Fully compatible with all of Thinklogical's VXRouter line of products.
- Simple plug and play

1.2.2. Mixing Q-Series Modules and TLX Modules in a single Chassis

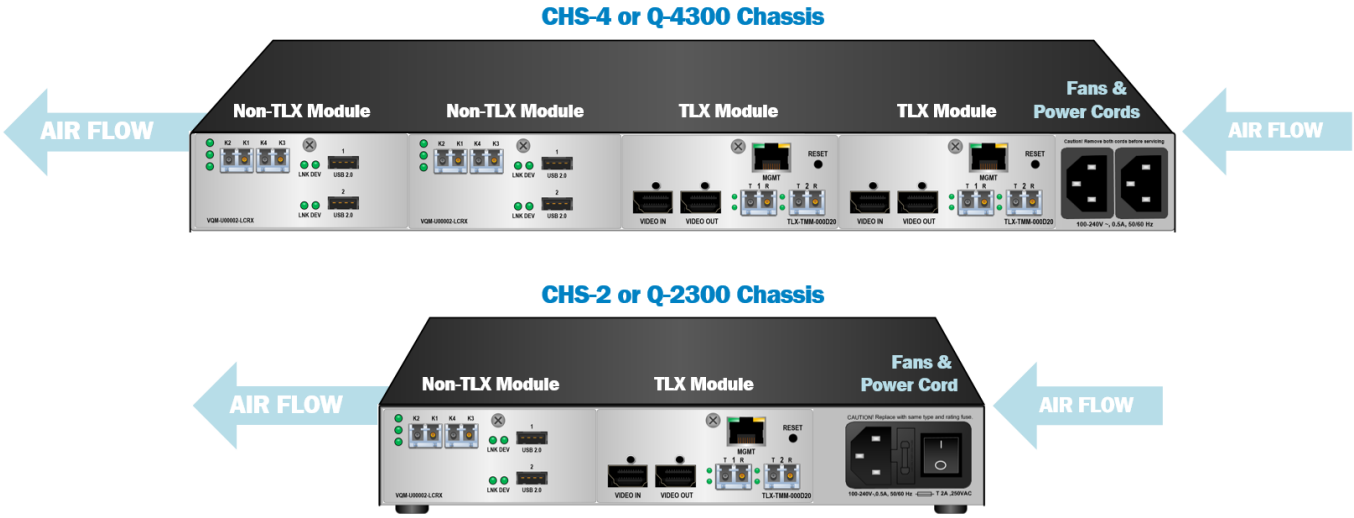
Besides Q-Series products, Thinklogical also carries the TLX line of 10G extension products in a modular format. **Non-Q-Series modules, such as TLX, are compatible with the Q-4300, Q-2300 and Q-1300 chassis as well as their own CHS-4, CHS-2 and CHS-1 chassis.** However, because VQM modules generate less heat than TLX modules, they were not deigned to allow air-flow through their enclosures as in TLX modules.

Air-Flow through VDM Modules

To avoid over-heating of TLX modules when mixed with non-TLX modules, the simple solution is to always install all non-TLX modules on the left side of the chassis (as looking from the back where the modules are loaded) **and install all TLX modules on the right side, next to the cooling-air intake fans** (The side next to the power cord receptacles). This will allow proper air-flow over the warmer TLX modules and will prevent over-heating. *This is true for both the Q-4300 and Q-2300 Chassis and for both the CHS-4 and CHS-2 Chassis.*

Warning! To avoid over-heating of TLX modules, always install all non-TLX modules on the left side of the chassis (as looking from the back where the modules are loaded) and install all TLX modules on the right side, next to the cooling-air intake fans (The side next to the power cord receptacles) .

Note: Non-TLX modules, such as Thinklogical's Q-Series (VQM), were not deigned to allow air-flow through their enclosures as in TLX modules.

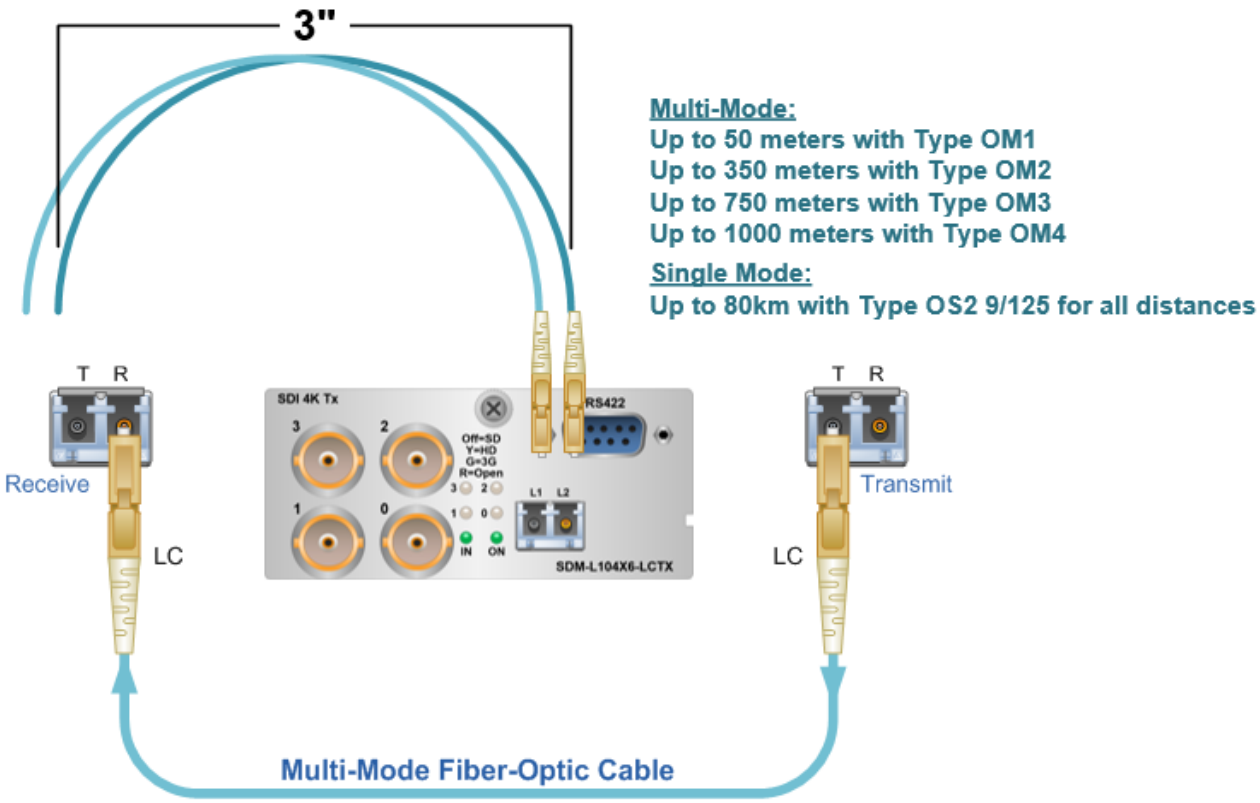


To avoid over-heating, always install all non-TLX modules on the left side of the chassis and install all TLX modules on the right

2. Fiber Optic Cable

Fiber optic cables connect the Transmitters to the Receivers. Standard multi-mode fiber optic cables must be 50 or 62.5 microns, terminated with LC type fiber optic connectors.

Be careful not to kink or pinch the fiber optic cable as it is being installed and keep all bend diameters to no less than 3 inches (76.2mm).



2.1. Single Fiber Operation

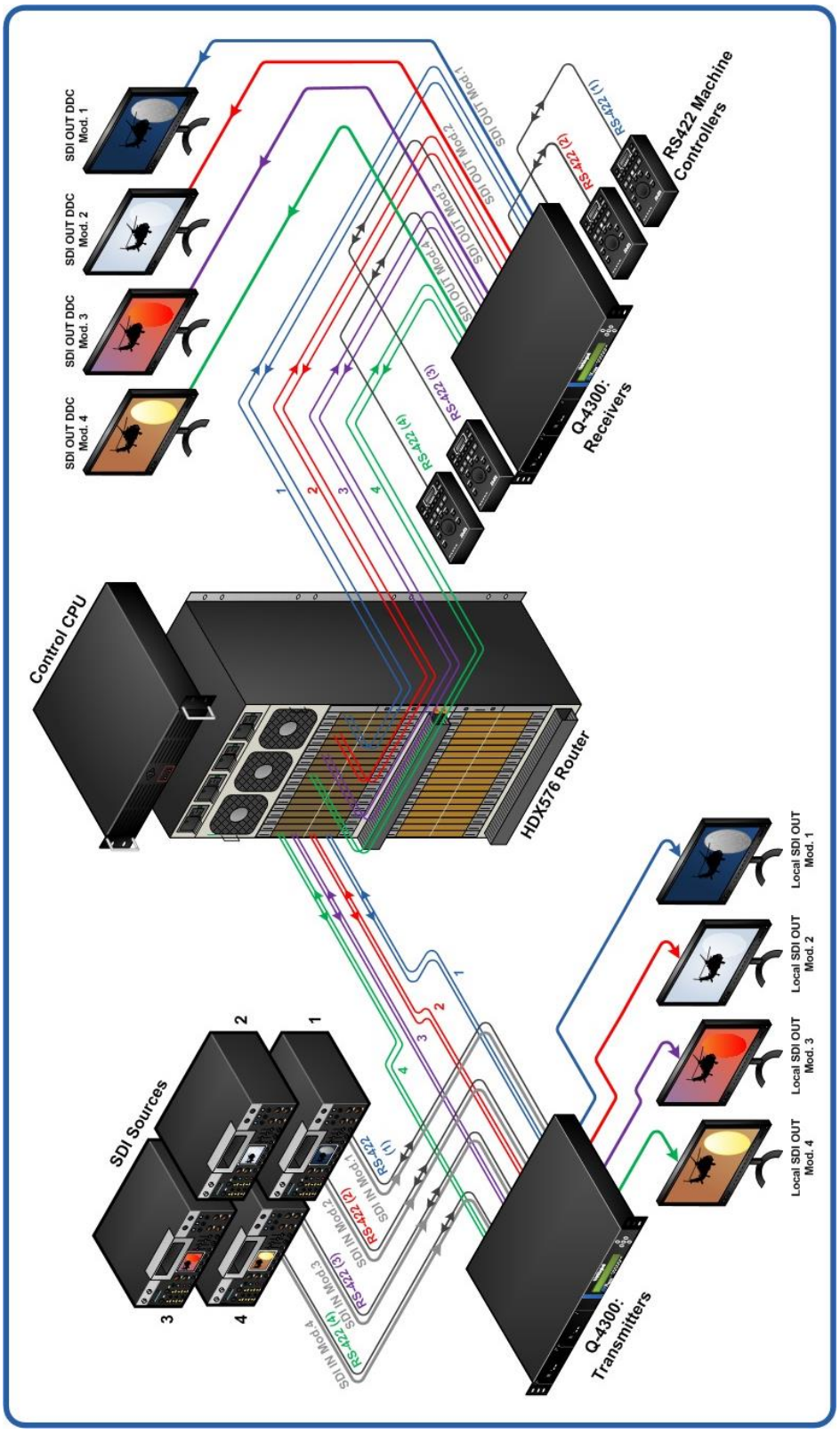
The unit will operate with a single fiber from TX to RX. In this mode the TX can transmit video and data to the RX, but the RX cannot send any information to the TX. (RS-422 data is transmitted in the TX to RX direction only.)

2.2. Dual Fiber Operation

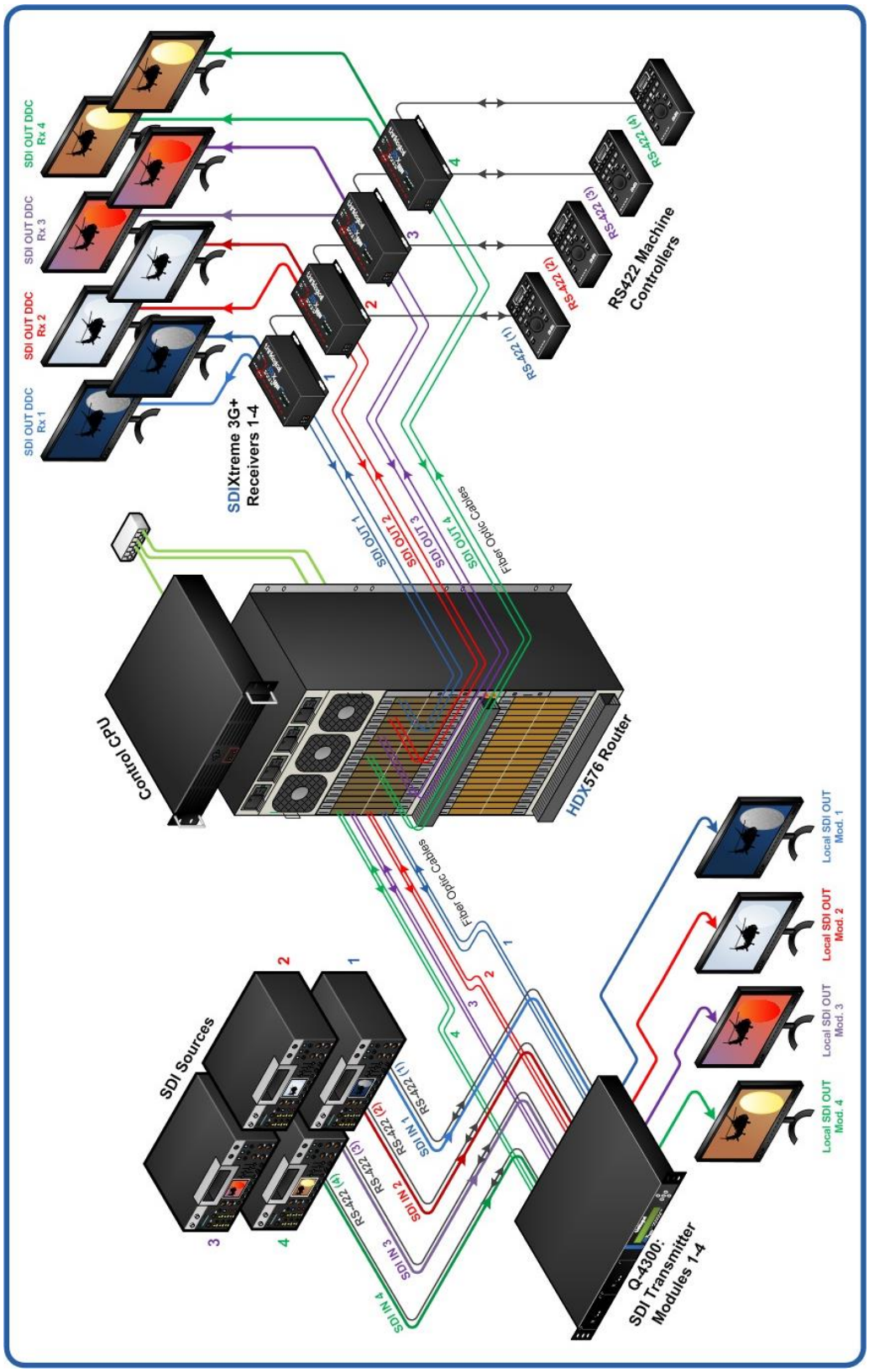
In this mode video is transmitted from TX to RX over fiber L1. Fiber L2 is used as a data return path from RX to TX, allowing full duplex, bi-directional RS-422 data transfer.

2.3 Three Fiber Operation

In models with two SFPs, video 1 is transmitted from TX to RX over fiber L1 and video 2 is transmitted from TX to RX over fiber L3. Fiber L2 is used as a data return path from RX to TX, allowing full duplex, bi-directional RS-422 data transfer.



SDM TXs to SDM RXs Fiber Extension System



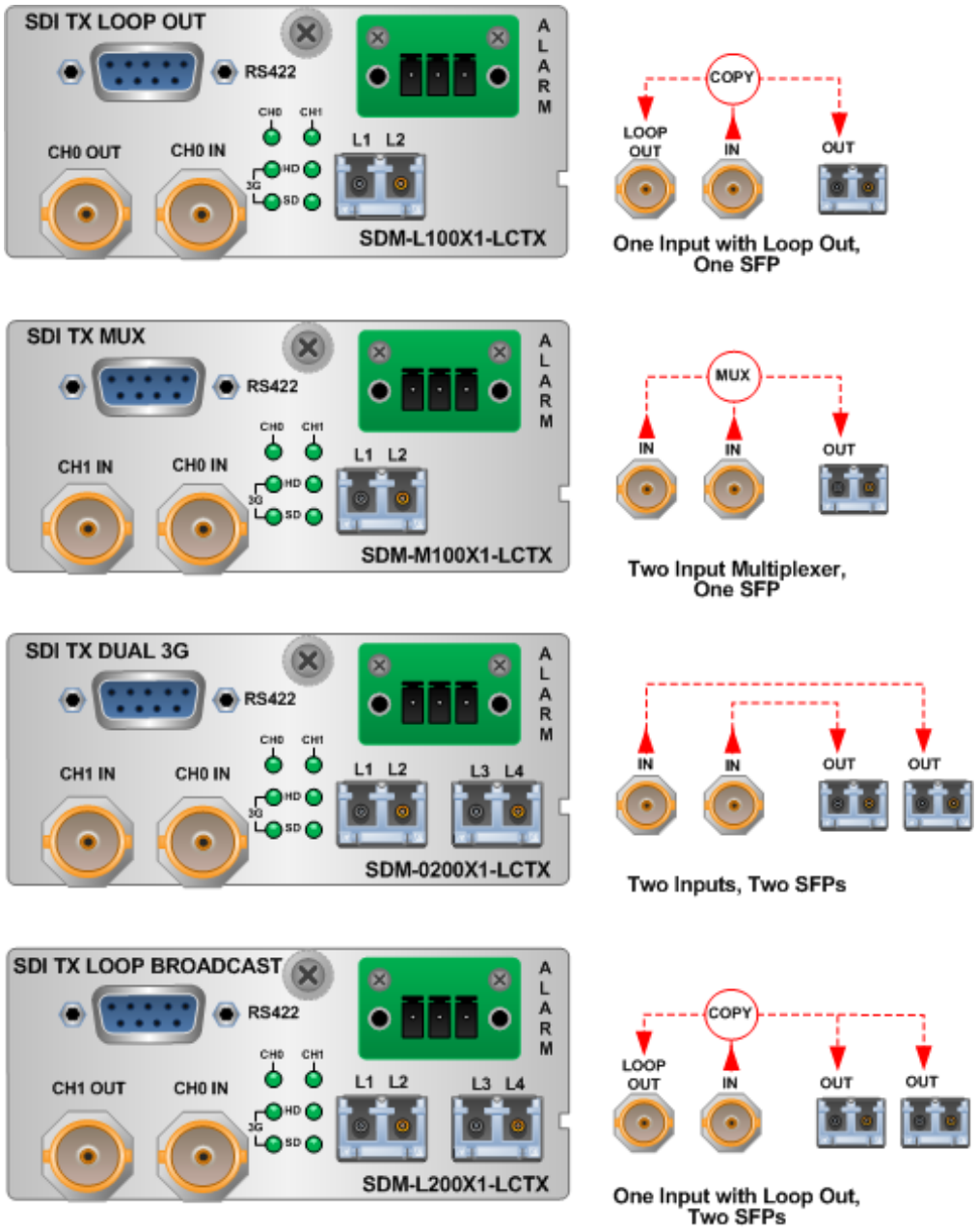
SDM TXs to SDIXtreme 3G+ RXs Fiber Extension System

3. The SDIXtreme 3G+ Modules

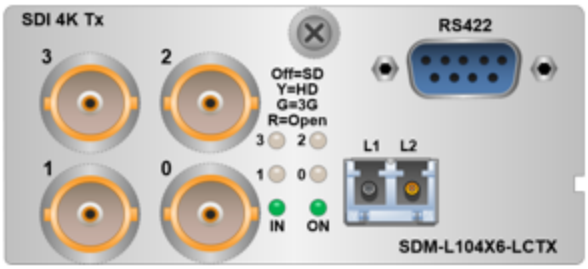
This section lists the various 3G+ SDI Modules designed for use in the Q-Series Video Extension System.

3.1. Transmitter Modules

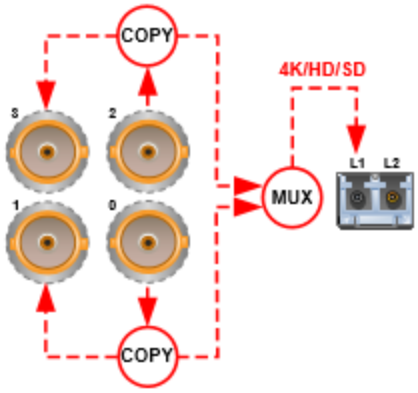
Each **SDI Transmitter** (TX) **Module** features an RS-422 serial port, one, two or four video inputs and, in some models, one or two local video outputs. The TX has fiber connectors used for transferring video and data to and from the RX. Dual and Loop Out Transmitters include a dry contact alarm. Status LEDs provide system information.



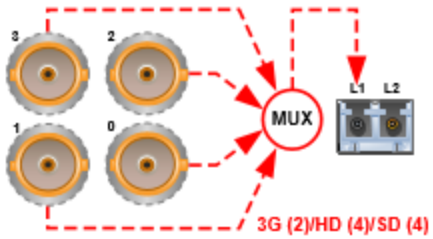
SDI Dual Input and Loop-out Transmitter Modules

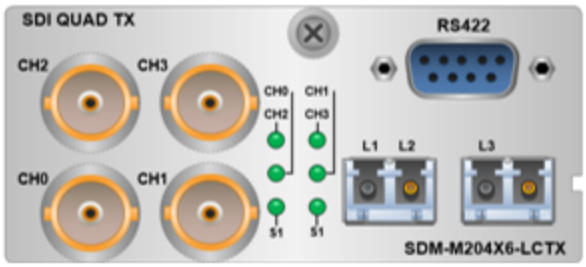


2 SDI IN, 2 Loop-outs, 1 SFP

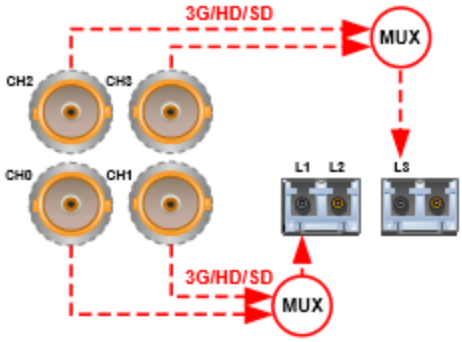


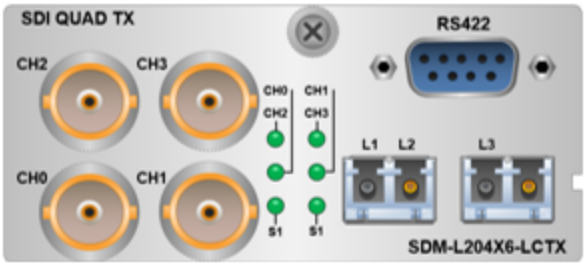
2 Multiplexed IN=3G,
4 Multiplexed IN=HD or SD, 1 SFP



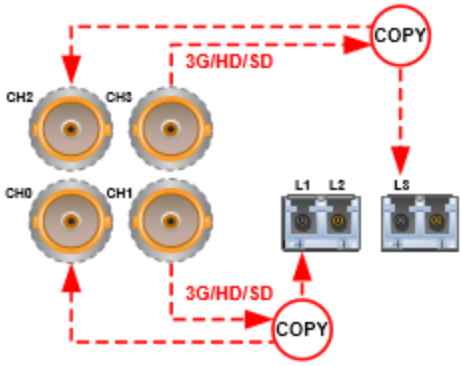


4 Multiplexed IN, 2 SFPs





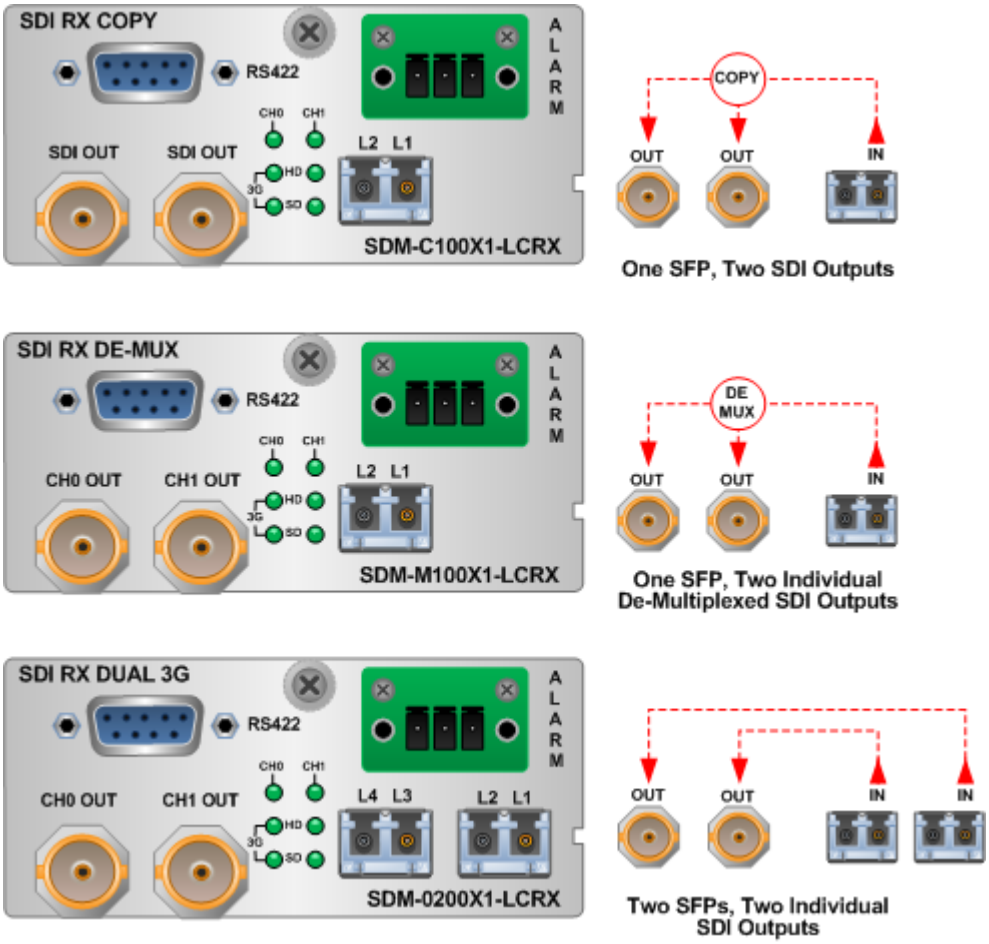
2 SDI IN, 2 Loop-outs, 2 SFPs



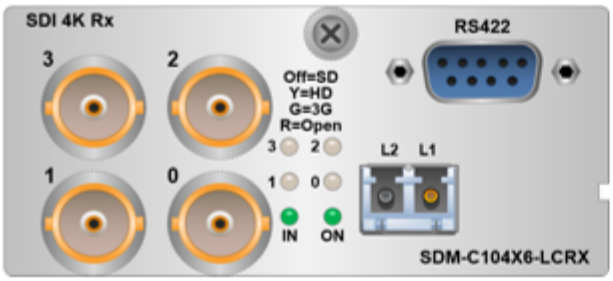
SDI 4K, Quad Input and Loop-out Transmitter Modules

3.2. Receiver Modules

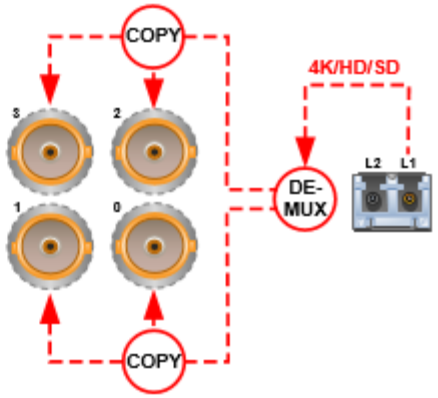
Each **SDI Receiver** (RX) **Module** features an RS-422 port and 2 or 4 video outputs. The RX has fiber connectors used for receiving video and data and for transmitting data to the TX. Dual Receivers include a dry contact alarm. Status LEDs provide system information.

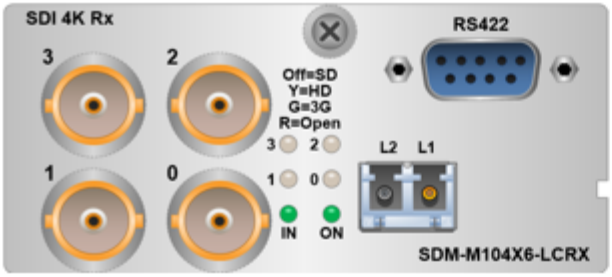


SDI Dual Receiver Modules

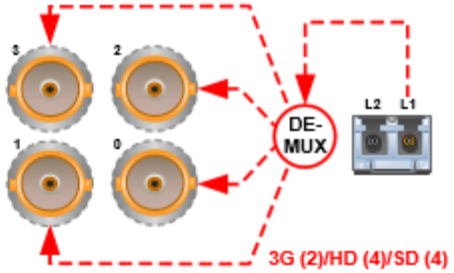


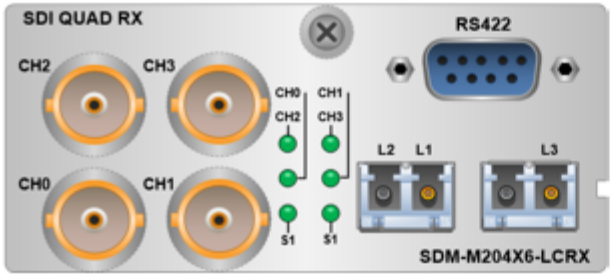
2 pairs SDI OUT, 1 SFP



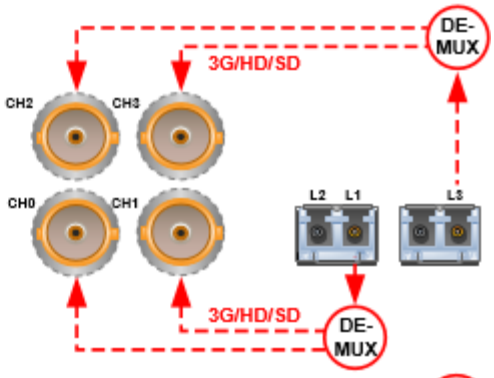


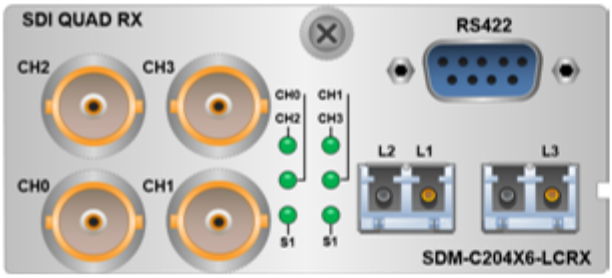
2 De-multiplexed 3G OUT,
4 De-multiplexed HD or SD OUT, 1 SFP



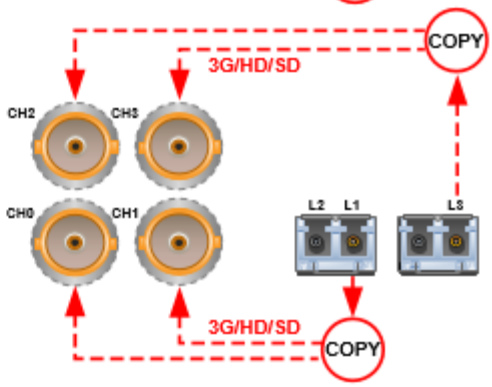


2 Pairs De-multiplexed SDI OUT, 2 SFPs





2 pairs SDI OUT, 2 SFPs



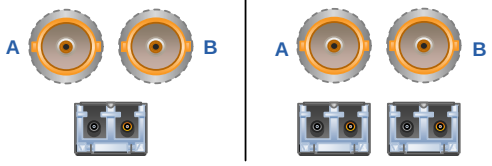
SDI 4K and Quad Receiver Modules

3.3. Signal Support Matrix

Each SDIXtreme 3G+ Module extends SD, HD or 3G signals over a single fiber. The following matrix specifies which signals can be extended with each module configuration.

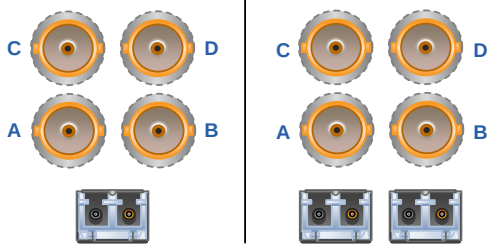
SDI Dual and Loop-out Modules

One SFP		*Two SFPs*	
A	**B**	**A**	**B**
SD	SD	SD	SD
HD	HD	HD	HD
SD	HD	SD	HD
HD	SD	HD	SD
3G	XX	3G	3G
XX	3G	3G	3G



SDI 4K, Quad and Loop-out Modules

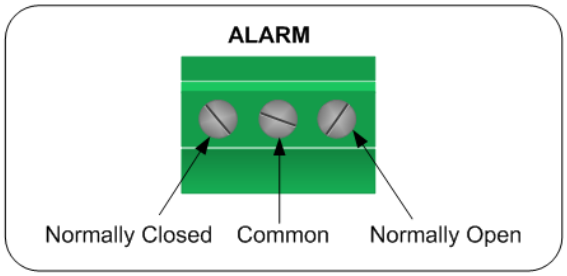
One SFP				*Two SFPs*			
A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
SD	SD	SD	SD	SD	SD	SD	SD
SD	SD	SD	HD	SD	SD	SD	HD
SD	SD	HD	HD	SD	SD	HD	HD
SD	HD	HD	SD	SD	HD	HD	SD
HD	HD	HD	HD	HD	HD	HD	HD
3G	XX	3G	XX	3G	3G	3G	3G
3G	XX	HD	HD	3G	3G	HD	HD
3G	XX	HD	SD	3G	3G	HD	SD
3G	XX	SD	HD	3G	3G	SD	HD
3G	XX	SD	SD	3G	3G	SD	SD
HD	HD	3G	XX	HD	HD	3G	3G
SD	HD	3G	XX	SD	HD	3G	3G
HD	SD	3G	XX	HD	SD	3G	3G
SD	SD	3G	XX	SD	SD	3G	3G
↓	↓	↓	↓	↓	↓	↓	↓



*A **3G** signal on either **A or B** will consume the A/B channel.*
*A **3G** signal on either **C or D** will consume the C/D channel.*
*All other combinations including **HD or SD** are valid.*

3.4. Dry Contact Alarm

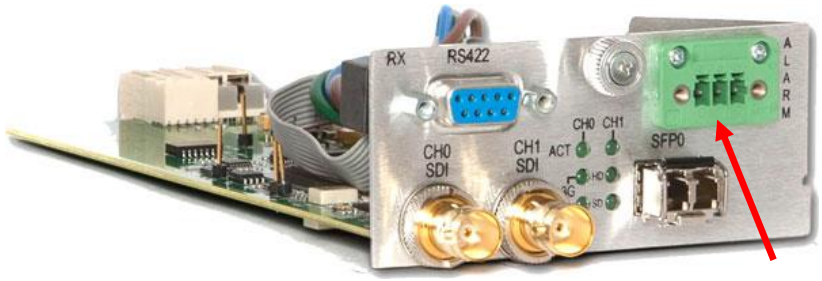
Dry contact alarms are available on Loop-out Transmitter and on Dual Transmitter and Receiver modules. The relay is energized when there is an alarm condition, such as over temperature or power regulation.



Alarm Pin Out

The dry contact alarm is a Form C contact with the following ratings:

Nominal switching capacity: 1A, 30V DC
Max. switching power: 30W DC



Dry Contact Alarm Receptacle

3.5. Q-Series SDIXtreme 3G+ Technical Specifications

Power Consumption	**10 watts per module (50 watts per chassis)**
Supply Voltage	**100-240 VAC, 47-63 Hz, Universal AC Power Supplies**
SDM Dimensions	**Height: 1.650" (41.91 mm)** **Depth: 6.366" (161.70 mm)** **Width: 3.693" (93.80 mm)** **(Tolerance: ± .039"; 1 mm)**
Fiber Optical Distance	**Up to 65 meters with Type OM1** **Up to 350 meters with Type OM2** **Up to 650 meters with Type OM3** **Up to 1000 meters with Type OM4**
Operating Temp and Humidity	**0° to 50° C (32° to 122° F), 5% to 95% RH, non-condensing**
Compliance	**Approvals for US, Canada and European Union**
Warranty	**12 months from date of delivery. Extended warranties available.**

4.0. FPGA Downloads

Upgrades are available through Thinklogical. For technical assistance, please call us at:
1-203-647-8700.

5.0. Regulatory & Safety Compliance

5.1. Safety Requirements

Symbols found on the product

Markings and labels on these products follow industry-standard conventions. Regulatory markings found on the products comply with domestic and many international requirements.

Regulatory Compliance

Thinklogical's products are designed and made in the U.S.A. Each product has been tested by a certified testing laboratory and found to be compliant with the following standards (for both domestic USA and international locations):

North America

Safety

ANSI/UL60950-1: 1st Edition (2003)
CAN/CSA C22.2 No. 60950-1-03

Electromagnetic Interference

FCC CFR47, Part 15, Class A
Industry Canada ICES-003 Issue 2, Revision 1

Australia & New Zealand

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective measures.

European Union

Declaration of Conformity

Manufacturer's Name & Address: **Thinklogical, LLC®**
100 Washington Street
Milford, Connecticut 06460 USA

These products comply with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

Standards with Which Our Products Comply

Safety

CENELEC EN 60950-1, 1st Edition (2001)

Electromagnetic Emissions

EN55022: 1994 (IEC/CSPIR22: 1993)
EN61000-3-2/A14: 2000
EN61000-3-3: 1994

Electromagnetic Immunity

EN55024: 1998 Information Technology Equipment-Immunity Characteristics
EN61000-4-2: 1995 Electro-Static Discharge Test
EN61000-4-3: 1996 Radiated Immunity Field Test
EN61000-4-4: 1995 Electrical Fast Transient Test
EN61000-4-5: 1995 Power Supply Surge Test
EN61000-4-6: 1996 Conducted Immunity Test
EN61000-4-8: 1993 Magnetic Field Test
EN61000-4-11: 1994 Voltage Dips & Interrupts Test

5.2. Supplementary Information

The following statements may be appropriate for certain geographical regions and might not apply to your location.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigencies du Règlement sur le mat érial brouilleur du Canada.

Warning! This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective measures.

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

Note: This Class A digital apparatus complies with Canadian ICES-003 and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment.

Note: The user may notice degraded audio performance in the presence of electro-magnetic fields.

5.2.1. Product Serial Number

Thinklogical products have a unique serial number, which includes a date-code, printed on an adhesive label that is affixed to the unit. The format for the date-code is 2 digits for the month, dash, 2 digits for the year, plus four digits for a unique unit number. For example, **05-160127** indicates the unit was built in the **5**th month of 20**16**, and is unit number **127**.

5.2.2. Connection to the Product

Connections and installation hardware for our products use industry-standard devices and methods. All wiring connections to the customer equipment are designed to minimize proprietary or customized connectors and cabling. Power connections are made with regionally appropriate power cords and approved methods.

6.0. How to Contact Us

6.1. Customer Support

Thinklogical® is an engineering company and we will always do our best to ensure that you receive any help you need directly from our most knowledgeable engineers.

We believe that the first line of support comes from the design engineers that developed each particular product.

Therefore, your questions or issues will be handled promptly by our in-house engineers who are most familiar with your products. ***We won't be satisfied until you're satisfied.***

Thank you for choosing Thinklogical® products for your application.

We appreciate your business and are dedicated to helping you successfully use our products.

thinklogical® is always here to help you.

To contact us, please use the following telephone numbers and internet-based methods:

Website

Check out our website for current product offerings, support information and general information about all of the products we offer.

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing online or for download), product diagrams showing physical connections and other information you might need.

Internet: **www.thinklogical.com**

Note: Most online documents are stored as Adobe Acrobat "PDF" files. If you do not have the Adobe Acrobat reader needed to view PDF files, please visit www.adobe.com for a download.

Email

Thinklogical is staffed **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. We will try to respond to your email inquiries promptly, use the following email addresses for your different needs:

info@thinklogical.com – Information on Thinklogical® and our products.

sales@thinklogical.com – Sales Department - orders, questions or issues.

support@thinklogical.com – Product support, technical issues or questions, product repairs and request for Return Authorization.

Telephone

Thinklogical Operator:	**1-203-647-8700**
Product & Customer Support:	**1-203-647-8798**
US Commercial & Canada Sales:	**1-203-647-8769**
US Federal Government Sales:	**1-203-647-8716**
Toll Free in the Continental US:	**1-800-291-3211**
International Sales (Europe, Middle East, Africa)**:**	**1-203-647-8704**
International Sales (Asia Pacific, Central & Latin America)**:**	**1-203-647-8734**

Please contact our expert sales staff in Milford, CT. We are here Monday through Friday from 8:30am to 5:00pm, Eastern Time Zone. We'll provide a representative's direct dial phone number when you call.

If leaving a voice message, please provide a preferred time to call back so we may reach you at your convenience.

Our switchboard attendant will direct your call during regular business hours. We have an automated attendant answering our main telephone switchboard after regular business hours and holidays. You can leave voice messages for individuals at any time.

Fax

Our company facsimile number is **1-203-783-9949**. Please indicate the nature of the fax on your cover sheet and provide return contact information.

6.2. Product Support

Thinklogical's support personnel are available **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. If your application requires assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make arrangements to help you with your Thinklogical products.

6.2.1. Warranty

Thinklogical, LLC® warrants this product against defects in materials and workmanship for a period of one year from the date of delivery. Thinklogical, LLC® and its suppliers disclaim any and all other warranties.

Note: Thinklogical, LLC® products carry a one year warranty, with longer term available at time of purchase on most products. Please refer to your product invoice for your products Warranty Terms & Conditions.

Defect remedy shall be the repair or replacement of the product, provided that the defective product is returned to the authorized dealer within a year from the date of delivery.

If you wish to return your device, contact the Thinklogical, LLC authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical, LLC at **1-800-291-3211** (USA).

6.2.2. Return Authorization

If you need to return your Thinklogical® product to us for any reason, please get a
Return Merchandise Authorization Number (RMA#)
from Thinklogical's Product Support Department (1-203-647-8700) before sending the unit in.

If you need to return a product to Thinklogical directly, please contact **Customer Support** at **1-800-291-3211** or **1-203-647-8700**. Customer Support will ask you to describe the problem and will issue you a **R**eturn **M**erchandise **A**uthorization number (RMA#). Pack the device in its original box, if possible, and return it with the RMA# printed on the outside of the box.

Note: DO NOT return products to Thinklogical® without *Return Merchandise Authorization*.

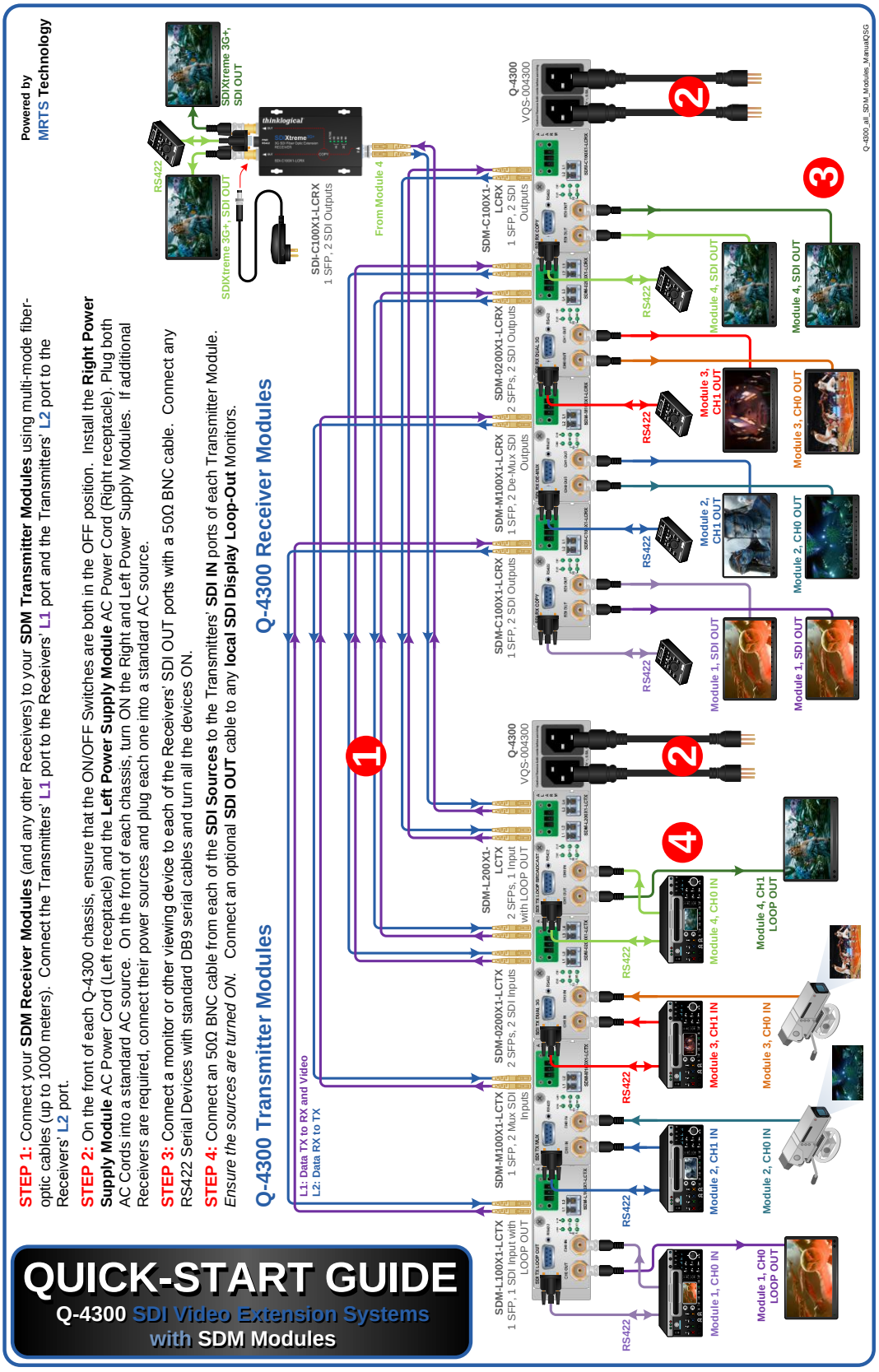
Our Addresses

If you have any product issues or questions or need technical assistance with your Thinklogical system, please call us at **1-800-291-3211 (USA only)** or **1-203-647-8700** and let us help. If you need to write us or return a product with a Return Merchandise Authorization, please use the following address:

Thinklogical, LLC®
Attn: *RMA#*
100 Washington Street
Milford, CT 06460 USA

Website:	www.thinklogical.com
Facebook:	www.facebook.com/ThinklogicalUSA
LinkedIn:	www.linkedin.com/company/thinklogical
Google+:	http://plus.google.com/u/0/109273605590791763795/about
YouTube:	www.youtube.com/user/thinklogicalNA
Twitter:	@thinklogical

Appendix A- Quick Start Guides



QUICK-START GUIDE

As used with *Thinklogical's*® Q-4300 SDI Video Extension System, SDM Modules and VX160 Router

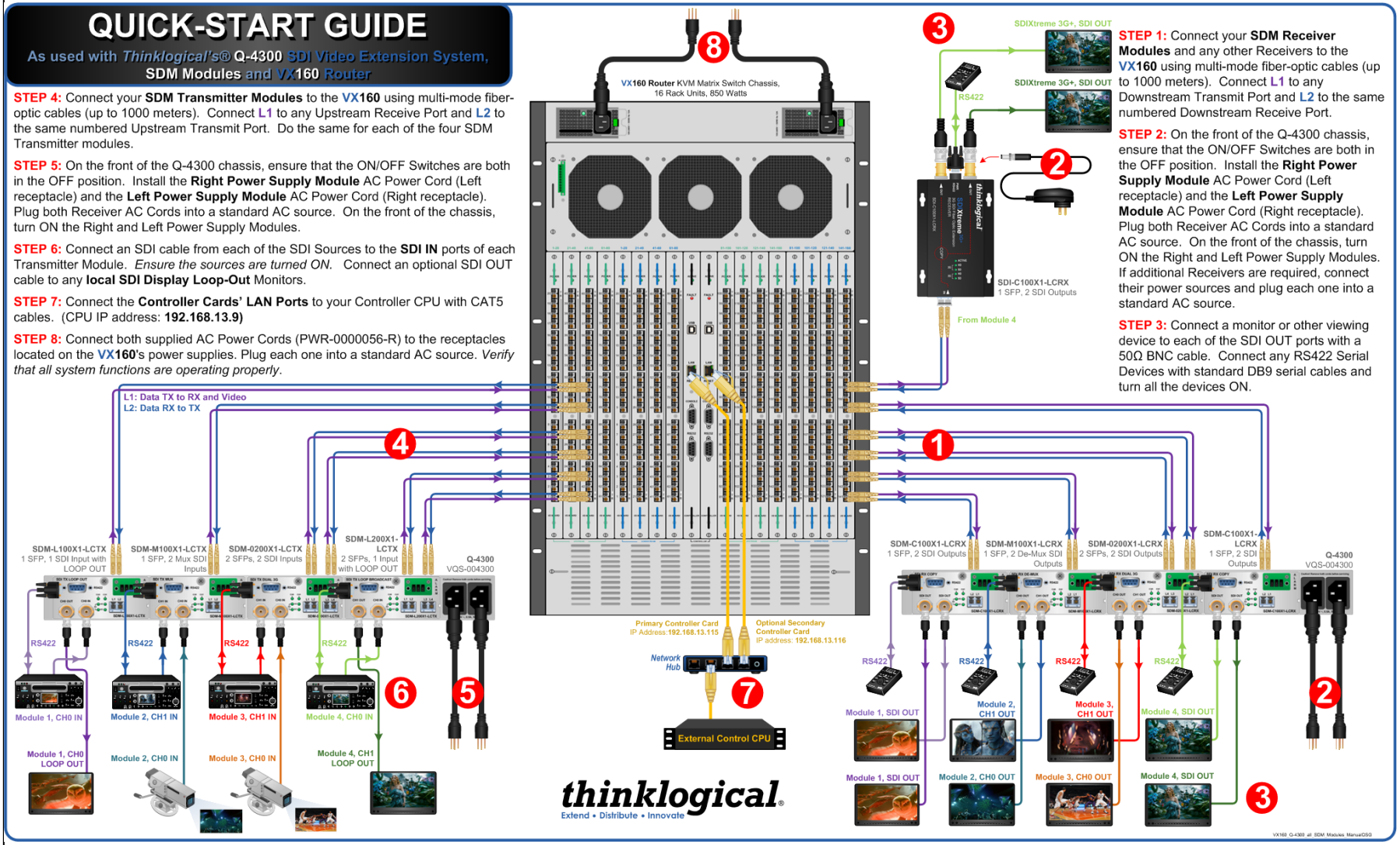
STEP 4: Connect your **SDM Transmitter Modules** to the **VX160** using multi-mode fiber-optic cables (up to 1000 meters). Connect **L1** to any Upstream Receive Port and **L2** to the same numbered Upstream Transmit Port. Do the same for each of the four SDM Transmitter modules.

STEP 5: On the front of the Q-4300 chassis, ensure that the ON/OFF Switches are both in the OFF position. Install the **Right Power Supply Module** AC Power Cord (Left receptacle) and the **Left Power Supply Module** AC Power Cord (Right receptacle). Plug both Receiver AC Cords into a standard AC source. On the front of the chassis, turn ON the Right and Left Power Supply Modules.

STEP 6: Connect an SDI cable from each of the SDI Sources to the **SDI IN** ports of each Transmitter Module. *Ensure the sources are turned ON.* Connect an optional SDI OUT cable to any **local SDI Display Loop-Out** Monitors.

STEP 7: Connect the **Controller Cards' LAN Ports** to your Controller CPU with CAT5 cables. (CPU IP address: **192.168.13.9)**

STEP 8: Connect both supplied AC Power Cords (PWR-0000056-R) to the receptacles located on the **VX160**'s power supplies. Plug each one into a standard AC source. *Verify that all system functions are operating properly*.



STEP 1: Connect your **SDM Receiver Modules** and any other Receivers to the **VX160** using multi-mode fiber-optic cables (up to 1000 meters). Connect **L1** to any Downstream Transmit Port and **L2** to the same numbered Downstream Receive Port.

STEP 2: On the front of the Q-4300 chassis, ensure that the ON/OFF Switches are both in the OFF position. Install the **Right Power Supply Module** AC Power Cord (Left receptacle) and the **Left Power Supply Module** AC Power Cord (Right receptacle). Plug both Receiver AC Cords into a standard AC source. On the front of the chassis, turn ON the Right and Left Power Supply Modules. If additional Receivers are required, connect their power sources and plug each one into a standard AC source.

STEP 3: Connect a monitor or other viewing device to each of the SDI OUT ports with a 50Ω BNC cable. Connect any RS422 Serial Devices with standard DB9 serial cables and turn all the devices ON.

The following procedure documents the steps necessary to perform a Slot FPGA Field Upgrade for the Q-4300 Extender Chassis. Perform the following steps in the order described below.

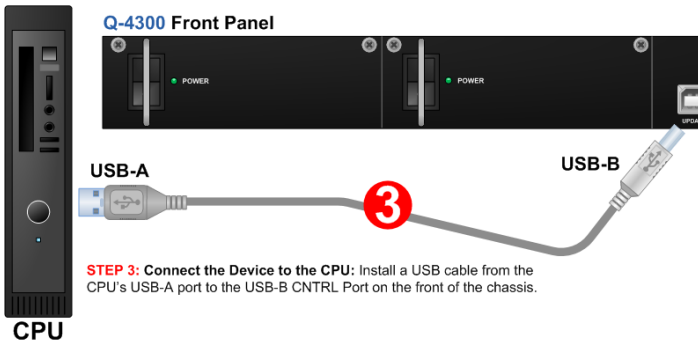
Q-4300
Extender FPGA Upgrade Procedure

FPGA Update Preparation:

A. Retrieve the ***Firmware files/revision numbers*** and the ***FPGA_Download application/instructions*** and place them in an accessible directory in your CPU.
B. Copy the file **FPGA_firmware.zip** to a local directory and extract the contents to a desired location.
C. Copy the file **FPGA_upgrade.zip** to a local directory.
D. Open the **FPGA_upgrade.zip** file and extract the contents to a temporary directory.

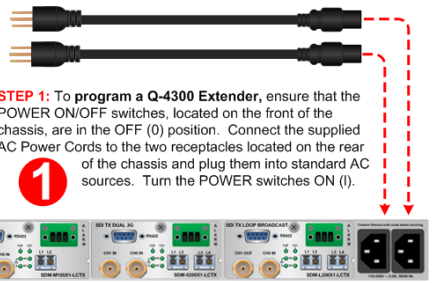
Firmware files and revision numbers are stored in the following:
http://ftp.thinklogical.com/ftp/visualization/updates/
Then select **FPGA.Upgrade.zip**
The **FPGA_Download.exe** application & instructions are stored in:
http://ftp.thinklogical.com/ftp/visualization/updates/

After completing steps A-D, perform steps 1-20 below to program the Q-4300.



STEP 3: Connect the Device to the CPU: Install a USB cable from the CPU's USB-A port to the USB-B CNTRL Port on the front of the chassis.

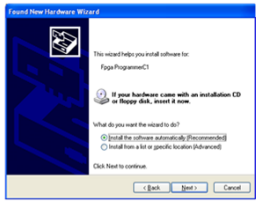
STEP 2: On the front panel of the chassis, the LCD will display the unit type and current revision. Using the front panel Down button ▼ scroll until you come to ***Card?**, where "**?**" indicates the number of the module to be updated. Scroll right ► until the **Rev** is shown. Note this version. Scroll right ►again and note the software version shown in the next menu item (**Sw Rev**).



STEP 1: To **program a Q-4300 Extender,** ensure that the POWER ON/OFF switches, located on the front of the chassis, are in the OFF (0) position. Connect the supplied AC Power Cords to the two receptacles located on the rear of the chassis and plug them into standard AC sources. Turn the POWER switches ON (I).

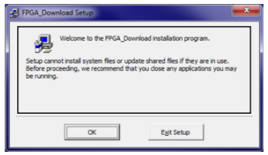
STEP 4: If running Windows XP, the **Found New Hardware Wizard** may open if the Thinklogical product is being connected to the PC for the first time. *If the Wizard does not open, proceed to Step 8*

STEP 5: If not connected to the Internet, select *No* and navigate to where the FPGA Update application is installed. The driver is in the Install Directory. Proceed to step 6. **If using an internet connection**, select: *Yes, this time only*. Click on *Next*.



STEP 6: Select *Install the software automatically (Recommended)*. Click on *Next*

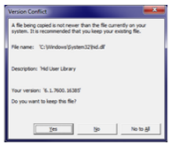
STEP 7: Follow the instructions to the *Completing the Found New Hardware Wizard* Box. Click on *Finish*.



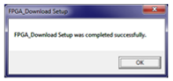
STEP 8: To install the application, double click on **setup.exe (Contained in FPGA_upgrade.zip).** If asked for permission to make changes, select *Yes*. At the *Welcome* screen, select *OK*.

STEP 9: Begin installation by clicking the displayed button.

STEP 10: Choose program group: Select *Continue* when the default selections are displayed.

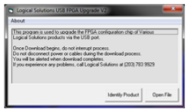


STEP 11: The files will now attempt to download. If a *Version Conflict* is displayed, select *No to all*.



STEP 12: The FPGA download installation will now occur. When completed, press *OK*.

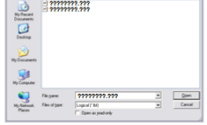
STEP 13: Connect the Device to the CPU:
A. Using the front panel Down button ▼ go to ***System.**
B. Scroll right ► until **Allow FPGA Update** is displayed, then press *enter*.
C. Use the down arrow ▼ to select *Yes* and press *enter*.



STEP 14: To **Run the Application** click on the CPU's START button, then select FPGA Download. Select *Identify Product*.

STEP 15: Once the product name is displayed, similar to above, select *Open File*.

STEP 16: Select the slot that describes the unit being updated and press *OK*.



STEP 17: Press *Open*. Select the file to be loaded. (The file name will be displayed in the small box near the bottom of the window, but may need to be specified under certain circumstances.)

STEP 18: The upgrade window will display the loading progress.

STEP 19: When completed, reboot the unit. On the front panel LCD, scroll down until you come to ***Card?** where "?" indicates the number of the module to be verified. Scroll right ► until the **Rev** is shown. Note this version. Scroll right to **Sw Rev** and verify that the latest version is now displayed. **NOTE:** *It is good practice to verify that all the ports have been properly updated.*

STEP 20: Repeat Steps 15-19 for all units to be updated.

thinklogical®
Extend • Distribute • Innovate
PHONE: 1-800-291-3211
WEBSITE: www.thinklogical.com
EMAIL: support@thinklogical.com

Visit us online at www.thinklogical.com for more product information, literature updates and the complete line of Thinklogical® products.