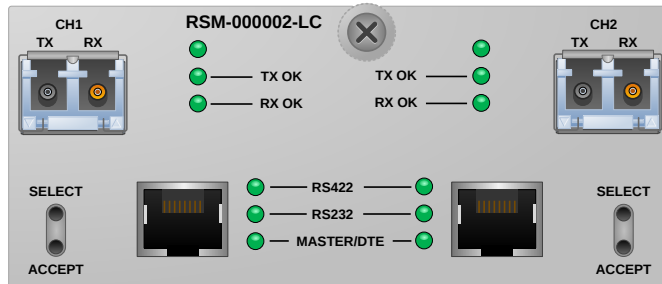


Q-Series

High Reliability, Rack-Space Saving
Extension Solutions



RS-232/422 Extender Module PRODUCT MANUAL

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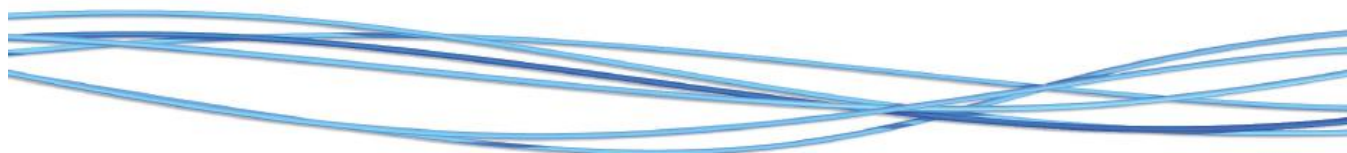
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RS-232/422
Extender Module



thinklogical®

Subject: Q-Series RS-232/422 Extender Module Product Manual

Revision: Initial Release (January, 2014)



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1. Introduction

1.1 About Thinklogical

Thinklogical is the leading manufacturer and provider of fiber optic 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 and routers in the world that are accredited to The Common Criteria, EAL4 and TEMPEST. Government, 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.

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.

Follow Thinklogical on LinkedIn at <http://www.linkedin.com/company/thinklogical> and on Facebook at <http://www.facebook.com/ThinklogicalUSA>



1.2 Product Overview

1.2.1 The RS-232/422 Extender

Now you can extend R-232 or RS-422 devices to a remote location up to 40 kilometers away

Thinklogical's RS-232/422 fiber-optic extender supports two remote serial devices up to 1000 meters using multi-mode fiber optics and up to 40km using single-mode fiber optics. Each port can be configured individually, as either RS-232 or RS-422. Additionally, the RS-232 port can be configured as DTE or DCE, while RS-422 can be configured as either a master or a slave.



Q-Series RS-232/422 Extender Module

Full duplex communication is supported in both modes, with rates up to 115 kbp/s in RS-422 mode and 230 kbp/s in RS-232 mode. In addition, the RS-422 extension follows SMPTE 207M protocol with 1 TX and RX pair for controlling devices such as tape decks, system controllers, etc. In the RS-232 mode, TX/RX, DTR/DSR, RTS/CTS and CD are all extended. In addition, RJ45 to DB9 Adapters ADP-000019-R and ADP-000025-R are provided to interface with RS-232 devices and ADP-000031-R is provided to interface with RS-422 devices.

1.2.2 Q-Series Chassis

Thinklogical's Q-Series Extenders are designed to be installed in the Q-Series line of chassis. There are three chassis designs to choose from, offering a variety of configuration options

1.2.2.1 Q-Series Chassis Features

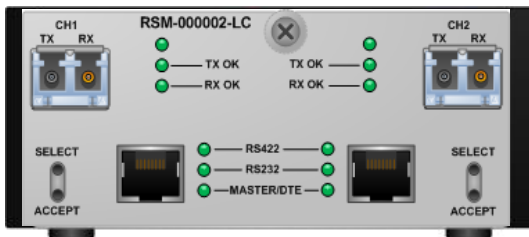
- The Q-4300 provides a desktop or rack mount chassis for up to four modules.
- The Q-2300 provides a desktop chassis for up to two modules
- The Q-1300 provides a desktop chassis for one module.
- All physical connections to Q-Series modules use industry-standard connectors.



Q-4300 Chassis: (VQS-004300) Supports up to four Q-Series modules. Current sharing power supplies. Desktop or 19" rack-mount.



Q-2300 Chassis: (VQS-002300) Desktop chassis supports up to two Q-Series modules.



Q-1300 Chassis: (VQS-001300) Desktop chassis supports one Q-Series module.

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/Rack-mount 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

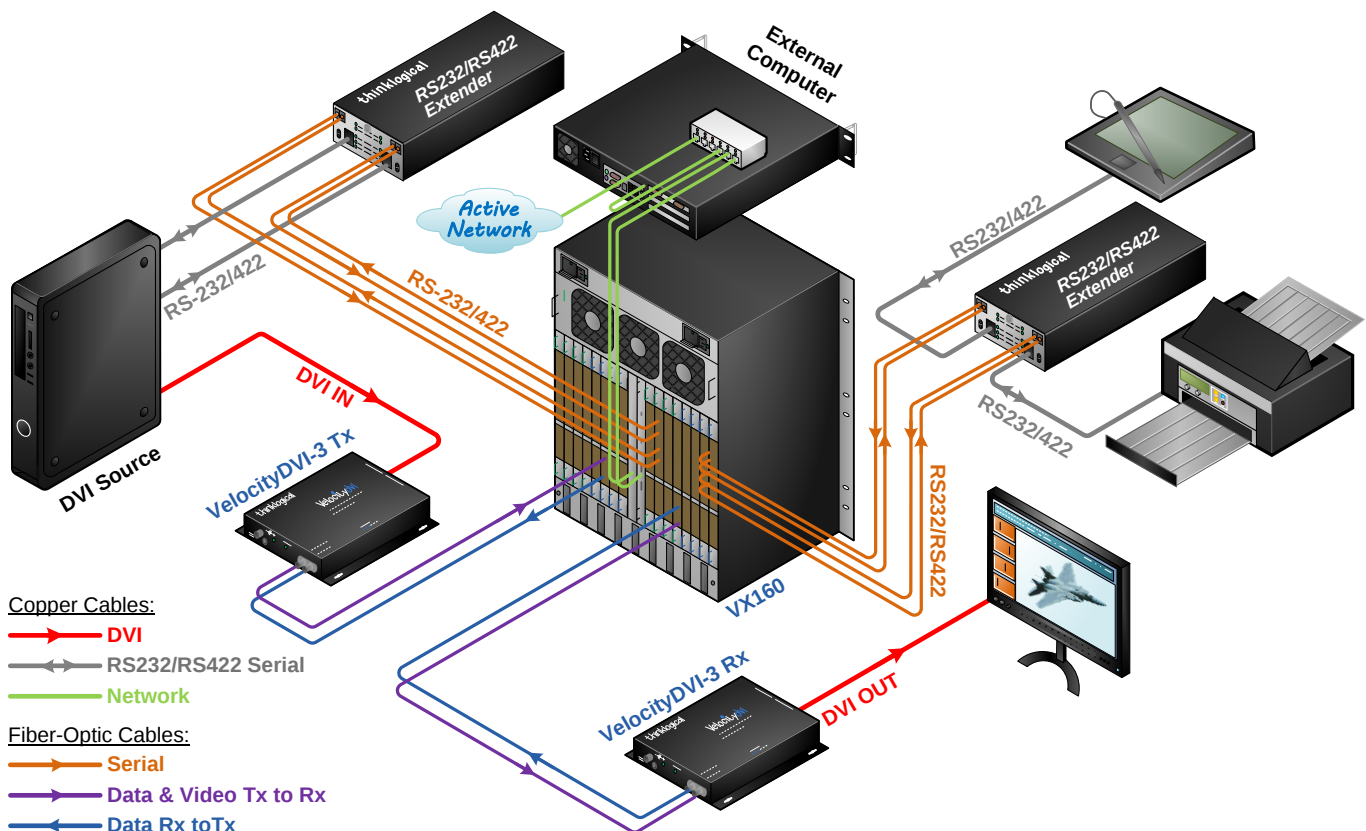
The Q-1300 Chassis includes the following features:

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

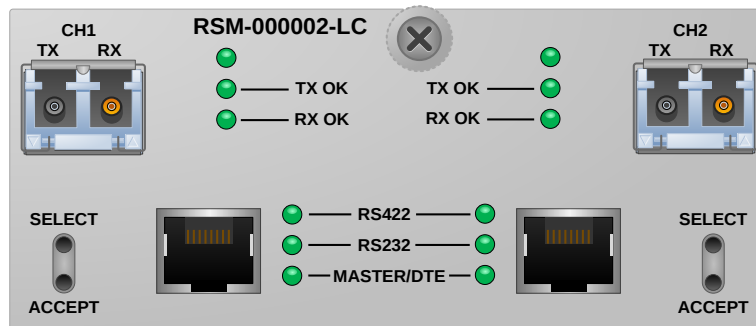
1.3 RS-232/422 Extender Application

The Q-Series RS-232/422 Extender Module is compatible with any Q-Series chassis, accommodating up to four modules in a single, rack-mountable chassis (*Q-1300 Chassis shown below*). Each module supports two remote serial devices up to 1000 meters using multi-mode fiber optics and up to 40km using single-mode fiber optics. Each port can be configured individually, as either RS-232 or RS-422 by using the SELECT and ACCEPT buttons in conjunction with the LED indicators on the face of each module. Also, the RS-232 port can be configured as DTE or DCE, while RS-422 can be configured as either a master or a tributary. The Q-Series RS-232/422 Extender Module is also compatible with the full line of Thinklogical KVM and DVI Extenders and MX and VX Routers.



1.4 Product Features

- Extends RS-232/422, two interfaces per module
- Designed as a stand-alone unit or up to four units can be configured in a rack-mount unit
- LC fiber connectors
- RJ45 to DB9 Adapters included (ADP-000019-R, ADP-000025-R, ADP-000031-R, Qty-2 each)
- Simple plug and play design
- LED Status Lights
 - TX OK
 - RX OK
 - RS-422 Mode
 - RS-232 Mode
 - Master/DTE Mode
 - SELECT and ACCEPT buttons for modes
- Multi-Mode or Single Mode Compatibility
 - Multi-Mode Extension up to 1000 meters
 - Single-Mode Extension up to 40 kilometers



1.4.1 SFP LED Status

TX OK:	LED
SFP Installed	On
SFP Not Installed	Off
RX OK:	LED
Signal Received OK	On
Signal Not Received	Off

1.4.2 Configuration

Press the SELECT button to scroll through the four modes of operation:

RS422 Tributary
 RS422 Master
 RS232 DCE
 RS232 DTE

Once the desired mode is selected, press the ACCEPT button within four seconds or the mode reverts to the previous mode.

1.4.3 Ordering Information

Part Number	Description
RSM-000002-LC	Q-Series RS-232/422 Extender Module

1.4.4 Technical Specifications

Technical Specifications	
Panel Connections	RJ-45: Serial (Qty-2)
Fiber Connections	2 SFP Modules, LC type: 1 Transmit and 1 Receive port each
Operating Temperature	0-50 °C (32-122° F)
Humidity	5-95% RH, non-condensing)
LED Indicators	(Undefined LED for future use) TX OK RX OK RS-422* RS-232* Master/DTE* *Used in conjunction with the SELECT and ACCEPT buttons
RS-232 Adapters (2 ea.)	RJ45 to DB9: ADP-000019-R (M), ADP-000025-R (F)
RS-422 Adapters (2)	RJ45 to DB9: ADP-000031-R (M)
Supplied Cables	CAT5, 2 meters, CBL000001-002MR (Qty. 2)
Data Rate	2 Gbps
Weight	.531 lb. (0.241 kg)
Shipping Weight	5 lbs. (2.268 kg)
Dimensions	Height: 1.592" (40.43mm) Depth: 6.366" (161.69mm) Width: 3.693" (93.80mm) Tolerance: +/- .039" (0.99mm)
Optical Cable	Two Multi-Mode or Single-Mode Fiber Optic Cables (available, not supplied)
Optical Fiber Distance	Multi-Mode: Up to 100 meters using 62.5/125um, type OM1 Up to 500 meters using 50/125um, type OM2 Up to 750 meters using 50/125 SX+, type OM3 Up to 1000 meters using 50/125eSX+, type OM3e Single-Mode: For all distances up to 40 kilometers using 9/125um (OS2)
Power Consumption	10 Watts
Compliance	Approvals for US, Canada, and European Union
Warranty	12 months from date of shipment. <i>Extended warranties available for purchase. Please contact your sales representative.</i>

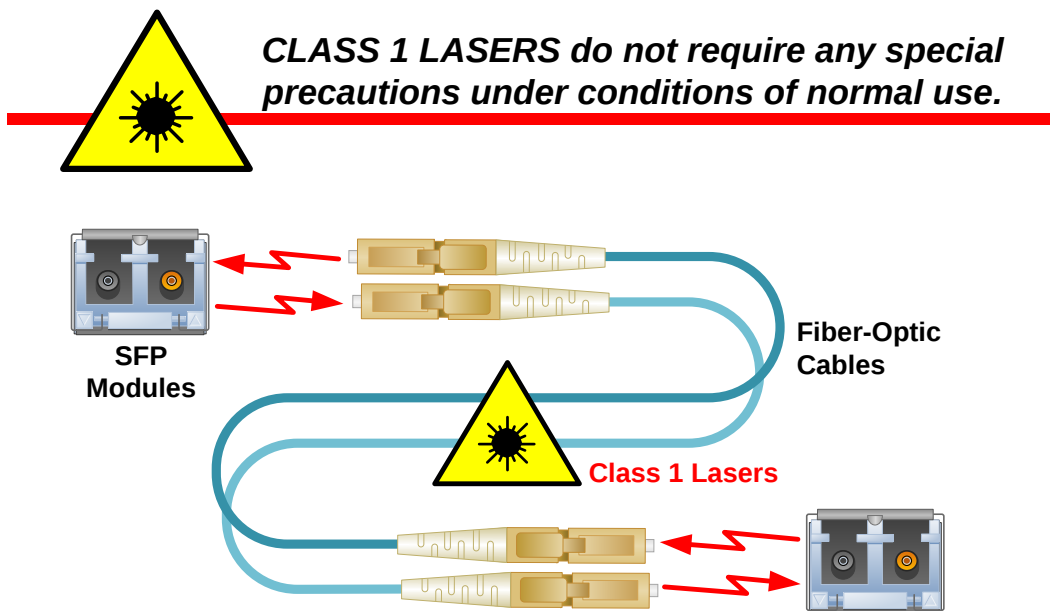
2. Regulatory and Safety Compliance

2.1 Symbols Found on Our Products

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

2.1.1 Class 1 Laser

RS-232/422 Extender Modules are designed and identified as Class 1 LASER products.



2.2 Regulatory Compliance

Thinklogical Q-Series products are designed and made in the USA. Q-Series products have been tested by a nationally recognized testing laboratory and found to be compliant with the following standards (both domestic USA and many international locations).

2.2.1 North America

These products comply with the following standards:

Safety

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

Laser Safety

- CDRH 21 CFR 1040.10
- Class 1 Laser Product
- Accession Number TBD

Electromagnetic Interference

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

2.2.2 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.

2.2.3 European Union

2.2.3.1 Declaration of Conformity

Product name

Q-Series RS-232/422 Extender Module

This product complies with the requirements of Low Voltage Directive 72/23/EEC and EMC Directive 89/336/EEC.

2.2.3.2 Standards Compliance

Safety

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

Laser Safety

- IEC60825:2001 Parts 1 and 2
- Class 1 Laser Product

Electromagnetic Emissions

- EN55022: 1994 (IEC/CSP1R22:1993)
- EN61000-3-2/A1 4:2000
- 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

2.2.4 Supplementary Information

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



NOTE: This equipment has been tested and found to comply with the limits for a Class 1 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 uses, generates 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 correct the interference.



NOTE: This Class 1 digital apparatus complies with Canadian ICES-003 and has been verified as 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.

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 exigences du Règlement sur le matériel brouilleur du Canada.



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

2.2.5 Product Serial Number

Thinklogical products have a unique serial number printed on an adhesive label that is fixed, typically, to the underside of the unit. The serial number includes a date-code formatted as 2 digits for the week and 2 digits for the year, plus two to three digits for a unique unit number.

Example: Serial number **381322** indicates that the unit was built in the **38th** week of the year **2013** and is unit number **22**.

3. How to Contact Us

3.1 Customer Support

Thinklogical is an engineering company and you will receive any information you require directly from our most knowledgeable engineers. We believe that the first lines of support are the design engineers that developed each particular product. Therefore, your questions will be handled promptly by our in-house engineers who are most familiar with your products.

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 helpful information. **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, 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 do our best to respond to your email inquiries promptly. Please use one of the following email addresses:

info@thinklogical.com – Information about 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

Product & Customer Support:	1-203-647-8700
International Sales (Europe, Middle East, Africa):	1-203-647-8704
International Sales (Asia Pacific, Central & Latin America):	1-203-647-8734
US Commercial & Canada:	1-203-647-8769
US Federal Government:	1-203-647-8716
Toll Free in the Continental US:	1-800-291-3211
Fax:	1-203-783-9949

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.

3.2 Product Support

Thinklogical's support personnel are available Monday through Friday from 8:30am to 5:00pm, Eastern Time Zone. If your application might require 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.

3.2.1 Warranty

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



Note: Thinklogical Inc. 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, 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 authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical at **1-800-291-3211 (Toll free in USA)**.

3.2.2 Return Merchandize Authorization

If you have any issue with any Thinklogical product, have product questions or need technical assistance with your Thinklogical system, please contact **Customer Support** at:

1-800-291-3211 (USA only) or **1-203-647-8700** and let us help.

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.

Customer Support will ask you to describe the problem and will issue you a **Return Merchandise Authorization number (RMA#)**. Pack the device in its original box, if possible, and return it with the RMA# displayed clearly on the box.



Note: Do not return a product to Thinklogical without an approved *Return Material Authorization Number*.

Return address for products with Return Material Authorization:

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

PH: 1-800-291-3211 (USA only)
1-203-647-8700



Thinklogical Innovation Leads the Way.
Performance • Security • Continuous Operation • Ease of Integration

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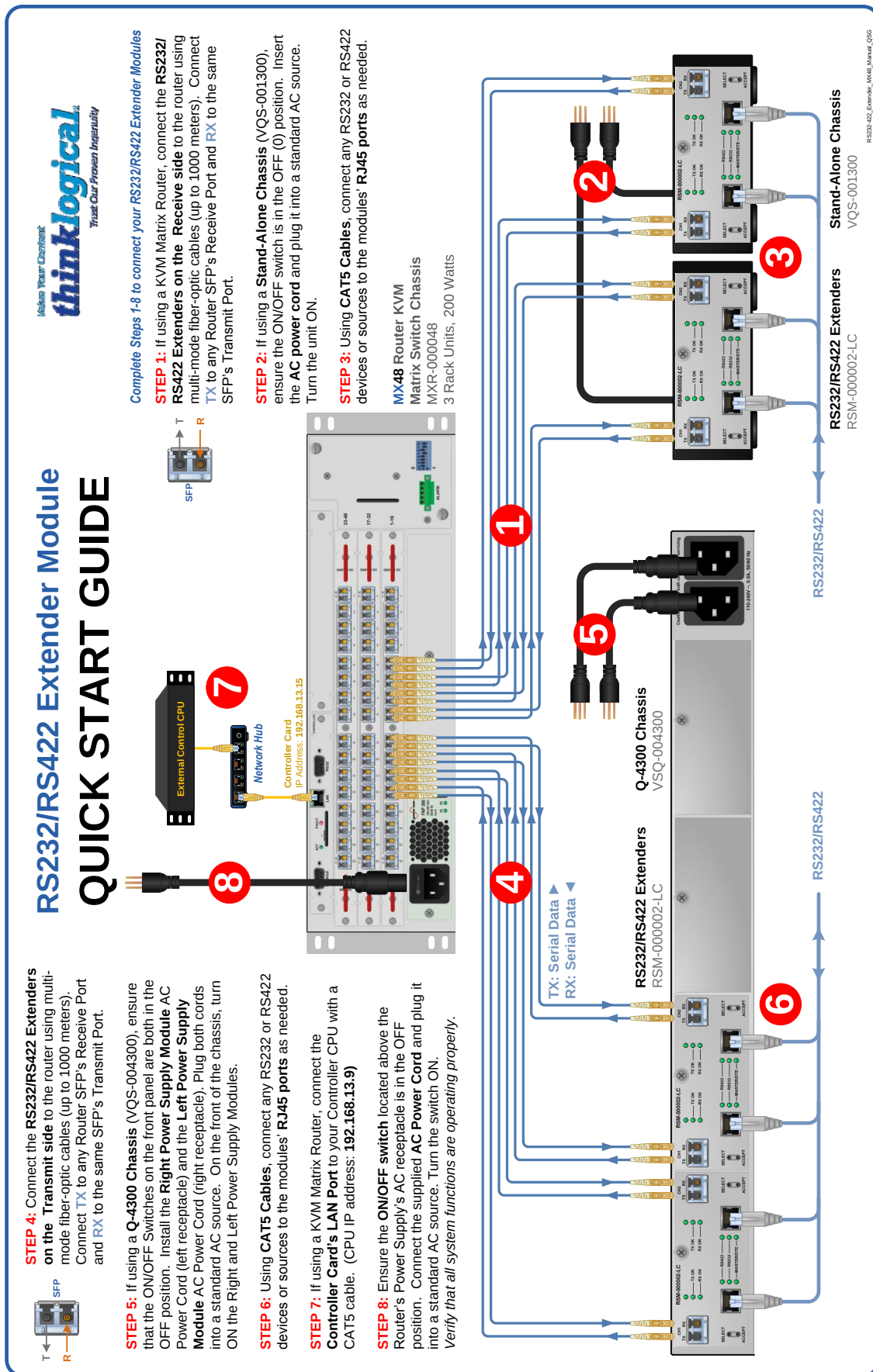
**RS-232/422
Extender Module**



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Appendix A: Quick Start Guide



Appendix B: ADP19, ADP-25 and ADP-31 Pin-Outs

