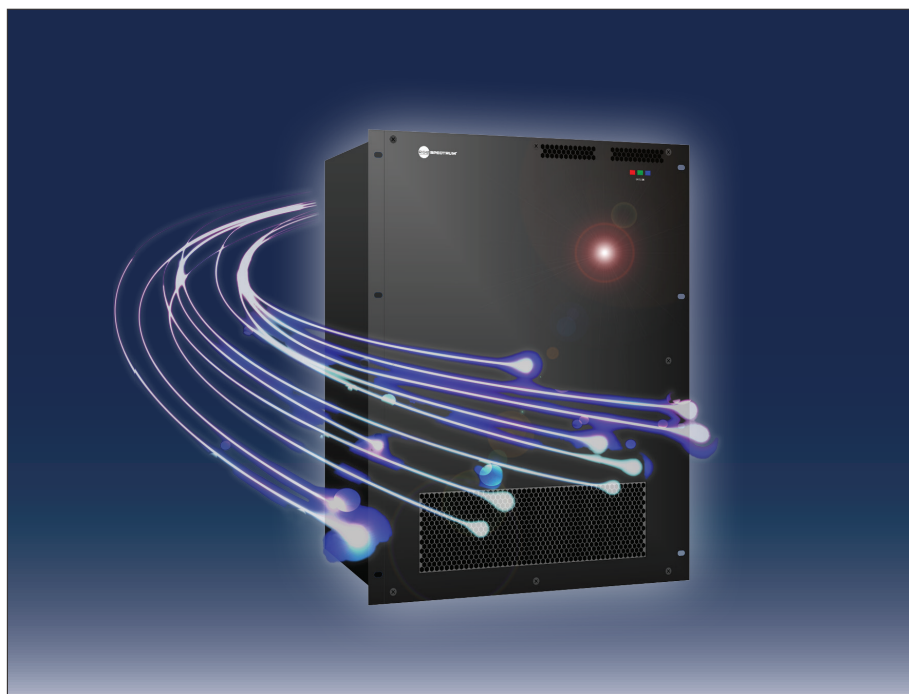# Opto
Fiber Optic Matrix Switchers

High 6.25 GHz Bandwidth

Up to 320x320

Single-link and Dual-link DVI (4K)

Simplex and Duplex Operation

DVI, HDMI, RGB and 3G/HD-SDI

HDCP over Simplex Fiber

Scaling Receivers

RGB SPECTRUM®

Opto

The *Opto*™ series of fiber optic based products includes enterprise level matrix switchers, transmit and receive endpoints and related accessories. *Opto* is designed and built for 24/7, mission critical applications.

The *Opto* switcher's distributed architecture enables secure communications over distances up to 40 km with no-compromise signal quality. *Opto* Transmit (TX) and Receive (RX) Endpoints convert DVI, HDMI, RGB and 3G/HD-SDI signals between copper cable and single mode or multimode fiber. Audio and data are combined with video for transmission over a single fiber. Available endpoints support one-to-many transmission of HDCP encrypted content over a single fiber -- an industry first.
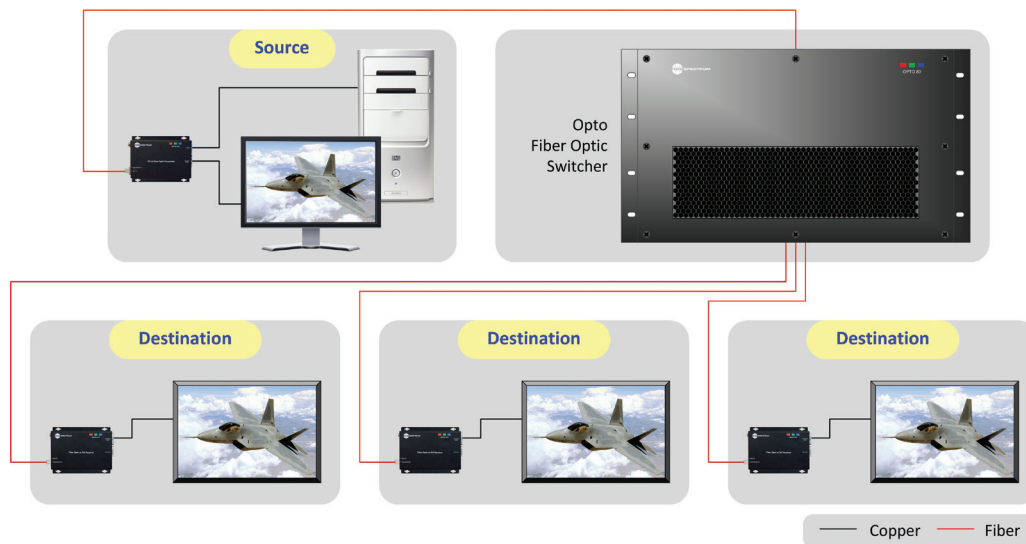
Each source signal can be routed to multiple destinations, including HDCP protected content.

Chassis

Four chassis accommodate up to 320x320 simplex and 160x160 duplex connections, and each offers considerable configuration flexibility. Duplex and simplex connections as well as multimode and single mode fiber I/O may be mixed within a frame. Opto chassis are power efficient, reducing the overall cost of ownership.

Opto **48**	Up to 48x48 simplex or 24x24 duplex matrix. 16-channel I/O cards.
Opto **80**	Up to 80x80 simplex or 40x40 duplex matrix. 5-channel I/O cards.
Opto **160**	Up to 160x160 simplex or duplex matrix. Two separate crosspoints. I and O cards are 20-channel.
Opto **320**	Up to 320x320 simplex or 160x160 duplex matrix. 16-channel I/O cards.

Single Mode or Multimode Fiber

The choice of SFP+ modules determines whether a channel uses multimode or single mode fiber. Multimode cable is used for distances up to 1000 m; single mode cable allows runs up to 40 km.

Secure Transmission

Signals travelling over fiber optic cable do not generate electro-magnetic fields, as they do in copper cables. It is impossible to electronically "sniff" the signal.

Signal distribution via optical fiber offers significant advantages over copper based transmission:

Longer distances • Higher bandwidth • No EMI signature • Compact chassis

Highest Bandwidth

The *Opto* switcher's 6.25 Gps bandwidth is the highest in its class and will accommodate signals up to 1920x1200 and 2048x1152 without frame dropping or other artifact-inducing compression schemes. High refresh rates are also supported.

Dual-link/4K UHD Support

For even higher resolution signals, dual-link DVI transmission is available, supporting up to 3840x2160p30 resolution over two fiber channels. DVI dual-link and single-link channels can be mixed within a chassis. 4K signals are accommodated with low-cost DisplayPort to DVI dual-link adapters.

Hot Swappable Components

All chassis include redundant power supplies. A redundant processor is available as an option. Controller and I/O cards, SFP modules, fan assemblies, and power supplies are all user-swappable and require no special tools for installation.

Scaling Endpoints

Receiver endpoints with built-in scalers ensure that any source is shown across the maximum number of pixels possible on any display device. They also supply continuous sync, providing faster transitions between sources.

Simplex and Duplex Modes

Opto switchers may be configured for simplex and/or duplex operation. Simplex mode consists of a single channel input and output through the switch, transmitting signals from the source to the destination. Duplex mode supports a channel in each direction and requires two fiber paths. The input channel transmits video/audio/data from the source to the destination. The data return channel carries EDID information back from the destination to the source, as well as audio and data if desired. Unlike other fiber switchers, Opto can transmit HDCP signals over a simplex connection.

Web Control Panel (WCP)

The *Opto WCP* is a web based configuration, control and administrative tool which runs on Linux and Windows PCs. Administrative options allow adding users, naming sources and destinations, and accessing system security and other settings. Routing templates simplify testing and troubleshooting. An extensive feature set includes macros and logs.

Opto WCP **Connections Page**
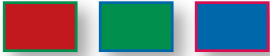
Transmit (TX) and Receive (RX) Endpoints

Opto endpoints convert signals from electrical to optical (TX) and from optical to electrical (RX). Two form factors are available, standalone and rackmount. All DVI modules support HDMI signals. HDCP compliant modules require only a simplex connection and a source can be routed to multiple compliant display devices.

Opto Standalone Endpoints

These small form factor modules range in size from 3.375" x 5.0" to 7.5" x 7.75" and are less than 2" high, convenient for desktop use or flush mounting. The Opto RGB module utilizes a half-rack format, which is suitable for desktop use.
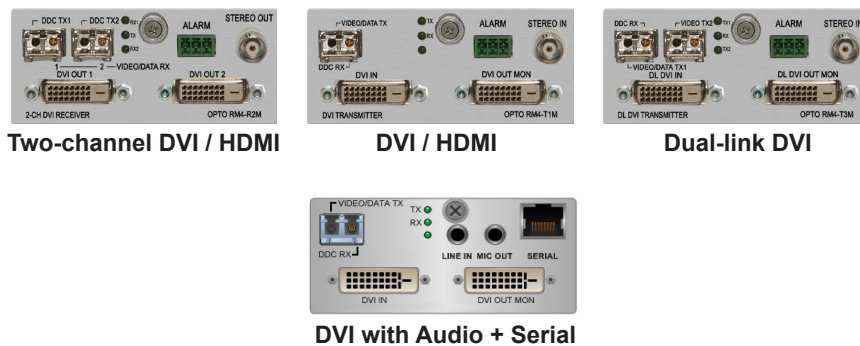

DVI / HDMI

Dual-link DVI

Dual-link DVI with Audio + Network

DVI / HDMI Scaler

RGB with Audio + Serial

3G / HD-SDI

Opto Rackmount Modules

For space efficiency and the added security of redundant power supplies, TX and RX modules are available for the *Opto* RM4 Chassis, a 1RU enclosure that houses up to four modules. Single-channel TX modules include a monitor out port to display a source signal; single-channel RX modules include two DVI output ports for additional configuration flexibility. Economical channel modules offer additional space savings with up to 8 channels of TX or RX in a single rack space.
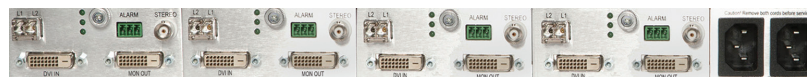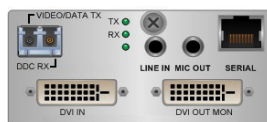

RM4 Rackmount Chassis

Two-channel DVI / HDMI

DVI / HDMI

Dual-link DVI

DVI with Audio + Serial

Signal Extenders

Pairs of TX and RX modules can also be used as signal extenders independent of a switcher chassis.

MCMS

RGB Spectrum's *MultiPoint® Control Room Management System (MCMS)* is a collaborative system for accessing, displaying, and controlling shared computer and other visual resources. Fully featured, modular and customizable, MCMS is a complete software and hardware solution that enables operators to manage facility and enterprise resources.

Collaboration is based on the explicit grant and release of control over source computers. A system of user-assignable permissions and priorities allows flexibility to tailor a system to a specific set of requirements. Operators may request, transfer or relinquish control within seconds; senior operators can take immediate control.

MCMS provides a simple way to integrate applications running on different computers into a unified display available at each operator station, controllable with a single keyboard and mouse. This enables each operator in, for example, a security operations center to easily access and manage any number of systems and applications, including the video management system, alarm system, elevator system, databases, word processing, and e-mail.

With *Opto* switchers, *MCMS* can be deployed over a large physical area with the security of fiber optic transmission, and the flexibility of up to 320 inputs and 20 control stations.
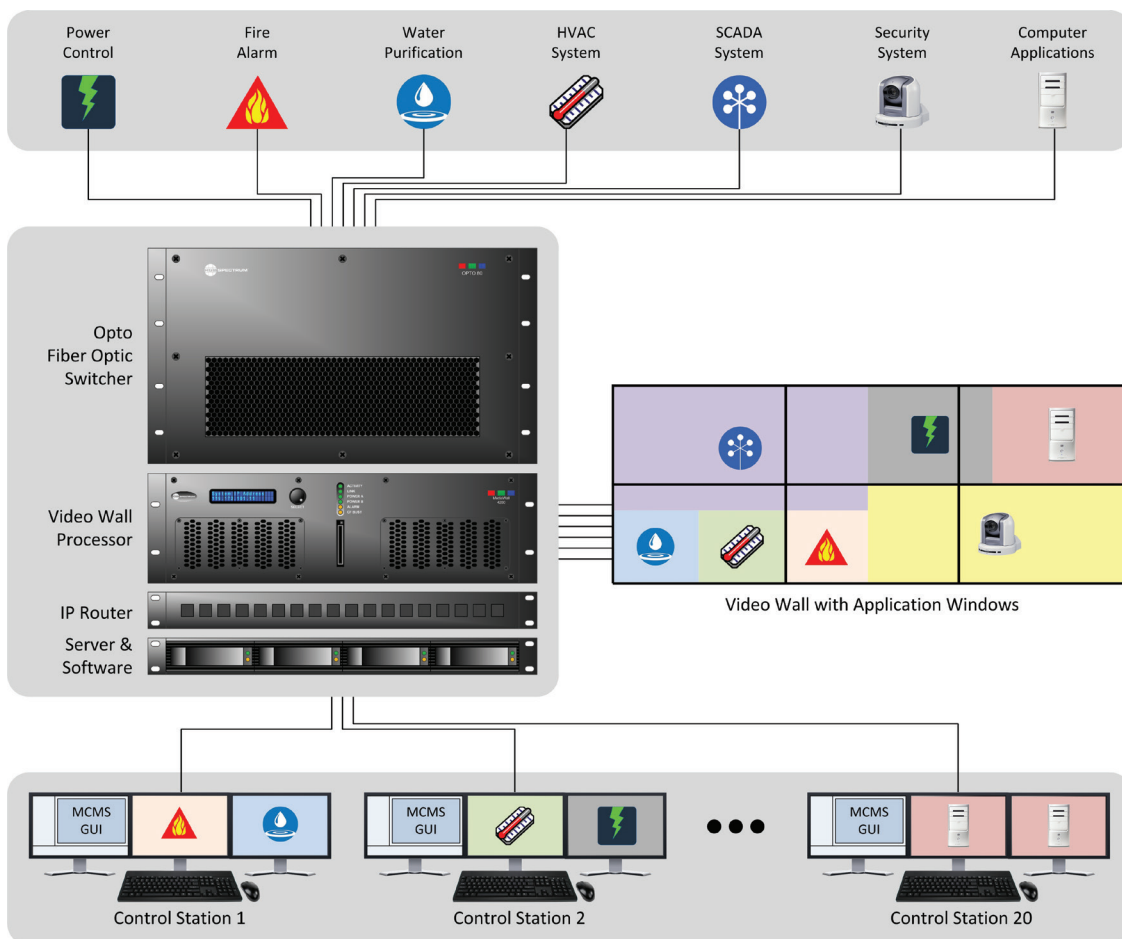
Specifications

Chassis

	Opto **48**	Opto **80**	Opto **160**	Opto **320**
Max Channels Simplex	48	80	160	320
Max Channels Duplex	24	40	160	160
I/O Cards	16 in +16 out	5 in + 5 out	Input: 20 in + 20 out Output: 20 in + 20 out	16 in +16 out
Power-All Chassis	100-240VAC 47-63Hz			
Power Consumption	200 watts typical	400 watts typical	850 watts typical	800 watts typical
Size (W x D x H)	17.49 x 14.93 x 5.22 " 437 x 379 x 133 mm	17.16 x 16.57 x 10.50" 436 x 421 x 267 mm	17.19 x 15.75 x 28" 437 x 400 x 711 mm	17.19 x 14.2 x 22.7" 437 x 361 x 578 mm
Net Weight (Fully Loaded)	20 lbs (9.1 kg)	37.1 lbs (16.9 kg)	103.5 lbs (46.9 kg)	78 lbs (35.4 kg)
Control-All Chassis	Serial/TCP-IP/Touch Screen			

Standalone TX/RX Endpoints

	DVI / HDMI	Dual-link DVI	RGB	DVI / HDMI with Scaler
Pixel Clock Rate	25-165 MHz	165-330 MHz	25-165 MHz	25-165 MHz
Resolutions	Up to 1920x1200/72	Up to 3840X2400/33	Up to 1920x1200/72	Up to 1920x1200/72
Connectors TX	DVI In, Mon out	DL DVI In, DL Mon out	RGB In, Mon out	DVI In
Connectors RX	DVI out, Mon out	DL DVI out, DL Mon out	RGB out, Mon out	DVI Out
Signal Type	DVI	Dual Link DVI	RGBHV	DVI/HDMI
Audio + Serial	Option	N.A.	Included	Option
Audio + Network	N.A.	Option	N.A.	N.A.
HDCP Compliant	Yes	Yes	No	Yes

	3G/HD-SDI
Data Rate	270 Mbps to 2.97 Gbps
Supported Standards	SMPTE 424M, 292M, 259M, 372M and 425 level A and B compliant
Equalization	Automatic up to 140m of Belden 1694A at 3.0 Gbps, 230m at 1.485 Gbps and 350m at 270 Mbps
Connectors TX	BNC; Input, loop through
Connectors RX	BNC; 2 outputs

Rackmount Chassis and TX/RX Modules

RM-4 Chassis

|	
I/O Cards	Up to 4 single-width or 2 double-width modules
Power	Dual redundant, hot swappable
Power Consumption	50 watts 100-240 VAC 47-63 Hz
Size	1.179 x 14.0 x 17.49" (45 x 356 x 444 mm)
Weight	15 lbs (4.99 kg)
Control	Front panel cursor and display; USB for firmware update

| TX/RX Modules	DVI	Dual-link DVI	Two-channel DVI
Module Size	Single	Single	Single
Signal Type	DVI	Dual-link DVI	DVI (x2)
Audio + Serial	Option	N.A.	N.A.
Pixel Clock Rate	25 MHz-165 MHz	165 Mhz-330 Mhz	25 MHz-165 MHz
Resolutions	Up to 1920x1200/60	Up to 3840x2400/33	Up to 1920x1200/60
Connectors TX	DVI-D x 2	DVI-D x 2	DVI-D x 2
Connectors RX	DVI-D x 2	DVI-D x 2	DVI-D x 2
HDCP Compliant	Yes	Yes	One-to-one

Fiber

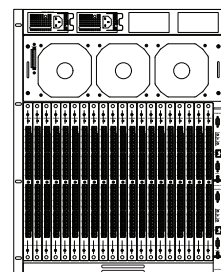|	
Connector Type	LC
Multimode fiber	Up to 350m with OM2; up to 750m with OM3; up to 1000m with OM4
Single mode fiber	Up to 40 km
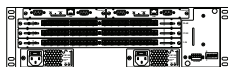
Opto 48
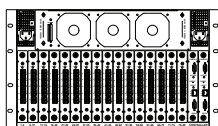
Opto 80
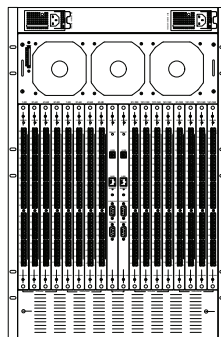
Opto 160

Opto 320

RGB Spectrum Products

MultiPoint Control Room Management Systems

A collaborative system to display and control shared computer and visual resources, MCMS integrates a state-of-the art multi-user KVM system with RGB Spectrum hardware, including video walls, multiviewers, codecs and switchers. Better decisions. Faster.
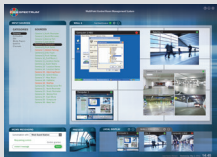
• Customizable work environment
• KVM access of controlled computers without software installed
• Unique operator GUI for both local and shared resource control
• Full bandwidth, uncompressed video
• Integration with shared display walls

Multiviewers

For displaying multiple video and graphics on a single screen, the QuadView® and SuperView® product lines provide superb multiviewer functionality with the ability to move, resize and overlap images. Options include KVM control of sources, HDCP compliance, and annotation.

SuperView 4100 / 5000   ### QuadView HDx

• 4, 8, or 12 windows
• DVI, RGB, HD-SDI, SD/HD video inputs
• Resolutions to 1920x1200
• Smooth scaling, panning, and zooming

SuperView 4K

• 8 megapixel multiviewer
• Up to 8 windows
• DVI single-link or dual-link output
• Smooth scaling, panning, and zooming

Codecs and Recorders

For streaming and recording video, graphics and audio with the highest fidelity, RGB Spectrum offers two codec families — the DSx™ with H.264 *high* profile compression and the DGy™ with JPEG 2000 compression.

DSx   ### DGy

• Up to 1920x1200 resolution
• Simultaneous recording and replay
• Event marking
• Variable speed playback
• Multi-unit synchronization
• Concurrent streaming and recording
• Recording to local and network storage devices

Digital Switchers

The Linx™ *Prime* and Opto™ series of DVI and fiber optic switchers enable transmission without signal degradation, providing superb tools for A/D conversion, routing and control, with HDCP compliance.

Linx *Prime*

• Single-link and dual-link DVI, RGB, 3G/HD-SDI inputs
• Single and dual-link DVI and scaled DVI outputs
• Fiber and copper I/O
• Chassis I/O up to 32x32

Opto

• Industry highest bandwidth - 6.25 GHz
• Chassis I/O up to a giant 320x320
• Simplex or duplex operation
• Single mode or multimode fiber
• Single and dual-link DVI, RGB and 3G/HD-SDI

MediaWall® Video Processors

Simultaneously display multiple computer and video signals across an array of high definition monitors or projectors, with the ability to interact with any source via KVM control. Windows can be custom sized, positioned and stretched across any combination of displays.

MediaWall

MediaWall 4200

MediaWall 2900

• Real-time operation, no dropped frames
• RGB/DVI, 3G/HD-SDI and analog inputs
• Smooth scaling, panning, and zooming
• Edge blending support and bezel compensation
• HDCP compliant

Extenders

For secure transmission of DVI signals over long distances, XtendView® FiberDVI signal extenders represent the state-of-the-art with the industry's smallest size housing.

• Up to 400M over a single fiber
• Resolutions to 2048x1152
• "All-in-the-headshell" design
• HDCP compliant

Worldwide Offices

Corporate Headquarters

950 Marina Village Parkway

Alameda, California 94501

TEL: (510) 814-7000

FAX: (510) 814-7026

WEB: www.rgb.com

email: sales@rgb.com

European Headquarters

Dragonder 20A

5554 GM Valkenswaard

The Netherlands

TEL: +32 11 515600

FAX: +32 11 515601

CELL: +31 6 51319730

email: europesales@rgb.com
africasales@rgb.com

Asian Headquarters

14F Cimic Tower

800 Shang Cheng Rd. Pudong District

200120, Shanghai, China

TEL: +86 10 5905 5776

FAX: +86 10 5905 5900

CELL: +86 1391 6213 594

email: asiasales@rgb.com

USA Offices

Somerset, New Jersey

Baltimore, Maryland

Atlanta, Georgia

Orlando, Florida

Cincinnati, Ohio

Dallas, Texas

Los Angeles, California

Middle Eastern Headquarters

Suite 302, Yes Business Center

14B Street, Al Mafraq Road

Al Barsha 1, Dubai

United Arab Emirates

TEL: +971 (0) 44 46 84 16

CELL: +971 (0) 50 420 3867

email: middleeastsales@rgb.com

International Offices

Paris, France

Shanghai, China

Seoul, Korea

Mumbai, India

St. Petersburg, Russia

Miami, Florida for Latin America

Beirut, Lebanon

London, UK

Dubai, UAE

RGBSPECTRUM®

VISUAL RESOURCE MANAGEMENT™

SWITCHERS ■ VIDEO WALLS ■ MULTIVIEWERS ■ CODECS ■ KVM