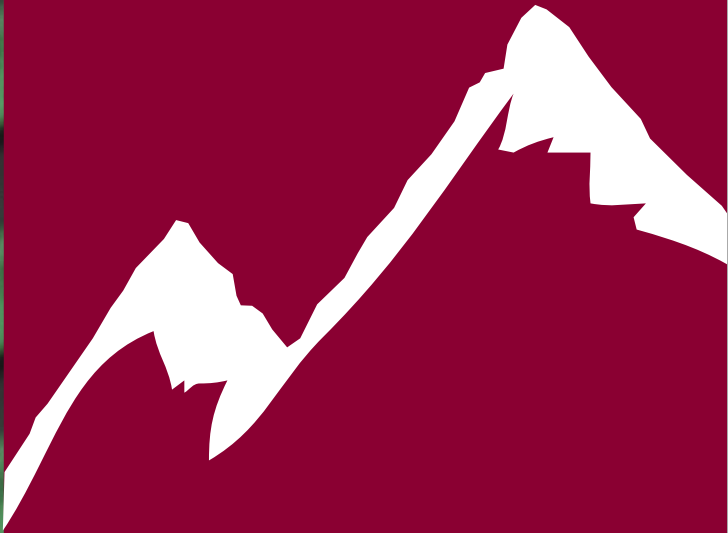




LASSEN ROUTING SWITCHERS



Lassen HD™ Routing Switchers
Lassen SDI™ Routing Switchers
Lassen Analog™ Routing Switchers

Lassen HD™ and Lassen SDI™ Routing Switchers

HD-SDI and SDI
Routing
Switchers



Lassen 1616DEE

FEATURES

- **Multi-Format Multi-Rate Boards** - Lassen HD routing switchers incorporate multi-format and multi-rate video boards that pass HD-SDI, SDI, DVB-ASI, and MPEG-2 signals
- **Cost-effective SDI Only Models** - Lassen SDI routing switchers pass SDI, DVB-ASI and MPEG-2 signals
- **Compact Form Factor** - Sizes from 8x8* in 2RU to 32x32 in 3RU
- **Digital and Analog Stereo Options** - AES/EBU digital audio or analog stereo audio available
- **RS-232/422 Control** - Standard on all models
- **Comprehensive Line of Remote and Remote-programmable Control Panels** - See the Control Panel and Software section at the end of the brochure for all available options
- **Qwik Adjust Knob™ Rotary Control Interface** - Intuitive user interface with front panel LCD display
- **Use with other Sierra Video Routing Switchers** - Functions as either the master or the slave unit when used with other Sierra Video Systems routing switchers
- **Redundant Power Supply Option**

* 8x8 HD model available Q3 2006



FITS YOUR DIGITAL WORKFLOW

Lassen HD and Lassen SDI routing switchers from Sierra Video Systems meet the needs of your HD-SDI and SDI workflow with the ultimate in flexible digital signal routing.

The Lassen HD routing switchers employ true multi-format and multi-rate digital video boards. They are capable of handling



standard serial digital video signals including SMPTE 310M, SMPTE 259M, SMPTE 344M, ITU-R BT.601 and DVB-ASI up to 540 Mbps along with HD serial digital video signals conforming to SMPTE 292M (1.485 Gbps single link).

Lassen SDI routing switchers are SDI-only routing switchers that provide the flexibility of handling standard serial digital video signals including SMPTE 310M, SMPTE 259M and DVB-ASI. Lassen SDI routing switchers offer additional cost-savings over Lassen HD routing switchers for facilities that only require the routing of Standard Definition SDI signals. Combined with audio, expandability and control options, these routing switchers are true digital performers.

MULTIPLE CONFIGURATIONS FOR MULTIPLE APPLICATIONS

Lassen HD and Lassen SDI routing switchers are compact and economical, perfect both for existing HD facilities and for facilities making the transition to digital or HD. Lassen HD routing switchers are also ideal for rental and staging companies looking to offer full high definition and digital capabilities in a single routing switcher. Any Lassen HD or Lassen SDI routing switcher can be paired with either 2-channel (4-stream) digital audio or analog stereo audio options in the same frame. Starting with 8x8* at 2RU up to 32x32 in 3RU, these digital powerhouses are economical both in size and pricing. This flexibility makes our Lassen products the perfect fit for your evolving digital operations in production, mobile and broadcast applications.

FLEXIBLE CONTROL OPTIONS

The entire Lassen family of routing switchers has numerous control options available. Each unit comes with a front panel LCD display and Sierra Video Systems' Qwik Adjust Knob™ rotary control interface that makes front panel control a breeze. Each Lassen model also offers an RS-232 and RS-422 serial interface supported by all major third party control systems. Additionally, we offer a comprehensive range of remote control panel options with our SCP Series programmable control panels and our simple XY and single bus remote control panels.

DIGITAL OR ANALOG AUDIO

Lassen HD and Lassen SDI routing switchers populated with AES/EBU digital audio are able to handle all AES standards. Models with analog stereo audio provide audio input level adjustment from +20.5dB to -8dB. They also provide audio output level adjustment from +15dB to -59.5dB along with a mute setting. Lassen analog audio boards have been



Lassen 3232HDEE

designed to eliminate the zipper effect associated with digital level controls. Adjusting the input or output audio levels yields only a smooth and pleasant transition.

ROOM FOR EXPANSION

For expanding facilities, our entire Lassen line of routing switchers is designed to connect with other Sierra Video Systems routing switchers. With the advent of the Lassen products, it is now practical to connect our small RS-422 machine control routing switcher to some of our smaller routing switchers. In addition, Lassen routing switchers can perform as either the master or the slave machine in your control system; the routing switcher can be inserted into an existing Sierra routing system providing additional format levels, or additional Lassen models can be linked to any Sierra Video Systems SCP Series control panel for ultimate control of any size broadcast system.

FLEXIBLE AND FORWARD-COMPATIBLE

Lassen HD and Lassen SDI routing switchers from Sierra Video Systems meet the needs of your digital workflow, providing HD-SDI and SDI video signal routing with digital and analog audio options and a full suite of hardware and software control possibilities. As a standalone product or as part of your larger Sierra routing system, Lassen HD and Lassen SDI routing switchers are the right products for your digital facility.

* 8x8 HD model available Q3 2006

Lassen HD Routing Switchers

MODEL	RACK UNIT HEIGHT	FORMAT	INPUTS	OUTPUTS	DESCRIPTION
88HD	2RU	HD-SDI/SDI video	8	8	8x8 HD-SDI, SDI routing switcher w/ front control * Available Q3 2006
1608HD	2RU	HD-SDI/SDI video	16	8	16x8 HD-SDI, SDI routing switcher w/ front control
1608HDS	2RU	HD-SDI/SDI video + analog stereo audio	16	8	16x8 HD-SDI, SDI + analog stereo audio routing switcher w/ front control
1616HD	2RU	HD-SDI/SDI video	16	16	16x16 HD-SDI, SDI routing switcher w/ front control
1616HDEE		HD-SDI/SDI video + AES digital audio	16	16	16x16 HD-SDI, SDI + balanced AES digital audio routing switcher w/ front control
1616HDS	2RU	HD-SDI/SDI video + analog stereo audio	16	16	16x16 HD-SDI, SDI + analog stereo audio routing switcher w/ front control
3216HD	3RU	HD-SDI/SDI video	32	16	32x16 HD-SDI, SDI routing switcher w/ front control
3216HDR	4RU	HD-SDI/SDI video	32	16	32x16 HD-SDI, SDI routing switcher w/ front control and redundant power supply
3216HDEE	3RU	HD-SDI/SDI video + AES digital audio	32	16	32x16 HD-SDI, SDI + balanced AES digital audio routing switcher w/ front control
3216HDEER	4RU	HD-SDI/SDI video + AES digital audio	32	16	32x16 HD-SDI, SDI + balanced AES digital audio routing switcher w/ front control and redundant power supply
3216HDS	3RU	HD-SDI/SDI video + analog stereo audio	32	16	32x16 HD-SDI, SDI + analog stereo audio routing switcher w/ front control
3216HDSR	4RU	HD-SDI/SDI video + analog stereo audio	32	16	32x16 HD-SDI, SDI + analog stereo audio routing switcher w/ front control and redundant power supply
3232HD	3RU	HD-SDI/SDI video	32	32	32x32 HD-SDI, SDI routing switcher w/ front control
3232HDR	4RU	HD-SDI/SDI video	32	32	32x32 HD-SDI, SDI routing switcher w/ front control and redundant power supply
3232HDEE	3RU	HD-SDI/SDI video + AES digital audio	32	32	32x32 HD-SDI, SDI + balanced AES digital audio routing switcher w/ front control
3232HDEER	4RU	HD-SDI/SDI video + AES digital audio	32	32	32x32 HD-SDI, SDI + balanced AES digital audio routing switcher w/ front control and redundant power supply
3232HDS	3RU	HD-SDI/SDI video + analog stereo audio	32	32	32x32 HD-SDI, SDI + analog stereo audio routing switcher w/ front control
3232HDSR	4RU	HD-SDI/SDI video + analog stereo audio	32	32	32x32 HD-SDI, SDI + analog stereo audio routing switcher w/ front control and redundant power supply

Lassen SDI Routing Switchers

MODEL	RACK UNIT HEIGHT	FORMAT	INPUTS	OUTPUTS	DESCRIPTION
88D	2RU	SDI video	8	8	8x8 SDI video routing switcher w/ front control
88DEE	2RU	SDI video + AES digital audio	8	8	8x8 SDI video + balanced AES digital audio routing switcher w/ front control
88DE	2RU	SDI video + AES digital audio	8	8	8x8 SDI video + unbalanced AES digital audio routing switcher w/ front control
1616D	2RU	SDI video	16	16	16x16 SDI video routing switcher w/ front control
1616DEE	2RU	SDI video + AES digital audio	16	16	16x16 SDI video + balanced AES digital audio routing switcher w/ front control
3232D	3RU	SDI video	32	32	32x32 SDI video routing switcher w/ front control
3232DR	4RU	SDI video	32	32	32x32 SDI video routing switcher w/ front control and redundant power supply
3232DEE	3RU	SDI video + AES digital audio	32	32	32x32 SDI video + balanced AES digital audio routing switcher w/ front control
3232DEER	4RU	SDI video + AES digital audio	32	32	32x32 SDI video + balanced AES digital audio routing switcher w/ front control and redundant power supply

TECHNICAL SPECIFICATIONS

HD-SDI/SDI Multi-Rate Video Boards

DATA RATES	19Mbps – 1.485Gbps
DATA TYPES	SMPTE 310M, SMPTE 259M, SMPTE 344M, SMPTE 292M, DVB-ASI, ITU-R BT.601
INPUT CABLE EQUALIZATION RANGE	0-100 meters for SMPTE 292, Belden 8281 0-300 meters for all other standards, Belden 8281
INPUT RETURN LOSS	> 15dB up to 1.5GHz
OUTPUT LEVEL	800mV p-p +/- 10%
OUTPUT JITTER	< 0.2UI
OUTPUT RETURN LOSS	> 15dB up to 1.5GHz
SIGNAL CONNECTORS	BNC

SDI Video Boards

DATA RATE	19 – 360Mbps
DATA TYPES	SMPTE 310M, SMPTE 259M, DVB-ASI, ITU-R BT.601
INPUT CABLE EQUALIZATION RANGE	1 – 300 meters, Belden 8281
INPUT RETURN LOSS	> 15dB
OUTPUT LEVEL	800mV p-p +/- 10%
OUTPUT JITTER	< 0.2 UI
OUTPUT RETURN LOSS	> 15dB
SIGNAL CONNECTORS	BNC

AES/EBU Digital Audio

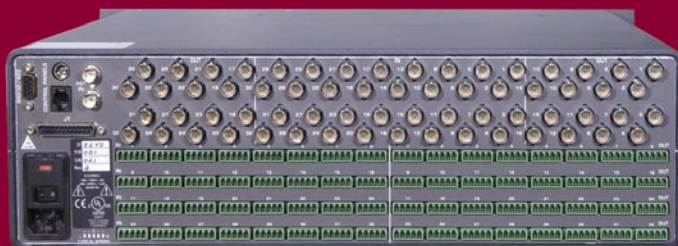
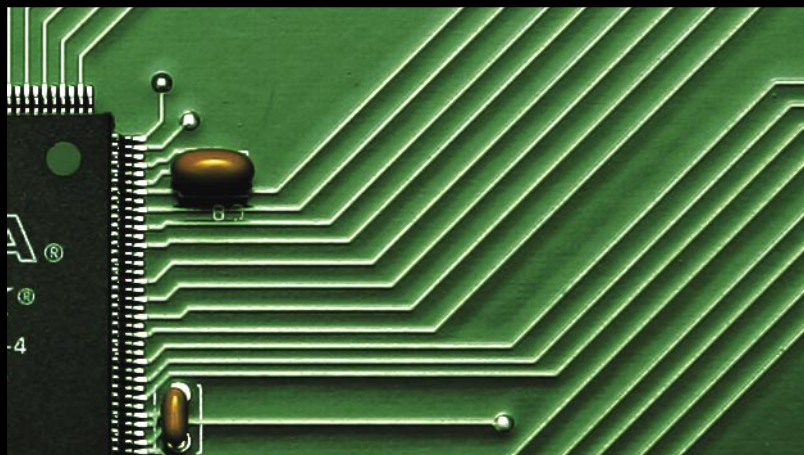
	AES3	AES3id
INTERFACE	Balanced	Unbalanced
CONNECTOR	Terminal Block	BNC
INPUT/OUTPUT IMPEDANCE	110 Ohm	75 Ohm
OUTPUT LEVEL	3.5V p-p	1V p-p
CABLE	STP	Coax
MAX. DISTANCE	100m	1000m
MIN. INPUT	200mV p-p	320mV p-p
EQUALIZATION	Optional	Optional
JITTER	< 0.025UI p-p	< 0.025UI p-p
DATA RATES	32kHz - 96kHz	32KHz - 96kHz

Analog Stereo Audio

MAX. INPUT AMPLITUDE	+ 24dBu
INPUT IMPEDANCE	> 20k
OUTPUT IMPEDANCE	< 50 Ohm
VOLTAGE GAIN (adjustment range, if any)	Unity: +/- 0.75dB max (+/- 0.25 typical) Input adjust range: + 20.5dB to - 8dB Output adjust range: + 15dB to - 59.5dB and fully off (MUTE)
FREQUENCY RESPONSE	20Hz to 20kHz +/- 0.5dB (typical - 3dB @ 120kHz) (unity gain)
DYNAMIC RANGE	96dB (20 - 20kHz unweighted) (unity gain)
CROSSTALK (ALL INPUTS HOSTILE)	< - 80dB @ 1kHz (unity gain); < - 60dB @ 10kHz (unity gain)
IM & THD (20 TO 20KHZ)	THD: < 0.025% (20Hz - 20kHz @ + 4dBu) (unity gain) IM: < 0.025 SMPTE-DIN @ + 4dBu (unity gain) < 0.01% CCIF @ + 16dBu (unity gain)
MAX. OUTPUT AMPLITUDE	+ 24dBu balanced; + 18dBu unbalanced
AUDIO CONNECTORS	5 pin terminal block for balanced or unbalanced operation

Lassen Analog™ Routing Switchers

Compact
Composite
Video
& Stereo Audio
Routing Switchers



Lassen 3232VS

FEATURES

- **Compact Design** - Space and cost saving compact design with sizes from 12x8 in 2RU to 32x32 in 3RU
- **RS-232/422 Control** - Standard on all models
- **Comprehensive Line of Remote and Remote-programmable Control Panels** - See the Control Panel and Software section at the end of the brochure for all the available options
- **Qwik Adjust Knob™ Rotary Control Interface** - Intuitive user interface with front panel LCD display
- **Use with other Sierra Video Routing Switchers** - Functions as either the master or the slave unit when used with other Sierra Video Systems routing switchers
- **Redundant Power Supply Option**



CONVENIENTLY COMPACT AND FEATURE RICH

Lassen Analog routing switchers provide all the features required for routing composite video and balanced stereo audio signals in a very compact footprint. They employ the extremely responsive and user intuitive Sierra Video Systems front panel Qwik Adjust Knob rotary control



BALANCED STEREO AUDIO

Lassen Analog routing switchers are equipped with balanced stereo audio and provide audio input level adjustment from +20.5dB to -8dB. They also provide audio output level adjustment from +15dB to -59.5dB along with a mute setting. Lassen analog audio boards have been designed to eliminate



Lassen 1616VS, Lassen 3232VS

interface and come in configurations ranging from 12x8 to 32x32.

The Lassen Analog routing switchers are ideal for live-to-air and post-production facilities, remote trucks, and corporate, scientific, military and educational installations. Lassen is the perfect routing switcher for facilities that require full production capabilities in a small production space.

OUTSTANDING ROUTING IN COMPACT SIZES

The Lassen Analog routing switchers are up to 50% smaller than their legacy counterparts in the Sierra Classic family - 32 inputs and 32 outputs of video and audio fit into a desirable 3RU frame with BNC video connectors and terminal block audio connectors for easy installation. The 12 Series and 16 Series are a mere 2RU.

FLEXIBLE CONTROL OPTIONS

The entire family of Lassen Analog routing switchers offers numerous control options. Each unit comes with a front panel LCD display and Sierra Video Systems' Qwik Adjust Knob™ rotary control interface that makes front panel control a breeze. Each Lassen model also comes with an RS-232 and RS-422 serial interface supported by all major third party control systems. Additionally, we offer a comprehensive range of remote control panel options with our SCP Series programmable control panels and our simple XY and single bus remote control panels.

the zipper effect associated with digital level controls. Adjusting the input or output audio levels yields only a smooth and pleasant transition.

ROOM FOR EXPANSION

For expanding facilities, our entire Lassen Analog line of routing switchers is designed to connect with other Sierra Video Systems routing switcher families. With the advent of the Lassen products, it is now practical to connect our small RS-422 machine control routing switcher to some of our smaller routing switchers. In addition, Lassen routing switchers can perform as either the master or the slave machine in your control system: the routing switcher can be inserted into an existing Sierra routing system providing additional format levels, or additional Lassen models can be linked to any Sierra Video Systems SCP Series control panel for ultimate control of any size broadcast system.

SIGNAL ROUTING HAS NEVER BEEN MORE COMPACT OR POWERFUL

The Lassen Analog routing switchers from Sierra Video Systems offer compact design, advanced features, and more control options than ever before. They are the ideal choice for demanding broadcast and post-production professionals.

Lassen Analog Routing Switchers

MODEL	RACK UNIT HEIGHT	FORMAT	INPUTS	OUTPUTS	DESCRIPTION
1208V	2RU	Video	12	8	12x8 composite video routing switcher w/ front control
1208VS	2RU	Video + Audio	12	8	12x8 composite video + stereo audio routing switcher w/ front control
1212V	2RU	Video	12	12	12x12 composite video routing switcher w/ front control
1212VS	2RU	Video + Audio	12	12	12x12 composite video + stereo audio routing switcher w/ front control
1608V	2RU	Video	16	8	16x8 composite video video routing switcher w/ front control
1608VS	2RU	Video + Audio	16	8	16x8 composite video + stereo audio routing switcher w/ front control
1616V	2RU	Video	16	16	16x16 composite video routing switcher w/ front control
1616VS	2RU	Video + Audio	16	16	16x16 composite video + stereo audio routing switcher w/ front control
3216V	3RU	Video	32	16	32x16 composite video routing switcher w/ front control
3216VR	4RU	Video	32	16	32x16 composite video routing switcher w/ front control and redundant power supply
3216VS	3RU	Video + Audio	32	16	32x16 composite video + stereo audio routing switcher w/ front control
3216VSR	4RU	Video + Audio	32	16	32x16 composite video + stereo audio routing switcher w/ front control and redundant power supply
3232V	3RU	Video	32	32	32x32 composite video routing switcher w/ front control
3232VR	4RU	Video	32	32	32x32 composite video routing switcher w/ front control and redundant power supply
3232VS	3RU	Video + Audio	32	32	32x32 composite video + stereo audio routing switcher w/ front control
3232VSR	4RU	Video + Audio	32	32	32x32 composite video + stereo audio routing switcher w/ front control and redundant power supply

TECHNICAL SPECIFICATIONS

Analog Composite Video

INPUT IMPEDANCE	75 Ohm nominal
INPUT CONNECTOR TYPE	BNC
VIDEO INPUT LEVEL	300mV to 2.5V p-p
VIDEO BANDWIDTH	> 100MHz @ -3dB fully loaded
CROSSTALK	80dB @ 1MHz - 47dB @ 100MHz
1 INPUT TO MANY OUTPUTS	All electrical specifications remain the same
VIDEO GAIN	Unity (adjustable per channel +/- 1.5dB)

Analog Stereo Audio

MAX. INPUT AMPLITUDE	+24dBu
INPUT IMPEDANCE	> 20k
OUTPUT IMPEDANCE	< 50 Ohm
VOLTAGE GAIN	Unity: +/- 0.75dB max (+/- 0.25 typical) Input adjust range: +20.5dB to -8dB Output adjust range: +15dB to -59.5dB and fully off (MUTE)
FREQUENCY RESPONSE	20Hz to 20KHz +/- 0.5dB (typical -3dB @ 120KHz) (unity gain)
DYNAMIC RANGE	96dB (20-20KHz unweighted) (unity gain)
CROSSTALK (all inputs hostile)	< -80dB @ 1kHz (unity gain); < -60dB @ 10kHz (unity gain)
IM & THD (20 to 20KHz)	THD: < 0.025% (20Hz - 20kHz @ +4dBu) (unity gain) IM: < 0.025 SMPTE-DIN @ +4dBu (unity gain) < 0.01% CCIF @ +16dBu (unity gain)
MAX. OUTPUT AMPLITUDE	+24dBu balanced + 18dBu unbalanced
AUDIO CONNECTORS	5 pin terminal block for balanced or unbalanced operation



Control Panels and Software



OUR OPTIONS ARE OUR STRENGTH

Sierra Video Systems offers a vast array of remote control panels. From our programmable SCP series to our simple XY panels, the breadth of our remote control options is one of our biggest strengths.

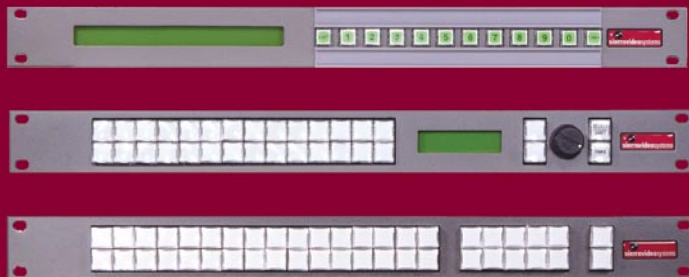
SOFTWARE

Sierra Video Systems' intuitive, user-friendly and free Graphical Router Interface Program, or G.R.I.P., uses a Windows-based graphical user interface that allows users to name sources and destination levels and set up personalities of individual control panels. With G.R.I.P., users can program up to 256 salvos and execute up to forty pre-loaded salvos, view the status and location of routing switchers, name destinations and sources, and create room groupings for all users. The GRIPNet™ version of this software allows the use of a LAN network with user access and complete administrative control.

REMOTE CONTROL PANELS

The SCP Series of programmable control panels features tremendous flexibility in external routing switcher control. The series has an on-board microprocessor which is combined with an effective 12 C bus architecture to provide customers with a multitude of button configurations resulting in the most powerful user-definable line of control panels the industry has to offer. SCP Series panels are programmed using our own G.R.I.P. software and they provide error-free serial communication with our routing switchers.

Sierra Video Systems also offers a complete array of convenient and simple Single-Bus, Button Per Source and XY panels for all our product families.



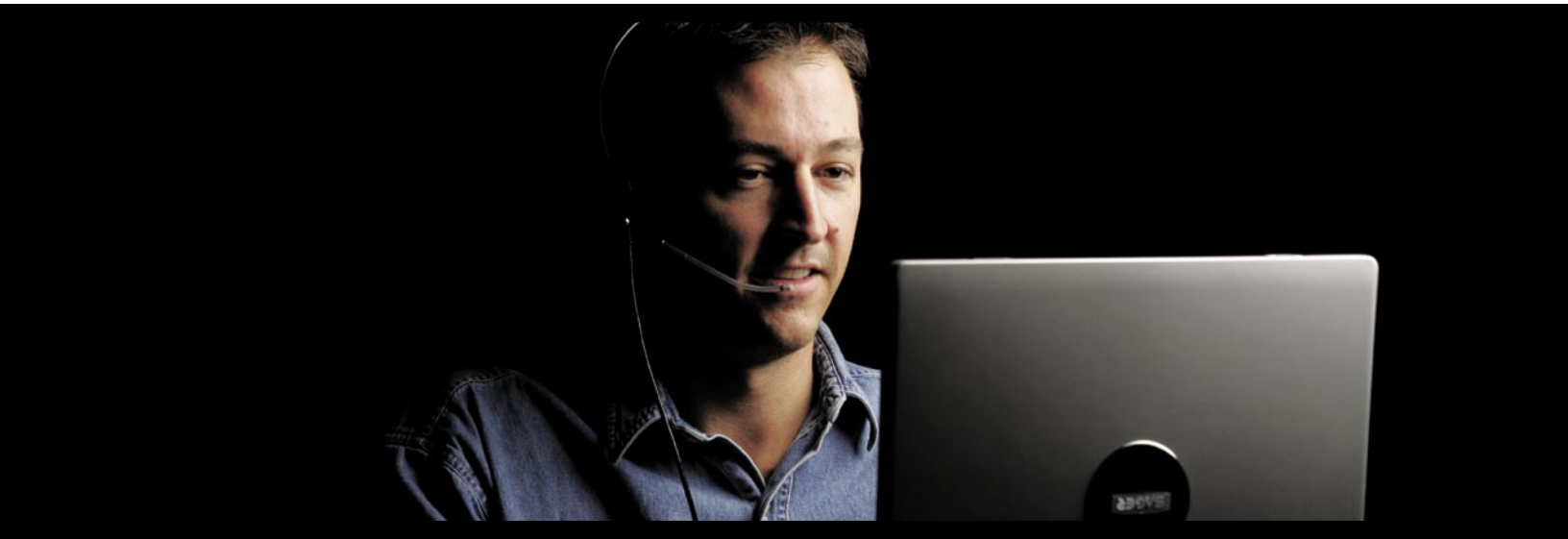
SCP-112,
SCP-132,
SCP-150



SCP-224,
SCP-240

Sierra Video Systems Control Panels and Accessories

MODEL	PART NUMBER	SIZE	DESCRIPTION
CONTROL PANELS			
SCP-20	804020	Desktop	Programmable Desktop Control Panel
SCP-112	804112	1RU	Basic Programmable Control Panel
SCP-132	804132	1RU	Programmable Push Button w/ Rotary Control Panel
SCP-150	804150	1RU	Programmable Push Button Control Panel
SCP-224	804224	2RU	Advanced Programmable Control Panel
SCP-240	804240	2RU	Multi-Bus/Multi-Level Programmable Control Panel
SINGLE BUS	804047	1RU	16x1 Single Bus LED Remote Control Panel
XY	804048	1RU	16x16 XY LED Remote Control Panel
XY	804148	2RU	16x16 XY LED Remote Control Panel
SINGLE BUS	804014	1RU	32x1 Single Bus LED Remote Control Panel
SINGLE BUS	804348	2RU	32x1 Single Bus LED Remote Control Panel
XY	804015	2RU	32x32 XY LED Remote Control Panel
CONTROL SOFTWARE			
ETHERNET TCP/IP	908006	N/A	Ethernet TCP/IP Web Control Software
ETHERNET TCP/IP	908012	N/A	Ethernet TCP/IP Web Control Software w/ Crestron E-server
G.R.I.P. NET	908009	N/A	G.R.I.P. Net Expanded Graphical Router Interface Program
ACCESSORIES			
CABLES	AC20103	1m	Control Panel Cable, shielded pair
CABLES	AC20303	3m	Control Panel Cable, shielded pair
CABLES	AC21503	15m	Control Panel Cable, shielded pair
CONNECTORS	AC70001	N/A	Connector kit, 2 ea. mini-XLR (Switchcraft TA3F or equal)
CONNECTORS	AC70002	N/A	Connector kit, 10 ea. mini-XLR (Switchcraft TA3F or equal)
CONNECTORS	AC70003	N/A	Cable kit, 10 ea. mini-XLR connector's w/150m. shielded pair



Reliable Products, Expert Support

For two decades, Sierra Video Systems has been assisting customers and providing solutions for almost any signal routing application imaginable. Our outstanding Customer Service and Technical Support teams are industry experts, skilled at answering your questions and optimizing your systems. Call direct during business hours and speak with a Technical Support Engineer, or take advantage of our After-Hours Technical Service: check our website for details. Technical manuals and online help are also available 24-hours a day at www.sierravideo.com.

Whether you need immediate on-site guidance or have repair questions, contact the best real-time customer service in the business. You can reach our Customer Service Department from 8 A.M. to 5 P.M. Pacific, Monday through Friday, or access 24-hour online support: www.sierravideo.com.

SEVEN-YEAR WARRANTY

Routers are the core of your system - "glueware" that is often taken for granted. In today's demanding video environment, you need to know that the backbone of your system will keep on working. When choosing a routing switcher, it is important that you discuss your requirements with a knowledgeable sales staff and identify the company's ability to provide long-term support. Be sure to make the right choice! Sierra Video Systems

is proud to offer a Seven-Year Warranty on most of our products. We've offered this warranty for two decades and stand behind our quality products.

We have been successful because we believe in providing quality products that don't come back, to customers who do.

FUTURE EXPANSION/INVESTMENT PROTECTION

With Sierra Video Systems, you can maximize the impact of your investment by adding or exchanging systems as your needs grow. Each of our routing systems is designed to expand with you, using flexible plug-in modules or easy factory modifications. Choose from a variety of frames and modular combinations that meet your needs. If your system is a single frame all-in-one solution, simply send it back, and we will either modify it by adding new modules or exchange the upgraded system entirely, based on your upgrade needs.

Additionally, Sierra Video Systems' excellent Trade-Up program allows a generous credit for a customer's entire system when it is traded for a larger Sierra Video Systems routing switcher. Let us know what your needs are and we will make every effort to accommodate you.

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