

CONFIGURATION GUIDE

C R O S S O V E R





CrossOver • Configuration Guide

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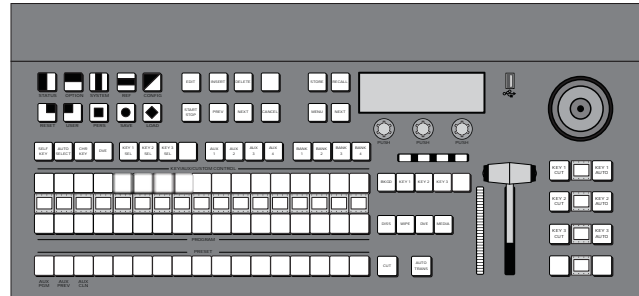
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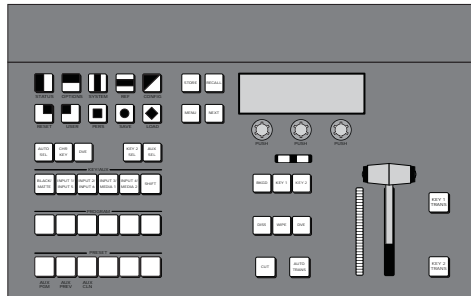
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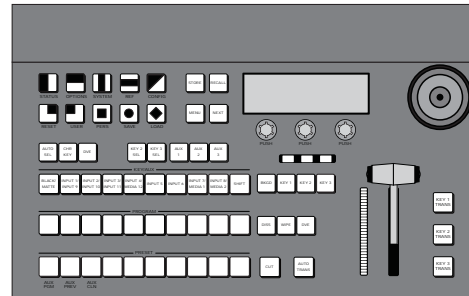
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CrossOver 16



CrossOver 6



CrossOver 12

Thank you for considering the purchase of a CrossOver Multi-Definition Live Production Switcher. Each switcher in the CrossOver family is a true multi-definition production switcher and comes fully equipped with support for a wide variety of SD and HD video formats. CrossOver is based on the latest technology in both hardware and software, offering a readiness for the future that is unmatched in the industry. Unlike other products on the market, no costly upgrades are required when moving from SD to HD. All that is required is a simple software setting change. Whether your production is in HD or SD, CrossOver will work for you - right out of the box.

Designed for Live!

CrossOver builds on the Ross Video reputation for designing switchers for live studios, trucks, and post-production. At the center of the action, it is important that the switcher be powerful and versatile, yet maintain its ease of operation. This frees the operator to concentrate on the programming instead of the equipment, delivering a cleaner, more professional production.

Designed for Linear!

The CrossOver family of switchers continues to build on Ross Video's reputation for setting the standard for multi-definition linear editing suites. The traditional layout and familiar controls of the CrossOver control panel provide the power and ease of use you expect from a Ross switcher.

CrossOver cleanly connects to virtually any editor using the industry standard GVG100/110 protocols.

Designed for You!

With production switchers installed in over 100 countries world-wide, our sales, demonstration, and training people get a lot of ongoing feedback from customers. This feedback is carefully tracked and considered in the design and feature set development of our production switchers. The CrossOver series, our seventh generation of switchers, was designed with the direct input of video professionals experienced in news, sports, drama, mobile, and post production. Key members of the CrossOver design team are part of an ongoing program in which they provide switcher demonstrations, assist with switcher installation, and train operators. As a result, the CrossOver line continues to offer our legendary combination of power and ease of use.



Join our Growing Customer Base!

Deciding to purchase a CrossOver switcher will put you in good company, with many thousands of Ross switchers installed worldwide. CrossOver continues to build on a family of multi-definition switchers that have been delivering the goods every day in live sports, stadium scoreboards, and drama productions, as well as local and network newscasts.

Experience Great Support!

Ross Video has designed and manufactured production switchers for over thirty years, with significant year over year growth for the past 12 years. We believe that an important factor of our success is our focus on providing a superior customer experience. We continually benchmark our warranty and technical support to ensure that they are the best in the industry.

We hope that you join the many thousands of satisfied video professionals around the world that are proud owners of Ross production switchers. Please do not hesitate to contact us with any questions or comments you have related to this Configuration Guide at Tel: +1-613-652-4886, Fax: +1-613-652-4425 or email us at solutions@rossvideo.com.

Product Overview

Multi-Definition — Future-proof right out of the box, CrossOver allows you to work in either SD or HD. CrossOver supports 480i (SD 525), 576i (SD 625), 720p, 1080i.

Incredibly Powerful CrossOver 6 – The CrossOver 6 Live Production Switcher sets a new standard for small compact switcher and chassis capability. It supports 6 Multi-Definition Serial Digital inputs, 3 Multi-Definition Serial Digital Aux Bus outputs, 2 Multi-Definition Serial Digital Program outputs, 1 Multi-Definition Serial Digital Preview output, a single user configurable composite output, two Keyers, 2 channels of Animation-Store with access to 1 Gigabyte of cache, 2 channels of 2D DVE, 24 user configurable GPIs, and a single Reference input with 3 adjustable Reference outputs. Add FlexiClean™, Linux OS, and a whole lot more, and the result is nothing short of revolutionary. Amazingly, it fits into a rack-saving 2 RU.

Incredibly Powerful CrossOver 12 – The CrossOver 12 Live Production Switcher has all the features of the CrossOver 6, with the addition of 6 Multi-Definition Serial Digital inputs, one additional Keyer, 4 Gigabytes of Animation-Store cache, and a 2-axis positioner.

Incredibly Powerful CrossOver 16 – The CrossOver 16 Live Production Switcher has all the features of the CrossOver 12, with the addition of 16 source buttons with mnemonics, and a 3-axis positioner.

2D DVE — Great for sophisticated looking boxes, it allows every type of key to be zoomed, cropped, and repositioned in 2D space, or you can use one of the useful pre-built 2D effects to perform 2D background transitions.

UltraChrome™ Advanced Chroma Keying — Our UltraChrome chroma keyer uses Ross technology to perform detailed keying in the most demanding applications. A single UltraChrome chroma keyer is provided as a standard feature.

2 Channel Animation-Store — Two independent channels of stills are available switcher-wide, providing 1 or 4 Gigabytes of stills, logos, and animation that can be stored and recalled from a USB media drive.

Powerful MLE — The Multi-Level Effects (MLE®) of the CrossOver comes standard with fully featured keyers with luma, and linear, plus an advanced UltraChrome chroma keyer. The MLE also has an advanced pattern generator that includes pattern rotation, aspectization, and multiplication. An additional pattern generator is dedicated to complex wash generation.

Upgrades from the Web — Software and even some firmware can be upgraded by downloading files from our web site. It's fast, easy, and it's FREE!

Affordable — A powerful switcher at a great price!

Built to Last — Ross warranties save thousands in operational costs over competitive products. It's no secret that Ross products are tough. They're built to handle years of demanding, continuous use. The CrossOver series is backed by a comprehensive 1-year transferable warranty. The design of our fourth generation fader bars is so good that they are guaranteed for life.

Your purchase decision must be based on a careful look at your present and future programming requirements. To ensure your investment is an informed one, and that the switcher is equipped for your programming needs, Ross Video has put together this Configuration Guide for the CrossOver switchers. In this guide, we describe the CrossOver switchers and their many standard and optional features. As you go through the information, please feel free to call us. We will be happy to address any of your questions.



Product Comparison

Use the following table to compare the different switchers in the CrossOver product line.

CrossOver Live Production Switcher

	CrossOver 6	CrossOver 12	CrossOver 16
Control Panel			
Panel Source Buttons	6	10	16
Maximum Number of MLEs Supported	1	1	1
Legendary Ross Fader Handle with Lifetime Guarantee	Yes	Yes	Yes
Source and Keyer Mnemonics	No	No	Yes
Positioner	No	2-Axis	3-Axis
Width x Depth	16"x11" (41cmx28cm)	16"x11" (41cmx28cm)	21.75"x11" (55cmx28cm)
Control Panel Redundant Power	Yes (optional)	Yes (optional)	Yes (optional)
Frame			
Rack Frame Height	2 RU	2 RU	2 RU
Rack Frame Redundant Power	Yes (optional)	Yes (optional)	Yes (optional)
Video Input/Output			
Multi-Definition HD/SD	Yes	Yes	Yes
Standard Definition Processing	525, 625	525, 625	525, 625
High Definition HD/SD ¹	Yes	Yes	Yes
SDI Inputs	6	12	12
SDI Outputs	6 (2xPGM, 1xPV, 3xAUX)	6 (2xPGM, 1xPV, 3xAUX)	6 (2xPGM, 1xPV, 3xAUX)
Analog Outputs ²	1	1	1
FlexiClean™ Clean Feed System	Yes	Yes	Yes
Format Scalar and Frame Sync	4	4	4
Input Reference Format ³	Internal / Black Burst / Tri-Level	Internal / Black Burst / Tri-Level	Internal / Black Burst / Tri-Level
Independent Reference Output	3	3	3
Effects Capabilities			
Maximum Simultaneous Keys	2	3	3
Internal DVE Channels	2	2	2
Memory AI	Yes	Yes	Yes
UltraChrome™ Chroma Keys	1	1	1
Storage and Networking			
USB Media Drive	Yes	Yes	Yes

	CrossOver 6	CrossOver 12	CrossOver 16
Animation-Store Still Store Channels	2	2	2
Ethernet Connectivity	Yes	Yes	Yes
Linux OS	Yes	Yes	Yes
Animated Logo Players (requires video and alpha playout)	1 Animation-Store	1 Animation-Store	1 Animation-Store
Peripheral Interfacing			
OverDrive™ Compatible ⁴	No	No	No
All Ross Interfaces Available ⁴	No	No	No
External Link Ports	1	1	1
Editor Protocols (GVG)	100	100	100
GPIs	24	24	24
Tallies	6	8	8
USB Ports	1	1	1

1. 1080i 50/59.94, 720p 50/59.94, 480i 59.94 (4:3 and 16:9), 576i 50 (4:3 and 16:9)
2. NTSC 59.94 or PAL 50
3. 480i, 576i, 720p, 1080i (frequency is factory set)
4. OverDrive™ support, and Ross Interfaces are not available at this time

Standard Features

► Serial Digital Inputs

The CrossOver Multi-Definition, and Standard-Definition, Live Production Switchers come standard with 6 or 12 Serial Digital inputs. The CrossOver 6 supports 6 Multi-Definition, or Standard-Definition, Serial Digital inputs and the CrossOver 12 supports 12 Multi-Definition, or Standard-Definition, Serial Digital inputs.

► Serial Digital Outputs

All CrossOver Multi-Definition, and Standard-Definition, Live Production Switchers come standard with 6 Serial Digital outputs, consisting of 2 Program, 1 Preview, and 3 Aux outputs, and a single Analog output.

Every output is fully timed to provide consistent and adjustable output phasing.

► Analog Reference Input

CrossOver provides you with maximum flexibility and cost effectiveness when choosing the reference signal for your facility. Reference can be an input from a house sync or generated internally. Although tri-level sync is recommended as your reference source for all applications, analog black burst can be used when operating the switcher.

A single reference input and three independent reference outputs are provided for your convenience.

See the table in the **Specifications** section, at the rear of the Configuration Guide, for detailed reference information.

► 2 Channel Animation-Store

Two independent channels of still/animations are available switcher-wide. Thousands of full screen stills and logos can be cached and used on the CrossOver Live Production Switcher.

Animation-Store comes standard with 1 Gigabyte of cache on the CrossOver 6 and 4 Gigabytes of cache on the CrossOver 12. The number of images cached increases considerably when smaller, non-full screen images like logos are loaded from USB.

► MLE Effects System

The MLE® (Multi-Level Effect) system is standard with the CrossOver Live Production Switcher. The MLE provides a keyer, supporting matte fill, pattern mask, box mask, self-key, linear key, and UltraChrome™ advanced chroma key.

A complex wash generator is also provided, that incorporates extensive wash patterns, matte video effects, and noise effects while a full preview is always available to reduce on-air surprises.

► Powerful Pattern Generator

The CrossOver Live Production Switcher has a single pattern generator that comes equipped with 10 classic wipes. Most wipes can be rotated, bordered, multiplied, aspectized, and repositioned.

► Matte/Wash Generator

The CrossOver Live Production Switcher has a single simple matte generator and complex wash generator capable of multi-color washes. Any one of the color generators can be assigned to MATTE, or wipe pattern edges.

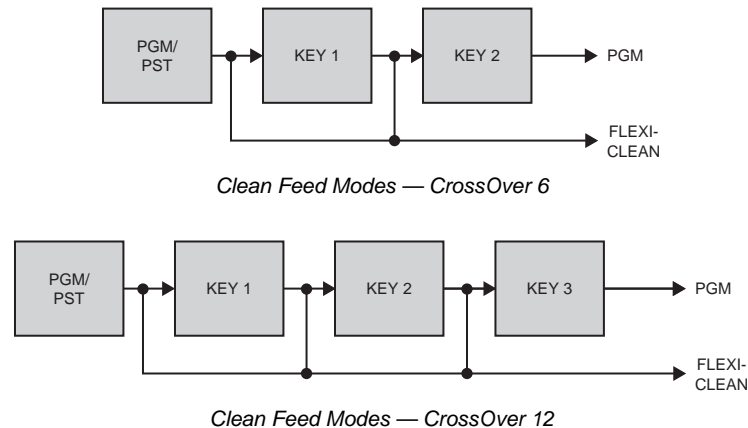
► UltraChrome Advanced Chroma Keying

The Ross UltraChrome™ uses advanced video processing technology to provide exceptional blue spill reduction and clean edges, even with difficult source material. Glass, smoke, translucent materials, and natural shadows are handled superbly.

► FlexiClean Clean Feed Output

FlexiClean is typically used for bilingual and live-to-tape productions. It provides a second Program output that is derived from a different location than the standard program output. A frequent application is the recording of shows for later airing without call-in phone numbers inserted.

The clean feed output can come from before or between the keys. The diagram below illustrates the possible clean feed configurations



► USB Media Drive

This feature makes it possible to store and recall switcher memories, media stills, and animations to a USB media drive. This allows operators and technical staff to back up their memories and easily transfer these settings to other CrossOver Live Production Switchers.

► 100 Event Switcher Memory

CrossOver comes standard with storage for 100 complete switcher snapshots. All of these memories can be stored to a USB media drive, providing custom tailored memories for every operator and every show.

► Clear and Intuitive Displays and Buttons

CrossOver always lets you know what's going on. A unique glow color can be set for each CrossOver control panel. This color is applied to all the buttons on the control panel.

Red-lit on-air sources allow you to easily identify the sources, and Keys that are on-air.

► Memory AI Recall Mode

CrossOver takes the guessing out of memory recalls by ensuring that a memory recall will not affect what is currently on-air. Memory AI uses the content of the memory to configure the Next Transition area and Preview bus for the background and keys so that the next transition takes the on-air state to the same as what was stored with the memory.

► General Purpose Interface

CrossOver is equipped with 24 GPIs across three banks of 8 GPIs.

The GPI inputs allow the switcher to interface with peripheral equipment such as editors. Each GPI input can be used to perform simple editing and switcher functions such as fade to black or an auto transition.



► Tally Outputs

The CrossOver Live Production Switcher has 8 pre-assigned tally relays located in the rack frame. Tallies are fixed to the first 8 inputs in a one to one relationship. For the CrossOver 6, tallies are fixed to the first 6 inputs.

► System Manuals

CrossOver comes with a complete set of system documentation that includes an Operator's Manual, an Engineering Manual, and a series of Quick-Start posters.

► Technical Support

At Ross, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24 Hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross personnel. During business hours (eastern standard time), technical support personnel are available by telephone any time. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support personnel who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. These people are available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

► Repair and Warranty Policy

The CrossOver is backed by a comprehensive one-year warranty on all components. CrossOver fader handles are covered with a lifetime warranty. For a more detailed description, please see our warranty document.

Standard Systems

Whether you have a demanding production environment, or a more modest one, selecting the Live Production Switcher that is right for you should not be a complicated task. Do you need 12 inputs, or would 6 be enough? Do you need the flexibility of a full Multi-Definition Live Production Switcher, or would a Standard-Definition Live Production Switcher be enough? Do you want to mount your switcher in a desk, or on top of it? Those are all the questions you need to ask yourself when looking at a CrossOver Live Production Switcher. The rest is already included.

► CrossOver Multi-Definition Live Production Switcher

CPS-1006-001
6 Input

Do you have a production environment where space is at premium? Compact, easy to use, and powerful are all terms used to describe the CrossOver Multi-Definition Live Production Switcher.

CPS-1012-001
12 Input

The **CrossOver 6 Multi-Definition Live Production Switcher (CPS-1006-001)** has 2 Keyers, 6 Crosspoint source buttons, 6 Multi-Definition dedicated outputs, a single SD only analog output, and 6 Multi-Definition Serial Digital inputs.

CPS-1016-001
12 Input

The **CrossOver 12 Multi-Definition Live Production Switcher (CPS-1012-001)** has all the features of the CrossOver 6 Multi-Definition Live Production Switcher, except that it has 12 Multi-Definition Serial Digital inputs, 3 Keyers, 10 Crosspoint source buttons, a 2-axis positioner, and 3 Aux Bus Assign buttons.

The **CrossOver 16 Multi-Definition Live Production Switcher (CPS-1016-001)** has all the features of the CrossOver 6 Multi-Definition Live Production Switcher, except that it has 12 Multi-Definition Serial Digital inputs, 3 Keyers, 16 Crosspoint source buttons with keyer mnemonics, a 3-axis positioner, and 3 Aux Bus Assign buttons.

► CrossOver Standard-Definition Live Production Switcher

CPSSD-1006-001
6 Input

Do you require the compact size and easy of use of the CrossOver Live Production Switcher but don't need High-Definition? The CrossOver Standard-Definition Live Production Switcher provides the same powerful features as the CrossOver Multi-Definition Live Production Switcher, but in Standard-Definition only.

CPSSD-1012-001
12 Input

The **CrossOver 6 Standard-Definition Live Production Switcher (CPSSD-1006-001)** has 2 Keyers, 6 Crosspoint source buttons, 6 Standard-Definition dedicated outputs, a single SD only analog output, and 6 Multi-Definition Serial Digital inputs.

CPSSD-1016-001
12 Input

The **CrossOver 12 Standard-Definition Live Production Switcher (CPSSD-1012-001)** has all the features of the CrossOver 6 Standard-Definition Live Production Switcher, except that it has 12 Standard-Definition Serial Digital inputs, 3 Keyers, 10 Crosspoint source buttons, a 2-axis positioner, and 3 Aux Bus Assign buttons.

The **CrossOver 16 Standard-Definition Live Production Switcher (CPSSD-1016-001)** has all the features of the CrossOver 6 Standard-Definition Live Production Switcher, except that it has 12 Standard-Definition Serial Digital inputs, 3 Keyers, 16 Crosspoint source buttons with keyer mnemonics, a 3-axis positioner, and 3 Aux Bus Assign buttons.

► **CrossOver 1 MLE Live Production Switcher Frame ONLY**

CPS-1006-001-FRAME

6 HD Inputs

Do you need the keying or chroma key power of multiple CrossOver 6 or 12 frames, but don't need a control panel connected to each one? With a single control panel and multiple frames, you can have multiple independent chroma keyers without the clutter or expense of multiple unused control panels. If you need to tweak the settings on one of the frames, simply connect your control panel to the frame and make the changes. For fast switching between frames, connect all your frames and control panel to a serial switch, and simply dial in the frame you want to control.

CPS-1012-001-FRAME

12 HD Inputs

CPSSD-1006-001-FRAME

6 SD Inputs

Offset your upgrade costs by purchasing your control panel and frame at different times. Any of the CrossOver frames can be purchased separate from the control panels.

Note: Only one control panel can be connected to a frame at a time.

CPSSD-1012-001-FRAME

12 SD Inputs

► **CrossOver 1 MLE Live Production Switcher Panel ONLY**

CPS-1006-001-PANEL

6 source buttons

Do you have a CrossOver 6 or 12 frame and want to upgrade your panel? Offset your upgrade costs by purchasing your control panel and frame at different times.

CPS-1012-001-PANEL

12 source buttons

Maybe you need an additional control panel to meet your production needs? Any of the CrossOver control panels can be purchased separate from the frame.

Note: Only one control panel can be connected to a frame at a time.

CPS-1016-001-PANEL

16 source buttons

System Options

Options are typically ordered when the switcher is purchased. However, you can order options if your needs change in the future. All of our options can be easily installed in the field. You can take comfort in knowing that you can purchase options in the future and that installation at your site will be a smooth process.

► CrossOver Standard-Definition Live Production Switcher HD Upgrade

**CPSSD-1006-
HDUPG**
6 Input

The CrossOver Standard-Definition Live Production Switcher can be upgraded to full Multi-Definition with this option. Start out with the CrossOver Standard-Definition Live Production Switcher and upgrade to full Multi-Definition when your needs change.

**CPSSD-1012-
HDUPG**
12 Input

**CPSSD-1016-
HDUPG**
12 Input

► Redundant Power (Frame and Panel)

**CPS-REDPSU-
EXT**

The redundant power supply option provides protection against AC power failure. It allow two external power supplies to receive power from independent power sources. Complete failure of one source, or power supply, will not affect the operation of the switcher in the slightest. If the main AC power fails, the switcher instantly draws power from the remaining source. The transition from one power source to the other is totally transparent and has no effect on the output of the switcher; a critical feature should one power source fail during an on-air broadcast.

► In-Desk or In-Rack Secure Mounting Kit (CrossOver 6 or 12)

CPS-INDESK

This option provides two mounting options for the CrossOver 6 or 12 control panel. A versatile mounting bracket is attached to the bottom of the CrossOver control panel and provides a flange on either side of the control panel. This flange allows the CrossOver control panel to be mounted into a desk and screwed down, or mounted vertically into a rack frame.

The CrossOver control panel required at least 7RUs to mount it into a rack frame. This includes 1RU for cable bend relief.

► In-Desk Secure Mounting Kit (CrossOver 16)

CPS-INDESK16

This option provides an in-desk mounting option for the CrossOver 16 control panel. A mounting bracket is attached to the bottom of the CrossOver 16 control panel and provides a flange on either side of the control panel that can be screwed down into the desk.

► Analog I/O Pack for SD Signals

**CPS-
ANALOGIO1**

Note: This option must be purchased at the same time as your CrossOver Live Production Switcher.

This option provides input and output support for analog video formats, such as RGB/YPbPr or YC/CVBS. A single (1) Ross GearLite DAC-9013 SDI to Analog Composite/Component Video Converter is provided for analog Program Out, and four (4) Ross GearLite ADC-9033 Analog Composite/Component/YC to ADI Video Converter for analog Inputs.

► **Onsite Operational Training, 1 Day**

CPS-TRAIN-1DAY

Although CrossOver was designed to be as easy as possible to install and operate, training is highly recommended to ensure that the process of taking your Ross Video switcher to air is a smooth one.

Training courses can be conducted at the customer's site or at Ross facilities. Expenses are included in North America. A minimum of four weeks advance notice is required for training to ensure that we can efficiently schedule the best possible training staff for your requirements. Onsite training is provided on the customer's switcher.

Customers are not charged for the travel time of the trainer.

► **Extended Warranty (CrossOver 6 or 12)**

CPS-999

This extends the standard one-year warranty on your CrossOver 6 or 12 Live Production Switcher by one year. Additional years can be purchased if required.

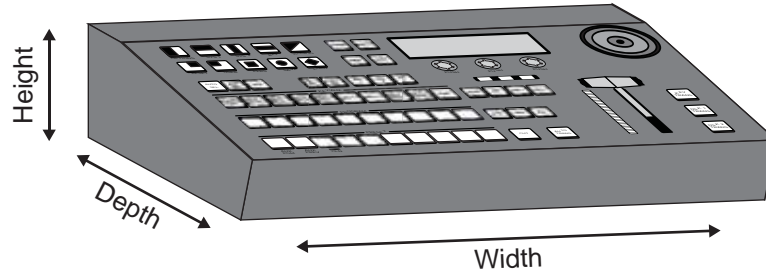
► **Extended Warranty (CrossOver 16)**

CPS-999-16

This extends the standard one-year warranty on your CrossOver 16 Live Production Switcher by one year. Additional years can be purchased if required.

Specifications

Physical Characteristics – CrossOver Control Panel



	CrossOver 6	CrossOver 12	CrossOver 16
CrossOver Control Panel Size			
Width	15.85" (40.3 cm)	15.85" (40.3 cm)	21.75" (55.3 cm)
Depth	10.64" (27.0 cm)	10.64" (27.0 cm)	10.75" (27.3 cm)
Height	3" (7.6 cm)	3" (7.6 cm)	4" (10.6 cm)
Height Above Desktop	4.81" (12.2 cm)	4.81" (12.2 cm)	4.81" (12.2 cm)
Panel Source Buttons	6	10	16
Desk Cutout Size			
Width	18" (45.7 cm)	18" (45.7 cm)	23.62" (60.0 cm)
Depth	11" (27.9 cm)	11" (27.9 cm)	11.5" (29.2 cm)
Connector Types			
External Link Port	RJ-45	RJ-45	RJ-45
AC Power	External DC Power Brick	External DC Power Brick	External DC Power Brick

Physical Characteristics – CrossOver Frame

	CrossOver 6	CrossOver 12
CrossOver Frame		
Width	19" (48.3 cm)	19" (48.3 cm)
Height (2 RU)	3.5" (8.89 cm)	3.5" (8.89 cm)
Depth	15.63" (39.7 cm)	15.63" (39.7 cm)
Connector Types		
Video I/O	BNC-Type	BNC-Type
Editor Port	D-Type, 9-pin, Female	D-Type, 9-pin, Female

	CrossOver 6	CrossOver 12
USB Port	A-Type	A-Type
Tally Ports	D-Type, 9-pin, Female	D-Type, 9-pin, Female
GPI I/O	D-Type, 25-pin ,Female	D-Type, 25-pin ,Female
Ethernet Port	RJ-45	RJ-45
Reference Out	BNC-Type	BNC-Type
AC Power	3-pin IEC	3-pin IEC

Power Rating – Tallies

All CrossOver Switchers	
Input Voltage	24VAC (rms) / 40VDC
Maximum Current	170mA
Impedance	< 15 ohms

Power Consumption

	CrossOver 6 & 12	CrossOver 16
Power Consumption – Frame		
Consumption	81W 6.75A 12V	81W 6.75A 12V
Input Voltage	100 - 120V~ 220 - 240V~ 47-63Hz 1.6A	100 - 120V~ 220 - 240V~ 47-63Hz 1.6A
Power Consumption – Panel		
Consumption	24W 2A 12V	26W 2A 12V
Input Voltage	100 - 120V~ 220 - 240V~ 47-63Hz 1.5A	100 - 120V~ 220 - 240V~ 47-63Hz 1.5A

Environmental Characteristics

All CrossOver Switchers	
Ambient Temperature Range	0 - 35°C (32 - 95°F)
Frame Cooling	Active, Front-to-Back airflow
Control Panel Cooling	Power Supply

Video Characteristics

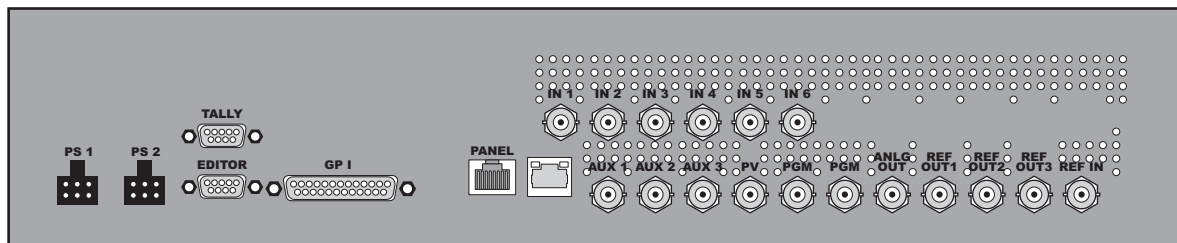
All CrossOver Switchers	
Supported Video Formats	
480i/59.94 (SD 525)	SMPTE 125M, SMPTE 259M
576i/50 (SD 625)	ITU-R BT.601-5, SMPTE 259M

All CrossOver Switchers	
720p/59.94	SMPTE 296M, SMPTE 292M
720p/50	SMPTE 296M, SMPTE 292M
1080i/50, 1080i/59.94	SMPTE 274M, SMPTE 292M
<ul style="list-style-type: none"> • 10 bit 4:2:2 component digital video and key processing • 4:3 and anamorphic 16:9 switchable aspect ratio where applicable • Contract Ross Video for additional format compatibility 	
Video Inputs	
CrossOver 6 — Number of Inputs	6
CrossOver 12 — Number of Inputs	12
CrossOver 16 — Number of Inputs	12
Equalization (using Belden 1694 cable)	> 180m @ 1.5Gb/s > 300m @ 270Mb/s
Impedance	75 ohm, terminating
Return Loss	> 20dB @ 1.5GHz
<ul style="list-style-type: none"> • All inputs are SMPTE-259M/292M serial digital non-looping. • Inputs can be used for either key or video. • The reference input is selectable, analog black for Standard Definition operation, and the recommended tri-level sync for High Definition operation. 	
Video Outputs	
Number of Outputs	7 (6 SDI and 1 SD analog)
Return Loss	> 16dB @ 1.5GHz
Rise and Fall Time	800ps +/- 10% (SD) 240ps +/- 10% (HD)
Signal Level	800mV +/- 10%
DC Offset	0 volts
Overshoot	< 8%
<ul style="list-style-type: none"> • All video outputs are 10-bit SMPTE-259M-C (SD Mode) or 10-bit SMPTE-292M serial digital (HD Mode). • EDH is inserted into all outputs and can be disabled. Aux Bus outputs do not have EDH insertion but do pass previously inserted EDH. (SD Video Mode). • Line CRCs are inserted into all outputs and can be disabled. Aux Bus outputs do not have line CRCs inserted but do pass previously inserted line CRCs. (HD Video Mode). 	
Jitter	
Video Mode	
HD – Tri-Level Sync	Alignment (> 100KHz) < 0.2UI Timing (<10Hz) < 1.0UI
HD – Composite Reference	Performance not guaranteed with composite reference
SD – Tri-Level Sync	Alignment (> 1KHz) < 0.2UI Timing (<10Hz) < 0.2UI
SD – Composite Reference	Alignment (> 1KHz) < 0.2UI Timing (<10Hz) < 0.5UI
System Timing	
<ul style="list-style-type: none"> • All video inputs zero time relative to reference input, auto timing will correct for inputs out of time by up to +/- 0.25 line. • System delay approximately 500 pixels. 	

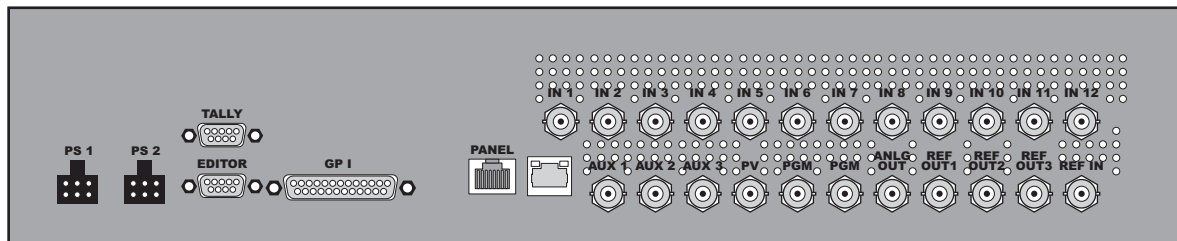
All CrossOver Switchers	
System Reference	
Reference Format	Video Format
480i/59.94	480i/59.94, 480i 16:9/59.94, 1080i/59.94, 720p/59.94
576i/50	576i/50, 576i 16:9/50, 1080i/50, 720p/50
720p/50	720p/50
720p/59.94	720p/59.94
1080i/50	576i/50, 576i 16:9/50, 1080i/50, 720p/50
1080i/59.94	480i/59.94, 480i 16:9/59.94, 720p/59.94, 1080i/59.94

Note: Specifications are subject to change without notice.

Note: CrossOver switchers meet applicable world standards for safety, emissions, and immunity.



CrossOver 6 Frame — Rear View



CrossOver 12 Frame — Rear View



CrossOver 6 Control Panel — Rear View



CrossOver 12 Control Panel — Rear View



CrossOver 16 Control Panel — Rear View



Option Summary

CrossOver Live Production Switcher

	CrossOver 6	CrossOver 12	CrossOver 12
Live Production Switcher			
CrossOver Multi-Definition Live Production Switcher	CPS-1006-001	CPS-1012-001	CPS-1016-001
CrossOver Standard-Definition Live Production Switcher	CPSSD-1006-001	CPSSD-1012-001	CPSSD-1016-001
CrossOver 1 MLE Live Production Switcher Frame ONLY (HD Inputs)	CPS-1006-001-FRAME	CPS-1012-001-FRAME	CPS-1012-001-FRAME
CrossOver 1 MLE Live Production Switcher Frame ONLY (SD Inputs)	CPSSD-1006-001-FRAME	CPSSD-1012-001-FRAME	CPSSD-1012-001-FRAME
CrossOver 1 MLE Live Production Switcher Panel ONLY	CPS-1006-001-PANEL	CPS-1012-001-PANEL	CPS-1016-001-PANEL
Additional Options			
Redundant Power, Frame and Panel	CPS-REDPSU-EXT	CPS-REDPSU-EXT	CPS-REDPSU-EXT
In-Desk or In-Rack Secure Mounting Kit	CPS-INDESK	CPS-INDESK	CPS-INDESK16
CrossOver Standard-Definition Live Production Switcher HD Upgrade	CPSSD-1006-HDUPG	CPSSD-1012-HDUPG	CPSSD-1016-HDUPG
Onsite Operational Training, 1 Day	CPS-TRAIN-1DAY	CPS-TRAIN-1DAY	CPS-TRAIN-1DAY
Extended Warranty, 1 Year	CPS-999	CPS-999	CPS-999-16
Analog I/O Pack for SD Signals	CPS-ANALOGIO1	CPS-ANALOGIO1	CPS-ANALOGIO1

Notes:



Notes:

Trademarks

- Ross, Ross Video, MLE, OverDrive, UltraChrome, FlexiClean, and CrossOver, RossGear, openGear, DashBoard, and GearLite, are trademarks of Ross Video Limited



Request for Quotation

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Customer Information

Company _____

Contact Name _____

E-mail _____

Telephone (s) _____

Address _____

Item #	Option Number	Option Name	Quantity