Installation and Setup Manual

020-102024-01

Spyder X80

CHRISTIE®

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PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

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The product 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 product is operated in a commercial environment. The product 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. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

CAN ICES-3 (A) / NMB-3 (A)

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Content

Product overview

Spyder is a versatile video processing system that blends, windows, and scales a wide array of video signals.

The Spyder architecture allows multiple displays to be combined to generate a resolution exceeding what any single display can handle. Use the Spyder to drive multiple displays to achieve greater brightness, image quality, and resolution than previously possible.

Spyder systems are generally composed of the following base components:

- **Spyder**—The hardware-based video processor core of the system. Adding additional Spyder boxes expands the system and allows more video inputs and windows to be managed.
- **Spyder Studio**—This application is used to configure the Spyder system, and provides online and offline editing capabilities for creating shows.

  Spyder Studio hosts a virtual version of the Spyder server, allowing users to work within the software as though they were actually connected to the system, and provides synchronization options for the user to take a copy of the system data offline with them, or to push their offline work onto the server hardware.
- **External control systems**—Use external control protocols to develop customized control systems and user interfaces. These control systems are generally found in installations where Spyder is only one of several disparate systems combined to form a larger system. Typical applications include systems such as Montage II, AMX, or Crestron.

Important safeguards

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.

General safety precautions

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.

Warning! If not avoided, the following could result in death or serious injury.

- SHOCK HAZARD! Disconnect the product from AC before moving, servicing, cleaning, removing components, or opening any enclosure.
- A minimum of two people or appropriately rated lift equipment is required to safely lift, install, or move the product.
- Motors and fans may start without warning.

Power precautions

Ensure all power precautions are understood before installing the product.

Warning! If not avoided, the following could result in death or serious injury.

- FIRE AND SHOCK HAZARD! Do not operate the system unless certified power connections, providing the recommended voltage, are used.
- FIRE AND SHOCK HAZARD! Do not attempt operation unless the power cord, power socket, and power plug meet the appropriate local rating standards.

Caution! If not avoided, the following could result in minor or moderate injury.

- SHOCK HAZARD! Only use the AC power cord provided with the product or recommended by Christie.
- TRIP OR FIRE HAZARD! Position all cables where they cannot contact hot surfaces, be pulled, be tripped over, or damaged by persons walking on or objects rolling over the cables.
- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- FIRE OR SHOCK HAZARD! Do not overload power outlets and extension cords.
- SHOCK HAZARD! The AC power cord must be inserted into an outlet with grounding.
- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and power range, as specified on the license label.

Required tools

Make sure the following tools are available during the installation.

- Torque driver
- M6 screwdriver

Related documentation

Additional information on the Spyder is available in the following documents.

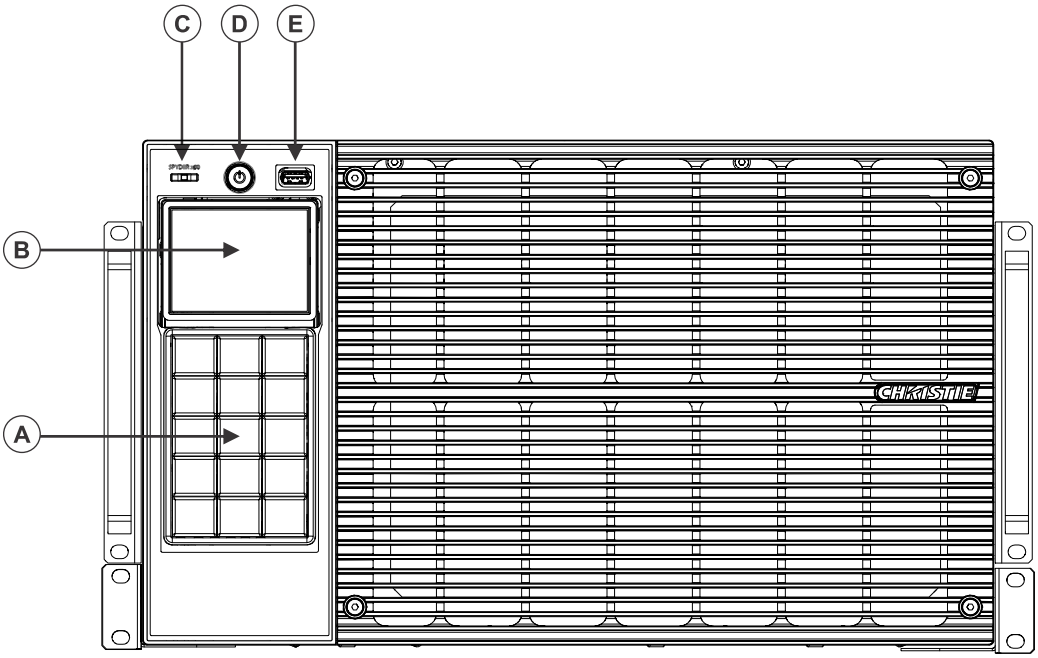
- *Christie Spyder Studio User Guide (P/N: 020-102205-XX)*
- *Christie Spyder Serial Commands Technical Reference (P/N: 020-102207-XX)*

Spyder X80 interface and ports

Learn about the interface and physical ports on the Spyder.

Front panel components

Identify the components on the front of the Spyder.



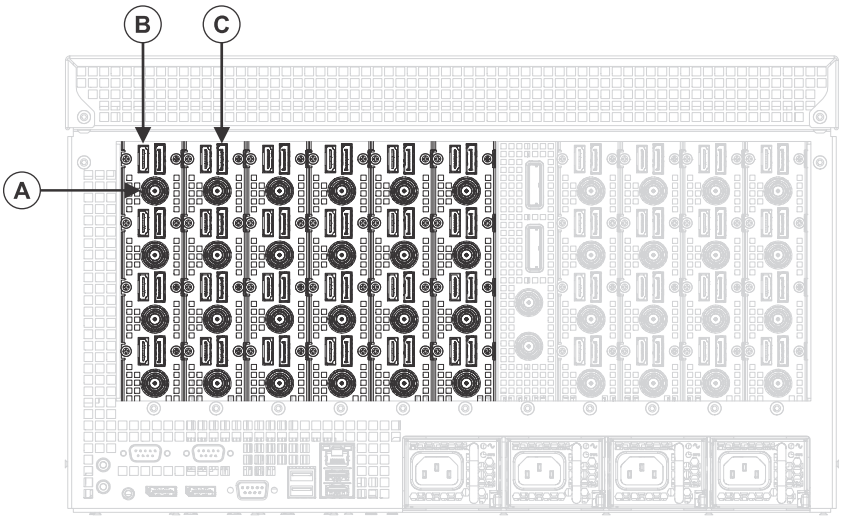
A	Front panel menu navigation buttons
B	LCD display
C	LED status light
D	Power button
E	USB port

Rear ports

Identify the ports on the back of the Spyder.

Input ports

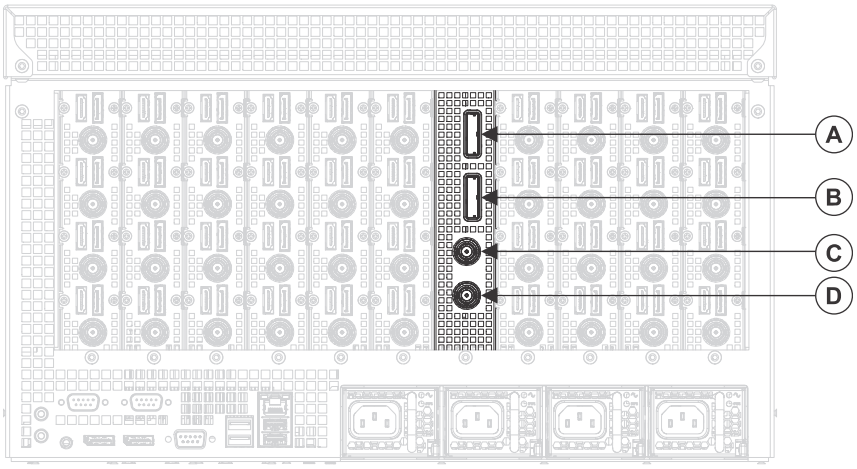
Connect video sources to the Spyder through the input ports.



A	BNC connectors for SDI (x24)
B	HDMI (x24)
C	DisplayPort (x24)

Control card

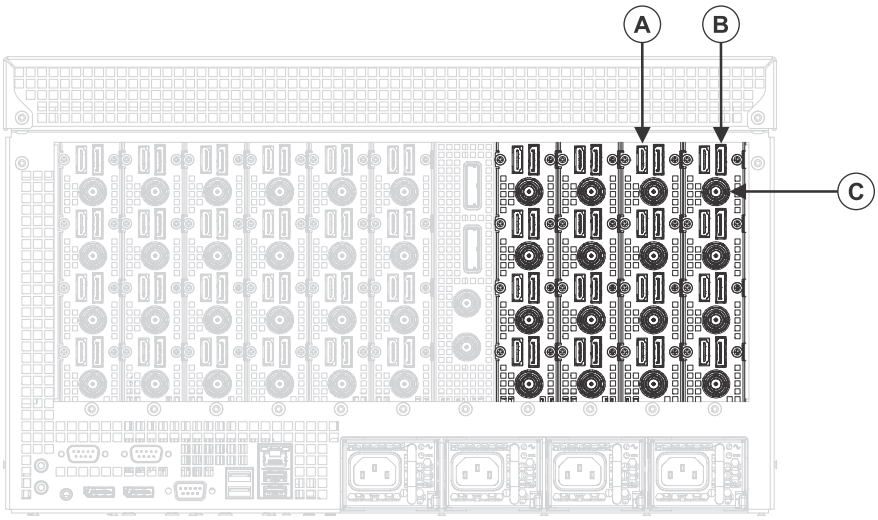
Connect multiple Spyder devices together through the control card ports, and control all devices from the primary Spyder.



A	PCI express IN
B	PCI express OUT
C	BNC for Genlock
D	BNC loop out

Output ports

Connect the Spyder to the displays through the output ports.



A	HDMI ports (x16)
B	DisplayPorts (x16)
C	BNC connectors for SDI (x16)

Installing the Spyder X80

Use the following instructions to install and configure the Spyder X80.

Mounting the Spyder X80 in a rack

The Spyder X80 must be mounted in a clean and dry environment. Provide space at the front and rear of the system for ventilation.

1. Attach the L brackets onto the rack using the screws supplied with the rack.
2. Set the Spyder X80 onto the brackets, and slide the device back into the rack.
3. Secure the Spyder X80 to the rack using the screws supplied with the rack.

Connecting the power

Supply power to the Spyder in the rack.

If the Spyder is not being installed in a rack, plug one end of the power cord into the AC receptacle on the device and plug the other end of the power cord into a grounded AC outlet.

1. For each of the four power receptacles on the Spyder, attach a power cable.

   Two of the power receptacles are used to provide power to the Spyder, and the other two receptacles provide redundancy.
2. Plug the other end of the power cords into grounded AC outlets.

Connecting video sources and displays

All source connections are made to the input panel, located at the back of the Spyder. Each projector or display is connected through the output panel.

1. Connect your video sources to the Input ports.
2. Connect the projectors or displays to the Output ports.

Related information

Spyder X80 interface and ports (on page 7)

Connecting the Spyder X80 to the network

Use a CAT5 Ethernet cable to connect the Spyder X80 to the network.

1. Connect a standard CAT5 Ethernet cable between the controller (or Ethernet hub) and the Spyder X80.
2. Review the front panel display, and verify an IP address is displayed.

   If the IP address 0.0.0.0 is displayed, a DHCP server cannot be found and an IP address must be manually set for the Spyder X80.

Related information

Changing the IP address of the Spyder X80 (on page 11)

Changing the IP address of the Spyder X80

If there is no DHCP server available on the network, manually assign an IP address to the Spyder X80.

1. On the front panel of the Spyder X80, press **Network**.
2. With the Type row selected, press **Enter** to change the type to **Static**.
3. Using the arrows, select **IP address** and press **Enter**.
4. Using the keypad, clear any IP address that may be displayed in the field and type the IP address of the Spyder X80.
5. Press **OK**.
6. Change the Subnet and Gateway settings as necessary.

Configuring Spyder Studio

Use the Spyder Studio software to connect to a Spyder, configure the canvas size and PixelSpace, and design the show.

Installing the Spyder Studio software

Install the Spyder Studio software on a computer with a resolution of 1920 x 1080 or greater.

Supported operating systems:

- Windows 7 SP1 or newer

Do not use MAC or PC emulators such as VMWare and Microsoft Virtual PC to run Spyder Studio.

Hardware requirements:

- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit)
- 16 GB available hard disk space (32-bit) or 20 GB (64-bit)

Christie recommends closing all programs before installing the Spyder Studio software.

1. Download Spyder Studio from the Christie website (*www.christiedigital.com*).
2. Double-click **Spyder Studio <version> Setup.exe** and follow the installation wizard.

   Although the application does not require that it be installed on any particular disk drive, the data path for the application has been hard coded to `C:\SPYDER`. All users must have full control (read and write access) to the installation directory and to `C:\SPYDER`.

Configuring the network connection

To ensure network performance and consistent communication between the Spyder and Spyder Studio clients, configure the network connection with these recommendations.

- Spyder communicates to its clients over broadcast traffic. This traffic can be intensive to an already active network. It is recommended that the Spyder and all Spyder Studio clients be installed on a closed network. Any unnecessary devices that also generate large amounts of network traffic should be placed on a separate network.
- Using complex routers and managed switching equipment in the network is not recommended and may cause communication interruptions if they are not configured properly, resulting in loss of communication with the Spyder. If the connection between Spyder and its client(s) are

interrupted, it is possible for the communication socket to break. This would cause a temporary loss of communication until the socket is restored with restarting the client application.

- On computers running Spyder Studio, avoid configuring a network card with multiple IP addresses and enabling secondary wired/wireless Ethernet connections.

Network cards on client computers must be configured with an IP address in a specific range.

1. Change the Internet Protocol (TCP/IP) properties to have the computer running Spyder Studio on the same subnet as the Spyder hardware.
2. If Spyder Studio is open, for the settings to be applied the software must be restarted.

Connecting Spyder Studio to the Spyder hardware

The computer running Spyder Studio must be connected to the Spyder before a show can be displayed.

1. Open Spyder Studio.
2. Select **Server** > **Connection Manager**

   The server connection manager displays all individual Spyder frames or primary frames available on the network. Spyder frames configured as expansion frames do not appear in the server connection dialog.
3. In the Current Connection area, select the Spyder from the list, and click **Connect**.

   The Spyder Studio version on the client computer must have the same the firmware version of the Spyder frame before a connection will be allowed. If the software versions do not match, the Connect button text changes to Update Now and the firmware must be updated.

Adding a router

To have access to more sources than can connect directly to the Spyder, add a router to the configuration.

1. Select **Tools** > **Routers** > **Add New Router**.

   Alternatively, in the Source properties area click **Add**.
2. Type a name for the router.
3. Select the number of inputs and outputs available on the router.
4. Select the type of router.

   If the router is not listed, contact Christie Technical Support.
5. For Spyder X20 frames, in the Patch To list select the router protocol.
6. Select the type of connection between the router and the Spyder.

   Analog is only valid for Spyder X20 frames.
7. Click **OK**.

Configuring a router

For increased redundancy, configure multiple Spyder systems to share the same physical routing switcher.

The router patch definition on each Spyder system distinguishes the physical router outputs that correlate to the Spyder frame inputs.

1. Select **Tools** > **Routers** and select the router.
2. Type a name for the router.
3. Select the type of router.

   If the router is not listed, contact Christie Technical Support.
4. Select the number of inputs and outputs available on the router.
5. Select the type of connection between the router and the Spyder.
6. If the router is an IP router, type the IP address of the router.
7. If the router is a serial router, select the serial port controlling the router.
8. To test the connection to the router, click **Query Now**.

Creating a new Spyder configuration

Create a new project file for each show.

For additional configuration options, refer to *Christie Spyder Studio User Guide (P/N: 020-102205-XX)*.

1. Select **File** > **New**.
2. In the Welcome Screen, select the type of configuration to start with.
   - **Start with new empty configuration file**—Build a new configuration.
   - **Load last used configuration**—Create a new configuration file using the settings from the project loaded into Spyder Studio.
3. Select the model of each Spyder frame and the IP address of the frame in the order it will appear in the expansion chain.

   The IP Address of every Spyder frame on the network appears in each of the IP address lists.
4. Select the frame rate and mode for the Spyder system.
5. Select the pixel depth model.
6. Click **Next**.
7. On the **Templates** or **Individual Screens** tabs, define the screen configuration by selecting any combination of widescreen or individual PixelSpace definitions.

   Selected PixelSpace definitions appear in the Screen Configurations window.
8. To change the settings of a PixelSpace, within the layout template click the PixelSpace and change the values in the Properties column.

   Values that can be changed include the output count, resolution, connection type, and positioning for that PixelSpace.

   Rotation is available only on systems using one or more DX-4 output modules. In rotation mode, the output count is limited to two of the four physical outputs.
9. Click **Next**.

If the screen configuration is valid, a confirmation message is displayed and one or more colored overlays appear over the configuration, indicating the automatically generated frame group associations.

If there are issues with the configuration, a failure message is displayed. Failures can be caused when the configuration exceeds the pixel limit based on the hardware setup. Click Back and repeat steps 6 to 8, changing the number of layers, outputs, or resolution of the PixelSpaces.

10. Switch to the **Options** tab.
11. Select the display mode.
    - **Normal**—2D, non-stereo content
    - **SSO Active**—A single DVI connection provides the stereo signal, and the DVI is connected to two Spyder input modules using a splitter.
    - **SSO Passive**—Two adjacent DVI connections provide the stereo signal, with the left-eye signal connected to the first input, and the right-eye signal connected to the adjacent input.
12. Select the pixel depth model.
13. Select the resolution for the PixelSpace preview displayed in the Simulator area.
14. After the configuration is confirmed as valid, click **Next**.
15. If the configuration was created based on an existing configuration, select which data types within the configuration to keep and remove from the new configuration.
16. Add a router to the configuration.

    Routers can also be added after the configuration has been created.
17. Click **Next**.
18. Apply the configuration.
    - If the computer is connected to a Spyder, select **Apply to Spyder hardware now**.
    - If the computer is not connected to a Spyder, select **Apply to local PC now (Virtual Mode)**.
19. In the confirmation dialog, click **OK**.

    Updates to Spyder the may cause any devices in the expansion chain to restart.

Saving a project file to the computer

When creating or updating a project while disconnected from the Spyder, save the project file on the computer.

1. Select **File** > **Backup**.
2. Navigate to the location where the file will be saved.
3. Type a name for the project file.
4. Click **Save**.

   Spyder Studio projects are saved with a `.vap` extension.
5. Select whether the still images in the configuration should be included.

   Including still images in the backup may significantly increase the size of the file.

Specifications

Learn about the product specifications. Due to continuing research, specifications are subject to change without notice.

Physical specifications

Learn the physical specifications for the Spyder.

Description	Details
Dimensions (W x H x D)	441 mm x 262 mm x 603 mm (17.36 in x 10.30 in x 23.74 in)
Weight	35.75 kg (78.82 lbs)

Power requirements

Learn the power requirements for the Spyder.

Description	Details
Input voltage	90-264 V~, 50-60 Hz, 14A, 75 watts Maximum power draw: 1680 watts

Environment requirements

Learn about the environment requirements for the product during operation and while the product is off.

Operating environment

Description	Details
Temperature	5 to 40°C (41°F to 104°F)
Humidity	10% to 80%, non-condensing
Altitude	-60 to 10 000 m (-197 to 32 810 ft)

Non-operating environment

Description	Details
Temperature	-40 to 70°C (-40°F to 158°F)
Humidity	

Regulatory

This product conforms to the following regulations related to product safety, environmental requirements and electromagnetic compatibility (EMC).

Safety

- CAN/CSA C22.2 No. 60950-1
- ANSI/UL 60950-1
- IEC 60950-1
- EN 60950-1
- IEC 62471-1

Electro-magnetic compatibility

Emissions

- FCC CFR47, Part 15, Subpart B, Class A
- CAN ICES-3 (A) / NMB-3 (A)
- CISPR 32/EN 55032, Class A
- IEC 61000-3-2/EN61000-3-2

Immunity

- CISPR 24/EN55024
- IEC 61000-3-3/EN61000-3-3
- IEC/EN61000
- IEC 61000-4-2/EN61000-4-2
- IEC 61000-4-3/EN61000-4-3
- IEC 61000-4-4/EN61000-4-4
- IEC 61000-4-5/EN61000-4-5
- IEC 61000-4-6/EN61000-4-6
- IEC 61000-4-8/EN61000-4-8
- IEC 61000-4-11/EN61000-4-11

Environmental

EU Directive (2011/65/EU) on the restriction of the uses of certain hazardous substances (RoHS) in electrical and electronic equipment and the applicable official amendment(s).

EU Regulation (EC) No. 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH) and the applicable official amendment(s).

EU Directive (2012/19/EU) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s).

China Ministry of Information Industry (along with 7 other Government Agencies) Order No.32 (01/2016) on the control of pollution caused by electronic information products, hazardous substances concentration limits (GB/T 26572 - 2011), and the applicable product marking requirement (SJ/T 11364 - 2014)

Glossary

1080p

1080p is the Advanced Television Systems Committee (ATSC) high definition 1920 x 1080 progressive scan video format in which a complete frame of video is delivered at either 60 or 24 frames per second.

4K

A display specification that is capable of displaying 4096 x 2160 resolution, or approximately 8.85 million pixels.

Active stereoscopic display

Powered glasses that present the image intended for the left eye while blocking the view of the right eye, then presenting the right eye image while blocking the left eye. This cycle is repeated rapidly, so that the two images combine into a single 3D image.

Aspect ratio

The ratio of the width of an image to its height, such as the 4:3 aspect ratio common in video output. Can also be expressed as a decimal number, such as 1.77, 1.85 or 2.39. The larger the ratio or decimal, the wider and less square the image.

Brightness (perceived)

The human eye responds to low light levels by enlarging the pupil, allowing more light to enter the eye. This response results in a difference between measured and perceived light levels. The brightness of a projection system can be precisely measured with a light meter; however, the human eye has a logarithmic response to light. A lamp that is dimmed to 10% of its maximum measured light output is perceived as being dimmed to only 32%. Likewise, a lamp dimmed to 1% is perceived to be at 10%.

Color temperature

The coloration (reddish, white, bluish, greenish, and so on.) of white in an image, measured using the *Kelvin* (on page 20) (degrees K) temperature scale.

Contrast (ratio)

The degree of difference between the lightest and darkest areas of the image.

DisplayPort

A digital display interface primarily used to connect a video source to a display device such as a computer monitor, though it can also be used to transmit audio, USB, and other forms of data. DisplayPort can be used to transmit audio and video simultaneously.

DVI

Digital visual interface. A standard that defines the interface between digital devices such as projectors, flat screens and personal computers. For devices that support DVI, a digital-to-digital connection can be made to eliminate the conversion to analog and deliver an image.

DVI can also carry an analog signal and comes as DVI-I (integrated—analog and digital), DVI-D (digital only) and DVI-A (analog only).

E-EDID

Enhanced extended display identification standard. Enables properties (such as resolution) of a display device to be detected by the display card in a controlling device such as a PC. The PC, in turn, can then output in a matching format to fill the display.

Gamma

The relationship between input video voltage and output brightness, which determines how mid-tones appear.

HDCP

High-bandwidth digital content protection. Prevents copying of digital audio and video content as it travels across connections.

Input

A physical connection route for a source signal.

Input signal

Signal sent from a source device to the projector or display.

Kelvin

A temperature measurement scale where 0° Kelvin (0°K) is equal to absolute zero, the temperature at which all molecular movement ceases. One degree of Kelvin is equal to one degree of Celsius. The color temperature of large image devices is measured in Kelvin.

Keyframe

Visual attributes applied to a layer such as size, position, borders, shadows, or clone modes.

Passive stereoscopic display

Two images are projected superimposed onto the same screen through polarizing filters or presented on a display with polarized filters. The viewer wears glasses which also contain a pair of opposite polarizing filters. As each filter only passes light which is similarly polarized and blocks the opposite polarized light, each eye only sees one of the images.

Pixel

The smallest discernible element of data from a computer-generated image.

PixelSpace

A clipping rectangle defining an area of the screen.

Preset

A set of layers and treatments to be displayed within a PixelSpace.

Output

A physical connection route for sending a signal to a projector or display.

Layer

A single input, displaying either a live video input or a still image.

Resolution

The maximum number of pixels that can be displayed horizontally and vertically.

Source

The device, such as a computer or DVD player, connected to the Spyder for display.

Stereoscopic

The creation of a 3D or stereoscopic display is based on the principle that a person's eyes see two different viewpoints. These two distinct viewpoints are then projected onto a screen so that each eye sees the proper perspective; the left eye sees only the left-eye viewpoint, and the right eye sees only the right-eye viewpoint. The brain then reads both viewpoints simultaneously to produce a single image with the depth necessary to make it appear three dimensional.

There are two ways to present 3D content, *active stereoscopic* (on page 19) or *passive stereoscopic* (on page 20) displays.

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