Christie Duo

Frequently Asked Questions (FAQs)

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Christie Duo FAQs

What are the benefits of a dual-projection system?

Christie® Duo provides twice the brightness for super large 2D or 3D screens, allowing cinema exhibitors to offer a differentiated, premium, movie going experience to their patrons. The patented Christie Duo mirror system has been specially designed to provide uniform pixel convergence across the entire screen for brilliant 2D and 3D presentations. Christie Duo is dual-projection system projecting simultaneous left-eye and right-eye images, which reduces the switching artifacts of single-projection systems to provide the highest possible 3D viewing quality and comfort for all patrons.

What makes Christie Duo a better option than competitive dual-projection systems?
Christie Duo allows cinema exhibitors to create their own premium brand experience at an affordable price, with no ongoing licensing fees. To add to its affordability, the Christie Duo integration kit is purchased separately from the two Christie Solaria™ projectors. That means exhibitors can upgrade their current Series 2 Solaria projectors just by adding an additional projector and the kit itself. From an image-quality perspective, the auto-calibrating, image-alignment software can align the two images within one-half of a 4K pixel within seconds. Christie Duo is also a highly-flexible solution. It comes in three configurations to maximize projection booth space and port window configuration.

What are the system requirements?

- Two matched Christie Solaria projectors (Christie CP2210 and Solaria One excluded)
- Solaria software release 3.1.0 (3)
- A motorized lens mount
- One Christie Integrated Media Block (IMB) for each projector

What are the available configurations? *Refer to appendix for further details*

The Christie Duo integration kit can support three standard projection configurations:

- **Stacked** – one projector stacked above the other
- **Single mirror** – one projector projects directly out of the port hole, the other projector is placed perpendicular to the first projector and a single mirror is attached to the projector at a 45° orientation
- **Dual mirror** – both projectors are facing each other parallel to the screen. Each projector has a mirror system attached at a 45° orientation

What are the benefits of the stacked configuration?

There are several advantages to using a stacked configuration:

- incredibly bright and engaging 3D displays
- low cost of ownership
- smallest foot print
- works with RealD XL 3D system

What are the benefits of the single mirror configuration?

There are several advantages to using a single mirror configuration:

- dual projection for both 2D and 3D content
- incredibly bright and engaging 3D displays
- low cost of ownership
- easy access to lamps and control panels
- the least amount of equipment is needed – a stacking kit and a second mirror are not required

What are the benefits of the dual mirror configuration?

There are several advantages to using a dual mirror configuration:

- dual projection for both 2D and 3D content
- incredibly bright and engaging 3D displays
- low cost of ownership
- easy access to lamps and control panels

What does the Christie Duo integration kit include?

The kit includes:

- Patented Christie DuoAlign™ auto-calibrating, image-alignment software
- Laptop PC for running the Christie DuoAlign software
- Camera kit
- Gen-lock cables for synchronizing the two projectors through the Christie IMBs
- Mirror or stacking systems (configuration dependent)
- An installation manual

Where does the Christie DuoAlign auto-calibrating, image-alignment software run?

The auto-calibrating, image-alignment software runs on a separate laptop PC. The auto-alignment camera is connected to the separate laptop by a USB connection.

How does the alignment system keep the images aligned?

During the auto-alignment process, each projector of the Christie Duo system projects a location marker onto the screen. The camera records the relative position of each screen and the image-alignment software adjusts the motorized lens shift of the two projectors to converge the image to within one-half of a pixel in 4K resolution. A dark screen test pattern with a single lit pixel in the center is required for a few seconds to complete the auto-alignment. The auto-alignment can be run by a theater automation system or by the push of a button depending on the requirements and how the system has been set up.

How often does the system require re-alignment? How long does it take?

Minor vibrations and projector thermals may cause one or both images to drift over time. It's recommended that the auto-calibrating, image-alignment software is initiated at the start of business

every day after warm-up. The complete auto-alignment process takes approximately 10 seconds or less. Depending on environmental variables, the re-alignment frequency may vary. This frequency is site specific and can be programmed accordingly.

Is the Christie Duo DCI compliant?

Yes, Christie Duo is fully DCI compliant. To show feature films on Christie Duo, exhibitors will need two key delivery messages (KDMs), if each projector is used to display the feature. If only one projector is used for a 2D presentation, then only one KDM is required for that feature.

Do I need special content for the dual-projection system?

No, exhibitors can play any standard feature film and alternative content the same way they would on a single projector system. Gen-lock cables connect the Sync Out from the master integrated media block (IMB) to the Sync In of the slave IMB to keep the two projectors in sync. Using this system setup, content is managed and displayed the same way it is in single-projection systems.

Does Christie Duo work with all major 3D systems? *Refer to appendix for further details*

Christie Duo supports the following 3D systems:

- Christie Duo 3D static polarizer kit
- Dolby® 3D
- MasterImage MI-DUAL3D
- RealD XL-DP (Stacked configuration only)
- XPAND

Is the Christie Duo 4K and High Frame Rate upgradable?

Yes, Christie Duo can work at 4K resolutions and high frame rates (HFR). Christie's 4K CP4230 and CP4220 projectors come equipped with motorized lens mounts and the Christie DuoAlign software can align images within one-half of a 4K pixel. All Christie Series 2 Solaria projectors can be upgraded to show HFR content and all Christie CP2220 and CP2230s can be upgraded to 4K resolution.

Do existing heat-extraction systems need to be upgraded to handle the dual-projection system?

With an upgrade, there will be an additional projector present, so proper extraction for both projectors will need to be considered. See the projector requirements for this information.

Appendix: Christie Duo 3D compatibility and installation considerations

		Single mirror configuration	Dual mirror configuration	Stacked configuration
3D system compatibility	**Christie Duo 3D Static Polarizer Kit**	• YES • Use Christie 3D static Polarizer Kit (includes sliding mount)	• YES • Use Christie 3D static Polarizer Kit (includes sliding mount)	• YES • Use Christie 3D static Polarizer Kit (includes sliding mount)
	Dolby 3D	• YES • Special Dolby 2 projector 3D system is required • Left eye image requires about 20% more brightness than the right eye image	• YES • Special Dolby 2 projector 3D system is required • Left eye image requires about 20% more brightness than the right eye image	• YES • Special Dolby 2 projector 3D system is required • Left eye image requires about 20% more brightness than the right eye image
	MasterImage MI-Dual3D	• YES • Special larger size polarizers may be required depending on installation • Will require a custom sliding mount	• YES • Special larger size polarizers may be required depending on installation • Will require a custom sliding mount	• YES • Will require a custom sliding mount
	RealD XL-DP (most brightness efficiency of all 3D systems)	• NO	• NO	• YES • Use the RealD XL-DP support shelves provided with the stacking frame
	XPAND 3D	• YES	• YES	• YES • Not recommended due to the tighter convergence tolerance requirement of this 3D system
Installation considerations	**Image convergence**	• Very tight image convergence is possible • The mirror can be adjusted to improve most image convergence errors	• Very tight image convergence is possible • The mirrors can be adjusted to improve most image convergence errors	• Good image convergence is possible • Due to the greater effective lens separation, image convergence at the bottom corners of the screen will be off by a small amount depending on the installation
	Port window size	• A larger than normal port window is required	• A larger than normal port window is required	• A larger than normal port window is required
	Service-ability	• Space is tight between perpendicular projector and port window wall • Space is related to port window size	• Space is tight between left projector and port window wall • Space is related to port window size	• Upper projector: requires a step ladder to reach into the top panels • Lower projector: removal of top panels is possible but difficult. Light engine replacement would require removing projector from the stacking frame
	Exhaust air extraction	• Air extraction is required for both projectors	• Air extraction is required for both projectors	• Air extraction is required for both projectors • Lower projector requires a Christie off-set duct (included in Duo stacking frame kit)