TECH BRIEF

LASER PROJECTION

Are RGB laser projectors safe?

Talk of lasers conjures science-fiction inspired depictions of super weapons capable of obliterating entire planets. Despite these portrayals, most actual lasers used in modern devices are not the destructive forces imagined by pop culture, but rather low-powered versions commonly used in technologies such as DVD players, medical devices and presentation pointers. What's more, when used in a RGB laser illuminated projector (LIP), the light produced poses no more risk than the light from their lamp-based counterparts.

When are lasers dangerous?

Certain types of lasers, like those used in LIPs, produce very intense, narrow beams of collimated light. This raw laser light can be dangerous to humans if aimed directly into a person's eye or, in some cases, at a person's skin. Despite these inherent dangers, the IEC, an international body that sets standards for lasers, recently changed its categorization of LIPs from the laser standard to the lamp standard. However, in the US, laser use is still administered by the Food and Drug Administration (FDA), which currently requires a special variance, or permit, whenever a LIP is deployed.

Making laser light safe

In 2014, Christie® was the first manufacturer to have been granted a variance by the FDA to legally sell and install LIPs in accordance with various safety guidelines. Christie achieved this distinction by engineering several safety features into our 3-Primary (3P) and 6-Primary (6P) laser projection systems.

Optical path

The raw laser light generated by a Christie laser projector goes through a series of optical elements that spreads the energy uniformly over a wide area. By the time the laser light enters the projection head, it is no longer collimated and does not emit the dangerous levels of energy inherent in raw laser light.

Fiber interlock loop

Additional safeguards include a patented fiber interlock loop that disables laser output whenever the access panel is opened, protecting the user from unintentional exposure. The projection head also sends a signal through the fiber link to the light source. If that signal is not received, indicating a problem, the lasers are unable to turn on.

Design safeguards

The most-likely chance that someone would be exposed to raw laser light from a LIP projector would be during servicing. To deal with this, Christie's laser projector has been designed to ensure that all service areas measure safe light levels. There is also a beamstop mechanism, which is a physical paddle that locks into place and prevents anyone from being able to activate the laser light sources while the projector is being serviced. Additionally, if anything enters the light path in the projection head, the system will automatically shut off.

These safety features exist to reduce the risk of exposure in scenarios where unsafe practices or operation of the LIP are being performed. Like all high-brightness projection systems, regular safety precautions must be followed at all times.

Final thoughts

What makes lasers potentially dangerous – the intense concentration of light energy – is also what makes them able to produce brightness levels that have never been achieved before. Although individual laser sources do pose a safety risk if improperly used, when they are employed in a LIP that has a series of safety features, such as Christie's RGB laser projection systems, the laser-related risks associated with raw laser light are dramatically reduced.

Corporate offices

Christie Digital Systems USA, Inc.
Cypress
ph: 714 236 8610

Christie Digital Systems Canada Inc.
Kitchener
ph: 519 744 8005

Worldwide offices

Australia
ph: +61 (0) 7 3624 4888

Brazil
ph: +55 (11) 2548 4753

China (Beijing)
ph: +86 10 6561 0240

China (Shanghai)
ph: +86 21 6278 7708

France
ph: +33 (0) 1 41 21 44 04

Germany
ph: +49 2161 664540

India
ph: +91 (080) 6708 9999

Japan (Tokyo)
ph: 81 3 3599 7481

Korea (Seoul)
ph: +82 2 702 1601

Mexico
ph: +52 55 47441790

Republic of South Africa
ph: +27 11 251 0000

Russian Federation
Eastern Europe
ph: +36 (0) 1 47 48 100

Singapore
ph: +65 6877 8737

Spain
ph: +34 91 633 9990

United Arab Emirates
ph: +971 4 3206688

United Kingdom
ph: +44 (0) 118 977 8000

United States (Arizona)
ph: 602 943 5700

United States (New York)
ph: 646 779 2014

Independent sales consultant offices

Italy
ph: +39 (0) 2 9902 1161

For the most current specification information, please visit www.christiedigital.com

CHRI4300 Jun 16

CHRISTIE®