



# Cine-Union Smart Series



## Laser Light Upgrade (LLU): **Pure RGB** Laser Light Source Designed for Series 2 Xenon Lamp Projectors

Introducing the fourth generation Cine-Union Smart Series RGB laser light source designed to upgrade Series 2 projectors from xenon lamps to pure RGB technology. The fourth generation model features a lightweight and compact design, providing ease of installation, increased efficiency, and a remarkable reduction in workload. Additionally, the modular design enables easy plug-and-play component replacement during maintenance. With the Laser Light Upgrade (LLU), audiences will experience exceptional projection image quality and exhibitors will reap the benefits of a more sustainable and efficient projection system.

Featuring the Cine-Union RGB laser light source, this upgrade offers an impressive lifetime of up to 50,000 hours, ensuring long-lasting performance for over 10 years depending on daily usage. To provide you with peace of mind, we also offer an optional extended warranty specifically designed for Barco, Christie, and NEC projection systems.

Experience a new level of visual excellence with our RGB Laser Light Upgrade. Enjoy accurate and uniform color reproduction, supporting DCI-P3 color gamut, and capable of approaching the Rec.2020 color gamut, ensuring vibrant and lifelike visuals that will captivate any audience.



# 10 Benefits of Cine-Union Laser Light Upgrade (LLU)

## Better than laser phosphor.

RGB laser offers a longer lifespan and higher theoretical maximum brightness. The laser phosphor wheel will degrade after a certain period of time and experience much faster brightness loss over time.

Eco-friendly: **50-60%**<sup>1</sup> less power than xenon lamps.

## Embedded non-fiber design

for easy integration with Barco, Christie, and NEC xenon lamp projectors, with a **50%**<sup>2</sup> reduction in projection failure rate.

Accurate and uniform color reproduction with **DCI-P3** color gamut and capable of approaching **Rec.2020** color gamut.

Operate the laser light source from the **existing projector controls**. No waiting time for power-on and off.



Laser light source lifetime of up to **50,000 hours** with an optional extended warranty for Barco, Christie, and NEC projection systems.

**No xenon lamp costs** and related maintenance costs.

Ultra-high brightness up to **40,000lm** and capable of increasing brightness **greater than 120%**<sup>3</sup> of a xenon lamp.

**Easy laser upgrade** by a certified technician.

**Safe operation** with a separate liquid-cooling system to eliminate the risk of liquid leakage.

### Note:

1. The data above represents the actual average data from upgrade cases in China. Measurements were taken using the pre-installed electricity meter between 22 May 2023 and 4 July 2023. The amount of power saved may vary depending on several variables, including but not limited to local electricity rates and the projector model.
2. The failure rates presented above represent actual average data from upgraded systems in China. The results were reported by the cinema chain's service team at the end of the 2022 fiscal year after comparing 1,000 LLU units with 3,000 non-upgraded projection systems in terms of their failure rates. Your failure rates may vary depending on, but not limited to daily operating hours and weather conditions.
3. During each laser light upgrade, engineers measure the brightness before and after the LLU on site. From user acceptance reports of 1,000 projectors, the average brightness of projectors with xenon lamps before the LLU was 13.7 FL (at maximum power); while the average brightness of projectors after the LLU is 31.2 FL (at maximum power). Your average brightness may vary depending on, but not limited to screen gain and condition of screen.

## Cine-Union Smart Series Laser Light Source Specifications

Laser technology	RGB
Laser wavelength	R: $(625 \pm 15)\text{nm}$
	G: $(525 \pm 10)\text{nm}$
	B: $(455 \pm 5)\text{nm}$
Color coordinates	R: (x: $0.708 \pm 0.002$ ; y: $0.283 \pm 0.006$ )
	G: (x: $0.081 \pm 0.002$ ; y: $0.829 \pm 0.006$ )
	B: (x: $0.142 \pm 0.002$ ; y: $0.019 \pm 0.006$ )
Light source cooling method	Separate water chiller with active liquid cooling
Light source working method	Spatially free coupling
Light source installation method	Embedded in projector
Laser lifespan	50,000 hours under ideal conditions
Smart control	Operate laser light source from existing projector controls
	Automatic color adjustment (intelligent white balance)
	Support GDC NOC, TMS
	Monitor status through the network and automatically report faults
Certification	EN 55032:2015 EN 55035:2017 EN 62368-1:2014 + A11:2017
Input current	<16A AC
Input voltage & frequency	200-240VAC, 50-60Hz
Optimum ambient temperature	25°C/77°F (laser light source and water chiller)
Optimum ambient humidity	75% relative humidity (laser light source and water chiller)
Safety requirements	<p>Display safety: the customers should take laser safety precautions (pay attention to hazard distances and separation heights) and comply with local laser display safety regulations.</p> <p>Workplace safety: the customers should take the following safety measures:</p> <ul style="list-style-type: none"> <li>▪ Workplace safety complies with local regulations.</li> <li>▪ Provide basic laser safety training to operators.</li> <li>▪ Implement the laser safety plan within the company.</li> <li>▪ 'Only trained personnel can enter area' labels, etc.</li> </ul>
Warranty time	3 years warranty

## Cine-Union Smart Series Laser Light Source Specifications

<b>Brightness (luminous flux at the lens)*</b>	10,000 lumens	15,000 lumens	20,000 lumens	25,000 lumens	30,000 lumens	40,000 lumens
<b>Recommended screenwidth with screen gain ≥2.4</b>	≤10m (33ft)	≤13m (42 ft)	≤15m (49ft)	≤16m (52ft)	≤17m (56ft)	≤19m (62ft)
<b>Laser model for Christie projector</b>	ZC2S1L25-10 ZC208L25-10 ZC210L25-10 ZC215L25-10	ZC215L25-15 ZC220L25-15 ZC420L25-15	ZC215L25-20 ZC220L25-20 ZC420L25-20 ZC230L25-20 ZC430L25-20	ZC220L25-25 ZC420L25-25 ZC230L25-25 ZC430L25-25	ZC220L25-30 ZC420L25-30 ZC230L25-30 ZC430L25-30	ZC220L25-40 ZC420L25-40 ZC230L25-40 ZC430L25-40
<b>Applicable Christie projector</b>	Solaria One CP2208/2308 CP2210 CP2215	CP2215 CP2220 CP4220	CP2215 CP2220 CP4220 CP2230 CP4230	CP2220 CP4220 CP2230 CP4230	CP2220 CP4220 CP2230 CP4230	CP2220 CP4220 CP2230 CP4230
<b>Laser model for Barco projector</b>	ZB208L25-10 ZB210L25-10 ZB212L25-10 ZB215L25-10 ZB220L25-10	ZB212L25-15 ZB215L25-15 ZB220L25-15 ZB223L25-15 ZB423L25-15	ZB215L25-20 ZB220L25-20 ZB219L25-20 ZB419L25-20 ZB223L25-20 ZB423L25-20 ZB232L25-20 ZB432L25-20	ZB219L25-25 ZB419L25-25 ZB223L25-25 ZB423L25-25 ZB232L25-25 ZB432L25-25	ZB219L25-30 ZB419L25-30 ZB223L25-30 ZB423L25-30 ZB232L25-30 ZB432L25-30	ZB223L25-40 ZB423L25-40 ZB232L25-40 ZB432L25-40
<b>Applicable Barco projector</b>	DP2K-8S DP2K-10S DP2K-12C DP2K-15C DP2K-20C	DP2K-12C DP2K-15C DP2K-20C DP2K-23B DP4K-23B	DP2K-15C DP2K-20C DP2K-19B DP4K-19B DP2K-23B DP4K-23B DP2K-32B DP4K-32B	DP2K-19B DP4K-19B DP2K-23B DP4K-23B DP2K-32B DP4K-32B	DP2K-19B DP4K-19B DP2K-23B DP4K-23B DP2K-32B DP4K-32B	DP2K-23B DP4K-23B DP2K-32B DP4K-32B
<b>Laser model for NEC projector</b>	-	ZN212L25-15	ZN212L25-20 ZN220L25-20	ZN232L25-25	ZN232L25-30 ZN432L25-30	-
<b>Applicable NEC projector</b>	-	NC1200C	NC1200C NC2000C	NC3200S	NC3200S NC3240S	-
<b>Light source rated power</b>	<650W	<950W	<1250W	<1550W	<1850W	<2450W
<b>Light source weight</b>	16.8(±1) kg 37.04(±2.2) lbs	28.7(±1) kg 63.27(±2.2) lbs		29.7(±1) kg 65.48(±2.2) lbs		32.7(±1) kg 72.09(±2.2) lbs
<b>Light source shipping weight</b>	21(±1) kg 46.3(±2.2) lbs	35(±1) kg 77.16(±2.2) lbs		36(±1) kg 79.37(±2.2) lbs		39(±1) kg 85.98(±2.2) lbs
<b>Light source, driver, and laser power supply shipping dimensions (L x W x H)</b>	700 x 470 x 430 mm 27.56 x 18.5 x 16.93 inches	700 x 470 x 810 mm 27.56 x 18.5 x 31.89 inches				

## Cine-Union Water Chiller for Smart Series Laser Light Source Specifications

Brightness (luminous flux at the lens)*	10,000 lumens	15,000 lumens	20,000 lumens	25,000 lumens	30,000 lumens	40,000 lumens
Water chiller model	ZKC-0.5A/04			ZKC-1.0A/04		ZKC-1.5A/04
Water chiller rated power	750W			1000W		1200W
Water chiller weight	39(±1) kg; 86(±2.2) lbs			45(±1) kg; 99(±2.2) lbs		64(±1) kg; 141(±2.2) lbs
Water chiller dimensions (L x W x H)	427 x 378 x 759 mm; 16.8 x 14.9 x 29.9 inches			476 x 460 x 831 mm; 18.4 x 18.1 x 32.7 inches		720 x 650 x 1040 mm 28.35 x 25.95 x 40.94 inches
Water chiller shipping weight	54(±1) kg; 120(±2.2) lbs			64(±1) kg; 141(±2.2) lbs		88(±1) kg; 194(±2.2) lbs
Water chiller shipping dimensions (L x W x H)	550 x 430 x 1050 mm 21.65 x 16.93 x 41.34 inches			600 x 500 x 1050 mm 23.62 x 16.69 x 41.34 inches		770 x 550 x 1170 mm 30.31 x 21.65 x 46.06 inches

\*Actual brightness out of the projector may vary based on projector condition/optical losses

Technical specifications are subject to change without prior notice. You can obtain a copy of the Terms & Conditions that may apply by contacting your Cine-Union representative.

