



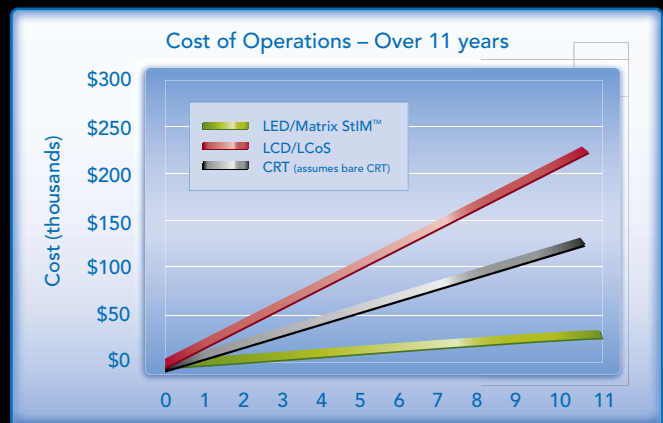
CHRISTIE MATRIX StIM™

The most advanced simulation and training projection system in the world

The Christie Matrix StIM™ is a true game-changer. It is the first simulation system to provide simultaneous and independent control over both the visible and near-IR spectrum using LED illumination. It is an intelligent projection system which enables real-time balancing and optimization of color, brightness and black levels on a frame-by-frame basis. And it is the first system designed for simulation and training with solid state LED illumination – there are no consumables for a virtually maintenance-free system.

The Christie Matrix StIM is a scalable environment display system that provides the unique capabilities of achieving eye-limiting resolution while stimulating Night Vision Goggles for revolutionary new capabilities in NVG training. The unique lamp-less illumination system of the Christie Matrix StIM offers unprecedented stability, reliability and years of continuous operation. Designed and engineered with Christie expertise, this system features extraordinarily long life, quality and ease of service.

Built on an inherently stable long-life platform that doesn't use polarization filters or fade over time, Christie offers a unique lamp-less illumination system for unprecedented stability and reliability. With no consumables, low heat, low power consumption, full RoHS compliance and years of continuous operation, the Christie Matrix StIM is a virtually maintenance-free, environmentally-friendly simulation system.



Based on a 3-channel display running 8 hours per day, 5 days a week and operating for a duration of 11 years, only the Christie Matrix StIM™ provides a virtually maintenance-free lifetime on the display. With 50,000 hrs MTBF on the illumination package, no moving parts, no lamps or filters to change – the Christie Matrix StIM is virtually maintenance-free. High MTBF and ease of support provide a near order-of-magnitude savings in sustainment cost.

StIMulation for simulation™

CHRISTIE®

TECHNICAL SPECIFICATIONS

		Christie Matrix StIM™
Image	brightness	• 600 lumens ±10% (rated at 75-80% EBU depending on the lens)
	contrast	• 10,000:1 dynamic contrast (optimized in real-time based on scene content) • No mechanical iris required
	uniformity	• >95% brightness and color uniformity after electronic adjustment
Display	type	• Revolutionary solid state projector using a single TI Darkchip 3™ DMD with a solid state illumination engine (no color wheel) and sealed optics
	native resolution	• Native 1920 x 1200 (16:10 aspect ratio) WUXGA
Lenses*	fixed	• 0.64:1 WUXGA fixed IR and visible light optimized lens
	zoom	• 1.2-1.6:1 WUXGA zoom IR and visible light optimized lens
	offsets	• 0.64:1 lens features ±5% (horizontal) and ±5% (vertical) offset when mounted in landscape orientation • 1.2-1.6:1 lens features ±75% (horizontal) and ±100% (vertical) when mounted in landscape orientation**
Optical system	lens mount	• Mechanical, horizontal and vertical lens shift • Tool-less lens insertion system • 3 point 60 degree bore sight adjustment • No shutter required • No iris required – user programmable illumination parameters (eliminates the need for a mechanical shutter)
	illumination	• Full spectrum InfraRGB™ (RGB + IR LEDs) • Illumination package has a MTBF of 50,000hrs • Light module can be changed in 15 minutes and is color and bright level matching in real-time to the projector array
	ArrayLOC™	• Manages the brightness, color space and black levels of all projectors within an array to a common level, in real-time with no additional latency
Input	signals	• Native 1920 x 1200 recommended, up to 1920 x 1200 native WUXGA
	pixel clock	• 165MHz max input
	scan rates	• Horizontal: 15-120KHz • Vertical: 23.97-60Hz
Inputs, control and networking		• DVI-D and HD15 analog standard • On-board Ethernet control capabilities (ChristieNET™ functionality) • Additional Ethernet connections for ArrayLOC™ network • IR/wired remote control as part of optional user kit • 2 – RS-232 ports and 1 RS-422 port • Optional analog input card • Optional DVI-D input card • Optional HDSDI input card • Optional electronics module for dedicated IR image generator
Accessories	standard	• Line cord
	optional	• Analog RGBHB input card • DVI-D input card • HDSDI input card • Electronics module for dedicated IR image generator • Remote IR sensor • User kit (includes manual, IR remote) • Rugged Motion Platform user kit (purpose-built)
Enhanced feature sets		• Minimum Processing Latency (MPL™) • Christie Twist™ II – Advanced warping/edge-blending hardware technology integrated directly into the projector, includes warping/blending software • Auto set-up, power up • Menus in 5 languages • Christie AccuFrame™ adjustable to <5ms • Multiple channel memories (for recall memory storage) • Christie ArrayLOC™ – automatic, continuous management of brightness, color space and black levels of all projectors in the array to a common level, in real-time • Christie InfraScene™ – the capability of the simultaneous display of both visible light and infrared projection
Power requirements	operating voltage	• 100-240 VAC @ 50/60Hz
	operating current	• Estimated max – 5.6A @ 100 VAC, 2.8A @ 200 VAC
	power	• 400W max (variable, dependant on content)
	dissipation	• 1364BTU/hr
Dimensions	size	• Projector head module + light module (no lens): (LxWxH): 8.7 x 18.4 x 11.0" (220 x 467 x 287mm) • Electronics module: (LxWxH): 16.5 x 5.5 x 6.7" (420 x 140 x 170mm)
	volume	• Projector head module + light module (no lens): 1,761in ³ (29,486cm ³) • Electronics module: 608.0in ³ (9,963.3cm ³)
	weight	• Projector head module + light module (no lens): 35lb (15.9kg) • Electronics module: 9.7lb (4.4kg)
	shipping weight	• 72lb (32.7kg)
Operating environment		• Temperature: 40-95° F (5-35° C) • Humidity: 20-80% non-condensing • Noise: less than 38dBA estimated
Regulatory approvals		• UL/CSA/IEC 60950-1 • EMC-emissions: FCC part 15 and EN55022 (CISPR22) Class A • EMC-immunity: EN55024 • RoHS compliant
Limited warranty		• 2 years parts and labor • Contact an authorized Christie representative for full details of our limited warranty

Performance specifications are typical and are subject to change without notice.

*Additional lenses planned for production 2010.

**Note: Each offset is specified with the other at zero. Simultaneous horizontal and vertical offsets may limit the adjustment range of each.

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ISO 9001



ISO 14001



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CHRISTIE®

Christie wins MT2 Best Programs award

Christie chosen as one of MT2's Top 100 Simulation Companies for 2009

CHRISTIE MATRIX StIM™



Christie is proud to be named as one of the MT2 2009 Top Simulation & Training Companies and, a Red Ribbon Best Programs winner with the Christie Matrix StIM™

Those that have made the most significant contributions to the training community are recognized with ribbons. A red ribbon indicates a company that had been involved with or led a program of the year—programs that are revolutionizing military training.

The list's companies are from around the world that have made a significant impact on the military training industry across the spectrum of technologies— serious gaming, live training, constructive simulation, modeling, virtual simulation and others. These companies' products allow service men and women to train and rehearse for missions in theater, or to prepare for deployment at home station.

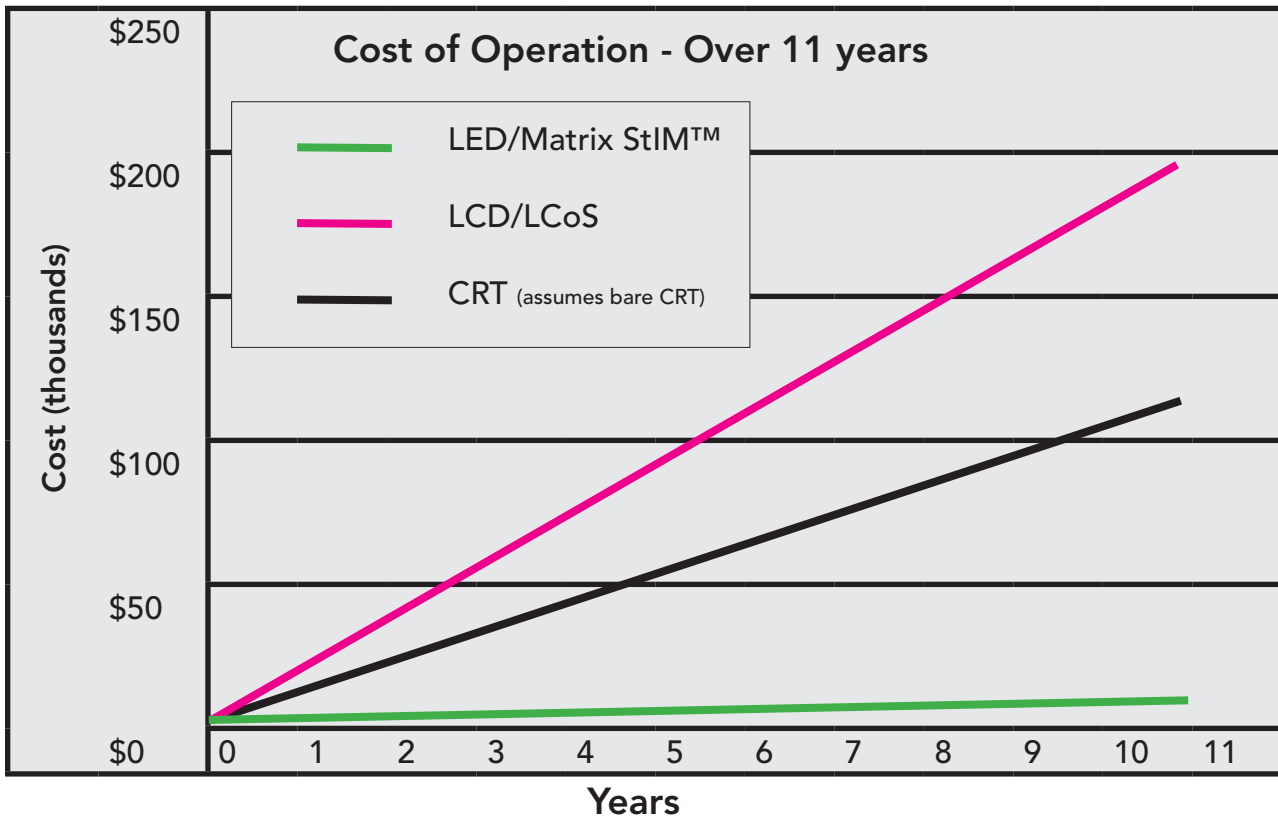
An impartial panel selected the winners from a very competitive group. Companies were selected based on various criteria, which in part, included total military sales, innovation, and program effectiveness. The 2009 submissions were especially competitive.

The Christie Matrix StIM™ was developed by leveraging "disruptive" technologies in the commercial market space, such as LED illumination, combined with Christie unique technologies and systems architecture, to enable previously unattainable levels of performance and capabilities. The Christie Matrix StIM is a "revolutionary" development in visual simulation.

The Christie Matrix StIM the first simulation system to provide simultaneous and independent control over both the visible and near-IR spectrum using LED illumination. It's the first intelligent projection system to enable real-time balancing and optimization of color, brightness and black levels on a frame-by-frame basis. And it's the first system designed for simulation and training with solid state LED illumination – there are no consumables for a virtually maintenance-free system.

This scalable environment display system provides the unique capabilities of achieving eye-limiting resolution while stimulating Night Vision Goggles.

Christie offers a unique lamp-less illumination system for unprecedented stability and reliability. With no consumables, the Christie Matrix StIM features extraordinarily long life, quality and ease of service. Very low power consumption directly translates to lower operating heat, less cooling requirements and cost savings in electricity for a dramatic reduction in sustainment costs.



Supportability – minimized maintenance costs

The Christie Matrix StIM is the first digital simulation projector that utilizes solid state illumination. Designed with extraordinarily long life, stability, reliability and continuous brightness and color matching, the Christie Matrix StIM incorporates many technological benefits never before available for an overall reduced sustainment cost.

Built on an inherently stable long-life platform that doesn't use polarization filters or fade over time, Christie's unique lamp-less illumination system offers unprecedented stability and reliability. With no consumables, the Christie Matrix StIM provides years of continuous operation.

Total Cost of Ownership

There are many contributing factors to total cost of ownership – initial purchase price, installation/repairs, downtime, spares, energy costs, staffing, incremental revenue, to name a few. With no moving parts and no lamps to change, sustainment costs for a Christie Matrix StIM simulation system are extremely low. No lamps means no replacements, no system set-up and balancing and a conservation of resources, a technician's time and other costs required for proper disposal and maintenance of a lamp-based simulator.



With no consumables, low heat, low power consumption, full RoHS compliance and years of continuous operation, the Christie Matrix StIM is a virtually maintenance-free, environmentally-friendly arrayed simulation display system.

If a simulation trainer goes down, the amount of time lost can directly translate into fewer training hours, lower quality training and higher maintenance costs – and lost revenue.

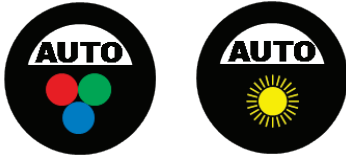
Based on a 3-channel display running 8 hours per day, 5 days a week and operating for a duration of 11 years, only the Christie Matrix StIM provides a virtually maintenance-free lifetime on the display. With 50,000 hrs MTBF on the illumination package, no moving parts, no lamps or filters to change – the Christie Matrix StIM is virtually maintenance-free. High MTBF and ease of support provide a near order-of-magnitude savings in sustainment cost.



Scalability

The Christie Matrix StIM, for the first time, makes scalability on a massive scale achievable. Previously the practical levels of multi-projector arrays were limited by the ability to create a seamless image and to keep it properly aligned and functioning over long periods as needed to meet rigorous training system schedules.

The inherent system stability and performance of the Christie Matrix StIM provides a new "baseline" for reliability. This is further enhanced with Christie ArrayLOC™ - real-time processing and calibration. As such, the Christie Matrix StIM is an "intelligent" projection system optimized to enable large arrays to meet both the required resolution and FOV as needed.



Stability

The comparatively low Mean-Time-Between Failures (MTBFs) of previous projection systems effectively put a ceiling on projection array scalability for simulation. The technology and systems engineering incorporated into the Christie Matrix StIM also enables unprecedented levels of maintenance-free operation. With Christie Matrix StIM, we haven't just "raised the bar" on scalability, we've revolutionized it!

Capability

Christie Matrix StIM also provides entirely new capabilities and levels of NVG training fidelity. The ability to provide realistic and relevant training is captured in the mantra "train like they fight". For today's warfighter this means training for difficult conditions of limited visibility and night time operations. And this same type of training is increasingly relevant and valuable for civil operations with first-responders, where lives are at stake.

There are two methods of NVG training in a virtual environment – simulation and stimulation. The "simulation" approach allows direct control of imagery displayed using simulated NVGs. In contrast, "stimulation" employs the actual NVGs which are stimulated by images viewed through the NVGs.

Matrix StIM employs our InfraRGB™ technology with a 4-band LED illumination source. In addition to the Red, Green and Blue primaries, InfraRGB™ also provides a near infra-red (IR) spectrum source that will 'stimulate' real Night Vision Goggles (NVGs) but is invisible to the unaided eye.



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CHRISTIE MATRIX StIM™

Cost of Operation (COO)



The ultimate in sustainable simulation solutions

- Modular and scalable to meet the most demanding performance requirements
- A seamless, intelligent display system that self adjusts in real-time
- 50,000 hours MTBF on illumination package
- 7-10 years of typical operation
- Mount in any orientation
- Reduced sustainment cost

Supportability

The Christie Matrix StIM™ is the first digital projector that doesn't utilize lamp technology but *solid state illumination*. Designed with extraordinarily *long life, stability, reliability* and *continuous brightness and color matching*, the Christie Matrix StIM incorporates many technological benefits never before available for an overall reduced sustainment cost.



Sustainability

Built on an inherently stable long-life platform that doesn't use polarization filters or fade over time, Christie offers a unique lamp-less illumination system for unprecedented stability and reliability. With no consumables, the Christie Matrix StIM provides years of continuous operation. Very low power consumption directly translates to lower operating heat, less cooling requirements and cost savings in electricity for an extremely low sustainment cost.

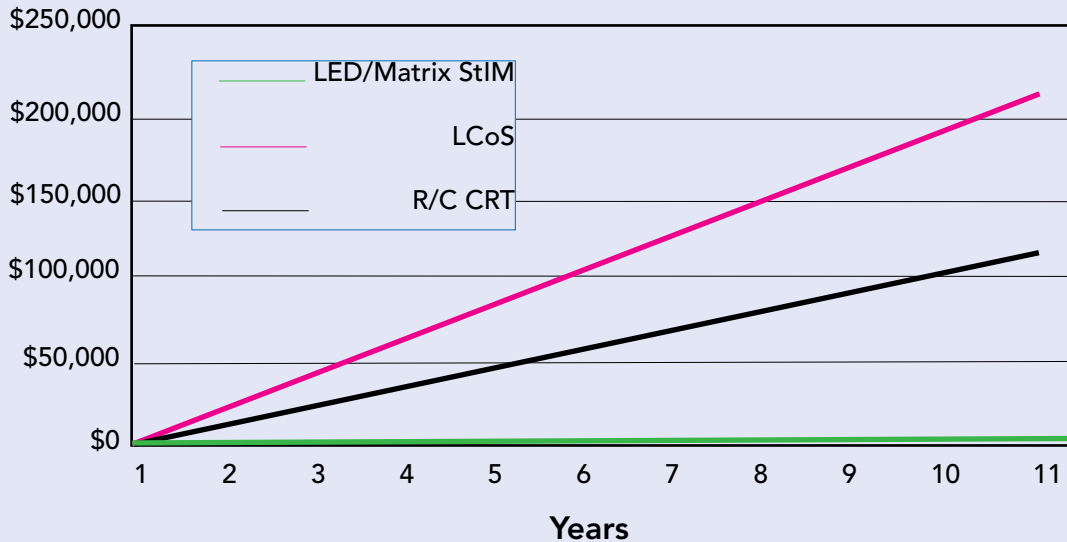


All of our products are backed by industry-leading service and support to ensure complete customer satisfaction.

CHRISTIE MATRIX StIM™

Cost of Operation (COO)

Cost of Operation - for 11 Years



Sub-assemblies	Typical lifetime	Replacements or changes required
Lamps and filters	1,500 hrs	44 in 11 years
CRTs	6,500 hrs	30 in 11 years
X-cubes	10,000 hrs	7 in 11 years
LEDs	50,000 hrs	0 in 11 years

Minimize maintenance costs

If a trainer goes down, depending on the MTTR, the amount of time lost can directly translate into fewer training hours, lower quality training and higher maintenance costs. That may result in lost revenue. Based on a 3-channel display running 8 hours per day, 5 days a week and operating for a duration of 11 years, only the Christie Matrix StIM™ provides a virtually maintenance-free lifetime on the display. With 50,000 hrs MTBF on the illumination package, no moving parts and no lamps to change - maintenance costs for a Christie Matrix StIM™ simulation system are extremely low.

Green – And virtually maintenance-free

The Christie Matrix StIM™ offers a unique lamp-less illumination system. This product has no lamps to replace or dispose of, conserving resources, a technician's time and other costs required for proper disposal and maintenance. Very low power consumption directly translates to lower operating heat, lower cooling requirements and cost savings in electricity for an extremely low sustainment cost. With no consumables, low heat, low power consumption, full RoHS compliance and years of continuous operation, the Christie Matrix StIM™ is a virtually maintenance-free, environmentally-friendly arrayed simulation display system.



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