Christie, an innovator and world leader in professional projection system display solutions, provides the broadest range of 24/7, high-performance Control Room display solutions in the industry. For 25 years, Christie has been a leading provider of “purpose-built” display solutions which are designed and manufactured to address the true needs of our customers. Several thousand Christie display solutions have been used in a variety of control and operations centers worldwide. Whether a very small Operations Center with a few displays or a huge Command and Control Center with hundreds of displays, Christie provides the right solution for your application.

**Uses**

- Large screen tiled wall displays
- Command and control rooms
- 24/7 mission critical environments
- Network operations centers
- Video walls
- Utility operation centers
Christie Control Room Display Systems

Industry Leaders in Control Rooms

Christie was the first to offer monochrome CRT based data projection systems back in 1980. Our products quickly evolved to color projection systems utilized in many industries worldwide. Over the next 2 decades, Christie defined and refined numerous new features and innovations in CRT based projection systems. In 1996, Christie was the first to offer a professional grade 3-chip DLP™ projection system – leading the way for innovation and technology advancement. In 1998 we were the first to offer a purpose-built LCOS (reflective LCD) based projector specifically for control room applications. Demonstrating our commitment to multi-display rear-screen solutions, Christie was the first to provide automatic brightness control (now called LiteLOC™) which automatically controls the brightness of individual projectors in a larger display wall to maintain uniform brightness. Shortly following, our product lines expanded to include “self-contained” projection display cubes. In 1999, Christie was the first to introduce “Rear Projection Modules”, complete “self-contained” projection display engines that may be integrated into a variety of customized display wall designs. Advancements in DLP™ technology led to more DLP-based designs used for our Control Room products. While other manufacturers are trying to catch up and follow, Christie leads with a broad line of high-performance DLP-based Control Room solutions which are backed by years of expertise and proven design, reliability and support.

High Resolution (SXGA+) Projection Solutions for Control Rooms

Christie offers the broadest range of high resolution 24/7 solutions for Control Rooms. This includes an entire suite of Rear Projection Module products (RPMSP Series), display wall structures (Nova Series) and standard cube systems (CSP Series). These solutions are all based on our single chip DLP™ platform.

Features include:
- SXGA+ native resolution; UXGA compatible
- Highest brightness capability: up to 1400 ANSI lumens max
- 1-chip DLP™ technology for superior tiling and performance quality
- Worry-free 24/7 design

Control Room Solutions Criteria

- High-performance, 24/7 reliable solutions
- “Purpose-built” for control rooms
- Versatile and easy to maintain
- Low cost of operation and maintenance
- Superior long life performance

Christie is North American based with two large development facilities and manufacturing operations. Our corporate headquarters and US factory is located in Cypress, California. Our digital display solutions are primarily developed and manufactured in our ISO 9001 registered factory in Canada. Major sales and support offices are located in all major centers worldwide. Our extensive experience and background in providing professional and industrial grade solutions is something that you can trust. We are the developer, the manufacturer and the solutions provider – we have the expertise and knowledge to understand your application and to support you!
Christie’s superior 10-bit electronics platform
- Christie’s own ultra low distortion short throw SXGA+ tiling lenses
- Unique, integrated 6-axis geometry adjustment and stability system
- Low depth platform
- Modular design for fast and easy serviceability

- Extensive, user friendly menu and control system via high frequency remote keypad
- Diagnostic monitoring and projection control via serial network
- Multiple input options and accessories available
- Full compatibility with Christie FRC Display Wall Controllers

RPMSP and CSP Series Models and Solutions

Combining years of development and a proven, mature understanding of rear screen projection systems and designs, Christie offers several products to cover a wide variation of solution requirements as illustrated below.

CSP and Nova Series Cubes and Display Structures

- SXGA+
- Up to 120” diagonal per display (e.g., 50”, 70”, 80”, 84”, 100”, 120”)
- Standard 70” modular cube available (CSP70)
- “RPMSP engine inside”

RPMSP Rear Projection Modules

- For customized rear screen display walls
- 50” to 120” diagonal screen size
- Allows most flexibility for custom integration
- Both 0.7:1 wide angle and 1.16:1 lens versions available

Christie manufactures its own screen solutions for its cube and display structure products in our ISO 9001 registered facility.
Reliable by Design

With DLP™ technology and Christie’s proven projection design, the display system offers high-performance for many, many years, not just for the initial display. Our proven designs and implementations offer high reliability, low failures, and minimal down time. Careful components design and selection are not simply “concepts”, but aspects of development that our projection design engineers implement and have taken seriously for many, many years. The projection engine design includes a modular electronics platform which boasts >30,000 hours MTBF (Mean Time Between Failures) of all major electronic modules. This platform utilizes Christie’s 10-bit electronics architecture. Developed initially for our ultra high-performance 3-chip DLP™ solutions, this electronics platform continues to be refined, improved and utilized in many of Christie’s high-end DLP™ projection products.

### DLP™ Technology

All of our Control Room projection display solutions are based on Texas Instruments’ 1-chip DLP™ digital light processing technology to ensure long term high-performance and reliability. DLP™ panel technology is far superior over other display technologies such as LCD when utilized in 24/7 environments. Why? Because DLP™ technology offers key features and benefits as shown below.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;100,000 Hours Useful Life</td>
<td>HIGH RELIABILITY &amp; Long Life</td>
</tr>
<tr>
<td>Simple Design Architecture</td>
<td></td>
</tr>
<tr>
<td>Used and proven in Christie designed products since 1996</td>
<td>Superior, Stable COLOR UNIFORMITY</td>
</tr>
<tr>
<td>Reflective Micro-mirror design</td>
<td>Superior, Stable BRIGHTNESS UNIFORMITY</td>
</tr>
<tr>
<td></td>
<td>LOW MAINTENANCE (no polarizers, filters or panels to replace)</td>
</tr>
</tbody>
</table>

1-chip DLP™ digital light processing provides greater than 100,000 hours useful life for high reliability and long life.
Low Geometric Distortion

Display systems with poor geometric distortion characteristics may appear acceptable in single screen applications but are unacceptable in tiling applications. This requirement has become even more critical in recent years with the advent of higher quality "seamless" screen systems. Minor distortions such as bow or keystone can be very noticeable in a tiling environment.

The projection engine includes a specially developed high-performance, SXGA+, ultra short throw tiling lens with field curvature correction that is designed specifically for rear screen tiling applications. This lens boasts less than 0.05% overall geometric distortion over the projector’s full environmental temperature range – unmatched in the industry.

Innovative Cooling Design Further Enhances Reliability

To further enhance system reliability and performance, the projection engine utilizes balanced, multi-fan cooling designs. A projection system incorporates multiple technologies including optics, illumination, mechanics and highly integrated electronics – all which must be cooled within optimum temperature ranges to promote high reliability. The optical/illumination areas, where controlled cooling is critical, are designed utilizing the latest computational fluid dynamic software to properly model the optical module to ensure optimal temperature management. Also within the optical module, fin theory is applied for the main light tube to provide excellent temperature control of this typically difficult to cool component.

KoRE™ Electronics Offers

- Modular architecture for ease of service
- Excellent signal support; 10-bit electronics and software designs are utilized in many of Christie’s projection products
- Extensive functionality and software control; newly available software and control features can be downloaded from our website and easily installed at site through the projector’s serial network
- Proven, reliable electronics designs

Geometric Distortion

With Geometric Distortion Correction
Christie Control Room Display Systems

Color Uniformity

Excellent Color Uniformity

In a tiling environment, color uniformity within each display and across multiple displays is essential. If the color within a display is not uniform, it will become most evident when displays are tiled in a grid pattern. The color quality becomes unappealing and a “checker board” effect occurs.

DLP™ technology is utilized for its superior color uniformity characteristics. Colors are displayed evenly across the display with no uniformity degradation over time. A color wheel is used to provide over 16 million possible colors for display, and being a single chip system there is never a convergence issue of the red, green and blue colors!

To ensure excellent color uniformity of all display colors across a tiled walled display with multiple projectors, the projection engine utilizes Christie’s exclusive Comprehensive Color Adjustment (CCA™) – an industry first, which allows fast and easy color matching from screen to screen without external equipment.

Excellent Brightness Uniformity

Systems with poor brightness uniformity characteristics display uneven brightness across each display. This can have a very unappealing effect for each individual display, but even more so for tiled projection displays.

DLP™ technology inherently provides extremely high consistency across the panel for light reflection. The projection engine also utilizes a high-performance glass integration rod system to manage and condition the light from the lamp for even light distribution before it reaches the display panel. The optical characteristics of the lens system also maintain and ensure uniform light distribution to the screen.

Although the “natural” performance of the projector or cube is quite acceptable for most tiling wall applications, Christie has taken the design to a higher level with the implementation of a “Brightness Uniformity Control” feature. This feature takes advantage of the capabilities of Christie’s KoRE electronics and

Whether a very small Operations Center with a few displays or a huge Command and Control Center with hundreds of displays, Christie provides the right solution for your application.
Brightness Uniformity

Software design by providing user-adjustable control of the brightness from center to edge of the image display. Up to 100% brightness uniformity can be achieved! This feature is an added benefit when integrating the projection engine (RPMSP) with other screen systems which may have poor center to edge drop-off; the projection engine can often compensate for the screen drop-off to provide improved brightness uniformity.

Advanced Color Wheel Systems

The projection engine has its own specially designed color wheel system with unique performance characteristics. The color wheel operates at “double speed” for an ideal balance between RGB performance and reliability. Christie’s unique designs offer a MTBF of over 50,000 hours for each color wheel providing very long life and reliable performance. The projection engine includes a four segment filter, meaning it includes a red, green, and blue color filter, plus an additional clear segment. The clear segment, if activated by the user, allows an additional boost in brightness when displaying images with “white” content. However, when activated, it does compromise the ability of control for primary color adjustment. Christie makes the white boost user selectable, allowing for the right balance between brightness and color matching requirement.

Dual UHP™ Illumination System
Integrated, independent 6-axis adjustment provides accurate geometry control and set-up.

All features and controls are quickly and easily accessible via full featured remote keypad and simple, easy-to-use menu system.

Brightness Control and Adjustability

All models include lamp brightness control and adjustability. The controls are totally “electronic solid state”, controlling the lamp power and brightness. The UHP system is adjustable from 100W to 120W. This feature can be beneficial if the display brightness noticeably varies, projector to projector, allowing better control of the brightness uniformity across a display wall. The “electronic solid state” nature of the design means there are no moving mechanical components and that ALL power to the lamp is effectively displayed at all times during projector operation.

Integrated 6-axis Adjustment System

The RPMSP projection engine system is the only SXGA+ system of its kind with a fully integrated 6-axis geometry adjustment system built directly into the optical head design – resulting in overall system cost savings, increased performance and stability, and simpler installation. The 6-axis adjustment system allows the projector lens to be positioned very accurately relative to the display screen so that the image fits the screen with minimal distortion at all corners and edges. There are 6 directions of adjustment: side to side, top to bottom, zoom, tilt, pitch and yaw. Simple “adjusters” make adjustment very easy to perform by the set-up or installation technician. Once set up, the projector remains stable with little need for future adjustment.

Purpose-Built Flexibility

Christie’s purpose-built 24/7 products are by far the most flexible system products for Control

Single Lamp Operation (auto-switching)

- **Optical System**
  - **Lamp A On**
  - **Lamp B Off**
  - **Illumination System**

- **Optical System**
  - **Lamp A Off**
  - **Lamp B On**
  - **Illumination System**
Room use. Because every control room and/or 24/7 application is unique, the projection engine offers extensive set-up and control capabilities to best suit your requirements. Our user-friendly graphical interface and menu system offers a wide range of set-up, control, service and display features and options to suit a variety of situations and needs. Display and input channel attributes, color temperature, primary color, pixel adjustment, image scaling and geometric control are just a few of the many controls provided within the base projection system.

Unique Dual UHP™ Lamp System

Christie’s dual lamp UHP based systems offer the widest range of flexibility which can be fully “site” controlled and configured to best suit end user needs. Features include:

- User selectable operation in “single lamp” or “dual lamp” modes. In single lamp mode, only one lamp is active at a time. This provides lower cost of operation and maintenance. In this mode, if the lamp reaches its end of life, the system can automatically detect and, within 10 seconds, switch to a secondary lamp – thus keeping the display operational with very little interruption. The system is fully electronic “solid state” with no moving mechanical or re-alignment parts. In dual lamp mode, two simultaneously operating lamps offer double the brightness. Should one of the lamps reach its end of life sooner, the remaining lamp remains in operation without interruption. In both single or dual lamp modes, a failed lamp can quickly and easily be replaced while the remaining lamp is operational.

- User selectable operation in Standard or Brightness Boost modes. Standard mode offers best color matching capability and control while Brightness Boost mode offers increased brightness.

- Adjustable lamp power range offers operation at 100W for longer lamp life and operation up to 120W for increased brightness with lower expected lamp life. Lamp power adjustability between 100W and 120W also allows for improved brightness matching between displays.

*When operated in single lamp mode.
**Brightness and Lamp Life**

<table>
<thead>
<tr>
<th></th>
<th>UHP 100W Operation</th>
<th>UHP 120W Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Typical Lamp Life</strong></td>
<td>Up to 10,000 hours</td>
<td>Up to 6000 hours</td>
</tr>
<tr>
<td></td>
<td>lamp life per lamp*</td>
<td>lamp life per lamp*</td>
</tr>
<tr>
<td><strong>Single Lamp Mode</strong></td>
<td>TYP: 480 ANSI lumens</td>
<td>TYP: 600 ANSI lumens</td>
</tr>
<tr>
<td></td>
<td>MAX: 560 ANSI lumens</td>
<td>MAX: 700 ANSI lumens</td>
</tr>
<tr>
<td><strong>Dual Lamp Mode</strong></td>
<td>TYP: 960 ANSI lumens</td>
<td>TYP: 1200 ANSI lumens</td>
</tr>
<tr>
<td></td>
<td>MAX: 1120 ANSI lumens</td>
<td>MAX: 1400 ANSI lumens</td>
</tr>
</tbody>
</table>

* Expected lamp life is based on lamp manufacturer's rating. Typical expectation is that greater than 50% of lamps will reach lamp life rating when operated as specified.

Note: Brightness values are with boost mode on. Brightness is 30% lower with boost mode turned off.

**Flexible Control**

As an alternative to using the handy remote keypad, the entire projection wall can be controlled via an external control device such as a touch panel controller, computer, or a Christie display wall controller via serial network. A standardized protocol structure is included within the design for ease of use and control.

**System Diagnostic Monitoring**

The projection engine includes continuous diagnostic monitoring, fault display and status messaging features. Fault display LEDs are provided on the projector hardware for diagnostic fault identification. For more elaborate fault surveillance, faults can be monitored via the serial network and by external computer/network/controller systems for notification and monitoring in remote, off-site or “front of the wall” locations.

**Superior Manufacturer Support**

Christie recognizes that control room and tiled wall displays can be a significant and critical investment for its customers. Renowned for industry-leading support and service around the world, Christie ensures that customers are well supported with training, service and technical support through our extensive distribution and support network.

Christie is proud of its on-going commitment to provide solutions that operate at maximum performance, combined with services and support that meet customer needs today and tomorrow.

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Powerful projector control and information/diagnostic monitoring capabilities.

Renowned for industry-leading support and service around the world, Christie ensures that customers are well supported.
GraphXMASTER RPMSP-100U

Throw Distance Formula
0.7:1 lens type \( TD = (0.65w^2) + 0.65 \)
for 1.16:1 lens type \( TD = (1.1w^2) + 1.18 \)
where \( w \) = screen width in inches

TOP VIEW
Lens may be positioned horizontally (0°) or vertically (90°).
Horizontal orientation shown.

GraphXMASTER CSP70

For other display sizes such as 50°, 80°, 84°, 100°, 120°,
please contact your Christie representative for details.

* Screen dimensions can vary depending on environmental conditions.
RPMSP & CSP Series Specifications

**BRIGHTNESS**
- Up to 1400 ANSI lumens max, depending on model and operating configuration
- Refer to the Brightness and Lamp Life chart in this brochure for nominal brightness at each operating mode

**CONTRAST RATIO**
- 1100:1

**RESOLUTION**
- 1-chip 0.95” Darkchip3™ DLP™
- True SXGA: 1400 x 1050
- Can operate in native SXGA mode
- 10-bit digital color processing

**HORIZONTAL/VERTICAL FREQUENCY**
- Horizontal – 15 kHz to 120 kHz
- Vertical – 23.97 Hz to 150 Hz

**PIXEL CLOCK**
- 220 MHz

**INPUTS**
- RGB/YPbPr; 5 BNC
- DVI-I: digital/analog RGB/YPbPr (HDCP)
- One composite video, one S-Video
- One option slot for analog/digital modules
- 2 RS-232 ports and 1 RS-422 port
- On-board ChristieNET™ connectivity (RJ45)
- IR remote control

**SOURCE COMPATIBILITY**
- Christie FRC display wall controllers
- Compatibility with VGA, SVGA, XGA, SXGA, SXGA+, UXGA, QXGA
- Accepts composite video, S-Video (VIC), component video (YUV) and HDTV (YPbPr)
- Separate, composite sync and sync-on-green compatible
- Various HDVT formats (1080i, 720p, 576p, 576i, 480p)

**ADVANCED TILING FEATURES**
- Comprehensive Color Adjustment (CCA) for true color matching
- Multi-mode lamp operation with lamp conserve and maximum brightness operation
- Brightness Uniformity Control – provides up to 100% uniformity capability for critical applications
- Ultra low distortion tiling lens

**LENSES OPTIONS (RPMSP SERIES)**
- 0.7:1 Ultra High Performance Tiling Lens
- 1.16:1 Ultra High Performance Tiling Lens
- Screen size: 50” to 120” Diagonal

**COLOR WHEEL CHARACTERISTICS**
- Long life, high reliability
- Specialized, double-speed, four-segment
- 13-bit color correction processing

**LAMP SPECIFICATIONS**
- Dual 100W/120W UHP lamps with solid state auto lamp switch-over, user replaceable lamp
- Lamp life: up to 10,000 hours per lamp (rated @ 100W operation)

**WIDE ANGLE SCREEN (CSP70 CUBE MODEL)**
- Horizontal viewing angle: 180° viewability range, 1/2 gain angle, ± 35°
- Vertical viewing angle: 180° viewability range, 1/2 gain angle, ± 35°
- On-axis peak gain: 0.82
- Type: Fresnel/Lenticular (Black Bead)
- Surface finish: low reflective
- 1mm “seamless” design
- Cube brightness with screen: See brightness chart and multiply lumens by 0.172 for approximate cd/m² brightness

**PHYSICAL (RPMSP SERIES)**
- Industrial design for rack or cube type installation
- Unique integrated 6-axis geometry adjustment system – provides accurate and stable geometry alignment
- Both 0° and 90° lens orientation
- Modular design for fast & easy serviceability

**POWER REQUIREMENTS**
- AC Input: 100 VAC to 240 VAC ± 10% (auto switching), 50/60 Hz
- Consumption: 230W (Single lamp mode) or 375W (Dual lamp mode)
- Thermal dissipation: 785 BTU/hr (Single lamp mode), 1280 BTU/hr (Dual lamp mode)

**CONTROL/NETWORKING**
- 2 RS-232 ports and 1 RS-422 port
- On-board ChristieNET™ connectivity (RJ45)
- Built-in backlight keypad and IR remote control
- Intuitive, easy-to-use graphical user interface
- Field upgradeable software via RS-232 network

**CUBE AND DISPLAY STRUCTURE FORMATS**
- 50”, 60”, 70” (regularly stacked), 80”, 84”, 100”, 120”, custom
- Contact your Christie representative for pricing and options

**ENVIRONMENTAL (RPMSP)**
- Operating temperature range: 6 to 35° C
- Operating humidity: 20 to 80% non-condensing
- Altitude: 0 to 3000 m (0 to 10,000 ft)
- Storage: -20 to 50° C, 20 to 80% RH, NC

**WEIGHT**
- RPMSP rear projector weight: 84 lb (approximately, unpacked)
- CSP70 display wall cube weight: 207 lb (approximately, unpacked); maximum stack height: 4 cubes

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

![Christie offers the broadest range of high resolution 24/7 solutions for Control Rooms.](image)

**STANDARD ACCESSORIES**
- Line cord
- 1 User Kit provided with 1–3 projectors/cubes; 2 User Kits provided with 4+ projectors/cubes
- User Kit contains:
  - User’s manual
  - Installation manual
  - IR remote keypad
  - Installation/kit-up tools

**OPTIONAL ACCESSORIES**
- Dual SD/HD-SDI, DVI and legacy interface modules
- Wire remote control and RS-422 Two Way Controller
- Remote IR sensor
- Ethernet, RS-232, RS-422 cables
- Service manual
- KoRE™ 10-bit librarian

**REGRULATORY**
- CAN/CSA – C22.2 No 60950-1-03
- EMC – emissions: FCC Part 15 and EN55022 (CISPR22) Class A
- EMC – immunity: EN 55024
- This product conforms to all relevant European directives, safety, health and environmental concerns and bears the CE marking
- China Compulsory Certificate (CCC)

**RELIABILITY**
- MTBF Engine: >30,000 hours (for major modules)
- MTBF Color Wheel: >50,000 hours
- MTTR: <15 minutes for any major serviceable component

**WARRANTY**
- 2 years parts and labor (including light engine)
- 5 year warranty, color wheel