

SONY®



4K Digital Cinema Projectors

SRX-R220/SRX-R210

Media Block

LMT-100

Screen Management System

LSM-100

The Combination of "4K" Visuals With a 2000:1 Contrast Enclosure Provides a Desirable Solution for the Digital



ast Ratio and a Highly Secure, Self-contained Cinema Age.

Sony is proud to introduce an ultra-high-resolution projector system designed specifically for digital cinema applications.

This projector system consists of the SRX-R220/SRX-R210 Digital Cinema Projector, the LMT-100 Media Block, and the LSM-100 Screen Management System, which are used with peripheral equipment such as RAID (Redundant Arrays of Inexpensive Disks) storage, an SMS Server, and an Uninterruptible Power Supply system.

The core component of this system, the SRX-R220 and SRX-R210 projectors, are equipped with three Silicon X-tal Reflective Display (SXRDTM) imaging devices, delivering an amazing resolution of 4096 x 2160 pixels (H x V) - more than four times the resolution of full HDTV (1920 x 1080, 16:9 widescreen format). The SXRDTM devices also provide a SMPTE-standard brightness level: 14 ft-L* on a 20-meter (65.6-foot) wide screen for the SRX-R220 and a 17- or 14-meter (55.8- or 45.9-foot) wide screen for the SRX-R210**, along with a high contrast ratio of 2000:1.

One of the major characteristics of these projectors is their enclosure design, which can accommodate additional necessary components into their body, such as RAID storage and a power management system. This self-contained design realizes a high security level that meets the SPB-2 anti-tamper regulation stipulated by the Digital Cinema Initiatives, LLC (DCI). It also provides significant space-saving benefits when installing the projectors.

Various optional lenses are available for the SRX-R220/SRX-R210 projector, which enables it to be used in a wide variety of theatres with many different throw distances.

The other important components of this projector system are the LMT-100 Media Block and LSM-100 Screen Management System which, in combination with the SRX projectors, establishes a highly secure digital cinema projection system.

The LMT-100 Media Block is a digital cinema server that can play back DCI DCP (Digital Cinema Packages) files. The LSM-100 Screen Management System provides a variety of screen management operations such as show scheduling, communication with other theatre control systems like lighting and curtains, and control of the SRX projectors and Media Block. Moreover, this software also has various functions to help prevent illegal copying, such as the monitoring of cavity security sensors on the enclosure, security key management, and diagnostic log management of security events.

With extremely high resolution, high-quality color tonal reproduction resembling film, and outstanding security, the Sony digital cinema projector system based on the SRX-R220/SRX-R210 4K projector is an ideal solution for digital cinema applications.

* Measured at the screen center of a full pixel size (4096 x 2160) projection with 100 IRE white and a screen gain of 1.8. A ft-L (foot-lambert) is a unit of measurement for luminance. One foot-lambert equals 3.4262591 candelas per square meter.

** Tentative



Display Not Included



CineAlta 4K™

Experience the Difference With True 4K Digital Cinema

In 1999, Sony introduced a totally new concept for moviemakers to provide a new higher level of picture quality, efficiency, and flexibility in production processes – digital cinema production.

Sony's new approach was to produce movies in a high-definition (HD) progressive video format at 24 frames per second using digital video tape media.

This concept, together with the Sony products that enabled it, was named CineAlta™ – and it has been embraced by an ever-broadening spectrum of producers, directors, and cinematographers all over the world. A large number of movies have already been produced digitally using CineAlta equipment, and this will continue into the future.

The recent acceleration of HD has heightened the need for the best technologies at every point in the professional production workflow. As a result, Sony launched "CineAlta 4K" in 2006 – an extension of the CineAlta brand that currently comprises the SRX Series SXR 4K projectors. Sony is also working to expand the "4K" concept to other Sony professional equipment, with a longer-term plan to establish a 4K production workflow.

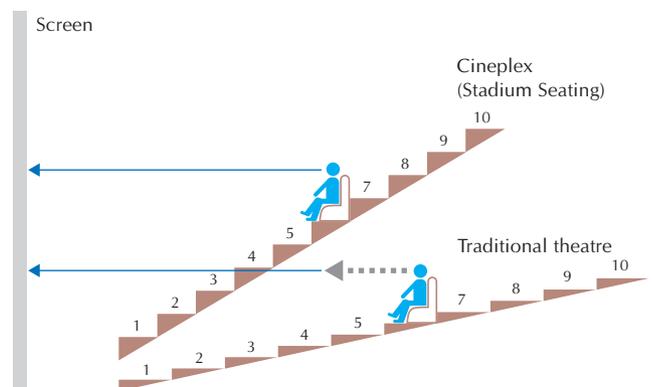
With Sony CineAlta 4K technologies and equipment, true 4K digital cinema is a reality.

System Advantage/Features

4K Resolution

Historically, the movie theatre experience has always exceeded that achieved by home entertainment systems. The advent of HDTV (1920 horizontal pixels) and technical improvements in home theatre equipment have stimulated the movie industry to think further ahead into the future. Meanwhile, the Hollywood movie studios have jointly agreed on standardizing 4K (4096 horizontal pixels) and 2K (2048 horizontal pixels) as the next-generation digital movie distribution and projection standards. Creating movies in 4K protects the future value of the content, and also provides a significant benefit to the theatre audience.

In recent years, stadium-type seating is becoming increasingly popular among modern cinema complexes. By sitting closer to the screen, the audience can enjoy an immersive visual experience. However, those sitting in the front rows may witness pixel artifacts when the resolution provided by the projection system is not sufficient to fill the screen size. The SRX-R220 and SRX-R210 provide true 4K output, which reproduces the full detail of 4K content thanks to the 4K SXR panels, 4K internal signal processing, and 4K-compatible optical system. Besides, since the SRX-R220/SRX-R210 provide four times the resolution of 2K projectors, the visual quality of 2K and HD content is also improved over those provided by native 2K and HD-resolution projectors.



High 2000:1 Contrast Ratio

The SRX-R220 and the SRX-R210 offer a high contrast ratio of more than 2000:1* through the use of Sony's unique SXRD device. The SXRD imaging device itself achieves a contrast ratio of over 4000:1.

This stunning picture quality makes the SRX-R220 and SRX-R210 ideal for applications in which dynamic range is essential.

The high contrast ratio has been achieved through two key technologies - the 'Vertically Aligned Liquid Crystal' system and an extremely thin liquid crystal cell gap.

* The contrast ratio is measured from a screen offering a gain of 1.0.

Xenon Lamp Provides Highly Bright and Pure Light Source

The SRX-R220 provides a high brightness of 14 ft-L* on a 20-meter (65.6-foot) wide screen, and the SRX-R210 provides the same brightness on a 17- or 14-meter** wide screen using a Xenon lamp.

A Xenon lamp, standard in all film projectors, provides pure, superb color tonal reproduction essential to meeting the stringent requirements of digital cinema. The SRX-R220 utilizes a 4.2 kW Xenon lamp, and the SRX-R210 uses a 3.0 kW** or 2.0 kW** Xenon lamp. These lamps satisfy the wide color range required for digital cinema by dispersion at a very flat and wide light spectrum.

* Measured at the screen center of a full pixel size (4096 x 2160) projection with 100 IRE white and a screen gain of 1.8. A ft-L (foot-lambert) is a unit of measurement for luminance. One foot-lambert equals 3.4262591 candelas per square meter.

** Tentative



Variety of High-quality Lenses

Five optional zoom lenses are available for the SRX-R220 and SRX-R210. All lenses utilize very large image circles that contribute to minimizing the optical vignetting that typically occurs on projector lenses, and to obtaining the highest possible values of MTF (Modulation Transfer Function). With these features, the optical systems of the SRX-R220 and SRX-R210 have the capacity to reproduce resolutions higher than 4K, which is necessary to project 4K contents exactly at 4K-resolution. In addition, these lenses are designed to minimize chromatic aberrations using Sony's accumulated technical knowledge.



LKRL-Z114C

LKRL-Z116C

LKRL-Z117



LKRL-Z119

LKRL-Z122

Variety of Interfaces

The SRX-R220 and SRX-R210 support a wide variety of signal formats including the 12-bit X'Y'Z' signal that is stipulated in the DCI specification. 10-bit 4:4:4 RGB and 10-bit 4:2:2 YPbPr signal formats are also supported for playback of other alternative contents.

- Two channels of SRLV which are used for connection to the Image Media Block (for 4K projection: 4K DCP).
- A dual-link HD/DC-SDI input that accepts any of the following signals: SMPTE 372M dual-link HD-SDI (4:4:4), SMPTE 292M HD-SDI (4:2:2), dual-link DC-SDI (RGB 4:4:4), DC-SDI (YPbPr 4:2:2), or 12-bit (X'Y'Z' 4:4:4) signals (for 2K projection: 2K ODS (Other Digital Stuff), etc).
- A DVI interface that accepts DVI signals for up to 2048 x 1080 at 60 Hz (for 2K projection: 2K ODS , etc).

	Resolution	Remarks
1	1024 x 768 at 60 Hz (XGA)	VESA
2	1280 x 960 at 60 Hz (SXGA1)	VESA
3	1280 x 1024 at 60 Hz (SXGA2)	VESA
4	1400 x 1050 at 60 Hz (SXGA+)	VESA
5	1600 x 1200 at 60 Hz (UXGA)	VESA
6	2048 x 1080 at 60 Hz (DC)	
7	1920 x 1080 at 24 Hz (HD)	
8	2048 x 1080 at 24 Hz (DC)	
9	1920 x 1200 at 59.95 Hz Reduced Blanking (WUXGA)	VESA
10	1920 x 1080 at 60 Hz (HD)	EIA/CEA-861B
11	2048 x 1080 at 48 Hz (DC)	

Operational Features

Color Space Conversion (CSC) function

The SRX-R220 and SRX-R210 feature a Color Space Conversion (CSC) function, which helps users easily adjust the projector's color space to that which is defined in the DCDM (Minimum D-Cinema Color Gamut) or ITU-R BT.709. The target color gamut parameters required to meet the DCDM or ITU-R BT. 709 standards can be automatically calculated from settings on the supplied SRX Controller software, and then applied to the projector. The internal test generator simplifies adjustment and lets the operator align the projector in minutes.

12-bit LCD Driver

The SRX-R220 and the SRX-R210 utilize a 12-bit imager driver for reproducing extremely natural images.

Gamma Curve Selection

The SRX-R220 and the SRX-R210 provide three preset gamma curve values. Users can select an optimum value from 1.8, 2.2, and 2.6 according to the desired color tone.

Squeeze Mode Function

The SRX-R220 and SRX-R210 allows squeezed images (16:9 or 1.896:1) to be changed to 2.39:1 un-squeezed images. This can be done electrically without an anamorphic lens, and be activated by the SRX Controller software.

Keystone Masking

To compensate for keystone distortion, which typically occurs when the projector is not installed directly in front of the screen, the SRX-R220 and SRX-R210 have an image-masking function. To determine a position of the masking, this allows users to set a further two points as well as four corner point, which is effective when projecting onto a curved screen.

Select four corner positions to mask the area outside the perimeter.



For curved screens, select two positions at the apex of the curve, one at the top and one at the bottom of the screen.

Zoom/Focus Memory Function

The SRX-R220 and SRX-R210 are equipped with zoom and focus memory functions that make it easy to switch the projection between two types of aspect ratios. When used with the optional zoom lens LKRL-Z114C, LKRL-Z116C, LKRL-Z117, LKRL-Z119, or LKRL-Z122, the zoom and focus positions for 1.85:1 VistaVision™ and 2.39:1 CinemaScope™ can be stored and instantly recalled via the SRX Controller software. This allows for full-screen display regardless of the aspect ratio. An electronic vertical alignment feature is included in the same memory to compensate for vertical changes in the image should the projector be mounted at a downwards angle.

Ease of Setup and Maintenance

Easy Setup on a PC Using Supplied Software

The SRX-R220 and SRX-R210 come equipped with the SRX Controller software. This runs on a PC* connected to the projector via the RS-232C interface, and features intuitive GUIs that enable easy setup and adjustment.

A comprehensive range of setup parameters including input configurations, colorimetry controls, installation adjustments, and maintenance settings can be controlled via this software.

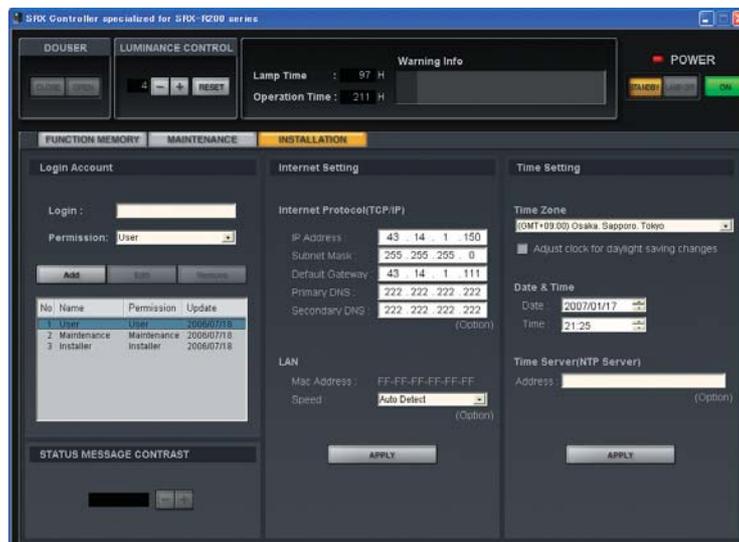
* System requirements for the setup software: Microsoft® Windows® XP Professional

Easy Maintenance

Special consideration was given to maintenance issues in the development of the SRX-R220 and SRX-R210 projectors.

No cumbersome adjustments are required after replacement.

The supplied setup software is a convenient tool for maintenance. This allows operators to easily verify a lamp's operating time. Automatic email alerts from the projector provides operators with maintenance reminders as well as error messages.



Installation Setting



Colorimetry Setting

Easy Maintenance of Luminance Level

During long periods of usage, users commonly have to adjust the luminance level of their projector, as Xenon lamps typically get darker over time. The SRX-R220/SRX-R210 has a convenient function to help users know when to make such adjustments. The supplied SRX Controller software allows users to set a standard luminance level, and displays an alert message on the LCD screen of the projector when the value changes from the standard level. With this feature, proper and timely maintenance of the luminance level can be performed.

Automatic Lamp Power Calibration Function

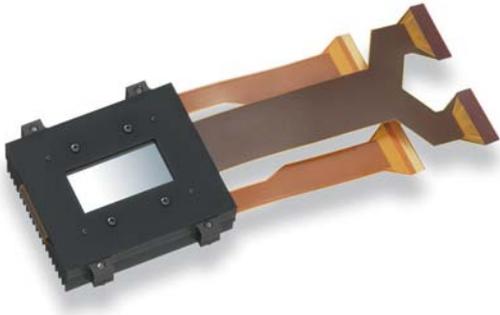
When switching the aspect ratio of projection from CinemaScope to VistaVision and vice versa, the luminance levels happen to change. To maintain a constant luminance level even after making these changes, the SRX-R220 and SRX-R210 projectors can automatically calibrate the luminance level by controlling the lamp output power. Users can set their desired luminance level using the SRX Controller software for this operation.

Key Lock System

The SRX-R220 and SRX-R210 are designed to be highly secure. They do not have screw holes, and require physical keys to open their enclosure. This body structure meets the SPB-2 anti-tamper regulation stipulated by the DCI. Even if the enclosure is opened with the physical keys, an anti-tamper sensor will trigger the Media Block LMT-100 to immediately start recording logs for further safety. In this case, these projectors also delete Key Delivery Messages (KDM) automatically, so that DCP files cannot be played back.



In addition to their extreme resolution and high contrast, the SXRD devices used in the SRX series projectors have the following remarkable technological features:



Vertically Aligned Liquid Crystal System

In every type of projector system, displaying absolute black is a major issue in order to achieve a high contrast ratio. In other words, the contrast ratio of a projector depends on how effectively the light from the source can be blocked so it does not leak through the imager.

All Liquid Crystal Display (LCD) devices control the amount of light to be projected by applying an electric field to the liquid crystal gap. In typical LCD devices, black is produced when an electric field is applied across the liquid crystal cell gap. However, molecules near the surface of the glass substrate may not be accurately controlled due to the influence of the alignment film. This is not an issue for bright images. However, when displaying dark images, light may tend to leak from the LCD device, since the molecules near the surface are less accurately controlled. This results in a creamy black instead of a deep black.

The SXRD device does not exhibit these characteristics. This is because the Vertically Aligned Liquid Crystal system displays black when the electric field is not applied and because all molecules are in the correct alignment, the polarized light alignment is also optimized. The direct result is a far deeper black level, leading to a high contrast ratio.

Thin Liquid Crystal Cell Gap

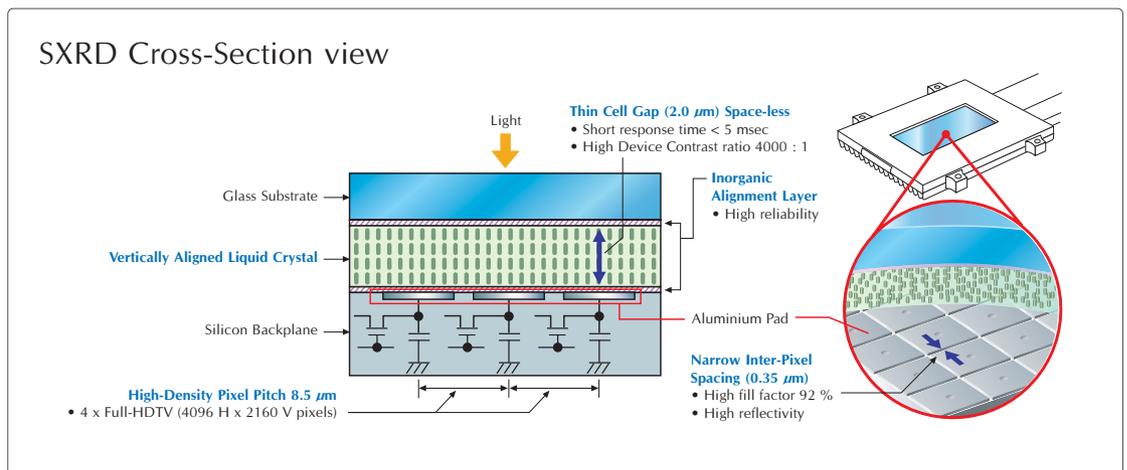
Another important enabling factor of high contrast is the SXRD device's ultra-thin cell gap of less than 2 micrometers. In conventional Vertically Aligned Liquid Crystal systems, a thin cell gap could not be achieved. Sony has overcome this difficulty through the use of Sony's innovative planarization technology in the silicon backplane structure and an advanced Silicon wafer-based assembly process. The SXRD device also adopts a structure that does not use "spacers". These are columns found in conventional reflective liquid crystal devices to maintain a constant gap between the liquid cell floor and the top of the device. Spacers tend to both scatter and reflect light, which can impair high-contrast pictures. In the spacer-less SXRD device, these artifacts are no longer seen.

Short Response Time

The thin cell gap structure in SXRD devices also contributes to an ultra-fast response time of 5 milliseconds. The SXRD device reacts promptly to an instantaneous change of picture content, enabling it to display a smooth motion. Consequently, the SRX-R220 and SRX-R210 virtually eliminate motion blur; a particularly significant benefit for visual content that includes fast-moving objects.

Reliable Imaging Device

The SRX-R220 and the SRX-R210 use a high-power, bright lamp. As a result, special attention has been paid to the reliability of the SXRD device. The inorganic materials utilized for the alignment layer of the SXRD device are resistant to deterioration or deformities that could occur due to the intense heat and light generated by the powerful lamp system.



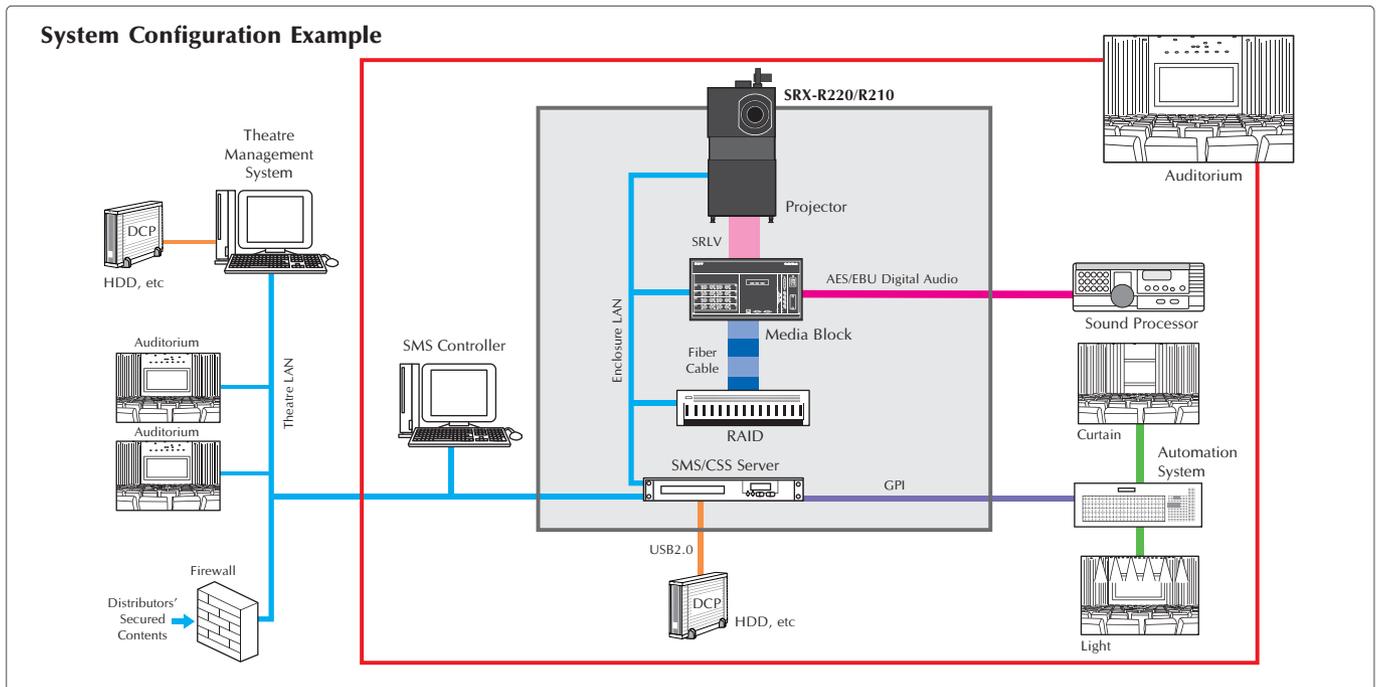
Digital Cinema Server - LMT-100 Media Block



The LMT-100 Media Block is a digital cinema server that can handle DCI DCP files, which is a key component in establishing highly secure theatre systems.

The LMT-100 server handles DCP (Digital Cinema Packages) files that consist of picture, audio, and subtitle data files, and that are wrapped in an MXF (Material eXchange Format) file. It can play back the DCP file by using advanced processing to decrypt and decode the picture data, and then send it to the projector over a secure multi-pin connection system.

The LMT-100 server is controlled with the optional SMS (Screen Management System) software.



Decryption and Unwrapping of DCP Files

The LMT-100 can decrypt DCP files that have been encrypted using the AES (Advanced Encryption Standard PSP 197). It can also unwrap individual picture, audio, and subtitle data files for processing that are encoded within the MXF file.

Picture and Subtitle

The LMT-100 can decode the JPEG 2000 picture data in real time for playback, regardless of whether the file was encoded at 2K or 4K resolution. Subtitles in Timed-Text/XML or PNG/XML format can be overlaid onto picture data before it is sent to the projector.

Audio

The LMT-100 transcodes audio DCP files into AES/EBU digital audio signals, and then outputs them to external audio processors. Up to 16 channels can be output from D-sub 25-pin or BNC connectors. The timing of the audio output can be adjusted for complete synchronization with the picture, and any channel can be routed to any output to simplify installation.

Event Log Creation

The LMT-100 can generate event logs* to record certain information - such as the number of times a movie has been played - which is a DCI requirement for secure content control.

* Requires the optional SMS software.

Screen Management System - LSM-100



The LSM-100 Screen Management System is a software application that controls a host of components including: SMS (Screen Management System) servers, SMS controllers, projectionist terminals, CSS (Cavity Security system) servers, power equipment, and status lights. For these controls, a variety of functions are provided. It also provides seamless integration with other systems in the theatre such as the Theatre Management System and the auditorium automation system. The LSM-100 satisfies the requirements of DCI Specifications version 1.0 for screen management and security.

Supported Functions

Screen Management Functions:

- Content ingest/registration and content management
- KDM registration and key management
- Show Play List (SPL) management
- Show schedule management
- Playback control
- Execution of SPLs
- Device configuration
- Device monitoring
- Auditorium setup
- Status monitoring: collect status information from projector, Media Block, RAID, and Cavity Security System; report status at pre-configured intervals
- Log retrieval: including log filtering and secondary log distribution
- Automation system interface
- Interface (XML/HTTPS) to external TMS system

Security Functions:

- Monitoring of cavity security sensors
- Notifying Media Block LMT-100 and CSS of cavity sensor events
- Responding to security queries made by Media Block LMT-100
- Keeping diagnostic logs of security events

Power Management Functions:

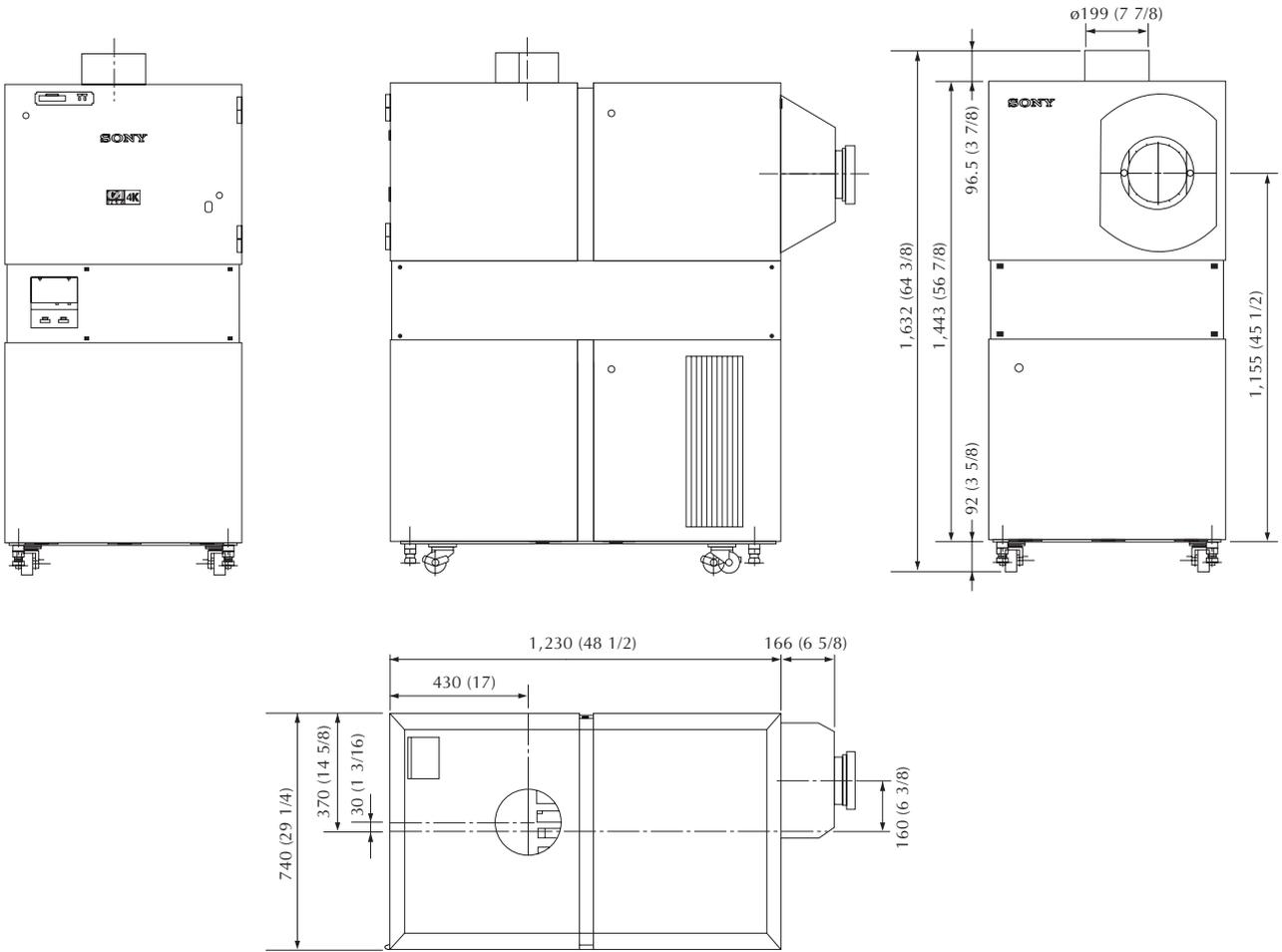
- Status monitoring: monitor status of RAID during power-up sequence
- IP traffic monitoring: listen for IP messages from UPS signaling abnormal power and UPS battery conditions
- IO monitoring: monitor power state change requests via projectionist terminals
- Controls the enclosure power lamp to show current power status
- Sequence power provided to component devices during power-up and power-down transitions, both user-requested and unplanned utility outages
- Control UPS during unplanned utility outages
- Initiate standby/shutdown sequences for SRX projector, Media Terminal, SMS Server, UPS
- Initiate startup/power-on sequences for UPS, RAID, Media Terminal, SMS Server
- Provides GUIs with status indication

Enclosure Status Light Management Functions:

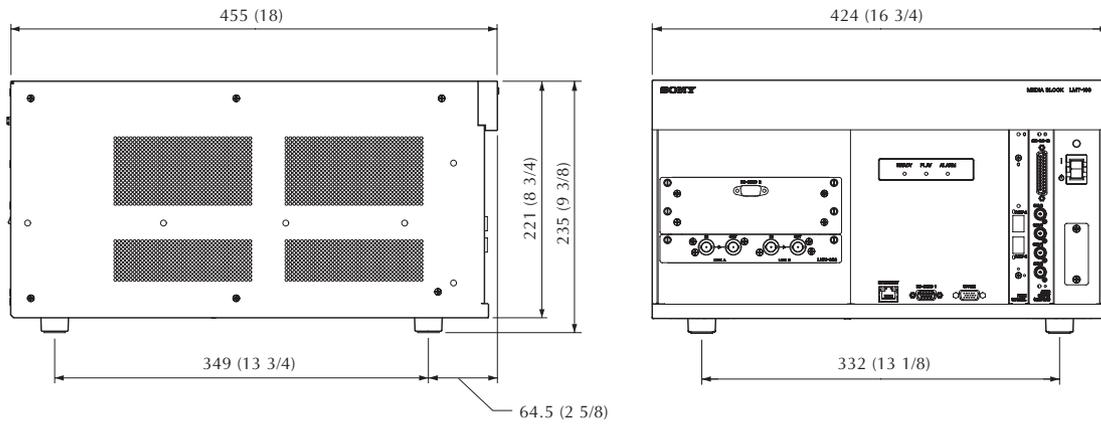
- Monitors and aggregates status of all system components using SMS API
- Sends aggregated status information to the status light of the enclosure

Dimensions Unit: mm (inches)

SRX-R220/SRX-R210



LMT-100



Optional Accessories



LKRL-Z114C Zoom Lens
x1.35 to x1.98 zoom lens



LKRL-Z116C Zoom Lens
x1.50 to x2.29 zoom lens



LKRL-Z117 Zoom Lens
x1.72 to x2.39 zoom lens



LKRL-Z119 Zoom Lens
x1.81 to x2.94 zoom lens



LKRL-Z122 Zoom Lens
x2.23 to x4.03 zoom lens



LKRX-2042A
4.2 kW Xenon lamp bulb for
replacement (for SRX-R220)



LKRX-2030A
3.0 kW* Xenon lamp bulb for
replacement (for SRX-R210)



LKRX-2020A
2.0 kW* Xenon lamp bulb for
replacement (for SRX-R210)

* Tentative

Specifications (SRX-R220/SRX-R210)



SXR Device Main Specifications	
Display device	SXR (Silicon X-tal Reflective Display)
Size	1.55-inch across Diagonal
Resolution	4096 (H) X 2160 (V) Pixels
Reflectivity	77%
Contrast	More than 4000:1
Pixel pitch	8.5 μm
Width (between pixels)	0.35 μm
Response speed	5 msec (tr + tf)
Liquid crystal mode	Vertical Aligned Mode
Alignment layer	Inorganic Thin Film
Backplane process	0.35 μm MOS Process
Liquid crystal cell gap	Less than 2 μm

Optical	
Projection system	3-SXR panel, prism color integrated system
Imaging device	SXR, 1.55-inch (diagonal), 4096 (H) x 2160 (V) pixels on each chip
Lamp	SRX-R220: 4.2 kW Xenon lamp x 1 SRX-R210: 3.0 kW** Xenon lamp x 1 or 2.0 kW** Xenon lamp x 1
Screen coverage (Approx.)	SRX-R220: 4.5-meter to 20-meter screen width on Scope size (4.2 kW lamp) SRX-R210: 4.5-meter to 17-meter screen width on Scope size (3.0 kW lamp)** 4.5-meter to 14-meter screen width on Scope size (2.0 kW lamp)**
Light output	SRX-R220: 14ft-L on 20-meter wide screen (4.2 kW lamp)* SRX-R210: 14ft-L on 17-meter wide screen (3.0 kW lamp)* ** 14ft-L on 14-meter wide screen (2.0 kW lamp)* **

* Measured at the screen center of a full pixel size (4096 x 2160) projection with 100 IRE white and a screen gain of 1.8. A ft-L (foot-lambert) is a unit of measurement for luminance. One foot-lambert equals 3.4262591 candelas per square meter.

** Tentative

General			
Colorimetry	Xenon Color Primaries		
	Encoding Primaries	X	Y
	R	0.6800	0.3200
	G	0.2650	0.6900
	B	0.1500	0.0600
White reference	Xenon white reference		
		X	Y
	White reference	0.3140	0.3510
Contrast	Over 2000:1		
Input signal	Media Block input x 2: 4096 x 2160 pixels		
	HD-SDI/Dual-link HD-SDI: 1920 x 1080 pixels (SMPTE-372M/SMPTE-292M/ITU-R.BT709/BTA-S004)		
	DC-SDI/Dual-link DC-SDI: 2048 x 1080 pixels		
	12 bit'X'Y'Z'		
	(with Dual-link HD/DC-SDI Input Board)		
	DVI-D: XGA (1024x768) / SXGA1 (1280x960) / SXGA2 (1280x1024) / SXGA+ (1400x1050) / UXGA (1600x1200) / WUXGA (1920x1200) / HD (1920x1080) / DC (2048x1080)		
Power consumption	SRX-R220: 1.2 kW (Single-phase/100-240VAC for main circuit) / 5.2kW (3-phase/ 200-208VAC or 380-415VAC selectable for lamp)		
	SRX-R210: 1.2kW (Single-phase/100-240VAC for main circuit) / 3.4kW** (3-phase/ 200-208VAC or 380-415VAC selectable for lamp)		
Power requirements	AC 100 to 240 V, 50/60 Hz, single-phase (for Main power)		
	AC 200 to 208 V / AC 380 to 415 V, 3-phase(changeable), 50/60 Hz (for Lamp power)		
Operating temperature	+5°C to +35°C (+41°F to +95°F)		
Storage temperature	-20°C to +60°C (+12°F to +140°F)		
Operating humidity	35% to 85% (without condensation)		
Storage humidity	10% to 90%		
Dimensions (W x H x D)	740 x 1535 x 1395mm (29 1/4 x 60 1/2 x 55 inches)		
Mass	300 kg (661 lb 6 oz), without lens and lamp		
Fan noise	65 dB or less		

Input/Output	
Input A	DVI-D
Input B	Dual-link HD/DC-SDI
Input C	A channel For Media Block INPUT-A (SRLV connection)
	B channel For Media Block INPUT-B (SRLV connection)
Remote interface	D-sub 15-pin, RS-232C (female) x 1
	Ethernet terminal, 10Base-T/100Base-TX x 1
Interlock	D-sub 15-pin (female) x 1

Others	
Safety regulations	[UL60950 listed], [cUL60950], [FCC Class A], [IC Class A], [VCCI Class A], [EN60950], [CE Class A], [C-tick], [GB4943], [GB9254], [K60950], [CISPR22], [CISPR24]
Supplied accessories	Attachment base plate kit for Touch Panel Controller x 1 Operation instructions x 1 Status Light x 1 Touch Panel Controller Attachment kit x 1
Required specifications for control PC	OS: Microsoft Windows XP Professional Edition (English and Japanese) with Service Pack 2 Required Memory: 256 MB or more HDD Capacity: 8 MB or more Equipped with: 10Base/100Base-TX Ethernet Connector RS-232C Connector Display with XGA or larger CPU: Windows XP: Intel® Celeron® 1 GHz or faster (recommendation)

Specifications (Media Block LMT-100)



General	
Power consumption	2.1 to 1.1 A
Power requirements	AC 100 to 240 V, 50/60 Hz
Operating temperature	+5°C to +35°C (+41°F to +90°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Operating humidity	35% to 85% (without condensation)
Storage humidity	10% to 90%
Dimensions (W x H x D)	424 x 221 x 455 mm (16 3/4 x 8 3/4 x 18 inches)
Mass	17.5 kg (38 lb 9 oz)
Picture	
Compression format (decode)	JPEG2000
Bit rate (J2K)	250 Mbps (Average), 500 Mbps (Max)
Resolution	4096(H) x 2160(V) pixels, 2048(H) x 1080(V) pixels
Applicable input signal source (External signal input)	Video: HD-SDI, DC-SDI

Audio	
Channel	16 channels
Digital audio format	24 bits Linear PCM
Subtitle	
Format	Timed-Text/XML or PNG/XML
Security	
Decryption format	RSA 2048 bit, AES
Key import	TLS Session from SMS server

SONY

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