



SRX-R220

4K Digital Cinema Projector

LMT-200

Media Block

LSM-100

Screen Management System

sony.com/digitalcinema

Sony's 4K Digital Cinema Solution



The Powerful Combination of “4K” Visuals with a 2000:1 Contrast Ratio and a Highly Secure, Self-contained Enclosure

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

This projector system offers a unique enclosure design that can incorporate all the necessary components. These include the SRX-R220 Digital Cinema Projector, the LMT-200 Media Block (sold separately), and the LSM-100 Screen Management System software (sold separately), which are used with peripheral equipment such as an SMS server and an Uninterruptible Power Supply system. The core component of this system, the SRX-R220 projector, is equipped with three Silicon X-tal Reflective Display (SXRD™) 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). The SXRD devices also provide a SMPTE-standard brightness level: 14 ft-L* on a 65.6-foot (20-meter) wide screen for the SRX-R220, along with a high contrast ratio of 2000:1.

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 projector systems.

Various optional lenses are available for the SRX-R220 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-200 Media Block and LSM-100 Screen Management System, which - in combination with the SRX projector - establish a highly secure digital cinema projection system. The LMT-200 Media Block is a digital cinema server that incorporates hard disk drives (HDDs) with a large storage capacity of 1TB and adopts a reliable RAID (Redundant Array of Inexpensive Disks) system - plus, it can also 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 projector 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, Sony's digital cinema projector system based on the SRX-R220 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.

Touch Panel 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.

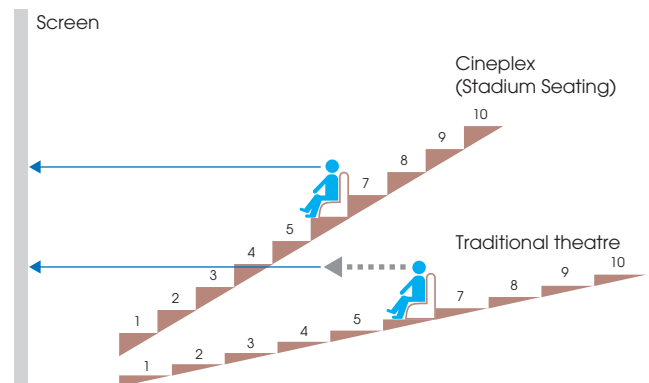
With Sony CineAlta 4K technologies and equipment, true 4K digital cinema is a reality.

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 provides 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 provides 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 offers a high contrast ratio of more than 2000:1 through the use of Sony's unique SXRD device. The SXRD device itself achieves a contrast ratio of over 4000:1. This stunning picture quality makes the SRX-R220 ideal for applications in which dynamic range is essential. The high contrast ratio has been achieved through two key technologies - the 'normally black mode' system and an extremely thin liquid crystal cell gap.

Xenon Lamp Provides Highly Bright and Pure Light Source

The SRX-R220 provides a high brightness of 14 ft-L* on a 65.6-foot (20-meter)** wide screen, using a Xenon lamp at full brightness. 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. This lamp satisfies 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.

** By lowering the brightness level of the projector lamp and attaching an appropriate ND filter to the projector lens, the SRX-R220 can be used for projection even on small screens.



USHIO DXL-40SRX

Table of Available Xenon Lamps

Sony recommended Xenon lamps for the SRX-R220 are available from the following lamp manufacturers.:

Lamp Manufacturer	Xenon Lamp		
	4.2 kW	3.0 kW	2.0 kW
USHIO INC.	DXL-40SRX	DXL-30SRX	DXL-20SRX
OSRAM GmbH	XBO4200W/HRS OFR	XBO3000W/HPS OFR	XBO2000W/HPS OFR

Variety of High-quality Lenses

Six optional zoom lenses are available for the SRX-R220.

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 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-Z111C



LKRL-Z114C



LKRL-Z116C



LKRL-Z117



LKRL-Z119



LKRL-Z122

Variety of Interfaces

The SRX-R220 supports 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 features 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 utilizes a 12-bit imager driver for reproducing extremely natural images.

Gamma Curve Selection

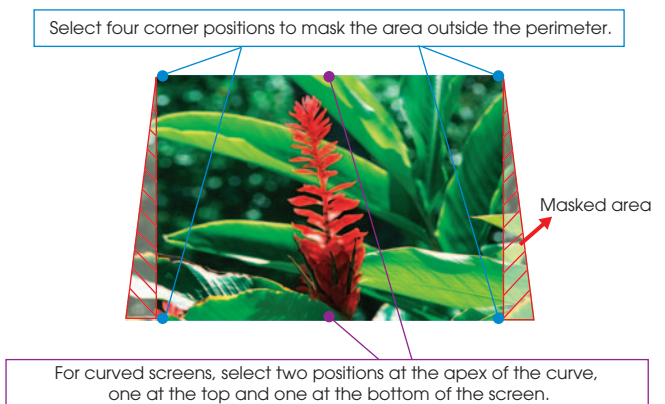
The SRX-R220 provides three preset gamma curve values. Users can select an optimum value from 1.8, 2.2, and 2.6 according to the desired color tone.

Squeeze Mode Function

The SRX-R220 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 has 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.



Zoom/Focus Memory Function

The SRX-R220 is equipped with focus memory functions that make it easy to switch projection between two types of aspect ratios. When used with an optional zoom lens - such as the LKRL-Z111C, LKRL-Z114C, LKRL-Z116C, LKRL-Z117, LKRL-Z119, and LKRL-Z122 - the zoom and focus positions for the 1.85:1 screen format 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 comes 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.

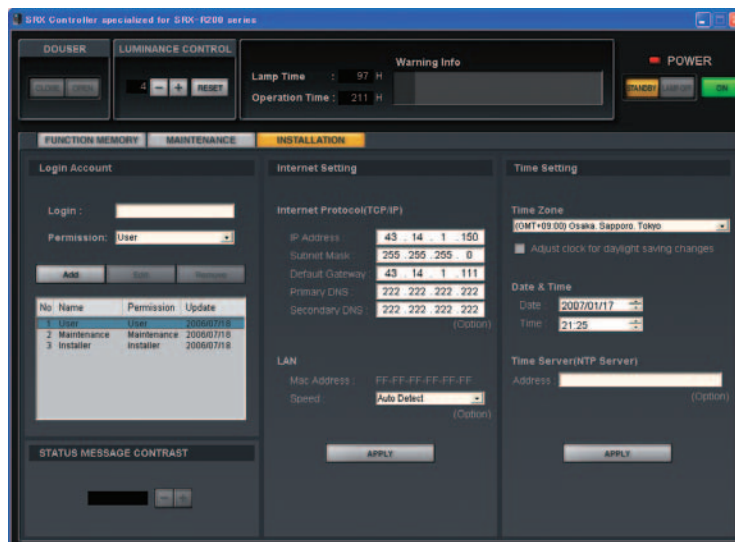
A comprehensive range of setup parameters including input configurations, colorimetry controls, installation adjustments, and maintenance settings can be controlled via this software.

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

Easy Maintenance

Special consideration was given to maintenance issues in the development of the SRX-R220 projector.

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

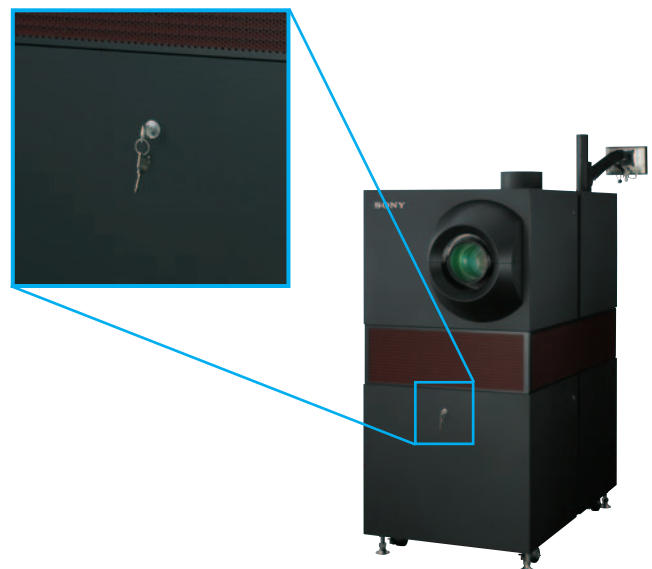
During long periods of usage, users commonly have to adjust the luminance level of their projector, as Xenon lamps typically get darker over time. The SRX-R220 has a convenient function to help users know when to make such adjustments. The supplied SRX Controller software allows users to set a standard 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

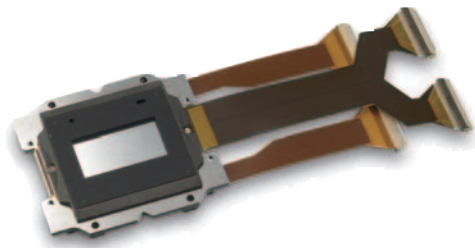
When switching the aspect ratio of projection from CinemaScope to VistaVision and vice versa, the luminance levels happen to change. To maintain a constant luminance level even after making these changes, the SRX-R220 projector can automatically calibrate the luminance level by controlling the lamp output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

Key Lock System

The SRX-R220 is designed to be highly secure. It does not have screw holes, and require physical keys to open its enclosure. This body structure meets the SPB-2 anti-tamper requirement of the DCI. Even if the enclosure is opened with the physical keys, an anti-tamper sensor will trigger the LMT-200 Media Block 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:



'Normally Black Mode' System

In every type of projector system, displaying absolute black is a major issue - as this helps 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 display device.

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 but, 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 'normally black mode' 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 factor allowing for the high contrast of the SRX-R220 is the SXRD device's ultra-thin cell gap of less than 2 micrometers. With conventional 'vertically aligned liquid crystal' systems, a thin cell gap could not be achieved. Sony has overcome this difficulty through the use of 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.

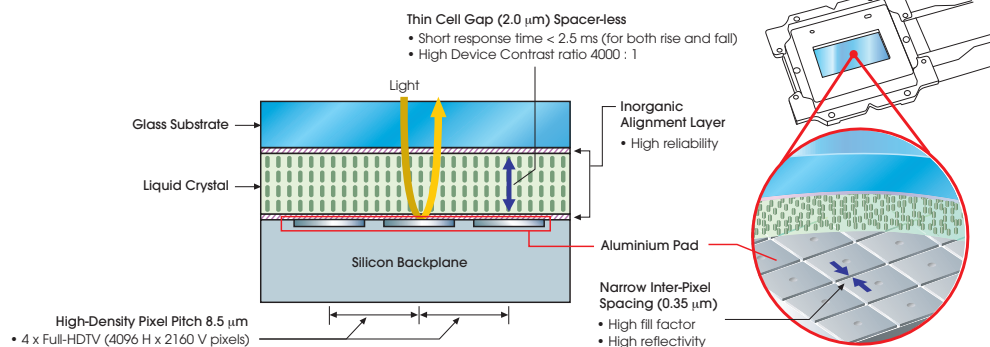
Short Response Time

The thin cell gap structure in SXRD devices also contributes to an ultra-fast response time of 2.5 milliseconds (for both rise and fall). The SXRD device reacts promptly to an instantaneous change of picture content, enabling SXRD-based projectors to display smooth motion. Consequently, the SRX-R220 virtually eliminates motion blur; a particularly significant benefit when presenting content that includes fast-moving objects.

Reliable Display Device

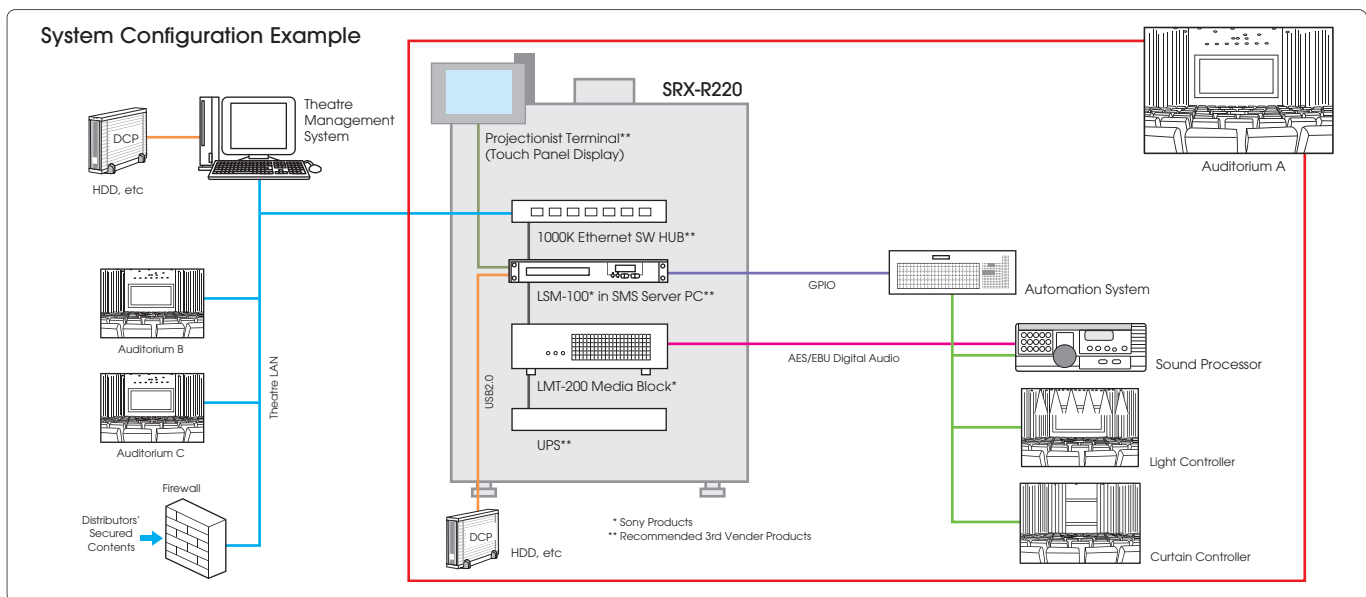
The SRX-R220 uses high-power, bright lamps. As a result, special attention has been paid to the reliability of the SXRD device. The inorganic materials utilized for the alignment layer of the SXRD device are resistant to deterioration or deformities that could occur due to the intense heat and light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

SXRD Cross-Section Diagram



Digital Cinema Server - LMT-200 Media Block

The LMT-200 Media Block is a digital cinema server, which is a key component in establishing highly secure theatre systems. It incorporates HDDs with a large storage capacity of 1TB and adopts a reliable RAID (Redundant Array of Inexpensive Disks) system. The LMT-200 can handle DCI DCP (Digital Cinema Packages) files that consist of picture, audio, and subtitle data files, and that are wrapped into 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. The LMT-200 server is controlled with the LSM-100 SMS (Screen Management System) software.



Large Storage Capacity and Reliable RAID System

The LMT-200 incorporates HDDs with a large storage capacity of 1TB. It employs a RAID system that allows for highly reliable digital cinema presentation.

Decryption and Unwrapping of DCP Files

The LMT-200 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-200 can decode 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-200 transcodes audio DCP files into AES/EBU digital audio signals, and then outputs them from two audio output connectors (D-sub 25-pin) to external audio processors such as Dolby® sound processors. The audio output 1 and audio output 2 can support up to 8 and 16 channels, respectively. 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

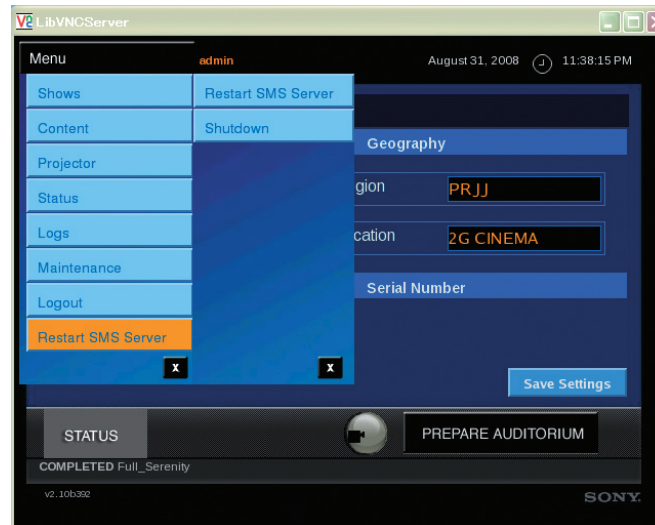
The LMT-200 can generate event logs* to record certain information - such as the number of times a movie has been played - which is a DCI requirement for secure content control.

* Requires the LSM-100 SMS software.

Ingest of DCP Files During Playback

DCP files can be ingested to the LMT-200, even while the SRX projector is playing a movie.

Screen Management System - LSM-100



Menu Window of the Projectionist Terminal
(Touch Panel Display)

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, 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 for screen management and security.

Supported Functions

Screen Management Functions Operated by a Projectionist Terminal (Touch Panel Display):

- DCP ingest/registration and DCP management
- KDM registration and key management
- Show Play List (SPL) creation and management
- Show schedule creation and management
- Playback control
- Execution of SPLs
- Device configuration
- Device monitoring
- Status monitoring: collect status information from the projector and Media Block; report status at pre-configured intervals
- Automation system interface
- Projector Power On/Standby control
- Lamp Power On/Off control
- Adjustment of lamp power values
- Adjustment of the lamp bulb's z-axis

- Lamp serial code input function when installing a new lamp bulb
- Adjustment of a registration gap
- Display of filter information and reset timer
- Content information display: title, aspect ratio, and KDM (Key Delivery Message) validity

Screen Management Functions Controlled by a PC:

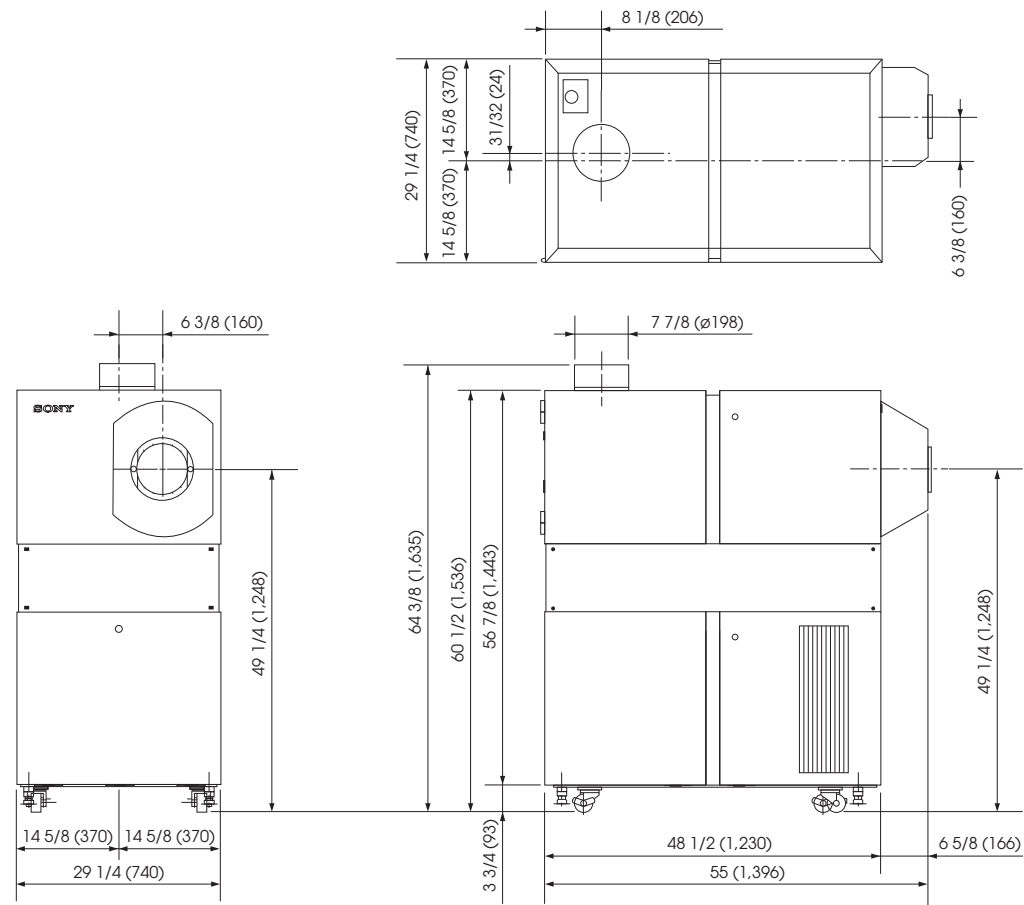
- Auditorium setup
- Log retrieval: including log filtering and secondary log distribution
- Interface (XML/HTTPS) to external TMS systems
- Security functions: automation system interface

Enclosure Status Light Management Functions:

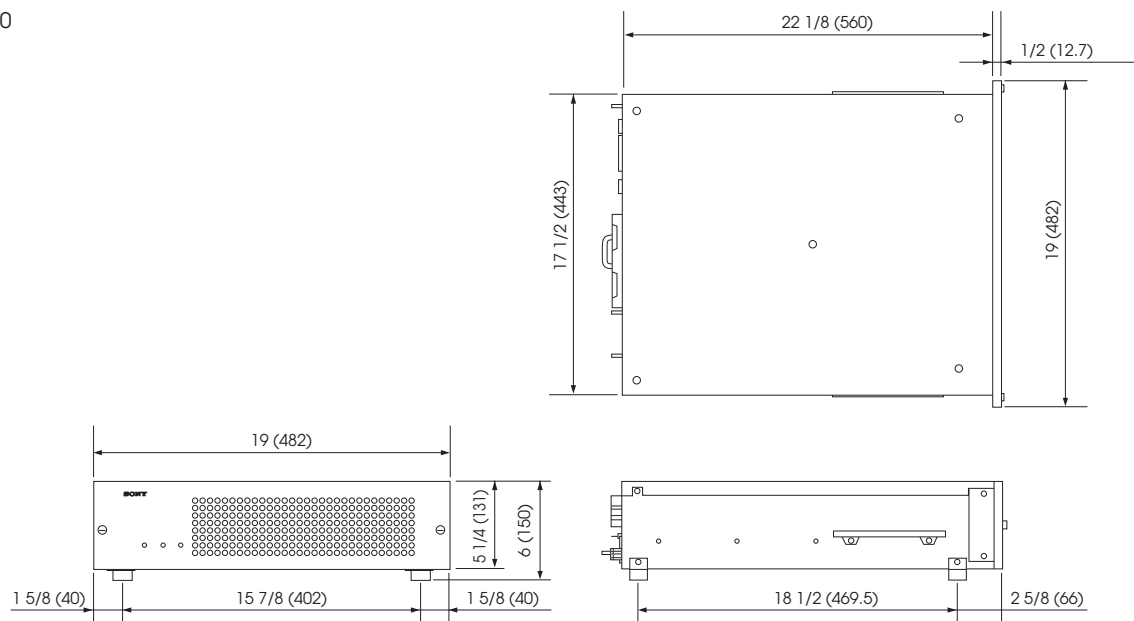
- Monitors and aggregates status of all system components using SMS API
- Sends aggregated status information to the status light of the enclosure

Dimensions

SRX-R220



LMT-200



Unit: inches (mm)

Optional Accessories



LKRL-Z111C
Zoom Lens
Throw ratio*: 1.07:1 to 1.71:1



LKRL-Z114C
Zoom Lens
Throw ratio: 1.35:1 to 1.98:1



LKRL-Z116C
Zoom Lens
Throw ratio: 1.50:1 to 2.29:1



LKRL-Z117
Zoom Lens
Throw ratio: 1.72:1 to 2.39:1



LKRL-Z119
Zoom Lens
Throw ratio: 1.81:1 to 2.94:1



LKRL-Z122
Zoom Lens
Throw ratio: 2.23:1 to 4.03:1

* The throw ratio denotes the ratio that the projection distance is divided by the screen width.

Specifications (SRX-R220)



SXRD Device Main Specifications

Display device	SXRD (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	2.5 ms (for both rise and fall)
Liquid crystal mode	Normally Black 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-SXRD panel, prism color integrated system
Imaging device	SXRD, 1.55-inch (diagonal), 4096 (H) x 2160 (V) pixels on each chip
Lamp	SRX-R220: 4.2 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)
Light output	SRX-R220: 14ft-L on 20-meter wide screen (4.2 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.

General			
Colorimetry	Xenon Color Primaries		
	Encoding Primaries	X	Y
	R	0.6800	0.3200
	G	0.2650	0.6900
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)		
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	+41°F to +95°F (+5°C to +35°C)		
Storage temperature	+12°F to +140°F (-20°C to +60°C)		
Operating humidity	35% to 85% (no condensation)		
Storage humidity	10% to 90%		
Dimensions (W x H x D)	29 1/4 x 60 1/2 x 55 inches (740 x 1536 x 1396 mm)		
Weight	Approx. 661 lb 6 oz (300 kg), 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 OUTPUT A (SRLV connection)
	B channel	For Media Block OUTPUT 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	
Required specifications for control PC	Touch Panel Controller Attachment kit x 1	
	OS: Microsoft Windows XP Professional Edition (English and Japanese) with Service Pack 2 and 3 Windows Vista with Service Pack 1	
	Required Memory: Windows XP: 256 MB or more Windows Vista: 2 GB 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)	
	Windows Vista: Intel Core™ 2 Duo 2.26 GHz or faster, AMD® Dual Core 5000B 2.60 GHz or faster (recommended)	

Specifications (Media Block LMT-200)

General	
Power consumption	3.9 to 1.7 A
Power requirements	AC 100 to 240 V, 50/60 Hz
Operating temperature	41 to 95 °F (5 to 35 °C)
Operating humidity	35% to 85% (no condensation)
Storage temperature	-4 to 140 °F (-20 to 60 °C)
Dimensions (W x H x D)	17 1/2 x 5 1/4 x 22 1/8 inches (443 x 131 x 560 mm)
Weight	Approx. 52 lb 13 oz (24 kg)
HDD	
Array composition	Data Drive: 4 Parity Drive: 2 Spare Drive: 1
Record capacity	1 TB*: 250 GB (capacity of a drive) x 4 drives
Video	
Projector Output A	For Projector A channel (SRLV connection)
Projector Output B	For Projector B channel (SRLV connection)
Compression format (decode)	JPEG 2000
Bit rate (J2K)	250 Mbps (average), 400 Mb/s (max.)
Resolution	4096 (H) x 2160 (V), 2048 (H) x 1080 (V) pixels
Audio	
Audio Output 1	D-sub 25-pin (female) Unbalanced : 8ch
Audio Output 2	D-sub 25-pin (female) AES/EBU : 16ch (Pin Assignment for Dolby Option board 790)
Digital audio format	24 bits, 48 kHz, Linear PCM
Interface	
Network	1000BASE-T Ethernet : RJ45
CSS	D-sub 15-pin (female)
Subtitle	
Format	Timed-Text/XML or PNG/XML
Security	
Decryption format	RSA 2048 bit, AES
Key import	TLS session from SMS server

Others	
Safety regulations	(UL60950-1), (cUL60950-1), (FCC part 15 Class A), (ICES-003 Class A), (VCCI Class A), (IEC60950-1), (EN60950-1), (EN55022/98 Class A), (CE Class A), (GB4943), (GB9254), (CISPR22), (CISPR24), (JIS-C6100-3-2)
Supplied accessories	PM-Link cable X 2 (Media Block to SRX Projector) CSS Harness X 1 (CSS module to LMT-200) Plug holder X 1 Screw X 4 Operation Instructions X 1 Installation Manual X 1
Required specifications for SMS (Screen management system)	LSM-100 Ver 2.0 or more

* 1TB includes a capacity used for a system area where system information is recorded.
The actual capacity available for recording data is 1 TB minus the capacity for the system area.



Front Panel



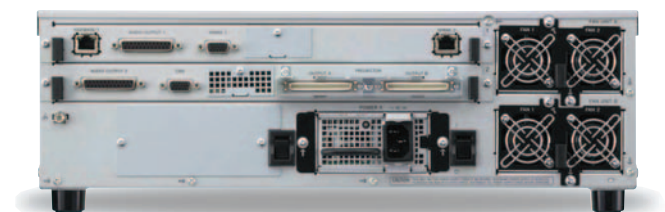
Front View without the Front Panel

Table of the Available Lenses

LKRL-Z111C			
Zoom Ratio	1.6x		
Throw ratio*	1.07:1 to 1.71:1		
F-number	2.8 to 2.9		
Screen width \ Throwing Distance	Wide	Tele	
6,730 mm	7,099 mm	11,466 mm	
8,000 mm	8,465 mm	13,657 mm	
9,000 mm	9,541 mm	15,381 mm	
10,000 mm	10,617 mm	17,106 mm	
11,000 mm	11,694 mm	18,831 mm	
12,000 mm	12,770 mm	20,555 mm	
13,000 mm	13,846 mm	22,280 mm	
14,000 mm	14,922 mm	24,005 mm	
15,000 mm	15,998 mm	25,729 mm	
16,000 mm	17,074 mm	27,454 mm	

		LKRL-Z114C		LKRL-Z116C		LKRL-Z117		LKRL-Z119		LKRL-Z122		
Zoom Ratio		1.5x		1.5x		1.4x		1.6x		1.8x		
Throw ratio*		1.35:1 to 1.98:1		1.50:1 to 2.29:1		1.72:1 to 2.39:1		1.81:1 to 2.94:1		2.23:1 to 4.03:1		
F-number		2.8		2.8		2.8		2.8		2.8		
Screen width \ Throwing Distance	Wide		Tele		Wide		Tele		Wide		Tele	
	4,500 mm	5,988 mm	8,865 mm	6,690 mm	10,289 mm	7,730 mm	10,862 mm	8,127 mm	13,365 mm	9,997 mm	18,150 mm	
	5,000 mm	6,668 mm	9,864 mm	7,449 mm	11,448 mm	8,559 mm	12,041 mm	8,999 mm	14,823 mm	11,074 mm	20,137 mm	
	6,000 mm	8,029 mm	11,863 mm	8,968 mm	13,765 mm	10,215 mm	14,400 mm	10,743 mm	17,738 mm	13,228 mm	24,109 mm	
	7,000 mm	9,389 mm	13,862 mm	10,486 mm	16,082 mm	11,872 mm	16,759 mm	12,487 mm	20,654 mm	15,383 mm	28,081 mm	
	8,000 mm	10,749 mm	15,861 mm	12,004 mm	18,399 mm	13,529 mm	19,118 mm	14,232 mm	23,570 mm	17,537 mm	32,054 mm	
	9,000 mm	12,109 mm	17,859 mm	13,522 mm	20,716 mm	15,186 mm	21,477 mm	15,976 mm	26,486 mm	19,691 mm	36,026 mm	
	10,000 mm	13,470 mm	19,858 mm	15,040 mm	23,033 mm	16,843 mm	23,836 mm	17,720 mm	29,402 mm	21,846 mm	39,998 mm	
	12,000 mm	16,190 mm	23,856 mm	18,077 mm	27,667 mm	20,157 mm	28,553 mm	21,208 mm	35,233 mm	26,154 mm	47,943 mm	
	14,000 mm	18,910 mm	27,853 mm	21,113 mm	32,301 mm	23,471 mm	33,271 mm	24,697 mm	41,065 mm	30,463 mm	55,888 mm	
16,000 mm	21,631 mm	31,851 mm	24,149 mm	36,935 mm	26,784 mm	37,989 mm	28,185 mm	46,896 mm	34,772 mm	63,833 mm		

* Distance between the center of the projector lens and the screen, divided by the screen width.



Rear Panel

SONY

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