SXRD 4K Ultra High Resolution Projectors
SRX-R110CE
SRX-R105CE
www.sonybiz.net/4k
Breathtaking 4K quality, high-resolution visuals with stunning 1800:1 contrast ratio for Digital Cinema and large-venue applications.
Sony is proud to introduce the SRX-R110CE and SRX-R105CE SXRD 4K Ultra High Resolution Projectors. These state-of-the-art projectors are equipped with three Silicon X-tal Reflective Display (SXRD™) imaging devices, delivering amazing resolution – more than four times the resolution of full HDTV – and meeting the 4K quality resolution level stipulated by Digital Cinema Initiative (DCI).

The SRX-R110CE and the SRX-R105CE offer a high contrast ratio of more than 1800:1. In addition, the SRX-R110CE provides high brightness of 10,000 ANSI lumens*, and the SRX-R105CE brightness of 5,000 ANSI lumens*.

The use of twin Xenon lamps combined with a gamma curve of 2.6 – (also recommended by DCI as the standard for Digital Cinema) – means the SRX-R110CE and the SRX-R105CE offer pure, high-quality colour tonal reproduction reminiscent of film.

Even in a multi-screen mode, high-resolution visuals are available from each quadrant. The SRX-R110CE and the SRX-R105CE Projectors are the ideal choice for Digital Cinema and large-venue applications such as auditoriums and concert halls.

* ANSI lumens is a measuring method of the American National Standards Institute IT 7.228. Since there is no uniform method of measuring brightness, specifications will vary among manufacturers.
In 1999, Sony introduced a totally new concept of digital cinema production for moviemakers to demonstrate a new higher level of picture quality, efficiency and flexibility in production processes. Sony’s new approach was to produce movies in a high-definition progressive video format at 24 frames per second using digital video tape media. This concept and Sony’s product line enabling this concept were named “CineAlta”, and have been highly embraced by an ever-broadening spectrum of producers, directors and cinematographers all over the world. An increasing number of movies have been produced using CineAlta equipment, and from this point forward, more and more motion pictures will continue to be produced digitally using these systems.

Since this revolutionary introduction, Sony has continually provided a comprehensive range of CineAlta products including digital video cameras, digital VTRs, monitors and digital editing systems – each offering breathtaking picture quality and stunning performance. Sony’s development for the motion picture industry does not remain in the content creation domain, but continues with another important revolution by engineering an incredibly high, 4K resolution digital projection system under the CineAlta logo.

Now Sony’s CineAlta line-up consists of products from acquisition through to theatrical projection. Sony’s SXRD 4K digital projector is the latest, but most important piece of the “Digital Cinema” picture.

Innovative Solutions for Digital Cinema

Silicon X-tal Reflective Display (SXRD) imaging device

The SXRD device used by the SRX-R110CE and SRX-R105CE is a 1.55-inch* Liquid Crystal on Silicon-based imager developed using leading-edge manufacturing technology. High-quality, accurate visuals are created using this brilliant imaging device.

*Measured diagonally.

High resolution 4K

Sony original SXRD display devices deliver the exceptionally high resolution of 4K (4096 H x 2160 V pixels at 1.85:1 aspect ratio). 4K is stipulated by DCI as a resolution corresponding to the master images of 65mm film for Digital Cinema. The resolution of 4K is more than four times as many pixels as full HDTV (1920 x 1080, 16:9 wide screen format). 4K resolution is ideal for visual applications in which quality is critical. The SXRD device helps to achieve this high picture quality by incorporating nearly 8.85 million pixels per imager at a narrow pitch of 8.5 microns. These high-density pixels enable an outstandingly high resolution that are quarter of the size of pixels projected using typical 2K resolution projection systems. Even in multi-screen mode, full 2K resolution per quadrant is possible.

High 1800:1 contrast ratio

The SRX-R110CE and the SRX-R105CE offer a high contrast ratio of more than 1800:1* through the use of Sony’s unique new SXRD device. The SXRD imaging device itself achieves a contrast ratio of 4000:1.

This stunning picture quality makes the SRX-R110CE and SRX-R105CE 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 under the condition that projection is on the screen with a screen gain of 1.0.
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 LCD device.

All Liquid Crystal Display (LCD) devices control the amount of light to be projected by applying an electric field to the liquid crystal layer. 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 black images, light can tend to leak from the LCD device, since the molecules near the surface are less accurately controlled, resulting in a creamy black colour.

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

Thin liquid crystal cell gap

Another important factor enabling the high contrast of the SXRD device is its ultra-thin cell gap of less than 2 microns. 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 planarisation 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” – 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 spacerless SXRD device, these artifacts are no longer seen.

Short response time

The thin cell gap structure in SXRD devices also contributes to an ultra-short response time of 5 milliseconds. The SXRD device reacts promptly to the instantaneous change of colours, enabling the projector to display a smooth motion. Consequently, the SRX-R110CE and SRX-R105CE are free from motion blur – a particularly significant benefit for visuals that include fast-moving objects.

Reliable imaging device

The SRX-R110CE and the SRX-R105CE use high-power bright lamps. As a result, special attention has been paid to the reliability of the SXRD device. The inorganic materials utilised 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 projector lamp.
Highly pure, superb colour tonal reproduction

Highly bright and pure light source of Xenon lamp

The SRX-R110CE provides a high brightness of 10,000 ANSI lumens*, and the SRX-R105CE provides a brightness of 5,000 ANSI lumens using Xenon lamps.

Xenon lamps are already used in conventional film projectors and are utilised by the SRX-R110CE and SRX-R105CE to provide superb colour tonal reproduction to the standards required for Digital Cinema.

The SRX-R110CE utilises two 2kW Xenon lamps, while the SRX-R105CE uses two 1kW Xenon lamps.

The Xenon lamp used in the projectors satisfies the wide colour range needed for Digital Cinema Distribution Master (DCDM) formats stipulated by DCI.

* Measured under conditions with the lamp power at 100% in dual-lamp mode.

12-bit Panel LCD driver

The SRX-R110CE and the SRX-R105CE utilise a 12-bit imager driver for reproducing extremely natural images.

Gamma curve selection

The SRX-R110CE and the SRX-R105CE provide three preset gamma curve values. You can select an optimum value from 1.8, 2.2, and 2.6 according to the desired colour tone. The value 2.6 is available for Digital Cinema applications.
Dual-lamp system with selectable lamp modes

The SRX-R110CE and SRX-R105CE adopt a dual-lamp system that uses two lamps for reliable, flexible and efficient use of light sources. With the dual-lamp system, users can select either single- or dual-lamp modes according to their desired brightness and applications.

The dual-lamp mode provides maximum lamp power and at the same time enables virtually fail-safe operation; if one bulb burns out the other can keep projecting images.

In the single-lamp mode, users can select either of two lamps manually, or the projectors can automatically select a lamp based on each lamp’s operating time. Another automatic mode is provided to make the lamps operate alternately at user-defined intervals selectable from four hours to twelve hours (in increments of one hour). This feature is useful for applications where “24/7” operation is required.

The lamp power can be set between 100% and 51%, in eight steps. This function, combined with the selectable lamp modes, contributes to achieving longer lamp life.

Multiple screen capability

Both the SRX-R110CE and SRX-R105CE provide single-mode, dual-mode and quad-mode display. In quad mode, four quadrants of full HD images (1920 x 1080 pixels) can be projected simultaneously. In single mode, a smooth, ultra high resolution 4096 x 2160-pixel image is projected.

Variety of lenses

A range of optional zoom lens are available. They are all newly designed to project images of extreme resolution and contrast with minimal chromatic aberration from 174 inches (4,428 mm) to 610 inches (15,497 mm) in screen width.
The supplied remote controller unit is provided to perform various simple controls of the projectors such as turning on/off lamp power, adjusting zoom/focus and lens shift control.

Four option slots are available to increase the flexibility of the SRX-R110CE and the SRX-R105CE by using three types of option boards that connect to different types of signal formats. Four input boards can be accommodated simultaneously in the side panel of the projector. You can select the screen mode from single, dual, and quad mode, and assign the appropriate signal board to each quadrant.

- The LKRI-001 Analogue Input Board utilises 5 BNC connectors that can accept 0.7 volt analogue signal levels. This board is supplied as standard with the SRX-R110CE and SRX-R105CE.

- The LKRI-002 HD-SDI (4:2:2) Input Board can accept SMPTE 259M SD digital 525 or 625 line video. It can auto-switch to either SMPTE 292M 1080 4:2:2 YUV serial picture data or SMPTE 372M 4:2:2 RGB serial picture data.

- The LKRI-003 Dual-link HD-SDI Input Board can accept 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), or DC-SDI (YPbPr 4:2:2). With four LKRI-003 boards, the SRX-R110CE or SRX-R105CE can project 4096 x 2160 4K images.

Input signal flexibility
Operational versatility

Easy set-up on a PC using supplied software

The SRX-R110CE and SRX-R105CE come equipped with set-up software that allows easy set-up and adjustments via its intuitive GUIs on a PC*. These projectors can be controlled through an Ethernet or RS-232C interface and multiple numbers of projectors can be controlled from a single PC**.

A comprehensive range of set-up parameters including input configurations, colourimetry controls, installation adjustments and maintenance settings can be controlled via this software.

* System requirements for the set-up software
  OS: Microsoft® Windows® XP Professional SP2.
** When using an Ethernet connection.

Easy maintenance

Special consideration for maintenance issue is taken into the development of these projectors in order to effectively perform periodic maintenance. Lamp bulbs and lamp house units used in the projectors can be easily replaced on site without any special tools, thus shortening the downtime required for the replacement. What’s more, a cumbersome adjustment after the replacement is not required.

The supplied set-up software is another convenient tool for maintenance. This allows operators to easily verify the lamp’s operating time. Automatic email alerts from the projector provide operators with maintenance reminders as well as error occurrences.
Dimensions

Optional Accessories

LKRX-105 1kW Xenon lamp bulb for replacement (for SRX-R105CE)

LKRX-B105 1kW Xenon lamp house unit for replacement (for SRX-R105CE)

LKRX-110 2kW Xenon lamp bulb for replacement (for SRX-R110CE)

LKRX-B110 2kW Xenon lamp house unit for replacement (for SRX-R110CE)

LKRA-001 8-inch Exhaust Duct Adaptor
## Specifications

### SXRD Device Main Specifications

- **Display device**: SXRD (Silicon X-tal Reflective Display)
- **Size**: 3.55” across diagonal
- **Resolution**: 4096(H) x 2160(V) pixels
- **Reflectivity**: 72%
- **Contrast (as device)**: More than 4000 : 1
- **Pixel pitch**: 8.5µm
- **Width (between pixels)**: 0.35µm
- **Response speed**: 5ms (6×(B + F))
- **Liquid crystal mode**: Vertical Aligned Mode
- **Alignment layer**: Inorganic Thin Film
- **Backplane process**: Inorganic Thin Film
- **Liquid crystal cell gap**: Less than 2µm

### Optical

- **Projection system**: 3-SXRD panel, prism colour integrated system
- **Imaging device**: Lamp: 2kW Xenon lamp x 2 (SRX-R110CE)
- **Lamp**: Xenon: 2kW Xenon lamp x 2 (SRX-R110CE)
- **Screen coverage**: 14 feet to 31 feet (Approx. 4.5 m to 9.5 m)
- **Light output**: 10,000 ANSI lumens ±10% (SRX-R110CE) / 5,000 ANSI lumens ±10% (SRX-R105CE)

### General

- **White reference**: Xenon white reference
- **Contrast**: More than 1800:1
- **Resolution**: 4096 x 2160 pixels (RGB)
- **Contrast**: More than 4000:1

### Power

- **Input**: AC 100 to 240 V, 50/60 Hz, max. power 3 kW (standby 40W)
- **Output**: 5,000 ANSI lumens ±10% (SRX-R105CE) / 10,000 ANSI lumens ±10% (SRX-R110CE)

### Lamp Specifications

- **Board x1**: Xenon white reference
- **Board x1**: Xenon white reference
- **Board x1**: Xenon white reference
- **Board x1**: Xenon white reference

### Optical Interface

- **Remote interface**: Ethernet terminal, 10Base-T/100Base-TX x 1
- **D-sub 9-pin**: RS-232C (female) x 1

### Input/Output

- **Input/Output**: Open for optional signal interface board
- **Input A**: Open for optional signal interface board
- **Input B**: Open for optional signal interface board
- **Input C**: Open for optional signal interface board
- **Input D**: Open for optional signal interface board
- **Remote interface**: D-Sub 9-pin, RS-232C (female) x 1

### Input Boards

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<th>Name</th>
<th>Description</th>
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<tr>
<td>LNR-001</td>
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<tr>
<td>LNR-002</td>
<td>HD-SDI (4:2:2) input board</td>
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<td>LNR-003</td>
<td>Dual-link HD-SDI input board</td>
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### Preset Data of Input Signals

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### Others

- **Safety regulations**: UL60950 listed, CUL60950, FCC Class A, IC Class A, VCCI Class A, EN60609, CE Class A, C-tick, GB4943, GB22524, K60950
- **Certifications**: CISPR22, CISPR24, A, EN60950, CE Class A, C-tick, GB4943, GB22524, K60950
- **Input Interface**: Dual-link HD-SDI (Dual-link HD-SDI/4:4:4, SMPTE-72M-2RGB, Dual-link DC-SDI (Dual-link DC-SDI/4:4:4, dvi, RGB)
- **Input Interface**: Remote controller x 1 / CNDOM x 1 (remote control application for Windows® XP Professional Edition / Dry cell (AA size) x 2 / Ethernet Cross Cable (3 m) x 1 / LNR-001-001 Analogue Input Board x 1

### Optional Accessories

- **Optional accessories**: Remote controller x 1 / Installation manual x 1
- **Optional accessories**: LNR-210: 1.9 to 2.3x zoom lens
- **Optional accessories**: LNR-215: 2.3 to 4.0x zoom lens
- **Optional accessories**: LNR-216: 4.0 to 7.0x zoom lens
- **Optional accessories**: LNR-091: Analog input board
- **Optional accessories**: LNR-020: HD-SDI (4:2:2) input board
- **Optional accessories**: LNR-033: Dual-link HD-SDI input board

### Input Boards

- **Board x1**: Analog input board
- **Board x1**: Digital input board
- **Board x1**: Dual-link HD-SDI input board
- **Board x1**: SXRD (Silicon X-tal Reflective Display)
- **Board x1**: SXRD (Silicon X-tal Reflective Display)

### Note

* When a signal other than the preset signals shown above is fed into this projector, the images may not be projected properly.

* SXRD (1400 x 1050) computer signal is not supported by this projector. If this signal is fed into the projector, one of the four directions of an image may be irregularly missing.