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The following projector manual has not been modified or altered in any way.

SONY®

SRX-series 4K Projector System Installation Guide

for Visualization, Simulation,
Auditorium and Post Production Applications



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1 Preface

In 2004, Sony introduced SXRD™ ultra-high resolution projectors for large-venue and digital cinema applications. A new industry standard was set with an extraordinary resolution of 4K (4,096 x 2,160 pixels) and outstanding picture quality was achieved by the newly developed “SXRD (Silicon X-tal Reflective Display)” device.

Since the release of the first models, the SRX-R110 and SRX-R105, Sony has been continuously developing more products in this series. These include the new SRX-S110 and SRX-S105 models, a wide range of projection lenses, input boards, and many other convenient options. The wide choice of products in this lineup allows users to flexibly configure a system that can fulfill diverse application requirements.

To help simplify system installation, this guide provides useful information on selecting the right projector, lens, and input board models, as well as installation guidelines and much more.

We hope it will serve as a useful reference in the system installation of Sony SRX-series projectors.



2 Overview of the SRX-series Projectors

2-1. Configurations

The Sony SRX-series projector lineup consists of four models - SRX-S110, SRX-S105, SRX-R110, and SRX-R105 - for visualization, simulation, auditorium and post production.

The SRX-S110 and SRX-S105 models - with one DVI input module pre-installed - exclusively have a 1080/60P display capability, making them ideally suited to high-end computer graphic-based projection applications. The SRX-R110 and SRX-R105 models scan as high as 1080/48P - with no input modules pre-installed - and are more suited to video-based projection applications.

The main difference between the SRX-110 and SRX-105 models is their brightness - with the SRX-110 models offering 10,000 ANSI lumens* compared to the 5,000 ANSI lumens of the SRX-105 models.

All SRX-series projectors offer four types of input modules, which allow users to choose the most appropriate inputs, and a wide variety of lenses are also available to meet the requirements of many types of installation environments.

Listed below is the key specification information for the four SRX-series models, plus the different input boards, lenses and the other options available for these models.

* ANSI Lumens is a measuring method of the American National Standards Institute IT7.228. Since there are multiple methods of measuring brightness, the way that brightness is specified will vary among manufacturers.

Projector - Refer to section 4 for selection.

	Brightness	Standard input module	Available slots for input modules	4K formats available	Other
SRX-S110	10,000 ANSI lumen	DVI signal input module x1	3	DVI	60P input capability
SRX-S105	5,000 ANSI lumen				
SRX-R110	10,000 ANSI lumen	No	4	HD-SDI, DVI	Interlaced video capability*
SRX-R105	5,000 ANSI lumen				

* except DVI input

Input Board - Refer to section 5 for selection.

LKRI-001	RGB/component analog input board
LKRI-002	SD-SDI/HD-SDI (4:2:2) input board
LKRI-003	Dual-link HD-SDI input board
LKRI-004	DVI interface board

Lens - Refer to section 3 for selection.

LKRL-Z115	1.48 to 1.81x zoom lens
LKRL-Z117	1.72 to 2.39x zoom lens
LKRL-Z119	1.81 to 2.94x zoom lens
LKRL-Z122	2.33 to 3.96x zoom lens
LKRL-Z140	3.81 to 7.12x zoom lens
LKRL-90	0.9x fixed focal length projection lens

*In the above list, the numbers in the descriptions denote the ratio of the projection distance to the screen width.

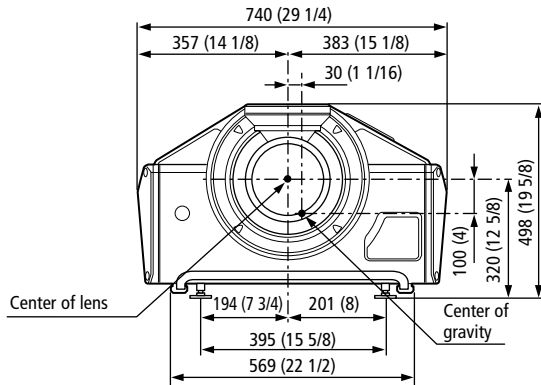
Other Options

LKRX-105	1 kW Xenon lamp bulb for replacement (for SRX-S105/R105)
LKRX-B105	1 kW Xenon lamp house unit for replacement (for SRX-S105/R105)*
LKRX-110	2 kW Xenon lamp bulb for replacement (for SRX-S110/R110)
LKRX-B110	2 kW Xenon lamp house unit for replacement (for SRX-S110/R110)*
LKRA-001	8-inch exhaust duct adaptor

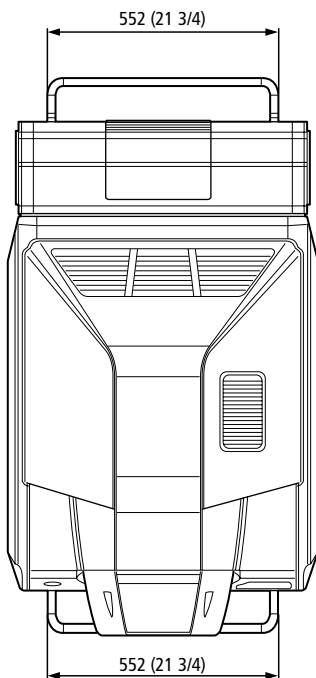
*Lamp house units include Xenon lamp bulb.

2-2. Dimensions

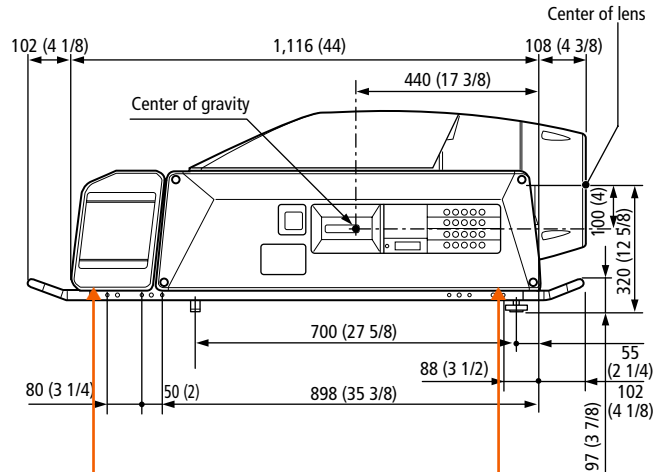
Front



Top



Side



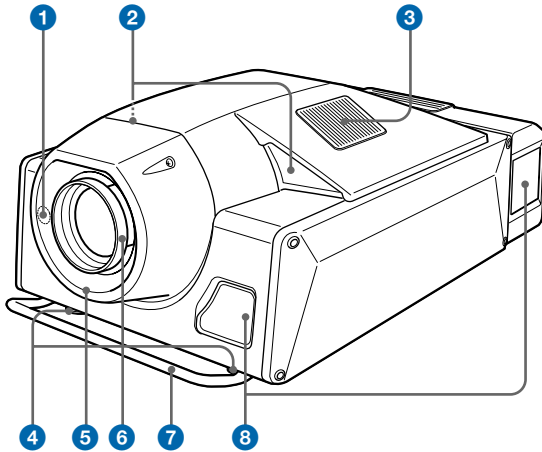
Screw holes to attach the projector to a pedestal (left side x 3, right side x 3).

Screw holes to attach the projector to a pedestal (left side x 3, right side x 3).

Unit: mm (inches)

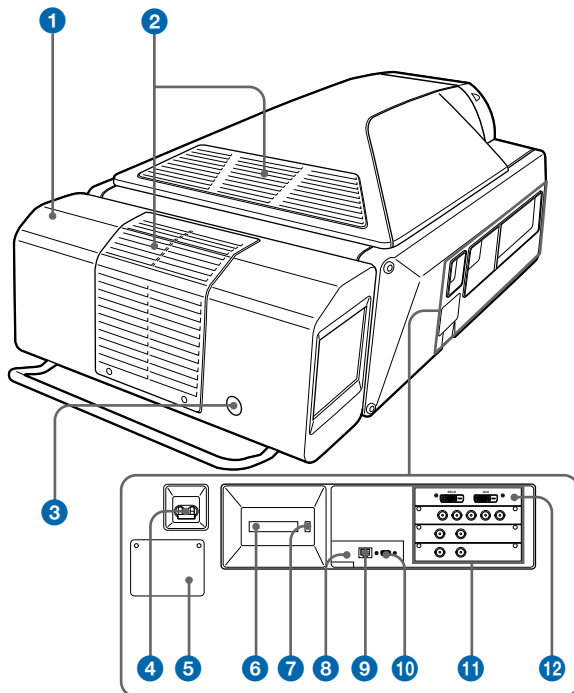
2-3. Controls, indicators, and connectors

Front/Top



- ❶ Remote Commander detector (front)
- ❷ Upper side ventilation holes (intake)
- ❸ Upper side ventilation holes (exhaust)
- ❹ Adjusters: Used to keep the projector level if it is installed on an uneven surface.
- ❺ Lens cover
- ❻ Lens mount adaptor
- ❼ Carrying handle (there is another handle on the rear side.)
- ❽ Front/right side ventilation holes (intake)

Left side/Rear

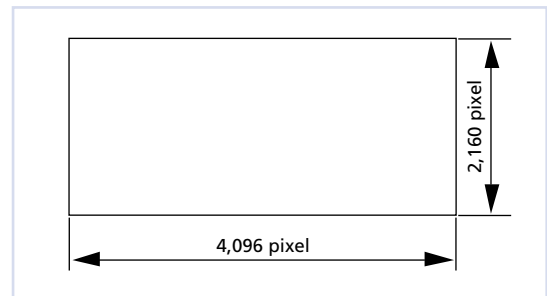


- ❶ Cooling unit: A cooling fan and the two lamp houses are installed here.
- ❷ Upper/rear side ventilation holes (exhaust)
- ❸ Remote controller detector (rear)
- ❹ Power switch: Upper is ON, and lower is OFF.
- ❺ AC IN terminal board: Connect the AC power cord with three wires (not supplied).
- ❻ STATUS MESSAGE window: Displays error messages.
- ❼ STATUS LAMP indicator:
 - Red: standby mode
 - Green: Power on
 - This flashes for about 10 minutes after the power is turned off using the Remote Commander™ unit or the SRX Controller software.
- ❽ INTER LOCK jack (minijack): Used to connect to an external emergency switch.
- ❹ Ethernet connector (10Base-T/100Base-TX)
- ❺ RS-232C connector (D-sub 9-pin, female)
- ❻ Input board attachment parts: Optional boards can be installed here. The SRX-S110/S105 is equipped with DVI-D connector and AUX connector, and three available slots here. The SRX-R110/R105 has four available slots here.
- ❼ INPUT A (DVI interface board pre-installed at the factory)(SRX-S110/S105 only)
 - DVI-D connector (24-pin DVI connector, male): For progressive DVI signal input.
 - AUX connector (24-pin DVI connector, male): Used for input extension.

2-4. Available display modes

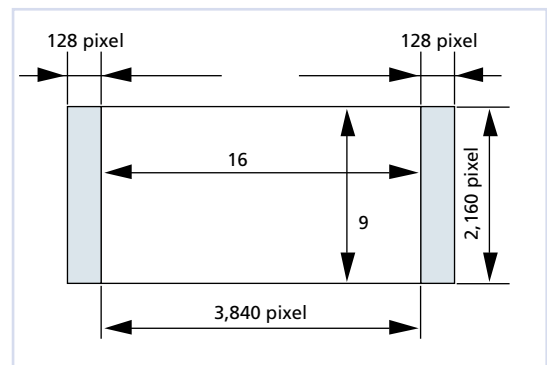
The SRX-series projectors can display images in the following modes. The displayed image on the screen varies by input signals as illustrated below.

- When projecting a 4,096-pixel (4K x 2K) image with the maximum horizontal picture elements



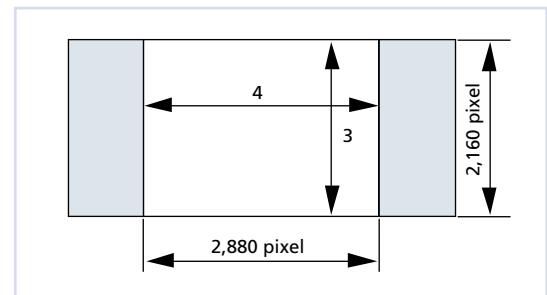
- When projecting a 3,840-pixel (aspect ratio 16:9) image with the maximum horizontal picture elements

-Black bands are displayed on the right and left sides.



- When projecting a 2,880-pixel (aspect ratio 4:3) image with the maximum horizontal picture elements

-Black bands are displayed on the right and left sides.



As each image format is scanned within the projector, certain pixels are used to fill the screen. This means careful consideration needs to be used in order to select the proper lens. The mapping of each image format to the SXRD imager is shown below.

Note that this differs depending on the number of images to be displayed on the screen.

Signal	Single-mode		Dual-mode		Quad-mode	
	H display dots	V display dots	H display dots	V display dots	H display dots	V display dots
VIDEO60	2,880	2,156	2,003	1,499	1,440	1,078
VIDEO50	2,880	2,146	2,003	1,504	1,440	1,073
XGA	2,849	2,137	2,048	1,536	1,432	1,074
SXGA	2,560	2,048	2,048	1,638	1,280	1,024
UXGA	2,864	2,148	1,600	1,200	–	–
720P	3,810	2,143	2,048	1,152	1,280	720
HD	3,840	2,160	1,920	1,080	1,920	1,080
4K	4,096	2,160	–	–	–	–

3 Selection of Lens

It is important to select a lens that is appropriate to the screen width that will be used, the size of the room where the projector will be installed, and the aspect ratio of the displayed image. The matrix charts below provide a guideline on which lens is most appropriate. First, pick the chart that matches the aspect ratio, and then select the lens model that is the closest match to the screen width and throw distance.

For example, if you are displaying in full-screen mode, and have a screen size of 8,000 mm and a throw distance of 19,000 mm, the most appropriate lens will be LKRL-Z117. If your specifications identify two lens models, then make your choice based on how the projector will be utilized.

Please note: the matrix charts below are not comprehensive. For more information on each lens, please refer to Appendix 2.

Zoom lenses

L (min): Minimum distance between the center of lens and screen

L (max): Maximum distance between the center of lens and screen

Fixed focal length lens

L: Distance between the center of lens and screen

For full-screen display (a 4096-pixel (4k x 2k) image)

Zoom lenses (mm)

Screen Width		4,500	6,000	8,000	10,000	12,000	16,000
LKRL-Z115	L (min)	6,554	8,778	11,743	14,709	17,674	23,605
	L (max)	8,056	10,780	14,412	18,044	21,676	28,940
LKRL-Z117*	L (min)	7,900	10,440	13,830	17,220	20,610	27,390
	L (max)	10,630	14,090	18,710	23,330	27,960	37,200
LKRL-Z119*	L (min)	8,128	10,744	14,233	17,721	21,210	28,187
	L (max)	13,366	17,740	23,572	29,404	35,236	46,900
LKRL-Z122*	L (min)	10,220	13,530	17,940	22,350	26,750	35,570
	L (max)	17,770	23,610	31,400	39,180	46,960	62,530
LKRL-Z140	L (min)	16,937	22,502	29,922	37,342	-	-
	L (max)	31,943	42,512	56,604	70,695	-	-

Fixed focal length lens (mm)

Screen Width		1,800	2,250	3,350	4,500	5,600	6,800
LKRL-90	L	1,550	1,960	2,970	4,020	5,030	6,130

Zoom lenses (inches)

Screen Width		177 1/5	236 2/9	315	393 5/7	472 4/9	630
LKRL-Z115	L (min)	258	345 3/5	462 1/3	579	695 5/6	929 1/3
	L (max)	317 1/6	424 2/5	567 2/5	710 2/5	853 2/5	1,139 3/8
LKRL-Z117*	L (min)	310 7/8	411	544 3/8	677 7/8	811 3/8	1,078 3/8
	L (max)	418 5/8	555	737	918 7/8	1,100 3/4	1,464 5/8
LKRL-Z119*	L (min)	320	423	560 1/3	697 2/3	835	1,109 3/4
	L (max)	526 1/5	698 2/5	928	1,157 5/8	1,387 1/4	1,846 1/2
LKRL-Z122*	L (min)	402 1/4	532 3/8	706	879 1/2	1,053 1/8	1,400 1/4
	L (max)	700	929 7/8	1,236 1/4	1,542 3/4	1,849 1/8	2,462
LKRL-Z140	L (min)	666 4/5	885 8/9	1,178	1,470 1/7	-	-
	L (max)	1,257 3/5	1,673 2/3	2,228 1/2	2,783 2/7	-	-

* Equipped with Zoom and Focus Memory functions

Fixed focal length lens (inches)

Screen Width		70 7/8	88 5/8	131 7/8	177 1/5	220 1/2	267 3/4
LKRL-90	L	61	77 1/8	116 7/8	158 1/4	198	241 3/8

Note that the minimum screen width recommended for these models is 4,490 mm with the exception of the LKRL-90 lens which can focus at as little as 1,796 mm.

For 16:9 aspect display

Zoom lenses (mm)

Screen Width		4,500	6,000	8,000	10,000	12,000	16,000
LKRL-Z115	L (min)	7,001	9,373	12,537	15,700	18,863	25,190
	L (max)	8,600	11,505	15,379	19,253	23,127	30,874
LKRL-Z117*	L (min)	8,430	11,140	14,760	18,370	21,990	29,220
	L (max)	11,340	15,030	19,960	24,890	29,820	39,680
LKRL-Z119*	L (min)	8,655	11,450	15,176	18,902	22,629	30,081
	L (max)	14,231	18,894	25,112	31,330	37,548	49,983
LKRL-Z122*	L (min)	10,880	14,410	19,110	23,810	28,520	37,920
	L (max)	18,940	25,170	33,470	41,770	50,080	66,680
LKRL-Z140	L (min)	18,062	24,002	31,921	39,841	-	-
	L (max)	34,047	45,317	60,343	75,370	-	-

Fixed focal length lens (mm)

Screen Width		1,700	2,250	3,350	4,500	5,600	6,800
LKRL-90	L	1,560	2,100	3,170	4,290	5,370	6,540

Zoom lenses (inches)

Screen Width		177 1/5	236 2/9	315	393 5/7	472 4/9	630
LKRL-Z115	L (min)	275 5/8	369	493 4/7	618 1/9	742 2/3	991 3/4
	L (max)	338 4/7	453	605 1/2	758	910 1/2	1,215 1/2
LKRL-Z117*	L (min)	330 7/8	437 5/8	580	722 3/8	864 3/4	1,149 1/2
	L (max)	445 7/8	591 1/2	785 1/2	979 1/2	1,173 5/8	1,561 5/8
LKRL-Z119*	L (min)	340 3/4	450 7/9	597 1/2	744 1/5	890 8/9	1,184 2/7
	L (max)	560 1/4	743 7/8	988 2/3	1,233 1/2	1,478 1/4	1,967 6/7
LKRL-Z122*	L (min)	428 1/4	567 1/8	752 1/4	937 3/8	1,122 1/2	1,492 3/4
	L (max)	746	991 1/8	1,318	1,644 7/8	1,971 3/4	2,625 1/2
LKRL-Z140	L (min)	711	945	1,256 3/4	1,568 1/2	-	-
	L (max)	1,340 3/7	1,784 1/8	2,375 3/4	2,967 1/3	-	-

* Equipped with Zoom and Focus Memory functions

Fixed focal length lens (inches)

Screen Width		66 7/8	88 5/8	131 7/8	177 1/5	220 1/2	267 3/4
LKRL-90	L	61 3/8	82 5/8	124 3/4	168 7/8	211 3/8	257 1/2

For 4:3 aspect display

Zoom lenses (mm)

Screen Width		3,500	4,500	6,000	8,000	10,000	12,000
LKRL-Z115	L (min)	7,271	9,381	12,547	16,767	20,988	25,208
	L (max)	8,922	11,504	15,377	20,541	25,705	30,869
LKRL-Z117*	L (min)	8,870	11,290	14,920	19,770	24,620	29,460
	L (max)	11,830	15,120	20,050	26,620	33,190	39,760
LKRL-Z119*	L (min)	8,989	11,483	15,224	20,213	25,201	30,189
	L (max)	14,725	18,864	25,072	33,349	41,627	49,904
LKRL-Z122*	L (min)	11,330	14,480	19,210	25,510	31,810	38,110
	L (max)	19,630	25,170	33,470	44,540	55,610	66,680
LKRL-Z140	L (min)	18,759	24,050	31,986	42,568	-	-
	L (max)	35,266	45,274	60,287	80,303	-	-

Fixed focal length lens (mm)

Screen Width		1,700	2,250	3,350	4,500	5,600	6,800
LKRL-90	L	2,110	2,830	4,260	5,760	7,190	8,760

Zoom lenses (inches)

Screen Width		137 4/5	177 1/5	236 2/9	315	393 5/7	472 4/9
LKRL-Z115	L (min)	286 1/4	369 1/3	494	660 1/8	743 1/5	992 4/9
	L (max)	351 1/4	453	605 2/5	808 5/7	910 1/3	1,215 1/3
LKRL-Z117*	L (min)	344 1/2	439 7/8	582 7/8	773 3/4	869 1/8	1,155 1/4
	L (max)	462 1/8	591 1/2	785 1/2	1,044 1/4	1,173 5/8	1,561 5/8
LKRL-Z119*	L (min)	353 8/9	452	599 2/5	795 7/9	992 1/6	1,188 5/9
	L (max)	579 3/4	742 2/3	987	1,313	1,638 5/6	1,964 5/7
LKRL-Z122*	L (min)	445 7/8	570	756	1,004 1/8	1,252 1/4	1,500 1/4
	L (max)	773 1/4	991 1/8	1,318	1,753 3/4	2,189 5/8	2,625 1/2
LKRL-Z140	L (min)	738 1/2	946 5/6	1,259 1/3	1,676	-	-
	L (max)	1,388 2/5	1,782 4/9	2,373 1/2	3,161 5/9	-	-

* Equipped with Zoom and Focus Memory functions

Fixed focal length lens (inches)

Screen Width		66 7/8	88 5/8	131 7/8	177 1/5	220 1/2	267 3/4
LKRL-90	L	83	111 3/8	167 3/4	226 3/4	283	344 7/8

4 Selection of Projector Model

This section offers a simple two-step guide to selecting the most appropriate projector model.

Step-1

First, calculate the required luminance of the projector using two parameters: the screen width and the screen gain that will be used.

Note that the values in the chart below were calculated in consideration of the fact that the luminance of projection lamp bulbs tends to deteriorate over time. Therefore, an extra margin of lamp power should be factored in choosing a projector to ensure the lamp provides the required luminance right through until its recommended time of replacement.

This calculation is based on an assumed brightness level of 14 ft-L. The aspect ratio of the screen is illustrated below.



Required Luminance (lumen)

Screen Width (m)		4.5	5	6	7	8	9	10	11	12	13	14
Screen Area (m²)		10.1	12.5	18	24.5	32	40.5	50	60.5	72	84.5	98
Screen Gain	G = 0.9	1,694	2,092	3,012	4,100	5,355	6,777	8,367	10,124	12,049	14,140	16,399
	G = 1.0	1,525	1,883	2,711	3,690	4,819	6,100	7,530	9,112	10,844	12,726	14,759
	G = 1.1	1,386	1,711	2,464	3,354	4,381	5,545	6,846	8,283	9,858	11,569	13,418
	G = 1.2	1,271	1,569	2,259	3,075	4,016	5,083	6,275	7,593	9,036	10,605	12,300
	G = 1.3	1,173	1,448	2,085	2,838	3,707	4,692	5,793	7,009	8,341	9,789	11,353
	G = 1.4	1,089	1,345	1,936	2,636	3,442	4,357	5,379	6,508	7,746	9,090	10,542
	G = 1.5	1,017	1,255	1,807	2,460	3,213	4,066	5,020	6,074	7,229	8,484	9,840
	G = 1.6	953	1,177	1,694	2,306	3,012	3,812	4,706	5,695	6,777	7,954	9,225
	G = 1.7	897	1,107	1,595	2,171	2,835	3,588	4,430	5,360	6,379	7,486	8,682
	G = 1.8	847	1,046	1,506	2,050	2,677	3,389	4,184	5,062	6,024	7,070	8,200
	G = 1.9	803	991	1,427	1,942	2,537	3,210	3,963	4,796	5,707	6,698	7,768
	G = 2.0	762	941	1,355	1,845	2,410	3,050	3,765	4,556	5,422	6,363	7,380

Step-2

Next, select an appropriate model using the luminance calculated in the step 1.

Required luminance (lumen)	~1,500	~2,500	~3,500	~4,500	~5,500	~6,500	~7,500	~8,500
SRX-S105/R105	Best recommended	Recommended	Recommended	Recommended				
SRX-S110/R110			Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Double stack SRX-S110/R110								Possible*

Required luminance (lumen)	~9,500	~10,500	~11,500	~12,500	~13,500	~14,500	~15,500	~16,500
SRX-S105/R105								
SRX-S110/R110								
Double stack SRX-S110/R110	Possible*	Possible*	Possible*	Possible*	Possible*	Possible*	Possible*	Possible*

Best recommended

Recommended

Possible*

* It is possible to double-stack two SRX-series projectors, but positional adjustments must be made to ensure their respective images are superimposed precisely. Unless this adjustment is made properly, image resolutions may be slightly decreased.

For installation, a pedestal which is equipped with a six-axis adjustment mechanism, and has sufficient frame rigidity is necessary. (Sony does not offer any pedestal for this.)

Please note that the double-stack configuration may cause the image quality to be reduced.

5 Selection of Input Modules

The SRX-series projectors are equipped with several input board slots that users can fill with a mixture of the following input modules. On the SRX-S110 and SRX-S105 models, one DVI input board is pre-installed and three slots are available for the installation of input modules.

The SRX-R110 and SRX-R105 models have four available slots for the installation of input configurations. These have no pre-installed boards.

Users can select the input boards most appropriate to their system requirements by referring to the chart below. If more detailed information about the input boards is required, please refer to Appendix 1.

4K (4,096 H x 2,160 V pixels at 1.896:1 aspect ratio) images can be projected by combining four 2K images with 2,048 x 1,080 pixels from four interface boards.

For SRX-S110/S105, INPUT A and three LKRI-004 interface boards are required.

For SRX-R110/R105, four LKRI-003 or LKRI-004 interface boards are required.



SRX-R110/R105



SRX-S110/S105

Available signals and connectors on each board

	SRX-S110/SRX-S105	SRX-R110/SRX-R105
LKRI-001 Analog input board	BNC x 5, HD/SD analog video input, RGB or Y/Cb/Cr selectable	
	Computer signals	
	R	0.7 Vp-p ± 2 dB positive, 75 Ω
	G	0.7 Vp-p ± 2 dB positive, 75 Ω
	B	0.7 Vp-p ± 2 dB positive, 75 Ω
	Sync	
	HD Horizontal	TTL level, high impedance, sync positive/negative
	HD Vertical	TTL level, high impedance, sync positive/negative
	Standard definition video [Y/Cb/Cr]	
	Y	1.0 Vp-p ± 2 dB sync negative, 75 Ω
	Cb	0.7 Vp-p ± 2 dB positive, 75 Ω
	Cr	0.7 Vp-p ± 2 dB positive, 75 Ω
	High definition video [RGB]	
	R	0.7 Vp-p ± 2 dB positive, 75 Ω
LKRI-002 HD-SDI (4:2:2) input board	BNC x 2 (Input x 1, Loop-through out x 1)	
	HD-SDI (SMPTE-292M / ITU-R.BT709 / BTA-S004)	
	HD-SDI (SMPTE-259M / ITU-R.BT601)	
	BNC x 4 (Input x 2, Loop-through out x 2)	
	HD-SDI (Single-link, HD-SDI/4:2:2, SMPTE-292M): Y/Pb/Pr	
LKRI-003 Dual-link HD-SDI input board	DC-SDI (Single-link, DC-SDI/4:2:2): Y/Pb/Pr	
	Dual-link HD-SDI (Dual-link HD-SDI/4:4:4, SMPTE-372M): RGB	
	Dual-link DC-SDI (Dual-link DC-SDI/4:4:4): RGB	
LKRI-004 DVI interface board	DVI-D (Input DVI) connector (24-pin DVI connector)	
	AUX (Input extension) connector (24-pin DVI connector)	
	1,024 x 768 at 60 Hz (XGA), 1,280 x 960 at 60 Hz (SXGA), 1,280 x 1,024 at 60 Hz (SXGA), 1,400 x 1,050 at 60 Hz (SXGA+), 1,600 x 1,200 at 60 Hz (UXGA), 2,048 x 1,080 at 60 Hz, 1,920 x 1,080 at 24 Hz, 2,048 x 1,080 at 24 Hz, 1,920 x 1,200 at 59.95 Hz Reduced Blanking (WUXGA), 1,920 x 1,080 at 60 Hz, 2,048 x 1,080 at 48 Hz	1,024 x 768 at 60 Hz (XGA), 1,280 x 960 at 60Hz (SXGA), 1,280 x 1,024 at 60 Hz (SXGA), 1,400 x 1,050 at 60 Hz (SXGA+), 1,600 x 1,200 at 60 Hz (UXGA), 1,920 x 1,080 at 24 Hz, 2,048 x 1,080 at 24 Hz

6 Installation Requirements

Please make sure to follow these guidelines when designing the facility and operating the projector system.

6-1. Environmental guidelines

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces such as rugs and blankets or near materials such as curtains and draperies that may block the ventilation holes. Leave a space of more than 100 cm (39 3/8 inches) between the wall and the projector. Be aware that room heat rises to the ceiling; check that the temperature near to the installation location is not excessive.
- Install the projector on the floor (with appropriate stand or pedestal) or mount it to the ceiling (using a cage or tray, but do not install the projector upside down). Any other installation can cause malfunctions such as color irregularity or a reduction in lamp life. Please also refer to the next section "Placement".
- Do not install the unit in a location near heat sources such as radiators or air ducts. Do not install the unit in a place subject to direct sunlight, excessive dust or humidity, or mechanical vibration or shock.
- To avoid moisture condensation, do not install the unit in a location where the temperature may rise rapidly.
- Image performance is best at a room temperature between 23 and 25 °C.

On illumination

- To obtain the best picture, the front of the screen should not be exposed to direct lighting or sunlight.
- For ambient lighting, a ceiling-mounted spot lights are recommended. Use a cover over fluorescent lamps to avoid lowering the contrast ratio.
- Cover any windows that face the screen with opaque draperies.
- It is desirable to install the projector in a room where the floor and walls are not of light-reflecting material. If the floor and walls are of reflecting material, it is recommended that the carpet and wallpaper be changed to a dark color.

6-2. Placement

- Install the projector on the floor (Fig. 1) or mount it to the ceiling.
- Any other installation may cause a malfunction such as color irregularity or a reduction in lamp life.
- Do not install the projector upside down. (Fig. 2)
- Do not install the projector at a tilt to the right or left. (Fig. 3, 4)
- It is possible to install the projector with an upwards or downwards tilt, to a maximum angle of 45 degrees. (Fig. 5)

Figure 1

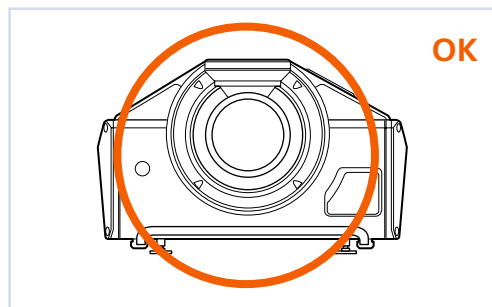


Figure 2

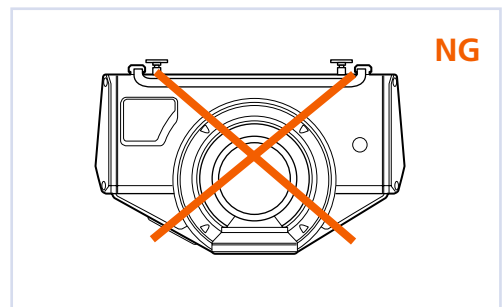


Figure 3

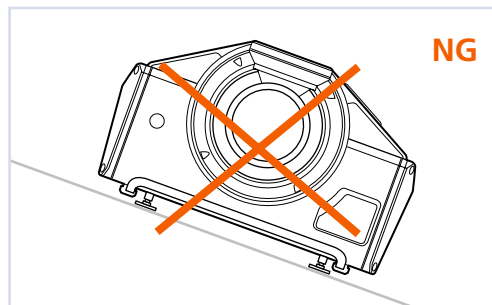


Figure 4

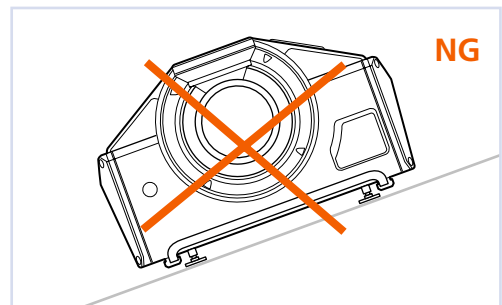
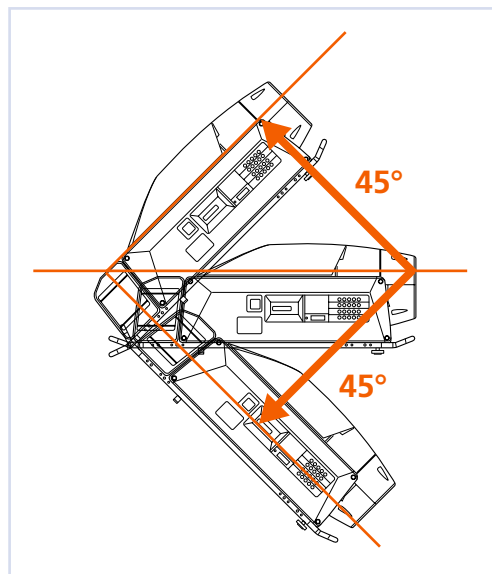
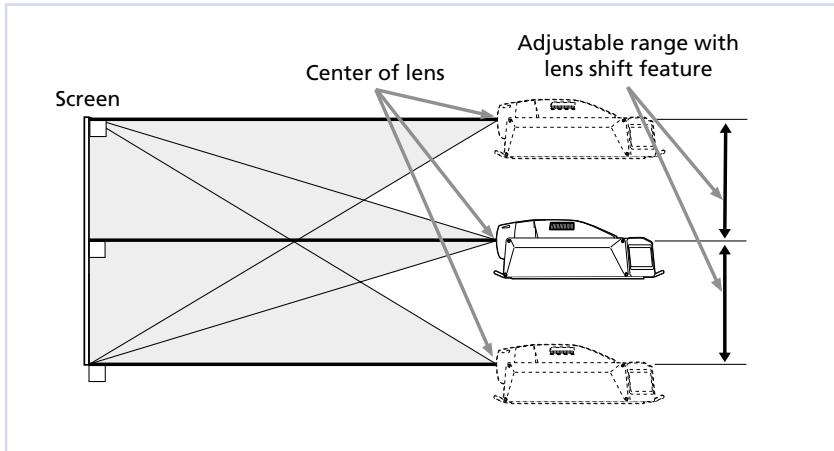


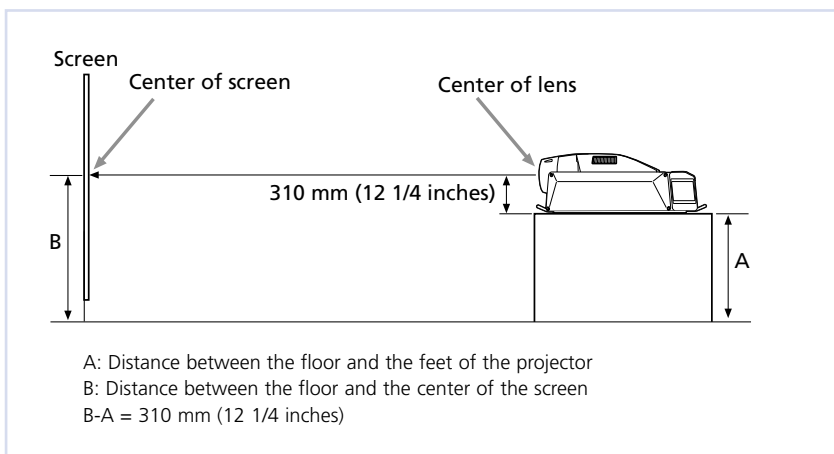
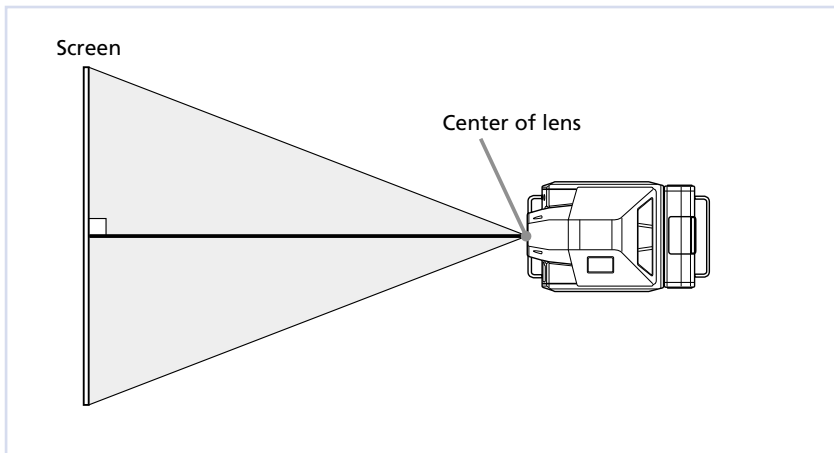
Figure 5



- There is an extreme amount of vertical lens shift available in this design. If the projector is installed so that the center of the lens is anywhere within the vertical height of the screen, there will be enough range to ensure the projector will not need to be tilted. Note that there is no keystone correction or masking available.



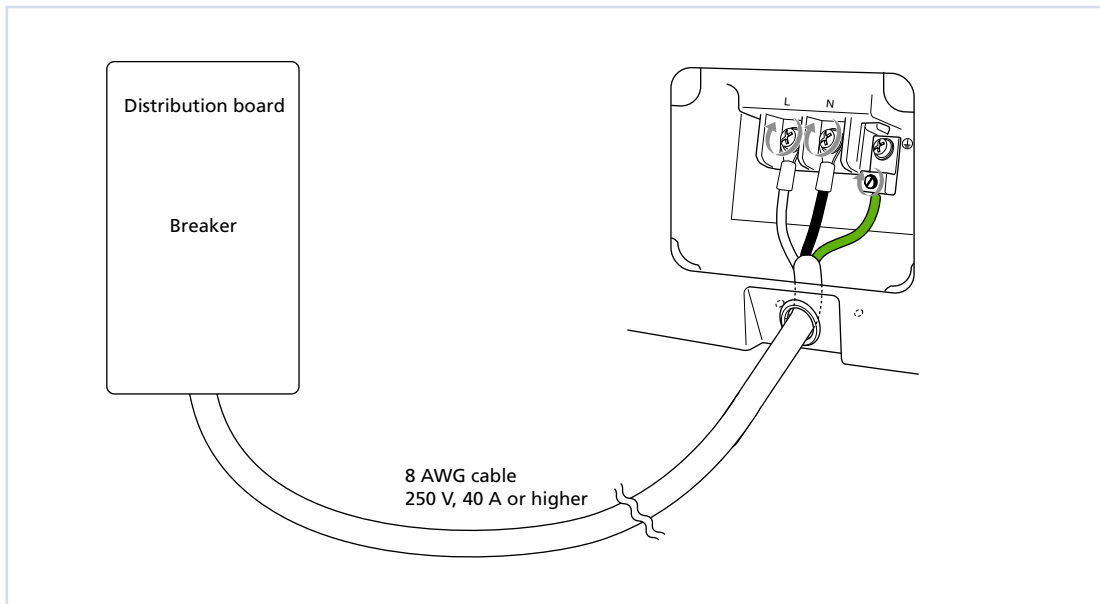
Lens	Adjustable range
LKRL-Z115	±50% of screen height
LKRL-Z117	
LKRL-Z119	
LKRL-Z122	
LKRL-Z140	±15% of screen height
LKRL-90	



6-3. Electrical power requirements

When setting up the power supply for the projector, please adhere to the following:

- The SRX-R105 and SRX-S105 work between 100 and 240 V AC.
- The SRX-R110 and SRX-S110 work between 200 and 240 V AC.
- The power line must be single phase. DO NOT CONNECT to 3 PHASE POWER
- Prepare the ground line.
- When connecting to 200 volt system, the projector connections should measure as follows:
 - 200 - 240 between the hot lead and the neutral lead
 - 100 - 120 between the hot lead and the ground lead
 - 100 - 120 between the neutral lead and the ground lead
- Use of a NEMA L6-30 AC connector is recommended for 200 V AC or higher voltages.
- Use an AC power cord that supports 8AWG, 250 V, 40 A or higher.
- Use a three-wire power cord to the AC IN terminal on the projector.
- For SRX-S110/R110, a 30 ampere circuit breaker is required in the distribution board.
 - Do not use a twin 20 amp service
- For SRX-R105/S105, a circuit breaker that satisfies proper electric capacity is required in the distribution board.



Specifications on power requirements

	SRX-S110/SRX-R110	SRX-S105/SRX-R105
Power requirements	200 to 240 V AC, 50/60 Hz	100 to 240 V AC, 50/60 Hz
Power consumption	Approx. 5.4 kW (Standby mode: 40 W)	Approx. 3.0 kW (Standby mode: 40 W)
Current consumption	30 to 22 A	30 to 12.5 A

6-4. Operating temperature control and venting

Operating temperature

To achieve optimum performance when operating the projector, proper temperature control is required. Two ways to ensure proper operating temperature are:

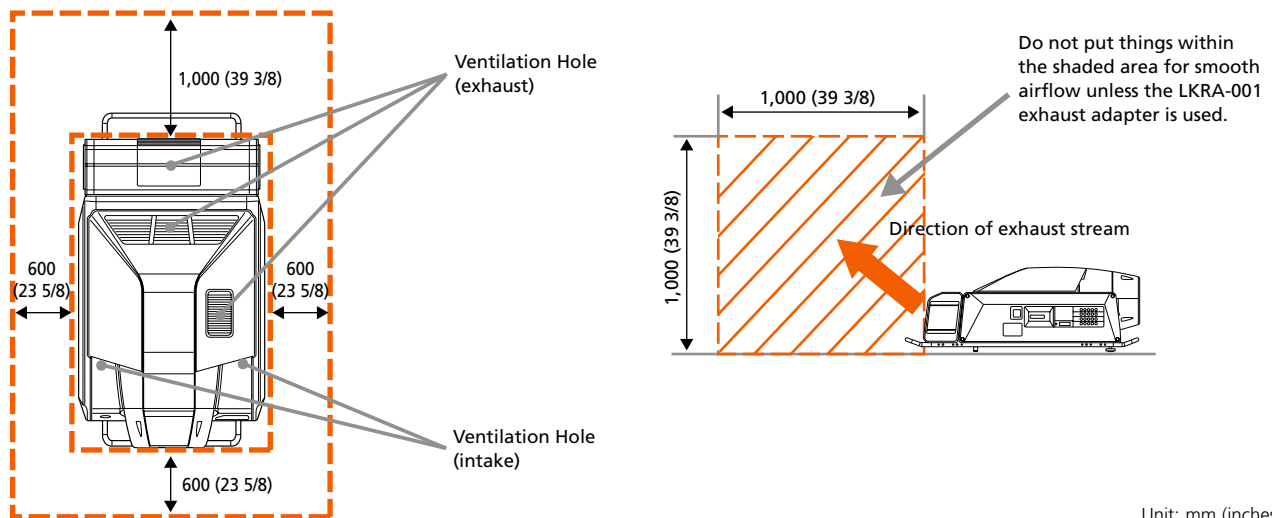
1. Maintain the ambient temperature (as indicated in the specifications below) by using an air-conditioning system installed in the room.
2. Use the optional exhaust duct adaptor LKRA-001 for effective ventilation.

Specifications on air conditioning

Operating temperature	5°C to 35°C (41°F to 95°F) (However, image performance is best at a room temperature between 23 and 25 °C. Also, it is recommended that the projector be powered on 20 minutes prior to use for optimum performance.)
Operating humidity	35% to 85% (no condensation)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Storage humidity	10% to 90%
Fan noise	65 dB or less

Required clearances around the projector

When installing the projector, it must have adequate clearance on all sides - as illustrated in the diagram below.



Venting using the optional exhaust duct adaptor

An 8-inch Exhaust Duct Adaptor LKRA-001 is available as an option. This will work with an 8-inch air-conditioning vent hose.

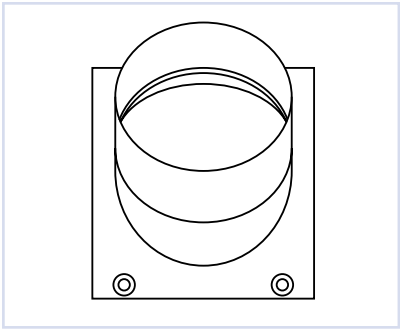
By replacing the fan cover at the rear of the projector with this adaptor, warm exhaust air from the projector can be vented to an external location.

To use this adaptor, a heat extractor and a blower capable of exhausting air are also required.

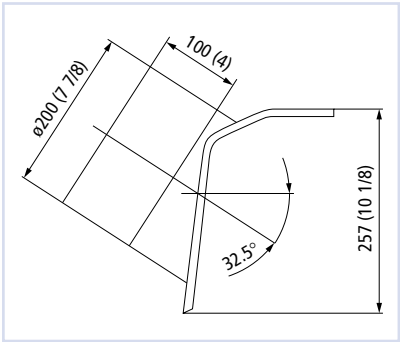
Model name	Air flow requirements
SRX-S110/R110	13.7 to 15.6 cube meters/min (450 to 550 cube feet/min)
SRX-S105/R105	13.7 to 15.6 cube meters/min (450 to 550 cube feet/min)



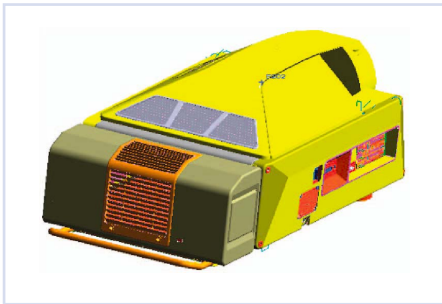
LKRA-001 Front



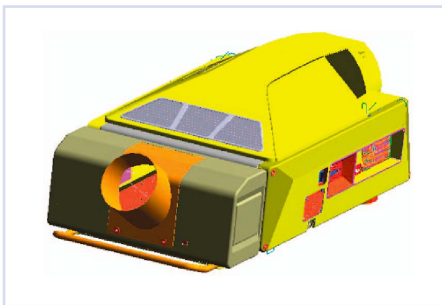
LKRA-001 Side



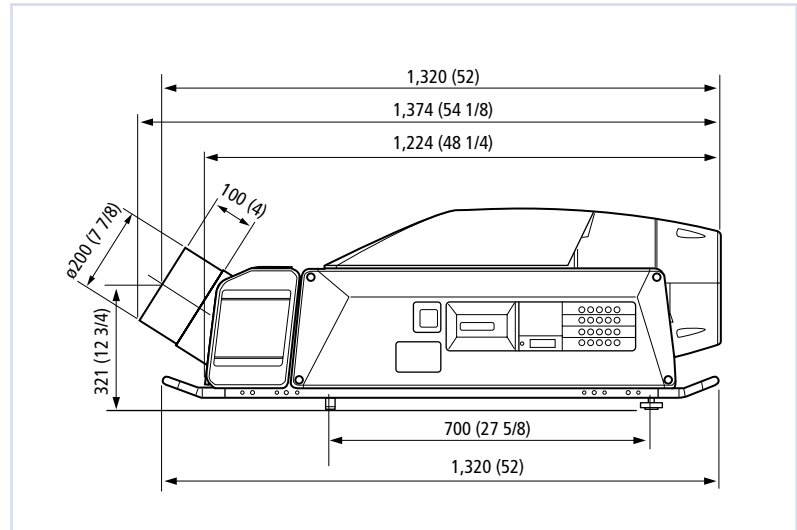
Unit: mm (inches)



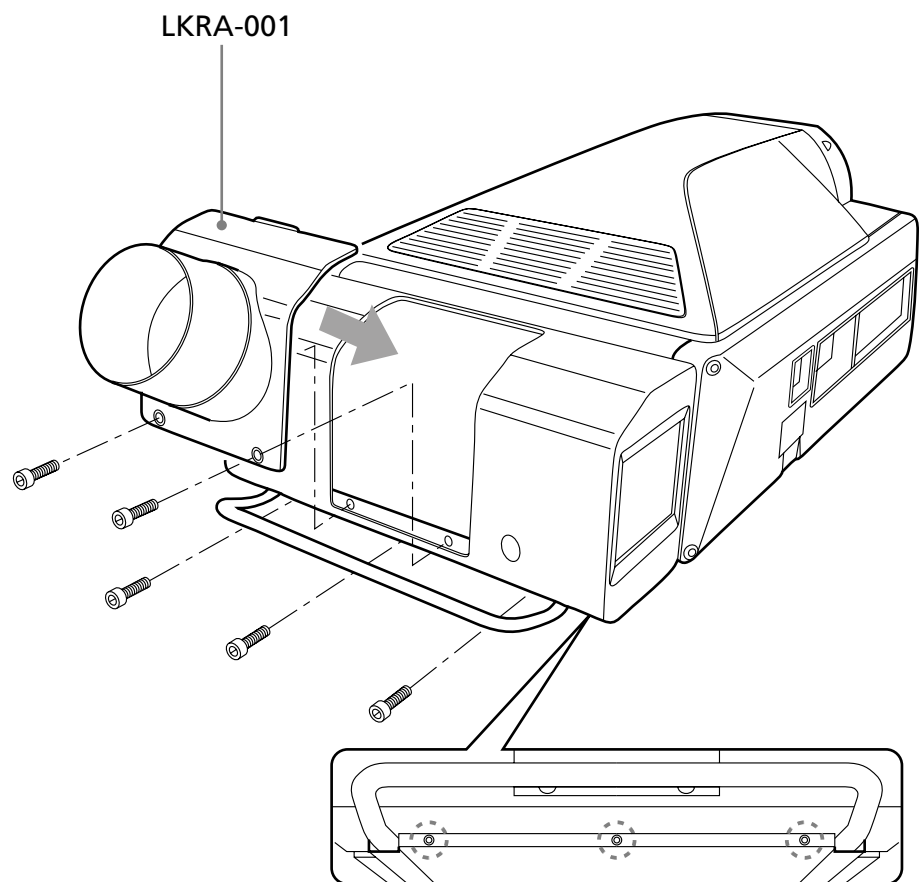
Without LKRA-001



With LKRA-001
(replaced with a fan cover)



Unit: mm (inches)



7 Connecting the Projector

7-1. Precautions

When connecting the projector, make sure to:

- Turn off all equipment before making any connections.
- Use the proper cables for each connection.
- Insert the cable plugs firmly. Loose connections may increase noise and reduce the performance of picture signals. When pulling on a cable, be sure to pull it out from the connector, not the cable itself.

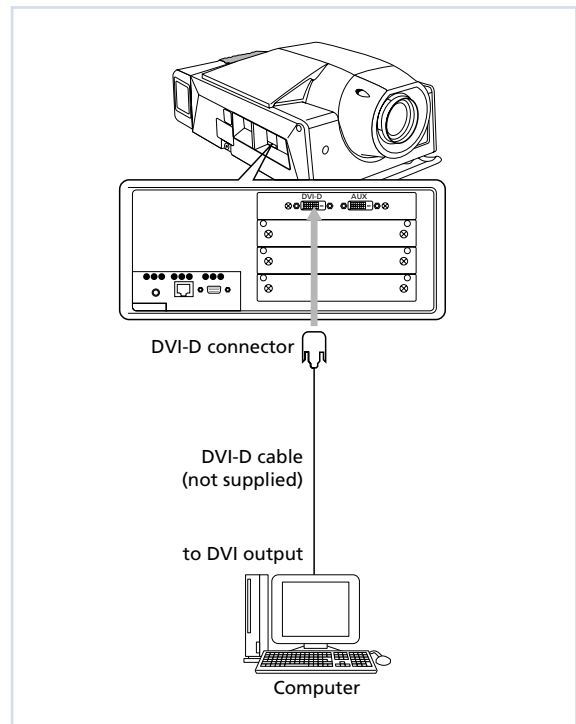
7-2. Connection examples

DVI Devices

With the DVI-D connector provided on the SRX-S110/S105 or the optional LKRI-004 board, the projector can be connected to a computer equipped with DVI output.

Notes

- According to the input signal type, set "Signal Mode" on "Input Source" in the PICTURE CONTROL window of the SRX Controller software.
- When an extension cable is used, the signal may not be input correctly due to signal reduction.
- If you input 10-bit signals from a DVI-D connector only (10-bit single mode), a DVI cable compatible with the Dual-link is required.
- Before connection, it is required to set the DIP switch at the bottom of INPUT A (for SRX-S110/S105 only) or the LKRI-004 input board depending on the type of input signal from the connected computer. See the next page.



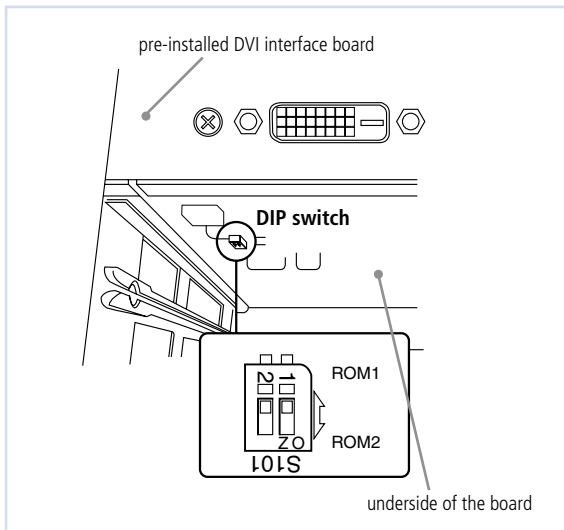
<Setting the DIP switch>

Generally, EDID (Extended Display Identification Data) - which stipulates display formats such as resolutions - is used to enable communication between a PC, a display device (such as a monitor), and a projector for plug-and-display operations. The EDID information is normally stored in the ROM of the display device.

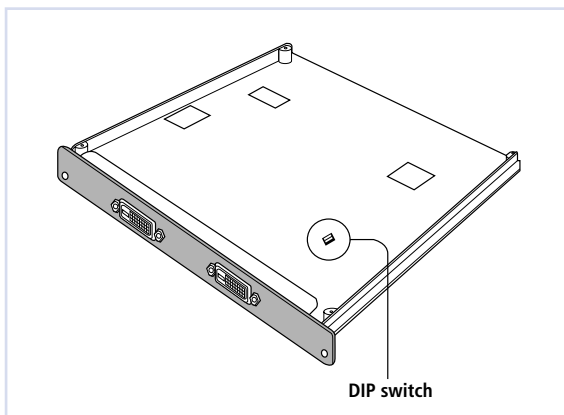
As SRX-series projectors can handle many different computer display formats, it is required to have many EDIDs. The projector therefore has two ROMs (actually they are on the DVI input module), and stores the EDIDs on the ROMs. The stored EDID can be selectively recalled depending on the setting by the DIP switch.

In order to switch between the different ROMs, Switch 1 and Switch 2 must be at the same position. To use the EDID on ROM 1, set both Switch 1 and Switch 2 to ON (slide them backward), or to use the EDID on ROM2, set them to OFF (slide them forward).

Positions of the DIP switches



SRX-S110/S105



LKRA-004 board (upside down)

Signal	Frame rate (Hz)	Dots clock (MHz)	EDID ROM used	
			ROM 1	ROM 2
1,024 x 768_60 (VESA)	60	65.00	YES	YES
1,280 x 960_60 (VESA)	60	108.00	YES	YES
1,280 x 1,200_60 (VESA)	60	108.00	YES	YES
1,600 x 1,200_60 (VESA)	60	162.00	YES	YES
1,920 x 1,200 (VESA2.30MA-R)	60	154.00	YES	—
1,920 x 1,080 (CIA/CEA-861B)	60	148.50	YES	—
2,048 x 1,080*	60	148.50	—	YES
1,920 x 1,080*	24	74.25	—**	—
2,048 x 1,080*	24	74.25	—	YES
2,048 x 1,080*	48	148.50	—**	—

* The signals are Sony's unique formats.

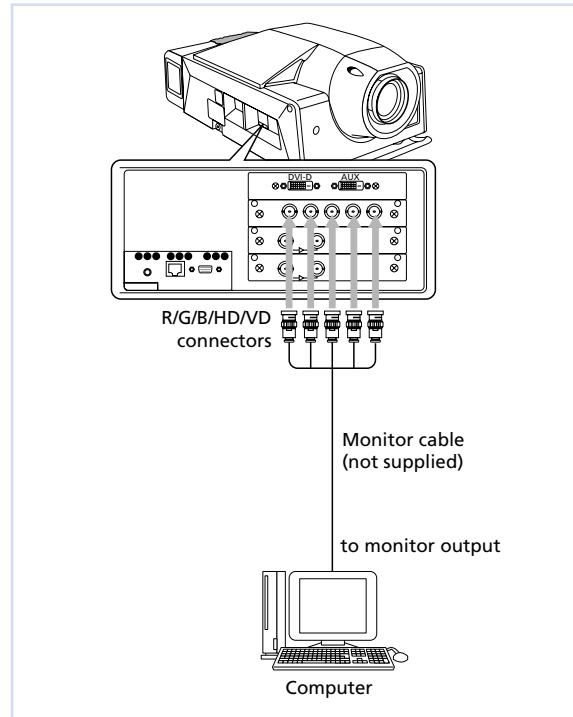
** When the projector is connected with a computer incompatible with DDC (Display Data Channel), the projector can receive the above signals regardless of the signals being EDID ROM compatible/incompatible.

Analog RGB

With the analog component input connector provided on the optional LKRI-001 board, the projector can be connected to a computer equipped with an analog RGB output.

Notes

Select "RGB" in "Signal Mode" of "Input Source" in the PICTURE CONTROL window of the SRX Controller software.

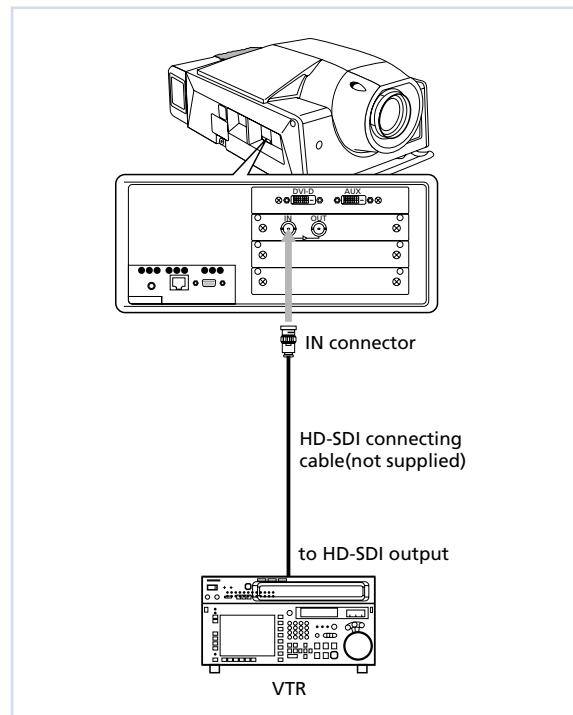


HD-SDI

With the HD-SDI connector provided on the optional LKRI-002 (HD-SDI (4:2:2)) or LKRI-003 (HD-SDI (4:4:4)) board, the projector can be connected to a video device equipped with an HD-SDI connector - such as an HDCAM™ or HDCAM-SR™.

Notes

When the LKRI-003 is attached to the projector, select the type of signal with "Signal Mode" of "Input Source" in the PICTURE CONTROL window of the SRX Controller software. For Single-link input, select "Y/Pb/Pr" or "Y/Pb/Pr FULL." For Dual-link input, select "RGB" or "RGB FULL."

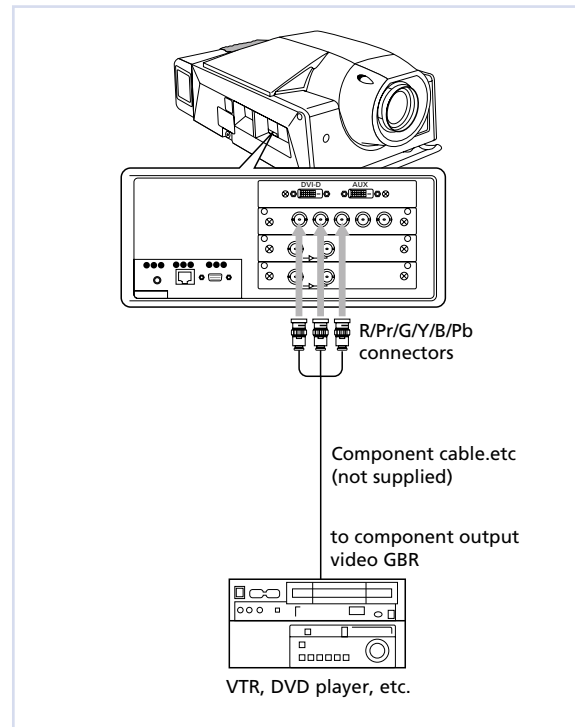


Component/Video GBR

With the analog component connectors provided on the optional LKRI-001 board, the projector can be connected to any video devices equipped with analog component connectors such as an analog Betacam™, a DVD recorder/player, or a high-definition video device equipped with video GBR connectors.

Notes

When connecting to the output of component equipment, set "Signal Mode" of "Input Source" in the PICTURE CONTROL window of the SRX Controller software to "Y/Pb/Pr". When connecting to the video GBR output of a high-definition video device, set it to "RGB."



7-3. Compatible formats and standards

Please see the table below to confirm the input option you are selecting works with the signal format you intend to use.

Signal format	Pixel count	Aspect ratio	Signal type	Standard	SRX-R110/R105				SRX-S110/S105			
					LKRI-001	LKRI-002	LKRI-003	LKRI-004	LKRI-001	LKRI-002	LKRI-003	LKRI-004
525 Line	720 x 480 @60i	1.33	Y/Pb/Pr	ITU 601	X	X			X	X		
625 Line	720 x 567 @50i	1.33	Y/Pb/Pr	ITU 601	X	X			X	X		
XGA	1,024 x 768 @60P	1.33	RGB	VESA 0.79M3	X			X	X			X
XGA	1,024 x 768 @70P	1.33	RGB	VESA 0.79M3	X				X			
XGA	1,024 x 768 @75P	1.33	RGB	VESA 0.79M3	X				X			
XGA	1,024 x 768 @85P	1.33	RGB	VESA 0.79M3	X				X			
SXGA	1,280 x 960 @60P	1.33	RGB	VESA 1.23M3	X			X	X			X
SXGA	1,280 x 960 @75P	1.33	RGB	VESA 1.23M3	X				X			
SXGA	1,280 x 1,024 @60P	1.25	RGB	VESA 1.31M4	X			X	X			X
SXGA	1,280 x 1,024 @75P	1.25	RGB	VESA 1.31M4	X				X			
SXGA	1,280 x 1,024 @85P	1.25	RGB	VESA 1.31M4	X				X			
SXGA+	1,400 x 1,050 @60P	1.33	RGB	VESA 1.47M3				X				X
UXGA	1,600 x 1,200 @60P	1.33	RGB	VESA 1.92M3	X			X	X			X
WUXGA	1,920 x 1,200 @59.95P	1.6	RGB	VESA 2.30MA-R								X
WUXGA	1,920 x 1,200 @60P	1.6	RGB	VESA 2.30MA-R								X
720P	1,280 x 720 @50P	1.78	Y/Pb/Pr		X	X			X	X		
720P	1,280 x 720 @60P	1.78	Y/Pb/Pr	SMPTE 296M	X	X			X	X		
1080i	1,920 x 1,080 @50i	1.78	Y/Pb/Pr	SMPTE 274M	X	X	X		X	X	X	
1080i	1,920 x 1,080 @50i	1.78	RGB	SMPTE 274M	X		X		X		X	
1080i	1,920 x 1,080 @59.94i	1.78	Y/Pb/Pr	SMPTE 274M	X	X	X		X	X	X	
1080i	1,920 x 1,080 @59.94i	1.78	RGB	SMPTE 274M	X		X		X		X	
1080i	1,920 x 1,080 @60i	1.78	Y/Pb/Pr	SMPTE 274M	X	X	X		X	X	X	
1080i	1,920 x 1,080 @60i	1.78	RGB	SMPTE 274M	X		X		X		X	
1080P	1,920 x 1,080 @23.98PsF	1.78	Y/Pb/Pr	SMPTE RP211	X	X	X		X	X	X	
1080P	1,920 x 1,080 @23.98PsF	1.78	RGB	SMPTE RP211	X		X		X		X	
1080P	1,920 x 1,080 @24PsF	1.78	Y/Pb/Pr	SMPTE RP211	X	X	X		X	X	X	
1080P	1,920 x 1,080 @24PsF	1.78	RGB	SMPTE RP211	X		X		X		X	
1080P	1,920 x 1,080 @25PsF	1.78	Y/Pb/Pr	SMPTE RP211		X	X			X	X	
1080P	1,920 x 1,080 @25PsF	1.78	RGB	SMPTE RP211			X				X	
1080P	1,920 x 1,080 @29.97PsF	1.78	Y/Pb/Pr	SMPTE RP211			X				X	
1080P	1,920 x 1,080 @29.97PsF	1.78	RGB	SMPTE RP211			X				X	
1080P	1,920 x 1,080 @30PsF	1.78	Y/Pb/Pr	SMPTE RP211		X	X			X	X	
1080P	1,920 x 1,080 @30PsF	1.78	RGB	SMPTE RP211			X				X	
1080P	1,920 x 1,080 @24P	1.78	Y/Pb/Pr	SMPTE RP211			X				X	
1080P	1,920 x 1,080 @24P	1.78	RGB				X	X			X	X
1080P	1,920 x 1,080 @60P	1.78	RGB									X
DC 1080P	2,048 x 1,080 @23.98PsF	1.85	Y/Pb/Pr	SMPTE 372M			X				X	
DC 1080P	2,048 x 1,080 @23.98PsF	1.85	RGB	SMPTE 372M			X				X	
DC 1080P	2,048 x 1,080 @24PsF	1.85	Y/Pb/Pr	SMPTE 372M		X	X			X	X	
DC 1080P	2,048 x 1,080 @24PsF	1.85	RGB	SMPTE 372M			X				X	
DC 1080P	2,048 x 1,080 @25PsF	1.85	Y/Pb/Pr	SMPTE 372M		X				X		
DC 1080P	2,048 x 1,080 @30PsF	1.85	Y/Pb/Pr	SMPTE 372M		X				X		
DC 1080P	2,048 x 1,080 @24P	1.85	Y/Pb/Pr	SMPTE 372M			X				X	
DC 1080P	2,048 x 1,080 @24P	1.85	RGB	SMPTE 372M			X	X			X	X
DC 1080P	2,048 x 1,080 @48P	1.85	RGB					X				X
DC 1080P	2,048 x 1,080 @60P	1.85	RGB									X

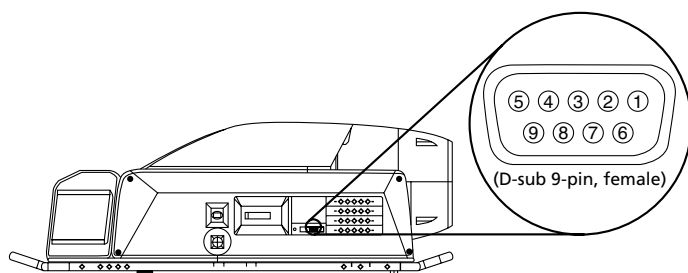
8 How to control the projector

8-1. Overview

There are three types of controls available for the projectors.

1. RS-232C (including the method using the supplied SRX Controller software)
2. Ethernet (including the method using the supplied SRX Controller software)
3. Supplied IR Remote Commander unit

8-2. RS-232C Pin assignment



Pin number	Signal name	Meaning
1	NC	
2	RD	Received Data
3	TD	Transmit Data
4	DTR*	Data Terminal Ready
5	GND	Ground
6	DSR*	Data Set Ready
7	RTS**	Request to Send
8	CTS**	Clear to send
9	NC	

* Circuit between pins 4 and 6 is short-circuited in the projector.

** Circuit between pins 7 and 8 is short-circuited in the projector.

8-3. Ethernet

Control through a network that uses Ethernet is possible.

Specification of 10Base-T/100Base-TX or an automatic selection is also available.

Connection to the host PC can be made via an Ethernet hub or an Ethernet cross cable.

All the used ports are shown in the list below.

Function	Port No.	Factory default values	Changes	
			Used/unused	Port No.
SDAP	53862	Automatic start	Possible	Possible
SDCP	53484	Automatic start	Not possible	Possible
SMTP	25	Unused	Possible	Not possible
POP3	110	Unused	Possible	Not possible
SNMP	161	Unused	Possible	Not possible
NTP	123	Unused	Possible	Not possible
HTTP	80	Automatic start	Not possible	Not possible

8-4. Projector commands

List of functions to be controlled or adjusted via a controller

Item	Description				
Picture Mode					
Screen Control	Relationship between Screen and Input is as follows. 1-screen (1 picture) mode: an input is allocated to all screens 1 to 4 (e.g. all are Input A). 2-screen (1 picture) mode: an input is allocated to screens 1 and 3, and another to screens 2 and 4 (e.g. Input A is allocated to screens 1, 3, and Input B to screens 2, 4). Screen<table><tr><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td></tr></table>	1	2	3	4
1	2				
3	4				
Cut Off*	Cut off Black level of picture is controlled by ON. In 1-screen mode, settings for screen 1 are effective for the whole screen. In 2-screen mode, settings for screen 1 and screen 2 are effective separately for each half of the whole screen.				
Input-A Signal Mode**	If input is an HD signal, input signal of Input A will be selected. For LKRI-004 (DVI), the signal mode of all input signals that can be received is set.				
Input-B Signal Mode**	If input is an HD signal, input signal of Input B will be selected. For LKRI-004 (DVI), the signal mode of all input signals that can be received is set.				
Input-C Signal Mode**	If input is an HD signal, input signal of Input C will be selected. For LKRI-004 (DVI), the signal mode of all input signals that can be received is set.				
Input-D Signal Mode**	If input is an HD signal, input signal of Input D will be selected. For LKRI-004 (DVI), the signal mode of all input signals that can be received is set.				
Progressive Display Mode	ON is set when input is a Digital Cinema signal mode. Note) This setting is validated only when four LKRI-002 and four LKRI-003 or four LKRI-004 are put in an input slot.				
Test Pattern*	Test pattern used for setting/adjustment is selected.				
LCD Contrast	Adjustment is made by using the LCD contrast button on the flank of the projector.				
Lamp Power	Lamp brightness.				
Lamp Select	If Full Auto Select is specified, a lamp with a shorter use time will be automatically detected and selected. User-Defined is specified by switching the lamps regularly (specified time).				
Installation	Installation position. If Rear is specified, picture will be mirror-reversed.				
Master (Electric) V_Shift					
Registration Adjustment					
Registration Red H					
Registration Red V					
Registration Blue H					
Registration Blue V					
Squeeze Mode					

* This turns off automatically when the cooling state is established.

** The setting may become invalid depending on the signals.

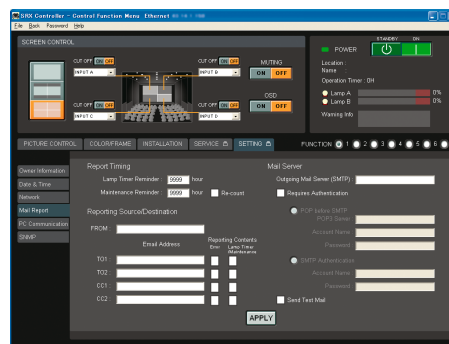
8-5. Supplied SRX Controller Software

The SRX-Series projectors come equipped with the SRX Controller software and its intuitive GUIs allow easy setup and adjustments using a PC. The projectors can be controlled through either Ethernet or RS-232C interfaces, and multiple projectors can be controlled from a single PC (when using the Ethernet connection).

A comprehensive range of setup parameters including input configurations, colorimetry controls, installation adjustments and maintenance settings can be controlled via the software. These are briefly explained below. For details of the software, please refer to the operation manual supplied with the projector.

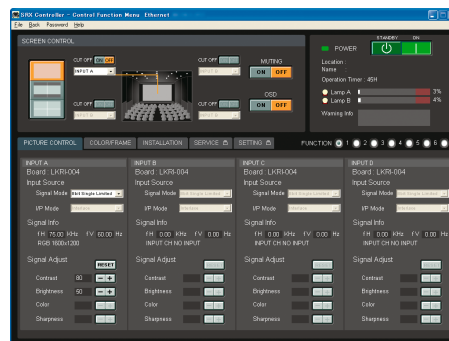
Picture Control

- Input source selection
- Interlace or progressive
- Contrast
- Brightness
- Color
- Sharpness



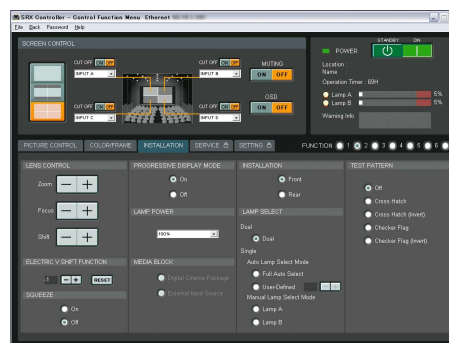
Color/Frame

- Color space
- Color temperature
- Gamma
- Dot phase
- H size
- H shift
- V shift



Installation

- Zoom
- Focus
- Lens shift
- Electric V shift
- Lamp power
- Front or rear projection
- Test pattern selection



The software also provides controls for initial setup and service items.

System requirements for the SRX Controller software

- Intel Pentium® Processor at 1 GHz or faster
- 64 MB of RAM or more
- CD drive at 8x or faster
- Monitor with 800 x 600 resolution or greater
- Ethernet connection using TCP/IP protocol or RS-232C connection
- Windows® 2000 with Service Pack 2 or Windows XP Professional or Windows XP Home Edition (Please note that the Mac OS is not compatible.)

8-6. Supplied Remote Commander unit

The following items can be controlled by the supplied IR Remote Commander unit.

- Power on/off
- Screen mode selection: full-screen, dual screen, quad screen
- Display muting
- Input selection
- Contrast
- Brightness
- Sharpness
- Screen selection: In dual and quad screen modes, positions can be assigned and displayed on each input.
- Focus
- Zoom
- Lens shift



Appendix

A Detailed Descriptions of the Input Boards

A-1. LKRI-001: Analog input board

The LKRI-001 Analog Input Board utilizes five BNC connectors that can accept 0.7 volt analog signal levels as RGB sync on G, RGBHV or YUV formats.

With this board SRX-series projectors can accept HD and SD analog component video signals, and computer signals of XGA (1,024 x 768), SXGA (1,280 x 1,024) and UXGA (1,600 x 1,200).

The board identifies the input signal and enlarges its pixel size automatically while image interpolation technology maintains the aspect ratio.

The following types of image resolution are available.

Single Screen mode

Input signals	Original resolution	Output resolution after image interpolation
SD Video	640 x 480	2,880 x 2,156
	768 x 575	2,880 x 2,146
XGA	1,024 x 768	2,849 x 2,137
SXGA1	1,280 x 1,024	2,560 x 2,048
SXGA2	1,280 x 960	2,560 x 1,920
UXGA	1,600 x 1,200	2,864 x 2,148
720P	1,280 x 720	3,810 x 2,143
HD	1,920 x 1,080	3,840 x 2,160
4K	—	—

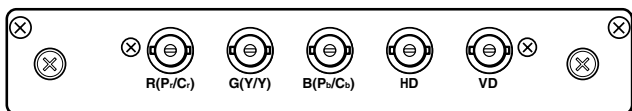
Dual Screen mode

Input signals	Original resolution	Output resolution after image interpolation
SD Video	640 x 480	2,003 x 1,499
	768 x 575	2,003 x 1,504
XGA	1,024 x 768	2,048 x 1,536
SXGA1	1,280 x 1,024	2,048 x 1,638
SXGA2	1,280 x 960	2,048 x 1,638
UXGA	1,600 x 1,200	1,600 x 1,200
720P	1,280 x 720	2,048 x 1,152
HD	1,920 x 1,080	1,920 x 1,080
4K	—	—

Quad Screen mode

Input signals	Original resolution	Output resolution after image interpolation
SD Video	640 x 480	1,440 x 1,078
	768 x 575	1,440 x 1,073
XGA	1,024 x 768	1,432 x 1,074
SXGA1	1,280 x 1,024	1,280 x 1,024
SXGA2	1,280 x 960	1,280 x 960
UXGA	—	—
720P	1,280 x 720	1,280 x 720
HD	1,920 x 1,080	1,920 x 1,080
4K	—	—

Connector panel



R (Pr/Cr)/G (Y/Y)/B (Pb/Cb)/HD/VD input connectors (BNC type) are provided.



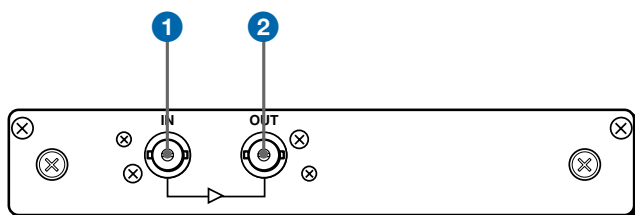
A-2. LKRI-002: HD-SDI (4:2:2) input board

With the LKRI-002 board SRX-series projectors can accept both SMPTE 259M SD digital 525/625 line video and SMPTE 292M 1,080 4:2:2 YUV serial picture data. Upon detecting the frequency of the input signal, switching is automatic.

The projector has a 4K image (3,840 x 2,160) when four LKRI-002 boards are installed into its slot.

The 4K image consists of four HD (1,920 x 1,080) images. Each input board handles a single HD signal (1,920 x 1,080) and represents a quarter of the screen. Four input boards are therefore required to display a 4K image. The projector then seamlessly merges the four images into a single 4K image.

Connector panel



1 IN (HD-SDI input) connector (BNC type)

Used to connect to a recorder/player equipped with an HD-SDI connector.

2 OUT (HD-SDI output) connector (BNC type)

Used to output the input signals supplied from the IN connector by loop-through. This allows the projector to be connected to an external device such as a video monitor so that it can monitor pictures or signals.

A- 3. LKRI-003: Dual-link HD-SDI input board

The LKRI-003 board accepts the signals described in the chart below.

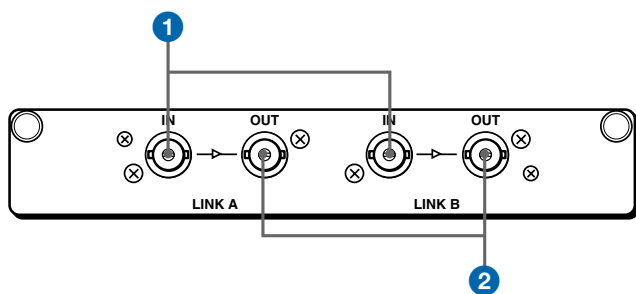
This board automatically detects the input signal and determines if it is dual-link or single-link, and DC-SDI or HD-SDI.

As with four LKRI-002 boards, the projector can display a 4K image using four LKRI-003 boards.

	23.98PsF	24PsF	24P (Real progressive)	25PsF	29.97 PsF	30PsF	50i	59.94i	60i
1,920 x 1,080 (SMPTE-292M/ Single-link/ 4:2:2)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)
2,048 x 1,080 (DC-SDI/ Single-link/4:2:2)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)	NO	NO	NO	NO	NO	NO
1,920 x 1,080 SMPTE-372M/Dual- link/4:4:4)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)
2,048 x 1,080 (DC-SDI/Dual- link/4:4:4)	YES (Dual-link: RGB only)	YES (Dual-link: RGB only)	YES (Dual-link RGB only)	NO	NO	NO	NO	NO	NO

	23.98PsF	24PsF	24P	25PsF	29.97PsF	30PsF	50i	59.94i	60i	50P	60P
720	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES (Single-link: Y/Pb/Pr only)	YES (Single-link: Y/Pb/Pr only)

Connector panel



1 LINK A/LINK B IN (HD-SDI input) connectors (BNC-type)

These are used to connect with a video device equipped with an HD-SDI connector such as HDCAM-SR VTR. Connection of LINK A and LINK B IN connectors allows Dual-link HD-SDI or Dual-link DC-SDI signal input.

2 LINK A/LINK B OUT (HD-SDI output) connectors (BNC-type)

These are used to output the input signals supplied from the LINK A/LINK B IN connectors by loop-through. This allows the projector to be connected to an external device such as a video monitor so that it can monitor pictures or signals.

A- 4. LKRI-004: DVI interface board

The LKRI-004 DVI interface board can accept the DVI signals described in the chart below:

	Resolution	SRX-S110/S105	SRX-R110/R105	Remarks
1	1,024 x 768 at 60 Hz (XGA)	YES	YES	VESA
2	1,280 x 960 at 60 Hz (SXGA)	YES	YES	VESA
3	1,280 x 1,024 at 60 Hz (SXGA)	YES	YES	VESA
4	1,400 x 1,050 at 60 Hz (SXGA+)	YES	YES	VESA
5	1,600 x 1,200 at 60 Hz (UXGA)	YES	YES	VESA
6	2,048 x 1,080 at 60 Hz	YES	NO	
7	1,920 x 1,080 at 24 Hz	YES	YES	
8	2,048 x 1,080 at 24 Hz	YES	YES	
9	1,920 x 1,200 at 59.95 Hz Reduced Blanking (WUXGA)	YES	NO	VESA
10	1,920 x 1,080 at 60 Hz	YES	NO	EIA/CEA-861B
11	2,048 x 1,080 at 48 Hz	YES	YES	

1) - 5) VESA standards

7) 1,920 x 1,080 at 60 Hz signal is commonly used for digital television.

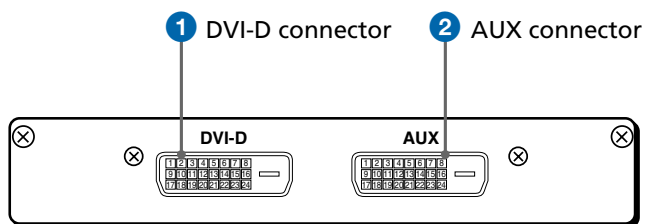
8) 2,048 x 1,080 at 60 Hz signal is commonly used for a computer graphic application or a 2K digital cinema application. It is one fourth of a 4K image.

9)-11) SMPTE 24P signals commonly used for a post-production and cinema applications.

The following chart provides information on the signal formats that can be handled, and on the format differences between the SRX-S110/S105 and SRX-R110/R105 models.

Resolution	SRX-S110/S105	SRX-R110/R105
Frequency: 60 Hz		
1,024 x 768 at 60 Hz (XGA)	YES	YES
1,280 x 960 at 60 Hz (SXGA)	YES	YES
1,280 x 1,024 at 60 Hz (SXGA)	YES	YES
1,400 x 1,050 at 60 Hz (XGA+)	YES	YES
1,600 x 1,200 at 60 Hz (UXGA)	YES	YES
2,048 x 1,080 at 60 Hz	YES	NO
1,920 x 1,200 at 60 Hz Reduced Blanking (WUXGA)	YES	NO
Frequency: 24 Hz		
1,920 x 1,080 at 24 Hz	YES	YES
2,048 x 1,080 at 24 Hz	YES	YES
Frequency: 48 Hz		
2,048 x 1,080 at 48 Hz	YES	NO

Connector panel



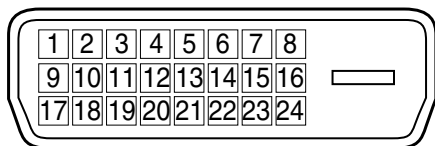
1 DVI-D (Input DVI) connector (24-pin DVI connector)

Used to input progressive DVI signals.

2 AUX (Input extension) connector (24-pin DVI connector)

Used for input extension. For details on connecting devices, please consult your nearest Sony office.

Pin assignment of DVI connector



Pin number	Signal name
1	DATA2-
2	DATA2+
3	GND
4	DATA4-
5	DATA4+
6	DDC_SCL
7	DDC_SDA
8	NC
9	DATA1-
10	DATA1+
11	GND
12	DATA3-
13	DATA3+
14	+5V
15	DDC_GND
16	HOTPLUG_DET
17	DATA0-
18	DATA0+
19	GND
20	DATA5-
21	DATA5+
22	GND
23	CLK+
24	CLK-

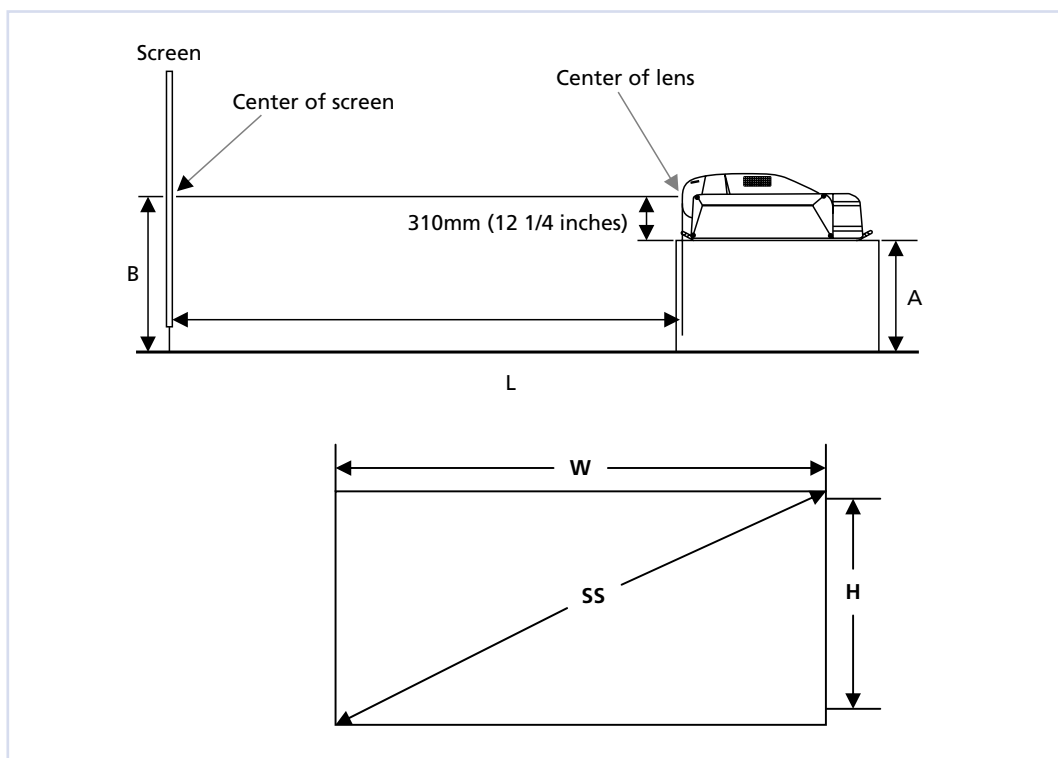
B Detailed Descriptions of Lens Throw Distances

B-1. Overview

This section provides the throw distances (the distance between the lens and the screen) for all lens models.

Throw distances depend on the lens used, the type of input signal, and/or the size and shape of the projected image.

In the charts on the following pages, abbreviations represent each parameter. Please refer to the explanations below for each item.



A	Distance between the floor and the feet of the projector, A=B-310 mm (12 1/4 inches)
B	Distance between the floor and the center of screen
L (min)	Minimum distance between the center of lens and screen
L (max)	Maximum distance between the center of lens and screen
W	Screen width
H	Screen height (different from the aspect ratio of the projected image)
SS	Diagonal screen size

B-2. LKRL-Z115 lens

For full-screen display

Screen width	W	mm	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,637	3,164	3,691	4,219	4,746	5,273	6,328	7,383	8,438
		inches	103 4/5	124 4/7	145 1/3	166	186 6/7	207 5/8	249 1/7	290 2/3	332 1/5
Diagonal distance	SS	mm	5,653	6,783	7,914	9,044	10,175	11,305	13,566	15,827	18,088
		inches	222 1/2	267	311 4/7	356	400 4/7	445	534 1/9	623 1/8	712 1/7
Throw distance	L (min)	mm	7,295	8,778	10,261	11,743	13,226	14,709	17,674	20,639	23,605
		inches	287 2/9	345 3/5	404	462 1/3	520 5/7	579	695 5/6	812 4/7	929 1/3
	L (max)	mm	8,964	10,780	12,596	14,412	16,228	18,044	21,676	25,308	28,940
		inches	353	424 2/5	496	567 2/5	638 8/9	710 2/5	853 2/5	996 3/8	1,139 3/8

$$L(\min)=(W-79.67)/0.67446 \quad L(\max)=(W-63.762)/0.55067$$

For 16:9 display

Screen width	W	mm	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,813	3,375	3,938	4,500	5,063	5,625	6,750	7,875	9,000
		inches	110 3/4	132 7/8	155	177 1/6	199 1/3	221 1/2	265 3/4	310	354 1/3
Diagonal distance	SS	mm	5,737	6,884	8,031	9,179	10,326	11,473	13,768	16,063	18,358
		inches	225 6/7	271	316 1/5	361 3/8	406 1/2	451 5/7	542	632 2/5	722 3/4
Throw distance	L (min)	mm	7,791	9,373	10,955	12,537	14,118	15,700	18,863	22,027	25,190
		inches	306 3/4	369	431 2/7	493 4/7	555 5/6	618 1/9	742 2/3	867 1/5	991 3/4
	L (max)	mm	9,568	11,505	13,442	15,379	17,316	19,253	23,127	27,000	30,874
		inches	376 5/7	453	529 2/9	605 1/2	681 3/4	758	910 1/2	1,063	1,215 1/2

$$L(\min)=(W-73.94)/0.63223 \quad L(\max)=(W-59.873)/0.51629$$

For 4:3 display

Screen width	W	mm	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000
		inches	157 1/2	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9
Screen height	H	mm	3,000	3,375	3,750	4,500	5,250	6,000	6,750	7,500	9,000
		inches	118 1/9	132 7/8	147 2/3	177 1/6	206 2/3	236 2/9	265 3/4	295 2/7	354 1/3
Diagonal distance	SS	mm	5,000	5,625	6,250	7,500	8,750	10,000	11,250	12,500	15,000
		inches	196 6/7	221 1/2	246	295 2/7	344 1/2	393 5/7	443	492 1/8	590 5/9
Throw distance	L (min)	mm	8,326	9,381	10,436	12,547	14,657	16,767	18,878	20,988	25,208
		inches	327 4/5	369 1/3	410 8/9	494	577	660 1/8	743 1/5	826 2/7	992 4/9
	L (max)	mm	10,213	11,504	12,795	15,377	17,959	20,541	23,123	25,705	30,869
		inches	402	453	503 3/4	605 2/5	707	808 5/7	910 1/3	1,012	1,215 1/3

$$L(\min)=(W-54.45)/0.47387 \quad L(\max)=(W-44.662)/0.38729$$

Note:

The values of throw distances have a margin of error of plus or minus 2%.

The value of throw distance is defined as the distance between the screen and the lens surface when a projector is installed horizontally.

B-3. LKRL-Z117 lens

For full-screen display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,373	2,637	3,164	3,691	4,219	4,746	5,273	6,328	7,383	8,438
		inches	93 3/7	103 4/5	124 4/7	145 1/3	166	186 6/7	207 5/8	249 1/7	290 2/3	332 1/5
Diagonal distance	SS	mm	5,087	5,653	6,783	7,914	9,044	10,175	11,305	13,566	15,827	18,088
		inches	200 2/7	222 1/2	267	311 4/7	356	400 4/7	445	534 1/9	623 1/8	712 1/7
Throw distance	L (min)	mm	7,730	8,559	10,215	11,872	13,529	15,186	16,843	20,157	23,471	26,784
		inches	304 1/3	337	402 1/6	467 2/5	532 2/3	597 7/8	663 1/9	793 4/7	924	1,054 1/2
	L (max)	mm	10,862	12,041	14,400	16,759	19,118	21,477	23,836	28,553	33,271	37,989
		inches	427 5/8	474	567	659 4/5	752 2/3	845 5/9	938 2/5	1,124 1/7	1,309 8/9	1,495 5/8

$$L(\min)=(W-79.67)/0.67446 \quad L(\max)=(W-63.762)/0.55067$$

For 16:9 display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,531	2,813	3,375	3,938	4,500	5,063	5,625	6,750	7,875	9,000
		inches	99 2/3	110 3/4	132 7/8	155	177 1/6	199 1/3	221 1/2	265 3/4	310	354 1/3
Diagonal distance	SS	mm	5,163	5,737	6,884	8,031	9,179	10,326	11,473	13,768	16,063	18,358
		inches	203 1/4	225 6/7	271	316 1/5	361 3/8	406 1/2	451 5/7	542	632 2/5	722 3/4
Throw distance	L (min)	mm	8232	9,117	10,887	12,656	14,426	16,195	17,965	21,504	25,043	28,582
		inches	324 1/9	359	428 3/5	498 2/7	568	637 3/5	707 2/7	846 3/5	986	1,125 2/7
	L (max)	mm	11,564	12,822	15,337	17,853	20,368	22,883	25,399	30,430	35,461	40,492
		inches	455 1/4	504 4/5	603 5/6	702 6/7	801 8/9	901	1,000	1,198	1,396	1,594 1/6

$$L(\min)=(W-73.94)/0.6322 \quad L(\max)=(W-59.873)/0.51629$$

For 4:3 display

Screen width	W	mm	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000
		inches	137 4/5	157 1/2	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9
Screen height	H	mm	2,625	3,000	3,375	3,750	4,500	5,250	6,000	6,750	7,500	9,000
		inches	103 1/3	118 1/9	132 7/8	147 2/3	177 1/6	206 2/3	236 2/9	265 3/4	295 2/7	354 1/3
Diagonal distance	SS	mm	4,375	5,000	5,625	6,250	7,500	8,750	10,000	11,250	12,500	15,000
		inches	172 1/4	196 6/7	221 1/2	246	295 2/7	344 1/2	393 5/7	443	492 1/8	590 5/9
Throw distance	L (min)	mm	8,547	9,732	10,917	12,102	14,472	16,841	19,211	21,581	23,951	28,690
		inches	336 1/2	383 1/6	429 4/5	476 1/2	569 3/4	663	756 1/3	849 2/3	943	1,129 1/2
	L (max)	mm	11,968	13,644	15,320	16,996	20,348	23,700	27,052	30,404	33,756	40,460
		inches	471 1/5	537 1/5	603 1/6	669 1/7	801 1/9	933	1,065	1,197	1,329	1,593

$$L(\min)=(W-54.45)/0.47387 \quad L(\max)=(W-44.662)/0.38729$$

B-4. LKRL-Z119 lens

For full-screen display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	314 8/9	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,373	2,637	3,164	3,691	4,219	4,746	5,273	6,328	7,383	8,438
		inches	93 3/7	103 4/5	124 4/7	145 1/3	166	186 6/7	207 5/8	249 1/7	290 2/3	332 1/5
Diagonal distance	SS	mm	5,087	5,653	6,783	7,914	9,044	10,175	11,305	13,566	15,827	18,088
		inches	200 2/7	222 5/9	267	311 5/9	356	400 4/7	445	534	623 1/8	712 1/7
Throw distance	L (min)	mm	8,128	9,000	10,744	12,488	14,233	15,977	17,721	21,210	24,699	28,187
		inches	320	354 1/3	423	491 2/3	560 1/3	629	697 2/3	835	972 2/5	1,109 3/4
	L (max)	mm	13,366	14,824	17,740	20,656	23,572	26,488	29,404	35,236	41,068	46,900
		inches	526 1/5	583 3/5	698 2/5	813 2/9	928	1,042 5/6	1,157 5/8	1,387 1/4	1,616 6/7	1,846 1/2

$$L(\min)=(W+159.472)/0.57329 \quad L(\max)=(W+83.491)/0.34293$$

For 16:9 display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	314 8/9	354 1/3	393 5/7	472 4/9	551 1/6	629 8/9
Screen height	H	mm	2,531	2,813	3,375	3,938	4,500	5,063	5,625	6,750	7,875	9,000
		inches	99 2/3	110 5/7	132 7/8	155	177 1/6	199 1/3	221 4/9	265 3/4	310	354 1/3
Diagonal distance	SS	mm	5,163	5,737	6,884	8,031	9,179	10,326	11,474	13,768	16,063	18,358
		inches	203 2/7	225 6/7	271	316 1/5	361 3/8	406 5/9	451 5/7	542	632 2/5	722 3/4
Throw distance	L (min)	mm	8,655	9,587	11,450	13,313	15,176	17,039	18,902	22,629	26,335	30,081
		inches	340 3/4	377 3/7	450 7/9	524 1/7	597 1/2	670 5/6	744 1/5	890 8/9	1,037 3/5	1,184 2/7
	L (max)	mm	14,231	15,785	18,894	22,003	25,112	28,221	31,330	37,548	43,766	49,983
		inches	560 1/4	621 1/2	743 7/8	866 1/4	988 2/3	1,111	1,233 1/2	1,478 1/4	1,723	1,967 6/7

$$L(\min)=(W+145.51)/0.53673 \quad L(\max)=(W+77.427)/0.32166$$

For 4:3 display

Screen width	W	mm	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000
		inches	137 4/5	157 1/2	177 1/6	196 6/7	236 2/9	275 3/5	314 8/9	354 1/3	393 5/7	472 4/9
Screen height	H	mm	2,625	3,000	3,375	3,750	4,500	5,250	6,000	6,750	7,500	9,000
		inches	103 1/3	118	132 7/8	147 5/8	177 1/6	206 5/7	236 2/9	265 3/4	295 2/7	354 1/3
Diagonal distance	SS	mm	4,375	5,000	5,625	6,250	7,500	8,750	10,000	11,250	12,500	15,000
		inches	172 1/4	196 6/7	221 4/9	246	295 2/7	344 1/2	393 5/7	442 8/9	492 1/8	590 5/9
Throw distance	L (min)	mm	8,989	10,236	11,483	12,730	15,224	17,719	20,213	22,707	25,201	30,189
		inches	353 8/9	403	452	501 1/5	599 2/5	697 4/7	795 7/9	894	992 1/6	1,188 5/9
	L (max)	mm	14,725	16,794	18,864	20,933	25,072	29,211	33,349	37,488	41,627	49,904
		inches	579 3/4	661 1/5	742 2/3	824 1/7	987	1,150	1,313	1,476	1,638 5/6	1,964 5/7

$$L(\min)=(W+104.01)/0.40094 \quad L(\max)=(W+57.925)/0.24162$$

B-5. LKRL-Z122 lens

For full-screen display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,373	2,637	3,164	3,691	4,219	4,746	5,273	6,328	7,383	8,438
		inches	93 3/7	103 4/5	124 4/7	145 1/3	166	186 6/7	207 5/8	249 1/7	290 2/3	332 1/5
Diagonal distance	SS	mm	5,087	5,653	6,783	7,914	9,044	10,175	11,305	13,566	15,827	18,088
		inches	200 2/7	222 1/2	267	311 4/7	356	400 4/7	445	534 1/9	623 1/8	712 1/7
Throw distance	L (min)	mm	9,997	11,074	13,228	15,383	17,537	19,691	21,846	26,154	30,463	34,772
		inches	393 4/7	436	520 4/5	605 3/5	690 3/7	775 1/4	860	1,029 2/3	1,199 1/3	1,369
	L (max)	mm	18,150	20,137	24,109	28,081	32,054	36,026	39,998	47,943	55,888	63,833
		inches	714 4/7	792 7/9	949 1/6	1,105 4/7	1,262	1,418 1/3	1,574 3/4	1,887 1/2	2,200 1/3	2,513

$$L(\min) = (W + 140.26) / 0.46418 \quad L(\max) = (W + 69.145) / 0.25174$$

For 16:9 display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,531	2,813	3,375	3,938	4,500	5,063	5,625	6,750	7,875	9,000
		inches	99 2/3	110 3/4	132 7/8	155	177 1/6	199 1/3	221 1/2	265 3/4	310	354 1/3
Diagonal distance	SS	mm	5,163	5,737	6,884	8,031	9,179	10,326	11,473	13,768	16,063	18,358
		inches	203 1/4	225 6/7	271	316 1/5	361 3/8	406 1/2	451 5/7	542	632 2/5	722 3/4
Throw distance	L (min)	mm	10,653	11,803	14,104	16,405	18,706	21,007	23,308	27,910	32,512	37,114
		inches	419 2/5	464 2/3	555 2/7	645 7/8	736 1/2	827	917 2/3	1,098 5/6	1,280	1,461 1/5
	L (max)	mm	19,337	21,456	25,692	29,929	34,166	38,402	42,639	51,112	59,586	68,059
		inches	761 1/3	844 5/7	1,011 1/2	1,178 1/3	1,345 1/9	1,512	1,678 5/7	2,012 1/3	2,346	2,679 1/2

$$L(\min) = (W + 129.66) / 0.43460 \quad L(\max) = (W + 64.235) / 0.23603$$

For 4:3 display

Screen width	W	mm	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000
		inches	137 4/5	157 1/2	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9
Screen height	H	mm	2,625	3,000	3,375	3,750	4,500	5,250	6,000	6,750	7,500	9,000
		inches	103 1/3	118 1/9	132 7/8	147 2/3	177 1/6	206 2/3	236 2/9	265 3/4	295 2/7	354 1/3
Diagonal distance	SS	mm	4,375	5,000	5,625	6,250	7,500	8,750	10,000	11,250	12,500	15,000
		inches	172 1/4	196 6/7	221 1/2	246	295 2/7	344 1/2	393 5/7	443	492 1/8	590 5/9
Throw distance	L (min)	mm	11,070	12,611	14,151	15,692	18,773	21,854	24,936	28,017	31,098	37,261
		inches	435 5/6	496 1/2	557 1/7	617 4/5	739	860 2/5	981 5/7	1,103	1,224 1/3	1,467
	L (max)	mm	20,033	22,856	25,679	28,503	34,149	39,796	45,443	51,090	56,736	68,030
		inches	788 2/3	899 6/7	1,011	1,122 1/6	1,344 1/2	1,566 7/9	1,789	2,011 2/5	2,233 5/7	2,678 1/3

$$L(\min) = (W + 92.727) / 0.32455 \quad L(\max) = (W + 47.707) / 0.17710$$

B-6. LKRL-Z140 lens

For full-screen display

Screen width	W	mm	5,000	6,000	7,000	8,000	9,000	10,000
		inches	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7
Screen height	H	mm	2,637	3,164	3,691	4,219	4,746	5,273
		inches	103 4/5	124 4/7	145 1/3	166	186 6/7	207 5/8
Diagonal distance	SS	mm	5,653	6,783	7,914	9,044	10,175	11,305
		inches	222 1/2	267	311 4/7	356	400 4/7	445
Throw distance	L (min)	mm	18,792	22,502	26,212	29,922	33,632	37,342
		inches	739 5/6	885 8/9	1,032	1,178	1,324	1,470 1/7
	L (max)	mm	35,466	42,512	49,558	56,604	63,649	70,695
		inches	1,396 2/7	1,673 2/3	1,951	2,228 1/2	2,505 7/8	2,783 2/7

$L(\min) = (W + 65.30) / 0.26955$ $L(\max) = (W + 33.615) / 0.14193$

For 16:9 display

Screen width	W	mm	5,000	6,000	7,000	8,000	9,000	10,000
		inches	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7
Screen height	H	mm	2,813	3,375	3,938	4,500	5,063	5,625
		inches	110 3/4	132 7/8	155	177 1/6	199 1/3	221 1/2
Diagonal distance	SS	mm	5,737	6,884	8,031	9,179	10,326	11,473
		inches	225 6/7	271	316 1/5	361 3/8	406 1/2	451 5/7
Throw distance	L (min)	mm	20,042	24,002	27,961	31,921	35,881	39,841
		inches	789	945	1,100 5/6	1,256 3/4	1,412 5/8	1,568 1/2
	L (max)	mm	37,803	45,317	52,830	60,343	67,857	75,370
		inches	1,488 1/3	1,784 1/8	2,080	2,375 3/4	2,671 1/2	2,967 1/3

$L(\min) = (W + 61.34) / 0.25254$ $L(\max) = (W + 31.485) / 0.13310$

For 4:3 display

Screen width	W	mm	4,000	4,500	5,000	6,000	7,000	8,000
		inches	157 1/2	177 1/6	196 6/7	236 2/9	275 3/5	315
Screen height	H	mm	3,000	3,375	3,750	4,500	5,250	6,000
		inches	118 1/9	132 7/8	147 2/3	177 1/6	206 2/3	236 2/9
Diagonal distance	SS	mm	5,000	5,625	6,250	7,500	8,750	10,000
		inches	196 6/7	221 1/2	246	295 2/7	344 1/2	393 5/7
Throw distance	L (min)	mm	21,404	24,050	26,695	31,986	37,277	42,568
		inches	842 2/3	946 5/6	1,051	1,259 1/3	1,467 3/5	1,676
	L (max)	mm	40,270	45,274	50,278	60,287	70,295	80,303
		inches	1,585 3/7	1,782 4/9	1,979 1/2	2,373 1/2	2,767 1/2	3,161 5/9

$L(\min) = (W + 45.49) / 0.18900$ $L(\max) = (W + 23.598) / 0.09992$

B-7. LKRL-90 lens

For full-screen display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,373	2,637	3,164	3,691	4,219	4,746	5,273	6,328	7,383	8,438
		inches	93 3/7	103 4/5	124 4/7	145 1/3	166	186 6/7	207 5/8	249 1/7	290 2/3	332 1/5
Diagonal distance	SS	mm	5,087	5,653	6,783	7,914	9,044	10,175	11,305	13,566	15,827	18,088
		inches	200 2/7	222 1/2	267	311 4/7	356	400 4/7	445	534 1/9	623 1/8	712 1/7
Throw distance	L	mm	3,969	4,422	5,329	6,237	7,144	8,051	8,958	10,773	12,587	14,402
		inches	156 1/4	174 1/9	209 5/6	245 1/2	281 1/4	317	352 2/3	424 1/8	495 5/9	567

$$L=(W-125.52)/1.1023$$

For 16:9 display

Screen width	W	mm	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000
		inches	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9	551 1/6	630
Screen height	H	mm	2,531	2,813	3,375	3,938	4,500	5,063	5,625	6,750	7,875	9,000
		inches	99 2/3	110 3/4	132 7/8	155	177 1/6	199 1/3	221 1/2	265 3/4	310	354 1/3
Diagonal distance	SS	mm	5,163	5,737	6,884	8,031	9,179	10,326	11,473	13,768	16,063	18,358
		inches	203 1/4	225 6/7	271	316 1/5	361 3/8	406 1/2	451 5/7	542	632 2/5	722 3/4
Throw distance	L	mm	4,242	4,726	5,693	6,661	7,629	8,596	9,564	11,500	13,435	15,370
		inches	167	186	224 1/7	262 1/4	300 1/3	338 4/9	376 1/2	452 3/4	529	605 1/8

$$L=(W-116.65)/1.0334$$

For 4:3 display

Screen width	W	mm	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	12,000
		inches	137 4/5	157 1/2	177 1/6	196 6/7	236 2/9	275 3/5	315	354 1/3	393 5/7	472 4/9
Screen height	H	mm	2,625	3,000	3,375	3,750	4,500	5,250	6,000	6,750	7,500	9,000
		inches	103 1/3	118 1/9	132 7/8	147 2/3	177 1/6	206 2/3	236 2/9	265 3/4	295 2/7	354 1/3
Diagonal distance	SS	mm	4,375	5,000	5,625	6,250	7,500	8,750	10,000	11,250	12,500	15,000
		inches	172 1/4	196 6/7	221 1/2	246	295 2/7	344 1/2	393 5/7	443	492 1/8	590 5/9
Throw distance	L	mm	4,413	5,059	5,705	6,351	7,643	8,935	10,226	11,518	12,810	15,394
		inches	173 3/4	199 1/6	224 3/5	250	300 8/9	351 3/4	402 5/8	453 1/2	504 1/3	606

$$L=(W-84.323)/0.77404$$

C Displayed Image Size in Multiple Screen Mode

Type of signal	Screen mode	Full screen		Dual screen		Quad screen	
		Horizontal size	Vertical size	Horizontal size	Vertical size	Horizontal size	Vertical size
VIDEO60		2,880	2,156	2,003	1,499	1,440	1,078
VIDEO50		2,880	2,146	2,003	1,504	1,440	1,073
XGA		2,849	2,137	2,048	1,536	1,432	1,074
SXGA1		2,560	2,048	2,048	1,638	1,280	1,024
SXGA2		2,560	1,920	2,048	1,536	1,280	960
UXGA*		2,864	2,148	1,600	1,200	-	-
WUXGA*		3,437	2,148	1,920	1,200	-	-
720P		3,810	2,143	2,048	1,152	1,280	720
HD		3,840	2,160	1,920	1,080	1,920	1,080
4K		4,096	2,160	-	-	-	-

* When projecting signals with vertical frequency of more than 1080 pixels such as UXGA and WUXGA in quad-screen mode, some of the image may not be visible.

D Brief Maintenance Information

The following list shows the basic guidelines for maintenance. For more details, please refer to the service manual.

Periodic replacement/periodic check/cleaning

SRX-R105/S105

Part name	Time required for check	Time required for replacement	1,000	2,000	3,000	4,000	5,000	6,000	10,000	15,000	20,000	Check points
Lamp bulb*	-	1 hour	○	○	○	○	○	○	○	○	○	Time, flicker
Lamp house*	1 minute	-							△	△	△	Peeling-off, damage of reflector (note: check at every 1,000H after 10,000H)
Fan	2 minutes	10 minutes					△		○	△	○	Noise
Shift block assembly**	20 minutes	2 hours					△		△	△	△	Contrast, blemish, uniformity
Combination prism	30 minutes	30 minutes					□		△	□	△	Crack, luminance level
B-ch pre-PBS block	30 minutes	30 minutes					□		△	□	△ ***	Crack, luminance level (note: recommend replacement at every 20,000H)
PS converter	30 minutes	30 minutes					-		○	-	○	Burns, luminance level

SRX-R110/S110

Part name	Time required for check	Time required for replacement	800	1,600	2,400	3,200	4,000	4,800	9,600	14,400	19,200	Check points
Lamp bulb*	-	1 hour	○	○	○	○	○	○	○	○	○	Time, flicker
Lamp house*	1 minute	-							△	△	△	Peeling-off, damage of reflector (note: check at every 800H after 9,600H)
Fan	2 minutes	10 minutes						△	○	△	○	Noise
Shift block assembly**	20 minutes	2 hours						△	△	△	△	Contrast, blemish, uniformity
Combination prism	30 minutes	30 minutes						□	△	□	△	Crack, luminance level
B-ch pre-PBS block	30 minutes	30 minutes						□	△ ***	□	△ ***	Crack, luminance level (note: recommend replacement at every 9,600H)
PS converter	30 minutes	30 minutes						○	○	○	○	Burns, luminance level

* Includes lamp house ventilation filter cleaning.

** Includes 3D gamma fine tuning.

*** It is recommended to replace Pre-PBS Block (B-ch).

E Preset Signals

No	Signal number	fH [kHz]	fV [Hz]	Aspect	Horizontal sampling	Vertical sampling
0	NO INPUT	0	0			
3	VIDEO60 (480_60i)	15.73	59.94	4:3	1,280	480
4	VIDEO50 (575_50i)	15.63	50.00	4:3	1,280	570
5	HDTV (1,080_60i)	33.75	60.00	16:9	1,920	1,080
23	1,024 x 768_VESA60	48.36	60.00	4:3	1,024	768
24	1,024 x 768_VESA70	56.48	70.07	4:3	1,024	768
25	1,024 x 768_VESA75	60.02	75.03	4:3	1,024	768
26	1,024 x 768_VESA85	68.68	85.00	4:3	1,024	768
32	1,280 x 960_VESA60	60.00	60.00	4:3	1,280	960
33	1,280 x 960_VESA75	75.00	75.00	4:3	1,280	960
36	1,280 x 1,024_VESA60	63.97	60.01	5:4	1,280	1,024
37	1,280 x 1,024_VESA75	79.98	75.03	5:4	1,280	1,024
38	1,280 x 1,024_VESA85	91.15	85.02	5:4	1,280	1,024
39	1,600 x 1,200_VESA60	75.00	60.00	4:3	1,600	1,200
45	1,080_50i	28.13	50.00	16:9	1,920	1,080
47	720_60P	45.00	60.00	16:9	1,280	720
48	720_50P	37.50	50.00	16:9	1,280	720
49	1,080_48i (24PsF)	27.00	48.00	16:9	1,920	1,080
-75	1,080_60i	33.75	60.00	16:9	1,920	1,080
-76	1,080_25PsF	31.25	50.00	16:9	1,920	1,080
-77	1,080_30PsF	33.75	60.00	16:9	1,920	1,080
-78	1,080_24P	27.00	24.00	16:9	1,920	1,080
-79	DC 2,048 x 1,080_48i	27.00	48.00		2,048	1,080
-80	DC 2,048 x 1,080_24P	27.00	24.00		2,048	1,080

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

F

Specifications

SXRD Device	
Display device	SXRD (Silicon X-tal Reflective Display)
Size	1.55-inch across diagonal
Resolution	4,096 (H) X 2,160 (V) pixels
Reflectivity	72 %
Contrast (as device)	More than 4,000 : 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

SRX-S110 / SRX-S105		SRX-R110 / SRX-R105
Optical		
Projection system	3-SXRD panel, prism color integrated system	
Imaging device	SXRD, 1.55-inch (diagonal), 4,096(H) x 2,160(V) pixels on each chip	
Lamp	2 kW Xenon lamp x 2 (SRX-R110/S110) 1kW Xenon lamp x 2 (SRX-R105/S105)	
Screen coverage	Approx. 4.5 to 15.5 m (14 to 51 feet) (viewable area, measured horizontally)	
Light output	10,000 ANSI lumens ±10 % (SRX-R110/S110)* 5,000 ANSI lumens ±10 % (SRX-R105/S105)	
General		
Xenon white reference	X: 0.314, Y: 0.351	
Contrast	More than 1800:1	
Resolution	600 TV lines (SDI input/SMPTE-259M) 1,920 x 1,080 pixels (HD-SDI input, SMPTE-292M) 4,096 x 2,160 pixels (RGB)	
Power requirements	AC 200 to 240 V, 50/60 Hz (SRX-R110/S110) AC 100 to 240 V, 50/60 Hz (SRX-R105/S105)	
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)	Approx. 740 x 500 x 1,330mm (29 4/5 x 19 4/5 x 52 3/5 inches)	
Mass	Approx. 110 kg (242 lb 8 oz) (without lens) Approx. 120 kg (264 lb 9 oz) (with lens)	
Input/Output		
Input A	DVI-D interface board	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 Ethernet terminal, 10Base-T/100Base-TX x 1	

SRX-S110 / SRX-S105		SRX-R110 / SRX-R105
Input Boards		
LKRI-001 Analog input board	BNC x 5, HD/SD analog video input, RGB/Y, Cb, Cr selectable	
	Computer signals	
	R	0.7 Vp-p ± 2 dB positive, 75 Ω
	G	0.7 Vp-p ± 2 dB positive, 75 Ω
	B	0.7 Vp-p ± 2 dB positive, 75 Ω
	Sync	
	HD Horizontal	TTL level, high impedance, sync positive/negative
	HD Vertical	TTL level, high impedance, sync positive/negative
	Standard definition video [Y, Cb, Cr]	
	Y	1.0 Vp-p ± 2 dB sync negative, 75 Ω
	Cb	0.7 Vp-p ± 2 dB positive, 75 Ω
	Cr	0.7 Vp-p ± 2 dB positive, 75 Ω
	High definition video [RGB]	
	R	0.7 Vp-p ± 2 dB positive, 75 Ω
	G with sync	1.0 Vp-p ± 2 dB, 75 Ω , Tri-level sync: ± 0.3 Vp-p / Bi-level sync: 0.3 Vp-p
	B	0.7 Vp-p ± 2 dB positive, 75 Ω
	High definition video [Y, Pb, Pr]	
	Y	1.0 Vp-p ± 2 dB, 75 Ω , Tri-level sync: ± 0.3 Vp-p / Bi-level sync: 0.3 Vp-p
	Pb	± 0.35 Vp-p ± 2 dB, positive 75 Ω
	Pr	± 0.35 Vp-p ± 2 dB, positive 75 Ω
LKRI-002 HD-SDI (4:2:2) input board	BNC x 2 (Input x 1, Loop-through out x 1) HD-SDI (SMPTE-292M / ITU-R.BT709 / BTA-S004) SDI (SMPTE-259M / ITU-R.BT601)	
LKRI-003 Dual-link HD-SDI input board	BNC x 4 (Input x 2, Loop-through out x 2) HD-SDI (Single-link, HD-SDI/4:2:2, SMPTE-292M): Y, Pb, Pr DC-SDI (Single-link, DC-SDI/4:2:2): Y, Pb, Pr Dual-link HD-SDI (Dual-link HD-SDI/4:4:4, SMPTE-372M): RGB Dual-link DC-SDI (Dual-link DC-SDI/4:4:4): RGB	
LKRI-004 DVI interface board	1,024 x 768 at 60 Hz (XGA), 1,280 x 960 at 60 Hz (SXGA), 1,280 x 1,024 at 60 Hz (SXGA+), 1,400 x 1,050 at 60 Hz (SXGA+), 1,600 x 1,200 at 60 Hz (UXGA), 2,048 x 1,080 at 60 Hz, 1,920 x 1,080 at 24 Hz, 2,048 x 1,080 at 24 Hz, 1,920 x 1,200 at 59.95 Hz Reduced Blanking (WUXGA), 1,920 x 1,080 at 60 Hz, 2,048 x 1,080 at 48 Hz	1,024 x 768 at 60 Hz (XGA), 1,280 x 960 at 60 Hz (SXGA), 1,280 x 1,024 at 60 Hz (SXGA), 1,400 x 1,050 at 60 Hz (SXGA+), 1,600 x 1,200 at 60 Hz (UXGA), 1,920 x 1,080 at 24 Hz, 2,048 x 1,080 at 24 Hz
Others		
Safety standards	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	Remote commander unit x 1, SRX controller software x 1, Dry cell (AA size) x 2 / Ethernet Cross Cable (3 m) x 1 Operation instructions x 1, Installation manual x 1	
Optional accessories	LKRL-90: 0.9x fixed focal length projection lens	
	LKRL-Z115: 1.48 to 1.81x zoom lens	
	LKRL-Z117: 1.72 to 2.39x zoom lens	
	LKRL-Z119: 1.81 to 2.94x zoom lens	
	LKRL-Z122: 2.33 to 3.96x zoom lens	
	LKRL-Z140: 3.81 to 7.12x zoom lens	
	LKRI-001: Analog input board	
	LKRI-002: HD-SDI (4:2:2) input board	
	LKRI-003: Dual-link HD-SDI input board	
	LKRI-004: DVI interface board	
	LKRX-105: 1kW Xenon lamp bulb for replacement (for SRX-R105/S105)	
	LKRX-B105: 1kW Xenon lamp house unit for replacement (for SRX-R105/S105)	
	LKRX-110: 2kW Xenon lamp bulb for replacement (for SRX-R110/S110)	
	LKRX-B110: 2kW Xenon lamp house unit for replacement (for SRX-R110/S110)	
	LKRA-001: 8-inch Exhaust Duct adaptor	

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