

SONY
make.believe



VPL-FH500L
Versatile Installation Projector



BrightEra™
Long Lasting Optics

High Picture Quality in WUXGA Projection Delivering a Dramatic Brightness of 7,000 Lumens

Packing the most advanced projector technologies into a low-profile design, the VPL-FH500L is an excellent choice, delivering a dramatic brightness of 7,000 lumens* and ultra high-quality images with WUXGA resolution. The VPL-FH500L offers peace-of-mind by using a twin-lamp system that provides both a redundant lamp and economical operation. It also delivers amazing installation flexibility and hassle-free maintenance in a stylish design that blends into any decor. This projector has a very wide lens shift range, enabling excellent flexibility when installing the unit and adjusting the image. Lamp and air filter maintenance cycles are synchronized, and are exceptionally long compared to single-lamp and other dual-lamp systems, cutting maintenance time and cost.

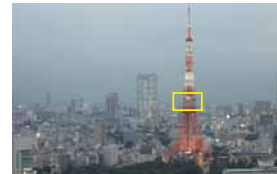
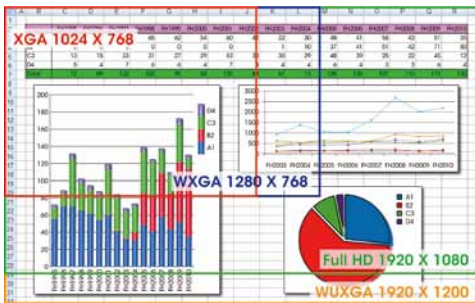
Overall, the VPL-FH500L delivers a low total cost of ownership, and additionally includes eco-friendly features such as long-lasting lamps and low power consumption.

* ISO 21118



Ultra-high WUXGA Resolution with Full-HD Compatibility

The VPL-FH500L delivers an amazing resolution of WUXGA (1920 x 1200), which exceeds Full-HD resolution (1920 x 1080).

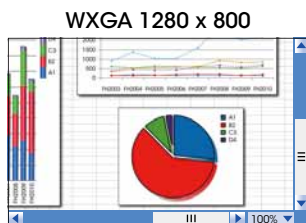


WXGA Picture Quality

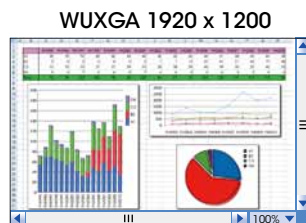
WUXGA Picture Quality

simulated images
Licensed by Tokyo Tower

The VPL-FH500L allows projection in a wider display range. More information can be displayed on the screen, so the user can see the whole page without scrolling.



Need to scroll during discussion



simulated images

Extremely clear and detailed high-quality images are projected, even on a large screen, and native Full-HD images can be projected full screen. The VPL-FH500L is the ultimate tool for projecting images in a range of applications requiring exceptional detail.

High Picture Quality

Brilliant Color Performance

By combining a new-generation optical system that uses Sony's BrightEra with Long Lasting Optics technology™* and a 3LCD projection system, the VPL-FH500L offers a high brightness of 7,000 lumens.

* BrightEra with Long Lasting Optics is the Sony brand name for a generation of optical system, which uses a more advanced version of Sony's original BrightEra technology. In addition to adopting LCD panels that have pixels with large aperture ratios and inorganic alignment layers, BrightEra with Long Lasting Optics technology also uses an inorganic layer for polarization plates to greatly enhance reliability.

3LCD Projection Offers Brilliant Color Performance

The VPL-FH500L adopts a 3LCD projection system incorporating three LCD panels. This system enables the projector to present bright and natural images.



simulated images

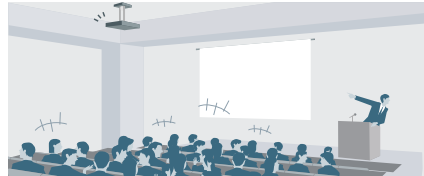
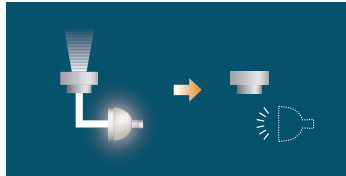
Twin-lamp System for Peace-of-mind Operation

The VPL-FH500L's twin-lamp system provides both peace of mind and economical operation. One lamp can output a total of 7,000 lumens but a second lamp is built in to provide automatic backup should the primary lamp fail. The two lamps are alternately used, achieving a recommended lamp replacement time of up to 8,000 hours*, saving maintenance time and cost.

*In Standard mode (with two lamps). Expected maintenance time, not guaranteed. Lamp performance will vary based on operating environment and use.

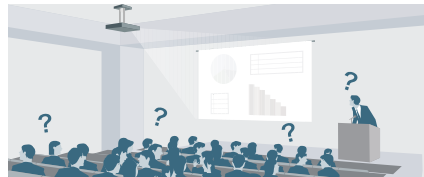
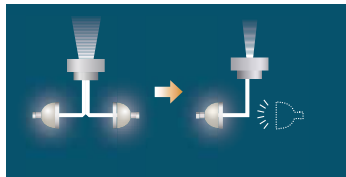


Twin-lamp system image



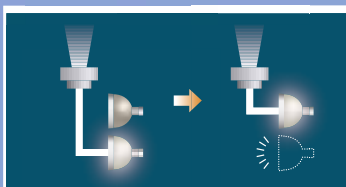
Single-lamp system:

When there's a problem with the lamp, the presentation has to stop.



Dual-lamp system:

When there's a problem with one lamp, brightness is halved and the presentation's impact is diminished.



Twin-lamp system:

Even if one lamp fails, the presentation is able to continue without interruption.

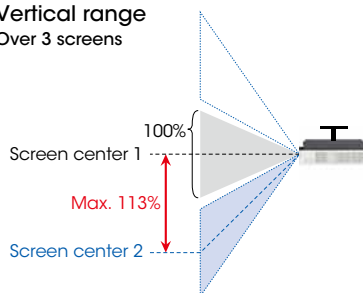
What happens if one lamp suddenly fails during an important presentation?

Installation Advantages

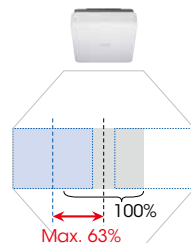
Lens Shift Function

The VPL-FH500L has a Lens Shift function which is controlled from the projector control panel or the supplied Remote Commander® unit. Using this function, the position of the projected image can be moved vertically by -113% to +113% and horizontally by -63% to +63%. Images can be easily adjusted to the desired settings during installation. With this exceptional shift range, the VPL-FH500L can be installed in a way to maximize performance even in the most difficult environments.

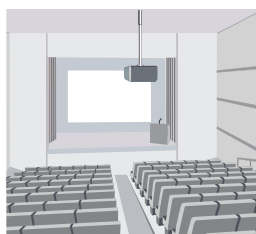
Vertical range
Over 3 screens



Horizontal range
Over 2 screens



V shift 50%



V shift 113%



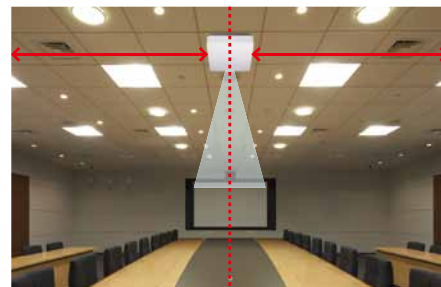
Sufficient V shift to ensure broad visibility

Variety of Optional Lenses Including Sony's Legacy Lenses

Various optional zoom lenses are available for the VPL-FH500L, and these can be used for many different applications.

Centered Lens Design

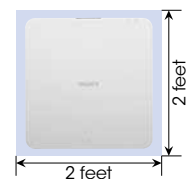
The centered lens provides symmetry for a balanced installation, and makes setup very simple.



Symmetric installation image

"Blend-in" Design

The VPL-FH500L showcases a newly designed low-profile chassis, so the projector appears to blend into the ceiling or wall on which it is mounted. The connector panel is located on the front of the unit so its cables cannot be seen by the audience.



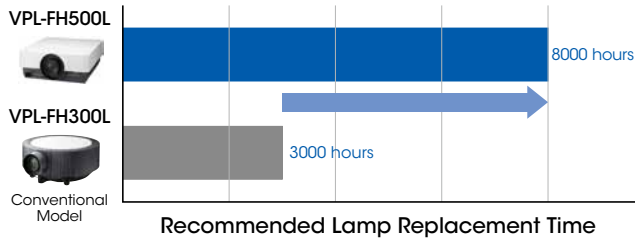
Please Note: Lens shift varies by lens model. Please see page 6 for details.

Good TCO and Eco-friendly Design

Long-lasting Lamp

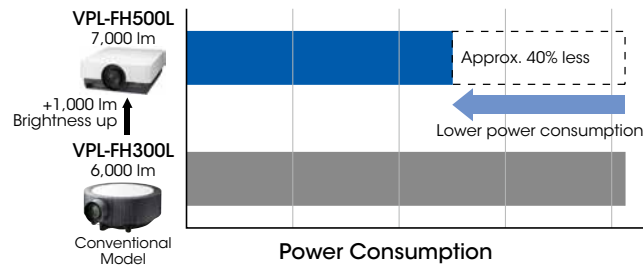
By incorporating newly developed high-performance lamps and advanced lamp-control technology, the VPL-FH500L delivers a recommended lamp replacement time of approximately 8,000 hours.*

* In Standard mode (with two lamps)



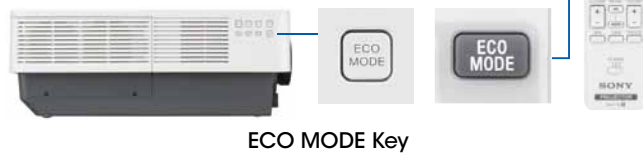
Low Power Consumption

The VPL-FH500L offers remarkably low power consumption, allowing users to make significant savings on their electricity expenses.



ECO MODE Key

With a single push of the ECO MODE key on either the projector or the supplied Remote Commander® unit, users can select an energy-saving setting from the ECO Mode menu.



ECO MODE Key

Lamp and Filter Synchronized Maintenance

When the lamps and air filter are due for replacement, a timely message is displayed on screen. The lamps and air filter are accessible from both sides, so their replacement can be performed without uninstalling the projector. Like the lamps, the replacement filter has an approximate 8,000-hour replacement cycle in Standard mode. This synchronized replacement is achieved even in tough environments by a Quad Filter System Plus, saving maintenance time and cost. The Quad Filter System Plus is composed of four pleated electrostatic filters. This substantial unit is designed to maintain high performance for a long period of time, requiring air filter replacement only when lamp replacement is also required. The unit is included with the replacement lamps.



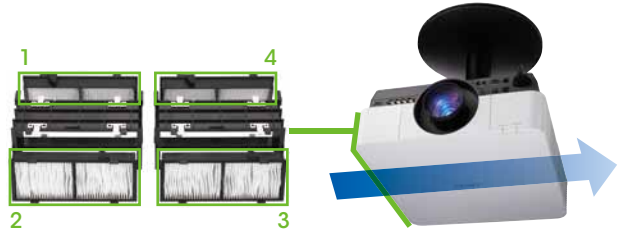
Lamp replacement



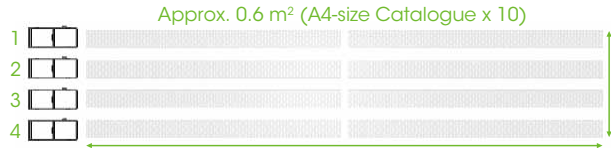
Air filter replacement

Benefits of the Quad Filter System Plus

To keep all internal parts clean, the projector design unifies air intake through just one hole which is equipped with a high-reliability filter system.



One-way intake with the Quad Filter System Plus



The Quad Filter System Plus consists of four very large, thick accordion filters. It provides exceptional protection from dust and dirt, and is a simple system that is easily maintained for the life of the projector.

Other Features

Picture-by-Picture

With this feature, users can project two different images at the same time, greatly expanding creative possibilities and enabling exciting new applications.



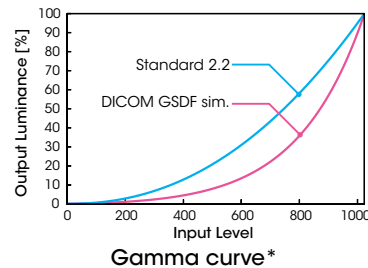
simulated images

DICOM GSDF Simulation*

The VPL-FH500L is equipped with a new gamma mode, called DICOM GSDF Simulation. This is ideal for viewing digital medical imagery for non-diagnostic applications.

* Follows GSDF (Grayscale Standard Display Function) medical standards for DICOM (Digital Imaging and Communications in Medicine).

* This function is for training and reference only, and cannot be used for medical diagnosis.



*Based on internal testing.



Standard 2.2



DICOM GSDF simulation

simulated images

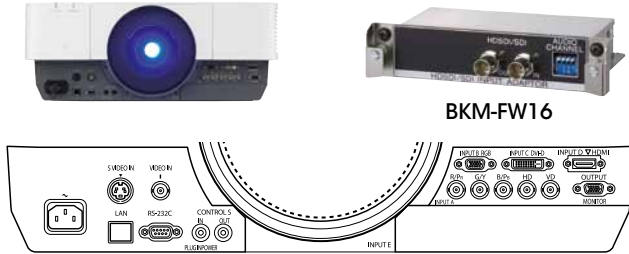
Screen Aspect

When screen and image aspect ratios do not match*, this function fits the projected image to the screen. So, even when images are switched between different aspect signals, the projected image can always fit the screen.

* Using the same aspect ratio between screen and projector is ideal.

Multiple Inputs

The VPL-FH500L is equipped with multiple connectivity inputs, including HDMI™ and DVI-D for digital connectivity with advanced video processing. In addition, with the optional BKM-FW16 HD-SDI Input Adaptor installed, the projector can accept HD-SDI/SDI signals to project high-quality digital video.



360-degree Orientation

The VPL-FH500L can be turned vertically for installation. This flexibility allows the projector to be used in several different ways.



Picture Muting Function via Built-in Mechanical Shutter

The VPL-FH500L can mute the projection of images on screen via a built-in mechanical shutter. This function can be easily operated with just the touch of a button on the supplied Remote Commander® unit.

Quiet Noise Operation

Low noise fans designed to produce lower frequency sounds to be less obtrusive

Closed Captioning

Official teletext broadcasting, developed by the NCI, USA

Security Pack

Security lock (password and mechanical), security bar, panel key lock, and security label

Test Pattern Key

For easy screen adjustment

ID Mode

For individual control of multiple projectors

Freeze Function

Freezes the projected image

Smart APA

Auto pixel alignment

Direct Power On/Off

Direct power control using the circuit breaker on the switch board

High Altitude Mode

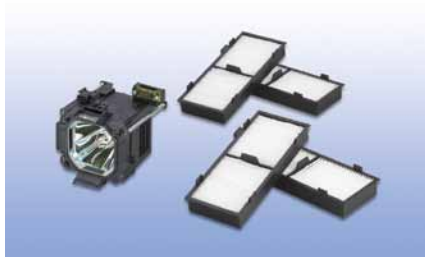
For projector operation at high altitude

Network and Control

Controls and monitors projector status
Compatible with various control systems



OPTIONAL ACCESSORIES



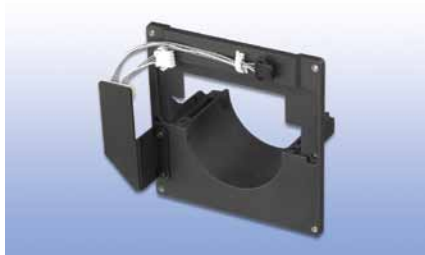
LMP-F330
Projector Lamp (Replacement filters included)



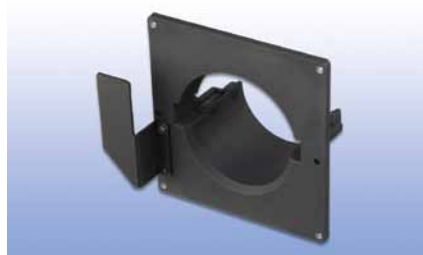
PAM-600
Projector Suspension Support



PSS-630P
Projector Suspension Support Joint Pole



PK-F500LA1
Projection Lens Adapter






PK-F500LA2
Projection Lens Adapter



BKM-FW16
HD-SDI/SDI Input Adaptor

OPTIONAL LENSES

<Premium Series>

Projection lens	VPLL-4008	VPLL-Z4015	VPLL-Z4019	VPLL-Z4025	VPLL-Z4045
					
Throw ratio	1.08:1	2.02:1 to 2.67:1	2.62:1 to 3.36:1	3.30:1 to 6.11:1	6.08:1 to 10.52:1
Zoom / Focus	— / Manual	Powered / Powered	Powered / Powered	Powered / Powered	Powered / Powered
Lens shift	Vertical: Upward 41% to Downward 41% Horizontal: Right 19% to Left 19%	Vertical: Upward 109% to Downward 109% Horizontal: Right 57% to Left 57%	Vertical: Upward 113% to Downward 113% Horizontal: Right 63% to Left 63%	Vertical: Upward 113% to Downward 113% Horizontal: Right 63% to Left 63%	Vertical: Upward 113% to Downward 113% Horizontal: Right 63% to Left 63%
Aperture	f/2.00	f/2.20 to 2.60	f/1.70 to 2.10	f/2.20 to 3.10	f/2.20 to 3.60
Screen size*	40" to 600"	40" to 600"	40" to 600"	40" to 600"	60" to 600"
Dimensions	W 148 x H 133 x D 240 mm (W 5 13/16 x H 5 1/4 x D 9 7/16 in)	W 148 x H 133 x D 231 mm (W 5 13/16 x H 5 1/4 x D 9 3/32 in)	W 148 x H 133 x D 212 mm (W 5 13/16 x H 5 1/4 x D 8 11/32 in)	W 148 x H 133 x D 243 mm (W 5 13/16 x H 5 1/4 x D 9 9/16 in)	W 148 x H 133 x D 235 mm (W 5 13/16 x H 5 1/4 x D 9 1/4 in)
Mass	2.55 kg / 5 lb 10 oz	3.00 kg / 6 lb 10 oz	3.06 kg / 6 lb 12 oz	2.80 kg / 6 lb 3 oz	3.00 kg / 6 lb 10 oz
Required projection lens adapter	—	—	—	—	—

<Value Series>

Projection lens	VPLL-FM22	VPLL-ZM32	VPLL-ZM42	VPLL-ZP41	VPLL-ZM102
					
Throw ratio	0.87:1	1.45:1 to 1.59:1	1.83:1 to 2.32:1	2.48:1 to 2.71:1	3.28:1 to 4.83:1
Zoom / Focus	— / Manual	Manual / Manual	Manual / Manual	Powered / Powered	Manual / Manual
Lens shift	—	Vertical: Upward 59% to Downward 59% Horizontal: Right 31% to Left 31%	Vertical: Upward 59% to Downward 59% Horizontal: Right 31% to Left 31%	Vertical: Upward 113% to Downward 113% Horizontal: Right 63% to Left 63%	Vertical: Upward 59% to Downward 59% Horizontal: Right 31% to Left 31%
Aperture	f/2.00	f/1.76 to 1.96	f/1.74 to 2.28	f/1.70 to 2.00	f/2.04 to 2.57
Screen size*	40" to 300"	40" to 300"	40" to 300"	40" to 300"	40" to 300"
Dimensions	W 88 x H 88 x D 169 mm (W 3 15/32 x H 3 15/32 x D 6 21/32 in)	W 88 x H 88 x D 159 mm (W 3 15/32 x H 3 15/32 x D 6 1/4 in)	W 88 x H 88 x D 159 mm (W 3 15/32 x H 3 15/32 x D 6 1/4 in)	W 117 x H 110 x D 198 mm (W 4 19/32 x H 4 11/32 x D 7 25/32 in)	W 88 x H 88 x D 198 mm (W 3 15/32 x H 3 15/32 x D 7 25/32 in)
Mass	0.95 kg / 2 lb 2 oz	1.00 kg / 2 lb 3 oz	0.65 kg / 1 lb 7 oz	1.46 kg / 3 lb 3 oz	1.50 kg / 3 lb 5 oz
Required projection lens adapter	PK-F500LA2	PK-F500LA2	PK-F500LA2	PK-F500LA1	PK-F500LA2

* Viewable area, measured diagonally.

PRESET SIGNAL CHART

Computer Signal

Resolution	fH [kHz]/ fV [Hz]	Input connector	
		RGB ^{*1}	DVI-D ^{*2} /HDMI ^{*6}
640 x 350	31.5/70	●	—
	37.9/85	●	—
640 x 400	31.5/70	●	—
	37.9/85	●	—
640 x 480	31.5/60	●	●
	35.0/67	●	—
	37.9/73	●	—
	37.5/75	●	—
	43.3/85	●	—
800 x 600	35.2/56	●	—
	37.9/60	●	●
	48.1/72	●	—
	46.9/75	●	—
	53.7/85	●	—
832 x 624	49.7/75	●	—
	48.4/60	●	●
1024 x 768	56.5/70	●	—
	60.0/75	●	—
	68.7/85	●	—
	64.0/70	●	—
1152 x 864	67.5/75	●	—
	77.5/85	●	—
	61.8/66	●	—
1152 x 900	60.0/60	●	●
	75.0/75	●	—
1280 x 960	64.0/60	●	●
	80.0/75	●	—
	91.1/85	●	—
1400 x 1050	65.3/60	●	●
1600 x 1200	75.0/60	●	●
1280 x 768	47.8/60	●	●
1280 x 720	45.0/60	●	● ^{*5}
1920 x 1080	67.5/60	—	● ^{*5}
1360 x 768	47.7/60	●	●
1440 x 900	55.9/60	●	●
1680 x 1050	65.3/60	●	●
1280 x 800	49.7/60	●	●
1920 x 1200	74.0/60	● ^{*4}	● ^{*4}
1600 x 900	60.0/60	● ^{*4}	● ^{*4}

Digital TV Signal

Signal	fV [Hz]	Input connector		
		RGB/YPbPr ^{*3}	DVI-D ^{*2} / HDMI ^{*6}	HD-SDI/SDI input adaptor BKM-FW16 ^{*7}
480i	60	●	●	●
576i	50	●	●	●
480p	60	●	●	—
576p	50	●	●	—
1080i	60	●	●	●
1080i	50	●	●	●
1080i	48	—	—	●
720p	60	●	● ^{*5}	●
720p	50	●	●	●
1080p	60	—	● ^{*5}	—
1080p	50	—	●	—
1080p	24	—	●	●
1080p	30	—	—	●

Analog TV Signal

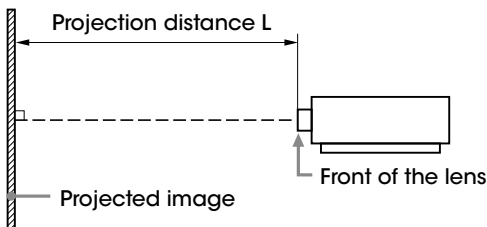
Signal	fV [Hz]	Input connector
		VIDEO/S VIDEO
NTSC	60	●
PAL/SECAM	50	●

- *1: INPUT A, INPUT B
- *2: INPUT C
- *3: INPUT A
- *4: Available for VESA Reduced Blanking signals only.
- *5: INPUT C is determined as a computer signal;
INPUT D is determined as a digital TV signal.
- *6: INPUT D
- *7: INPUT E
- When a signal other than the signals listed in table is input, the picture may not be displayed properly.
- An input signal meant for a screen resolution different from that of the panel will not be displayed in its original resolution. Text and lines may be uneven.
- Some actual value may differ slightly from the design values given in the table.

INSTALLATION DIAGRAM

Unit: m (inches)

Projection image size		Projection distance L									
Diagonal	Width x Height	VPLL-FM22	VPLL-ZM32	VPLL-ZM42	VPLL-ZP41	VPLL-ZM102	VPLL-4008	VPLL-Z4015	VPLL-Z4019	VPLL-Z4025	VPLL-Z4045
80-inch (2.03 m)	1.72 x 1.08 (68 x 42)	1.48 (58)	2.49 – 2.74 (98 – 108)	3.17 – 3.98 (125 – 157)	4.28 – 4.78 (169 – 188)	5.62 – 8.33 (221 – 328)	1.80 (71)	3.36 – 4.42 (132 – 174)	4.36 – 5.57 (172 – 219)	5.48 – 10.14 (216 – 399)	10.09 – 17.46 (397 – 687)
100-inch (2.54 m)	2.15 x 1.35 (85 x 53)	1.87 (74)	3.12 – 3.44 (123 – 135)	3.98 – 4.99 (157 – 196)	5.37 – 6.00 (211 – 236)	7.07 – 10.46 (278 – 412)	2.27 (89)	4.22 – 5.55 (166 – 219)	5.48 – 6.99 (216 – 275)	6.88 – 12.71 (271 – 500)	12.66 – 21.88 (498 – 861)
120-inch (3.05 m)	2.58 x 1.62 (102 x 64)	2.25 (89)	3.76 – 4.15 (148 – 163)	4.78 – 6.00 (188 – 236)	6.45 – 7.22 (254 – 284)	8.52 – 12.58 (335 – 495)	2.74 (108)	5.09 – 6.68 (200 – 263)	6.60 – 8.41 (260 – 331)	8.29 – 15.28 (326 – 602)	15.23 – 26.30 (600 – 1035)
150-inch (3.81 m)	3.23 x 2.02 (127 x 79)	2.83 (111)	4.71 – 5.20 (185 – 205)	5.99 – 7.51 (236 – 296)	8.09 – 9.05 (319 – 356)	10.69 – 15.77 (421 – 621)	3.44 (135)	6.38 – 8.38 (251 – 330)	8.29 – 10.55 (326 – 415)	10.40 – 19.14 (409 – 754)	19.10 – 32.93 (752 – 1296)
200-inch (5.08 m)	4.31 x 2.69 (170 x 106)	3.79 (149)	6.30 – 6.95 (248 – 274)	8.01 – 10.03 (315 – 395)	10.80 – 12.11 (425 – 477)	14.31 – 21.09 (563 – 830)	4.61 (182)	8.55 – 11.20 (337 – 441)	11.09 – 14.10 (437 – 555)	13.92 – 25.57 (548 – 1007)	25.53 – 43.99 (1005 – 1732)



SPECIFICATIONS

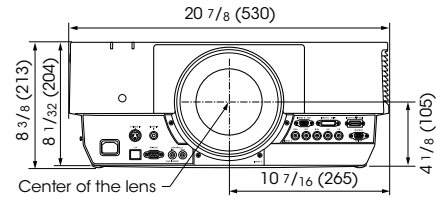
		VPL-FH500L
Display system	3 LCD system	
Display device	Size of effective display area	0.95" (24.1 mm) x 3, BrightEra, Aspect ratio: 16:10
	Number of pixels	6,912,000 (1920 x 1200 x 3) pixels
Projection lens	Zoom	Powered / Manual (Depends on lens)
	Focus	Powered / Manual (Depends on lens)
	Lens shift	Powered
	Light source	High-pressure mercury lamp, 330 W type (Twin lamp system)
Recommended lamp replacement time*1	6000 H (Lamp mode: High), 8000 H (Lamp mode: Standard) *2	
Filler replacement cycle	Same time as the lamp replacement	
Screen size	40" to 600" (1.02 m to 15.24 m) (Depends on lens)	
Light output	7000 lm (Lamp mode: High)*3, 5600 lm (Lamp mode: Standard)*3	
Color light output	7000 lm (Lamp mode: High)*3, 5600 lm (Lamp mode: Standard)*3	
Contrast ratio (full white / full black)*4	2500:1	
Displayable	Horizontal	14 kHz to 93 kHz
	Vertical	47 Hz to 93 Hz
Display resolution	Computer signal input	Maximum display resolution: 1920 x 1200 dots*5 Panel display resolution: 1920 x 1200 dots
	Video signal input	NTSC, PAL, SECAM, 480/60i, 576/50i, 480/60p, 576/50p, 720/60p, 720/50p, 1080/60i, 1080/50i, 1080/60p, 1080/50p, 1080/48i*6, 1080/24p, 1080/30p*6
Color system	NTSC3.58, PAL, SECAM, NTSC4.43, PAL-M, PAL-N, PAL60	
Keystone correction	Vertical: Max. +/- 5 degrees	
OSD language	20-languages (English, Dutch, French, Italian, German, Spanish, Portuguese, Turkish, Polish, Russian, Swedish, Norwegian, Japanese, Simplified Chinese, Traditional Chinese, Korean, Thai, Vietnamese, Arabic, Persian)	
Computer and video signal input/output	INPUT A	RGB / Y Pb Pr input connector: 5BNC (female)
	INPUT B	RGB input connector: Mini D-sub 15-pin (female)
	INPUT C	DVI-D input connector: DVI-D 24-pin (Single link), supported HDCP
	INPUT D	HDMI input connector: Digital RGB/Y Pb Pr
	INPUT E	Optional adaptor slot (For HD-SDI/SDI Input Adaptor "BKM-FW16")
	S VIDEO IN	S video input connector: Mini DIN 4-pin
	VIDEO IN	Video input connector: BNC
	OUTPUT	Monitor output connector*7: Mini D-sub 15-pin (female)
Control signal input/output	RS-232C connector: D-sub 9-pin (female)	
	LAN connector: RJ45, 10BASE-T/100BASE-TX	
	Control S input connector: Stereo mini jack, Plug in power DC 5 V Control S output connector: Stereo mini jack	
Operating temperature (Operating humidity)	32°F to 104°F / 0°C to 40°C (35% to 85%; no condensation)	
Storage temperature (Storage humidity)	-4°F to +140°F / -20°C to +60°C (10% to 90%)	
Power requirements	AC 100 V to 240 V, 4.9 A to 2.0 A, 50/60 Hz	
Power consumption	AC 100 V to 120 V	490 W
	AC 220 V to 240 V	460 W
Standby mode	AC 100 V to 120 V 11 W (Standby mode: Standard) / 0.1 W (Standby mode: Low)	
power consumption	AC 220 V to 240 V 10 W (Standby mode: Standard) / 0.2 W (Standby mode: Low)	
Heat dissipation	AC 100 V to 120 V	1672 BTU
	AC 220 V to 240 V	1569 BTU
Outside dimensions	W 20 7/8 x H 8 3/8 x D 21 15/32 in (W 530 x H 213 x D 545 mm) W 20 7/8 x H 8 1/32 x D 21 15/32 in (W 530 x H 204 x D 545 mm) (without protrusions)	
Weight	44 lb 1 oz / 20 kg	
Supplied accessories	RM-PJ19 Remote Commander (1), Size AA (R6) batteries (2), AC Power Cord (1), Cable ties (2), Cable tie holder for HDMI (1), Lens installation screws (4), Lens gap cover (1), Quick Reference Manual (1), Security Label (1), Operating Instructions (1)	

*1. Expected maintenance time, not guaranteed. Lamp performance will vary based on operating environment and use. *2 With two lamp sequential use. *3 When attaching the VPLL-ZP41. *4 The value is average. *5 Available for VESA Reduced Blanking signal. *6 Available via BKM-FW16. *7 From INPUT A and INPUT B.

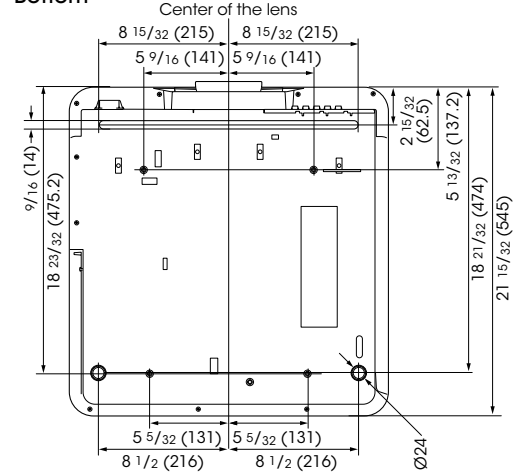
DIMENSIONS

Front

Unit: inches (mm)



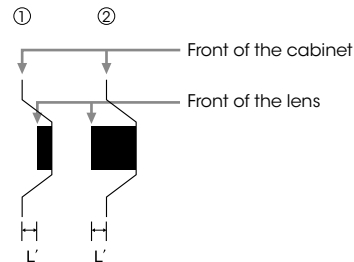
Bottom



The distance L' is between the front of the lens (center) and the front of the cabinet

Unit: inches (mm)

Lens	L'	Type
VPLL-FM22	1 7/32 (30.9)	①
VPLL-ZM32	1 11/16 (42.5)	①
VPLL-ZM42	1 19/32 (40.1)	①
VPLL-ZP41	11/32 (9.1)	②
VPLL-ZM102	1/8 (3.0)	①
VPLL-4008	2 9/32 (57.8)	②
VPLL-Z4015	1 7/8 (47.8)	②
VPLL-Z4019	1 1/16 (26.7)	②
VPLL-Z4025	2 3/16 (55.4)	②
VPLL-Z4045	2 3/32 (53.0)	②



Sony Electronics Inc.
1 Sony Drive
Park Ridge, NJ 07656
sony.com/professional

DI-0224A (MK10801V1)

©2011 Sony Corporation. All rights reserved.
Reproduction in whole or in part without written permission is prohibited.
Features and specifications are subject to change without notice.
The values for mass and dimension are approximate.
Sony, the Sony logo, the Sony make.believe logo, BrightEra, the BrightEra with Long Lasting Optics logo, and Remote Commander are trademarks of Sony Corporation.
Trademark PJLink is a trademark applied for trademark rights in Japan, the United States of America and other countries and areas.
HDMI is a trademark of HDMI Licensing LLC.
All other trademarks are the property of their respective owners.

Printed in USA (3/11)