

V731U & V801U Installation Guide

Rev 1.0

Desktop and Ceiling Mount

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Product Description

Type:	3 panel LCD projector, 0.76 p-Si TFT w/MLA	Dimensions: 19.8"(W) x 6.6"(H) x 16.2"(D) Weight: 24.7 lbs
Resolution:	1920 x 1200 (16:10)	Brightness: V731U: 7,300 Lumens V801U: 8,000 Lumens
Fan Noise:	V731U: 40 dB / 31 dB @ 1 meter V801U: 42 dB / 32 dB @ 1 meter	Power Requirements: 100-240V AC 50/60Hz V731U: 5.8A / V801U: 6.1A
Power Consumption:	V731U: 465W (max) V801U: 490W (max)	BTU's: V731U: 1588 BTU/hour V801U: 1666 BTU/hour

Lens Specifications

XP-44ML:	Throw Ratio: 0.32:1 Screen Sizes: 100"-400"	Focal Length: 6.27mm F/#:2.0	Weight: 7.1lbs. / 3.2kg
XP-50ZL:	Throw Ratio: 0.60 – 0.75:1 Screen Sizes: 60"-500"	Focal Length: 10.2 – 12.8mm F/#:1.9 - 2.1	Weight: 5.5lbs. / 2.5kg
XP-40ZL:	Throw Ratio: 0.79 – 1.11:1 Screen Sizes: 50"-500"	Focal Length: 13.3 – 18.6mm F/#:2.0 - 2.5	Weight: 3.5lbs. / 1.6kg
XP-41ZL:	Throw Ratio: 1.30 – 3.02:1 Screen Sizes: 50" - 500"	Focal Length: 21.8 – 49.8mm F/#:1.7 – 2.0	Weight: 3.7lbs. / 1.7kg
XP-43ZL:	Throw Ratio: 2.99 – 5.93:1 Screen Sizes: 50"-500"	Focal Length: 49.7 – 99.8mm F/#:2.2 -2.6	Weight: 4.0bs. / 1.8kg

Screen/Aspect Ratio

4:3, 16:9 and 16:10 screens are fully supported with proper aspect ratio control using Sharp developed scaling technology. Menu selections have settings for each screen type and aspect ratio control for each source type.

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Formulas: 16:10 Aspect Ratio (WUXGA)

The Projection Formulas use the image width for calculation. Image width is the same for all aspect ratios, only vertical image size varies. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width for "W" in the Projection Formulas. Refer to the diagrams and charts for popular screen sizes on page 2 and 3:

Projection Formulas:

XP-50ZL: C(Wide) = 0.626W – 1.932 ----- C(Tele) = 0.779W – 2.024

XP-40ZL: C(Wide) = 0.807W – 1.535 ----- C(Tele) = 1.131W – 1.632

XP-41ZL: C(Wide) = 1.323W – 1.763 ----- C(Tele) = 3.034W – 1.539

XP-43ZL: C(Wide) = 2.929W + 5.143 ----- C(Tele) = 5.878W + 4.320

Horizontal Lens Shift Max (Right) = 0.30W (XP-40ZL, XP-41ZL, XP-43ZL)

Horizontal Lens Shift Max (Left) = 0.30W (XP-40ZL, XP-41ZL, XP-43ZL)

Definitions:

W = Image Width

H = Image Height (size)

C = Throw distance

16:10 Screen Formulas

W = H x 16/10

H = W x 10/16

Diagonal = W x 18.868/16

Distance Chart for popular 16:10 Screens (WUXGA)

Screen Size (16:10)			Zoom Lenses			
			XP-50ZL	XP-40ZL	XP-41ZL	XP-43ZL
Diagonal	Width(W)	Height (H)	0.6 - 0.75:1	0.79 - 1.11:1	1.30 - 3.02:1	2.99 - 5.93:1
inches	inches	inches	inches	inches	inches	inches
60	51	32	29.9 - 37.6	39.5 - 55.9	65.6 - 152.8	154.2 - 303.4
67	57	36	33.6 - 42.2	44.3 - 62.6	73.4 - 170.8	171.6 - 338.3
72	61	38	36.3 - 45.5	47.7 - 67.4	79.0 - 183.7	184.0 - 363.2
84	71	45	42.7 - 53.5	55.9 - 78.9	92.5 - 214.6	213.8 - 423.0
94	80	50	48.0 - 60.1	62.8 - 88.5	103.7 - 240.3	238.6 - 472.9
100	85	53	51.2 - 64.0	66.9 - 94.3	110.4 - 255.7	253.5 - 502.8
120	102	64	61.8 - 77.2	80.6 - 113.5	132.9 - 307.2	303.2 - 602.5
150	127	79	77.7 - 97.1	101.1 - 142.2	166.5 - 384.4	377.7 - 752.0
180	153	95	93.6 - 116.9	121.6 - 171.0	200.2 - 461.6	452.2 - 901.5
210	178	111	109.5 - 136.7	142.2 - 199.8	233.8 - 538.8	526.7 - 1051.1
240	204	127	125.5 - 156.5	162.7 - 228.5	267.5 - 615.9	601.3 - 1200.6
270	229	143	141.4 - 176.3	183.2 - 257.3	301.1 - 693.1	675.8 - 1350.1
300	254	159	157.3 - 196.2	203.8 - 286.1	334.8 - 770.3	750.3 - 1499.7
400	339	212	210.4 - 262.2	272.2 - 382.0	447.0 - 1027.6	998.7 - 1998.1
500	424	265	263.5 - 328.3	340.6 - 477.9	559.2 - 1284.9	1247.0 - 2496.6

Notes

- For screen sizes not indicated on the projection tables, use the formulas above respective charts. If the figures on the tables do not match the results of formulas, use the figures in the table.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary $\pm 5\%$.

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Formulas: 16:10 Aspect Ratio (WUXGA)

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Refer to the diagrams and charts for popular screen sizes on page 2 and 3:

Projection Formulas:

XP-44ML:
 $A = (0.339 * W) - 25.2$
 $B = ((0.844 * W) + 6.614) - (0.5 * H)$
 $C = (0.339 * W) - 1.333$
 $D = (0.219 * W) - 1.791$
 $E = (0.219 * W) + 6.562$

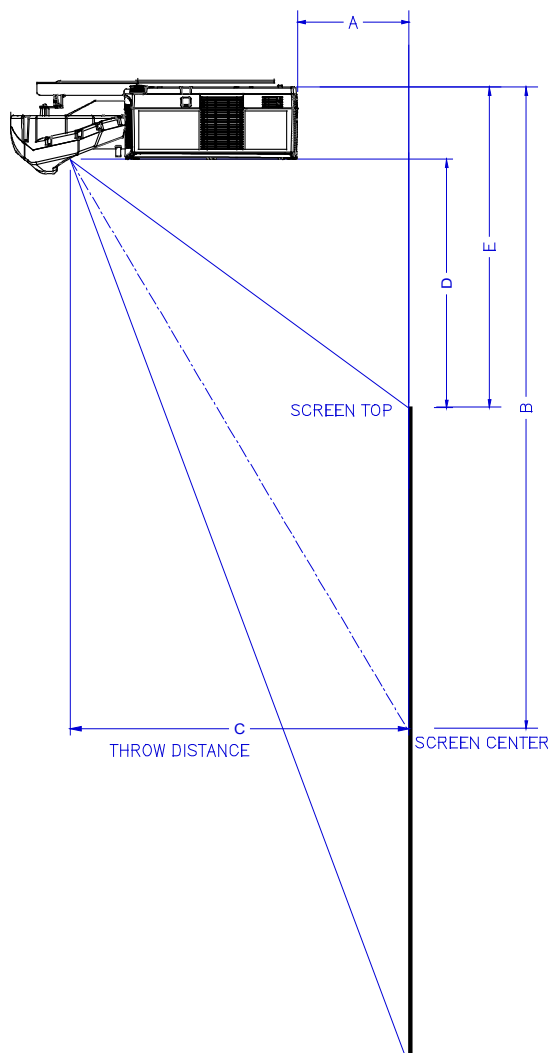
Definitions:

W = Image Width
H = Image Height (size)
C = Throw distance

16:10 Screen Formulas

$W = H \times 16/10$
 $H = W \times 10/16$
Screen Diagonal = $W \times 18.868/16$

Distance Chart for popular 16:10 Screens (WUXGA) with XP-44ML Installation



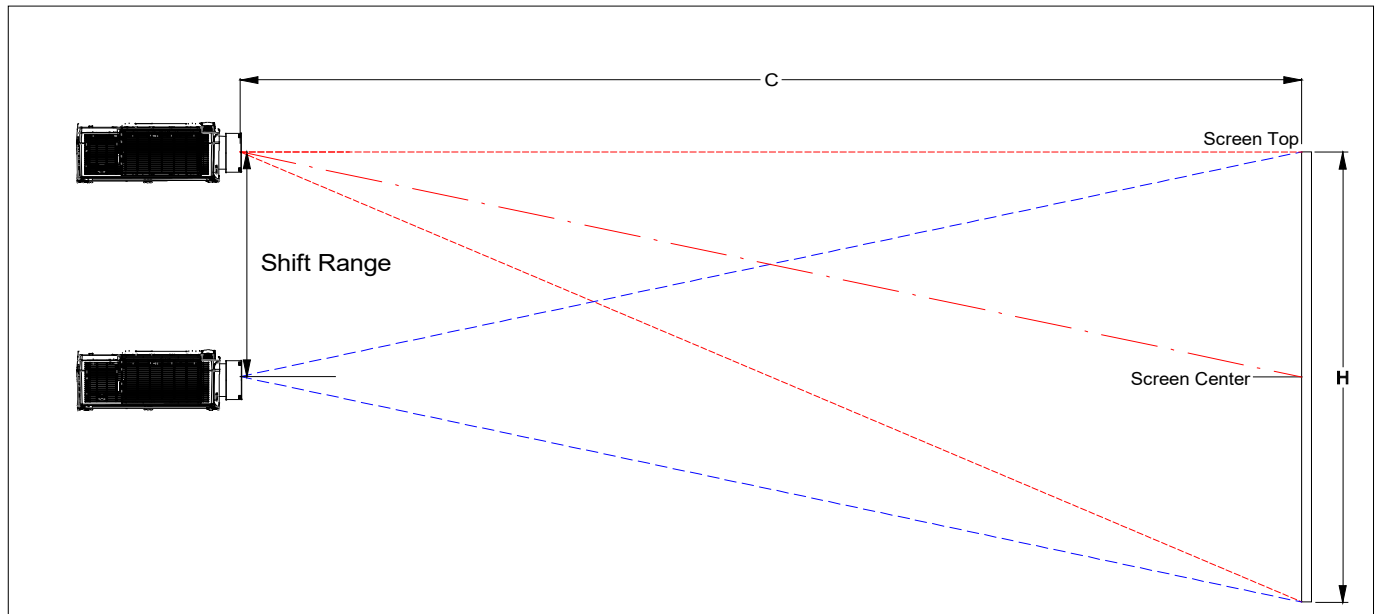
Screen Size (16:10)			A	B	C	D	E
Diagonal	Width (W)	Height (H)					
inches	inches	inches	inches	inches	inches	inches	inches
108	92	57	5.8	55.3	29.7	18.3	26.6
118	100	63	8.7	59.8	32.6	20.1	28.5
130	110	69	12.2	65.2	36.0	22.4	30.7
137	116	73	14.2	68.4	38.1	23.7	32.0
164	139	87	21.9	80.5	45.8	28.7	37.0
189	160	100	29.1	91.8	53.0	33.3	41.7
208	176	110	34.6	100.4	58.5	36.8	45.2
226	192	120	39.8	108.5	63.6	40.2	48.5
270	229	143	52.4	128.3	76.3	48.4	56.7
300	254	159	61.0	141.8	84.9	53.9	62.3
350	297	185	75.4	164.4	99.3	63.2	71.6

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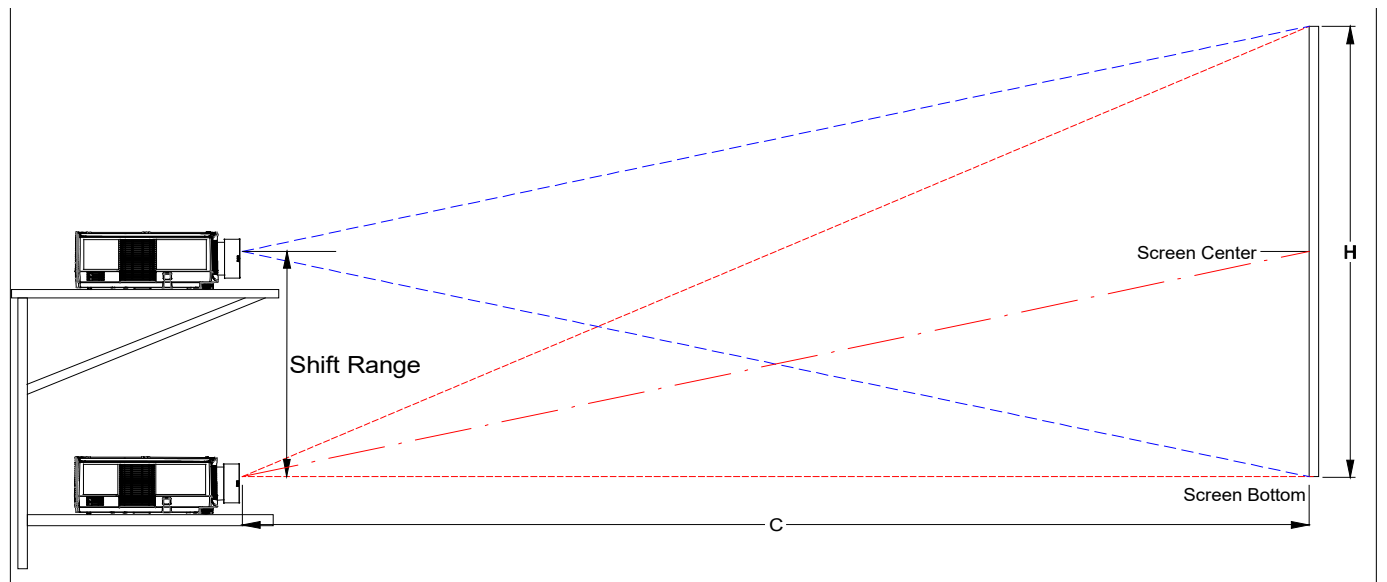
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Desktop and Ceiling Mount

Ceiling Mount Installation



Desktop Installation



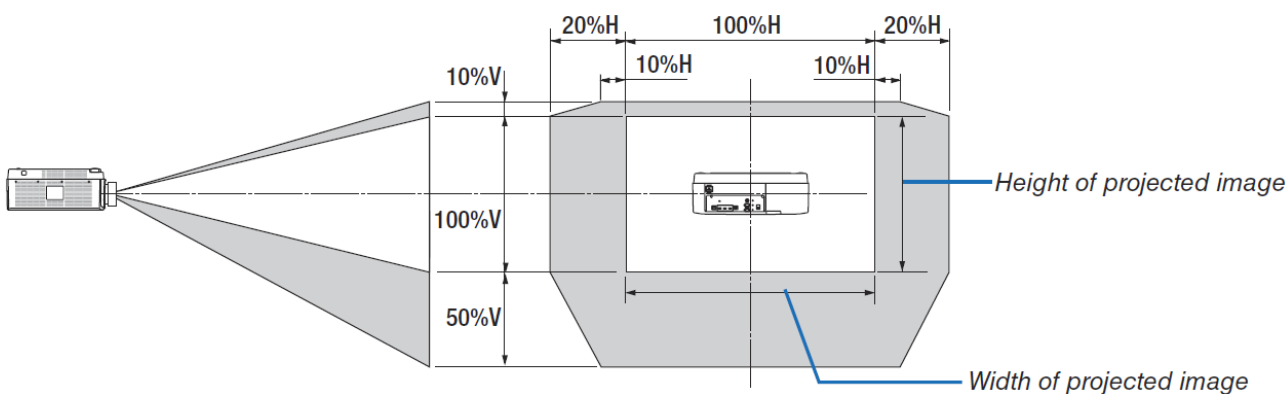
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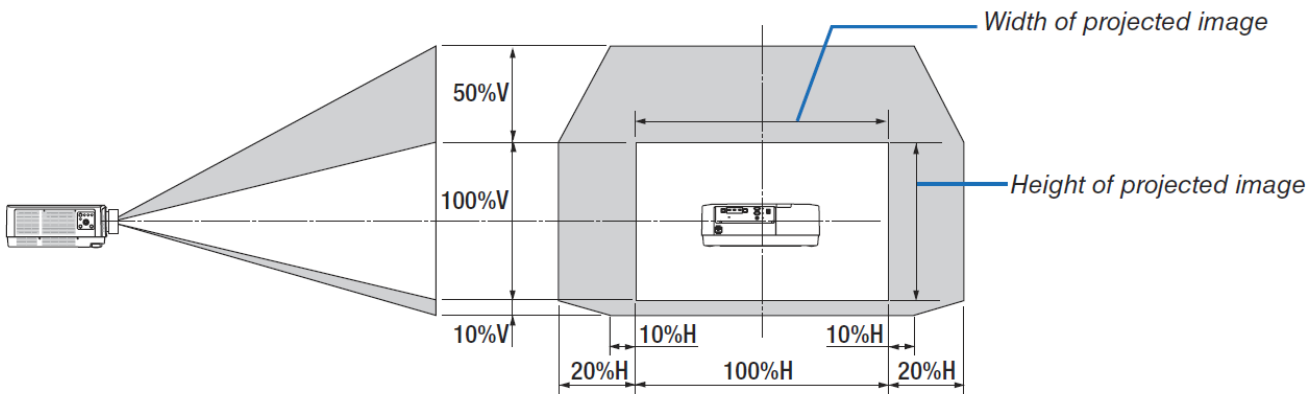
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Lens Shift Adjustable Range

Ceiling/front projector



Desk/front projection



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Geometric Ranges

Keystone

Lens Spec.						Lens shift center (0%)				Lens shift maximum (both horizontal and vertical)			
Lens	Throw Ratio		Shift Range			only (*1)		both (*2)		only (*1)		both (*2)	
	Wide	Tele	H	V up	V down	H	V	H	V	H	V	H	V
XP-40ZL	0.79	1.11	20%	50%	10%	±35°	±30°	±34°	±25°	±35°	±30°	±23°	±17°
XP-41ZL	1.30	3.02	20%	50%	10%	±40°	±30°	±40°	±30°	±40°	±30°	±31°	±24°
XP-43ZL	2.99	5.93	20%	50%	10%	±40°	±30°	±40°	±30°	±40°	±30°	±38°	±30°
XP-44ML	0.32	—	—	—		Not Supported							
XP-50ZL	0.60	0.75	20%	50%	10%	±29°	±30°	±27°	±30°	±29°	±30°	±21°	±16°

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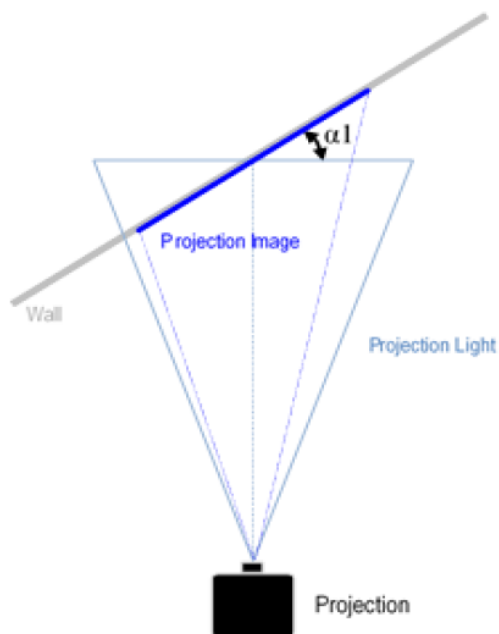
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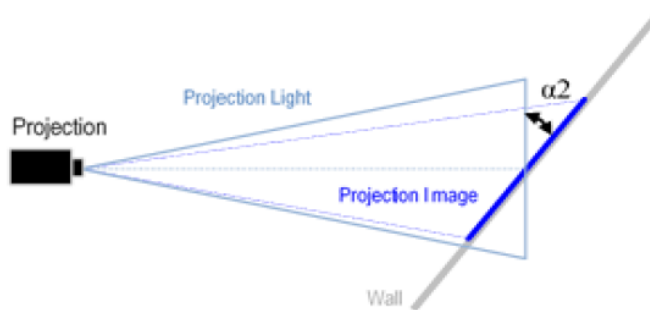
Geometric Ranges

Cornerstone

Lens Unit	Lens shift center (0%)		Lens shift maximum (both horizontal and vertical)	
	Image center is fixed		Image center is fixed	
	Horizontal ($\alpha 1$)	Vertical ($\alpha 2$)	Horizontal ($\alpha 1$)	Vertical ($\alpha 2$)
XP-40ZL	$\pm 32^\circ$	$\pm 40^\circ$	$\pm 15^\circ$	-37° to $+28^\circ$
XP-41ZL	$\pm 40^\circ$	$\pm 47^\circ$	$\pm 25^\circ$	-44° to $+37^\circ$
XP-43ZL	$\pm 50^\circ$	$\pm 54^\circ$	$\pm 47^\circ$	-53° to $+48^\circ$
XP-44ML	Not Supported			
XP-50ZL	$\pm 27^\circ$	$\pm 35^\circ$	$\pm 11^\circ$	-29° to $+23^\circ$



[Horizontal Diagonal Projection]



[Vertical Diagonal Projection]

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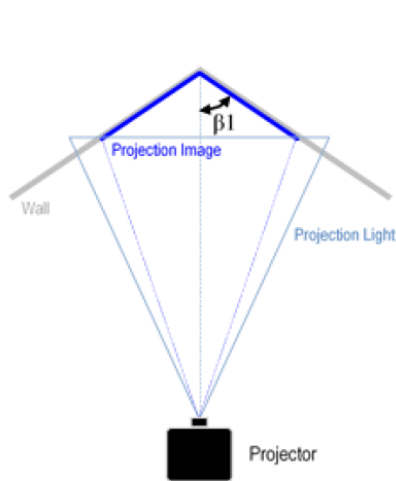
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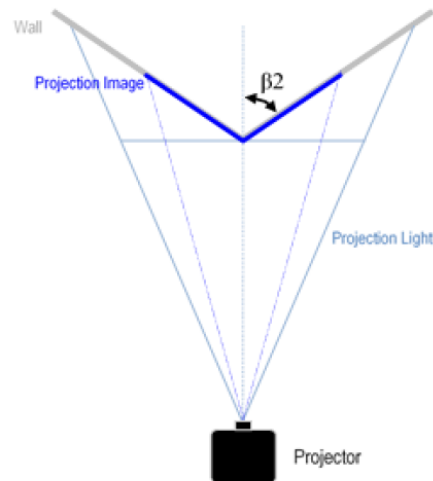
Geometric Ranges

Horizontal / Vertical Corner

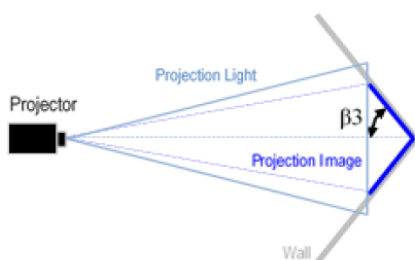
Lens Unit	Lens shift center (0%)				Lens shift maximum (both horizontal and vertical)			
	HORIZONTAL		VERTICAL		HORIZONTAL		VERTICAL	
	Inside (β_1)	Outside (β_2)	Inside (β_3)	Outside (β_4)	Inside (β_1)	Outside (β_2)	Inside (β_3)	Outside (β_4)
XP-40ZL	38°	47°	31°	41°	73°	72°	60°	57°
XP-41ZL	31°	41°	31°	37°	59°	59°	43°	49°
XP-43ZL	32°	36°	32°	34°	35°	40°	36°	40°
XP-44ML	Not Supported							
XP-50ZL	54°	54°	46°	46°	78°	77°	72°	64°



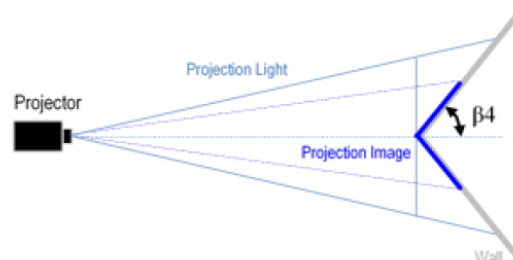
[Horizontal Corner Inside Projection]



[Horizontal Corner Outside Projection]



[Vertical Corner Inside Projection]



[Vertical Corner Outside Projection]

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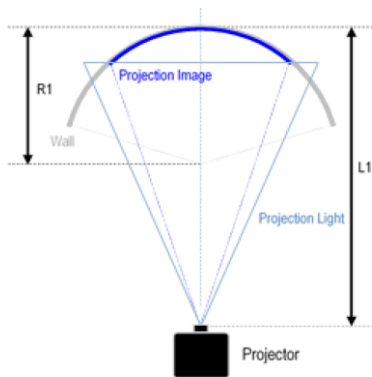
Geometric Ranges

Warp

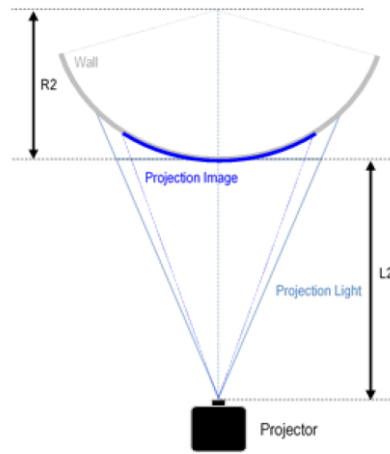
The following table specifies the ratio (R/L) on minimum radius (R) and throw distance (L) on a cylindrical screen.

The following table specifies the ratio (R/L) of minimum radius (R) and throw distance (L) on the cylindrical screen.

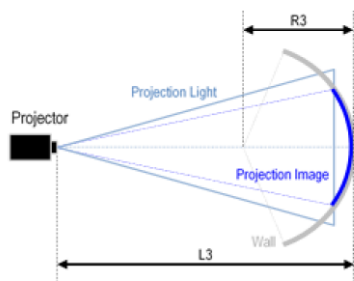
Lens Unit	Lens shift center (0%)				Lens shift maximum (both horizontal and vertical)			
	Horizontal		Vertical		Horizontal		Vertical	
	Inside (R1/L1)	Outside (R2/L2)	Inside (R3/L3)	Outside (R4/L4)	Inside (R1/L1)	Outside (R2/L2)	Inside (R3/L3)	Outside (R4/L4)
XP-40ZL	0.42	0.88	0.27	0.46	1.28	1.39	0.49	0.69
XP-41ZL	0.26	0.44	0.18	0.25	0.44	0.52	0.24	0.33
XP-43ZL	0.13	0.17	0.09	0.10	0.14	0.17	0.10	0.12
XP-44ML	Not Supported							
XP-50ZL	0.74	1.37	0.33	0.67	2.32	2.45	0.82	1.11



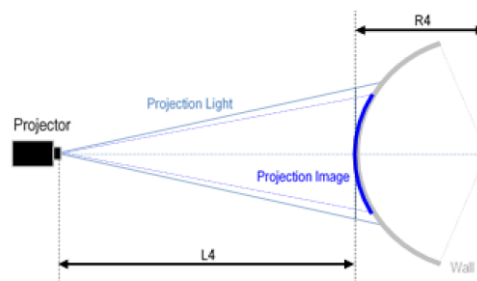
[Horizontal Cylindrical Inside Projection]



[Horizontal Cylindrical Outside Projection]



[Vertical Cylindrical Inside Projection]



[Vertical Cylindrical Outside Projection]

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Desktop and Ceiling Mount

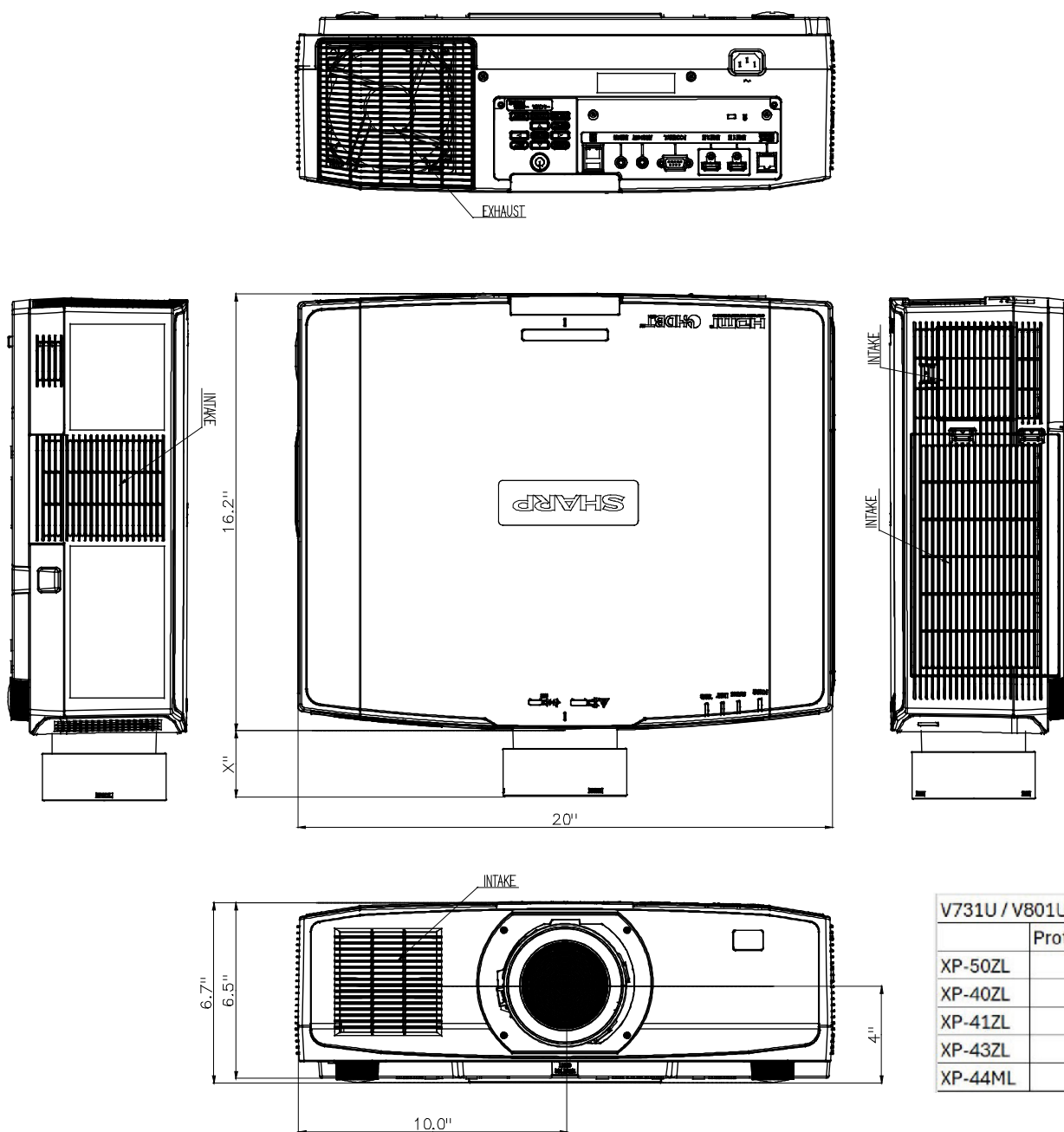
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Cabinet Dimensions

The following diagrams show the cabinet dimensions for the V731U/V801U.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown with the XP-41ZL lens



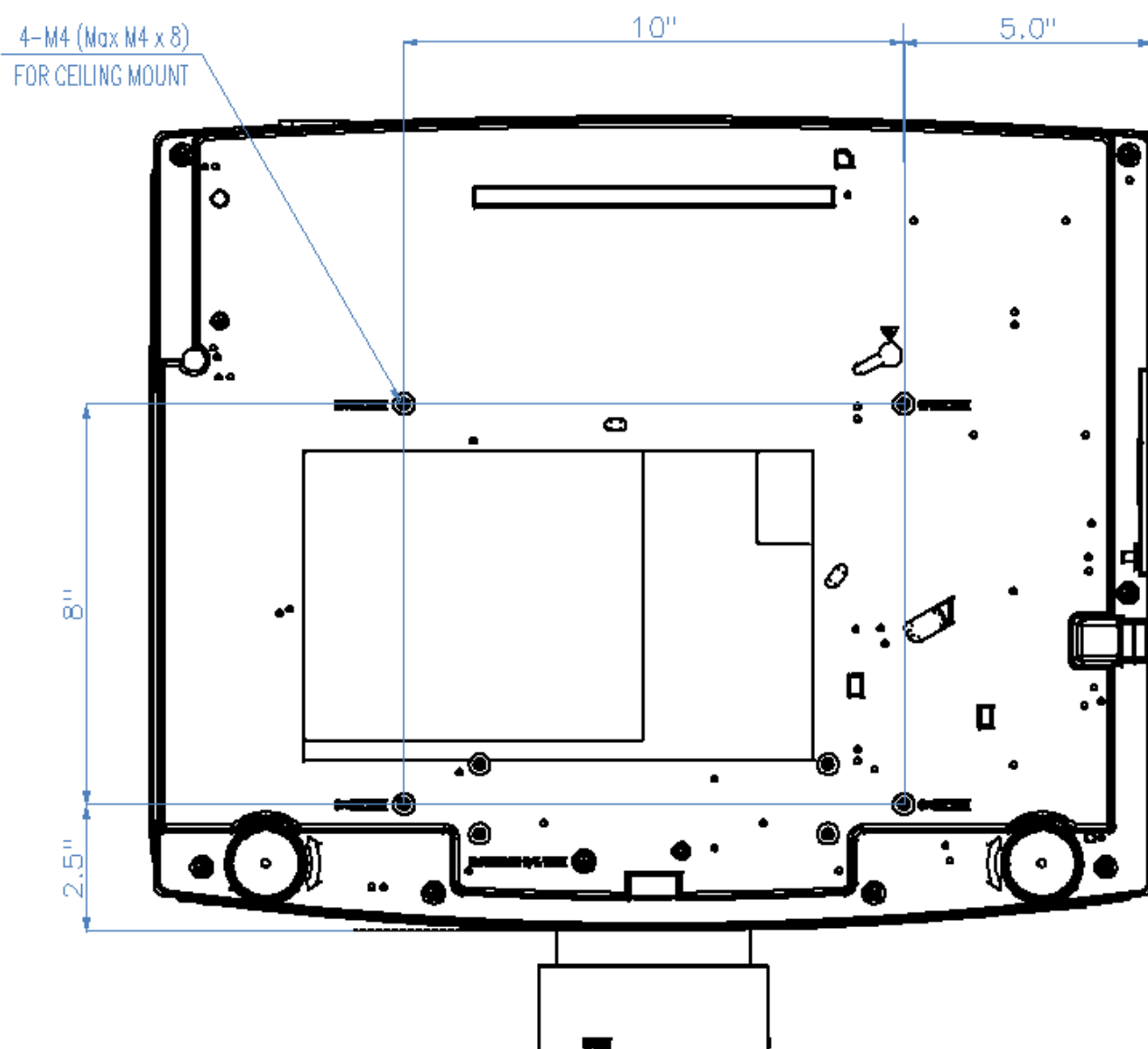
V731U / V801U with Option Lens	
	Protruding value (X)
XP-50ZL	3.6" 
XP-40ZL	2.3"
XP-41ZL	2.5"
XP-43ZL	3.0"
XP-44ML	10.81"

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Desktop and Ceiling Mount

Cabinet Dimensions



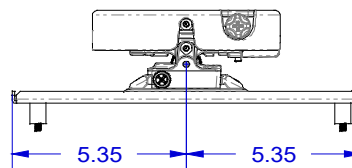
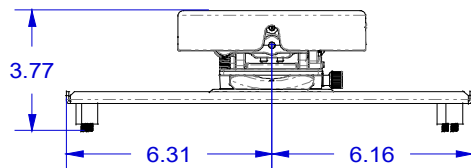
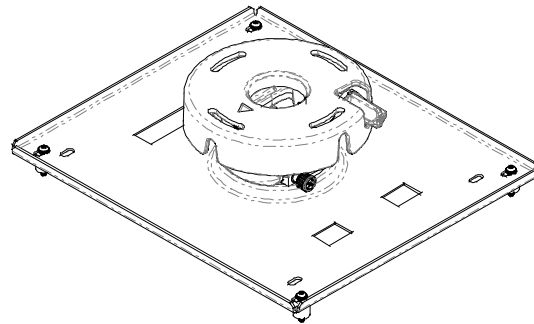
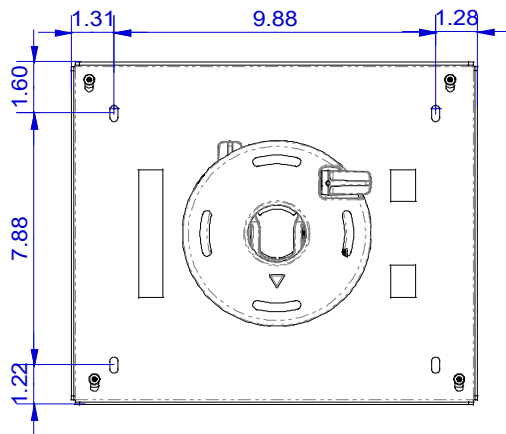
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Desktop and Ceiling Mount

Optional Ceiling Mount Dimensions (Part #: PA600CM)

The following diagrams show ceiling mount dimensions for the PA600CM. Dimensions are in inches. For millimeters multiply by 25.4.

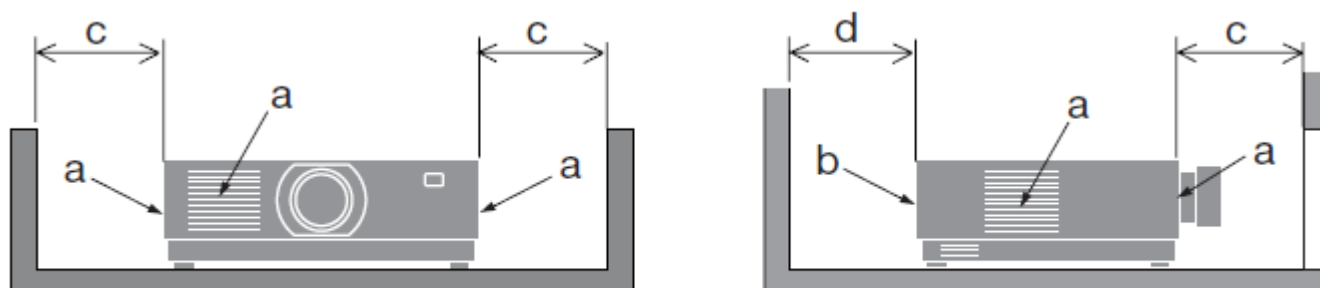


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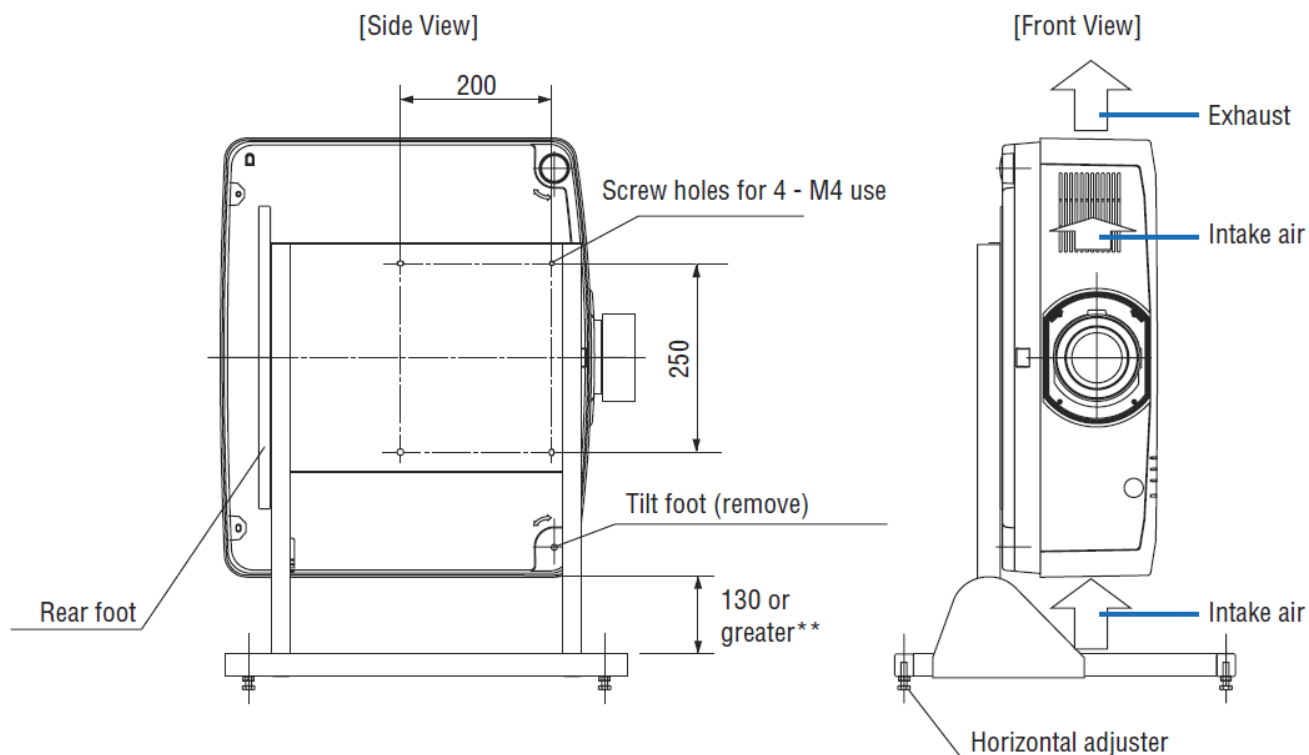
Desktop and Ceiling Mount

Ventilation Requirements



a: Intake vent / b: Exhaust vent / c: 20 cm/8" or greater / d: 30 cm/12" or greater

Portrait Requirements



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Regulatory Labels

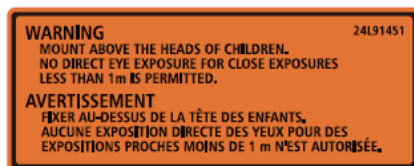
Label 1

Laser Explanatory Label



Label 2

FDA additional warning label



Label 3

Lens replacement caution label



Input Panel



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Desktop and Ceiling Mount

PC Control Codes

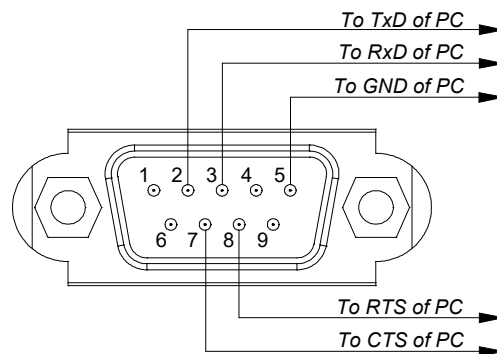
Function	Code Data								
POWER ON	02H	00H	00H	00H	00H	02H			
POWER OFF	02H	01H	00H	00H	00H	03H			
INPUT SELECT HDMI1	02H	03H	00H	00H	02H	01H	A1H	A9H	
INPUT SELECT HDMI2	02H	03H	00H	00H	02H	01H	A2H	AAH	
INPUT SELECT HDBaseT	02H	03H	00H	00H	02H	01H	BFH	C7H	
PICTURE MUTE ON	02H	10H	00H	00H	00H	12H			
PICTURE MUTE OFF	02H	11H	00H	00H	00H	13H			
SOUND MUTE ON	02H	12H	00H	00H	00H	14H			
SOUND MUTE OFF	02H	13H	00H	00H	00H	15H			
ON SCREEN MUTE ON	02H	14H	00H	00H	00H	16H			
ON SCREEN MUTE OFF	02H	15H	00H	00H	00H	17H			
AUTO ADJUST	02H	0FH	00H	00H	02H	05H	00H	18H	

Cable Connection

Communication Protocol:

Baud Rate: 38400 bps (for cable lengths longer than 20', it is recommended changing to 9600 bps in setup menu)
 Data Length: 8 bits
 Parity: No Parity
 Stop Bit: 1 bit
 X on/off: None
 Communications: Full duplex

PC Control Connector (D-Sub 9P)



NOTE 1: Pins 1, 4, 6, and 9 are used inside the projector.

NOTE 2: For long cable runs it is recommended to set communication speed within the projector to 9600 bps.

NOTE 3: Jumper "Request to Send" and "Clear to Send" together on both ends of the cable to simplify cable connection.