

## PX2000UL Installation Guide

Rev 1.4

### Desktop and Ceiling Mount

#### Contents

Product Description, Lens Specs, Screen/Aspect Ratio	
Notes	Pg 1
Distance Charts and Formulas	Pg 2
Ceiling Mount/Desktop Installation	Pg 3
Lens Shift Adjustable Range	Pg 4
Power Cord	Pg 5
Cabinet Dimensions	Pg 6
Cabinet Dimensions	Pg 7
Ceiling Mount	Pg 8
Optional Lens Dimensions	Pg 9
Ventilation Requirements/Portrait Requirements	Pg 10
Regulatory Labels	Pg 11
Hazard Zone	Pg 12
Input Panel and Button Panel	Pg 13
Control Codes	Pg 14



#### Product Description

<b>Type:</b>	1 chip DMD Reflection Type 0.96 in. 2x LVDS DMD	<b>Dimensions:</b> 20.9" (W) x 10.8" (H) x 29.4" (D)
		<b>Weight:</b> 112 lbs. / 51kg
<b>Resolution:</b>	1920 x 1200 (16:10)	<b>Brightness:</b> 20,000 Lumens
<b>Fan Noise:</b>	45 dB / 43dB @ 1 meter	
<b>Power Consumption:</b>	1922W (max)	<b>BTU's:</b> 6535 BTU/hour

Network Ready, integrated wired and wireless adapter  
Powered: Lens Shift, Horizontal & Vertical /Zoom/ Focus

#### Lens Specifications

<b>NP45ZL:</b>	Throw Ratio: 0.9 - 1.2:1 Screen Sizes: 50"-500"	Focal Length: 19.34 – 25.76mm F/#: 2.2 - 2.53	<b>Weight:</b> 6.3lbs. / 2.85kg
<b>NP46ZL:</b>	Throw Ratio: 1.2 – 1.56:1 Screen Sizes: 50-500"	Focal Length: 25.69 – 33.22mm F/#: 2.18 - 2.66	<b>Weight:</b> 4.5lbs. / 2.02kg
<b>NP47ZL:</b>	Throw Ratio: 1.5 – 2.0:1 Screen Sizes: 50-500"	Focal Length: 31.90 – 45.20mm F/#: 2.17 – 2.65	<b>Weight:</b> 4.5lbs. / 2.02kg
<b>NP48ZL:</b>	Throw Ratio: 2.0 – 4.0:1 Screen Sizes: 50"-500"	Focal Length: 45.60 – 84.80mm F/#: 2.17 - 2.65	<b>Weight:</b> 5.9lbs. / 2.66kg
<b>NP49ZL:</b>	Throw Ratio: 4.0 – 7.0:1 Screen Sizes: 50"-500"	Focal Length: 83.93 -146.85mm F/#: 2.2 - 2.57	<b>Weight:</b> 4.4lbs. / 1.98kg

#### Screen/Aspect Ratio

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

#### Notes

- For screen sizes not indicated on the projection tables, use the formulas below.  
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 ±5%.

## PX2000UL Installation Guide

Desktop and Ceiling Mount

Rev 1.4

### 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:**

- NP45ZL: C(Wide) = 0.943W - 3.632 ----- C(Tele) = 1.259W - 3.717
- NP46ZL: C(Wide) = 1.264W - 5.446 ----- C(Tele) = 1.634W - 4.902
- NP47ZL: C(Wide) = 1.531W + 3.074 ----- C(Tele) = 2.035W - 2.953
- NP48ZL: C(Wide) = 1.926W + 6.260 ----- C(Tele) = 3.866W + 5.280
- NP49ZL: C(Wide) = 3.929W + 6.040 ----- C(Tele) = 6.904W + 6.180

**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
  - Screen Diagonal = W x 18.868/16
- 16:9 Screen Formulas**
- W = H x 16/9
  - H = W x 9/16
  - Screen Diagonal = W x 18.358/16

### Distance Chart for popular 16:10 Screens (WUXGA)

Screen Size (16:10)			Zoom Lenses									
Diagonal inches	Width(W) inches	Height (H) inches	NP45ZL		NP46ZL		NP47ZL		NP48ZL		NP49ZL	
			0.90-1.20:1 inches	1.20-1.56:1 inches	1.50-2.00-1 inches	2.00-4.00:1 inches	4.00-7.00:1 inches					
40	34	21	28.4 - 39.0	37.4 - 50.5	48.9 - 66.1	71.6 - 136.4	139.3 - 240.4					
60	51	32	44.3 - 60.3	58.9 - 78.2	74.8 - 100.6	104.3 - 202.0	205.9 - 357.5					
68	58	36	50.7 - 68.9	67.4 - 89.3	85.2 - 114.4	117.3 - 228.2	232.6 - 404.3					
72	61	38	53.9 - 73.2	71.7 - 94.9	90.4 - 121.3	123.9 - 241.3	245.9 - 427.7					
85	72	45	64.3 - 87.0	85.7 - 112.9	107.3 - 143.7	145.1 - 283.9	289.2 - 503.8					
108	92	57	82.7 - 111.6	110.3 - 144.7	137.1 - 183.4	182.7 - 359.3	365.9 - 638.5					
113	96	60	86.7 - 116.9	115.7 - 151.7	143.6 - 192.0	190.8 - 375.7	382.5 - 667.7					
130	110	69	100.3 - 135.1	133.9 - 175.2	165.7 - 221.4	218.6 - 431.5	439.2 - 767.3					
137	116	73	105.9 - 142.5	141.4 - 184.9	174.8 - 233.5	230.0 - 454.4	462.5 - 808.3					
170	144	90	132.3 - 177.8	176.8 - 230.7	217.6 - 290.4	283.9 - 562.6	572.4 - 1001.5					
186	158	99	145.1 - 194.9	193.9 - 252.8	238.4 - 318.0	310.0 - 615.1	625.8 - 1095.1					
208	176	110	162.7 - 218.3	217.5 - 283.3	267.0 - 356.0	346.0 - 687.2	699.0 - 1223.9					
226	192	120	177.1 - 237.6	236.8 - 308.2	290.3 - 387.0	375.4 - 746.2	759.0 - 1329.3					
270	229	143	212.3 - 284.5	284.0 - 369.2	347.5 - 463.0	447.2 - 890.4	905.6 - 1586.9					
300	254	159	236.3 - 316.6	316.1 - 410.8	386.4 - 514.7	496.2 - 988.8	1005.6 - 1762.6					
500	424	265	396.2 - 530.1	530.5 - 687.9	646.1 - 859.9	822.9 - 1644.5	1671.9 - 2933.5					

### Distance Chart using 16:9 native projector with 16:9 Image (1080p)

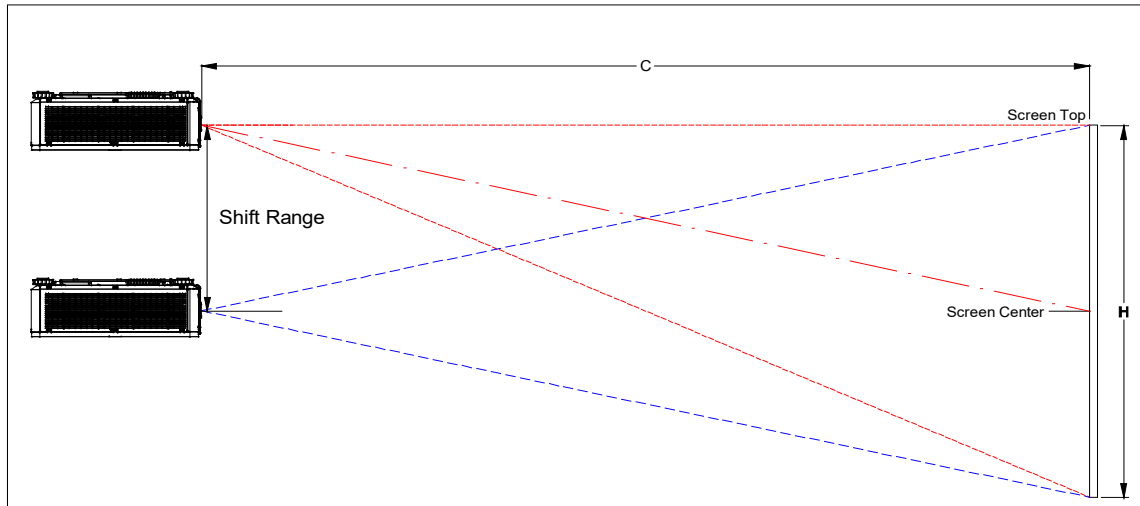
Screen Size (16:9)			Zoom Lenses									
Diagonal inches	Width(W) inches	Height (H) inches	NP45ZL		NP46ZL		NP47ZL		NP48ZL		NP49ZL	
			0.90-1.20:1 inches	1.20-1.56:1 inches	1.50-2.00-1 inches	2.00-4.00:1 inches	4.00-7.00:1 inches					
39	34	19	28.4 - 39.1	37.5 - 50.6	55.1 - 66.2	71.7 - 136.7	139.6 - 240.9					
59	51	29	44.9 - 61.0	59.6 - 79.1	81.8 - 101.7	105.3 - 204.1	208.1 - 361.2					
67	58	33	51.4 - 69.8	68.4 - 90.5	92.5 - 115.9	118.7 - 231.0	235.5 - 409.3					
70	61	34	53.9 - 73.1	71.7 - 94.8	96.5 - 121.2	123.8 - 241.1	245.7 - 427.4					
83	72	41	64.6 - 87.4	86.0 - 113.3	113.8 - 144.3	145.6 - 284.9	290.3 - 505.6					
106	92	52	83.5 - 112.6	111.3 - 146.1	144.5 - 185.1	184.2 - 362.4	369.0 - 644.0					
110	96	54	86.8 - 117.0	115.7 - 151.8	149.9 - 192.1	190.9 - 375.9	382.7 - 668.1					
126	110	62	99.9 - 134.5	133.4 - 174.5	171.2 - 220.5	217.8 - 429.8	437.5 - 764.3					
133	116	65	105.7 - 142.2	141.1 - 184.5	180.5 - 232.9	229.5 - 453.4	461.5 - 806.5					
159	139	78	127.0 - 170.8	169.7 - 221.5	215.2 - 279.1	273.2 - 541.0	550.5 - 962.9					
184	160	90	147.6 - 198.2	197.3 - 257.1	248.6 - 323.4	315.1 - 625.3	636.1 - 1113.3					
202	176	99	162.4 - 217.9	217.1 - 282.8	272.6 - 355.3	345.3 - 685.9	697.8 - 1221.7					
220	192	108	177.2 - 237.7	236.9 - 308.4	296.6 - 387.2	375.6 - 746.6	759.4 - 1330.0					
263	229	129	212.5 - 284.9	284.3 - 369.6	354.0 - 463.5	447.7 - 891.4	906.6 - 1588.7					
299	261	147	242.1 - 324.4	323.9 - 420.9	402.0 - 527.4	508.2 - 1012.7	1029.9 - 1805.3					
500	436	245	407.3 - 544.9	545.4 - 707.2	670.2 - 883.9	845.6 - 1690.0	1718.2 - 3014.8					

## PX2000UL Installation Guide

Desktop and Ceiling Mount

Rev 1.4

### Ceiling Mount Installation

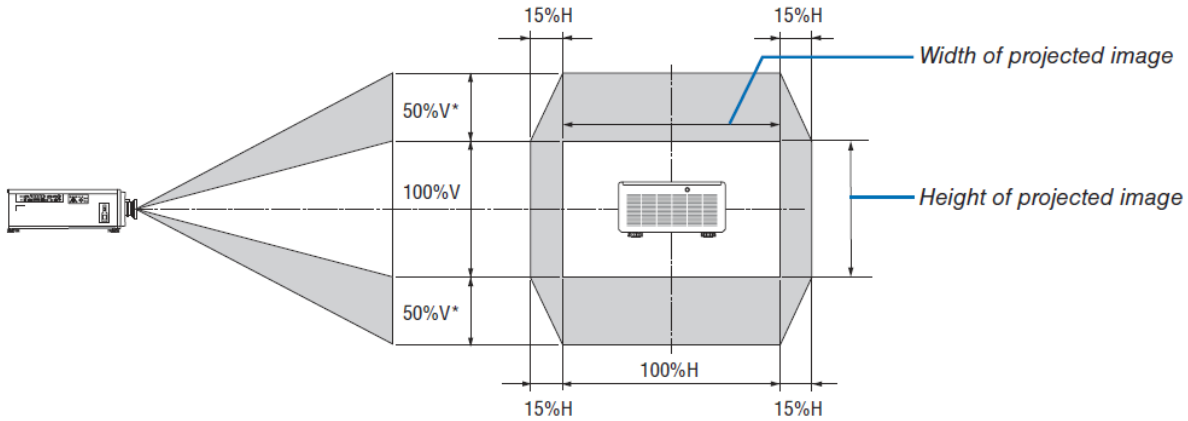


# PX2000UL Installation Guide

Rev 1.4

Desktop and Ceiling Mount

## Lens Shift Adjustable Range



### Lens Shift Range for Desktop and Ceiling Mount Application

The diagram above shows the location of the image position in the lens. The lens can be shifted within the shaded area as shown using the normal projection position as a starting point.

**Note:** Lens shift feature is smaller for the NP45ZL +/- 45%V

**Note:** Projector is set out of the box at maximum lens shift, which is how it is depicted above.

(W: Width of projected image, H: Height of projected image)

## PX2000UL Installation Guide

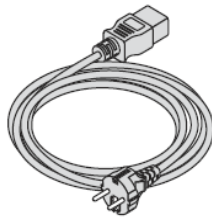
Rev 1.4

Desktop and Ceiling Mount

### Power Cord

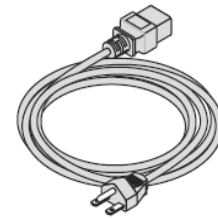
**Power Supply:** 200-240V AC, 50/60Hz (Single Phase)  
**Power Consumption:** 1922W (max)  
**Rated Input Current:** 9.7A, 50/60Hz  
**Power Cord Specification:** 15A or Higher

#### Service Part Numbers (INCLUDED):



(79TM1021)

*For Europe/Asia/South America*



(79TQ1011)

*For North America*



**NEMA 6-15P**



**NEMA 6-15R**



**IEC-60320-C19**

#### Alternative Power Cord with Twist Lock:



**NEMA L6-30P**



**NEMA L6-30R**



**IEC-60320-C19**

## PX2000UL Installation Guide

Rev 1.4

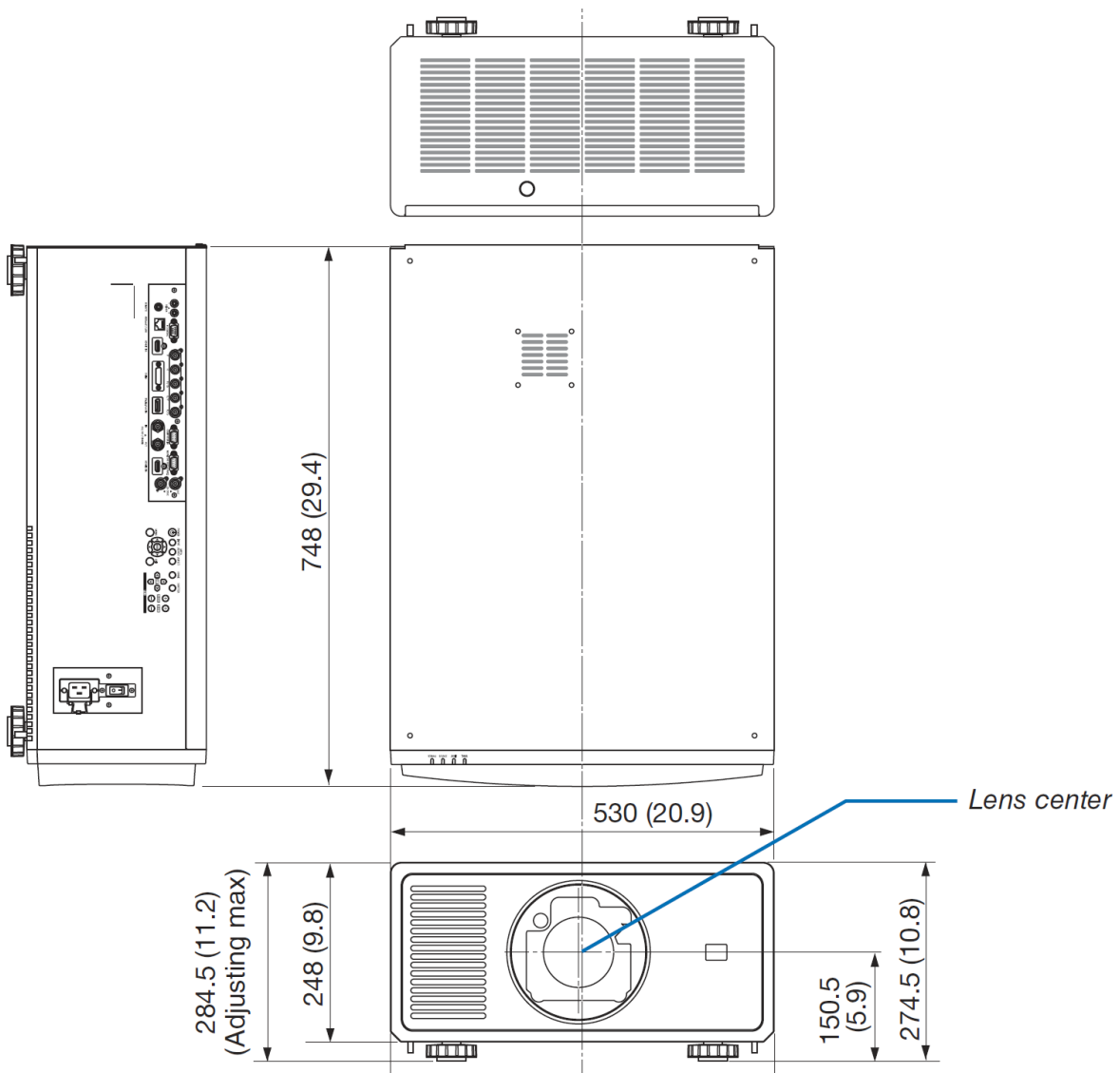
### Desktop and Ceiling Mount

#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the PX2000UL.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without a lens

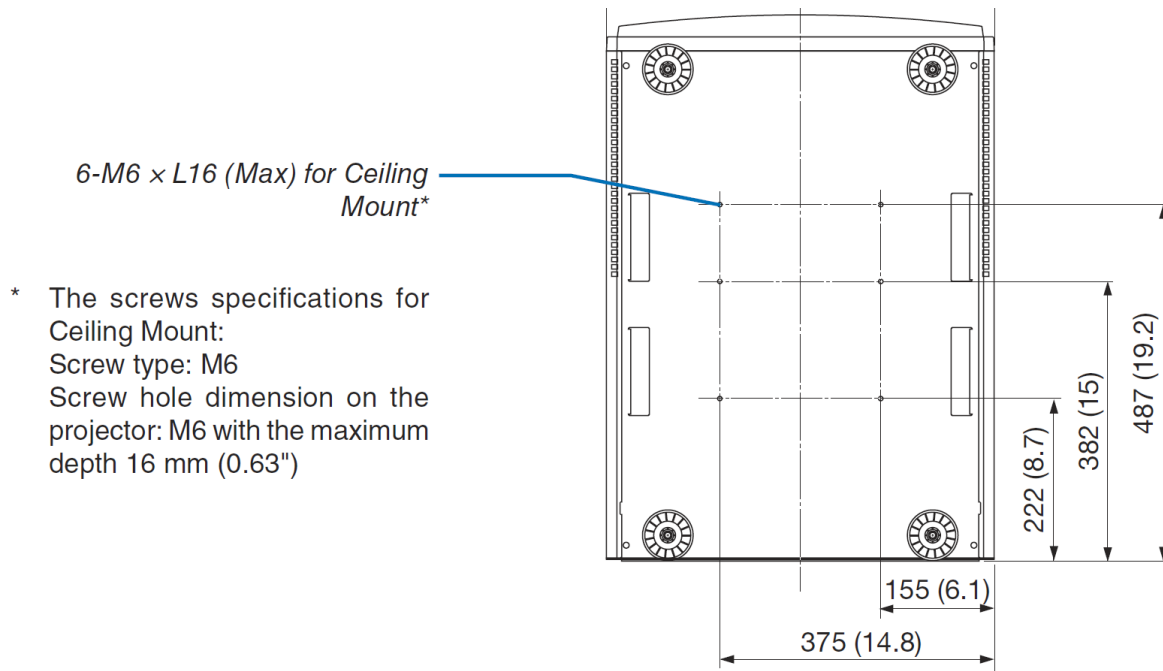


## PX2000UL Installation Guide

Rev 1.4

Desktop and Ceiling Mount

### Cabinet Dimensions

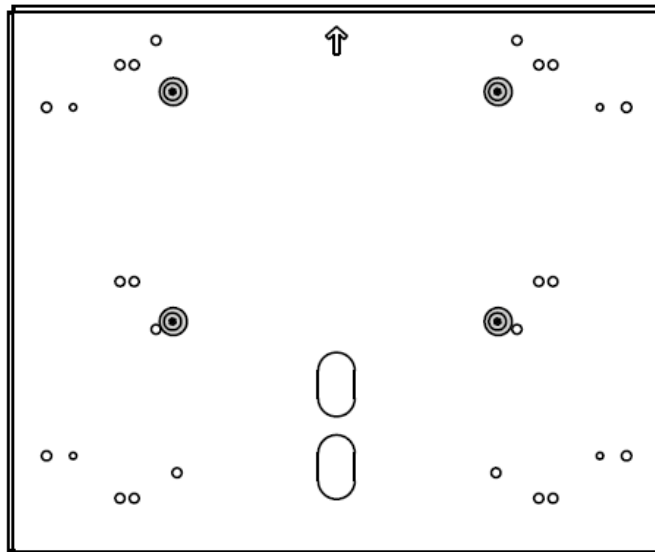
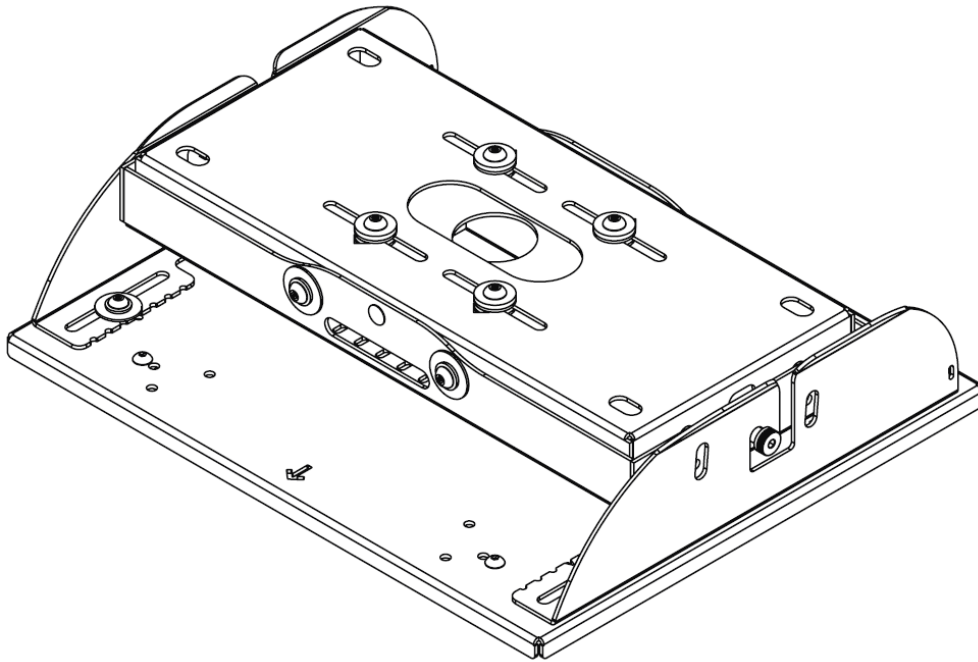


## PX2000UL Installation Guide

Desktop and Ceiling Mount

Rev 1.4

IPJ2000CM



Mounting holes for  
PX2000UL only

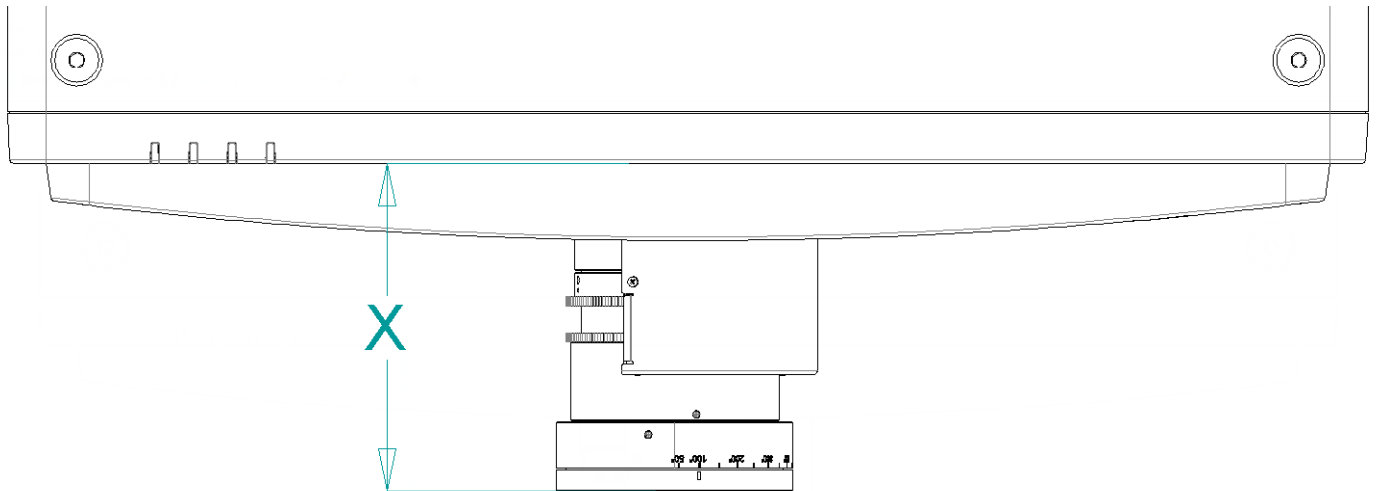


## PX2000UL Installation Guide

Rev 1.4

Desktop and Ceiling Mount

### Optional Lens Dimensions



Lens	Distance "X"
NP45ZL	5.20"
NP46ZL	4.54"
NP47ZL	4.38"
NP48ZL	5.32"
NP49ZL	5.24"

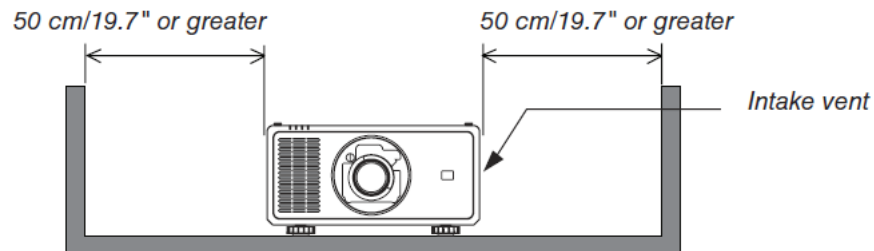
## PX2000UL Installation Guide

Rev 1.4

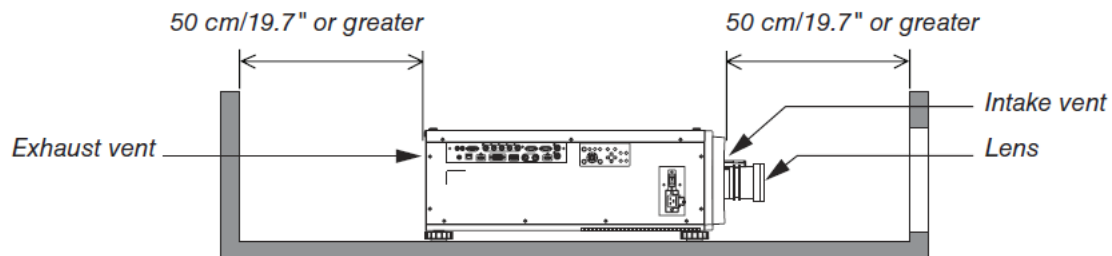
Desktop and Ceiling Mount

### Ventilation Requirements

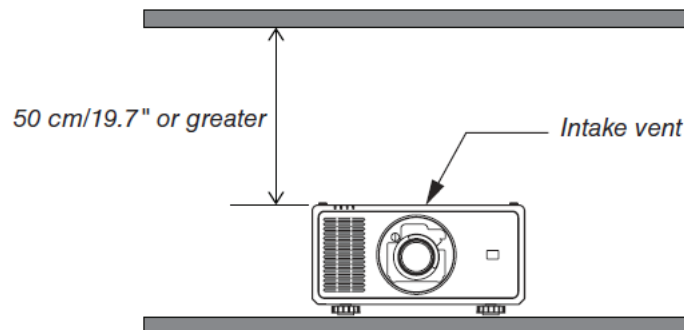
- If there are walls on both sides of the projector:



- If there's a wall behind the projector:



- If there's not much clearance above the projector:



## PX2000UL Installation Guide

Desktop and Ceiling Mount

Rev 1.4

### Regulatory Labels

#### Label Information

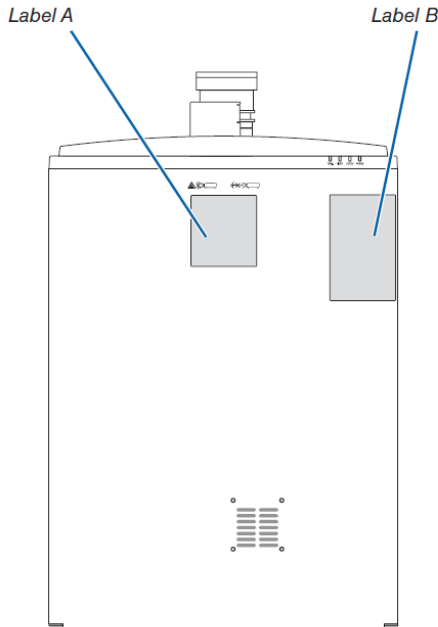
These labels are stuck on the below indicated positions.

#### For USA

The LASER PRODUCT in CLASS 3R conforming to IEC 60825-1 Second edition.

#### For other regions

The LASER PRODUCT in CLASS 1 conforming to IEC 60825-1 Third edition, and RG3 of IEC/EN 62471-5 First edition 2015.



Label A: Laser Explanatory Label  
(Includes LASER APERTURE label)



Label B: Risk Group /Lamp Safety Label



## PX2000UL Installation Guide

Rev 1.4

### Desktop and Ceiling Mount

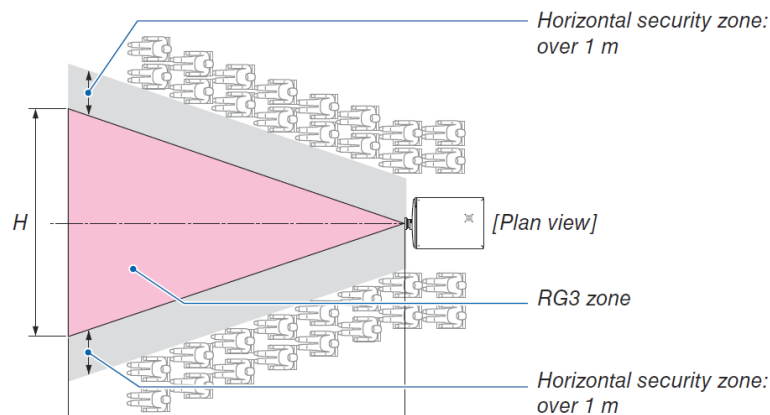
#### Hazard Zone

- The below table describes the radiation range of emitted light by the projector that is classified as Risk Group 3 (RG3) of IEC/EN 62471-5 First edition 2015.
- Please keep within bounds for installing the projector.
  - Install a barrier for preventing human eyes from entering the RG3 zone. For the barrier installation position, keep horizontal safety zone over 1 m from the RG3 zone. In case to install the projector over head, keep over 3 m distance at least between the floor surface and the RG3 zone.
  - This projector must be installed at a height that will prevent your eyes from being exposed within the RG3 zone.
  - The equipment administrator (operator) must control the entry of viewers into the RG3 zone.

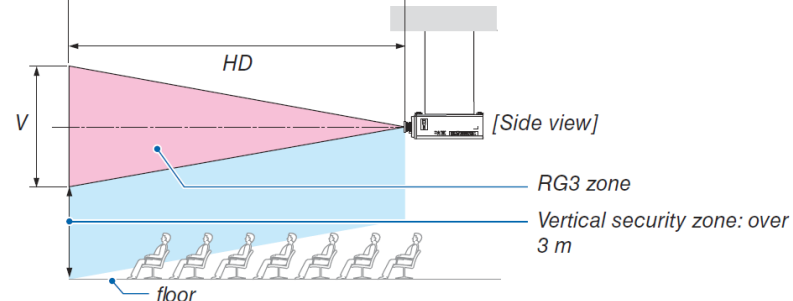
Lens	RG3 HD (m)	Screen size (m)		
		H	V	
NP45ZL	Wide	2.0	2.22	1.39
	Tele	2.5	2.06	1.29
NP46ZL	Wide	3.0	2.48	1.55
	Tele	3.5	2.22	1.39
NP47ZL	Wide	3.5	2.34	1.46
	Tele	4.5	2.25	1.41
NP48ZL	Wide	5.5	2.77	1.73
	Tele	6.5	1.65	1.03
NP49ZL	Wide	8.0	2.00	1.25
	Tele	9.5	1.35	0.85

The drawings below are example of typical installation methods. Besides these, when installing the projector at an angle, a security zone is required in the same way.

When installed on a floor or a desktop



When installed on a ceiling



\* If lens shift is utilized, please consider the shift of projected image according to the volume of lens shift.

## PX2000UL Installation Guide

Desktop and Ceiling Mount

Rev 1.4

### Input Panel



### Control Panel



## PX2000UL Installation Guide

Rev 1.4

Desktop and Ceiling Mount

### PC Control Codes

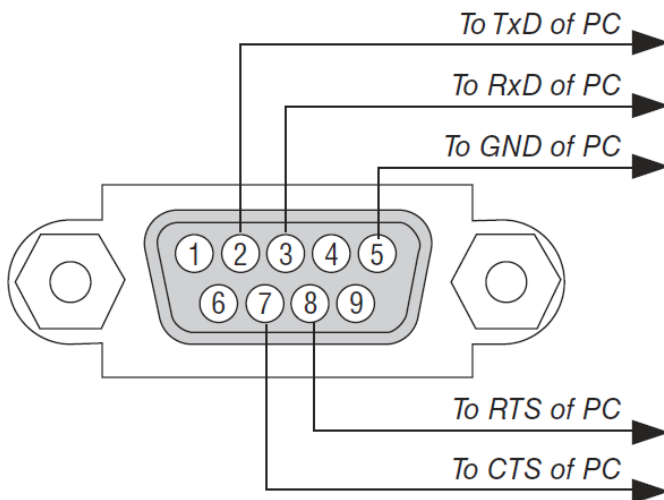
Function	Code Data								
POWER ON	02H	00H	00H	00H	00H	02H			
POWER OFF	02H	01H	00H	00H	00H	03H			
INPUT SELECT HDMI1	02H	03H	00H	00H	02H	01H	A1H	A9H	
INPUT SELECT HDMI2	02H	03H	00H	00H	02H	01H	A2H	AAH	
INPUT SELECT COMPUTER	02H	03H	00H	00H	02H	01H	01H	09H	
INPUT SELECT BNC	02H	03H	00H	00H	02H	01H	02H	10H	
INPUT SELECT DVI-D	02H	03H	00H	00H	02H	01H	9CH	A4H	
INPUT SELECT DisplayPort	02H	03H	00H	00H	02H	01H	A6H	AEH	
INPUT SELECT 3G-SDI	02H	03H	00H	00H	02H	01H	C4H	CCH	
INPUT SELECT HDBaseT	02H	03H	00H	00H	02H	01H	BFH	C7H	

### Cable Connection

#### Communication Protocol:

- Baud Rate: 9600 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: One bit
- X on/off: None
- Communications: Full duplex

### PC Control Terminal (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.