

## PA653UL, PA703UL & PA803UL Installation Guide

### Desktop and Ceiling Mount

Rev 1.3

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#### Product Description

<b>Type:</b>	3 panel LCD projector, 0.76 p-Si TFT w/MLA	<b>Dimensions:</b> 22.8"(W) x 8.2"(H) x 19.3"(D)	<b>Weight:</b> 40.1 lbs
<b>Resolution:</b>	1920 x 1200 (16:10)	<b>Brightness:</b> PA653UL: 6500 Lumens PA703UL: 7000 Lumens PA803UL: 8000 Lumens	
<b>Fan Noise:</b>	PA653UL: 39 dB / 33dB @ 1 meter PA703UL: 42 dB / 34dB @ 1 meter PA803UL: 45 dB / 35dB @ 1 meter		
<b>Power Consumption:</b>	PA653UL: 627W (max) PA703UL: 647W (max) PA803UL: 798W (max)	<b>BTU's:</b> PA653UL: 2131 BTU/hour PA703UL: 2207 BTU/hour PA803UL: 2713 BTU/hour	

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

#### Lens Specifications

<b>NP44ML-01LK :</b>	Throw Ratio: 0.32:1 Screen Sizes: 100"-400"	Focal Length: 6.27mm F/#:2.0	<b>Weight:</b> 7.1lbs. / 3.20kg
<b>NP40ZL:</b>	Throw Ratio: 0.79 – 1.11:1 Screen Sizes: 50"-500"	Focal Length: 13.3 – 18.6mm F/#:2.0 - 2.5	<b>Weight:</b> 3.6lbs. / 1.64kg
<b>NP41ZL:</b>	Throw Ratio: 1.30 – 3.02:1 Screen Sizes: 50" - 500"	Focal Length: 21.8 – 49.8mm F/#:1.7 – 2.0	<b>Weight:</b> 3.9lbs. / 1.75kg
<b>NP43ZL:</b>	Throw Ratio: 2.99 – 5.93:1 Screen Sizes: 50"-500"	Focal Length: 49.7 – 99.8mm F/#:2.2 -2.6	<b>Weight:</b> 3.9lbs. / 1.75kg

#### 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%.

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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:

**NP40ZL:** C(Wide) = 0.807W – 1.535 ----- C(Tele) = 1.131W – 1.632

**NP41ZL:** C(Wide) = 1.323W – 1.763 ----- C(Tele) = 3.034W – 1.539

**NP43ZL:** C(Wide) = 2.929W + 5.143 ----- C(Tele) = 5.878W + 4.320

Horizontal Lens Shift Max (Right) = 0.15W

Horizontal Lens Shift Max (Left) = 0.-15W

#### 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

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

Screen Size (16:10)			Zoom Lenses						
			NP40ZL	NP41ZL	Horizontal Lens Shift (NP40ZL/NP41ZL)		NP43ZL	Horizontal Lens Shift (NP43ZL)	
Diagonal	Width(W)	Height (H)	0.79 - 1.11:1	1.30 - 3.02:1	Max (Right)	- Max (Left)	2.99 - 5.93:1	Max (Right)	- Max (Left)
inches	inches	inches	inches	inches	inches		inches	inches	
60	51	32	39.5 - 55.9	65.6 - 152.8	10.2	-10.2	154.2 - 303.4	16.3	-16.3
67	57	36	44.3 - 62.6	73.4 - 170.8	11.4	-11.4	171.6 - 338.3	18.2	-18.2
72	61	38	47.7 - 67.4	79.0 - 183.7	12.2	-12.2	184.0 - 363.2	19.5	-19.5
84	71	45	55.9 - 78.9	92.5 - 214.6	14.2	-14.2	213.8 - 423.0	22.8	-22.8
90	76	48	60.1 - 84.7	99.2 - 230.0	15.3	-15.3	228.7 - 452.9	24.4	-24.4
100	85	53	66.9 - 94.3	110.4 - 255.7	17.0	-17.0	253.5 - 502.8	27.1	-27.1
127	108	67	85.4 - 120.2	140.7 - 325.2	21.5	-21.5	320.6 - 637.4	34.5	-34.5
150	127	79	101.1 - 142.2	166.5 - 384.4	25.4	-25.4	377.7 - 752.0	40.7	-40.7
180	153	95	121.6 - 171.0	200.2 - 461.6	30.5	-30.5	452.2 - 901.5	48.8	-48.8
210	178	111	142.2 - 199.8	233.8 - 538.8	35.6	-35.6	526.7 - 1051.1	57.0	-57.0
241	204	128	163.4 - 229.5	268.6 - 618.5	40.9	-40.9	603.7 - 1205.6	65.4	-65.4
270	229	143	183.2 - 257.3	301.1 - 693.1	45.8	-45.8	675.8 - 1350.1	73.3	-73.3
300	254	159	203.8 - 286.1	334.8 - 770.3	50.9	-50.9	750.3 - 1499.7	81.4	-81.4
400	339	212	272.2 - 382.0	447.0 - 1027.6	67.8	-67.8	998.7 - 1998.1	108.5	-108.5
500	424	265	340.6 - 477.9	559.2 - 1284.9	84.8	-84.8	1247.0 - 2496.6	135.7	-135.7

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### Formulas: 16:10 Aspect Ratio (WUXGA)

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**Projection Formulas:**

- NP44ML-01LK:**     $A=(0.339*W) - 25.2$   
                           $B=((0.844*W) + 6.614) - (0.5*H)$   
                           $C=(0.339*W) - 1.333$   
                           $D=(0.219*W) - 1.791$   
                           $E=(0.219*W) + 6.562$

**Definitions:**

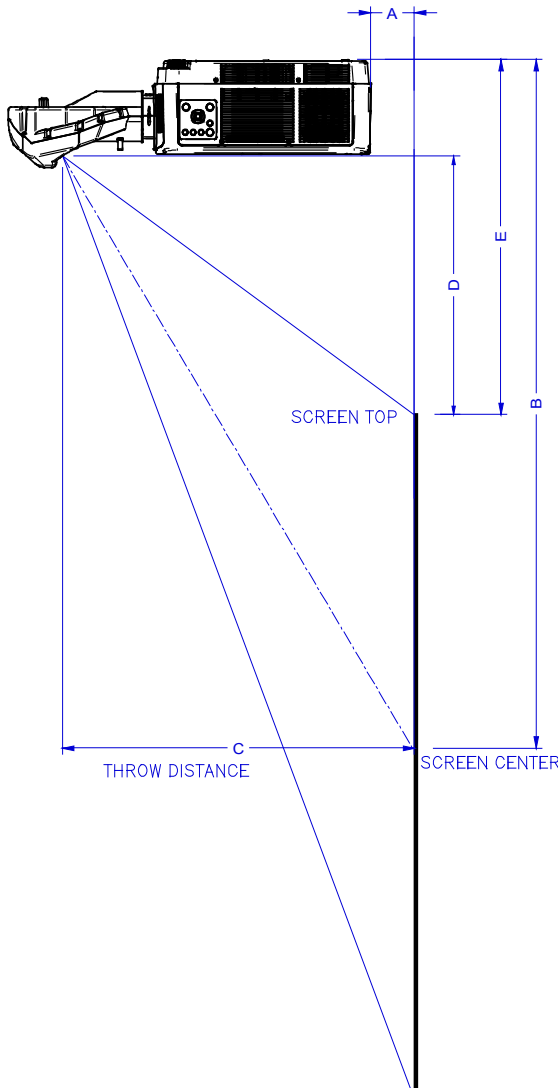
- W = Image Width  
 H = Image Height (size)  
 C = Throw distance

**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)

#### NP44ML-01LK Installation



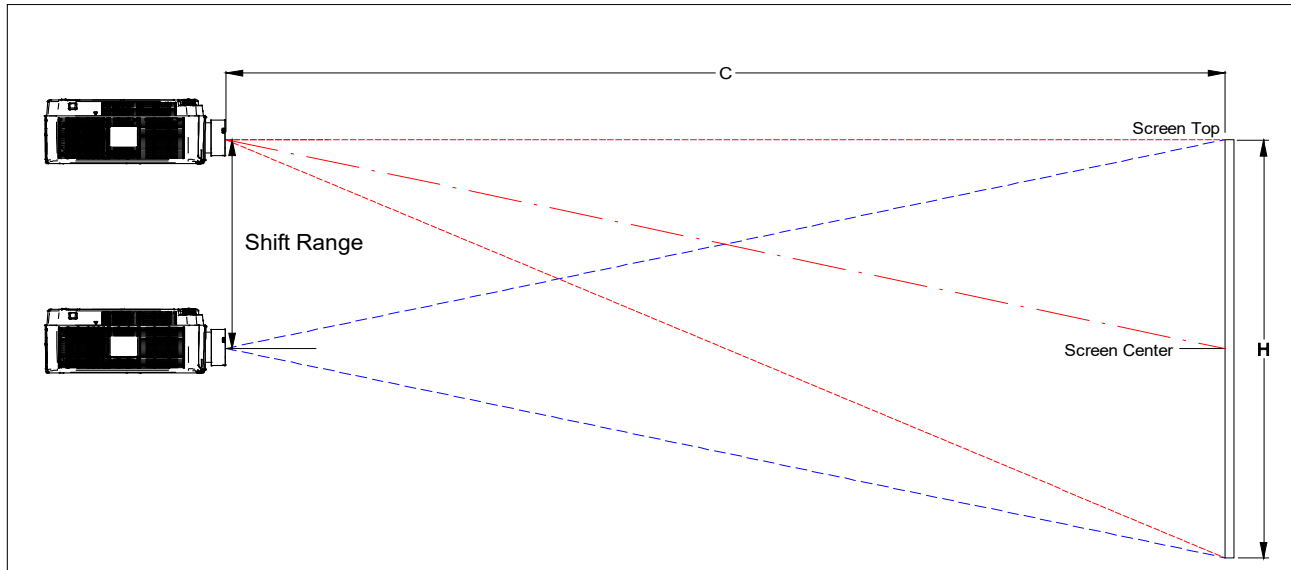
Screen Size (16:10)			A	B	C	D	E
Diagonal	Width(W)	Height (H)	inches	inches	inches	inches	inches
108	92	57	5.8	55.3	29.7	18.3	26.6
113	96	60	7.3	57.5	31.2	19.2	27.5
130	110	69	12.2	65.2	36.0	22.4	30.7
137	116	73	14.2	68.4	38.1	23.7	32.0
164	139	87	21.9	80.5	45.8	28.7	37.0
189	160	100	29.1	91.8	53.0	33.3	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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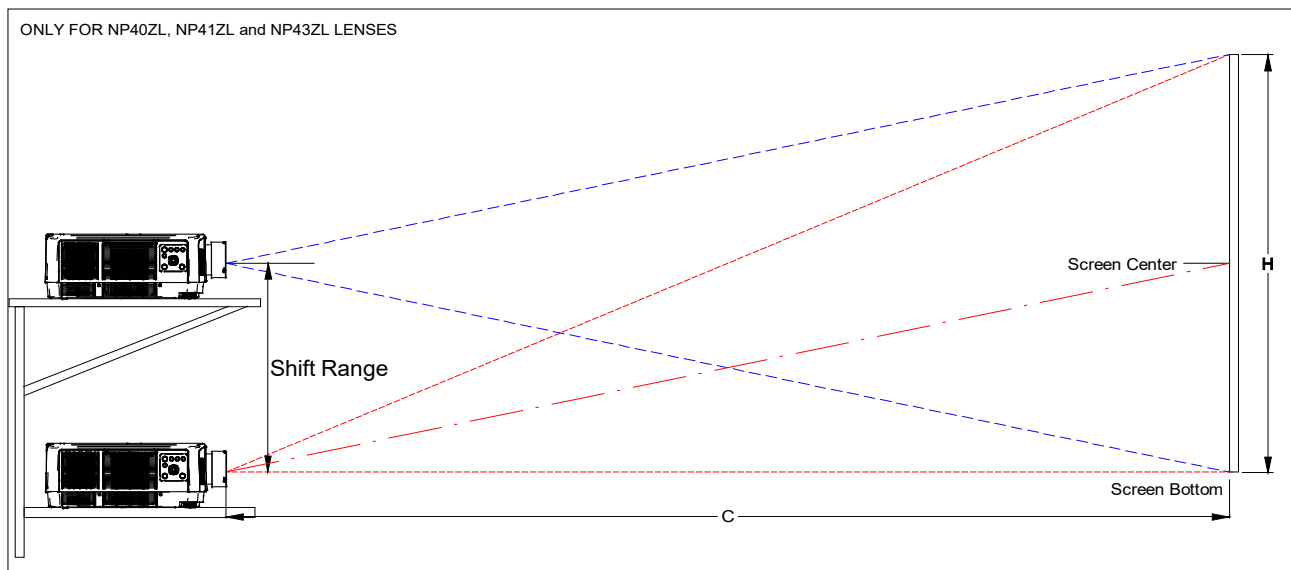
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### Ceiling Mount Installation



### Desktop Installation

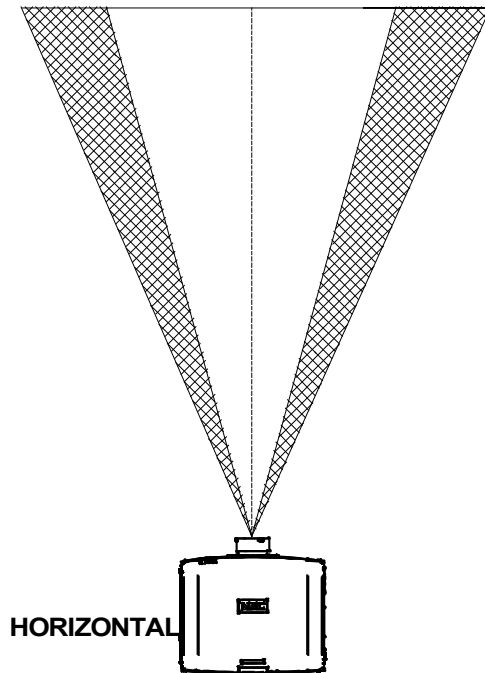
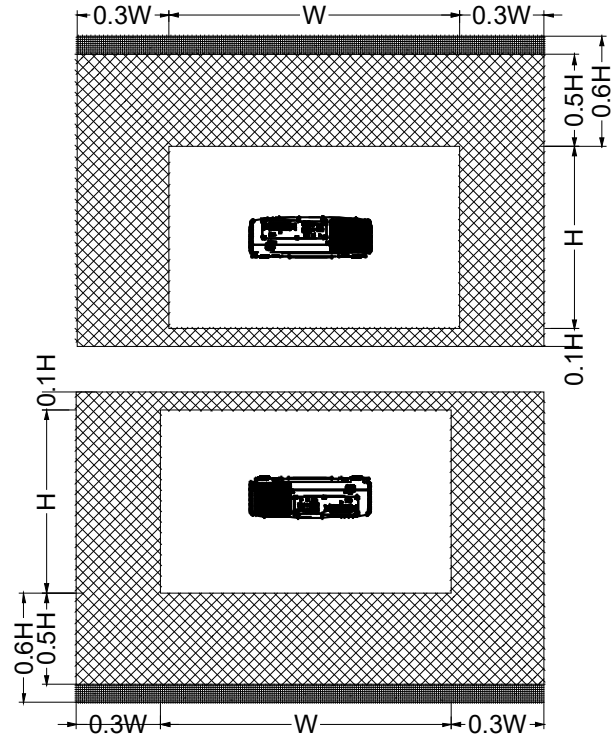
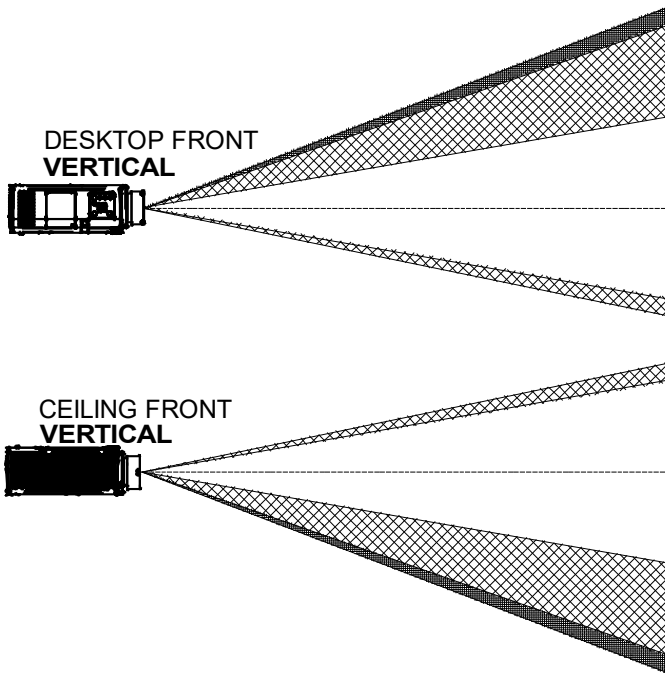


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**Lens Shift Adjustable Range**



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

The diagram below 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.

**Maximum Possible Range for NP40ZL, NP41ZL, NP43ZL:**

Towards ceiling/floor: 0.5H

Away from ceiling/floor: 0.1H

Right: 0.3W

Left: 0.3W

(W: width of projected image, H: height of projected image)

**Note:** Horizontal lens shift range is 0.15W at a 200" projected image with NP41ZL

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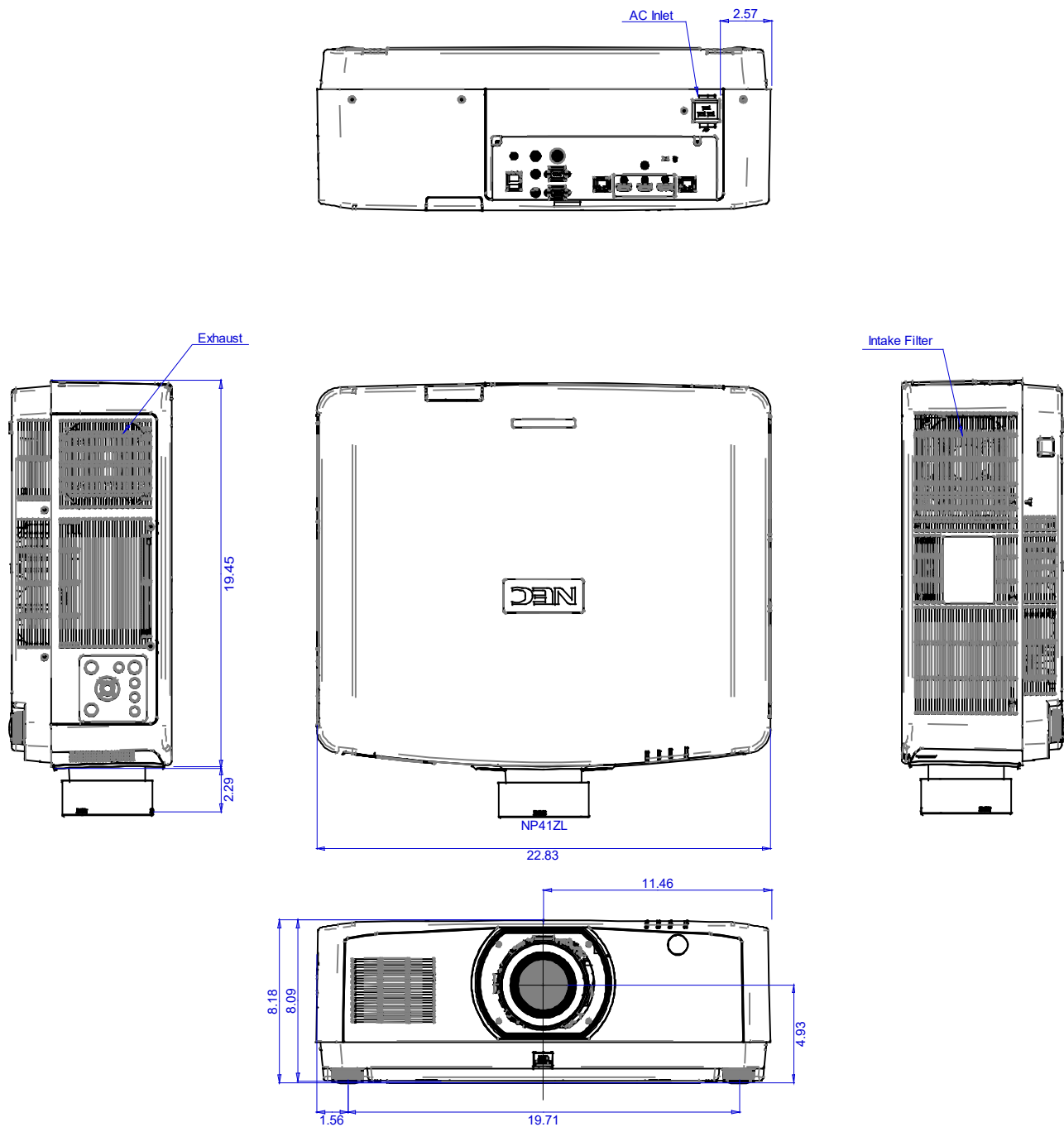
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### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the PA653UL/PA703UL/PA803UL.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown with the NP41ZL lens

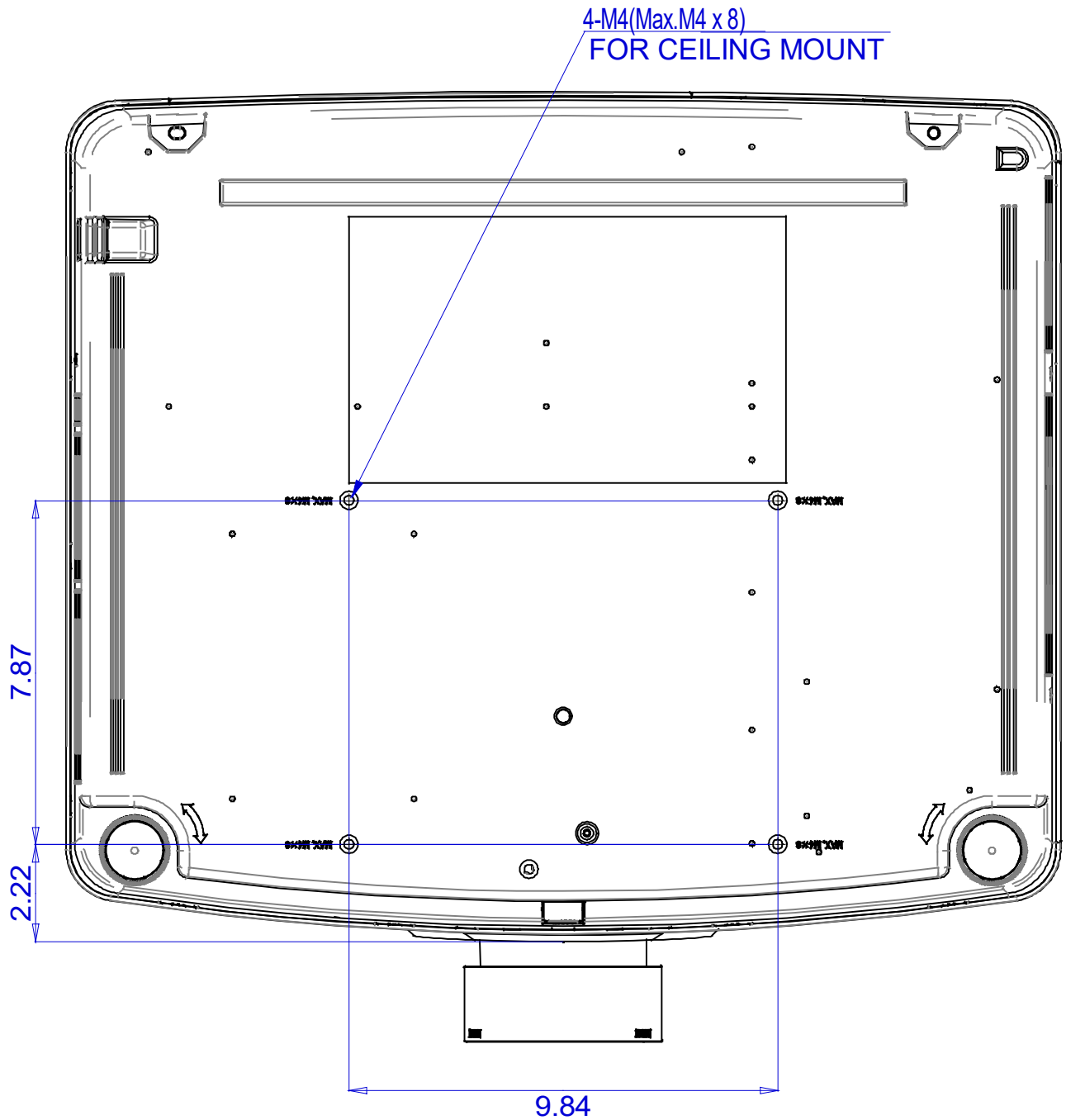


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### Cabinet Dimensions



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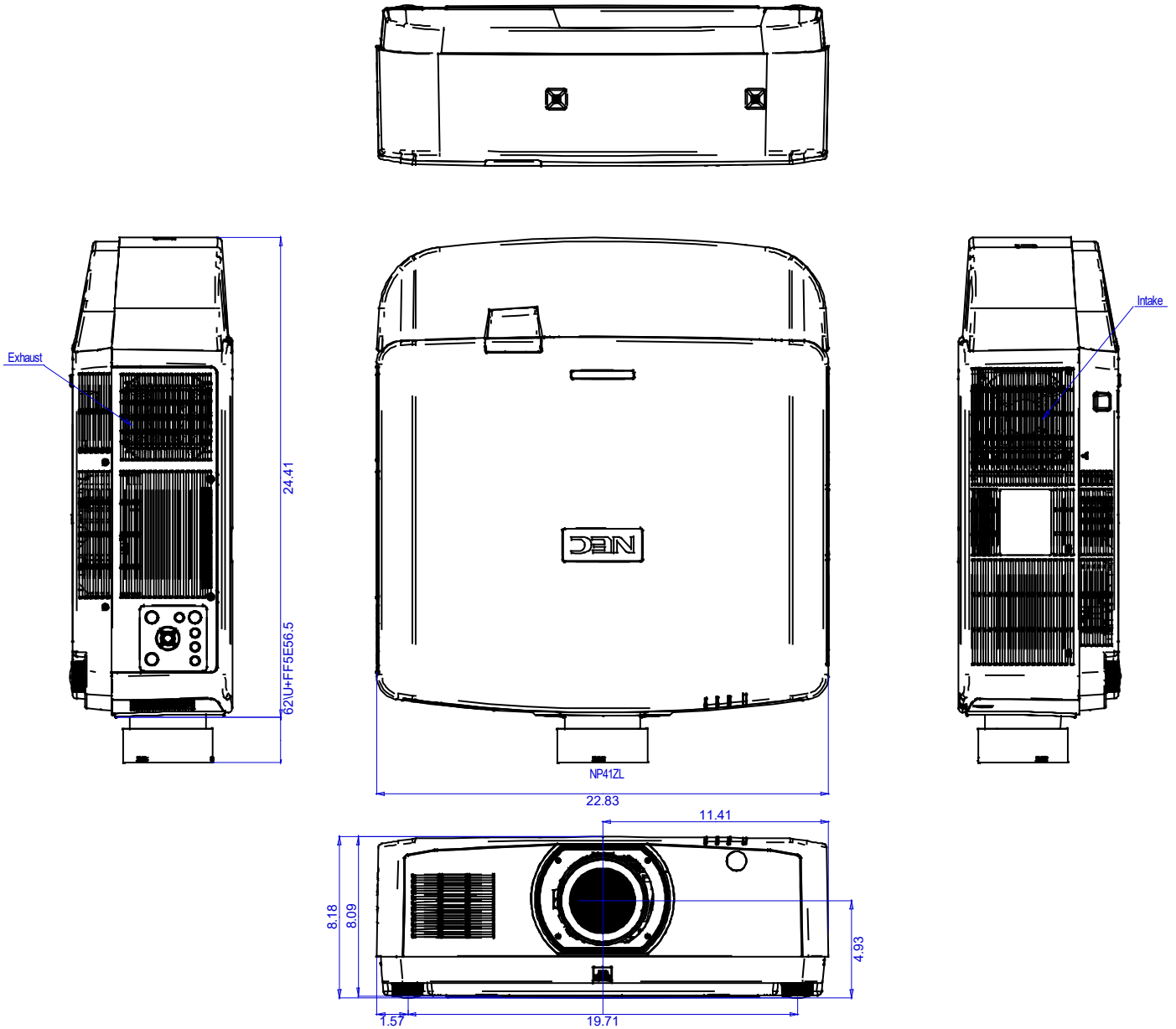
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### Cabinet Dimensions with Cable Cover

The following diagrams show the cabinet dimensions for the PA653UL/PA703UL/PA803UL. Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown with the NP41ZL lens



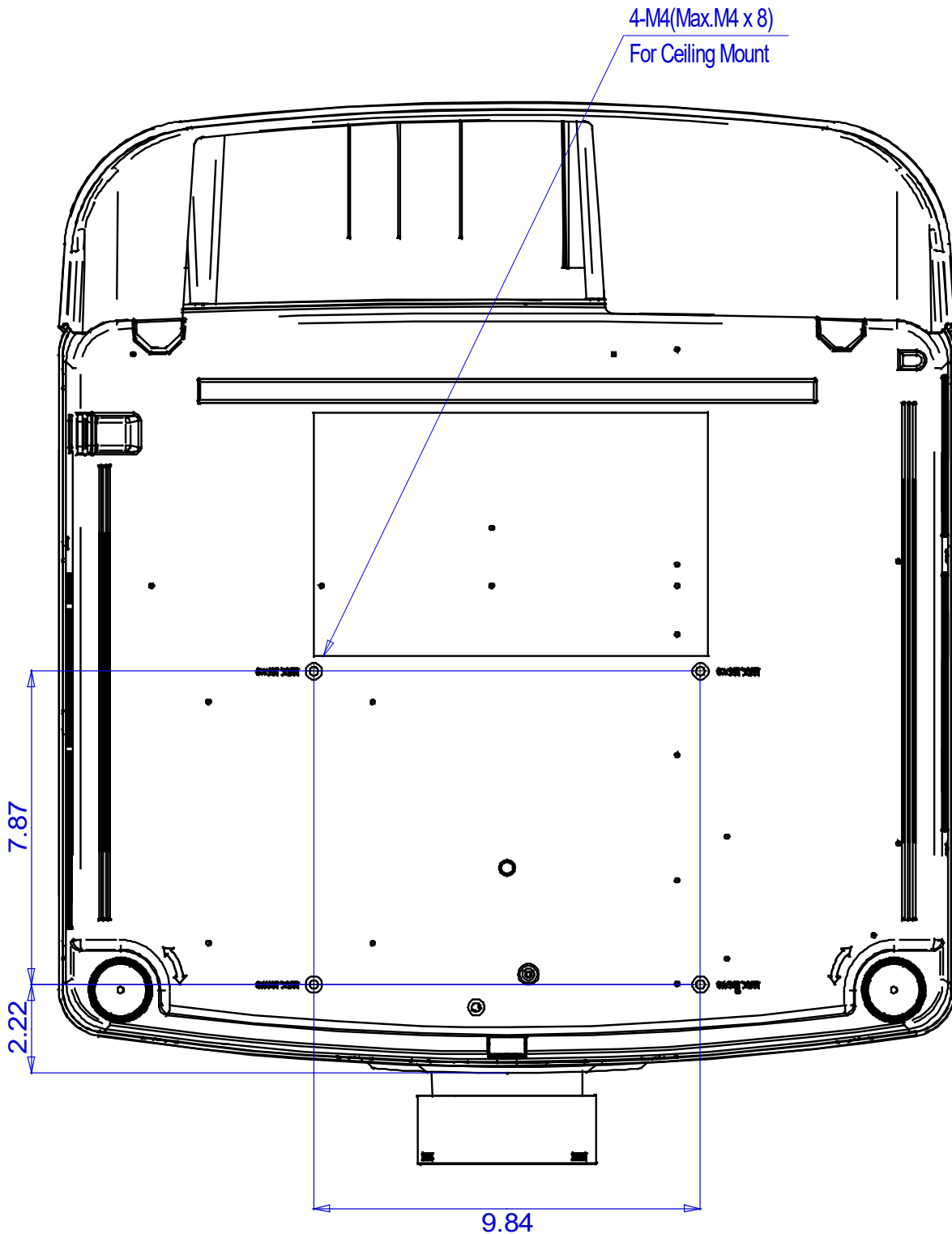


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### Cabinet Dimensions with Cable Cover

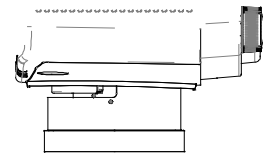
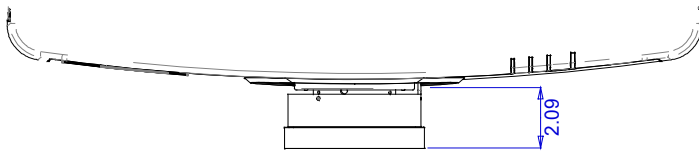


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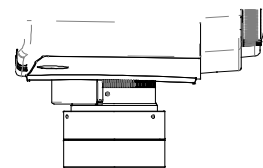
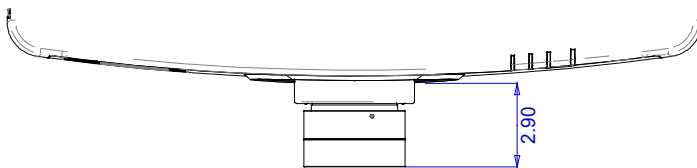
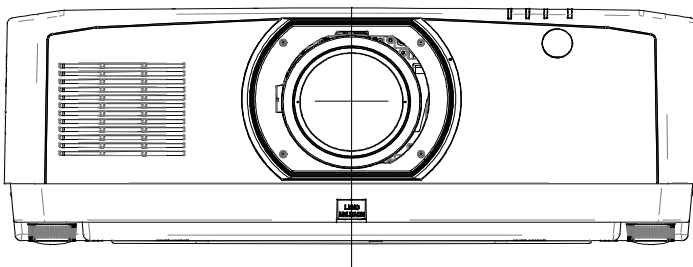
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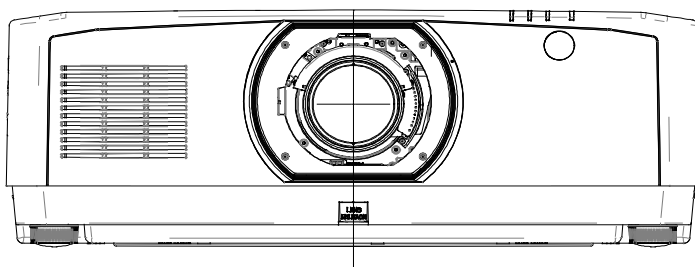
### Optional Lens Dimensions (NP40ZL and NP43ZL)



NP40ZL



NP43ZL



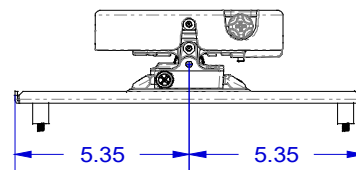
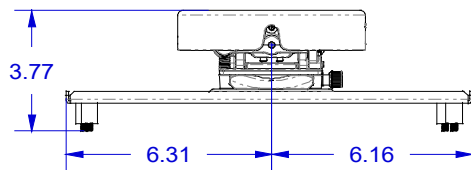
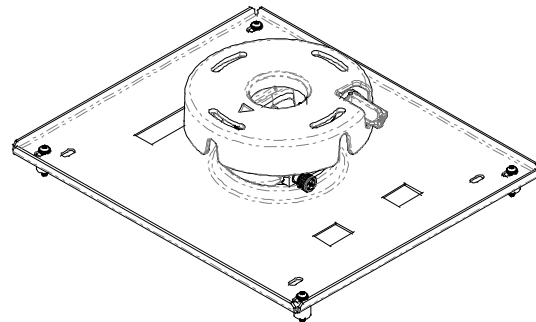
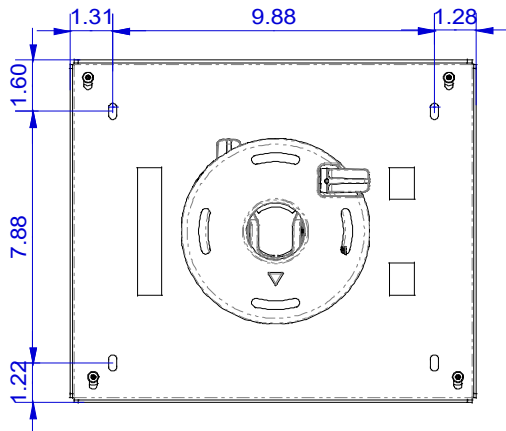
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#### Optional Ceiling Mount Dimensions (Part #: NP600CM)

The following diagrams show ceiling mount dimensions for the NP600CM. Dimensions are in inches. For millimeters multiply by 25.4.



#### Input Panel



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### PC Control Codes

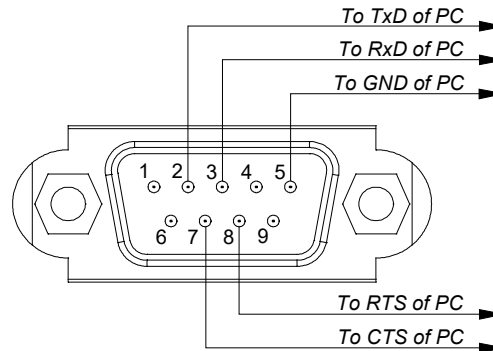
Function	Code Data										
POWER ON	02H	00H	00H	00H	00H	02H					
POWER OFF	02H	01H	00H	00H	00H	03H					
INPUT SELECT HDMI1	02H	03H	00H	00H	02H	01H	A1H	A9H			
INPUT SELECT HDMI2	02H	03H	00H	00H	02H	01H	A2H	AAH			
INPUT SELECT DisplayPort	02H	03H	00H	00H	02H	01H	A6H	AEH			
INPUT SELECT Computer	02H	03H	00H	00H	02H	01H	01H	09H			
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					
ASPECT RATIO (4:3 Screen)											
4:3	03H	10H	00H	00H	05H	18H	00H	00H	00H	00H	30H
LETTERBOX	03H	10H	00H	00H	05H	18H	00H	00H	01H	00H	31H
WIDESCREEN	03H	10H	00H	00H	05H	18H	00H	00H	02H	00H	32H
ZOOM	03H	10H	00H	00H	05H	18H	00H	00H	03H	00H	33H
ASPECT RATIO (RGB)											
4:3 WINDOW	03H	10H	00H	00H	05H	18H	00H	00H	00H	00H	30H
16:9	03H	10H	00H	00H	05H	18H	00H	00H	02H	00H	32H
5:4	03H	10H	00H	00H	05H	18H	00H	00H	0BH	00H	3BH
16:10	03H	10H	00H	00H	05H	18H	00H	00H	0CH	00H	3CH
15:9	03H	10H	00H	00H	05H	18H	00H	00H	0DH	00H	3DH
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: One 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.