

PA500U/PA500X/PA550W/PA600X Installation Guide

Desktop and Ceiling Mount

Rev 1.5

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Product Description

Type:	3 panel LCD projector, 0.79 p-Si TFT w/MLA (PA500X/PA600X) 0.75 p-Si TFT w/MLA (PA550W) 0.76 p-Si TFT w/MLA (PA500U)		Dimensions: 19.7"(W) x 6.5"(H) x 14.4"(D)	
			Weight: PA500X/550W/600X: 17.0 lbs PA500U: 17.2 lbs.	
Resolution:	1024 x 768 (4:3) 1920 x 1200 (16:10)		Brightness: PA500X: 5000 Lumens PA500U: 5000 Lumens PA550W: 5500 Lumens PA600X: 6000 Lumens	
Fan Noise:	PA500X:	38 dB / 31dB @ 1 meter		
	PA500U:	38 dB / 32dB @ 1 meter		
	PA550W:	38 dB / 31dB @ 1 meter		
	PA600X:	38 dB / 31dB @ 1 meter		
Power Consumption:	PA500X/PA550W:	464W (max)	BTU's: PA500X/PA550W: 1583 BTU/hour	
	PA600X:	464W (max)	PA600X: 1583 BTU/hour	
	PA500U:	477W (max)	PA500U: 1628 BTU/hour	

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

Lens Specifications

NP11FL: Throw Ratio: ~ 0.8:1 Screen Sizes: 60"-150"	Focal Length: 13.2mm F/#:2.3	NP14ZL: Throw Ratio: 2.97 -4.79:1 Screen Sizes: 60" - 200"	Focal Length: 48.5 - 77.6mm F/#:2.2
NP12ZL: Throw Ratio: 1.19 - 1.56:1 Screen Sizes: 40" - 200"	Focal Length: 19.4 – 25.3mm F/#:2.2	NP15ZL: Throw Ratio: 4.70 - 7.02:1 Screen Sizes: 80" - 200"	Focal Length: 76.6 - 116.5mm F/#:2.2
NP13ZL: Throw Ratio: 1.50 - 3.02:1 Screen Sizes: 40" - 200"	Focal Length: 24.4 – 48.6mm F/#:1.7		

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 $\pm 5\%$.

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Formulas: 4:3 Aspect Ratio (PA500X/PA600X—XGA)

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:

NP11FL:	C = 0.827W – 1.374	
NP12ZL:	C(Wide) = 1.214W – 1.794	C(Tele) = 1.578W – 1.794
NP13ZL:	C(Wide) = 1.524W – 1.974	C(Tele) = 3.043W – 1.972
NP14ZL:	C(Wide) = 3.034W – 4.844	C(Tele) = 4.855W – 4.844
NP15ZL:	C(Wide) = 4.797W – 7.630	C(Tele) = 7.291W – 7.630

Definitions:

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

4:3 Screen Formulas:

W = H x 4/3
H = W x 3/4
Diagonal = W x 5/4

Note: Tilting the front of the projector up or down by more than 45° from level could reduce lamp life by up to 20%.

Distance Chart for popular 4:3 screens

Screen Size (4:3)			Rear Lens	Zoom Lenses				
			NP11FL	NP12ZL	NP13ZL	NP14ZA	NP15ZL	
Diagonal	Width(W)	Height (H)	0.8:1	1.19 - 1.56:1	1.50 - 3.02:1	2.97 - 4.79:1	4.70 - 7.20:1	
inches	inches	inches	inches	inches	inches	inches	inches	
40	32	24	25.09	37.05 - 48.7	46.8 - 95.40	92.2 - 150.5	NA	
60	48	36	38.32	56.48 - 74.0	71.2 - 144.09	140.8 - 228.2	222.5 - 342.3	
67	53.6	40.2	42.95	63.28 - 82.8	79.7 - 161.13	157.8 - 255.4	249.4 - 383.2	
72	57.6	43.2	46.26	68.13 - 89.1	85.8 - 173.30	169.9 - 274.8	268.5 - 412.3	
84	67.2	50.4	54.20	79.79 - 104.2	100.4 - 202.52	199.0 - 321.4	314.6 - 482.3	
90	72	54	58.17	85.61 - 111.8	107.8 - 217.12	213.6 - 344.7	337.6 - 517.3	
100	80	60	64.79	95.33 - 124.4	119.9 - 241.47	237.9 - 383.6	376.0 - 575.7	
120	96	72	78.02	114.75 - 149.7	144.3 - 290.16	286.4 - 461.2	452.7 - 692.3	
150	120	90	97.87	143.89 - 187.6	180.9 - 363.19	359.2 - 577.8	567.9 - 867.3	
180	144	108	NA	173.02 - 225.4	217.5 - 436.22	432.1 - 694.3	683.0 - 1042.3	
210	168	126	NA	202.16 - 263.3	254.1 - 509.25	504.9 - 810.8	798.1 - 1217.3	
240	192	144	NA	231.29 - 301.2	290.6 - 582.28	577.7 - 927.3	913.3 - 1392.2	
270	216	162	NA	260.43 - 339.1	327.2 - 655.32	650.5 - 1043.8	1028.4 - 1567.2	
300	240	180	NA	289.57 - 376.9	363.8 - 728.35	723.3 - 1160.4	1143.5 - 1742.2	
400	320	240	NA	386.69 - 503.2	485.7 - 971.79	966.0 - 1548.8	1527.3 - 2325.5	
500	400	300	NA	483.81 - 629.4	607.6 - 1215.23	1208.8 - 1937.2	1911.0 - 2908.8	

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Formulas: 16:10 Aspect Ratio (PA550W—WXGA)

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:

NP11FL:	C = 0.819W – 1.354	
NP12ZL:	C(Wide) = 1.203W – 1.794	C(Tele) = 1.564W – 1.794
NP13ZL:	C(Wide) = 1.510W – 1.974	C(Tele) = 3.014W – 1.972
NP14ZL:	C(Wide) = 3.005W – 4.844	C(Tele) = 4.808W – 4.844
NP15ZL:	C(Wide) = 4.751W – 7.630	C(Tele) = 7.221W – 7.630

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 (WXGA)

Screen Size (16:10)			Rear Lens	Zoom Lenses					
			NP11FL	NP12ZL	NP13ZL	NP14ZA	NP15ZL		
Diagonal	Width(W)	Height (H)	0.8:1	1.19 - 1.56:1	1.50 - 3.02:1	2.97 - 4.79:1	4.70 - 7.20:1		
inches	inches	inches	inches	inches	inches	inches	inches		
40	34	21	26.49	39.1 - 51.4	49.4 - 100.5	N/A	N/A	N/A	N/A
60	51	32	40.42	59.6 - 78.0	75.0 - 151.7	148.4 - 240.4	234.7	360.6	
67	57	36	45.33	66.8 - 87.4	84.1 - 169.8	166.4 - 269.2	263.2	404.0	
72	61	38	48.61	71.6 - 93.6	90.1 - 181.9	178.5 - 288.4	282.2	432.9	
84	71	45	56.80	83.6 - 109.3	105.2 - 212.0	208.5 - 336.5	329.7	505.1	
90	76	48	60.89	89.6 - 117.1	112.8 - 227.1	223.5 - 360.6	353.4	541.2	
100	85	53	68.26	100.5 - 131.1	126.4 - 254.2	250.6 - 403.8	396.2	606.2	
120	102	64	82.18	120.9 - 157.7	152.0 - 305.5	301.7 - 485.6	477.0	728.9	
150	127	79	102.66	151.0 - 196.8	189.8 - 380.8	376.8 - 605.8	595.7	909.4	
180	153	95	NA	182.3 - 237.5	229.1 - 459.2	454.9 - 730.8	719.3	1097.2	
210	178	111	NA	212.3 - 276.6	266.8 - 534.5	530.0 - 851.0	838.0	1277.7	
240	204	127	NA	243.6 - 317.3	306.1 - 612.9	608.2 - 976.0	961.6	1465.5	
270	229	143	NA	273.7 - 356.4	343.8 - 688.2	683.3 - 1096.2	1080.3	1646.0	
300	254	159	NA	303.8 - 395.5	381.6 - 763.6	758.4 - 1216.4	1199.1	1826.5	
400	339	212	NA	406.0 - 528.4	509.9 - 1019.8	1013.9 - 1625.1	1603.0	2440.3	
500	424	265	NA	508.3 - 661.3	638.3 - 1276.0	1269.3 - 2033.7	2006.8	3054.1	

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Formulas: 16:10 Aspect Ratio (PA500U—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:

NP11FL:	C = 0.807W – 1.354	
NP12ZL:	C(Wide) = 1.185W – 1.794	C(Tele) = 1.541W – 1.794
NP13ZL:	C(Wide) = 1.488W – 1.974	C(Tele) = 2.970W – 1.972
NP14ZL:	C(Wide) = 2.961W – 4.844	C(Tele) = 4.737W – 4.844
NP15ZL:	C(Wide) = 4.681W – 7.630	C(Tele) = 7.115W – 7.630

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)			Rear Lens	Zoom Lenses					
			NP11FL	NP12ZL	NP13ZL	NP14ZA	NP15ZL		
Diagonal	Width(W)	Height (H)	0.8:1	1.19 - 1.56:1	1.50 - 3.02:1	2.97 - 4.79:1	4.70 - 7.20:1		
inches	inches	inches	inches	inches	inches	inches	inches		
40	34	21	26.08	38.5 - 50.6	48.6 - 99.0	N/A	N/A	N/A	N/A
60	51	32	39.80	58.6 - 76.8	73.9 - 149.5	146.2 - 236.7	231.1 - 360.6		
67	57	36	44.65	65.8 - 86.0	82.8 - 167.3	163.9 - 265.2	259.2 - 404.0		
72	61	38	47.87	70.5 - 92.2	88.8 - 179.2	175.8 - 284.1	277.9 - 432.9		
84	71	45	55.94	82.3 - 107.6	103.7 - 208.9	205.4 - 331.5	324.7 - 505.1		
90	76	48	59.98	88.3 - 115.3	111.1 - 223.7	220.2 - 355.2	348.1 - 541.2		
100	85	53	67.24	98.9 - 129.2	124.5 - 250.5	246.8 - 397.8	390.3 - 606.2		
120	102	64	80.96	119.1 - 155.4	149.8 - 301.0	297.2 - 478.3	469.8 - 728.9		
150	127	79	101.14	148.7 - 193.9	187.0 - 375.2	371.2 - 596.8	586.9 - 909.4		
180	153	95	NA	179.5 - 234.0	225.7 - 452.4	448.2 - 719.9	708.6 - 1097.2		
210	178	111	NA	209.1 - 272.5	262.9 - 526.7	522.2 - 838.3	825.6 - 1277.7		
240	204	127	NA	239.9 - 312.6	301.6 - 603.9	599.2 - 961.5	947.3 - 1465.5		
270	229	143	NA	269.6 - 351.1	338.8 - 678.2	673.2 - 1079.9	1064.3 - 1646.0		
300	254	159	NA	299.2 - 389.6	376.0 - 752.4	747.3 - 1198.4	1181.3 - 1826.5		
400	339	212	NA	399.9 - 520.6	502.5 - 1004.9	998.9 - 1601.0	1579.2 - 2440.3		
500	424	265	NA	500.6 - 651.6	628.9 - 1257.3	1250.6 - 2003.6	1977.1 - 3054.1		

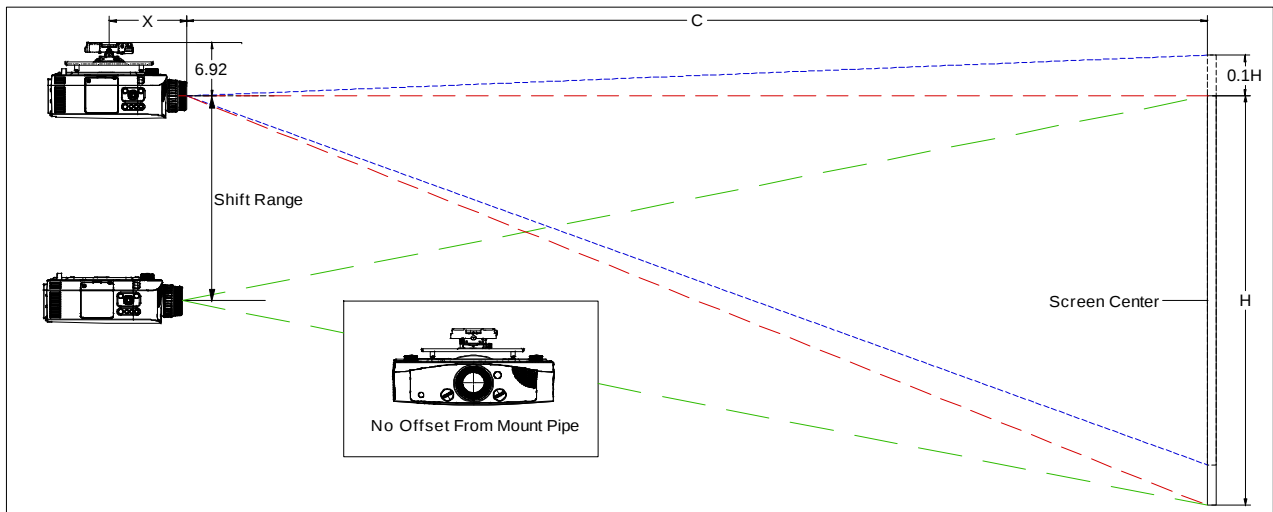
Note: For screen sizes not indicated in projection tables, refer to formulas above respective charts.

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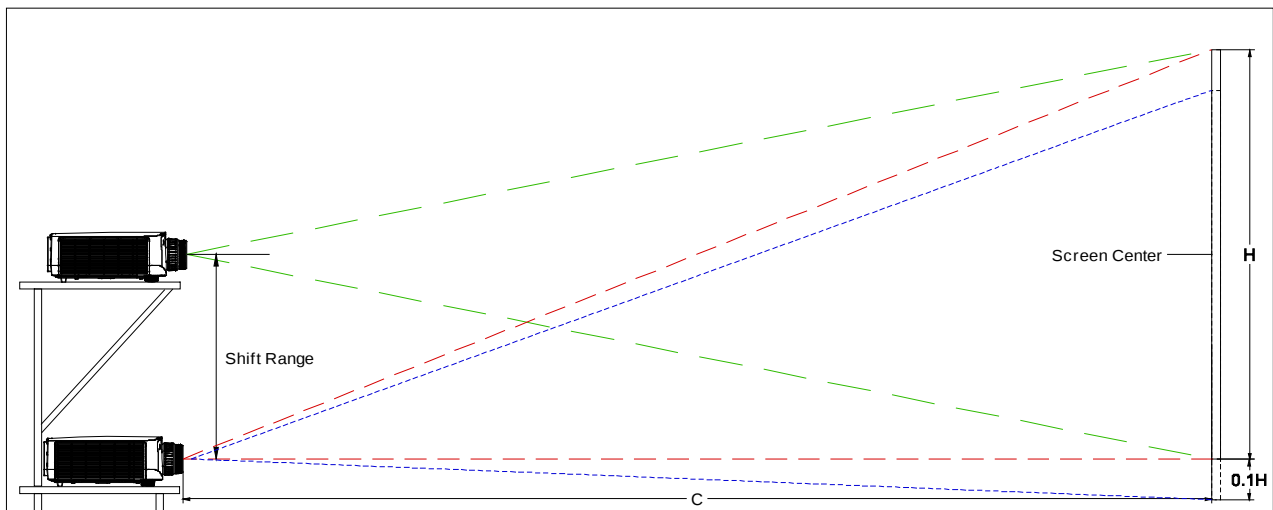
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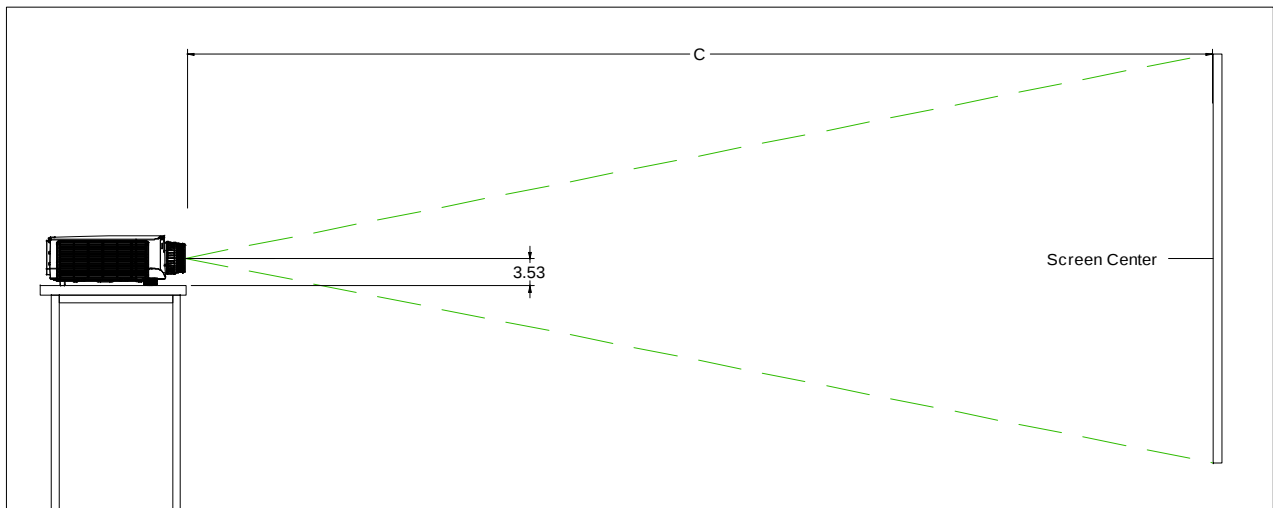
Ceiling Mount Installation



Desktop Installation



Note: Lens Shift Feature is not available to NP11FL. This lens should only be used for "zero degree"/"no-offset" applications. See below

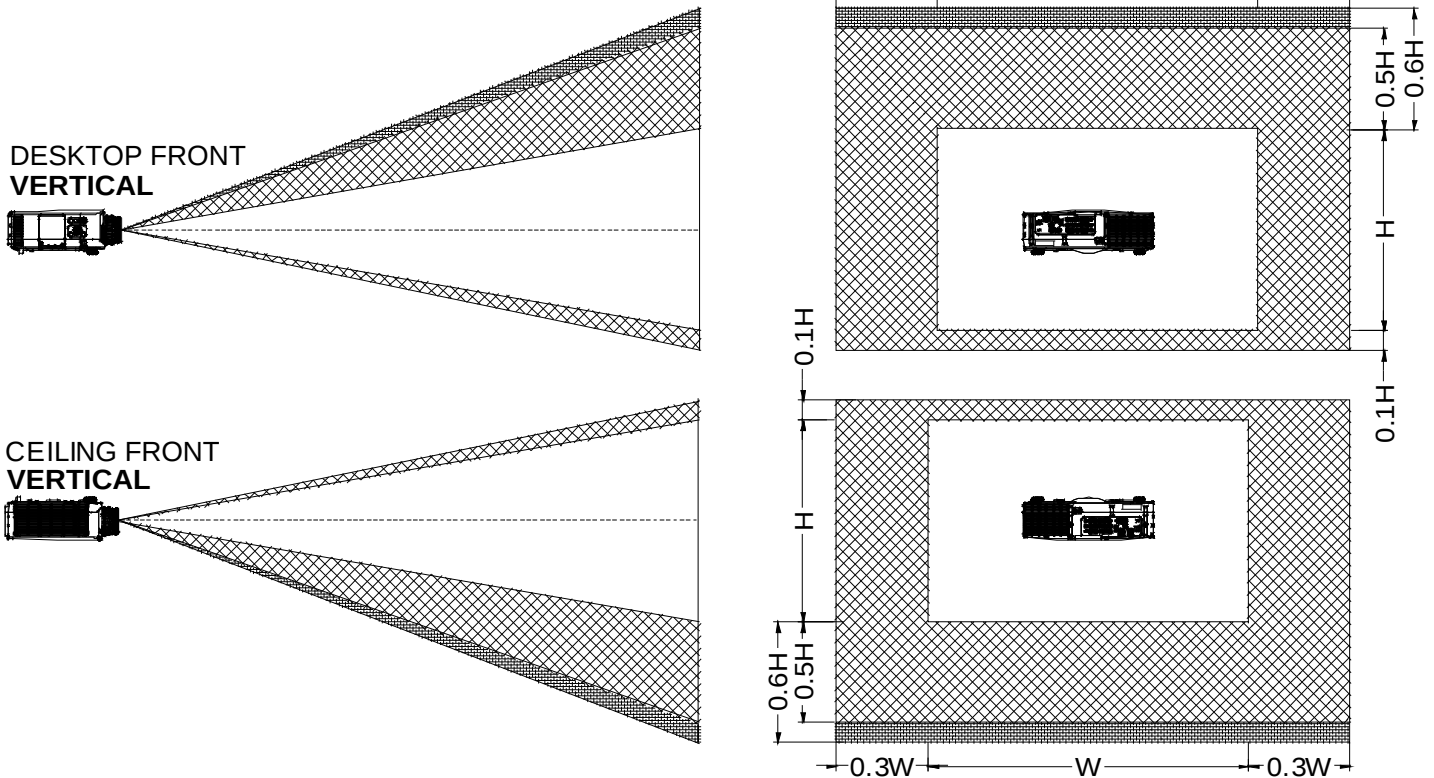


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Lens Shift Adjustable Range



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.

Note: Lens shift feature is not available with NP11FL (rear lens). NP11FL should be used only for "zero degree" / "no-offset" applications.

Maximum Possible Range for NP12ZL, NP13ZL, NP14ZL, NP15ZL:

Towards ceiling/floor: 0.5H (0.6H for PA550W)

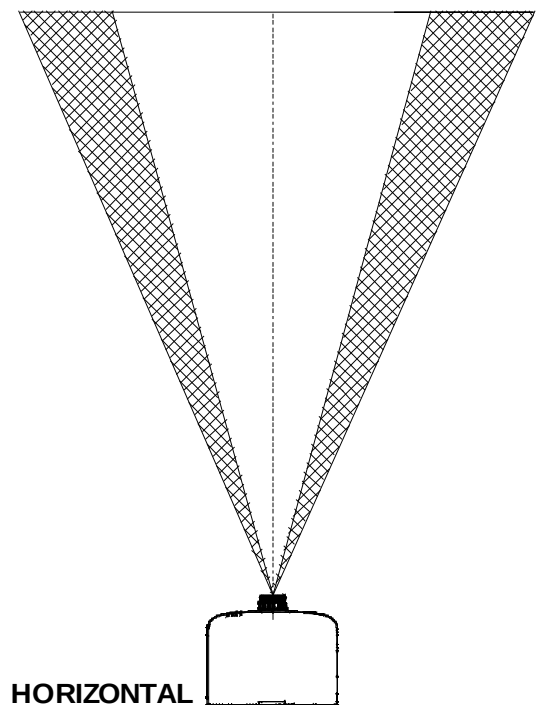
Away from ceiling/floor: 0.1H

Right: 0.3W

Left: 0.3W

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

Note: Horizontal lens shift range for the PA500U is 0.15W at a 200" projected image with NP13ZL



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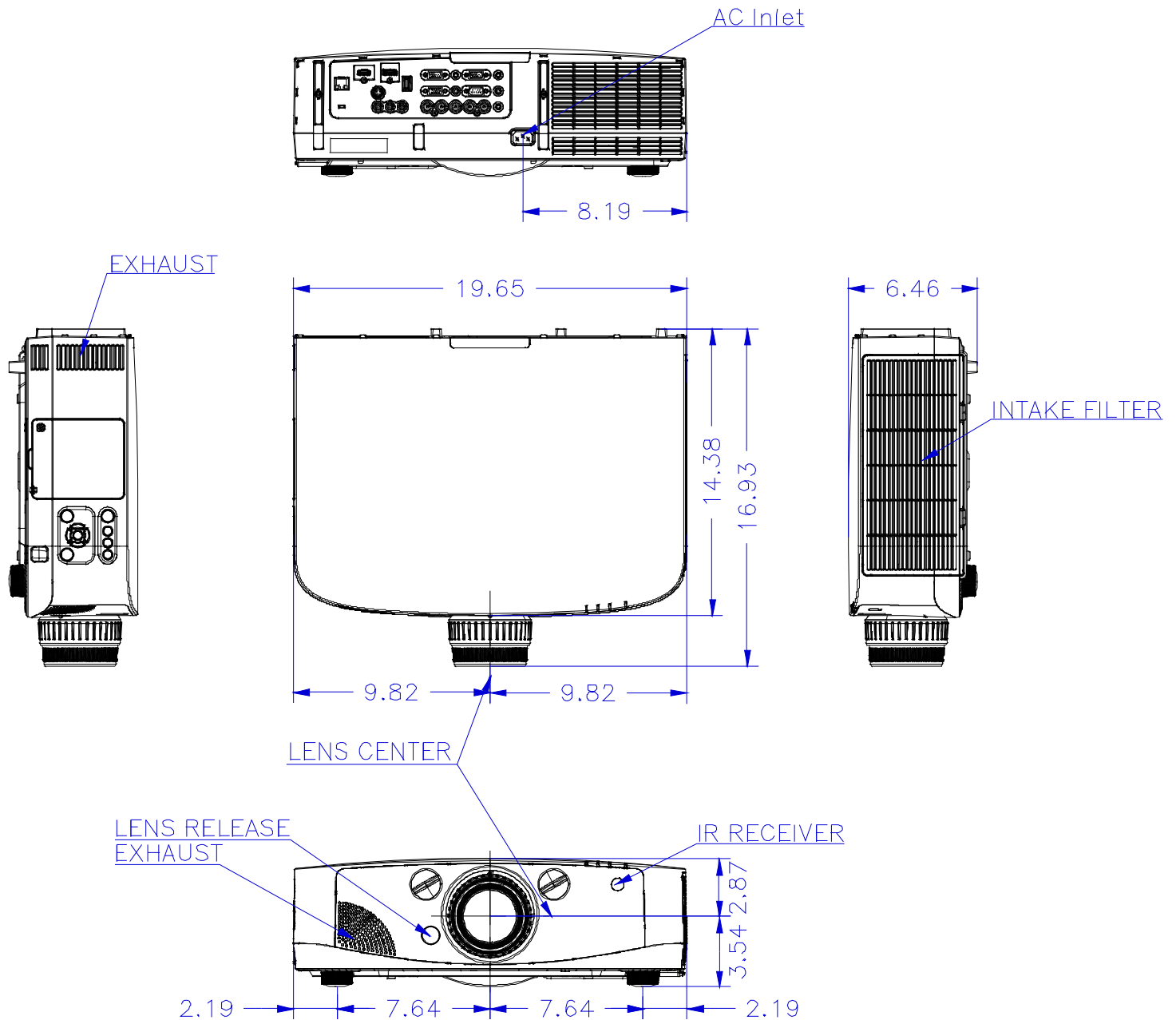
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Cabinet Dimensions

The following diagrams show the cabinet dimensions for the PA500U/PA500X/PA550W/PA600X.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown with the NP13ZL lens

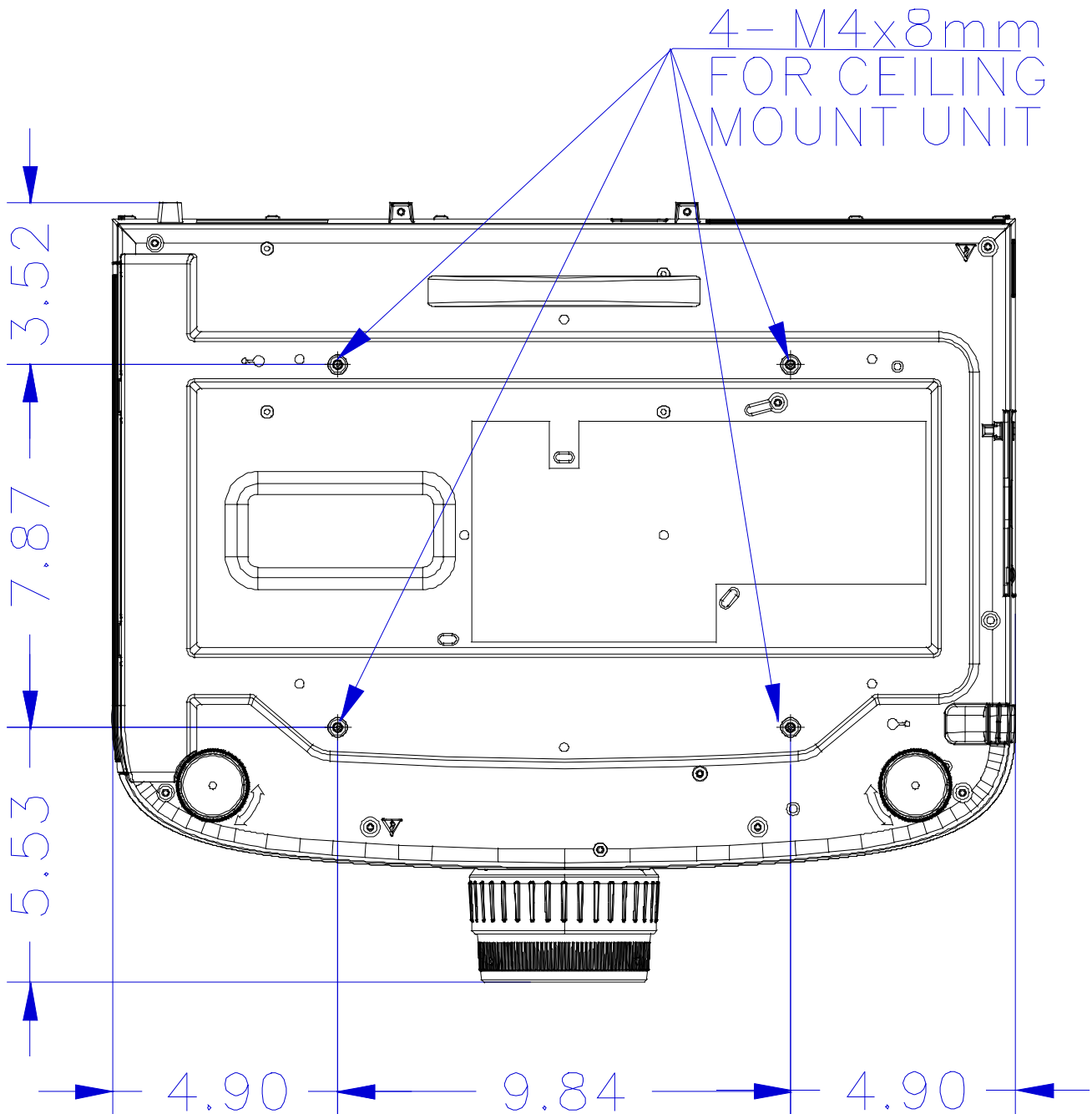


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Cabinet Dimensions

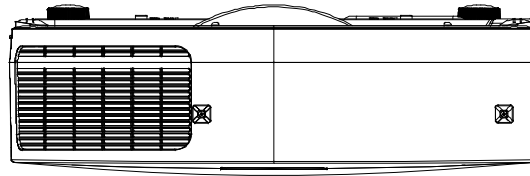


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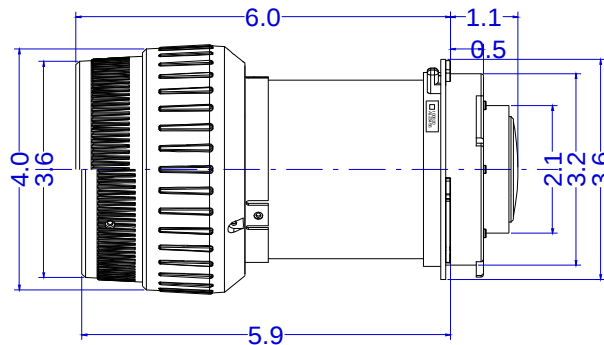
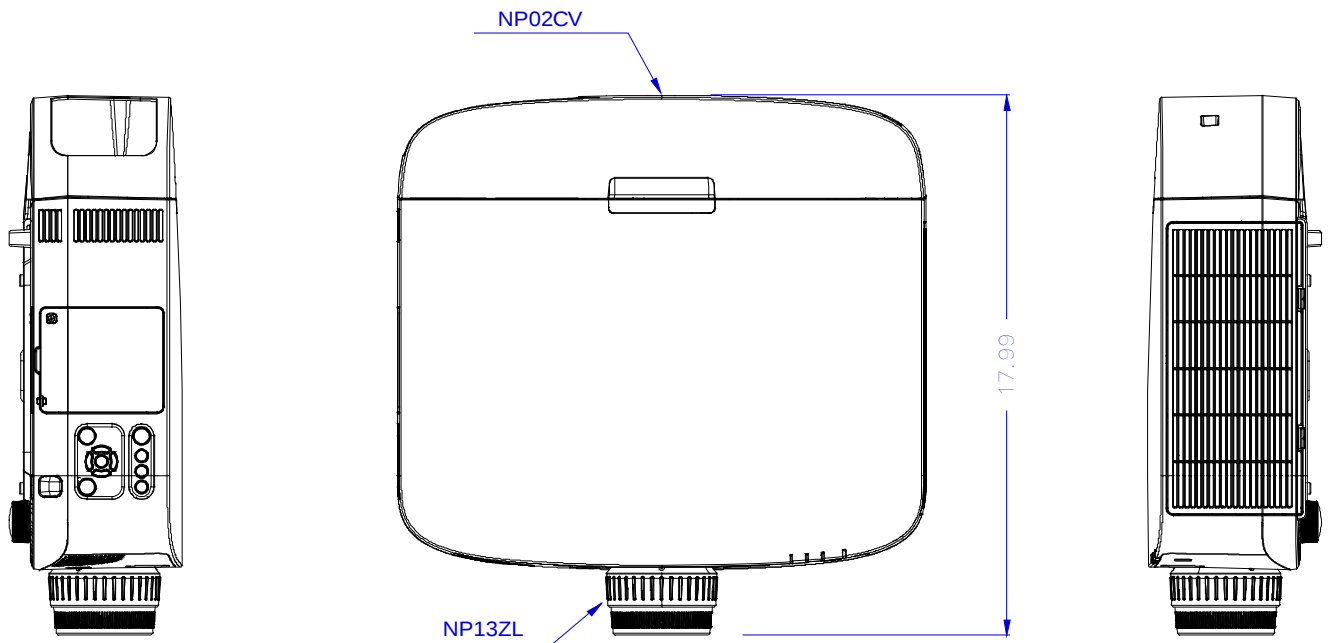
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Optional Terminal Cover (Part #: NP02CV)



NP13ZL & NP02CV

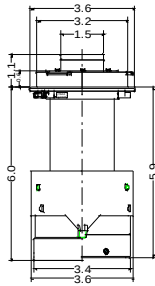


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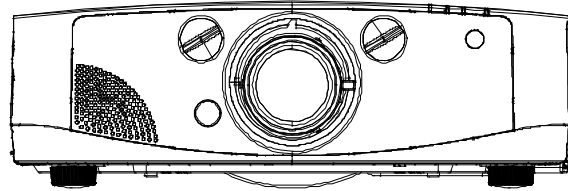
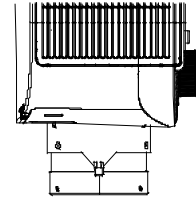
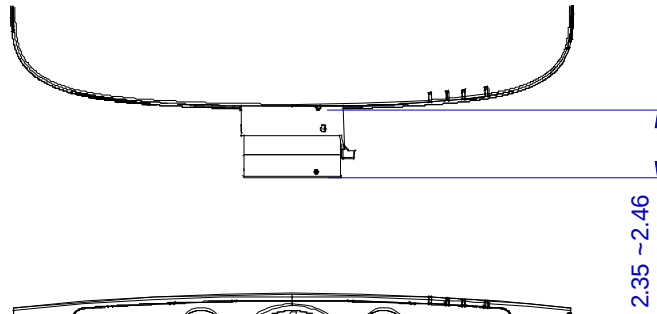
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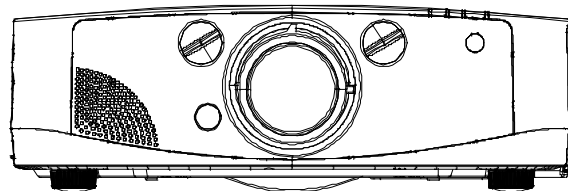
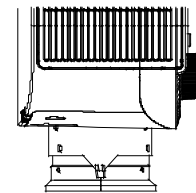
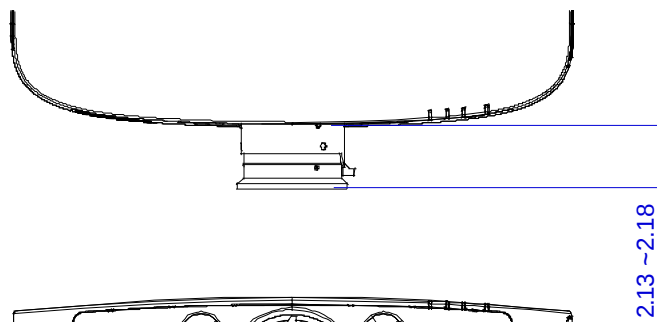
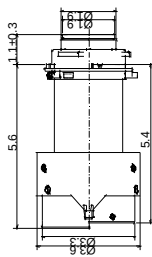
Optional Lens Dimensions (NP11FL and NP12ZL)



NP11FL



NP12ZL

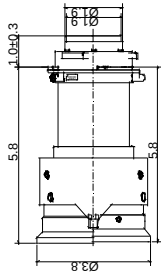


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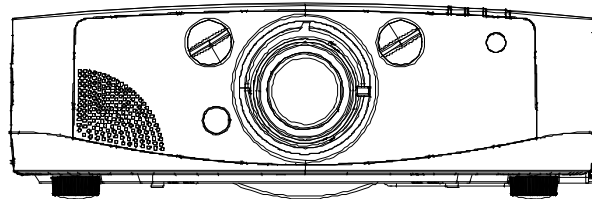
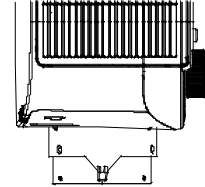
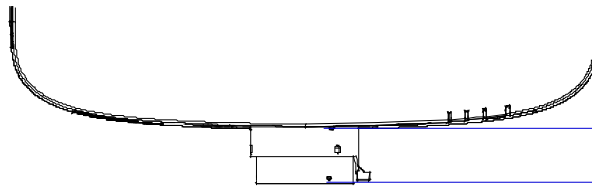
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Optional Lens Dimensions (NP14ZL and NP15ZL)

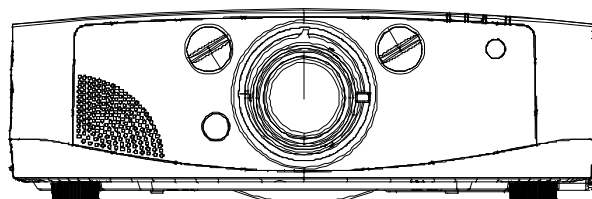
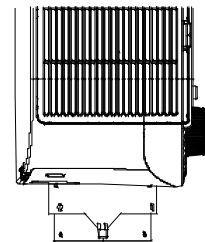
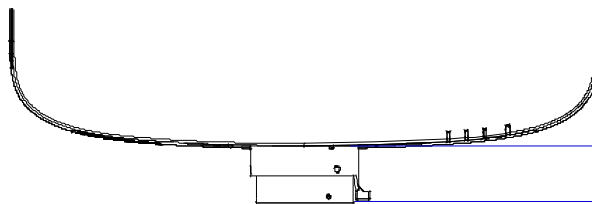
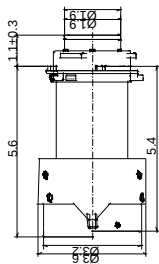


NP14ZL



1.80 ~ 1.98

NP15ZL



1.77 ~ 1.95

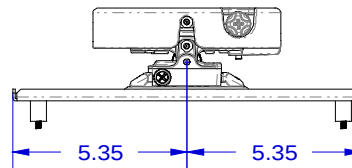
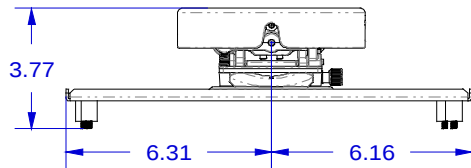
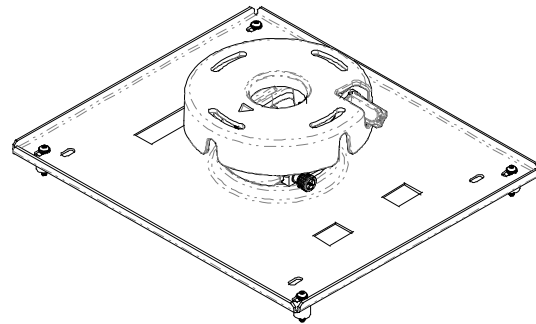
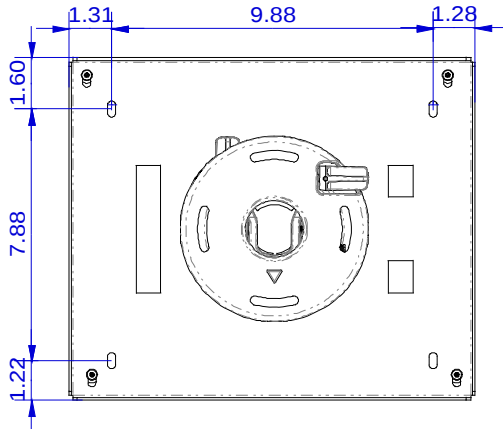
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Optional Ceiling Mount Dimensions (Part #: NP3250CM)

The following diagrams show ceiling mount dimensions for the NP3250CM. Dimensions are in inches. For millimeters multiply by 25.4.



Input Panel



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Rev 1.5

PC Control Codes

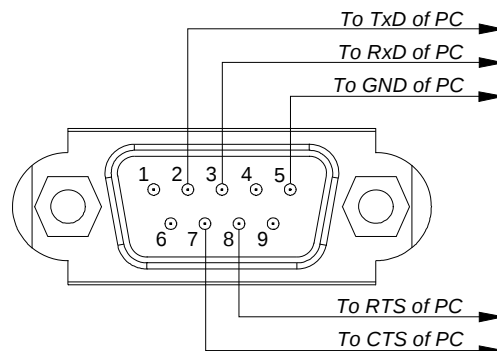
Function	Code Data										
POWER ON	02H	00H	00H	00H	00H	02H					
POWER OFF	02H	01H	00H	00H	00H	03H					
INPUT SELECT COMPUTER 1	02H	03H	00H	00H	02H	01H	01H	09H			
INPUT SELECT COMPUTER 2	02H	03H	00H	00H	02H	01H	02H	0AH			
INPUT SELECT COMPUTER 3	02H	03H	00H	00H	02H	01H	03H	0BH			
INPUT SELECT HDMI	02H	03H	00H	00H	02H	01H	1AH	22H			
INPUT SELECT DisplayPort	02H	03H	00H	00H	02H	01H	1BH	23H			
INPUT SELECT VIDEO	02H	03H	00H	00H	02H	01H	06H	0EH			
INPUT SELECT S-VIDEO	02H	03H	00H	00H	02H	01H	0BH	13H			
INPUT SELECT VIEWER	02H	03H	00H	00H	02H	01H	1FH	27H			
INPUT SELECT NETWORK	02H	03H	00H	00H	02H	01H	20H	28H			
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.