

## PA500U/PA500X/PA550W/PA600X Installation Guide

### Desktop and Ceiling Mount

Rev 1.7

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### Product Description

<b>Type:</b>	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)	<b>Dimensions:</b> 19.7"(W) x 6.5"(H) x 14.4"(D)
<b>Resolution:</b>	1024 x 768 (4:3) 1920 x 1200 (16:10)	<b>Weight:</b> PA500X/550W/600X: 17.0 lbs PA500U: 17.2 lbs.
<b>Fan Noise:</b>	PA500X: 38 dB / 31dB @ 1 meter PA500U: 38 dB / 32dB @ 1 meter PA550W: 38 dB / 31dB @ 1 meter PA600X: 38 dB / 31dB @ 1 meter	<b>Brightness:</b> PA500X: 5000 Lumens PA500U: 5000 Lumens PA550W: 5500 Lumens PA600X: 6000 Lumens
<b>Power Consumption:</b>	PA500X/PA550W: 464W (max) PA600X: 464W (max) PA500U: 477W (max)	<b>BTU's:</b> PA500X/PA550W: 1583 BTU/hour PA600X: 1583 BTU/hour PA500U: 1628 BTU/hour

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

### Lens Specifications

<b>NP11FL:</b> Throw Ratio: ~ 0.8:1 Screen Sizes: 60"-150"	Focal Length: 13.2mm F#:2.3	<b>NP14ZL:</b> Throw Ratio: 2.97 -4.79:1 Screen Sizes: 60" - 200"	Focal Length: 48.5 - 77.6mm F#:2.2
<b>NP12ZL:</b> Throw Ratio: 1.19 - 1.56:1 Screen Sizes: 40" - 200"	Focal Length: 19.4 – 25.3mm F#:2.2	<b>NP15ZL:</b> Throw Ratio: 4.70 - 7.02:1 Screen Sizes: 80" - 200"	Focal Length: 76.6 - 116.5mm F#:2.2
<b>NP13ZL:</b> 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 ±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				
Diagonal	Width(W)	Height (H)	NP11FL	NP12ZL	NP13ZL	NP14ZL	NP15ZL	
inches	inches	inches	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	
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		NP14ZL		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		NP14ZL		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

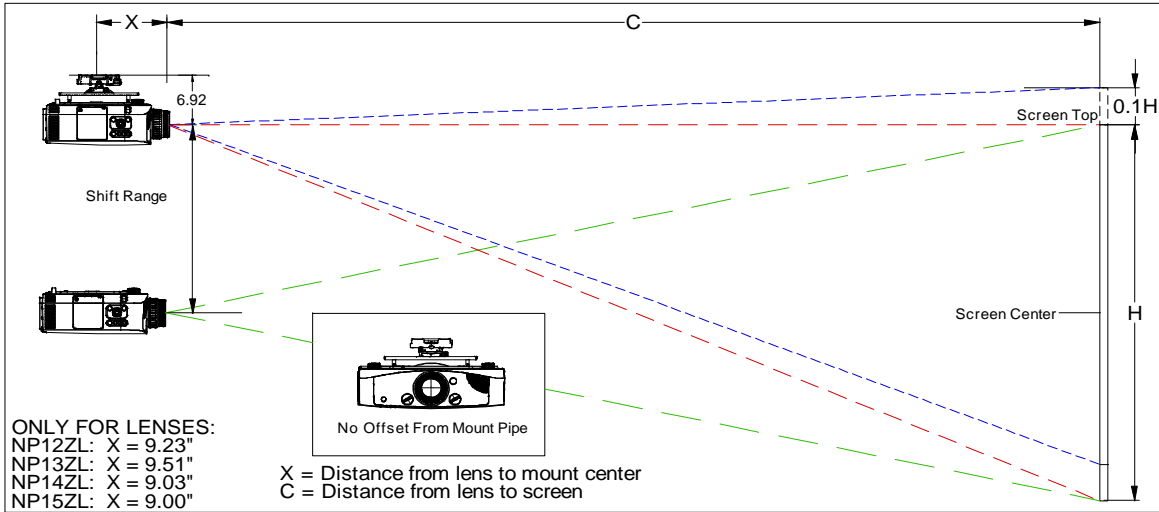
**Note:** For screen sizes not indicated in projection tables, refer to formulas above respective charts.

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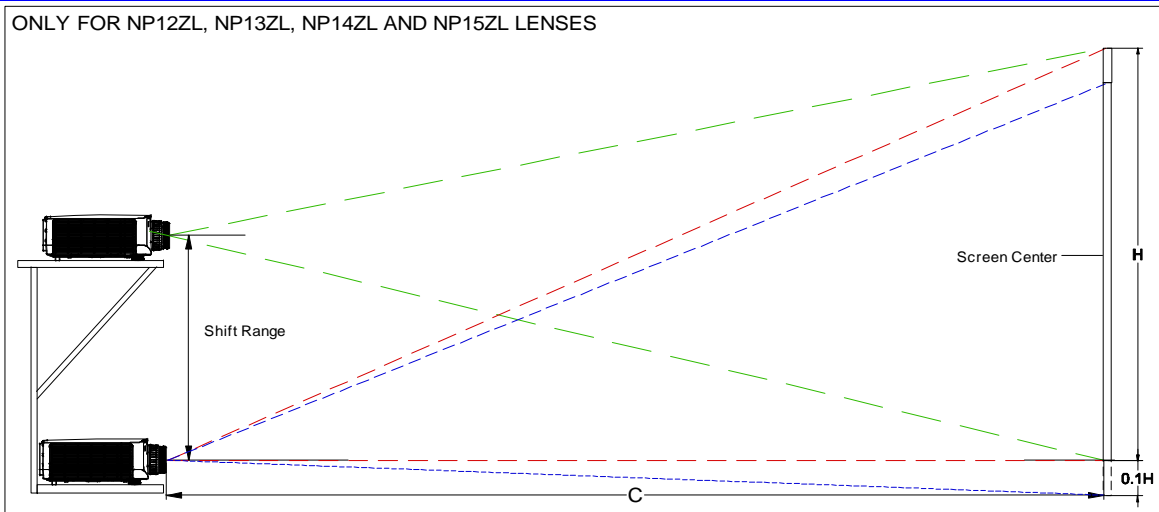
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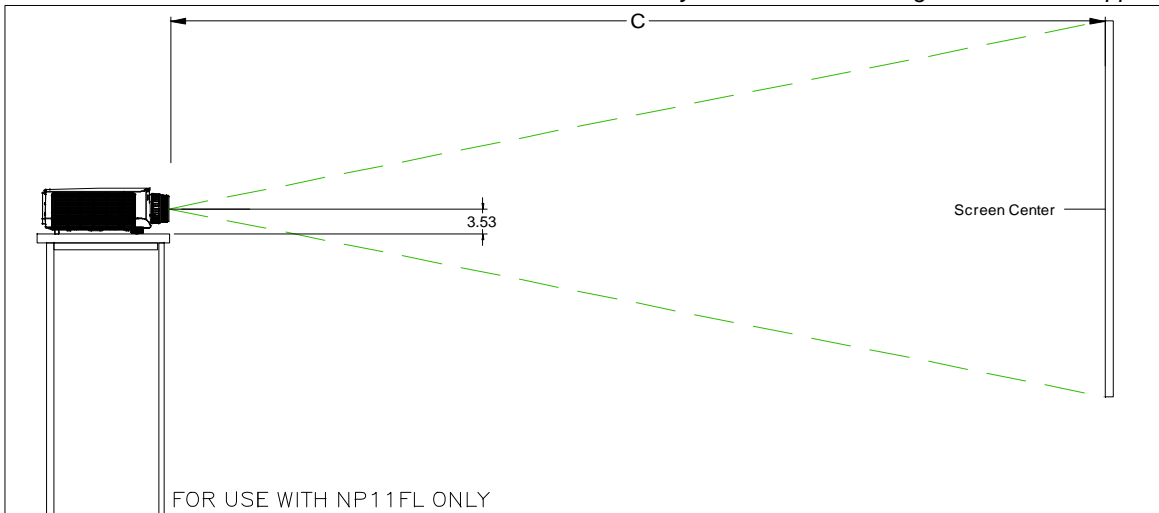
### Ceiling Mount Installation



### 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

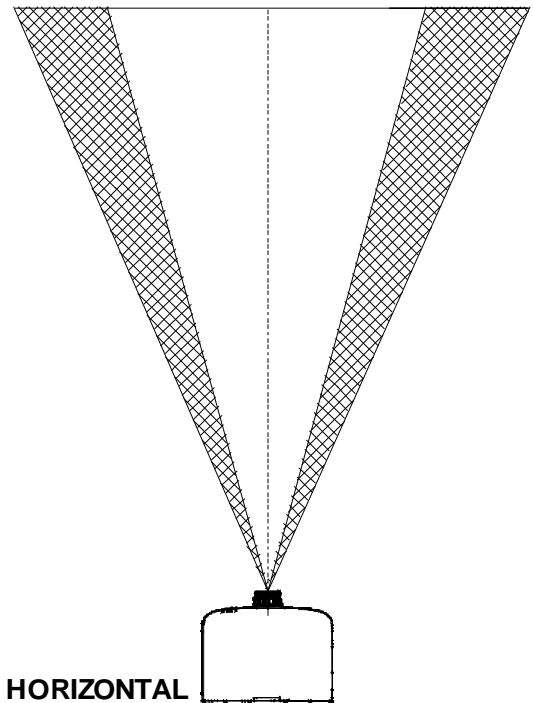
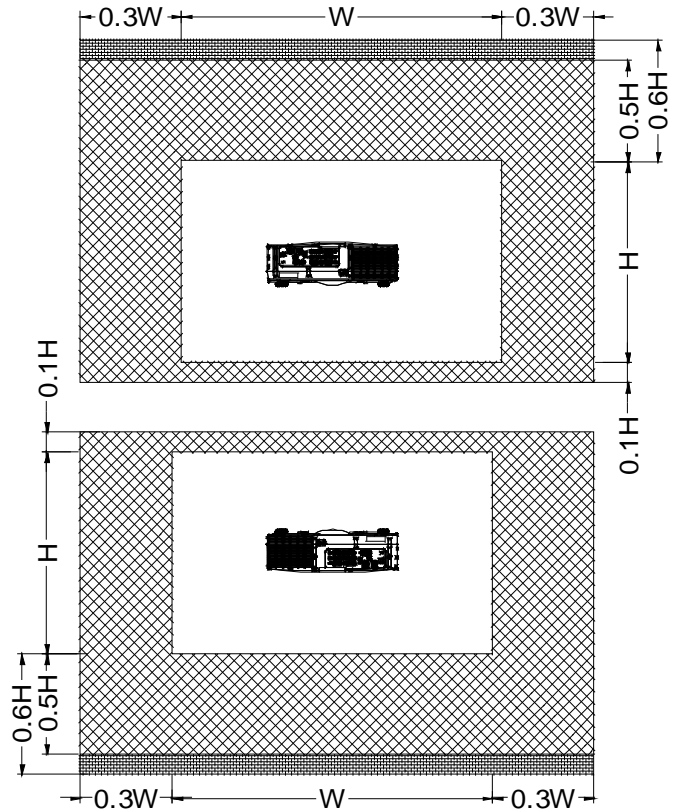
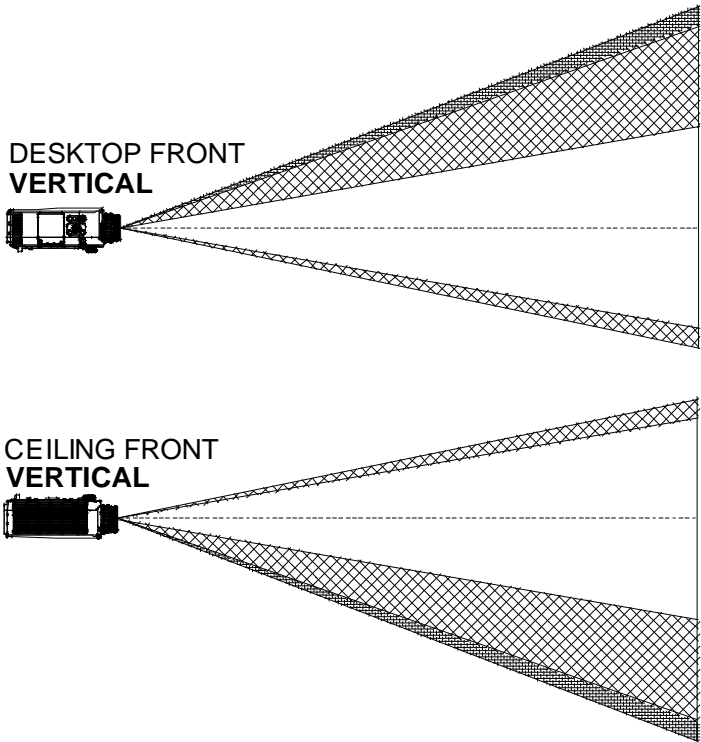


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### Lens Shift Adjustable Range



#### 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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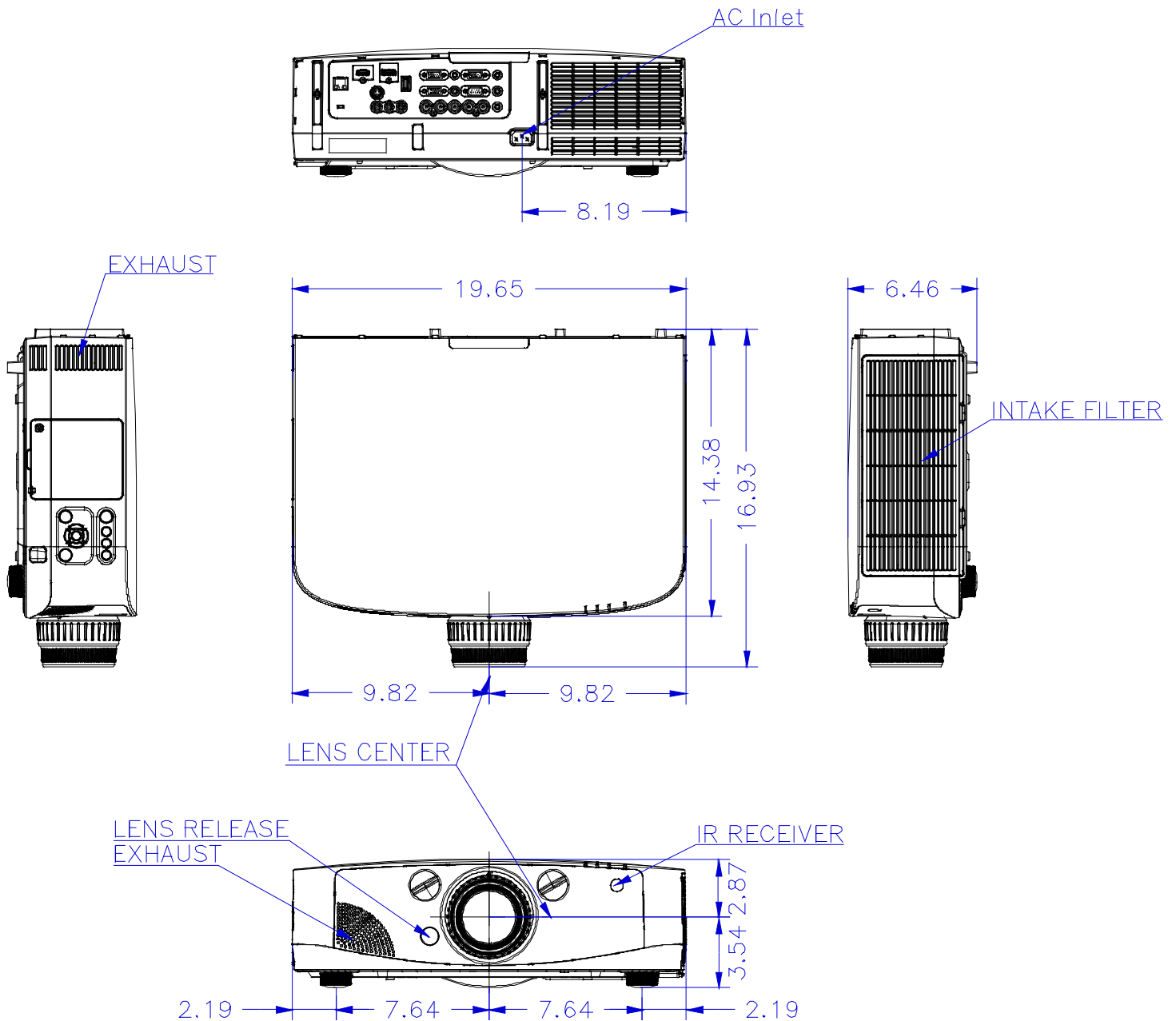
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### Cabinet Dimensions

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

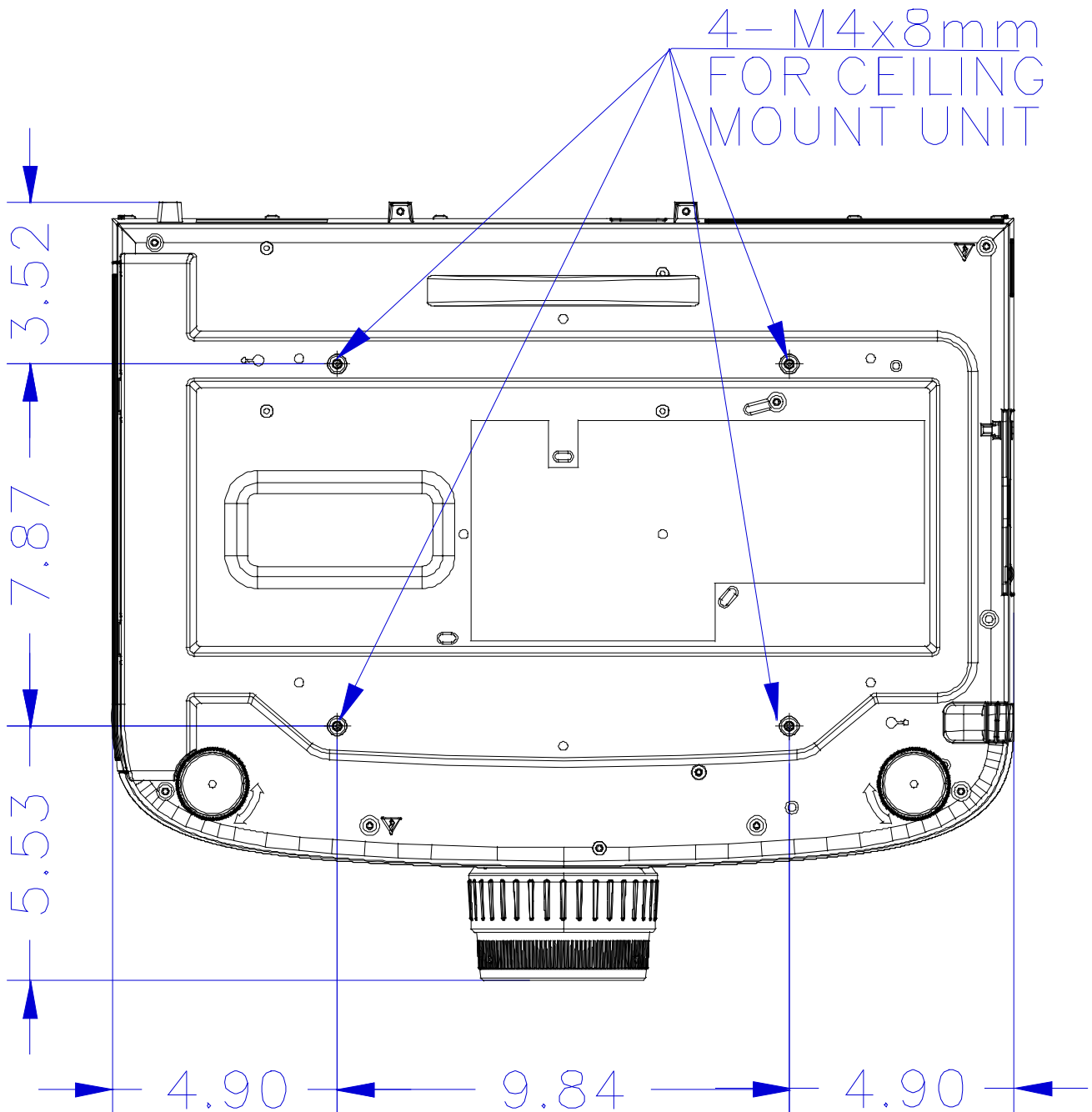


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### Cabinet Dimensions



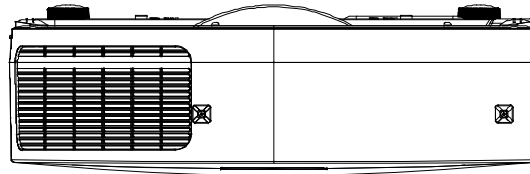


## PA500U/PA500X/PA550W/PA600X Installation Guide

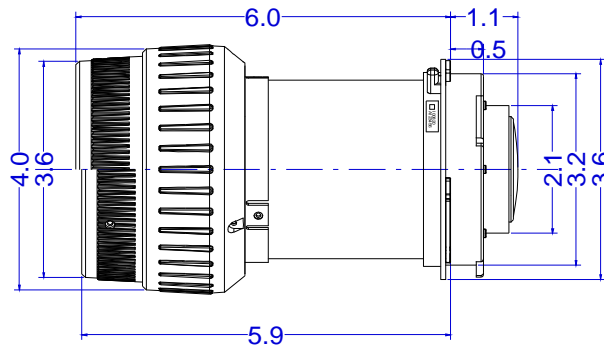
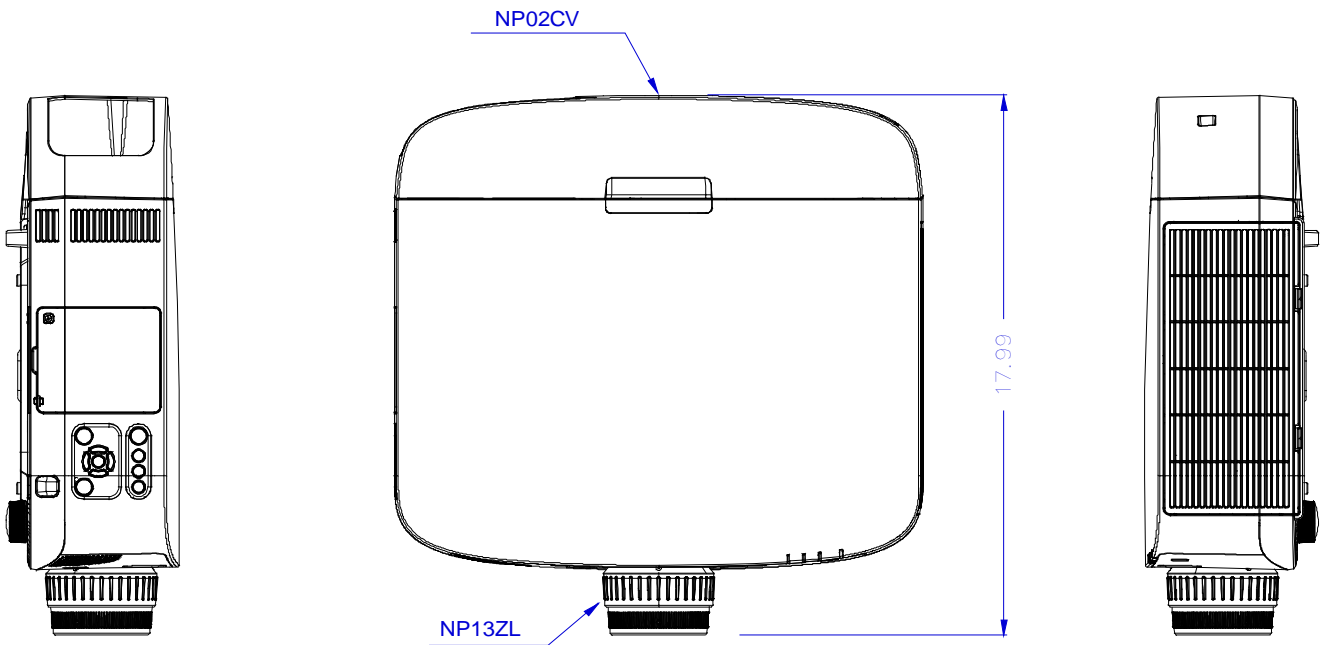
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### Optional Terminal Cover (Part #: NP02CV)



NP13ZL & NP02CV

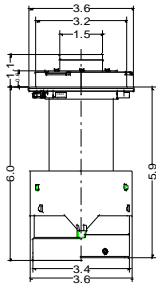


## PA500U/PA500X/PA550W/PA600X Installation Guide

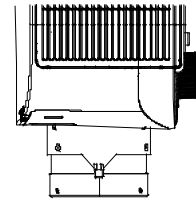
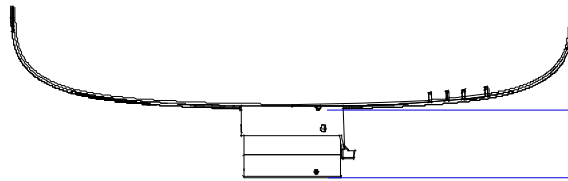
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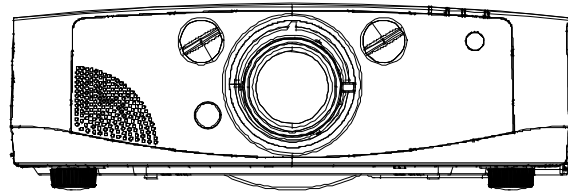
### Optional Lens Dimensions (NP11FL and NP12ZL)



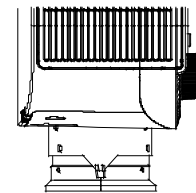
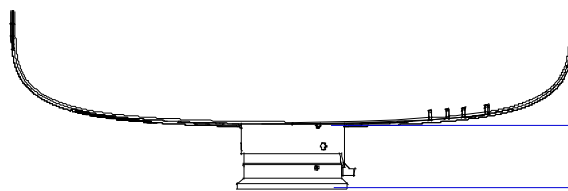
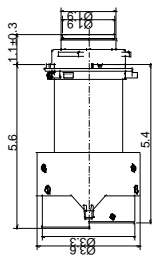
NP11FL



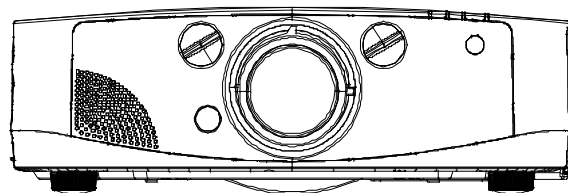
2.35 ~ 2.46



NP12ZL



2.13 ~ 2.18

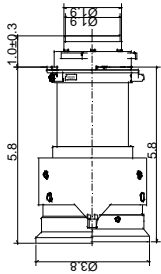


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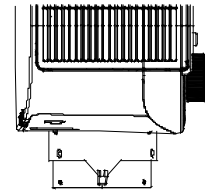
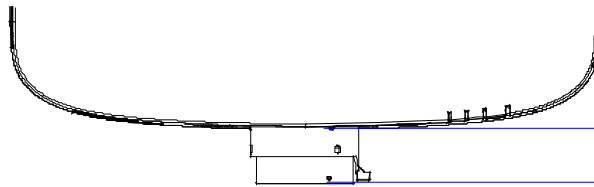
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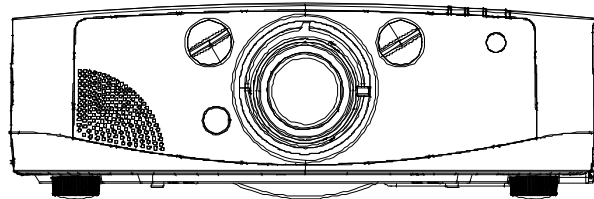
### Optional Lens Dimensions (NP14ZL and NP15ZL)



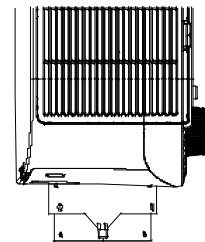
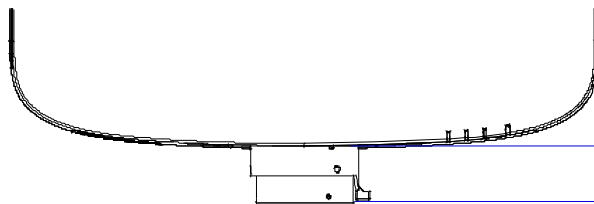
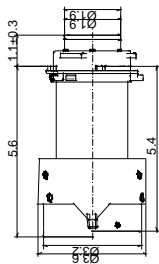
NP14ZL



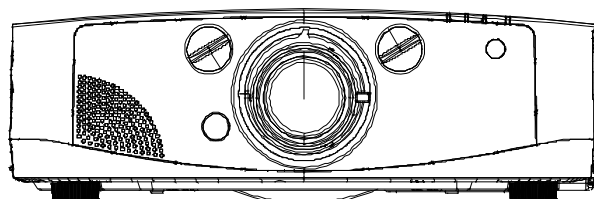
1.80 ~ 1.98



NP15ZL



1.77 ~ 1.95



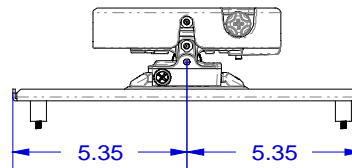
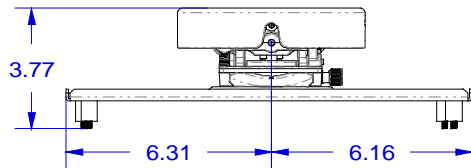
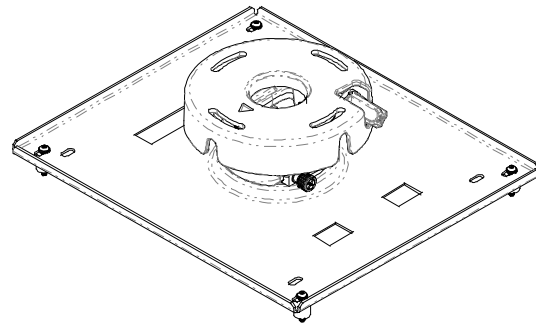
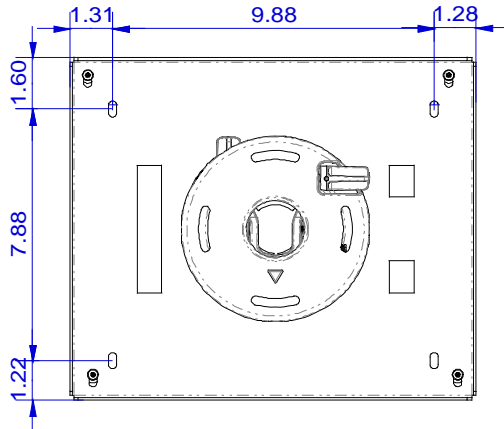
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### Optional Ceiling Mount Dimensions (Part #: NP3250CM)

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



### Input Panel



## PA500U/PA500X/PA550W/PA600X Installation Guide

Desktop and Ceiling Mount

Rev 1.7

### PC Control Codes

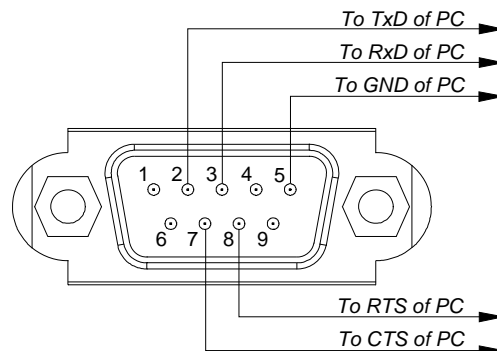
Function	Code Data
POWER ON	02H 00H 00H 00H 00H 02H
POWER OFF	02H 01H 00H 00H 00H 03H
INPUT SELECT COMPUTER 1	02H 03H 00H 00H 02H 01H 01H 09H
INPUT SELECT COMPUTER 2	02H 03H 00H 00H 02H 01H 02H 0AH
INPUT SELECT COMPUTER 3	02H 03H 00H 00H 02H 01H 03H 0BH
INPUT SELECT HDMI	02H 03H 00H 00H 02H 01H 1AH 22H
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.

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