

## 6860 Series Installation Guide

### Desktop and Ceiling Mount

Rev 1.5

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#### Product Description

<b>Type:</b>	1 chip DMD Reflection Type 6860WUSS: 0.67 in. 2x LVDS DMD 6860WSS: 0.65 in. 2x LVDS DMD	<b>Dimensions:</b> 19.84"(W) x 8.67"(H) x 20.55"(D)
		<b>Weight:</b> 6800 Series: 43.3lbs. / 19.7kg NP33ZL: 1.65lbs. / 0.75kg NP34ZL: 1.32lbs. / 0.60kg NP35ZL: 0.86lbs. / 0.39kg NP36ZL: 0.86lbs. / 0.39kg NP37ZL: 1.74lbs. / 0.79kg NP38ZL: 2.29lbs. / 1.04kg

<b>Resolution:</b>	6860WUSS: 1920 x 1200 (16:10) 6860WSS: 1280 x 800 (16:10)	<b>Brightness:</b> 6860WUSS: 6000 Lumens 6860WSS: 6000 Lumens
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**Fan Noise:** 6800 Series: 39 dB / 34dB @ 1 meter

**Power Consumption:** 6800 Series: 530W (max)      **BTU's:** 6800 Series: 1810.05 BTU/hour

Network Ready, integrated wired networking  
Power: Lens Shift, Horizontal & Vertical /Zoom/ Focus

#### Lens Specifications

<b>NP33ZL:</b> Throw Ratio: ~ 0.75-0.95:1 Focal Length: 11.4 – 14.1mm Screen Sizes: 50"-300" F/#: 2.3 – 2.53	<b>NP37ZL:</b> Throw Ratio: 1.60 -3.07:1 Focal Length: 22.6 – 42.9mm Screen Sizes: 50" - 300" F/#: 2.3 – 2.39
<b>NP34ZL:</b> Throw Ratio: ~1.00 - 1.28:1 Focal Length: 14.0 – 18.0mm Screen Sizes: 50" - 300" F/#: 2.3 – 2.57	<b>NP38ZL:</b> Throw Ratio: 2.9 -5.5:1 Focal Length: 42.6 – 80.9mm Screen Sizes: 50" - 300" F/#: 2.3 – 2.74
<b>NP36ZL:</b> Throw Ratio: ~1.28 – 1.61:1 Focal Length: 18.1 – 22.6mm Screen Sizes: 50" – 300" F/#: 2.0 – 2.32	

#### Screen/Aspect Ratio

**4:3, 16:9 and 16:10 screens are fully supported** with proper aspect ratio control for both type sources using Dukane 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 (6860WSS—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:

NP33ZL: C(Wide) = 0.798W – 1.012 ----- C(Tele) = 1.017W – 1.012  
 NP34ZL: C(Wide) = 1.017W – 1.193 ----- C(Tele) = 1.300W – 1.087  
 NP36ZL: C(Wide) = 1.300W – 1.130 ----- C(Tele) = 1.620W – 1.138  
 NP37ZL: C(Wide) = 1.625W – 2.358 ----- C(Tele) = 3.097W – 2.213  
 NP38ZL: C(Wide) = 2.981W – 5.634 ----- C(Tele) = 5.678W – 5.634

#### 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 (WXGA)

Screen Size (16:10)			Zoom Lenses				
			NP33ZL	NP34ZL	NP36ZL	NP37ZL	NP38ZL
Diagonal	Width(W)	Height (H)	0.75-0.95:1	0.95-1.20:1	1.28-1.60-1	1.52-2.92:1	2.90-5.50:1
inches	inches	inches	inches	inches	inches	inches	inches
60	51	32	39.7 - 50.9	50.7 - 65.2	65.2 - 81.5	80.5 - 155.7	146.4 - 283.9
68	58	36	45.3 - 58.0	57.8 - 74.3	74.3 - 92.8	91.9 - 177.4	167.3 - 323.7
72	61	38	47.7 - 61.0	60.8 - 78.2	78.2 - 97.7	96.8 - 186.7	176.2 - 340.7
85	72	45	56.4 - 72.2	72.0 - 92.5	92.5 - 115.5	114.6 - 220.8	209.0 - 403.2
108	92	58	72.4 - 92.6	92.4 - 118.5	118.5 - 147.9	147.1 - 282.7	268.6 - 516.7
113	96	60	75.6 - 96.6	96.4 - 123.7	123.7 - 154.4	153.6 - 295.1	280.5 - 539.5
130	110	69	86.8 - 110.9	110.7 - 141.9	141.9 - 177.1	176.4 - 338.5	322.3 - 618.9
137	116	73	91.6 - 117.0	116.8 - 149.7	149.7 - 186.8	186.1 - 357.0	340.2 - 653.0
164	139	87	109.9 - 140.4	140.2 - 179.6	179.6 - 224.0	223.5 - 428.3	408.7 - 783.6
189	160	100	126.7 - 161.7	161.5 - 206.9	206.9 - 258.1	257.6 - 493.3	471.3 - 902.8
208	176	110	139.4 - 178.0	177.8 - 227.7	227.7 - 284.0	283.6 - 542.9	519.0 - 993.7
226	192	120	152.2 - 194.3	194.1 - 248.5	248.5 - 309.9	309.6 - 592.4	566.7 - 1084.5
270	229	143	181.7 - 231.9	231.7 - 296.6	296.6 - 369.8	369.8 - 707.0	677.0 - 1294.6
300	339	212	269.5 - 343.8	343.6 - 439.6	439.6 - 548.0	548.5 - 1047.7	1004.9 - 1919.2

#### Distance Chart using 16:10 native projector with 16:9 Image (720p)

Screen Size (16:9)			Zoom Lenses				
			NP33ZL	NP34ZL	NP36ZL	NP37ZL	NP38ZL
Diagonal	Width(W)	Height (H)	0.75-0.95:1	0.95-1.20:1	1.28-1.60-1	1.52-2.92:1	2.90-5.50:1
inches	inches	inches	inches	inches	inches	inches	inches
59	51	29	39.7 - 50.9	50.7 - 65.2	65.2 - 81.5	80.5 - 155.7	146.4 - 283.9
67	58	33	45.3 - 58.0	57.8 - 74.3	74.3 - 92.8	91.9 - 177.4	167.3 - 323.7
70	61	34	47.7 - 61.0	60.8 - 78.2	78.2 - 97.7	96.8 - 186.7	176.2 - 340.7
83	72	41	56.4 - 72.2	72.0 - 92.5	92.5 - 115.5	114.6 - 220.8	209.0 - 403.2
106	92	52	72.4 - 92.6	92.4 - 118.5	118.5 - 147.9	147.1 - 282.7	268.6 - 516.7
110	96	54	75.6 - 96.6	96.4 - 123.7	123.7 - 154.4	153.6 - 295.1	280.5 - 539.5
126	110	62	86.8 - 110.9	110.7 - 141.9	141.9 - 177.1	176.4 - 338.5	322.3 - 618.9
133	116	65	91.6 - 117.0	116.8 - 149.7	149.7 - 186.8	186.1 - 357.0	340.2 - 653.0
159	139	78	109.9 - 140.4	140.2 - 179.6	179.6 - 224.0	223.5 - 428.3	408.7 - 783.6
184	160	90	126.7 - 161.7	161.5 - 206.9	206.9 - 258.1	257.6 - 493.3	471.3 - 902.8
202	176	99	139.4 - 178.0	177.8 - 227.7	227.7 - 284.0	283.6 - 542.9	519.0 - 993.7
220	192	108	152.2 - 194.3	194.1 - 248.5	248.5 - 309.9	309.6 - 592.4	566.7 - 1084.5
263	229	129	181.7 - 231.9	231.7 - 296.6	296.6 - 369.8	369.8 - 707.0	677.0 - 1294.6
300	339	212	269.5 - 343.8	343.6 - 439.6	439.6 - 548.0	548.5 - 1047.7	1004.9 - 1919.2

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#### Lens Specifications

<b>NP33ZL:</b> Throw Ratio: ~ 0.75-0.95:1 Focal Length: 11.4 – 14.1mm Screen Sizes: 50"-300" F/#: 2.3 – 2.53	<b>NP37ZL:</b> Throw Ratio: 1.52 -2.92:1 Focal Length: 22.6 – 42.9mm Screen Sizes: 50" - 300" F/#: 2.3 – 2.39
<b>NP34ZL:</b> Throw Ratio: ~0.95 - 1.20:1 Focal Length: 14.0 – 18.0mm Screen Sizes: 50" - 300" F/#: 2.3 – 2.57	<b>NP38ZL:</b> Throw Ratio: 2.9 -5.5:1 Focal Length: 42.6 – 80.9mm Screen Sizes: 50" - 300" F/#: 2.3 – 2.74
<b>NP35ZL:</b> Throw Ratio: ~1.23 – 1.52:1 Focal Length: 18.1 – 22.6mm Screen Sizes: 50" – 300" F/#: 2.0 – 2.32	

#### Formulas: 16:10 Aspect Ratio (6860WUSS—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:

<b>NP33ZL:</b>	$C(\text{Wide}) = 0.761W - 1.047$	$C(\text{Tele}) = 0.966W - 1.047$
<b>NP34ZL:</b>	$C(\text{Wide}) = 0.966W - 1.181$	$C(\text{Tele}) = 1.240W - 1.118$
<b>NP35ZL:</b>	$C(\text{Wide}) = 1.235W - 1.217$	$C(\text{Tele}) = 1.546W - 1.185$
<b>NP37ZL:</b>	$C(\text{Wide}) = 1.546W - 2.339$	$C(\text{Tele}) = 2.948W - 2.039$
<b>NP38ZL:</b>	$C(\text{Wide}) = 2.837W - 5.366$	$C(\text{Tele}) = 5.404W - 5.366$

#### 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 =  $W \times 18.868/16$   
**16:9 Screen Formulas**  
 $W = H \times 16/9$   
 $H = W \times 9/16$   
Screen Diagonal =  $W \times 18.358/16$

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

Screen Size (16:10)			Zoom Lenses				
			NP33ZL	NP34ZL	NP35ZL	NP37ZL	NP38ZL
Diagonal	Width(W)	Height (H)	0.75-0.95:1	0.95-1.20:1	1.23-1.52-1	1.52-2.92:1	2.90-5.50:1
inches	inches	inches	inches	inches	inches	inches	inches
60	51	32	37.9 - 48.4	48.3 - 62.4	62.0 - 78.0	76.8 - 148.9	139.9 - 271.3
68	58	36	42.8 - 54.6	54.5 - 70.3	69.9 - 87.9	86.7 - 167.8	158.0 - 305.9
72	61	38	45.2 - 57.7	57.6 - 74.3	73.9 - 92.8	91.7 - 177.2	167.1 - 323.2
85	72	45	53.7 - 68.5	68.4 - 88.2	87.7 - 110.1	109.0 - 210.2	198.9 - 383.7
108	92	57.5	69.0 - 87.8	87.7 - 113.0	112.4 - 141.0	139.9 - 269.2	255.6 - 491.8
113	96	60	72.0 - 91.7	91.6 - 117.9	117.3 - 147.2	146.1 - 281.0	267.0 - 513.4
130	110	69	83.0 - 105.6	105.5 - 135.8	135.1 - 169.5	168.3 - 323.4	307.8 - 591.2
137	116	72.5	87.2 - 111.0	110.9 - 142.7	142.0 - 178.2	177.0 - 339.9	323.7 - 621.5
164	139	87	104.9 - 133.4	133.3 - 171.5	170.7 - 214.0	212.9 - 408.3	389.5 - 746.9
189	160	100	120.7 - 153.5	153.4 - 197.3	196.4 - 246.2	245.0 - 469.6	448.6 - 859.3
208	176	110	132.9 - 169.0	168.8 - 217.1	216.1 - 270.9	269.8 - 516.8	493.9 - 945.7
226	192	120	145.1 - 184.4	184.3 - 237.0	235.9 - 295.6	294.5 - 564.0	539.3 - 1032.2
270	229	143	173.1 - 220.0	219.8 - 282.6	281.4 - 352.5	351.4 - 672.5	643.7 - 1231.1
300	254	159	192.2 - 244.3	244.2 - 313.8	312.5 - 391.5	390.3 - 746.8	715.2 - 1367.3

#### Distance Chart using 16:10 native projector with 16:9 Image (1080p)

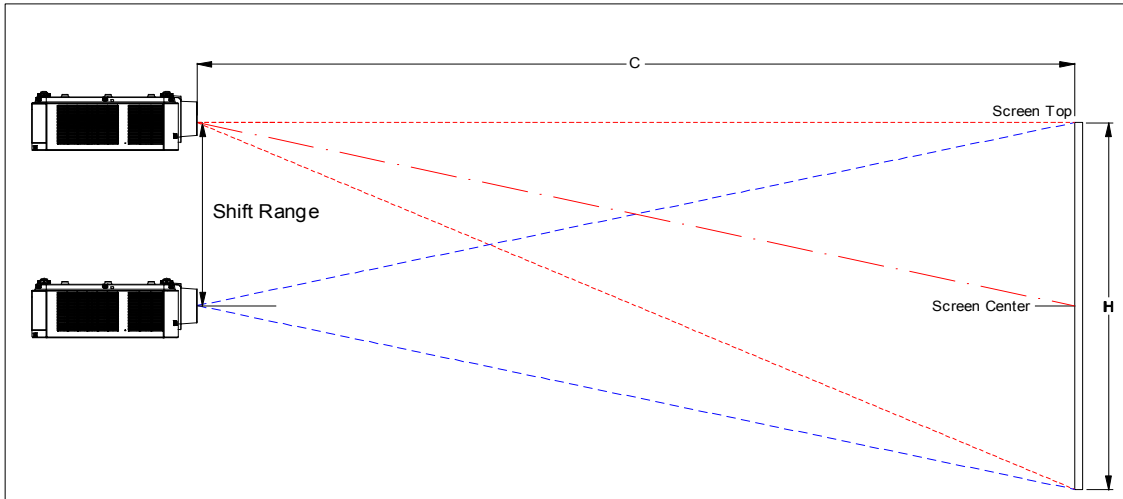
Screen Size (16:9)			Zoom Lenses				
			NP33ZL	NP34ZL	NP35ZL	NP37ZL	NP38ZL
Diagonal	Width(W)	Height (H)	0.75-0.95:1	0.95-1.20:1	1.23-1.52-1	1.52-2.92:1	2.90-5.50:1
inches	inches	inches	inches	inches	inches	inches	inches
59	51	29	37.8 - 48.2	48.1 - 62.1	61.8 - 77.7	76.5 - 148.3	139.3 - 270.2
67	58	33	43.1 - 55.0	54.8 - 70.8	70.4 - 88.5	87.3 - 168.9	159.2 - 308.1
70	61	34	45.4 - 57.9	57.7 - 74.5	74.1 - 93.1	92.0 - 177.8	167.7 - 324.3
83	72	41	53.7 - 68.5	68.4 - 88.2	87.7 - 110.1	109.0 - 210.2	198.9 - 383.7
106	92	52	69.0 - 87.8	87.7 - 113.0	112.4 - 141.0	139.9 - 269.2	255.6 - 491.8
110	96	54	72.0 - 91.7	91.6 - 117.9	117.3 - 147.2	146.1 - 281.0	267.0 - 513.4
126	110	62	82.7 - 105.2	105.1 - 135.3	134.6 - 168.9	167.7 - 322.2	306.7 - 589.1
133	116	65	87.2 - 111.0	110.9 - 142.7	142.0 - 178.2	177.0 - 339.9	323.7 - 621.5
159	139	78	104.7 - 133.2	133.1 - 171.2	170.4 - 213.7	212.6 - 407.7	389.0 - 745.8
184	160	90	120.7 - 153.5	153.4 - 197.3	196.4 - 246.2	245.0 - 469.6	448.6 - 859.3
202	176	99	132.9 - 169.0	168.8 - 217.1	216.1 - 270.9	269.8 - 516.8	493.9 - 945.7
220	192	108	145.1 - 184.4	184.3 - 237.0	235.9 - 295.6	294.5 - 564.0	539.3 - 1032.2
263	229	129	173.2 - 220.0	220.0 - 282.8	281.6 - 352.8	351.7 - 673.1	644.3 - 1232.2
300	339	212	256.9 - 326.4	326.3 - 419.2	417.4 - 522.9	521.8 - 997.3	956.4 - 1826.6

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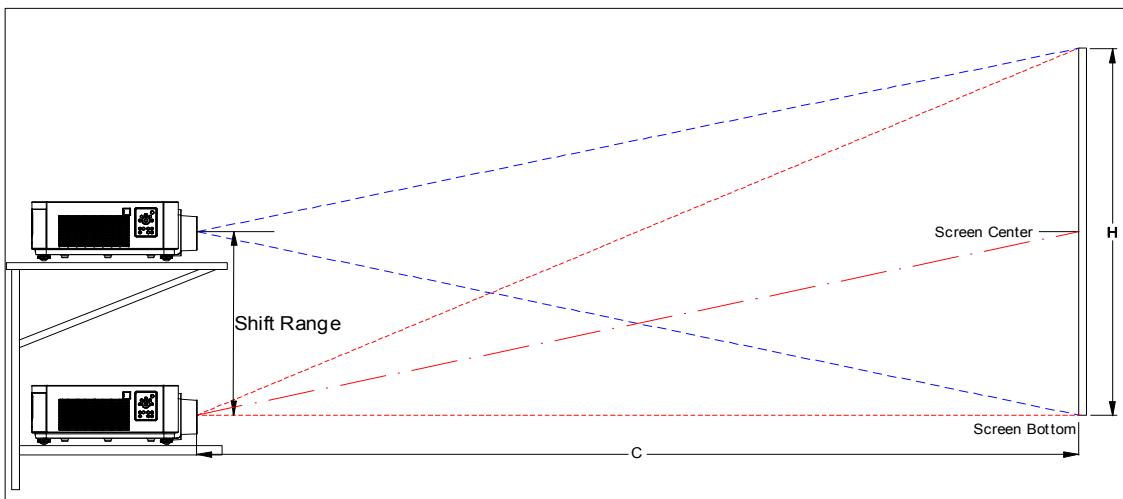
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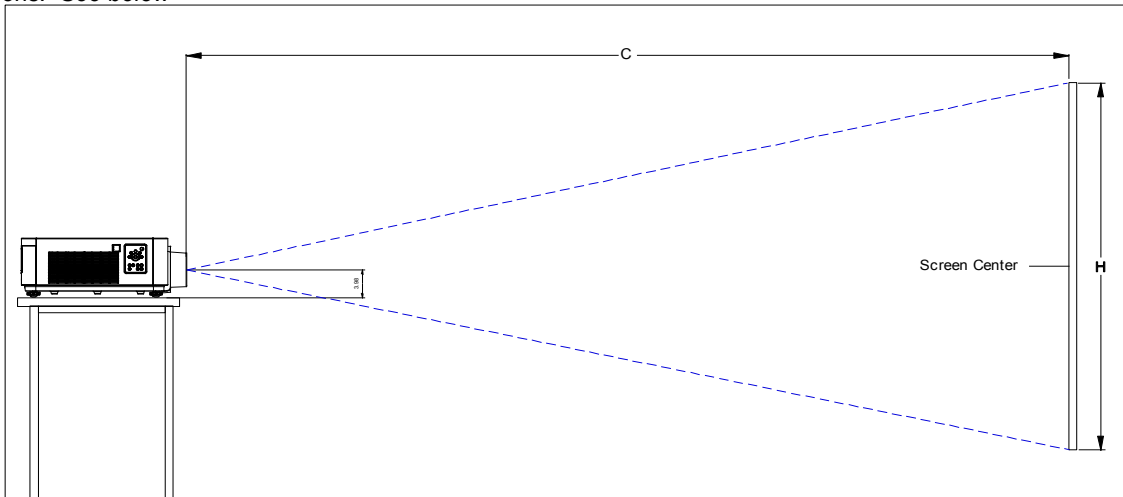
#### Ceiling Mount Installation



#### Desktop Installation



**Note:** Lens Shift Feature is not available for the NP06FL and NP16FL. This lens should only be used for “zero degree”/“no-offset” applications. See below



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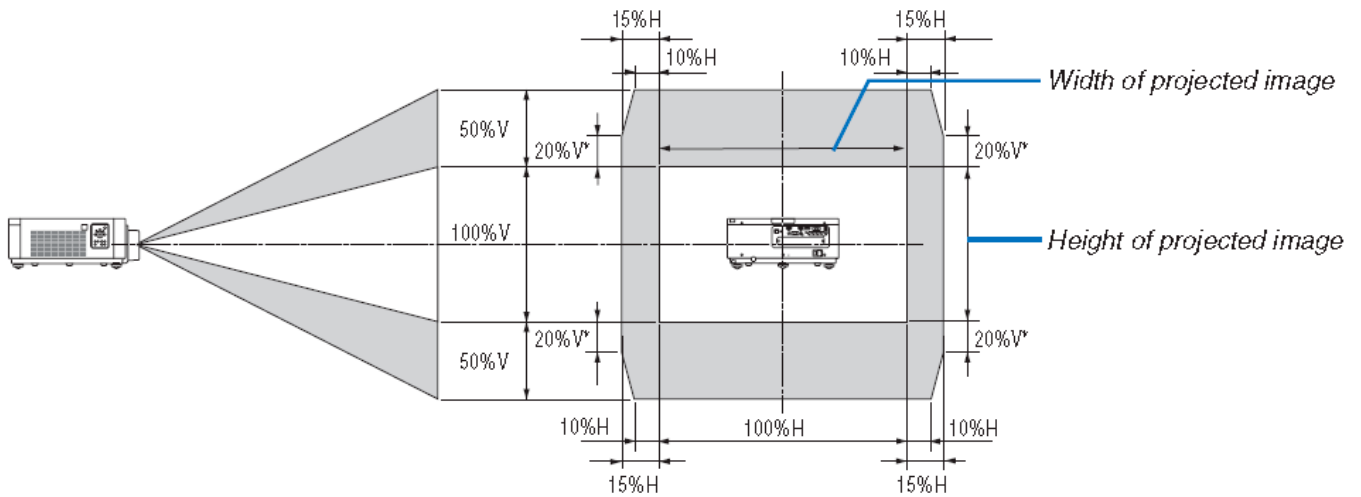
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#### Lens Shift Adjustable Range

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

The diagram below shows the location of the image position in the lens for the 6860WUSS. The 6860WSS has a maximum vertical lens shift of +/- 30%. The lens can be shifted within the shaded area as shown using the normal projection position as a starting point.



**Note:** Projector is set out of the box at center position, which is how it is depicted above.  
(W: width of projected image, H: height of projected image)

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### Desktop and Ceiling Mount

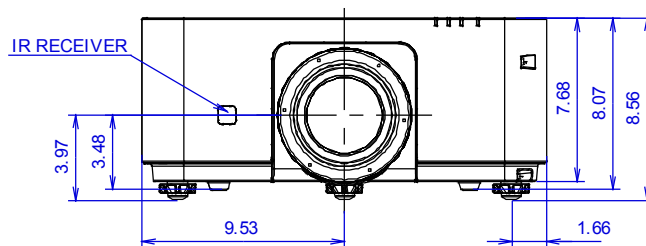
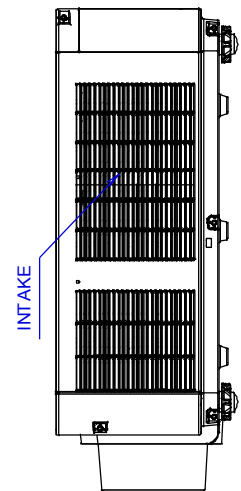
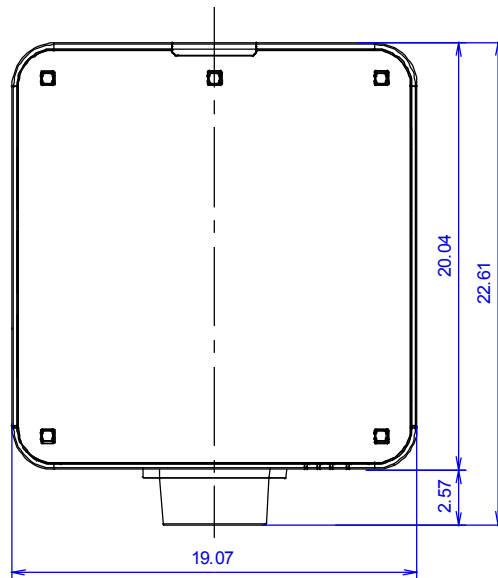
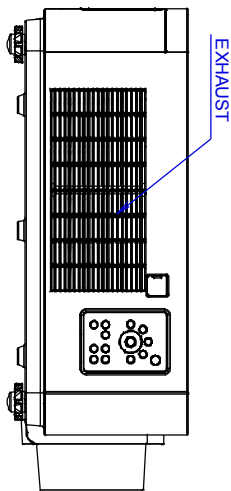
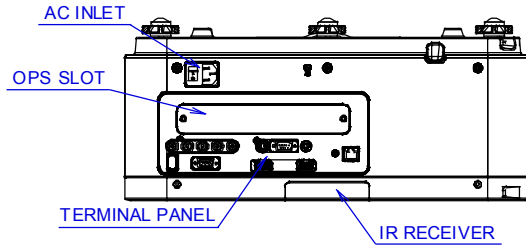
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#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the 6860WUSS\_6860WSS.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown with the NP35ZL lens

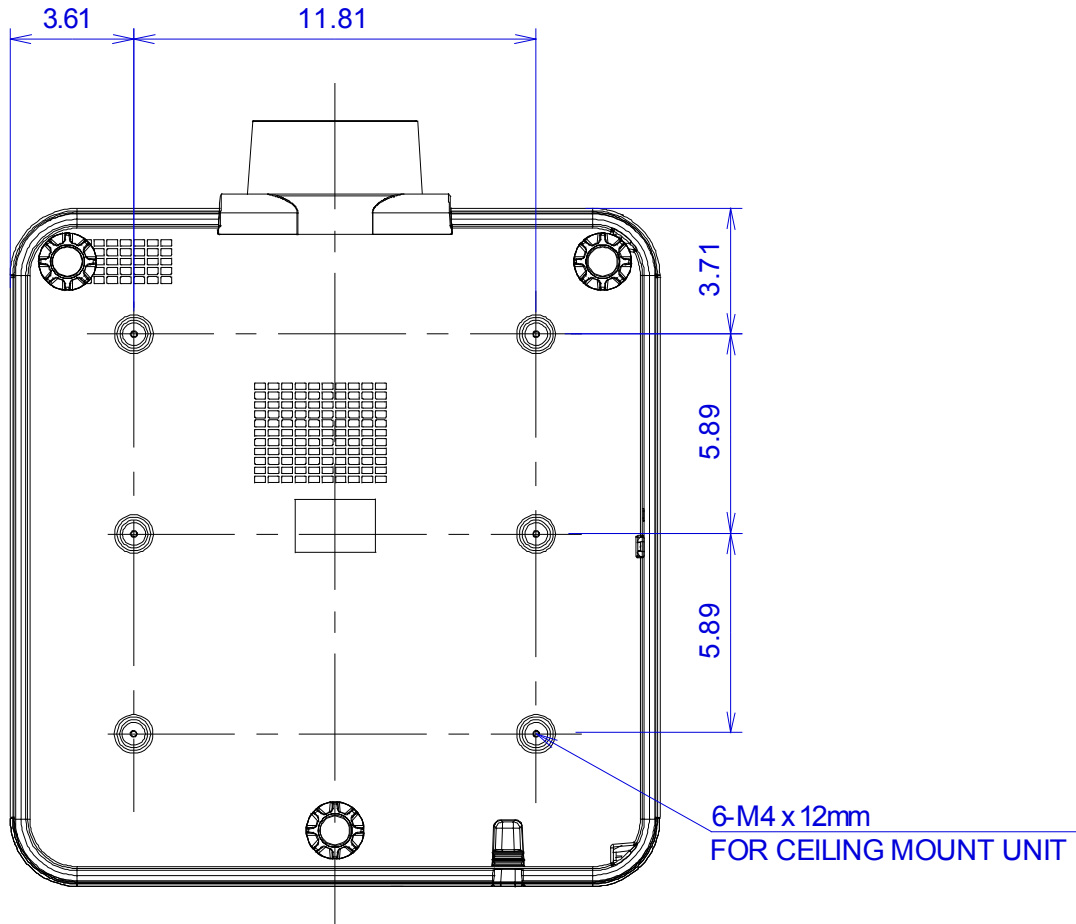


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### Desktop and Ceiling Mount

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#### Cabinet Dimensions



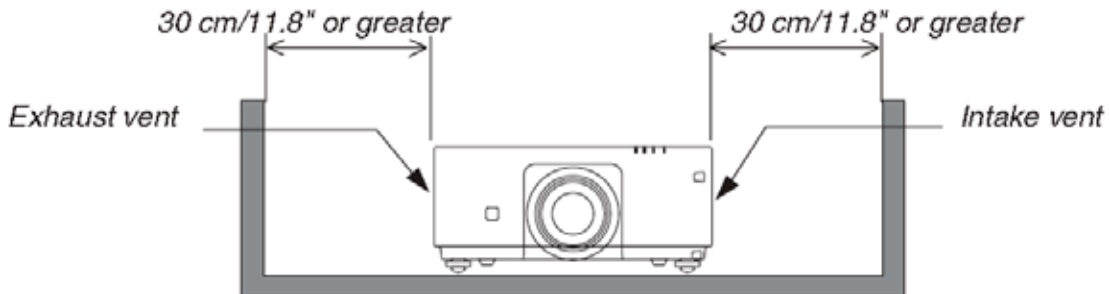
## 6860 Series Installation Guide

### Desktop and Ceiling Mount

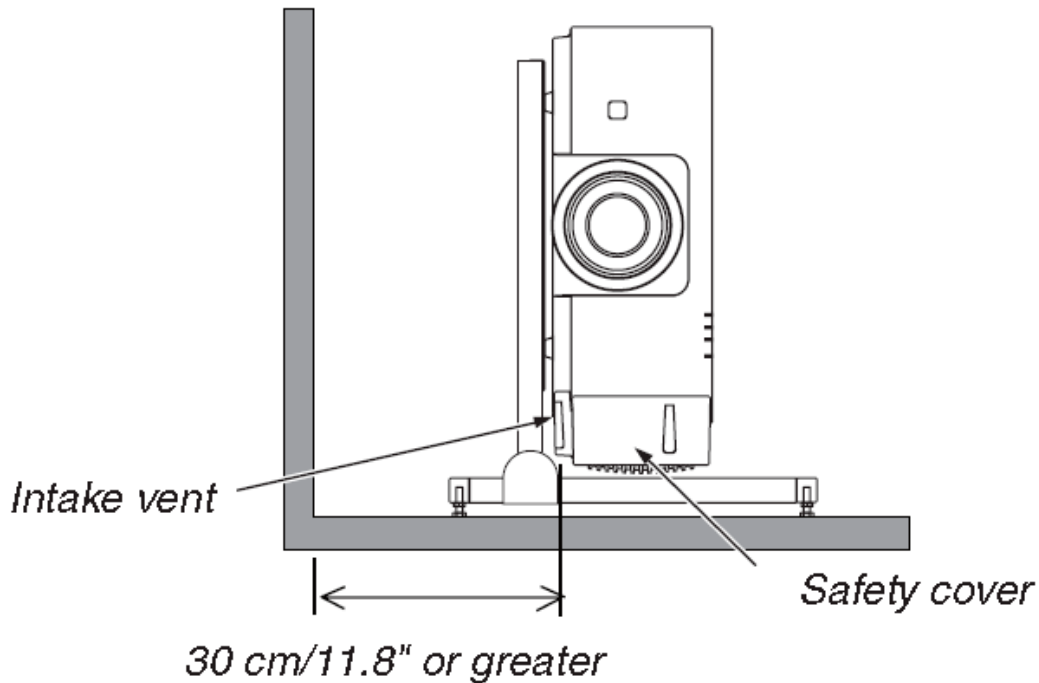
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#### Ventilation Requirements

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



- If installed on a portrait stand :



**Note:** The Dukane models described in this document are manufactured by NEC and use the same firmware, software programs, control code, and accessory parts. The equivalent Dukane to NEC models are 6860WSS (PX602WL-WT), 6860WSS-B (PX602WL-BK), 6860WUSS (PX602UL-WT), AND 6860WUSS-B (PX602UL-BK).



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#### Input Panel



#### Control Panel



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#### PC Control Codes

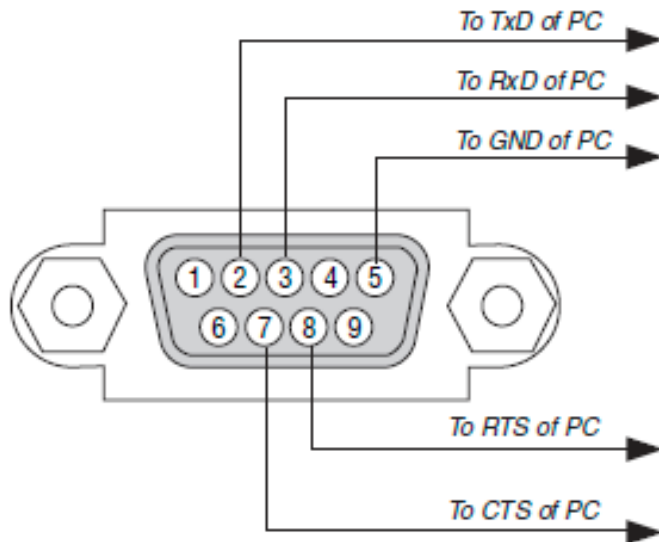
Function	Code Data
POWER ON	02H 00H 00H 00H 00H 02H
POWER OFF	02H 01H 00H 00H 00H 03H
INPUT SELECT HDMI	02H 03H 00H 00H 02H 01H A1H A9H
INPUT SELECT DISPLAYPORT	02H 03H 00H 00H 02H 01H A6H AEH
INPUT SELECT BNC	02H 03H 00H 00H 02H 01H 02H 0AH
INPUT SELECT BNC (CV)	02H 03H 00H 00H 02H 01H 06H 0EH
INPUT SELECT BNC (Y/C)	02H 03H 00H 00H 02H 01H 0BH 13H
INPUT SELECT COMPUTER	02H 03H 00H 00H 02H 01H 01H 09H
INPUT SELECT HDBaseT	02H 03H 00H 00H 02H 01H 20H 28H
INPUT SELECT SLOT	02H 03H 00H 00H 02H 01H ABH B3H
PICTURE MUTE ON	02H 10H 00H 00H 00H 12H
PICTURE MUTE OFF	02H 11H 00H 00H 00H 13H

#### 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.