

## PX803UL & PX1004UL Installation Guide

Rev 2.4

### Desktop and Ceiling Mount

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#### Product Description

<b>Type:</b>	1 chip DMD Reflection Type 0.67 in. 2x LVDS DMD	<b>Dimensions:</b> 19.7" (W) x 8.49" (H) x 23.0" (D)
		<b>Weight:</b> PX803UL: 61.7 lbs. / 28.0kg PX1004UL: 63.9 lbs. / 29.0kg
<b>Resolution:</b>	1920 x 1200 (16:10)	<b>Brightness:</b> PX803UL: 8,000 Lumens PX1004UL: 10,000 Lumens
<b>Fan Noise:</b>	PX803UL: 40 dB / 35dB @ 1 meter PX1004UL: 42 dB / 38dB @ 1 meter	
<b>Power Consumption:</b>	PX803UL: 874W (max) PX1004UL: 1220W (max)	<b>BTU's:</b> PX803UL: 2983 BTU/hour PX1004UL: 4163 BTU/hour

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

#### Lens Specifications

<b>NP39ML:</b>	Throw Ratio: ~ 0.38:1 Screen Sizes: 85"-350"	Focal Length: 11.4mm F/#: 1.85	<b>Weight:</b> 6.0lbs. / 2.7kg
<b>NP16FL:</b>	Throw Ratio: ~ 0.76:1 Screen Sizes: 50"-300"	Focal Length: 11.6mm F/#: 1.85	<b>Weight:</b> 3.3lbs. / 1.5kg
<b>NP17ZL:</b>	Throw Ratio: 1.24 - 1.78:1 Screen Sizes: 50"-300"	Focal Length: 18.7 – 26.5mm F/#: 1.85	<b>Weight:</b> 2.0lbs. / 0.9kg
<b>NP18ZL:</b>	Throw Ratio: 1.71 – 2.25:1 Screen Sizes: 50"-300"	Focal Length: 26.0 – 34.0mm F/#: 1.70-1.90	<b>Weight:</b> 2.4lbs. / 1.1kg
<b>NP19ZL:</b>	Throw Ratio: 2.20 -3.67:1 Screen Sizes: 50"-300"	Focal Length: 32.9 – 54.2mm F/#: 1.86 – 2.48	<b>Weight:</b> 1.9lbs. / 0.84kg
<b>NP20ZL:</b>	Throw Ratio: 3.54 – 5.36:1 Screen Sizes: 50"-300"	Focal Length: 52.8 – 79.1mm F/#: 1.85-2.41	<b>Weight:</b> 2.2lbs. / 1.0kg
<b>NP21ZL:</b>	Throw Ratio: 5.25 – 8.28:1 Screen Sizes: 50"-300"	Focal Length: 78.5 -121.9mm F/#: 1.85-2.48	<b>Weight:</b> 2.2lbs. / 1.0kg
<b>NP31ZL:</b>	Throw Ratio: 0.74 – 0.93:1 Screen Sizes: 50"-300"	Focal Length: 11.3 -14.1mm F/#: 1.96-2.3	<b>Weight:</b> 3.1lbs. / 1.4kg

#### 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:

- NP16FL: C = 0.794W - 1.85
- NP17ZL: C(Wide) = 1.281W - 2.094 ----- C(Tele) = 1.825W - 1.913
- NP18ZL: C(Wide) = 1.764W - 2.677 ----- C(Tele) = 2.313W - 2.638
- NP19ZL: C(Wide) = 2.261W - 3.150 ----- C(Tele) = 3.747W - 3.114
- NP20ZL: C(Wide) = 3.654W - 5.319 ----- C(Tele) = 5.492W - 5.299
- NP21ZL: C(Wide) = 5.469W - 11.626 ---- C(Tele) = 8.527W - 11.531
- NP31ZL: C(Wide) = 0.775W - 1.839 ----- C(Tele) = 0.970W - 1.740
- NP39ML: Ultra-Short Throw lens (See page 3 for Formulas)

#### 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)			Rear Lens	Zoom Lenses							
Diagonal	Width(W)	Height (H)	NP16FL	NP31ZL	NP17ZL	NP18ZL	NP19ZL	NP20ZL	NP21ZL		
inches	inches	inches	0.76:1	0.75-0.93:1	1.29-1.79:1	1.73-2.27-1	2.22-3.67:1	3.60-5.40:1	5.30-8.30:1		
40	34	21	25.08	24.4 - 31.2	41.4 - 60.0	57.2 - 75.8	73.5 - 124.0	118.6 - 181.0	173.9 - 277.7		
60	51	32	38.55	37.6 - 47.6	63.1 - 90.9	87.1 - 115.0	111.9 - 187.5	180.6 - 274.1	266.6 - 422.3		
68	58	36	43.94	42.9 - 54.2	71.8 - 103.3	99.0 - 130.7	127.2 - 213.0	205.4 - 311.4	303.7 - 480.2		
72	61	38	46.63	45.5 - 57.5	76.1 - 109.5	105.0 - 138.6	134.9 - 225.7	217.8 - 330.0	322.3 - 509.1		
85	72	45	55.38	54.0 - 68.2	90.2 - 129.6	124.5 - 164.1	159.8 - 267.0	258.1 - 390.6	382.6 - 603.1		
108	92	57	70.87	69.1 - 87.1	115.2 - 165.2	158.9 - 209.2	203.9 - 340.0	329.3 - 497.7	489.2 - 769.4		
118	100	63	77.60	75.7 - 95.3	126.1 - 180.7	173.8 - 228.8	223.1 - 371.8	360.3 - 544.3	535.6 - 841.7		
130	110	69	85.68	83.6 - 105.2	139.1 - 199.3	191.8 - 252.3	246.1 - 410.0	397.5 - 600.1	591.3 - 928.5		
137	116	73	90.39	88.2 - 111.0	146.7 - 210.1	202.3 - 266.1	259.5 - 432.2	419.2 - 632.7	623.7 - 979.1		
170	144	90	112.61	109.9 - 138.1	182.6 - 261.2	251.6 - 330.8	322.8 - 537.1	521.4 - 786.4	776.8 - 1217.7		
186	158	99	123.39	120.4 - 151.3	200.0 - 285.9	275.6 - 362.2	353.5 - 587.9	571.0 - 860.9	851.0 - 1333.4		
208	176	110	138.20	134.9 - 169.4	223.9 - 320.0	308.5 - 405.3	395.7 - 657.8	639.2 - 963.4	953.0 - 1492.5		
226	192	120	150.32	146.7 - 184.2	243.4 - 347.8	335.4 - 440.6	430.2 - 715.0	695.0 - 1047.2	1036.5 - 1622.6		
270	229	143	179.94	175.6 - 220.4	291.2 - 415.9	401.2 - 526.9	514.5 - 854.8	831.3 - 1252.1	1240.6 - 1940.8		
300	254	159	NA	195.3 - 245.0	376.6 - 753.6	748.4 - 1200.2	1183.2 - 1829.4	1379.7 - 2157.7	1379.7 - 2157.7		
500	424	265	NA	326.8 - 409.5	628.9 - 1257.3	1250.6 - 2003.6	1977.1 - 3054.1	2307.2 - 3603.9	2307.2 - 3603.9		

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

Screen Size (16:9)			Rear Lens	Zoom Lenses							
Diagonal	Width(W)	Height (H)	NP16FL	NP31ZL	NP17ZL	NP18ZL	NP19ZL	NP20ZL	NP21ZL		
inches	inches	inches	0.76:1	0.75-0.93:1	1.29-1.79:1	1.73-2.27-1	2.22-3.67:1	3.60-5.40:1	5.30-8.30:1		
39	34	19	25.14	24.5 - 31.2	41.4 - 60.1	57.3 - 76.0	73.7 - 124.2	118.9 - 181.4	174.3 - 278.3		
59	51	29	38.98	38.0 - 48.1	63.8 - 91.9	88.0 - 116.3	113.1 - 189.6	182.6 - 277.1	269.6 - 426.9		
67	58	33	44.51	43.4 - 54.9	72.7 - 104.7	100.3 - 132.4	128.9 - 215.7	208.1 - 315.4	307.7 - 486.4		
70	61	34	46.59	45.4 - 57.4	76.1 - 109.4	104.9 - 138.5	134.8 - 225.5	217.6 - 329.8	322.0 - 508.7		
83	72	41	55.59	54.2 - 68.4	90.6 - 130.1	124.9 - 164.7	160.4 - 267.9	259.0 - 392.0	384.0 - 605.3		
106	92	52	71.50	69.8 - 87.9	116.3 - 166.7	160.3 - 211.0	205.7 - 343.1	332.3 - 502.1	493.6 - 776.2		
110	96	54	74.27	72.5 - 91.3	120.7 - 173.1	166.4 - 219.1	213.6 - 356.1	345.0 - 521.2	512.7 - 806.0		
126	110	62	85.34	83.3 - 104.8	138.6 - 198.5	191.0 - 251.4	245.1 - 408.4	395.9 - 597.8	589.0 - 924.9		
133	116	65	90.19	88.0 - 110.7	146.4 - 209.6	201.8 - 265.5	258.9 - 431.2	418.2 - 631.3	622.3 - 976.9		
159	139	78	108.18	105.6 - 132.7	175.4 - 251.0	241.8 - 317.9	310.2 - 516.1	501.0 - 755.8	746.3 - 1170.1		
184	160	90	125.48	122.4 - 153.8	203.3 - 290.8	280.2 - 368.3	359.4 - 597.8	580.7 - 875.4	865.4 - 1355.9		
202	176	99	137.94	134.6 - 169.0	223.4 - 319.4	307.9 - 404.6	394.9 - 656.6	638.0 - 961.6	951.2 - 1489.7		
220	192	108	150.39	146.8 - 184.2	243.5 - 348.0	335.6 - 440.9	430.4 - 715.3	695.3 - 1047.7	1037.0 - 1623.5		
263	229	129	180.15	175.8 - 220.6	291.5 - 416.4	401.7 - 527.5	515.1 - 855.8	832.2 - 1253.6	1242.0 - 1943.0		
299	261	147	NA	200.1 - 251.0	385.8 - 772.0	766.8 - 1229.6	1212.2 - 1874.1	1250.4 - 2210.6	1413.6 - 2210.6		
500	436	245	NA	335.9 - 421.0	646.5 - 1292.3	1285.5 - 2059.4	2032.2 - 3139.1	2096.1 - 3704.3	2371.6 - 3704.3		

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

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#### Projection Formulas:

**NP39ML:**  
 $A = (0.351 * W) - 30.7$   
 $B = 0.625 * W$   
 $C = (0.351 * W) + 2.362$   
 $D = (0.258 * W) - 2.311$   
 $E = (0.258 * W) + 5.689$

#### Definitions:

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

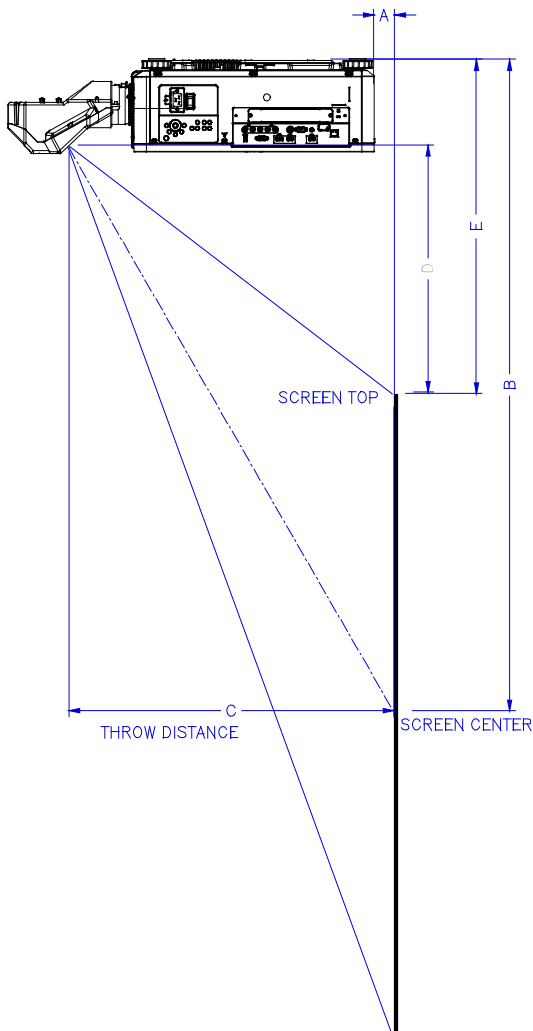
#### 16:10 Screen Formulas

$W = H \times 16/10$   
 $H = W \times 10/16$   
 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) with NP39ML Installation



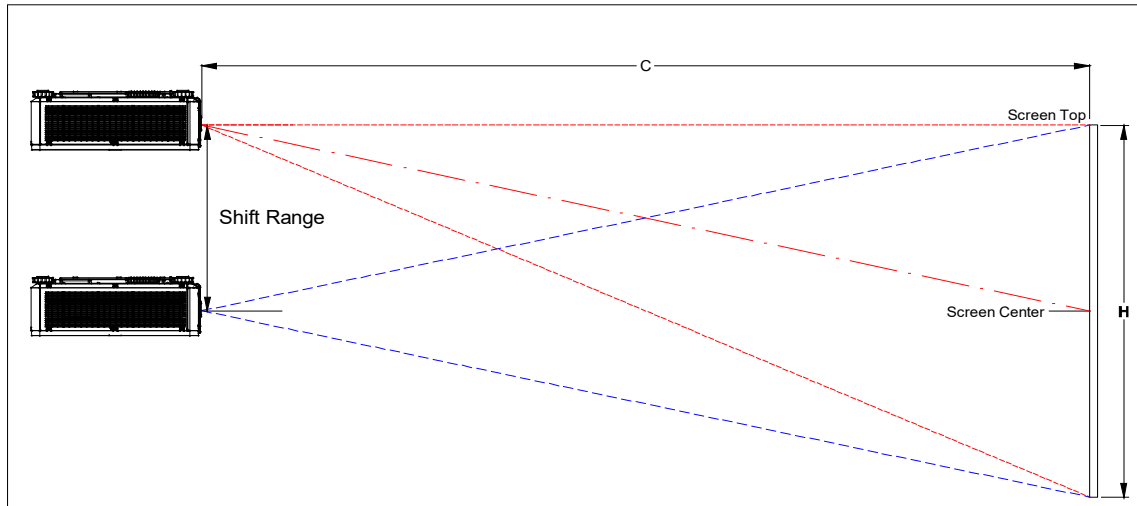
Screen Size (16:10)			A	B	C	D	E
Diagonal	Width(W)	Height (H)	inches	inches	inches	inches	inches
108	92	57	1	57	35	21.3	29.3
113	96	60	3	60	36	22.4	30.4
130	110	69	8	69	41	26.1	34.1
137	116	73	10	73	43	27.7	35.7
164	139	87	18	87	51	33.6	41.6
189	160	100	26	100	59	39.0	47.0
208	176	110	31	110	64	43.2	51.2
226	192	120	37	120	70	47.1	55.1
270	229	143	50	143	83	56.8	64.8
300	255	159	59	159	92	63.4	71.4
350	297	185	73	185	107	74.3	82.3

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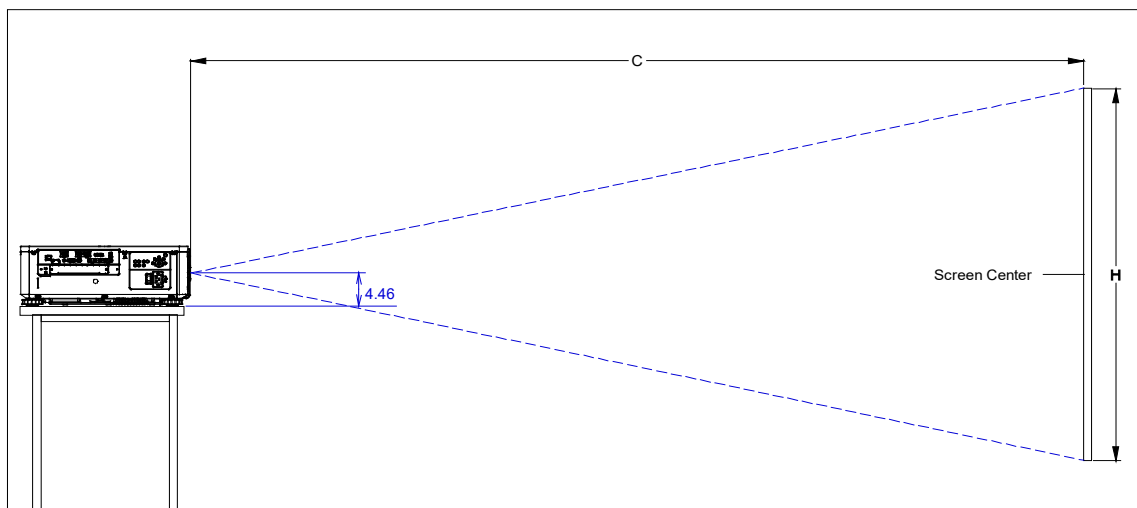
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Desktop and Ceiling Mount

### Ceiling Mount Installation



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

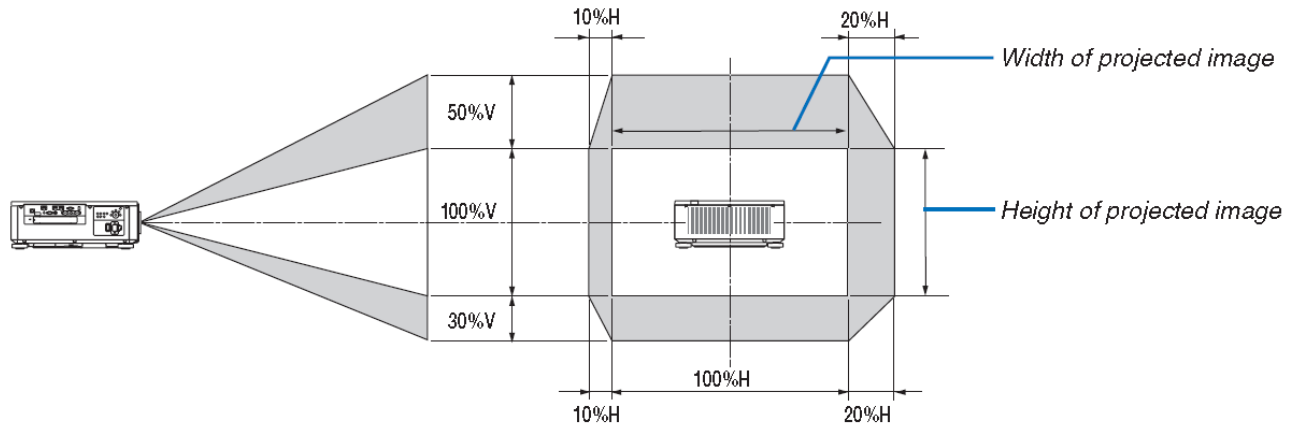


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Desktop and Ceiling Mount

## 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 NP16FL (rear lens). NP16FL should be used only for “zero degree” / no-offset” applications.

**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)

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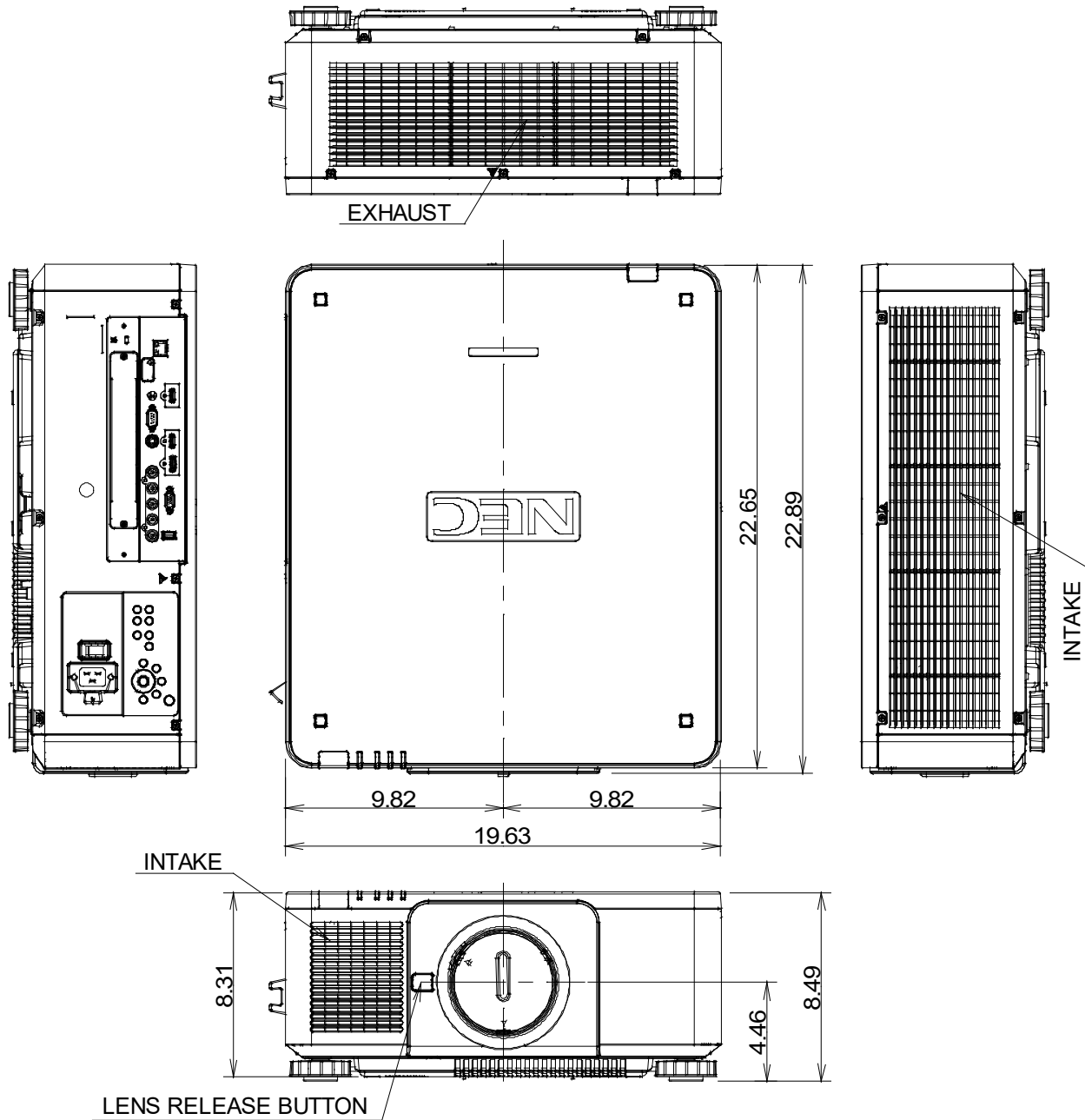
### Desktop and Ceiling Mount

#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the PX803UL and PX1004UL.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without a lens

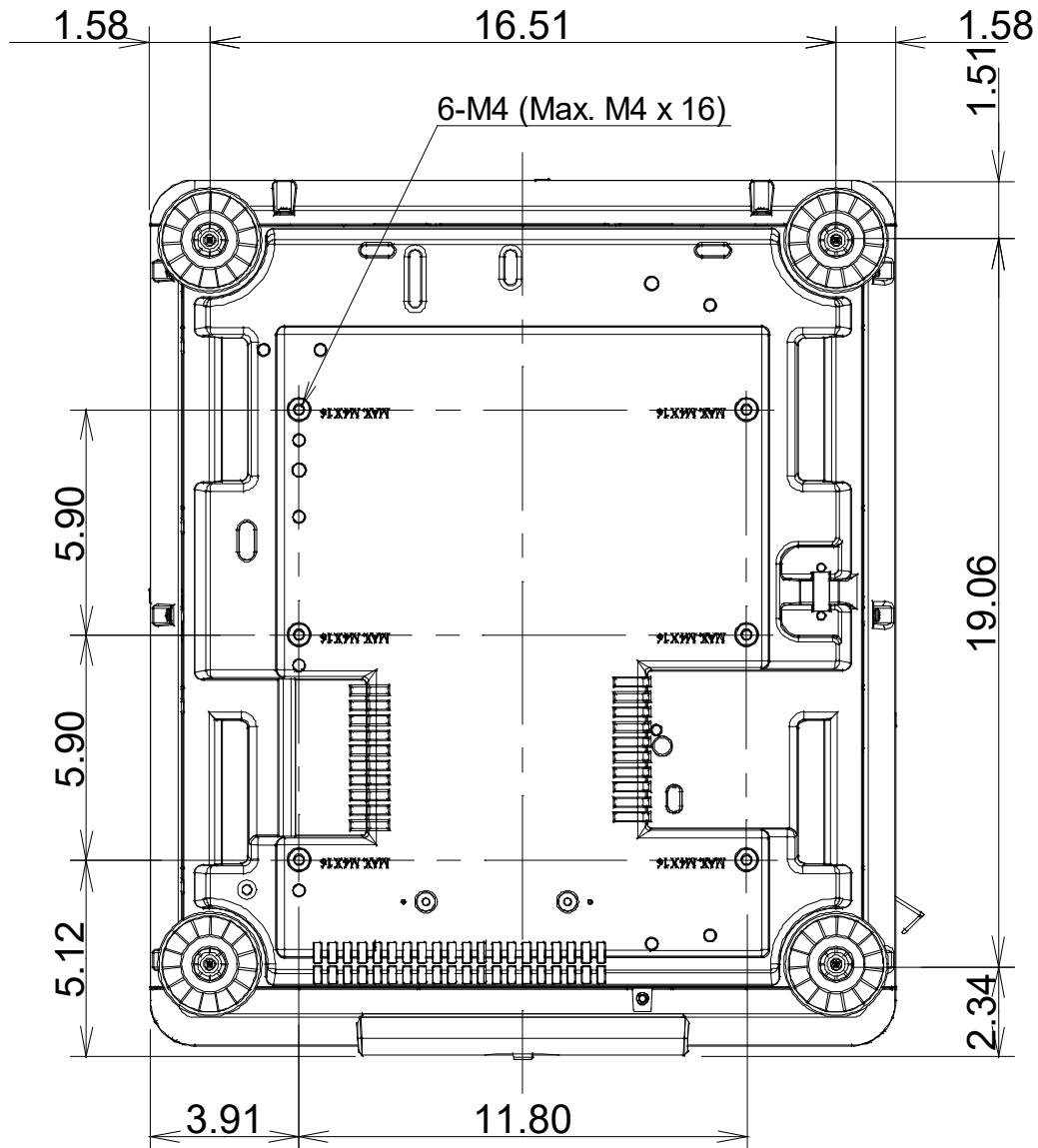


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**Cabinet Dimensions**

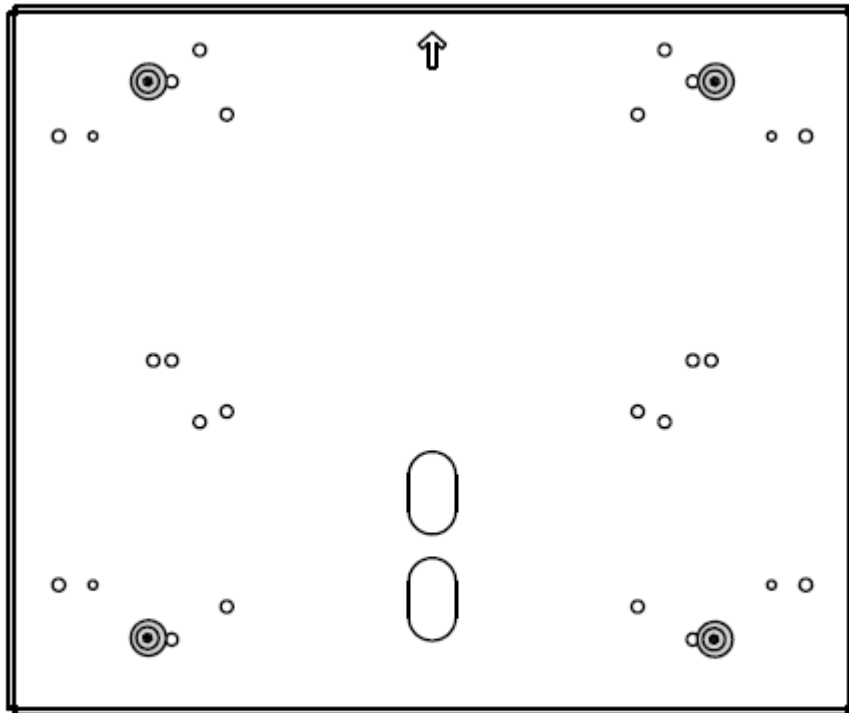
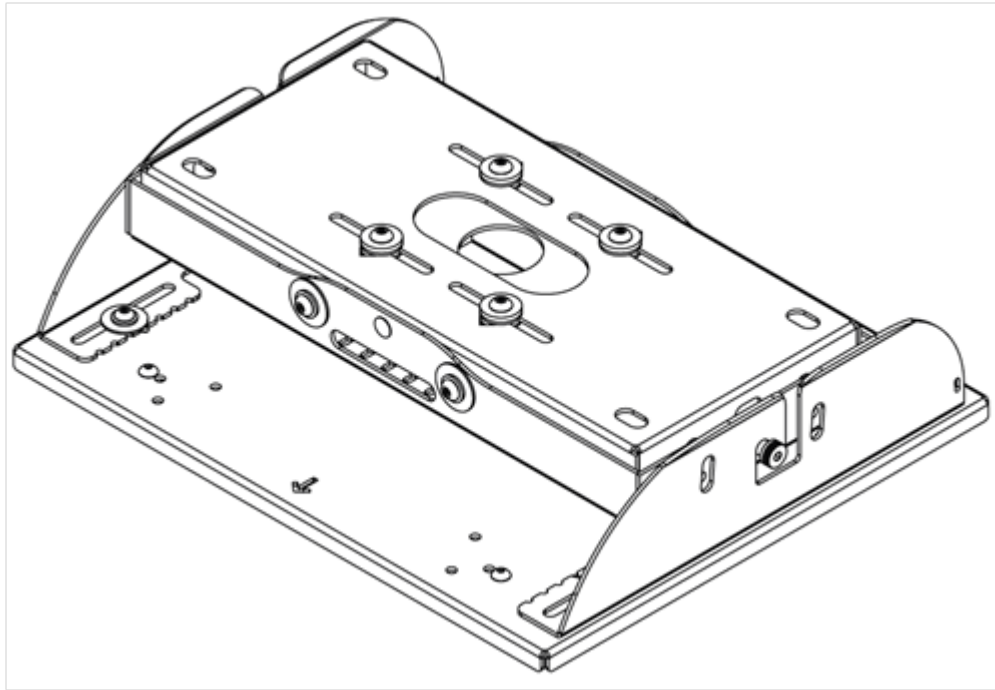


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### IPJ2000CM



Mounting holes for NP-PA804UL, NP-PA1004UL,  
PX803UL, PX1004UL, PX1005QL only

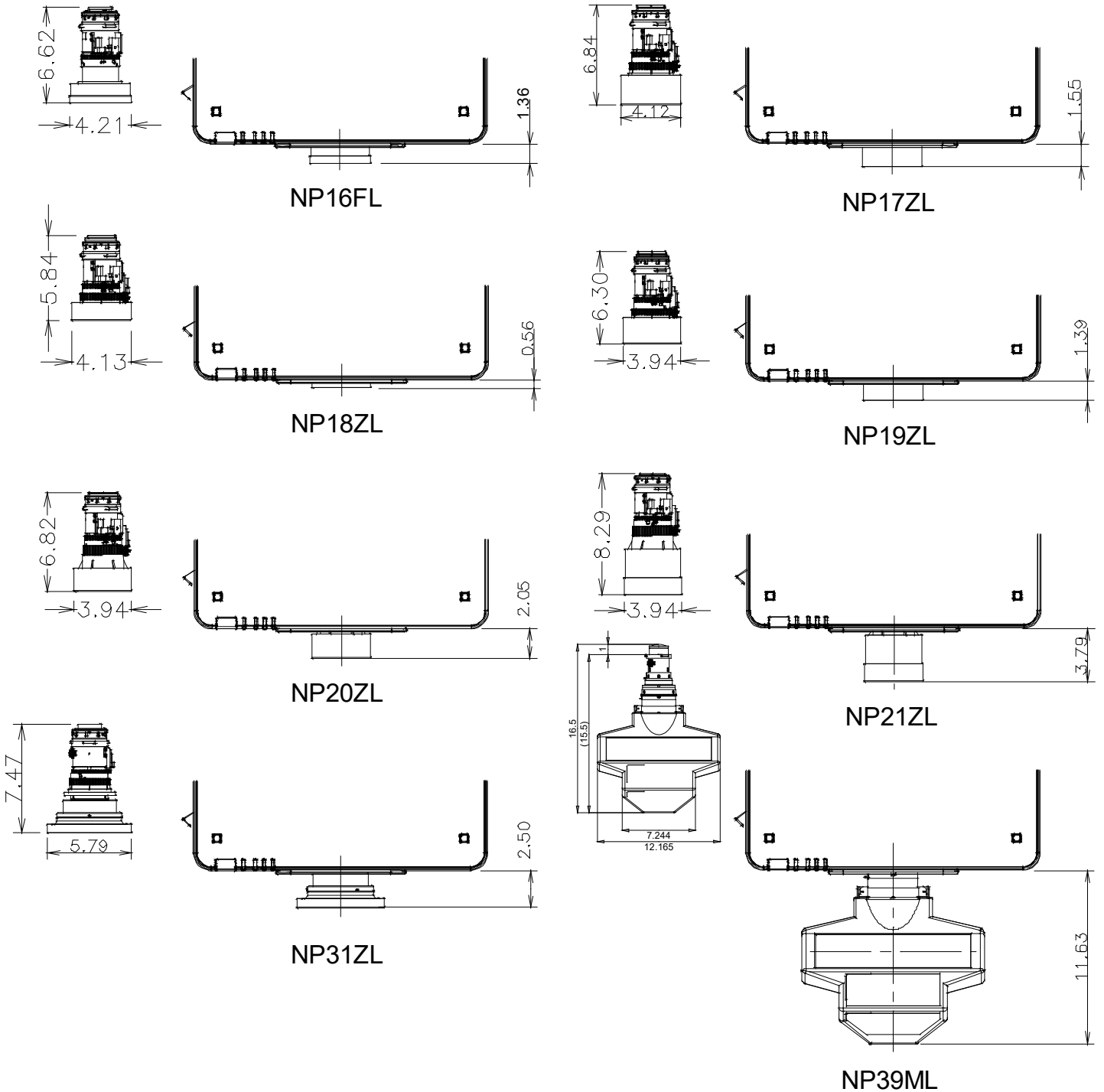


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### Optional Lens Dimensions



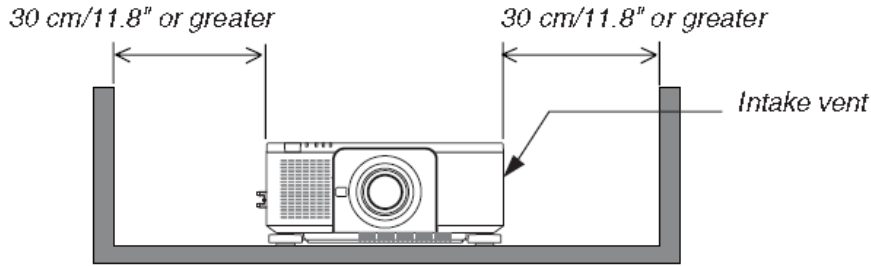
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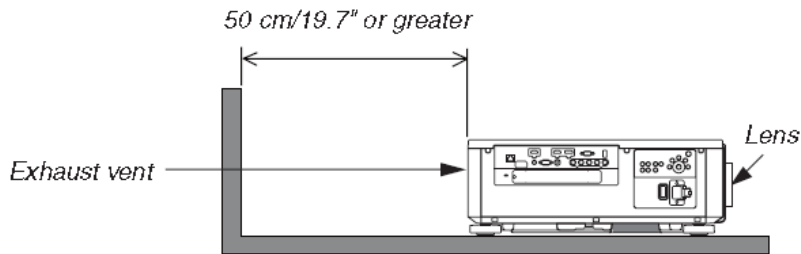
### Desktop and Ceiling Mount

#### Ventilation Requirements

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



- If there's a wall behind the projector :

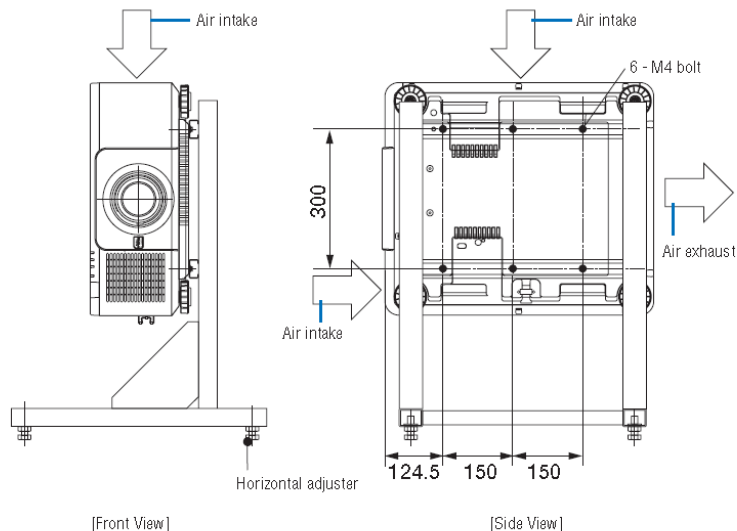


#### Portrait Requirements

##### Reference drawings

\* The drawing showing the dimensional requirements is not an actual stand design drawing.

(Unit: mm)



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Desktop and Ceiling Mount

### Regulatory Labels

	<p><b>CAUTION</b>  <b>POSSIBLY HAZARDOUS OPTICAL RADIATION</b>  <b>EMITTED FROM THIS PRODUCT.</b>  <b>DO NOT STARE AT OPERATING LAMP.</b>  <b>MAY BE HARMFUL TO THE EYES.</b>  <b>RISK GROUP 2 IEC 62471:2006</b></p>	<p><b>VORSICHT</b>          Dieses Produkt strahlt eventuelle gefährliche optische Strahlung aus.          Schauen Sie nicht in die eingeschaltete Lampe.          Dies kann Ihre Augen gefährden.  <b>RISIKOGRUPPE 2 IEC 62471:2006</b></p>	<p><b>MISE EN GARDE</b>          Rayonnement optique éventuellement dangereux émis par ce produit.          Ne regardez pas fixement la lampe de fonctionnement.          Cela peut être dangereux pour les yeux.  <b>GROUPE À RISQUE 2 IEC 62471:2006</b></p>
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	<p><b>COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE No. 50, DATED JUNE 24, 2007</b></p>
<p><b>LASER RADIATION</b>          AVOID DIRECT EYE EXPOSURE          CLASS 3R LASER PRODUCT          WAVE LENGTH: 450-460 nm          MAX. PULSE ENERGY: 0.376mJ          PULSE DURATION: 0.74 ms          IEC/EN 60825-1:2007          CLASS 1 LASER PRODUCT          IEC/EN 60825-1:2014</p>	<p>레이저 방사선          육안으로 쳐다보지 말 것          등급 3R 레이저 제품          파장: 450-460nm          최대 펄스 에너지: 0.376mJ          펄스 지속 시간: 0.74ms          IEC/EN 60825-1:2007          등급 1 레이저 제품          IEC/EN 60825-1:2014</p>
<p><b>LASERSTRAHLUNG</b>          DIREKTE EXPOSITION DER AUGEN VERMEIDEN          LASERPRODUKT DER KLASSE 3R          WELLENLÄNGE: 450-460 nm          MAX. PULSENERGIE: 0,376 mJ          IMPULSDAUER: 0,74 ms          IEC/EN 60825-1:2007          LASERPRODUKT DER KLASSE 1          IEC/EN 60825-1:2014</p>	
<p><b>RAYONNEMENT LASER</b>          ÉVITER D'EXPOSER DIRECTEMENT LES YEUX          PRODUIT LASER DE CLASSE 3R          LONGUEUR D'ONDE : 450-460 nm          ÉNERGIE D'IMPULSION MAX. : 0,376 mJ          DURÉE DE L'IMPULSION : 0,74 ms          IEC/EN 60825-1:2007          PRODUIT LASER DE CLASSE 1          IEC/EN 60825-1:2014</p>	
<p><b>ЛАЗЕРНОЕ ИЗЛУЧЕНИЕ</b>          ИЗБЕГАЙТЕ ПРЯМОГО ВОЗДЕЙСТВИЯ НА ГЛАЗА          ЛАЗЕРНОЕ ИЗДЕЛИЕ 3R КЛАССА ОПАСНОСТИ          ДЛИНА ВОЛНЫ: 450-460 нм          МАКС. ЭНЕРГИЯ ИМПУЛЬСА: 0,376 мДж          ДЛИТЕЛЬНОСТЬ ИМПУЛЬСА: 0,74 мс          IEC/EN 60825-1:2007          ЛАЗЕРНОЕ ИЗДЕЛИЕ 1 КЛАССА ОПАСНОСТИ          IEC/EN 60825-1:2014</p>	

**LASER APERTURE**  
**LASERÖFFNUNG**  
**OUVERTURE LASER**  
**АПЕРТУРА ЛАЗЕРА**  
**레이저 개구부**

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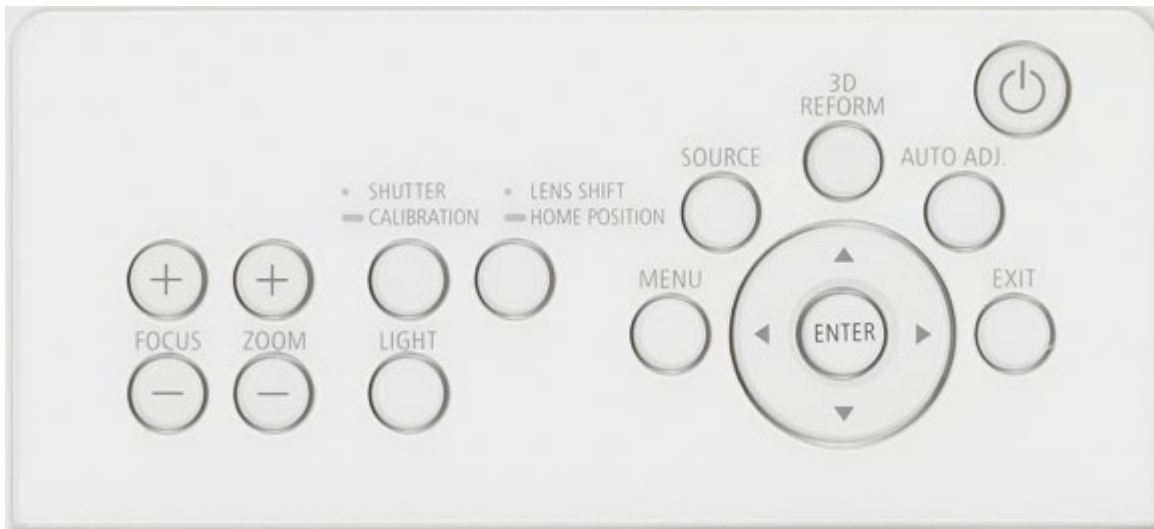
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### Input Panel



### Control Panel



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### PC Control Codes

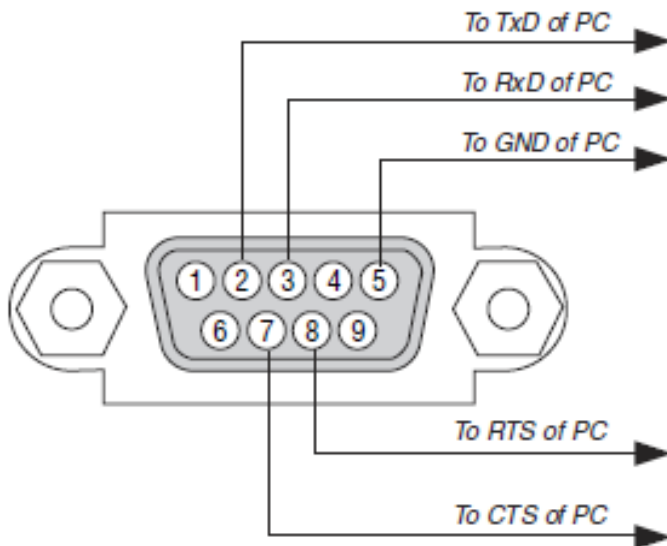
Function	Code Data
POWER ON	02H 00H 00H 00H 00H 02H
POWER OFF	02H 01H 00H 00H 00H 03H
INPUT SELECT COMPUTER	02H 03H 00H 00H 02H 01H 01H 09H
INPUT SELECT BNC	02H 03H 00H 00H 02H 01H 02H 0AH
INPUT SELECT BNC(CV)	02H 03H 00H 00H 02H 01H 06H 0EH
INPUT SELECT BNC(Y/V)	02H 03H 00H 00H 02H 01H 0BH 13H
INPUT SELECT HDMI	02H 03H 00H 00H 02H 01H A1H A9H
INPUT SELECT DisplayPort	02H 03H 00H 00H 02H 01H A6H AEH
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.