

## PX1005QL Installation Guide

Rev 1.8

### Desktop and Ceiling Mount

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#### Product Description

|                           |                                                |                                                                                           |
|---------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Type:</b>              | 1 chip DMD Reflection Type<br>0.66 in. TRP DMD | <b>Dimensions:</b> 19.7" (W) x 8.49" (H) x 23.0" (D)<br><b>Weight:</b> 68.8 lbs. / 31.2kg |
| <b>DMD Resolution:</b>    | 2716 x 1528 (16:9) WQXGA                       | <b>Brightness:</b> 10,000 Lumens                                                          |
| <b>Output Resolution:</b> | 3840 x 2160 (16:9) UHD                         |                                                                                           |
| <b>Fan Noise:</b>         | 42 dB / 39dB @ 1 meter                         |                                                                                           |

|                           |             |                             |
|---------------------------|-------------|-----------------------------|
| <b>Power Consumption:</b> | 1222W (max) | <b>BTU's:</b> 4166 BTU/hour |
|---------------------------|-------------|-----------------------------|

Network Ready, RJ45  
Powered: Lens Shift, Horizontal & Vertical /Zoom/ Focus

#### Lens Specifications

|                                                                        |                                                 |                                 |
|------------------------------------------------------------------------|-------------------------------------------------|---------------------------------|
| <b>NP39ML-4K:</b> Throw Ratio: ~ 0.38:1<br>Screen Sizes: 85"-350"      | Focal Length: 11.4mm<br>F/#: 1.85               | <b>Weight:</b> 6.0lbs. / 2.7kg  |
| <b>NP16FL-4K:</b> Throw Ratio: ~ 0.76:1<br>Screen Sizes: 50"-300"      | Focal Length: 11.6mm<br>F/#: 1.85               | <b>Weight:</b> 3.3lbs. / 1.5kg  |
| <b>NP17ZL-4K:</b> Throw Ratio: 1.24 - 1.78:1<br>Screen Sizes: 50"-300" | Focal Length: 18.7 - 26.5mm<br>F/#: 1.85        | <b>Weight:</b> 2.0lbs. / 0.9kg  |
| <b>NP18ZL-4K:</b> Throw Ratio: 1.71 - 2.25:1<br>Screen Sizes: 50"-300" | Focal Length: 26.0 - 34.0mm<br>F/#: 1.70-1.90   | <b>Weight:</b> 2.4lbs. / 1.1kg  |
| <b>NP19ZL-4K:</b> Throw Ratio: 2.20 - 3.67:1<br>Screen Sizes: 50"-300" | Focal Length: 32.9 - 54.2mm<br>F/#: 1.86 - 2.48 | <b>Weight:</b> 1.9lbs. / 0.84kg |
| <b>NP20ZL-4K:</b> Throw Ratio: 3.54 - 5.36:1<br>Screen Sizes: 50"-300" | Focal Length: 52.8 - 79.1mm<br>F/#: 1.85-2.41   | <b>Weight:</b> 2.2lbs. / 1.0kg  |
| <b>NP21ZL-4K:</b> Throw Ratio: 5.25 - 8.28:1<br>Screen Sizes: 50"-300" | Focal Length: 78.5 - 121.9mm<br>F/#: 1.85-2.48  | <b>Weight:</b> 2.2lbs. / 1.0kg  |
| <b>NP31ZL-4K:</b> Throw Ratio: 0.74 - 0.93:1<br>Screen Sizes: 50"-300" | Focal Length: 11.3 - 14.1mm<br>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  $\pm 5\%$ .

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#### Formulas: 16:9 Aspect Ratio (UHD)

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>NP16FL-4K:</b> | $C = 0.794W - 1.85$                                                        |
| <b>NP17ZL-4K:</b> | $C(\text{Wide}) = 1.269W - 2.091$ ----- $C(\text{Tele}) = 1.802W - 1.910$  |
| <b>NP18ZL-4K:</b> | $C(\text{Wide}) = 1.748W - 2.673$ ----- $C(\text{Tele}) = 2.290W - 2.633$  |
| <b>NP19ZL-4K:</b> | $C(\text{Wide}) = 2.241W - 3.150$ ----- $C(\text{Tele}) = 3.713W - 3.114$  |
| <b>NP20ZL-4K:</b> | $C(\text{Wide}) = 3.618W - 5.319$ ----- $C(\text{Tele}) = 5.434W - 5.299$  |
| <b>NP21ZL-4K:</b> | $C(\text{Wide}) = 5.412W - 11.622$ ---- $C(\text{Tele}) = 8.438W - 11.531$ |
| <b>NP31ZL-4K:</b> | $C(\text{Wide}) = 0.768W - 1.795$ ----- $C(\text{Tele}) = 0.953W - 1.705$  |
| <b>NP39ML-4K:</b> | Ultra-Short Throw lens (See page 3 for Formulas)                           |

#### Definitions:

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

#### 16:9 Screen Formulas

$W = H \times 16/9$   
 $H = W \times 9/16$   
Screen Diagonal =  $W \times 18.358/16$

#### Distance Chart

| Screen Size (16:9) |          |            | Rear Lens | Zoom Lenses   |               |               |               |                |                 |  |  |  |  |  |  |
|--------------------|----------|------------|-----------|---------------|---------------|---------------|---------------|----------------|-----------------|--|--|--|--|--|--|
|                    |          |            | NP16FL-4K | NP31ZL-4K     | NP17ZL-4K     | NP18ZL-4K     | NP19ZL-4K     | NP20ZL-4K      | NP21ZL-4K       |  |  |  |  |  |  |
| Diagonal           | Width(W) | Height (H) | 0.76:1    | 0.74-0.93:1   | 1.24-1.78:1   | 1.71-2.25:1   | 2.20-3.67:1   | 3.54-5.36:1    | 5.25-8.28:1     |  |  |  |  |  |  |
| inches             | inches   | inches     | inches    | inches        | inches        | inches        | inches        | inches         | inches          |  |  |  |  |  |  |
| 30                 | 26       | 15         | 18.9      | 18.3 - 23.2   | 31.1 - 45.2   | 43.0 - 57.2   | 55.4 - 94.0   | 89.3 - 136.8   | 129.9 - 209.1   |  |  |  |  |  |  |
| 59                 | 51       | 29         | 39.0      | 37.7 - 47.3   | 63.2 - 90.8   | 87.2 - 115.1  | 112.1 - 187.8 | 180.7 - 274.1  | 266.7 - 422.4   |  |  |  |  |  |  |
| 67                 | 58       | 33         | 44.5      | 43.1 - 53.9   | 72.0 - 103.3  | 99.4 - 131.1  | 127.7 - 213.7 | 206.0 - 312.0  | 304.4 - 481.2   |  |  |  |  |  |  |
| 70                 | 61       | 34         | 46.6      | 45.1 - 56.4   | 75.3 - 108.0  | 104.0 - 137.1 | 133.6 - 223.4 | 215.4 - 326.2  | 318.6 - 503.3   |  |  |  |  |  |  |
| 83                 | 72       | 41         | 55.6      | 53.8 - 67.2   | 89.7 - 128.4  | 123.8 - 163.0 | 159.0 - 265.5 | 256.4 - 387.8  | 379.9 - 598.9   |  |  |  |  |  |  |
| 106                | 92       | 52         | 71.5      | 69.2 - 86.3   | 115.1 - 164.6 | 158.8 - 208.9 | 203.9 - 339.9 | 328.9 - 496.7  | 488.4 - 768.0   |  |  |  |  |  |  |
| 110                | 96       | 54         | 74.3      | 71.8 - 89.7   | 119.6 - 170.8 | 164.9 - 216.9 | 211.7 - 352.9 | 341.5 - 515.7  | 507.2 - 797.4   |  |  |  |  |  |  |
| 126                | 110      | 62         | 85.3      | 82.5 - 102.9  | 137.3 - 196.0 | 189.3 - 248.8 | 242.9 - 404.6 | 392.0 - 591.4  | 582.7 - 915.1   |  |  |  |  |  |  |
| 133                | 116      | 65         | 90.2      | 87.2 - 108.8  | 145.0 - 207.0 | 199.9 - 262.8 | 256.6 - 427.3 | 414.1 - 624.6  | 615.7 - 966.6   |  |  |  |  |  |  |
| 159                | 139      | 78         | 108.2     | 104.6 - 130.4 | 173.8 - 247.8 | 239.6 - 314.7 | 307.4 - 511.4 | 496.1 - 747.7  | 738.4 - 1157.8  |  |  |  |  |  |  |
| 184                | 160      | 90         | 125.5     | 121.4 - 151.1 | 201.4 - 287.1 | 277.6 - 364.6 | 356.2 - 592.3 | 574.9 - 866.1  | 856.3 - 1341.6  |  |  |  |  |  |  |
| 202                | 176      | 99         | 137.9     | 133.4 - 166.1 | 221.3 - 315.3 | 305.1 - 400.5 | 391.4 - 650.6 | 631.6 - 951.4  | 941.2 - 1474.0  |  |  |  |  |  |  |
| 220                | 192      | 108        | 150.4     | 145.5 - 181.0 | 241.2 - 343.6 | 332.5 - 436.5 | 426.5 - 708.8 | 688.4 - 1036.6 | 1026.1 - 1606.4 |  |  |  |  |  |  |
| 263                | 229      | 129        | 180.1     | 174.2 - 216.7 | 288.8 - 411.1 | 398.0 - 522.3 | 510.5 - 848.0 | 824.0 - 1240.3 | 1228.9 - 1922.6 |  |  |  |  |  |  |
| 299                | 261      | 147        | 205.1     | 198.3 - 246.6 | 328.6 - 467.7 | 452.8 - 594.1 | 580.8 - 964.5 | 937.5 - 1410.8 | 1398.7 - 2187.4 |  |  |  |  |  |  |

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### Formulas: 16:9 Aspect Ratio (UHD)

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:

**NP39ML-4K:**  $A = (0.348 * W) - 30.6$   
 $B = 0.588 * W$   
 $C = (0.348 * W) + 2.488$   
 $D = (0.284 * W) - 2.262$   
 $E = (0.284 * W) + 5.738$

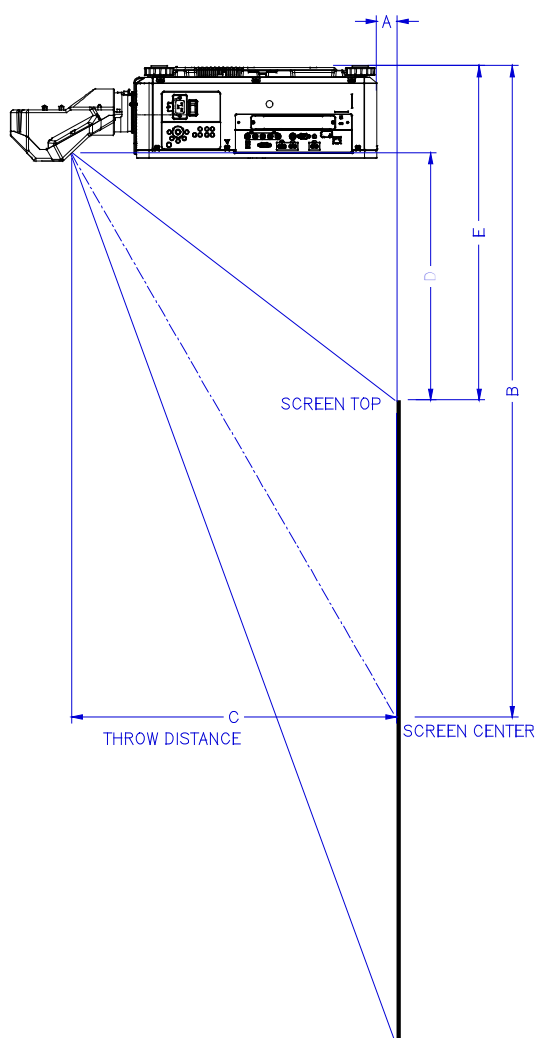
#### Definitions:

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

#### 16:9 Screen Formulas

$W = H \times 16/9$   
 $H = W \times 9/16$   
Screen Diagonal =  $W \times 18.358/16$

### NP39ML-4 Installation



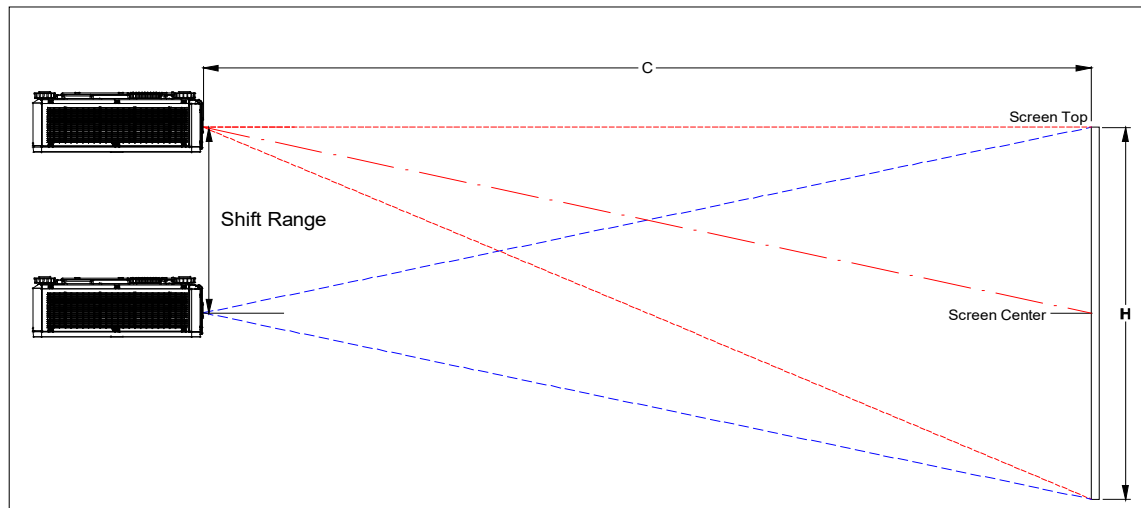
| Screen Size (16:9) |          |            | A      | B      | C      | D      | E      |
|--------------------|----------|------------|--------|--------|--------|--------|--------|
| Diagonal           | Width(W) | Height (H) | inches | inches | inches | inches | inches |
| 107                | 93       | 52         | 2      | 55     | 35     | 24.2   | 32.2   |
| 113                | 98       | 55         | 4      | 58     | 37     | 25.7   | 33.7   |
| 130                | 113      | 64         | 9      | 67     | 42     | 29.9   | 37.9   |
| 137                | 119      | 67         | 11     | 70     | 44     | 31.6   | 39.6   |
| 164                | 143      | 80         | 19     | 84     | 52     | 38.3   | 46.3   |
| 189                | 165      | 93         | 27     | 97     | 60     | 44.5   | 52.5   |
| 208                | 181      | 102        | 32     | 107    | 66     | 49.2   | 57.2   |
| 226                | 197      | 111        | 38     | 116    | 71     | 53.7   | 61.7   |
| 270                | 235      | 132        | 51     | 138    | 84     | 64.6   | 72.6   |
| 300                | 261      | 147        | 60     | 154    | 93     | 72.0   | 80.0   |
| 350                | 305      | 172        | 76     | 179    | 109    | 84.4   | 92.4   |

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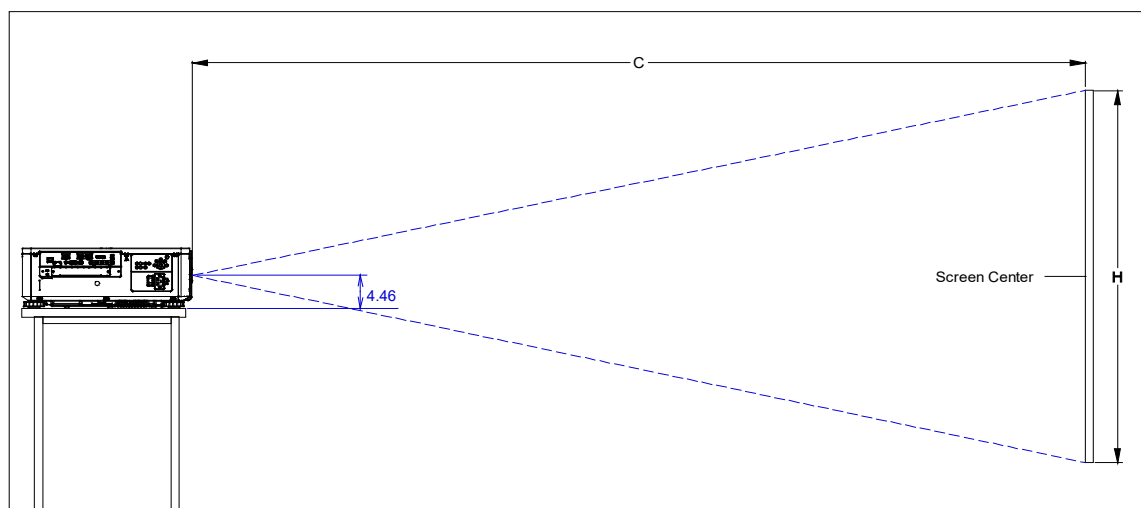
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## Ceiling Mount Installation



**Note:** Lens Shift Feature is not available for the NP16F-4KL. This lens should only be used for “zero degree”/“no-offset” applications.

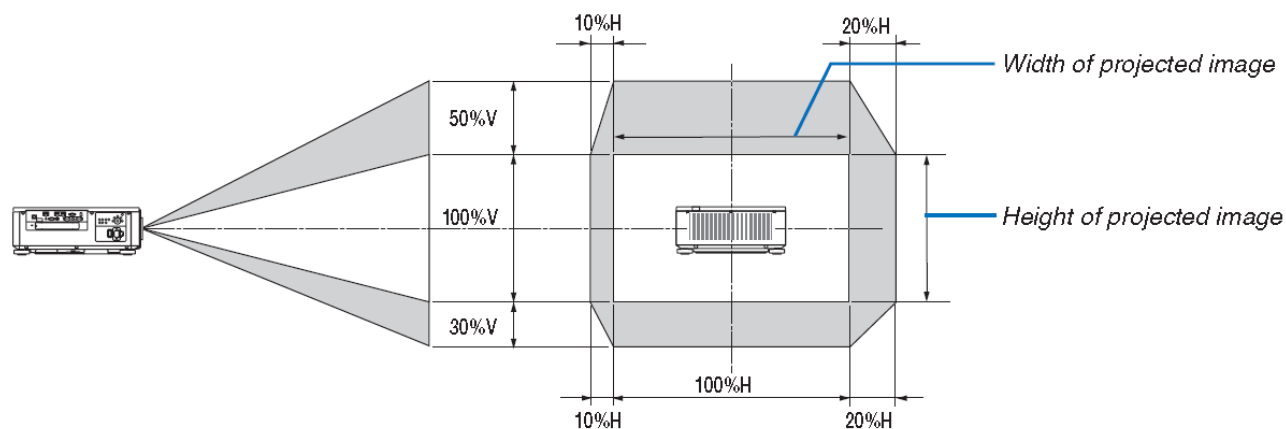


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### Lens Shift Adjustable Range



#### 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 NP16FL-4K (rear lens). NP16FL-4K 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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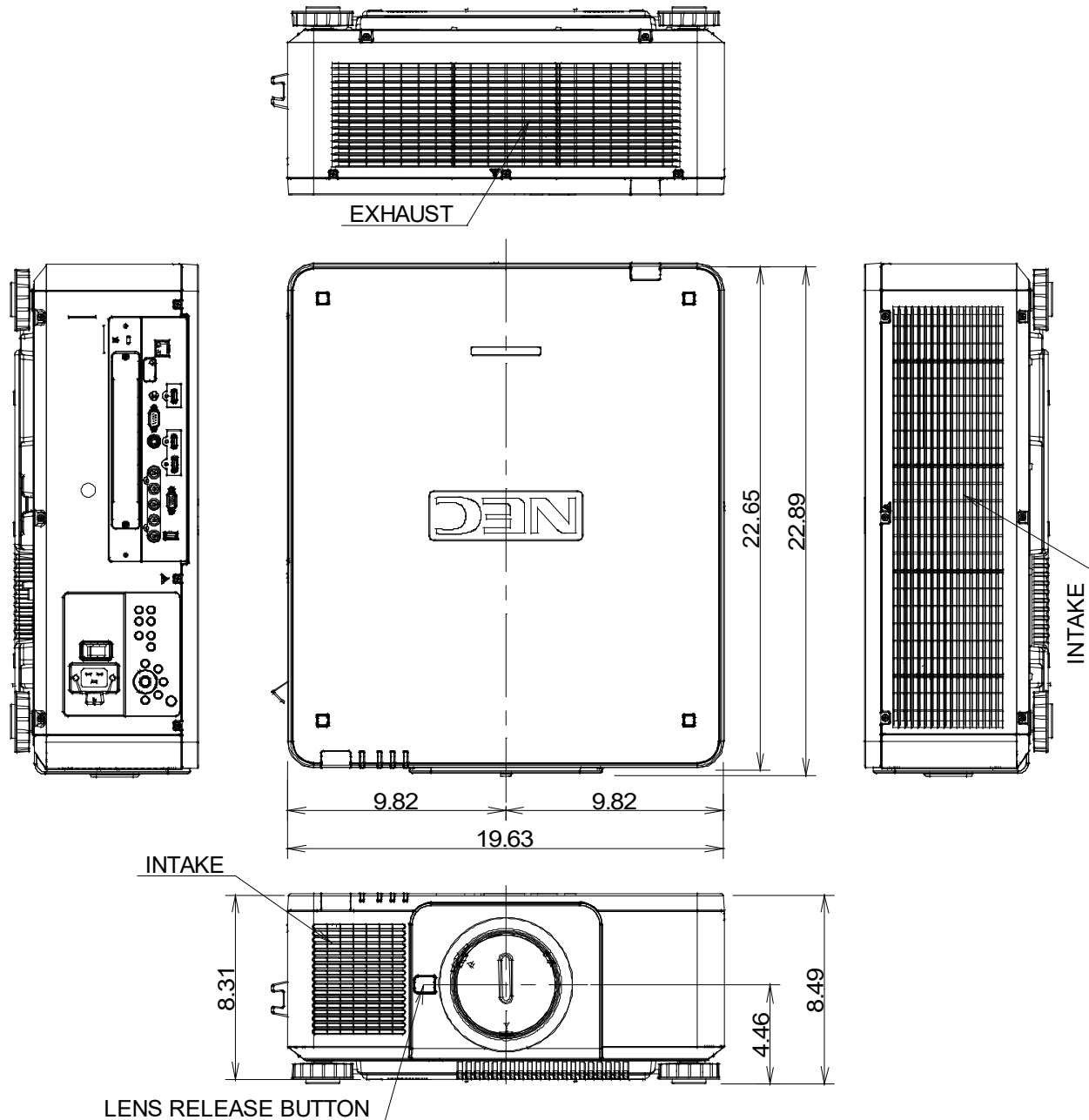
### Desktop and Ceiling Mount

#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the PX1005QL.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without a lens

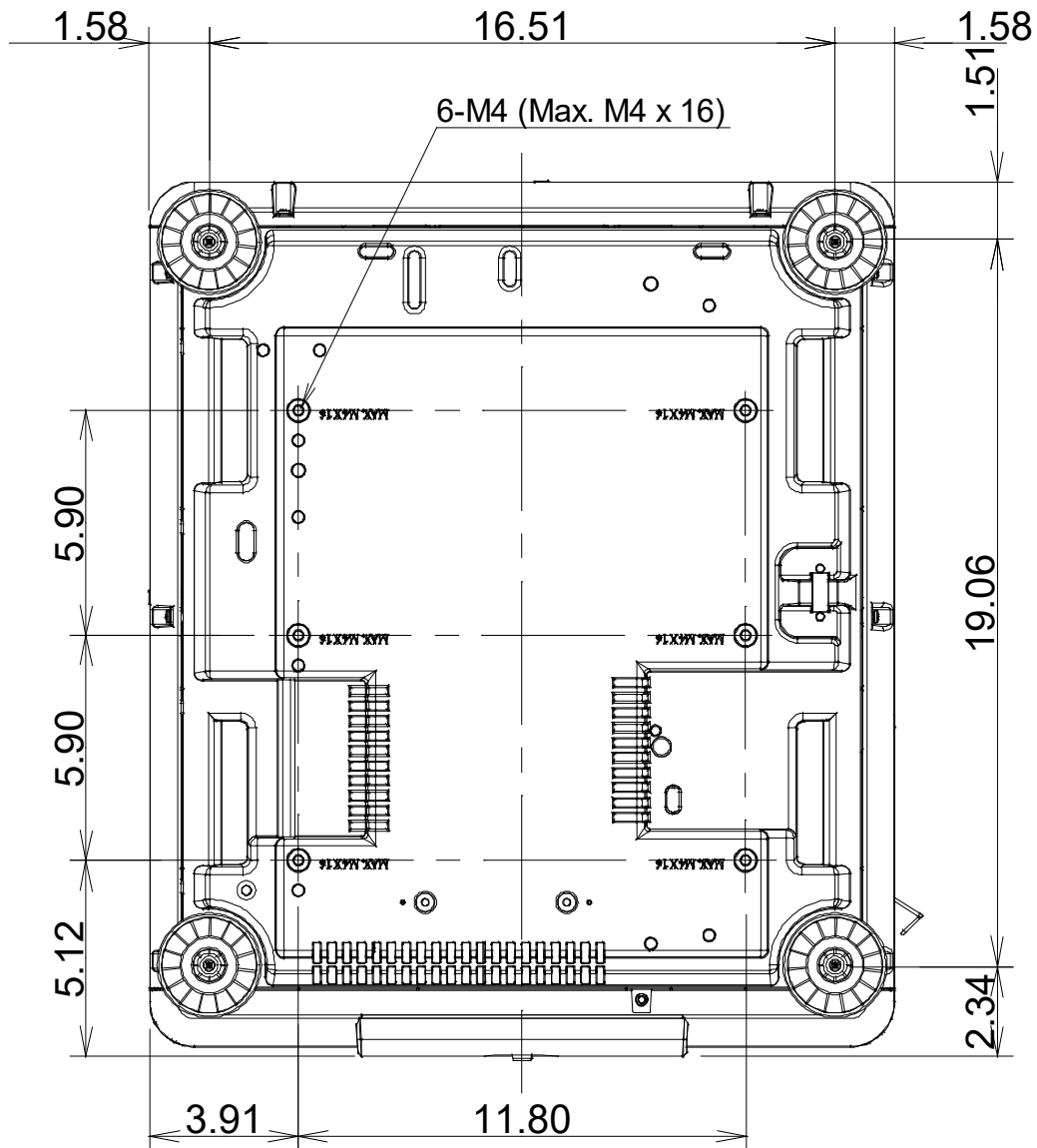


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### Cabinet Dimensions

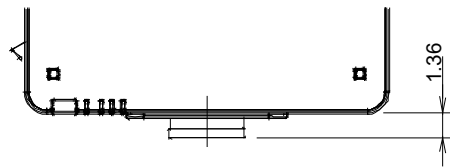
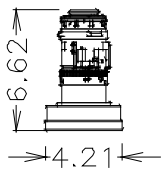


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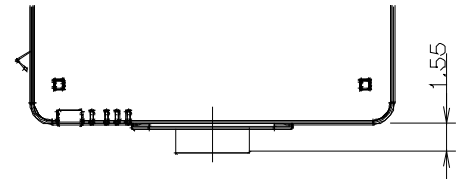
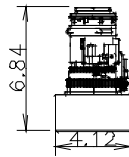
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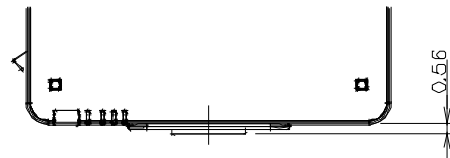
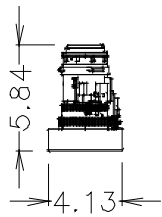
### Optional Lens Dimensions



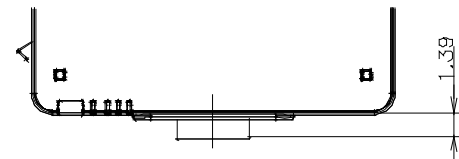
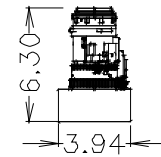
NP16FL-4K



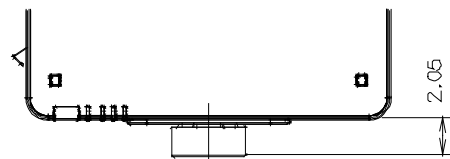
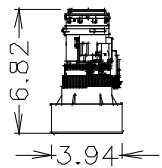
NP17ZL-4K



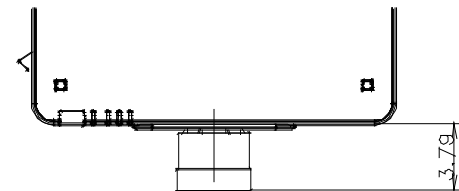
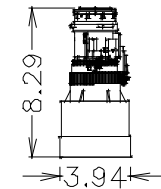
NP18ZL-4K



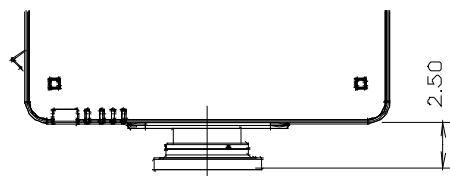
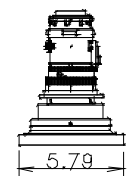
NP19ZL-4K



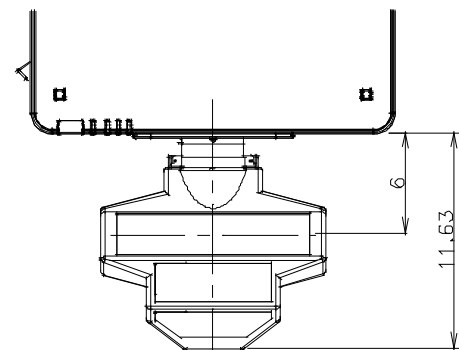
NP20ZL-4K



NP21ZL-4K



NP31ZL-4K



NP39ML-4K



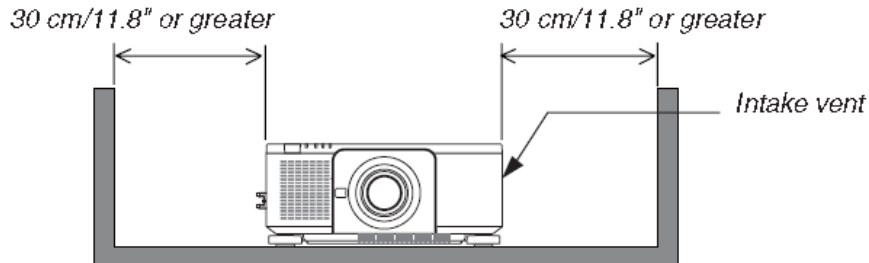
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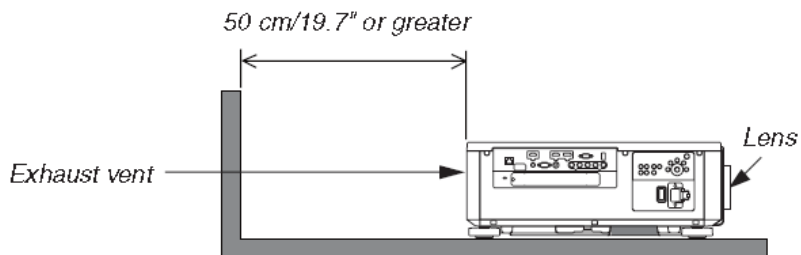
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### Ventilation Requirements

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



- If there's a wall behind the projector :

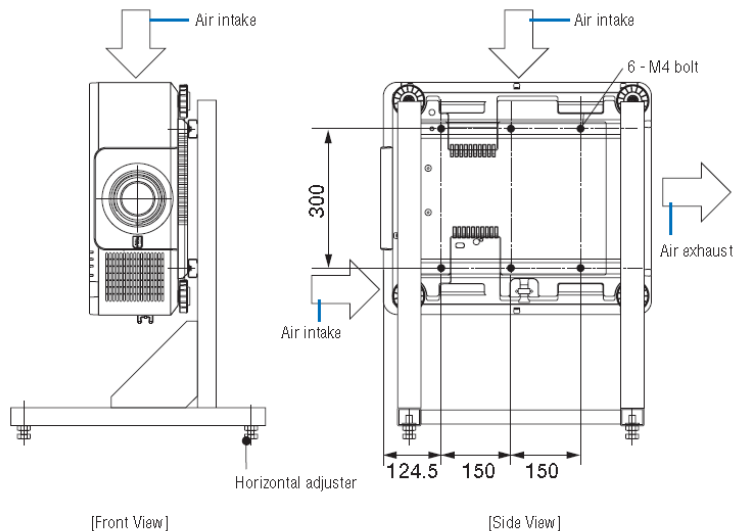


### Portrait Requirements

#### Reference drawings

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

(Unit: mm)



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### Regulatory Labels

|  |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>CAUTION</b><br/> <b>POSSIBLY HAZARDOUS OPTICAL RADIATION</b><br/> <b>EMITTED FROM THIS PRODUCT.</b><br/> <b>DO NOT STARE AT OPERATING LAMP.</b><br/> <b>MAY BE HARMFUL TO THE EYES.</b><br/> <b>RISK GROUP 2 IEC 62471:2006</b></p> | <p><b>VORSICHT</b><br/>         Dieses Produkt strahlt eventuelle gefährliche optische Strahlung aus.<br/>         Schauen Sie nicht in die eingeschaltete Lampe.<br/>         Dies kann Ihre Augen gefährden.<br/> <b>RISIKOGRUPPE 2 IEC 62471:2006</b></p> | <p><b>MISE EN GARDE</b><br/>         Rayonnement optique éventuellement dangereux émis par ce produit.<br/>         Ne regardez pas fixement la lampe de fonctionnement.<br/>         Cela peut être dangereux pour les yeux.<br/> <b>GROUPE À RISQUE 2 IEC 62471:2006</b></p> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>COMPLIES WITH 21 CFR 1040.10</b><br/> <b>AND 1040.11 EXCEPT FOR DEVIATIONS</b><br/> <b>PURSUANT TO LASER NOTICE No. 50,</b><br/> <b>DATED JUNE 24, 2007</b></p>                                                                                        |
| <p><b>LASER RADIATION</b><br/> <b>AVOID DIRECT EYE EXPOSURE</b><br/> <b>CLASS 3R LASER PRODUCT</b><br/> <b>WAVE LENGTH: 450-460 nm</b><br/> <b>MAX. PULSE ENERGY: 0.376mJ</b><br/> <b>PULSE DURATION: 0.74 ms</b><br/> <b>IEC/EN 60825-1:2007</b><br/> <b>CLASS 1 LASER PRODUCT</b><br/> <b>IEC/EN 60825-1:2014</b></p>                                                           | <p><b>레이저 방사선</b><br/>         육안으로 쳐다보지 말 것<br/>         등급 3R 레이저 제품<br/>         파장: 450-460nm<br/>         최대 펄스 에너지: 0.376mJ<br/>         펄스 지속 시간: 0.74ms<br/> <b>IEC/EN 60825-1:2007</b><br/>         등급 1 레이저 제품<br/> <b>IEC/EN 60825-1:2014</b></p> |
| <p><b>LASERSTRAHLUNG</b><br/> <b>DIREKTE EXPOSITION DER AUGEN VERMEIDEN</b><br/> <b>LASERPRODUKT DER KLASSE 3R</b><br/> <b>WELLENLÄNGE: 450-460 nm</b><br/> <b>MAX. PULSENERGIE: 0,376 mJ</b><br/> <b>IMPULSDAUER: 0,74 ms</b><br/> <b>IEC/EN 60825-1:2007</b><br/> <b>LASERPRODUKT DER KLASSE 1</b><br/> <b>IEC/EN 60825-1:2014</b></p>                                          |                                                                                                                                                                                                                                                              |
| <p><b>RAYONNEMENT LASER</b><br/> <b>ÉVITER D'EXPOSER DIRECTEMENT LES YEUX</b><br/> <b>PRODUIT LASER DE CLASSE 3R</b><br/> <b>LONGUEUR D'ONDE : 450-460 nm</b><br/> <b>ÉNERGIE D'IMPULSION MAX. : 0,376 mJ</b><br/> <b>DURÉE DE L'IMPULSION : 0,74 ms</b><br/> <b>IEC/EN 60825-1:2007</b><br/> <b>PRODUIT LASER DE CLASSE 1</b><br/> <b>IEC/EN 60825-1:2014</b></p>                |                                                                                                                                                                                                                                                              |
| <p><b>ЛАЗЕРНОЕ ИЗЛУЧЕНИЕ</b><br/> <b>ИЗБЕГАЙТЕ ПРЯМОГО ВОЗДЕЙСТВИЯ НА ГЛАЗА</b><br/> <b>ЛАЗЕРНОЕ ИЗДЕЛИЕ 3R КЛАССА ОПАСНОСТИ</b><br/> <b>ДЛИНА ВОЛНЫ: 450-460 nm</b><br/> <b>МАКС. ЭНЕРГИЯ ИМПУЛЬСА: 0,376 мДж</b><br/> <b>ДЛИТЕЛЬНОСТЬ ИМПУЛЬСА: 0,74 мс</b><br/> <b>IEC/EN 60825-1:2007</b><br/> <b>ЛАЗЕРНОЕ ИЗДЕЛИЕ 1 КЛАССА ОПАСНОСТИ</b><br/> <b>IEC/EN 60825-1:2014</b></p> |                                                                                                                                                                                                                                                              |

|                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|
| <p><b>LASER APERTURE</b><br/> <b>LASERÖFFNUNG</b><br/> <b>OUVERTURE LASER</b><br/> <b>АПЕРТУРА ЛАЗЕРА</b><br/> <b>레이저 개구부</b></p> |
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## PX1005QL Installation Guide

Desktop and Ceiling Mount

Rev 1.8

### Input Panel



### Control Panel



## PX1005QL Installation Guide

Rev 1.8

Desktop and Ceiling Mount

### PC Control Codes

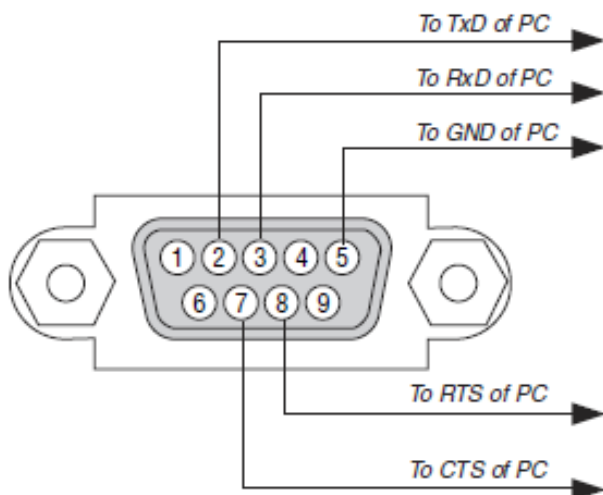
| Function                   | Code Data |     |     |     |     |     |     |     |
|----------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|
| POWER ON                   | 02H       | 00H | 00H | 00H | 00H | 02H |     |     |
| POWER OFF                  | 02H       | 01H | 00H | 00H | 00H | 03H |     |     |
| INPUT SELECT HDMI 1        | 02H       | 03H | 00H | 00H | 02H | 01H | A1H | A9H |
| INPUT SELECT HDMI 2        | 02H       | 03H | 00H | 00H | 02H | 01H | A2H | AAH |
| INPUT SELECT DisplayPort 1 | 02H       | 03H | 00H | 00H | 02H | 01H | A6H | AEH |
| INPUT SELECT DisplayPort 2 | 02H       | 03H | 00H | 00H | 02H | 01H | A7H | AFH |
| INPUT SELECT HDBaseT       | 02H       | 03H | 00H | 00H | 02H | 01H | 20H | 28H |
| INPUT 3G SDI1              | 02H       | 03H | 00H | 00H | 02H | 01H | C4H | CCH |
| INPUT 3G SDI2              | 02H       | 03H | 00H | 00H | 02H | 01H | C5H | CDH |
| INPUT 3G SDI3              | 02H       | 03H | 00H | 00H | 02H | 01H | C6H | CEH |
| INPUT 3G SDI4              | 02H       | 03H | 00H | 00H | 02H | 01H | C7H | CFH |
| 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.