

## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

### Contents

Product Description, Lens Specs, Screen/Aspect Ratio

|                                 |      |
|---------------------------------|------|
| Notes and Formulas              | Pg 1 |
| Diagrams & Distance Charts; 4:3 | Pg 2 |
| 16:9                            | Pg 3 |
| Lens Shift Adjustable Range     | Pg 4 |
| Tilt Capabilities               | Pg 5 |
| Cabinet Dimensions              | Pg 6 |
| Lens Dimensions                 | Pg 7 |
| Ceiling Mount Dimensions        | Pg 8 |
| Input Panel and Control Codes   | Pg 9 |



### Product Description

|               |                                                |                    |                                    |
|---------------|------------------------------------------------|--------------------|------------------------------------|
| Type:         | 1 chip DLP Projector                           | Dimensions:        | 19.88" (W) x 8.23" (H) x 15.16 (D) |
|               | 0.7 DMD                                        | Weight:            | 38.6 lbs                           |
| Resolution:   | 1024 x 768 (4:3) / 1024 x 576 (16:9)           | Brightness:        | 6200 ANSI Lumens                   |
| Powered:      | Lens Shift, Horizontal & Vertical /Zoom/ Focus | BTU's:             | 2425 BTU/hour                      |
| Fan Noise:    | 38 dB / 34dB @ 1 meter                         | Power Consumption: | 710W (max)                         |
| Network Ready |                                                |                    |                                    |

### Lens Specifications

|                |                             |                             |                |                             |                             |
|----------------|-----------------------------|-----------------------------|----------------|-----------------------------|-----------------------------|
| <b>NP06FL:</b> | Throw Ratio: ~ 0.77:1       | Focal Length: 11.4mm        | <b>NP09ZL:</b> | Throw Ratio: ~2.22 - 4.43:1 | Focal Length: 32.0 – 63.0mm |
|                | Screen Sizes: 50"-200"      | F/#:2.0                     |                | Screen Sizes: 40" - 500"    | F/#:2.1 – 2.9               |
| <b>NP07ZL:</b> | Throw Ratio: ~1.33 - 1.79:1 | Focal Length: 19.3 - 25.8mm | <b>NP10ZL:</b> | Throw Ratio: 4.43 -8.3:1    | Focal Length: 48.8 - 77.6mm |
|                | Screen Sizes: 40" - 500"    | F/#:1.8 – 2.3               |                | Screen Sizes: 40" - 500"    | F/#:2.2 – 3.1               |
| <b>NP08ZL:</b> | Throw Ratio: ~1.78 - 2.35:1 | Focal Length: 26.0 - 34.0mm |                |                             |                             |
|                | Screen Sizes: 40" – 500"    | F/#:1.7 – 1.9               |                |                             |                             |

### Screen/Aspect Ratio

**Both 4:3 and 16:9 screens are fully supported** with proper aspect ratio control for both type sources using NEC developed scaling technology. Menu selections have 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.
- All calculations are based on 4:3 aspect ratio.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary  $\pm 5\%$ .

### Formulas

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>NP06FL:</b> | $C = 0.808W - 1.644$              |                                   |
| <b>NP07ZL:</b> | $C(\text{Wide}) = 1.361W - 1.833$ | $C(\text{Tele}) = 1.831W - 1.800$ |
| <b>NP08ZL:</b> | $C(\text{Wide}) = 1.823W - 2.524$ | $C(\text{Tele}) = 2.403W - 2.447$ |
| <b>NP09ZL:</b> | $C(\text{Wide}) = 2.298W - 4.133$ | $C(\text{Tele}) = 4.579W - 4.226$ |
| <b>NP10ZL:</b> | $C(\text{Wide}) = 4.516W - 5.296$ | $C(\text{Tele}) = 8.514W - 5.512$ |

#### Definitions:

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

#### 4:3 Screen Formulas:

$W = H \times 4/3$   
 $H = W \times 3/4$   
Diagonal =  $W \times 5/4$

#### 16:9 Screen Formulas:

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

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

## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

### Projection Distance and Screen Size for Ceiling Mount

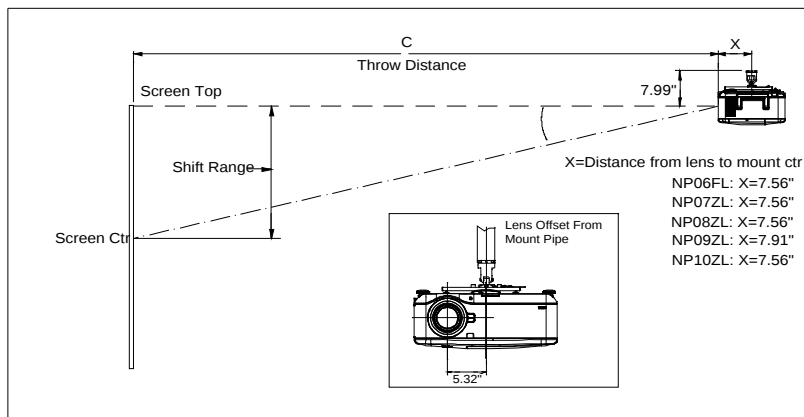
The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation.

Distances are in inches. For millimeters multiply by 25.4.

**Note:** To achieve a 4x3 image, you must select 4x3 for each incoming signal in the OSM.

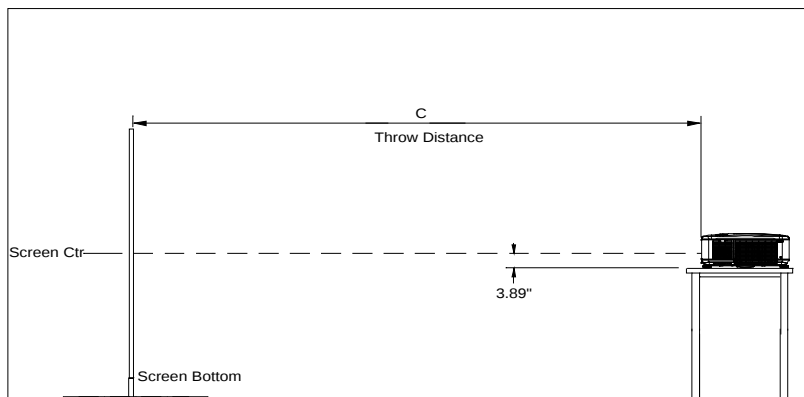
MENU>IMAGE OPTIONS>ASPECT RATIO

### Ceiling Mount Installation



### Desktop Installation

**Note:** Lens shift feature is not available with NP06FL (rear lens) NP06FL should be used only for "zero degree" / "no-offset" applications.



### Distance Chart for popular 4:3 screens

| Screen Size (4:3)  |                    |                      | Rear Lens | Zoom Lenses   |       |               |       |               |        |               |        |
|--------------------|--------------------|----------------------|-----------|---------------|-------|---------------|-------|---------------|--------|---------------|--------|
| Diagonal<br>inches | Width(W)<br>inches | Height (H)<br>inches | NP06FL    | NP07ZL        |       | NP08ZL        |       | NP09ZL        |        | NP10ZL        |        |
|                    |                    |                      | 0.77:1    | 1.33 - 1.79:1 |       | 1.78 - 2.35:1 |       | 2.22 - 4.43:1 |        | 4.43 - 8.30:1 |        |
|                    |                    |                      |           | inches        |       | inches        |       | inches        |        | inches        |        |
| 40                 | 32                 | 24                   | NA        | 41.72         | 56.8  | 55.8          | 74.4  | 69.4          | 142.3  | 139.2         | 266.9  |
| 60                 | 48                 | 36                   | 37.14     | 63.50         | 86.1  | 85.0          | 112.9 | 106.2         | 215.6  | 211.5         | 403.2  |
| 67                 | 53.6               | 40.2                 | 41.66     | 71.12         | 96.3  | 95.2          | 126.4 | 119.0         | 241.2  | 236.8         | 450.8  |
| 72                 | 57.6               | 43.2                 | 44.90     | 76.56         | 103.7 | 102.5         | 136.0 | 128.2         | 259.5  | 254.8         | 484.9  |
| 84                 | 67.2               | 50.4                 | 52.65     | 89.63         | 121.2 | 120.0         | 159.0 | 150.3         | 303.5  | 298.2         | 566.6  |
| 90                 | 72                 | 54                   | 56.53     | 96.16         | 130.0 | 128.7         | 170.6 | 161.3         | 325.5  | 319.9         | 607.5  |
| 100                | 80                 | 60                   | 63.00     | 107.05        | 144.7 | 143.3         | 189.8 | 179.7         | 362.1  | 356.0         | 675.6  |
| 120                | 96                 | 72                   | 75.92     | 128.82        | 174.0 | 172.5         | 228.2 | 216.5         | 435.4  | 428.2         | 811.8  |
| 150                | 120                | 90                   | 95.32     | 161.49        | 217.9 | 216.2         | 285.9 | 271.6         | 545.3  | 536.6         | 1016.2 |
| 180                | 144                | 108                  | 114.71    | 194.15        | 261.9 | 260.0         | 343.6 | 326.8         | 655.2  | 645.0         | 1220.5 |
| 210                | 168                | 126                  | NA        | 226.82        | 305.8 | 303.7         | 401.3 | 381.9         | 765.0  | 753.4         | 1424.8 |
| 240                | 192                | 144                  | NA        | 259.48        | 349.8 | 347.5         | 458.9 | 437.1         | 874.9  | 861.8         | 1629.2 |
| 270                | 216                | 162                  | NA        | 292.14        | 393.7 | 391.2         | 516.6 | 492.2         | 984.8  | 970.2         | 1833.5 |
| 300                | 240                | 180                  | NA        | 324.81        | 437.6 | 435.0         | 574.3 | 547.4         | 1094.7 | 1078.5        | 2037.8 |
| 400                | 320                | 240                  | NA        | 433.69        | 584.1 | 580.8         | 766.5 | 731.2         | 1461.1 | 1439.8        | 2719.0 |
| 500                | 400                | 300                  | NA        | 542.57        | 730.6 | 726.7         | 958.8 | 915.1         | 1827.4 | 1801.1        | 3400.1 |

**Note:** For screen sizes not indicated on the projection tables, use the formulas on page 1.

## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

### Projection Distance and Screen Size for Ceiling Mount

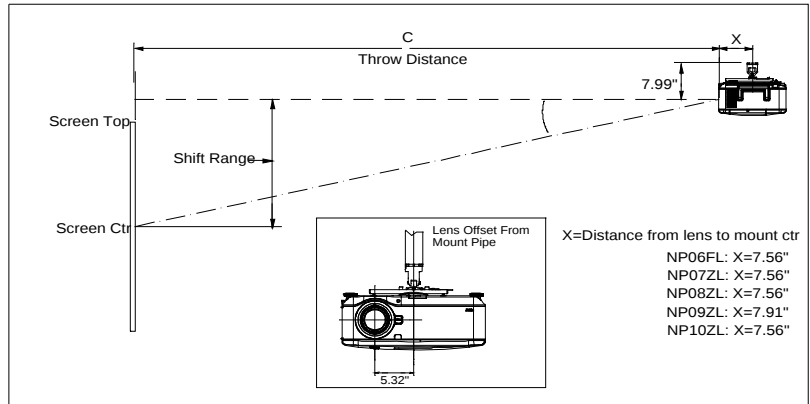
The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation.

Distances are in inches. For millimeters multiply by 25.4.

**Note:** To achieve a 16x9 image, you must select 16x9 for each incoming signal in the OSM.

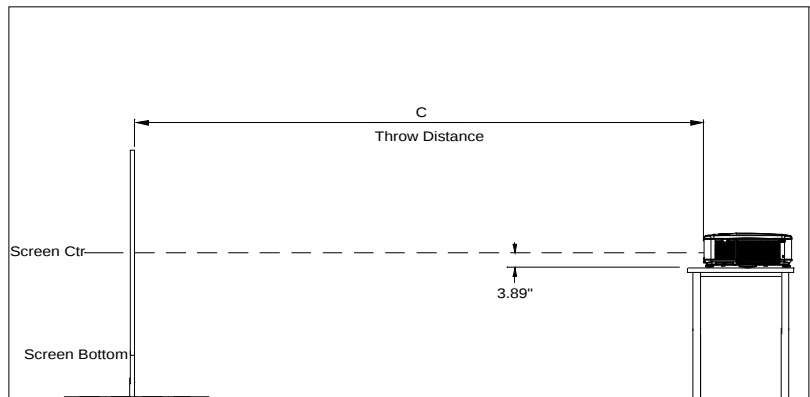
MENU>IMAGE OPTIONS>ASPECT RATIO

### Ceiling Mount Installation



### Desktop Installation

**Note:** Lens shift feature is not available with NP06FL (rear lens) NP06FL should be used only for "zero degree" / "no-offset" applications.



### Distance Chart for popular 16:9 screens

| Screen Size (16:9) |          |            | Rear Lens | Zoom Lenses    |               |                |                 |        |
|--------------------|----------|------------|-----------|----------------|---------------|----------------|-----------------|--------|
|                    |          |            | NP06FL    | NP07ZL         | NP08ZL        | NP09ZL         | NP10ZL          |        |
| Diagonal           | Width(W) | Height (H) | 0.77:1    | 1.33 - 1.79:1  | 1.78 - 2.35:1 | 2.22 - 4.43:1  | 4.43 - 8.30:1   |        |
| inches             | inches   | inches     | inches    | inches         | inches        | inches         | inches          | inches |
| 92                 | 80       | 45         | 62.99     | 107.05 - 144.7 | 143.3 - 189.8 | 179.7 - 362.1  | 356.0 - 675.6   |        |
| 100                | 87       | 49         | 68.64     | 116.57 - 157.5 | 156.1 - 206.6 | 195.8 - 394.1  | 387.6 - 735.2   |        |
| 106                | 92       | 52         | 72.68     | 123.38 - 166.7 | 165.2 - 218.6 | 207.3 - 417.0  | 410.2 - 777.8   |        |
| 110                | 96       | 54         | 75.91     | 128.82 - 174.0 | 172.5 - 228.2 | 216.5 - 435.4  | 428.2 - 811.8   |        |
| 119                | 104      | 58.8       | 82.38     | 139.71 - 188.6 | 187.1 - 247.5 | 234.9 - 472.0  | 464.4 - 879.9   |        |
| 123                | 107      | 60         | 84.80     | 143.79 - 194.1 | 192.5 - 254.7 | 241.8 - 485.7  | 477.9 - 905.5   |        |
| 133                | 116      | 65         | 92.07     | 156.04 - 210.6 | 208.9 - 276.3 | 262.4 - 526.9  | 518.6 - 982.1   |        |
| 135                | 118      | 66         | 93.69     | 158.77 - 214.3 | 212.6 - 281.1 | 267.0 - 536.1  | 527.6 - 999.1   |        |
| 159                | 139      | 78         | 110.66    | 187.35 - 252.7 | 250.9 - 331.6 | 315.3 - 632.3  | 622.4 - 1177.9  |        |
| 161                | 140      | 79         | 111.47    | 188.71 - 254.5 | 252.7 - 334.0 | 317.6 - 636.8  | 626.9 - 1186.4  |        |
| 229                | 200      | 113        | NA        | 270.37 - 364.4 | 362.1 - 478.2 | 455.5 - 911.6  | 897.9 - 1697.3  |        |
| 275                | 240      | 135        | NA        | 324.81 - 437.6 | 435.0 - 574.3 | 547.4 - 1094.7 | 1078.5 - 2037.8 |        |
| 367                | 320      | 180        | NA        | 433.69 - 584.1 | 580.8 - 766.5 | 731.2 - 1461.1 | 1439.8 - 2719.0 |        |
| 459                | 400      | 225        | NA        | 542.57 - 730.6 | 726.7 - 958.8 | 915.1 - 1827.4 | 1801.1 - 3400.1 |        |

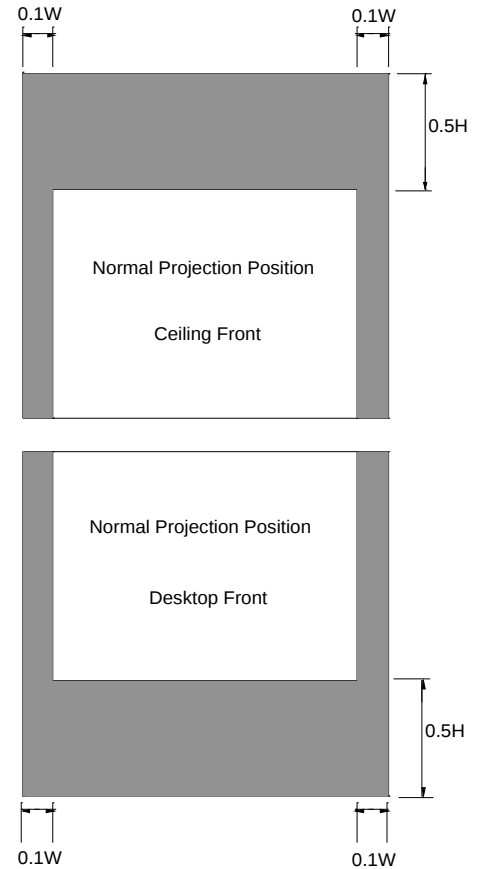
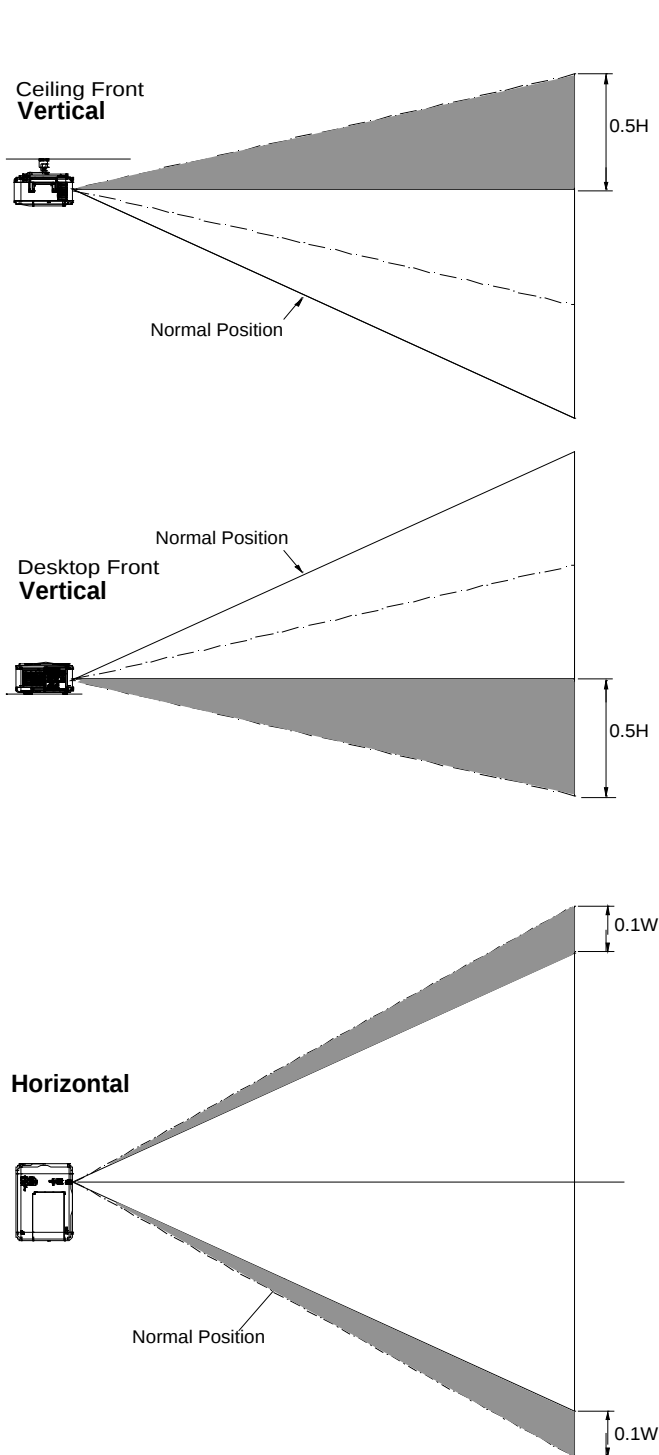
**Note:** For screen sizes not indicated on the projection tables, use the formulas on page 1.

## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

### 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 NP06FL (rear lens). NP06FL should be used only for "zero degree" / "no-offset" applications.

#### Maximum Possible Range for Standard Lens/NP07ZL/NP08ZL/NP09ZL/NP10ZL:

Up:  $0.5H$

Right:  $0.10W$

Left:  $0.10W$

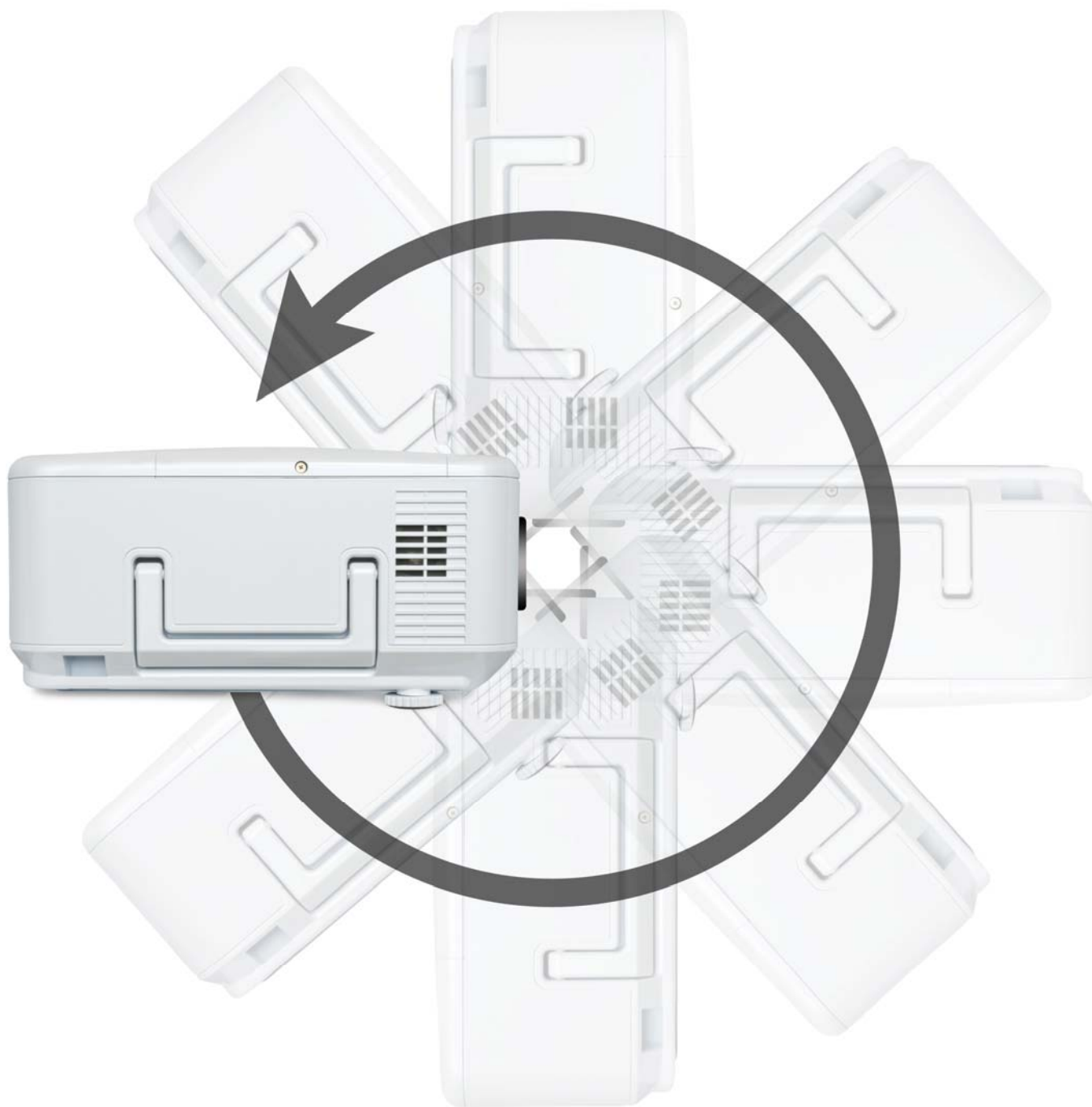
(W: width of projected image, H: height of projected image)

## NP4100 Installation Guide

Desktop and Ceiling Mount

v 1.0

### Tilt Free Operation



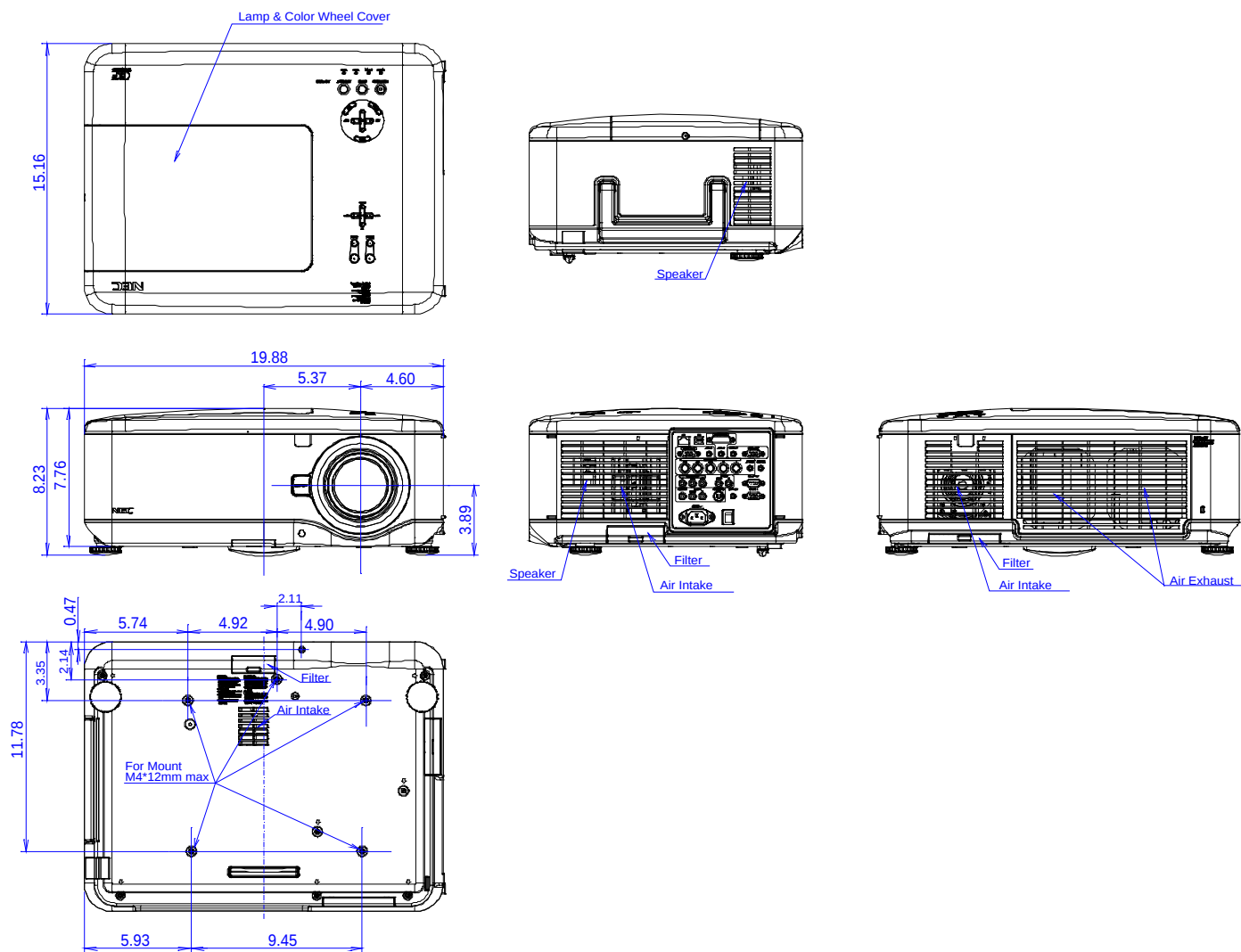
## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the NP4100. Dimensions are in inches. For millimeters multiply by 25.4.



## NP4100 Installation Guide

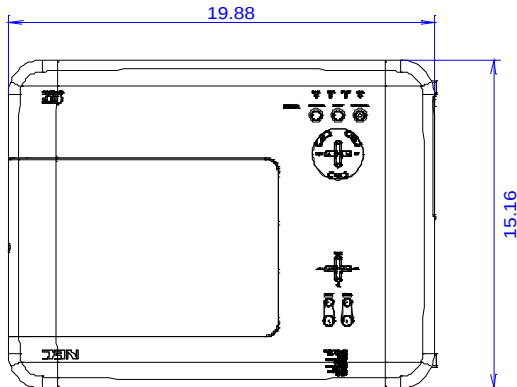
### Desktop and Ceiling Mount

v 1.0

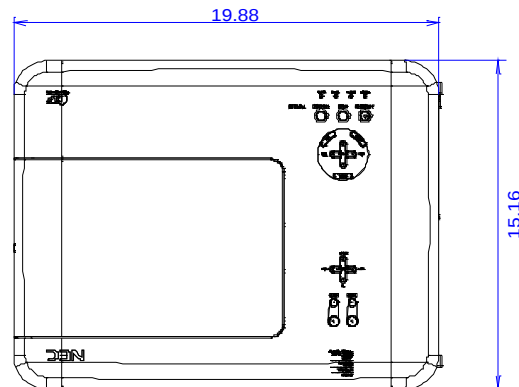
#### Lens Dimensions

The following drawings show the added dimensions for the optional lenses  
Dimensions are in inches. For millimeters multiply by 25.4.

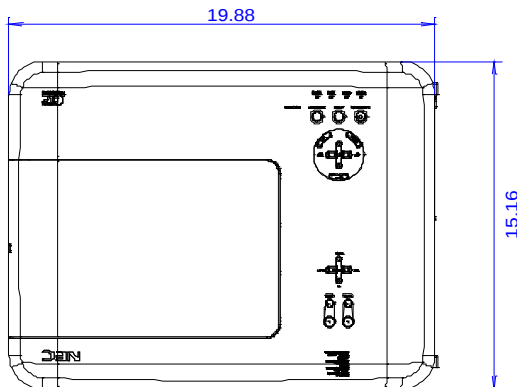
NP06FL



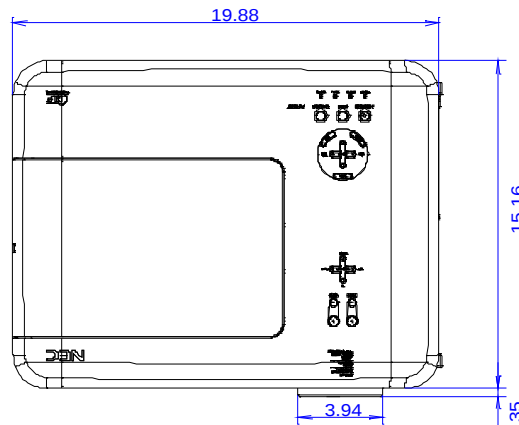
NP07ZL



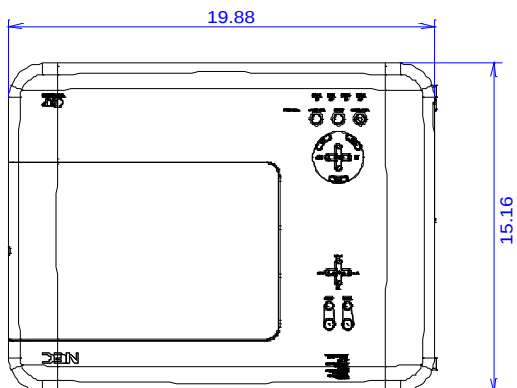
NP08ZL



NP09ZL



NP10ZL



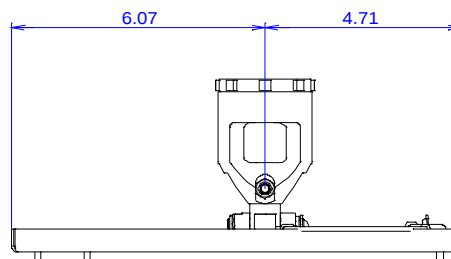
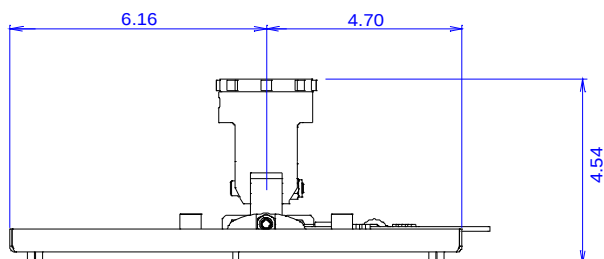
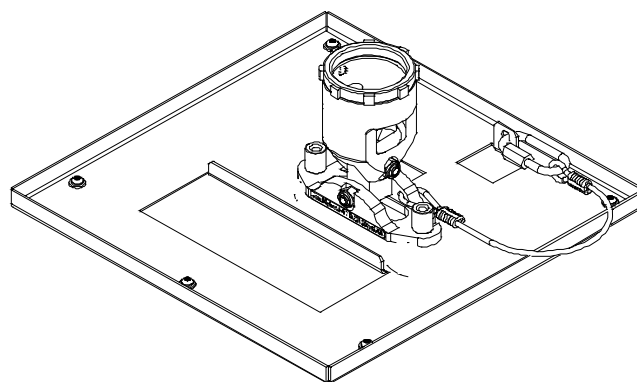
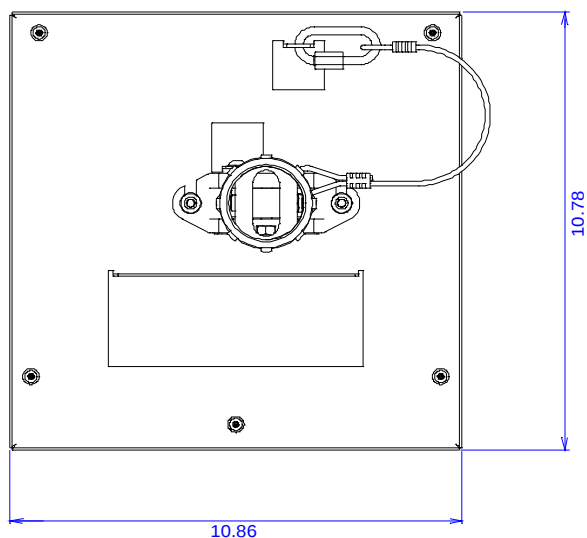
## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

#### Optional Ceiling Mount Dimensions (Model #: NP4000CM)

The following diagrams show ceiling mount dimensions for the NP4000CM. Dimensions are in inches. For millimeters multiply by 25.4.

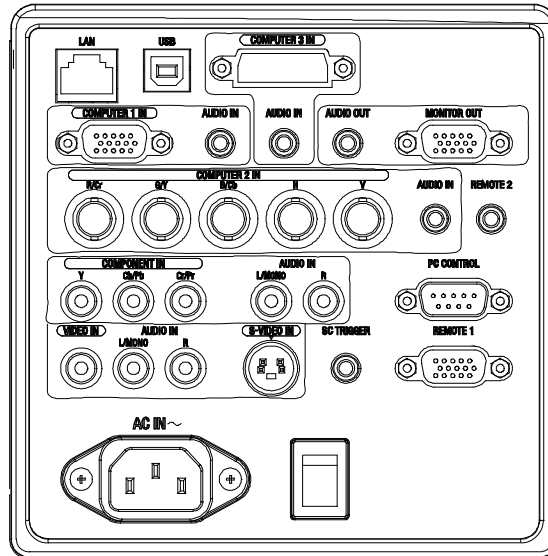


## NP4100 Installation Guide

### Desktop and Ceiling Mount

v 1.0

### Input Panel



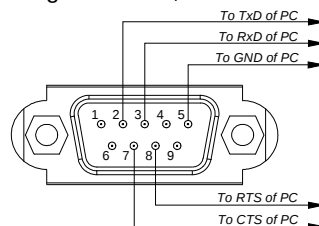
### PC Control Codes

| Function               | Code Data                                   |
|------------------------|---------------------------------------------|
| POWER ON               | 02H 00H 00H 00H 00H 02H                     |
| POWER OFF              | 02H 01H 00H 00H 00H 03H                     |
| INPUT SELECT RGB 1     | 02H 03H 00H 00H 02H 01H 01H 09H             |
| INPUT SELECT RGB 2     | 02H 03H 00H 00H 02H 01H 02H 0AH             |
| INPUT SELECT RGB 3     | 02H 03H 00H 00H 02H 01H 1AH 22H             |
| INPUT SELECT COMPONENT | 02H 03H 00H 00H 02H 01H 10H 18H             |
| INPUT SELECT VIDEO     | 02H 03H 00H 00H 02H 01H 06H 0EH             |
| INPUT SELECT S-VIDEO   | 02H 03H 00H 00H 02H 01H 0BH 13H             |
| 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       | 03H 10H 00H 00H 05H 18H 00H 00H 00H 00H 30H |
| ASPECT RATIO 16:9      | 03H 10H 00H 00H 05H 18H 00H 00H 02H 00H 32H |
| ASPECT RATIO CROP      | 03H 10H 00H 00H 05H 18H 00H 00H 03H 00H 33H |
| ASPECT RATIO NATIVE    | 03H 10H 00H 00H 05H 18H 00H 00H 0H 00H 3H   |
| ASPECT RATIO NORMAL    | 03H 10H 00H 00H 05H 18H 00H 00H 05H 00H 35H |
| 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 9Pin)

**NOTE:** Pins 1, 4, 6, and 9 are used inside the projector.

Jumper "Request to send" and "Clear to Send" together on both ends of the cable to simplify cable connection.