

## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

### Desktop and Ceiling Mount

Rev 1.0

#### Contents

|                                                                  |        |
|------------------------------------------------------------------|--------|
| Product Description, Lens Specs, Screen/Aspect Ratio             |        |
| Notes                                                            | Pg 1   |
| Distance Charts and Formulas, Ceiling Mount/Desktop Installation | Pg 2-3 |
| Lens Shift Adjustable Range                                      | Pg 4   |
| Cabinet Dimensions                                               | Pg 5   |
| Cabinet Dimensions                                               | Pg 6   |
| Ventilation Requirements/Regulatory Stickers                     | Pg 7   |
| Input Panel and Button Panel                                     | Pg 8   |
| Control Codes                                                    | Pg 9   |



#### Product Description

|                                                                                                     |                                                                            |                                                                       |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Type:                                                                                               | 1 chip DMD Reflection Type<br>0.65 in. 2x LVDS DMD                         | Dimensions: 18.5"(W) x 5.4"(H) x 14.4"(D)<br>Weight: 19.2lbs. / 8.7kg |
| Resolution:                                                                                         | P502WL/P502WL-2: 1280 x 800 (16:10)<br>P502HL/P502HL-2: 1920 x 1080 (16:9) | Brightness: 5000 Lumens                                               |
| Fan Noise:                                                                                          | 39 dB / 33dB @ 1 meter                                                     |                                                                       |
| Power Consumption: 464W (max)                                                                       |                                                                            | BTU's: 1583 BTU/hour                                                  |
| Network Ready, integrated wired networking<br>Power: Lens Shift, Horizontal & Vertical /Zoom/ Focus |                                                                            |                                                                       |

#### Lens Specifications

|               |                                                                                                       |                               |
|---------------|-------------------------------------------------------------------------------------------------------|-------------------------------|
| Throw Ratio:  | P502WL/P502WL-2: 1.3 – 2.2:1 (for 100" diagonal)<br>P502HL/P502HL-2: 1.24 – 2.1:1 (for 100" diagonal) | Focal Length: 18.2mm – 31.1mm |
| Offset Angle: | 4.8° - 8.0° (for 100" diagonal)                                                                       | F/#: 2.0                      |
| Screen Sizes: | 30" - 300" diagonal                                                                                   | Manual Focus/Manual Zoom      |

#### 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%.

## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

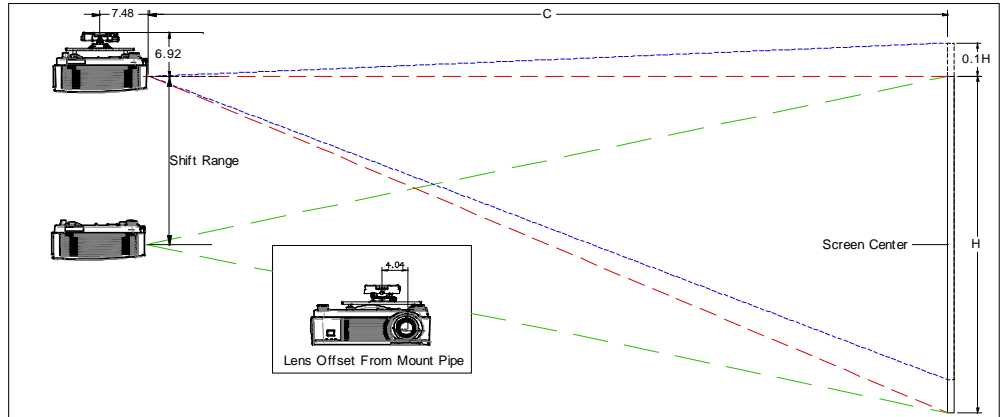
Desktop and Ceiling Mount

Rev 1.0

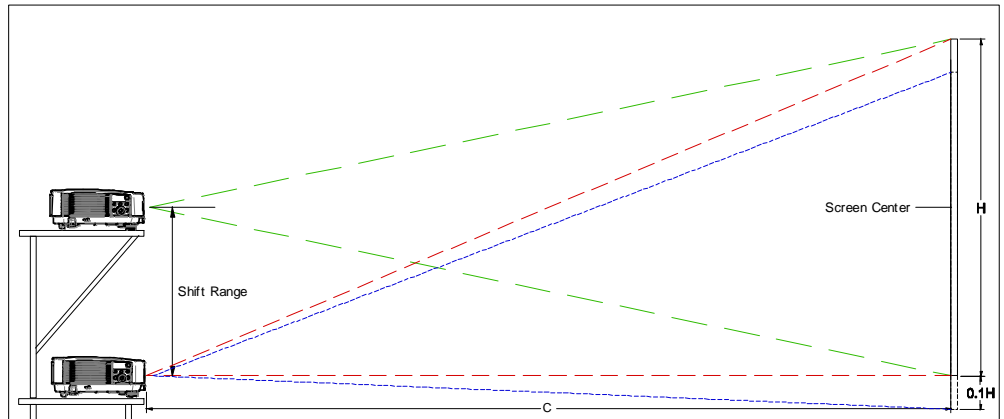
### Diagrams and Distance Charts

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.

#### Ceiling Mounted



#### Desktop



### Distance Chart for popular 16:10 screens

#### 16:10 Screen Formulas:

$$W = H \times 16/10$$

$$H = W \times 10/16$$

$$\text{Screen Diagonal} = W \times 18.868/16$$

#### Projection Formulas:

$$B = 0.369W$$

$$C (\text{wide}) = 1.309W - 1.457$$

$$C (\text{tele}) = 2.248W - 1.404$$

$$D (\text{max}) = -0.056W$$

$$D (\text{min}) = 0.313W$$

$$\alpha (\text{wide}) = \tan^{-1} (B/C(\text{wide}))$$

$$\alpha (\text{tele}) = \tan^{-1} (B/C(\text{tele}))$$

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

| Screen Size (16:10) |          |            | B      | C           |           | D          |             | $\alpha$ |  |
|---------------------|----------|------------|--------|-------------|-----------|------------|-------------|----------|--|
| Diagonal            | Width(W) | Height (H) |        | wide - tele | max - min | max - min  | wide - tele | degrees  |  |
| inches              | inches   | inches     | inches | inches      | inches    | inches     | degrees     | degrees  |  |
| 57                  | 48       | 30         | 18     | 61 - 107    | -3 - 15   | 16.1 - 9.4 |             |          |  |
| 66                  | 56       | 35         | 21     | 72 - 124    | -3 - 18   | 16.0 - 9.4 |             |          |  |
| 68                  | 58       | 36         | 21     | 74 - 128    | -3 - 18   | 16.0 - 9.4 |             |          |  |
| 75                  | 64       | 40         | 24     | 82 - 142    | -4 - 20   | 16.0 - 9.4 |             |          |  |
| 79                  | 67       | 42         | 25     | 87 - 150    | -4 - 21   | 16.0 - 9.4 |             |          |  |
| 85                  | 72       | 45         | 27     | 93 - 160    | -4 - 23   | 16.0 - 9.4 |             |          |  |
| 92                  | 78       | 49         | 29     | 101 - 175   | -4 - 25   | 16.0 - 9.4 |             |          |  |
| 98                  | 83       | 52         | 31     | 107 - 186   | -5 - 26   | 15.9 - 9.4 |             |          |  |
| 102                 | 86       | 54         | 32     | 112 - 193   | -5 - 27   | 15.9 - 9.4 |             |          |  |
| 111                 | 94       | 59         | 35     | 122 - 211   | -5 - 30   | 15.9 - 9.4 |             |          |  |
| 113                 | 96       | 60         | 35     | 124 - 214   | -5 - 30   | 15.9 - 9.4 |             |          |  |
| 123                 | 104      | 65         | 38     | 135 - 232   | -6 - 33   | 15.9 - 9.4 |             |          |  |
| 125                 | 106      | 66         | 39     | 137 - 236   | -6 - 33   | 15.9 - 9.4 |             |          |  |
| 147                 | 125      | 78         | 46     | 162 - 279   | -7 - 39   | 15.9 - 9.4 |             |          |  |
| 149                 | 126      | 79         | 47     | 164 - 283   | -7 - 40   | 15.9 - 9.4 |             |          |  |
| 213                 | 181      | 113        | 67     | 235 - 405   | -10 - 57  | 15.8 - 9.4 |             |          |  |
| 255                 | 216      | 135        | 80     | 281 - 484   | -12 - 68  | 15.8 - 9.3 |             |          |  |
| 270                 | 229      | 143        | 84     | 298 - 513   | -13 - 72  | 16 - 9     |             |          |  |
| 300                 | 254      | 159        | 94     | 332 - 570   | -14 - 80  | 16 - 9     |             |          |  |

## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

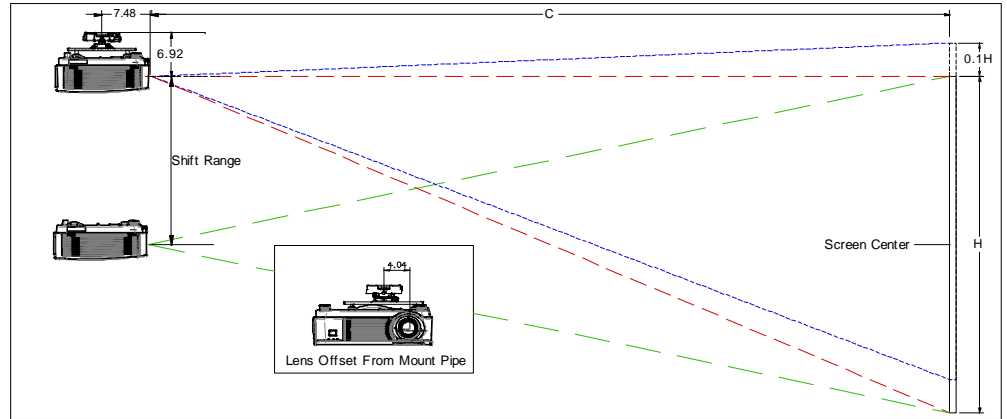
Desktop and Ceiling Mount

Rev 1.0

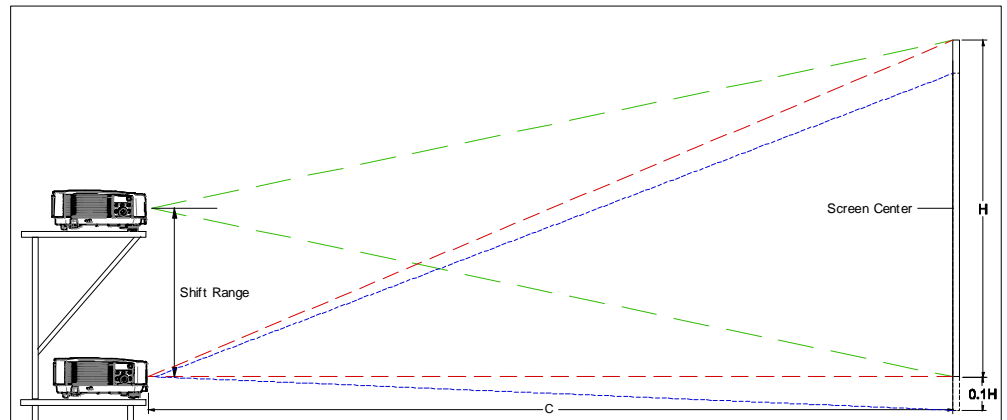
### Diagrams and Distance Charts

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.

#### Ceiling Mounted



#### Desktop



### Distance Chart for popular 16:9 screens

#### 16:9 Screen Formulas:

$$W = H \times 16/9$$

$$H = W \times 9/16$$

$$\text{Screen Diagonal} = W \times 18.358/16$$

#### Projection Formulas:

$$B = 0.369W$$

$$C \text{ (wide)} = 1.247W - 1.426$$

$$C \text{ (tele)} = 2.142W - 1.374$$

$$D \text{ (max)} = -0.068W$$

$$D \text{ (min)} = 0.281W$$

$$\alpha \text{ (wide)} = \tan^{-1} (B/C(\text{wide}))$$

$$\alpha \text{ (tele)} = \tan^{-1} (B/C(\text{tele}))$$

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

| Screen Size (16:9) |                    |                      | B<br>inches | C<br>wide - tele<br>inches | D<br>max - min<br>inches | $\alpha$<br>wide - tele<br>degrees |
|--------------------|--------------------|----------------------|-------------|----------------------------|--------------------------|------------------------------------|
| Diagonal<br>inches | Width(W)<br>inches | Height (H)<br>inches |             |                            |                          |                                    |
| 61                 | 53                 | 30                   | 20          | 63 - 110                   | 4 - 15                   | 17.5 - 10.2                        |
| 71                 | 62                 | 35                   | 23          | 74 - 129                   | 4 - 17                   | 17.4 - 10.1                        |
| 73                 | 64                 | 36                   | 24          | 76 - 133                   | 4 - 18                   | 17.4 - 10.1                        |
| 82                 | 71                 | 40                   | 26          | 85 - 148                   | 5 - 20                   | 17.3 - 10.1                        |
| 86                 | 75                 | 42                   | 28          | 89 - 156                   | 5 - 21                   | 17.3 - 10.1                        |
| 92                 | 80                 | 45                   | 30          | 96 - 167                   | 5 - 22                   | 17.2 - 10.1                        |
| 100                | 87                 | 49                   | 32          | 104 - 182                  | 6 - 24                   | 17.2 - 10.1                        |
| 106                | 92                 | 52                   | 34          | 111 - 194                  | 6 - 26                   | 17.2 - 10.0                        |
| 110                | 96                 | 54                   | 36          | 115 - 201                  | 7 - 27                   | 17.2 - 10.0                        |
| 120                | 105                | 59                   | 39          | 126 - 220                  | 7 - 29                   | 17.1 - 10.0                        |
| 122                | 107                | 60                   | 40          | 128 - 224                  | 7 - 30                   | 17.1 - 10.0                        |
| 133                | 116                | 65                   | 43          | 139 - 243                  | 8 - 32                   | 17.1 - 10.0                        |
| 135                | 117                | 66                   | 44          | 142 - 247                  | 8 - 33                   | 17.1 - 10.0                        |
| 159                | 139                | 78                   | 51          | 168 - 292                  | 9 - 39                   | 17.0 - 10.0                        |
| 161                | 140                | 79                   | 52          | 170 - 296                  | 10 - 39                  | 17.0 - 10.0                        |
| 230                | 201                | 113                  | 75          | 244 - 425                  | 14 - 56                  | 17.0 - 9.9                         |
| 275                | 240                | 135                  | 89          | 293 - 508                  | 16 - 67                  | 16.9 - 9.9                         |

## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

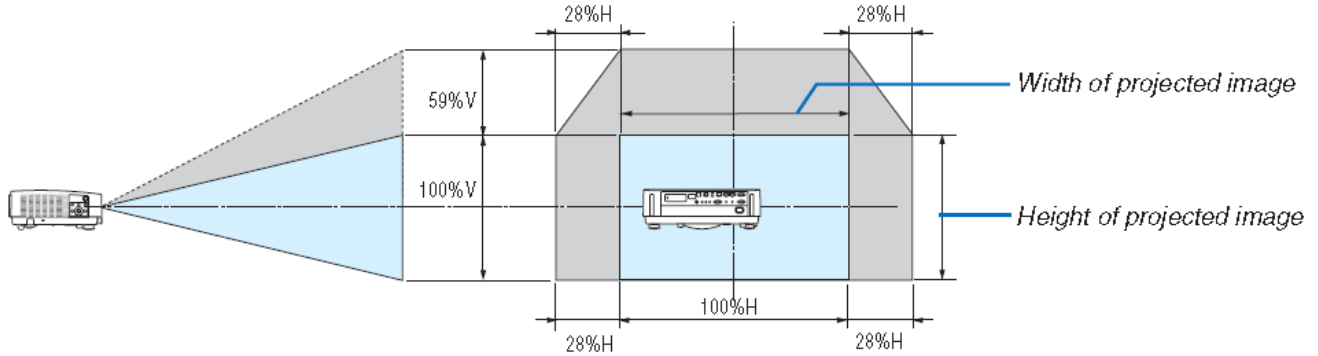
### Desktop and Ceiling Mount

Rev 1.0

#### Lens Shift Adjustable Range

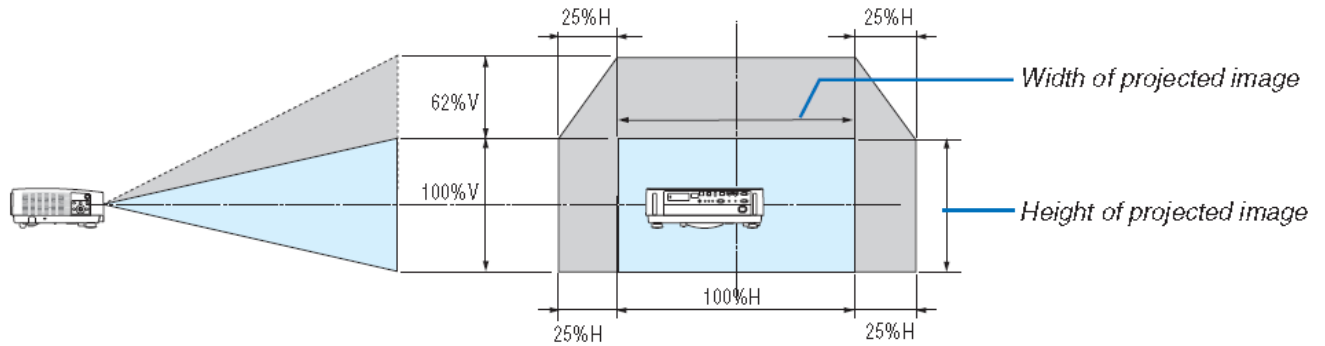
##### Lens Shift Range for Desktop and Ceiling Mount Application

The diagram below shows the location of the image position in the lens for the P502WL. The P502WL has a maximum horizontal lens shift range of +/- 28% and a maximum vertical lens shift of + 59%. The lens can be shifted within the shaded area as shown using the normal projection position as a starting point.



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

The diagram below shows the location of the image position in the lens for the P502HL. The P502HL has a maximum horizontal lens shift range of +/- 25% and a maximum vertical lens shift of + 62%. 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.  
(H: width of projected image, V: height of projected image)

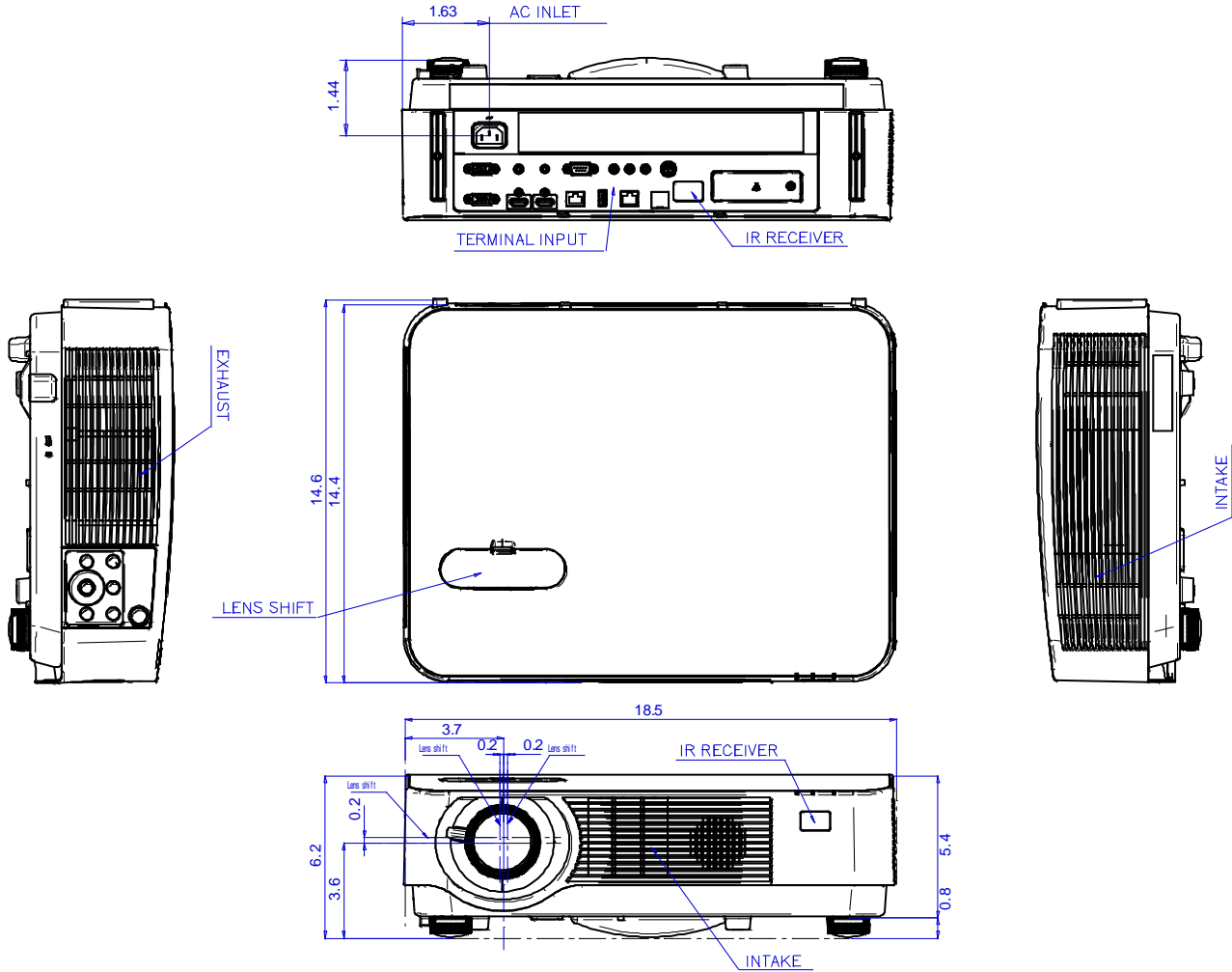
## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

Desktop and Ceiling Mount

Rev 1.0

### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the P502WL\_P502HL. Dimensions are in inches. For millimeters multiply by 25.4.

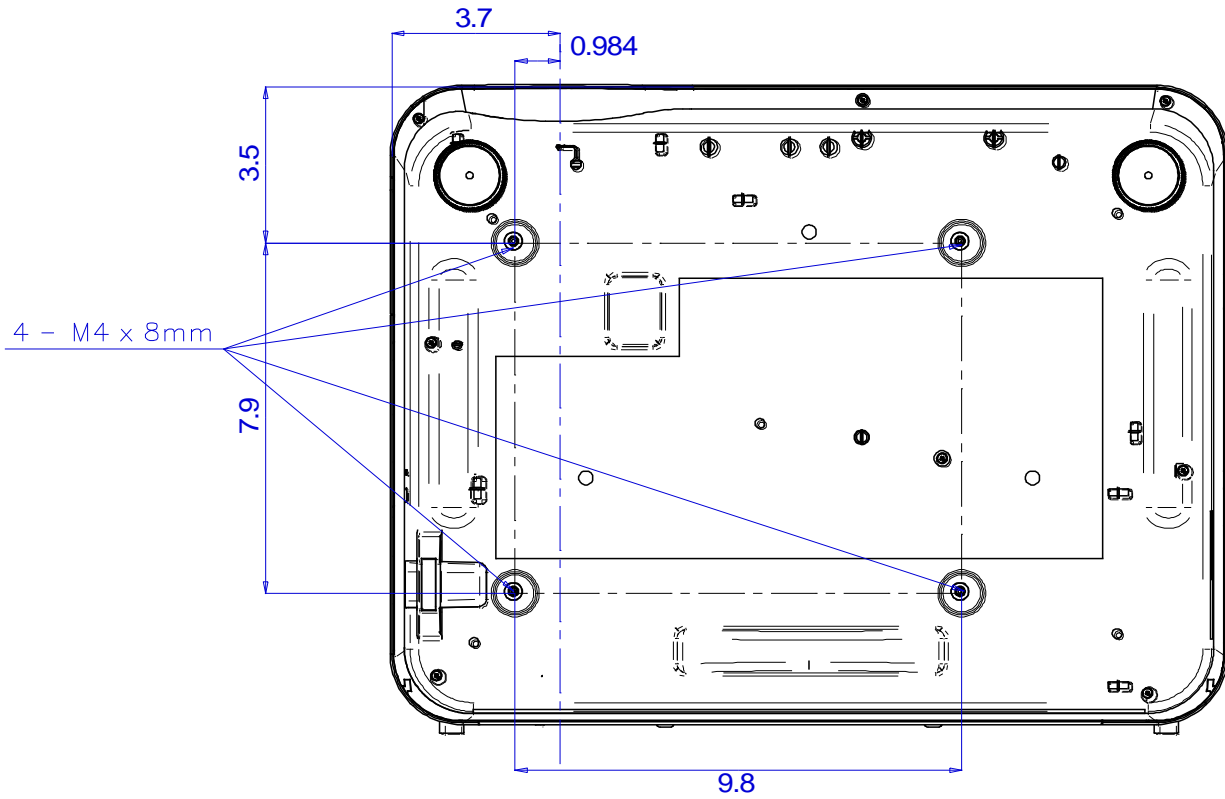


## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

Desktop and Ceiling Mount

Rev 1.0

### Cabinet Dimensions



## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

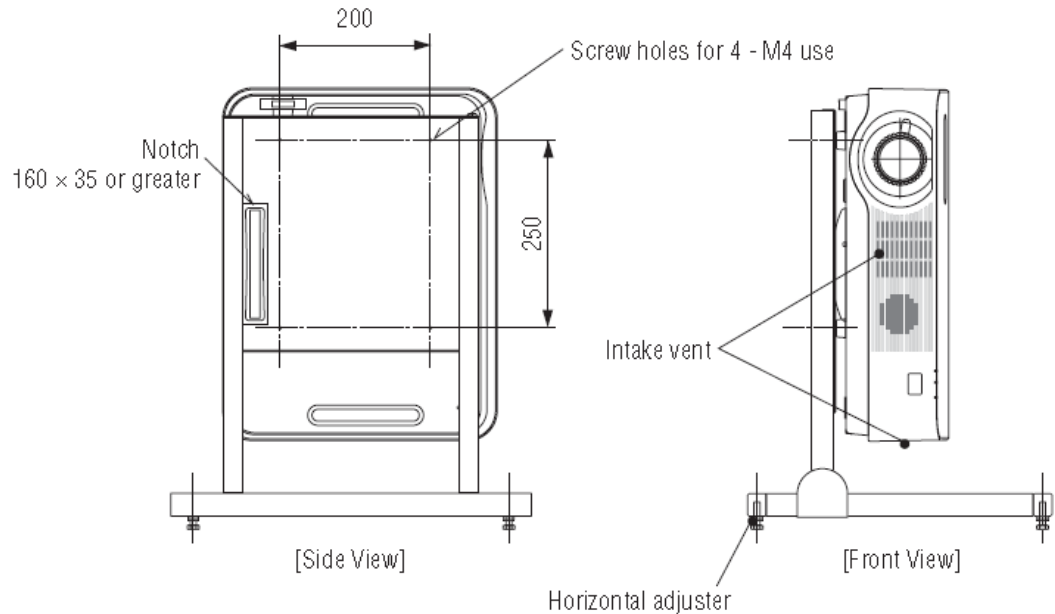
Desktop and Ceiling Mount

Rev 1.0

### Ventilation Requirements

- If installed on a portrait stand :

(Unit: mm)



### Regulatory Stickers

Label 1:

|  |                                                                                                                                                                                             |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                 |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>LASER RADIATION</b><br/>DO NOT STARE INTO BEAM<br/>CLASS 2 LASER PRODUCT<br/>WAVE LENGTH: 450-460 nm<br/>MAX OUTPUT: 14.12 mW<br/>PULSE DURATION: 0.85 ms<br/>IEC/EN 60825-1:2007</p> | <p><b>RAYONNEMENT LASER</b><br/>NE PAS FIXER LE FAISCEAU DU REGARD<br/>PRODUIT LASER DE CLASSE 2<br/>LONGUEUR D'ONDE : 450-460 nm<br/>SORTIE MAXIMALE : 14.12 mW<br/>DURÉE DE L'IMPULSION : 0.85 ms<br/>IEC/EN 60825-1:2007</p> | <p><b>LASERSTRAHLUNG</b><br/>NICHT IN DEN STRAHL SCHAUEN<br/>LASERPRODUKT DER KLASSE 2<br/>WELLENLÄNGE: 450-460 nm<br/>MAXIMALE AUSGANGSLEISTUNG: 14.12 mW<br/>IMPULSDAUER: 0.85 ms<br/>IEC/EN 60825-1:2007</p> |
|  | <p>CLASS 1 LASER PRODUCT<br/>IEC/EN 60825-1: 2014</p>                                                                                                                                       | <p>PRODUIT LASER DE CLASSE 1<br/>IEC/EN 60825-1:2014</p>                                                                                                                                                                        | <p>LASERPRODUKT DER KLASSE 1<br/>IEC/EN 60825-1:2014</p>                                                                                                                                                        |

COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE No. 50, DATED JUNE 24, 2007

Label 2:

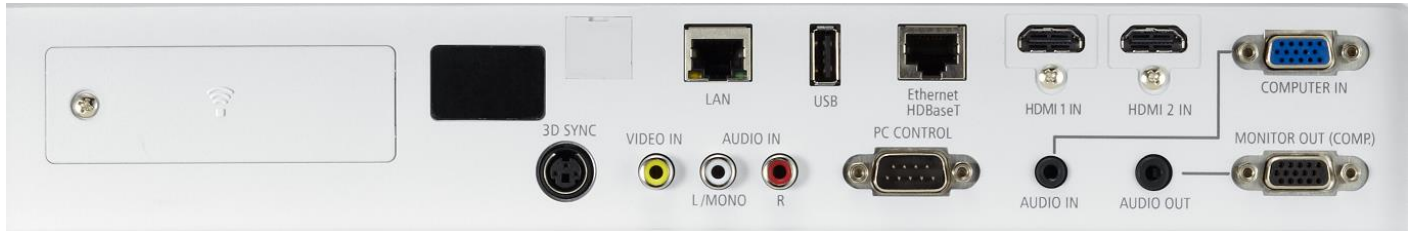
|  |                                                                                                                                                                                                   |                                                                                                                                                                                                                              |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>CAUTION</b><br/>POSSIBLY HAZARDOUS OPTICAL RADIATION<br/>EMITTED FROM THIS PRODUCT.<br/>DO NOT STARE AT OPERATING LAMP.<br/>MAY BE HARMFUL TO THE EYES.<br/>RISK GROUP 2 IEC 62471:2006</p> | <p><b>VORSICHT</b><br/>Dieses Produkt strahlt eventuell gefährliche<br/>optische Strahlung aus.<br/>Schauen Sie nicht in die eingeschaltete Lampe.<br/>Dies kann Ihre Augen gefährden.<br/>RISIKOGRUPPE 2 IEC 62471:2006</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

Desktop and Ceiling Mount

Rev 1.0

### Input Panel



### Control Panel





## P502WL/P502HL/P502WL-2/P502HL-2 Installation Guide

Desktop and Ceiling Mount

Rev 1.0

### PC Control Codes

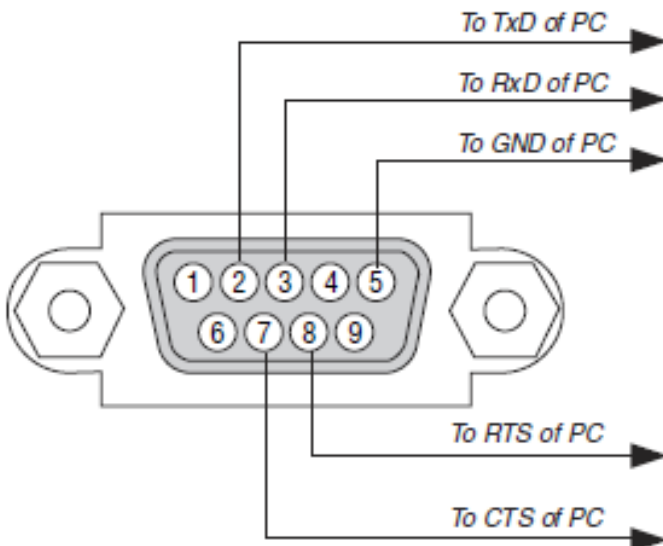
| Function              | Code Data                       |
|-----------------------|---------------------------------|
| POWER ON              | 02H 00H 00H 00H 00H 02H         |
| POWER OFF             | 02H 01H 00H 00H 00H 03H         |
| INPUT SELECT COMPUTER | 02H 03H 00H 00H 02H 01H 01H 09H |
| INPUT SELECT HDMI 1   | 02H 03H 00H 00H 02H 01H 1AH 22H |
| INPUT SELECT HDMI 2   | 02H 03H 00H 00H 02H 01H 1BH 23H |
| INPUT SELECT VIDEO    | 02H 03H 00H 00H 02H 01H 06H 0EH |
| INPUT SELECT APPS     | 02H 03H 00H 00H 02H 01H 20H 28H |
| INPUT SELECT HDBaseT  | 02H 03H 00H 00H 02H 01H 22H 2AH |
| 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         |

### 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.