# SHARP / NEC

**Sharp NEC Display Solutions of America, Inc.**

# PE456USL Installation Guide
## Desktop and Ceiling Mount

Rev 1.0

## Contents

## Product Description

| | | | |
|---|---|---|---|
| **Type:** | 3 panel LCD Projector 0.64" p-Si TFT w/MLA | **Dimensions:** | 15.9" (W) x 6.5" (H) x 15.9" (D) |
| **Resolution:** | 1920 x 1200 | **Weight:** | 17.9 lbs |
| **Fan Noise:** | 37dB / 27dB @ 1 meter | **Brightness:** | 4500 Lumens |
| **Power Consumption:** | 352W (max) | **BTU's:** | 1201 BTU/hour |

## Lens Specifications

| | | | |
|---|---|---|---|
| **Throw Ratio:** | 0.44:1 (for 80" diagonal) | **Focal Length:** | 6.39mm |
| **Offset Angle:** | 34.5° (for 80" diagonal) | **F/#:** | 1.6 |
| **Screen Sizes:** | 55" - 130" diagonal (16:10) | **Manual Focus** | |

## 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.

- 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 for PE456USL

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 projection placement, determine the image width for the desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the width for "W" in the Projection Formulas.
Refer to the diagrams and charts for popular screen sizes on page 2:

**Projection Formulas:**

$C = 0.464W – 1.284$

$B = 0.3063W$

$D = -0.0063W$

**Definitions:**

W = Image Width
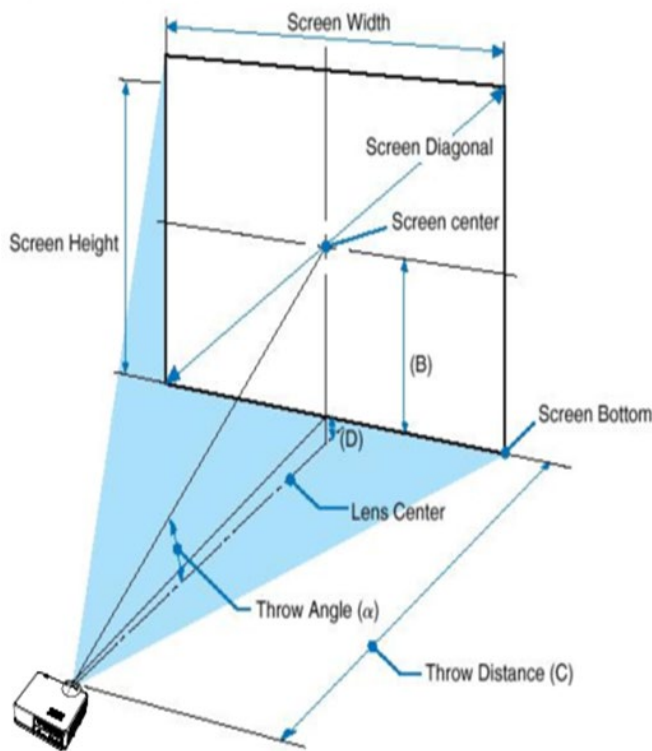
H = Image Height (size)

C = Throw distance

**16:10 Screen Formulas**

W = H x 16/10

H = W x 10/16

Diagonal = W x 18.868/16

## Diagrams and Distance Charts for PE456USL

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

**Distance Chart**



| Screen Size (16:10) | | | C | | B | | D | |
|---|---|---|---|---|---|---|---|---|
| Diagonal | Width(W) | Height (H) | | | | | | |
| inches | inches | inches | inches / mm | | inches / mm | | inches / mm | |
| 55 | 47 | 29 | 20 | 518 | 14 | 363 | -0.3 | -7.5 |
| 65 | 55 | 34 | 24 | 618 | 17 | 429 | -0.3 | -8.8 |
| 75 | 64 | 40 | 28 | 718 | 19 | 495 | -0.4 | -10.2 |
| 85 | 72 | 45 | 32 | 818 | 22 | 561 | -0.5 | -11.5 |
| 90 | 76 | 48 | 34 | 868 | 23 | 594 | -0.5 | -12.2 |
| 95 | 81 | 50 | 36 | 918 | 25 | 627 | -0.5 | -12.9 |
| 100 | 85 | 53 | 38 | 968 | 26 | 660 | -0.5 | -13.6 |
| 105 | 89 | 56 | 40 | 1018 | 27 | 693 | -0.6 | -14.2 |
| 110 | 93 | 58 | 42 | 1068 | 29 | 726 | -0.6 | -14.9 |
| 115 | 98 | 61 | 44 | 1118 | 30 | 759 | -0.6 | -15.6 |
| 120 | 102 | 64 | 46 | 1168 | 31 | 792 | -0.6 | -16.3 |
| 125 | 106 | 66 | 48 | 1218 | 32 | 825 | -0.7 | -17.0 |
| 130 | 110 | 69 | 50 | 1268 | 34 | 858 | -0.7 | -17.6 |

B = Vertical distance between lens center and screen center

C = Throw distance

D = Vertical distance between lens center and bottom of screen (top of screen for ceiling application)
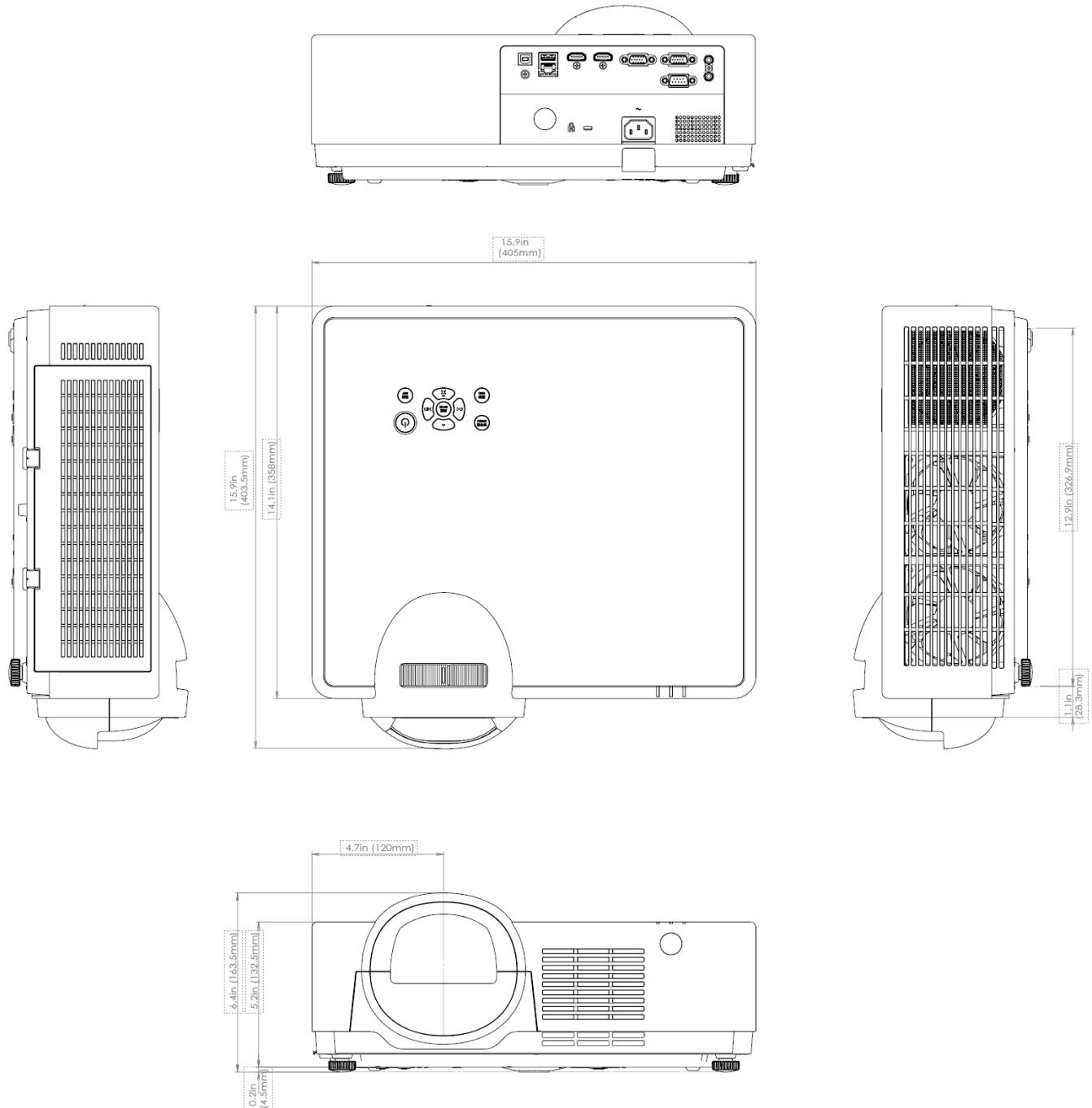
α = Throw angle

NOTE: Distances may vary +/-5%.

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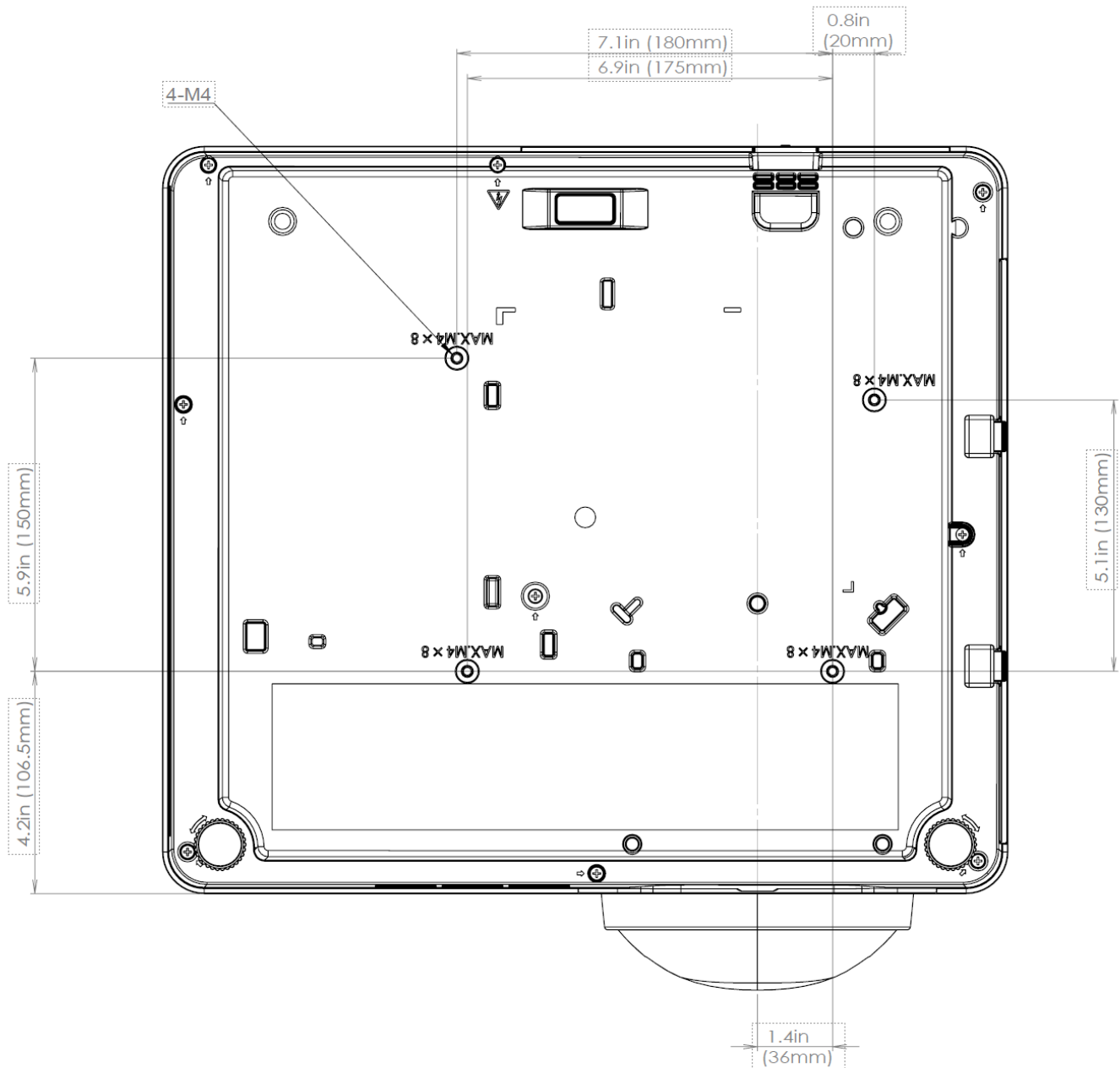
## Cabinet Dimensions (PE456USL)

The following drawings show the cabinet dimensions.
Dimensions are in inches unless noted. For millimeters multiply by 25.4.

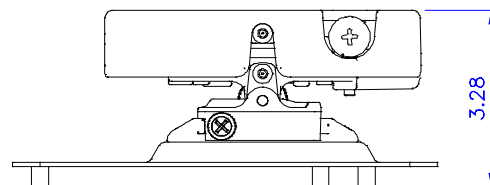# PE456USL Installation Guide

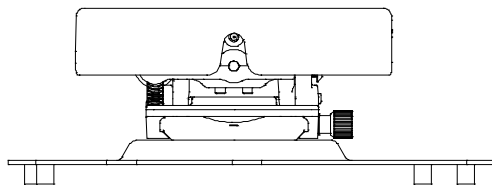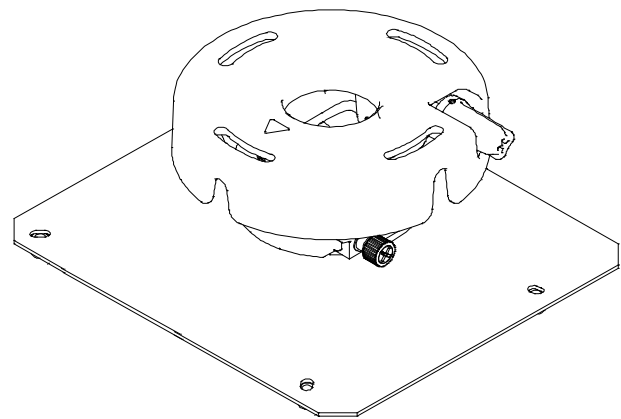Rev 1.0

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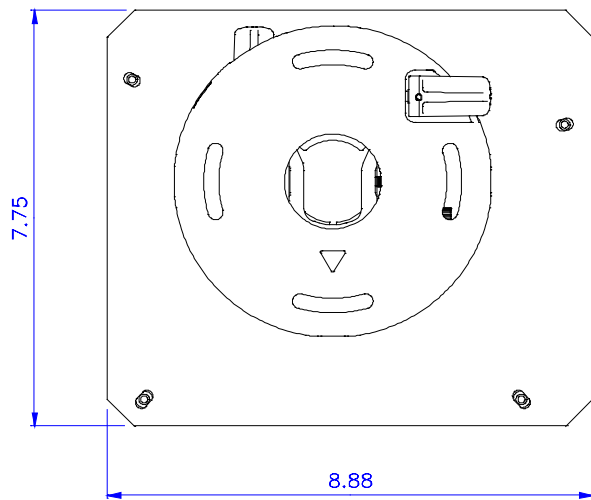
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## Optional Ceiling Mount Dimensions (Model #: MP300CM)

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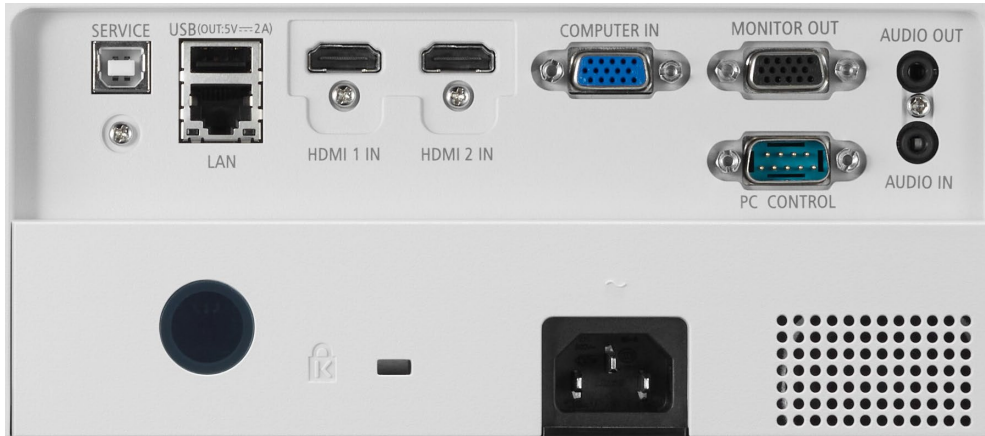Dimensions are in inches. For millimeters multiply by 25.4.

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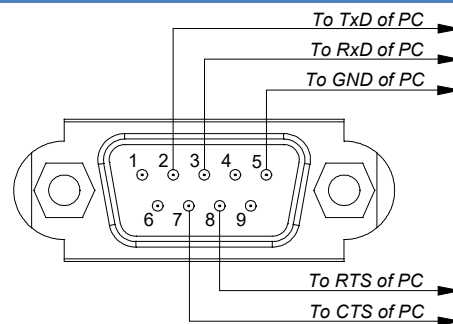
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## Input / Output Panel



## PC Control Codes

| Function | Code Data | | | | | | |
|---|---|---|---|---|---|---|---|
| POWER ON | 02H | 00H | 00H | 00H | 00H | 02H | |
| POWER OFF | 02H | 01H | 00H | 00H | 00H | 03H | |
| INPUT SELECT 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 USB-A | 02H | 03H | 00H | 00H | 02H | 01H | 1FH | 27H |
| INPUT SELECT LAN | 02H | 03H | 00H | 00H | 02H | 01H | 20H | 28H |
| 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 | |

*Note: Contact your Sharp NEC rep for codes not listed.*

## Cable Connection

**Communication Protocol:**

| | |
|---|---|
| Baud Rate: | 4800/9600/19200/38400 bps |
| Data Length: | 8 bits |
| Parity: | No Parity |
| Stop Bit: | One Bit |
| X on/off: | None |
| Communications: | Full duplex |



To TxD of PC
To RxD of PC
To GND of PC
To RTS of PC
To CTS of PC

**PC Control Terminal (D-Sub 9P)**

*NOTE 1 :* *Pins 1, 4, 6, and 9 are not 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.*