NP310/NP410/NP510 Installation Guide
Ceiling Mounted and Desktop
Rev 1.4

Contents

Product Description

Type:	3 panel LCD projector,	Dimensions:	12.1" (W) x 4.3" (H) x 10.4" (D)
	NP510: 0.63" p-Si TFT w/MLA	Weight:	6.6 lbs
	NP310/410: 0.63" p-Si TFT		
Resolution:	1024 x 768	Brightness:	NP310 - 2200 Lumens
			NP410 - 2600 Lumens
Fan Noise:	35 dB / 29dB @ 1 meter		NP510 - 3000 Lumens
Power Consumption: NP310/410/510 251W (max)		BTU's:	857 BTU/hour

Lens Specifications

Throw Ratio:	1.5 – 1.8:1 (for 100" diagonal)	Focal Length:	19.8mm – 23.7mm
Offset Angle:	8.0° - 9.6° (for 100" diagonal)	F/#:	1.7 - 2.0
Screen Sizes:	21" - 300" diagonal (4:3)	Manual Focus/Manual Zoom	

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 a 4:3 aspect ratio.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary ±5%.

Formulas

The Projection Formulas use the image width for calculation. 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:

Definitions:

W = Image Width
H = Image Height (size)
B = Vertical distance between lens center and screen center
C = Throw distance
D = Vertical distance between lens center and screen top
   (screen bottom for desktop application)

4:3 Screen Formulas:

W = H x 4/3
H = W x 3/4
Screen Diagonal = W x 5/4

Projection Formulas:

B = 0.375W
C (wide) = 1.539W – 1.176
C (tele) = 1.852W – 1.173
D = 0.0625W
α (wide) = $\tan^{-1}$ (B/C(wide))
α (tele) = $\tan^{-1}$ (B/C(tele))

NP310/NP410/NP510 Installation Guide
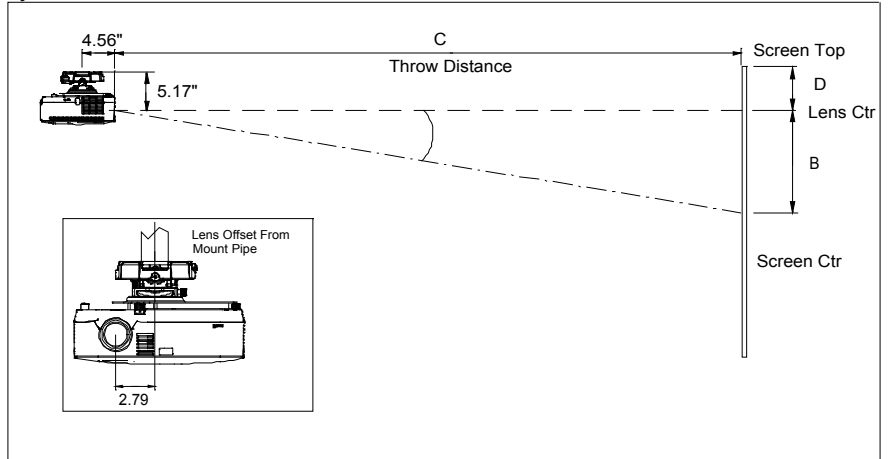## Ceiling Mounted and Desktop   Rev 1.4
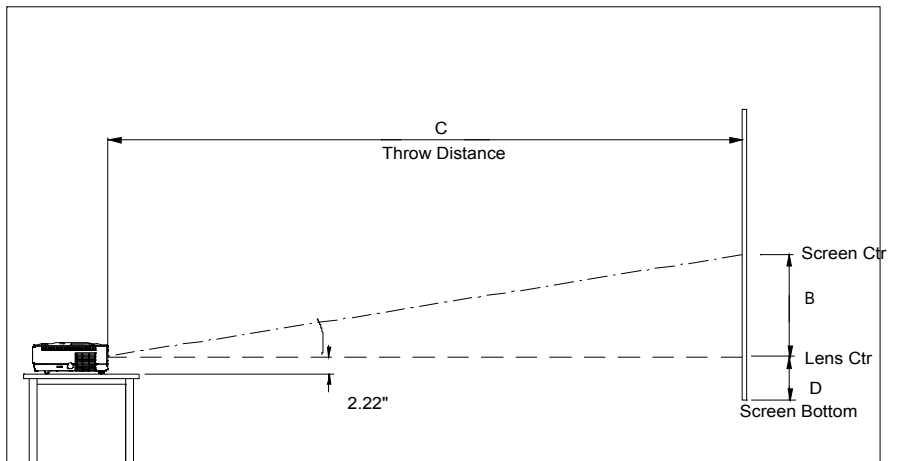
Diagrams and Distance Charts
The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation.
Distances are in inches. For millimeters multiply by 25.4.

Ceiling Mounted

Desktop

Distance Chart for popular 4:3 screens

Screen Size (4:3)			B	C			D	α		
				wide - tele				wide - tele		
Diagonal	Width(W)	Height (H)								
inches	inches	inches	inches	inches			inches	degrees		
30	24	18	9	36	-	43	2	9.9	-	8.2
60	48	36	18	73	-	88	3	9.7	-	8.0
67	53.6	40.2	20	81	-	98	3	9.7	-	8.0
72	57.6	43.2	22	87	-	105	4	9.6	-	8.0
84	67.2	50.4	25	102	-	123	4	9.6	-	8.0
90	72	54	27	110	-	132	5	9.6	-	8.0
100	80	60	30	122	-	147	5	9.6	-	8.0
120	96	72	36	147	-	176	6	9.6	-	8.0
150	120	90	45	184	-	221	8	9.5	-	8.0
180	144	108	54	220	-	265	9	9.5	-	8.0
210	168	126	63	257	-	310	11	9.5	-	7.9
240	192	144	72	294	-	354	12	9.5	-	7.9
270	216	162	81	331	-	398	14	9.5	-	7.9
300	240	180	90	368	-	443	15	9.5	-	7.9

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

Cabinet Dimensions
The following drawings show the cabinet dimensions.
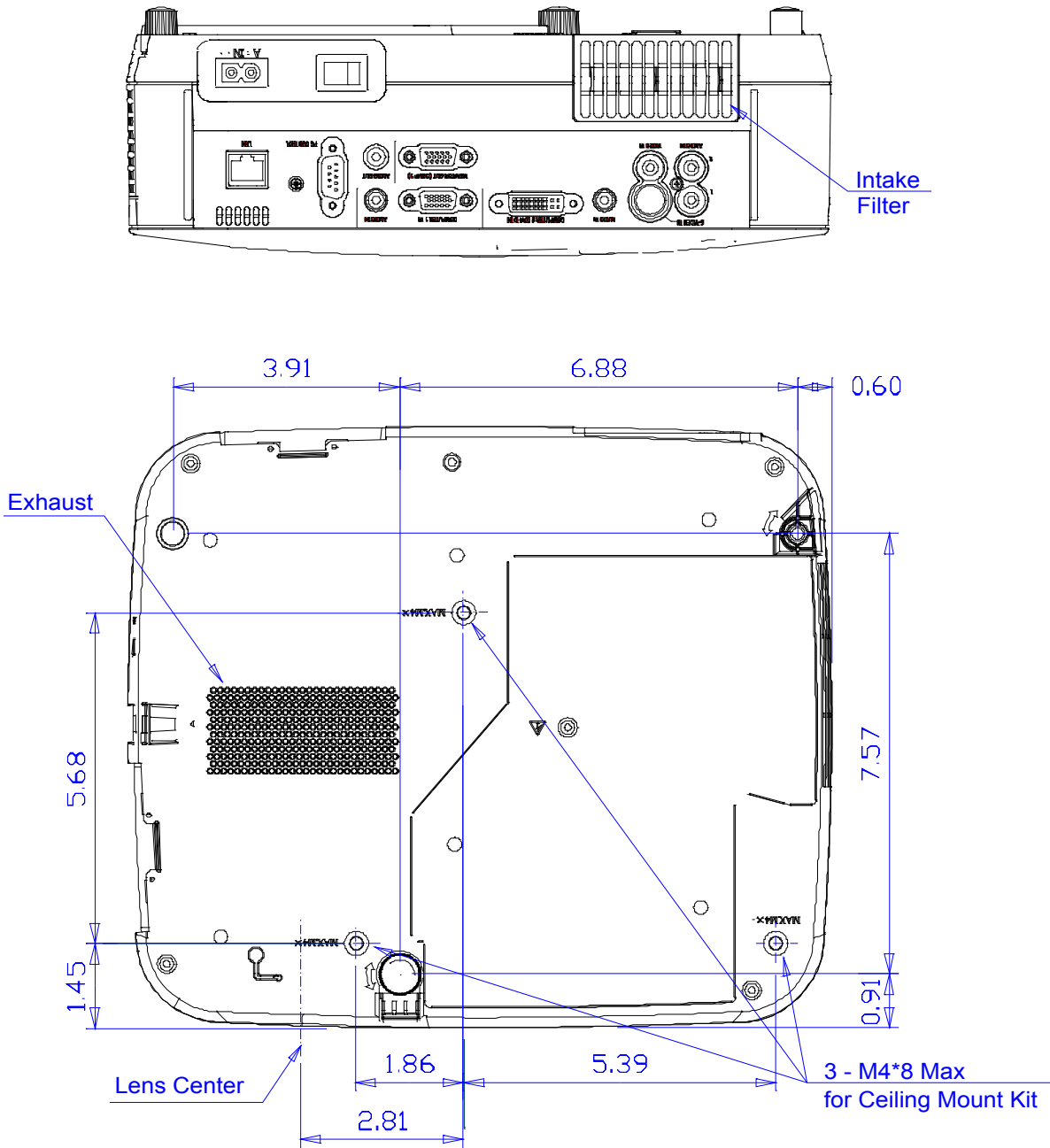Dimensions are in inches. For millimeters multiply by 25.4.
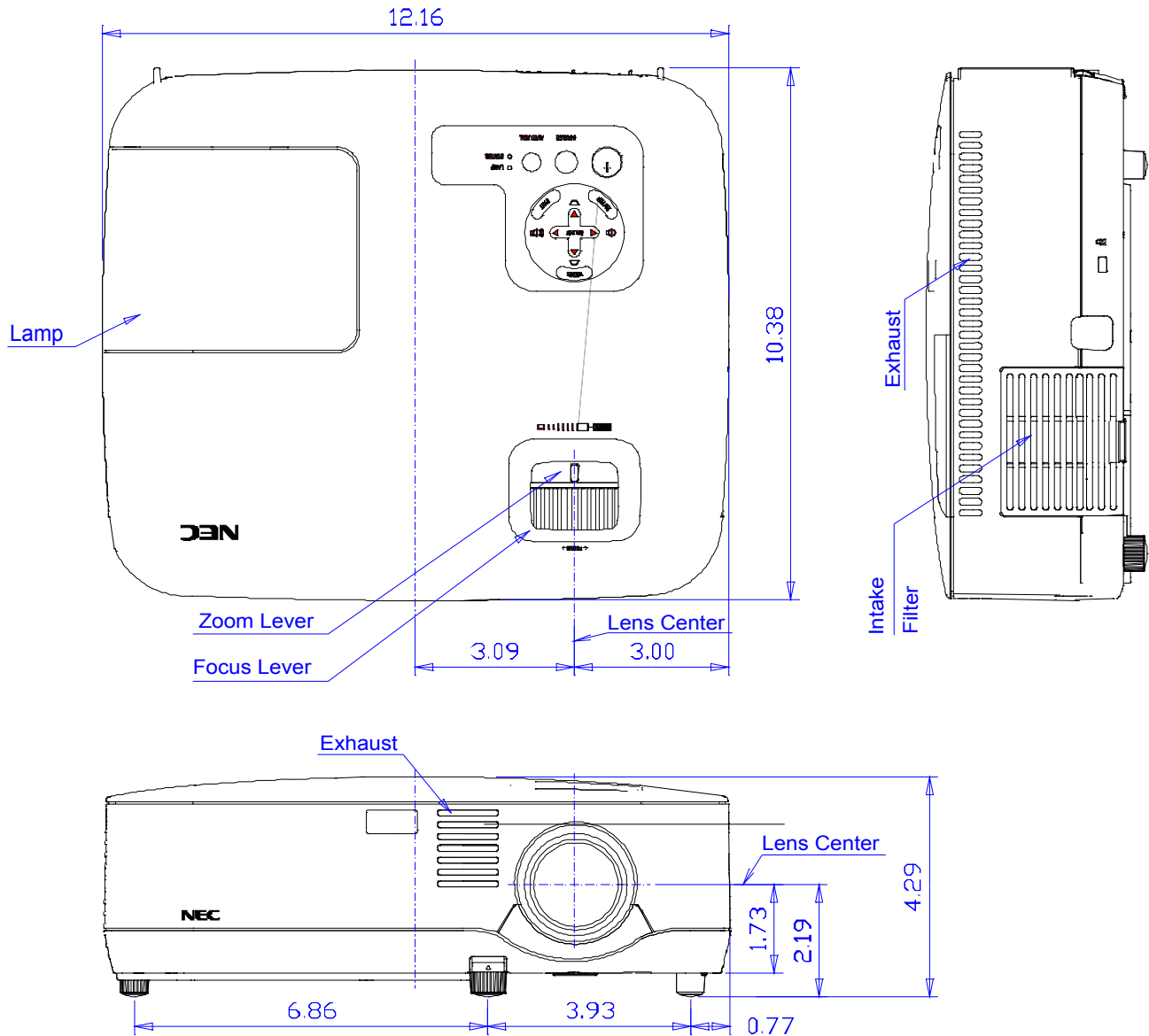
Cabinet Dimensions (continued)
The following drawings show the cabinet dimensions.
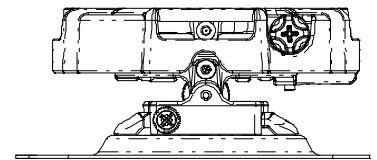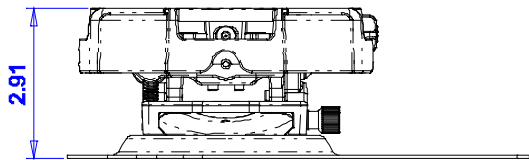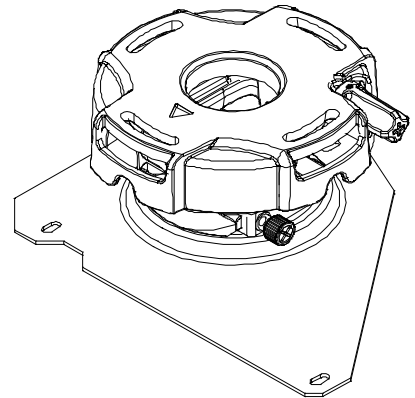Dimensions are in inches. For millimeters multiply by 25.4.
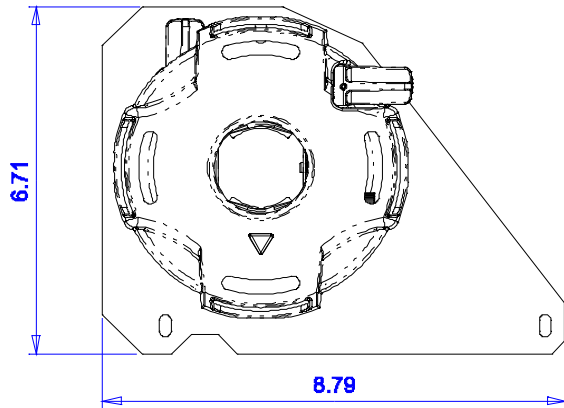
Optional Ceiling Mount Dimensions (Model #: NP600CM)

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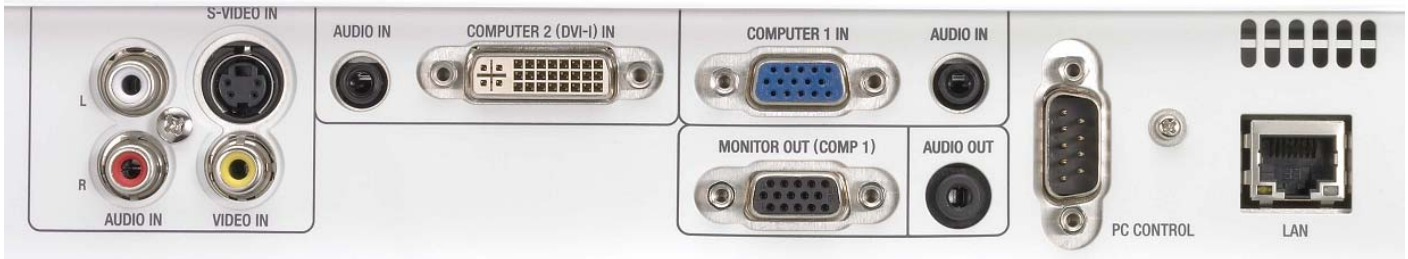Dimensions are in inches. For millimeters multiply by 25.4.

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 VIDEO	02H	03H	00H	00H	02H	01H	06H	0EH
INPUT SELECT S-VIDEO	02H	03H	00H	00H	02H	01H	0BH	13H
INPUT SELECT DVI (DIGITAL)	02H	03H	00H	00H	02H	01H	1AH	22H
INPUT SELECT DVI (ANALOG)	02H	03H	00H	00H	02H	01H	02H	0AH
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	
PROJECTOR INFORMATION REQUEST	00H	BFH	00H	00H	01H	02H	C2H	
ERROR STATUS REQUEST	00H	88H	00H	00H	00H	88H	
INFORMATION REQUEST	03H	8AH	00H	00H	00H	8DH	

Note: Contact your NEC rep for codes not listed.

Cable Connection

Communication Protocol:

Baud Rate:	19200 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
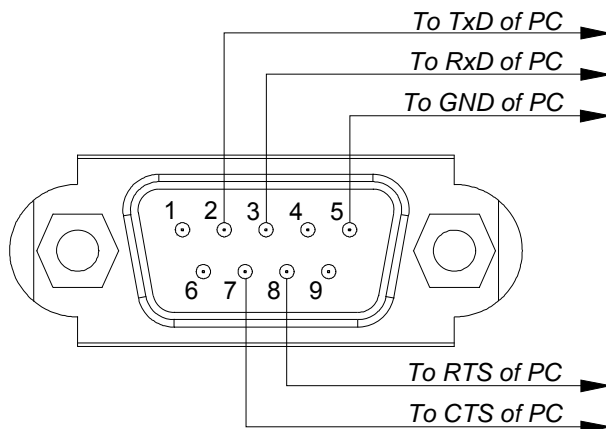
PC Control Connector (D-Sub 9P

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.