

## VT491/590/595 Installation Guide

### Ceiling Mounted and Desktop

Rev 1.3

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#### Product Description

Type:	3 panel LCD projector, 0.6" p-Si TFT w/MLA	Brightness:	VT491: 2000 ANSI Lumens VT590/VT595: 2000 ANSI Lumens
Resolution:	VT491: 800 x 600 VT590/VT595: 1024x768	Fan Noise:	34 dB / 29dB @ 1 meter
Dimensions:	12.1" (W) x 4.4" (H) x 10.2" (D)	Weight:	6.17 lbs
Power Consumption:	255W (max)	BTU's:	870 BTU/hour

#### Lens Specifications

Throw Ratio:	1.5 – 1.8:1 (for 100" diagonal)	Focal Length:	18.9mm – 22.7mm
Offset Angle:	8.3° - 10.0° (for 100" diagonal)	F/#:	1.7 - 2.07
Screen Sizes:	25" - 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 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 = 0.266W  
 C (wide) = 1.525W – 1.176  
 C (tele) = 1.828W – 1.173  
 D = 0.108W  
 $\alpha$  (wide) =  $\tan^{-1}$  (B/C(wide))  
 $\alpha$  (tele) =  $\tan^{-1}$  (B/C(tele))

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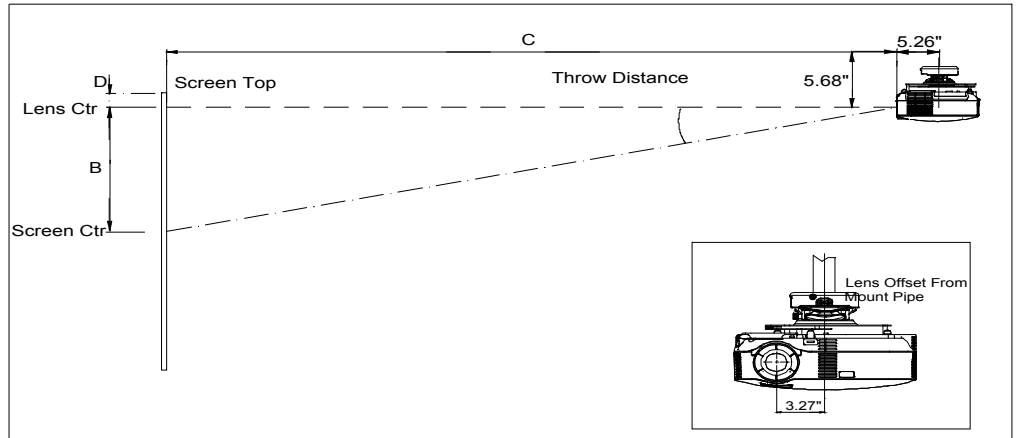
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#### Diagrams and Distance Charts

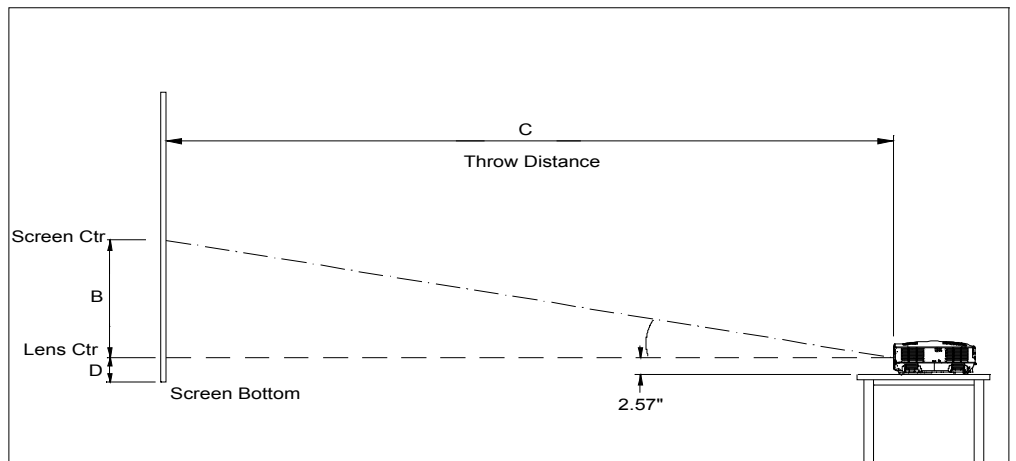
The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation.

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 wide - tele	D	α wide - tele
Diag	W	H				
inches	inches	inches	inches	inches	inches	degrees
30	24	18	6	35 - 43	-3	10.2 - 8.5
60	48	36	13	72 - 87	-5	10.1 - 8.4
72	57.6	43.2	15	87 - 104	-6	10.0 - 8.4
84	67.2	50.4	18	101 - 122	-7	10.0 - 8.4
90	72	54	19	109 - 130	-8	10.0 - 8.4
100	80	60	21	121 - 145	-9	10.0 - 8.3
120	96	72	26	145 - 174	-10	10.0 - 8.3
150	120	90	32	182 - 218	-13	10.0 - 8.3
180	144	108	38	218 - 262	-16	10.0 - 8.3
200	160	120	43	243 - 291	-17	10.0 - 8.3
250	200	150	53	304 - 364	-22	9.9 - 8.3
300	240	180	64	365 - 438	-26	9.9 - 8.3

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

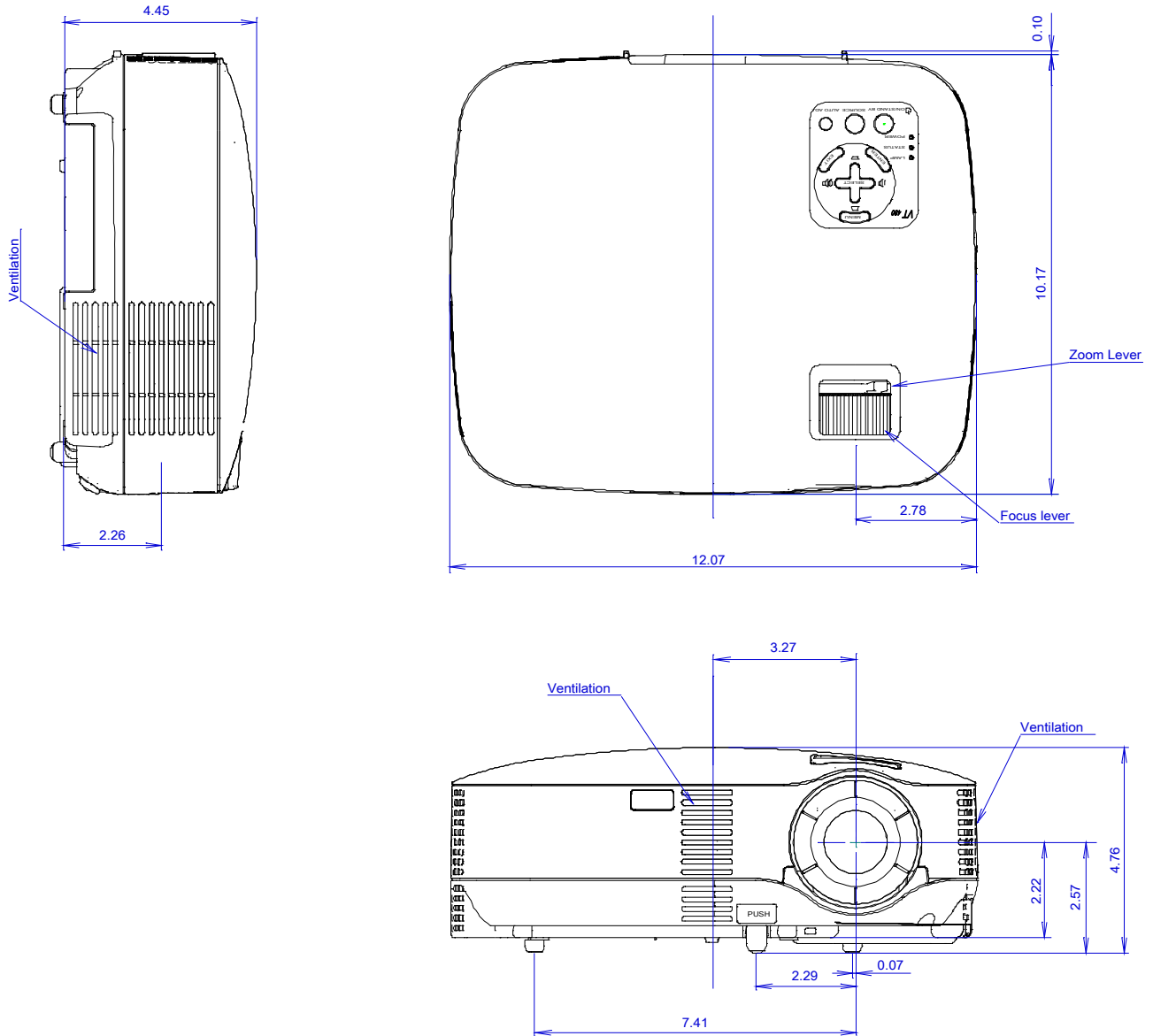
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#### Cabinet Dimensions

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



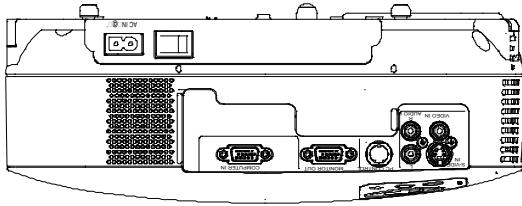
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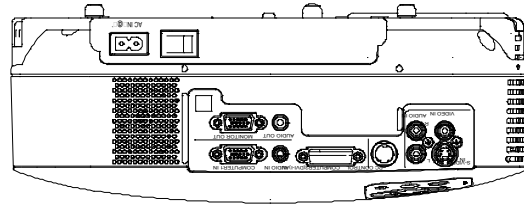
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#### Cabinet Dimensions (continued)

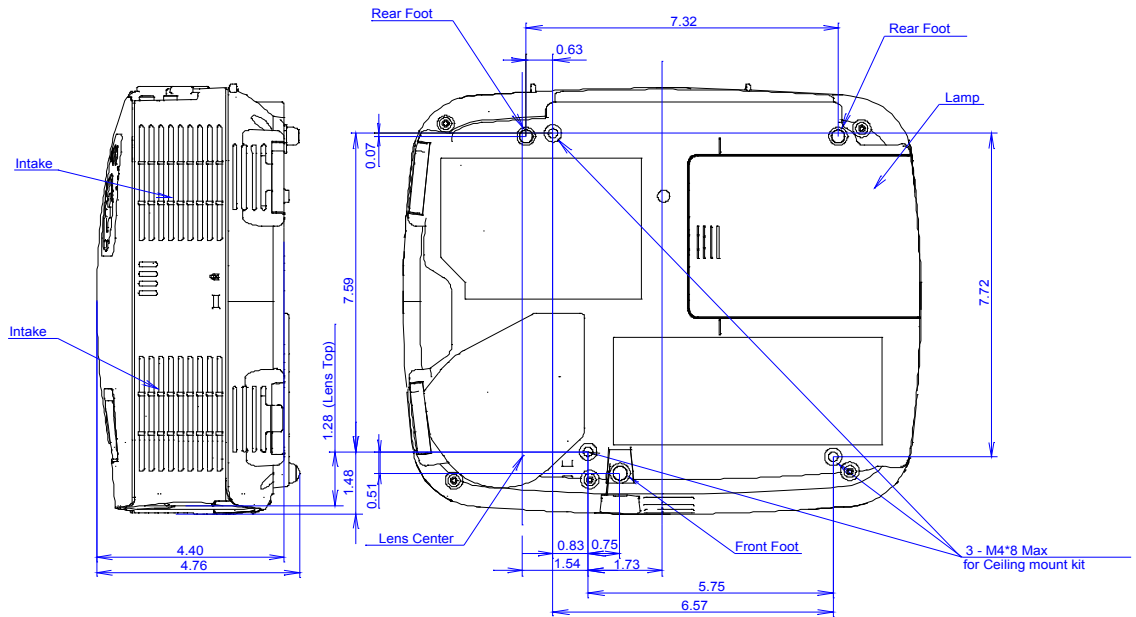
The following drawings show the cabinet dimensions. Dimensions are in inches. For millimeters multiply by 25.4.



VT490/590



VT595



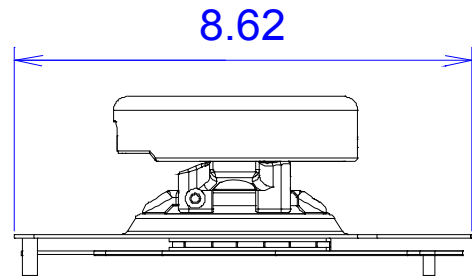
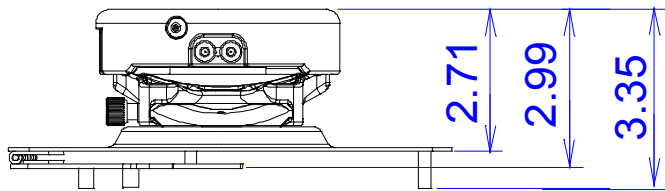
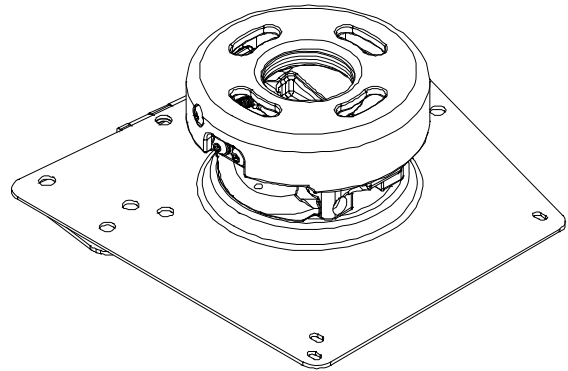
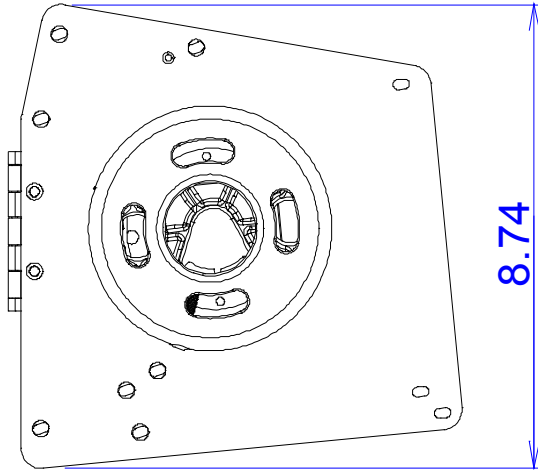
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#### Optional Ceiling Mount Dimensions (Model #: VL80CM)

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



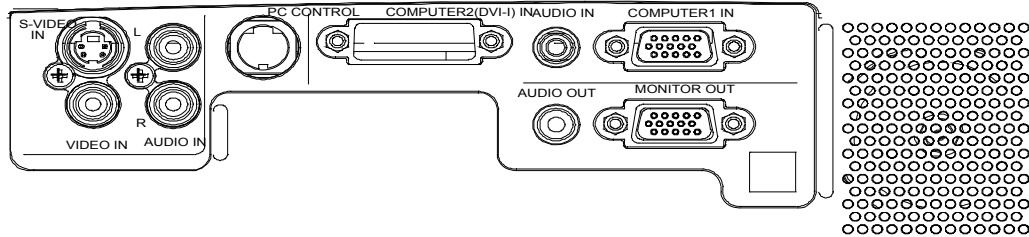
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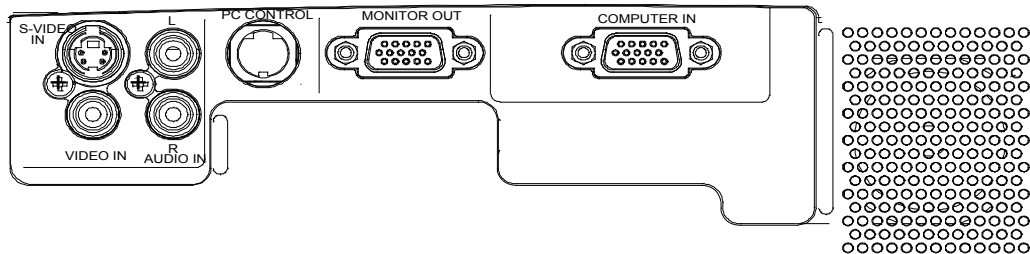
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### Input Panel

#### VT595



#### VT490 / VT590



### 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
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

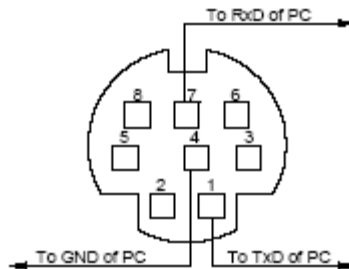
**Note:** Contact your NEC rep for codes not listed.

### Cable Connection

#### Communication Protocol:

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

PC Control Connector (Din-8P)



**NOTE 1 :** Pins 2, 3, 5, and 6 are used inside the projector.

**NOTE 2 :** For long cable runs it is recommended to set communication speed within the projector to 9600 bps.