

VT770 Installation Guide

Desktop and Ceiling Mounted

v1.2

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Product Description

Type:	3 panel LCD projector; 0.8" p-Si TFT w/MLA	Brightness:	3000 ANSI Lumens
Resolution:	1024x768 (4:3) 1024x576 (16:9)	Dimensions:	13.4"(W) x 4.2"(H) x 10.2"(D)
		Weight:	7.9 lbs

Lens Specifications

Throw Ratio:	1.5 - 1.8:1 (for 100" diagonal)	Focal Length:	24.0mm – 28.8mm
Offset Angle:	9.6°-11.5° (for 100" diagonal)	F/#:	1.7 – 2.0
Screen Sizes:	25"-300"	Manual Zoom / Manual Focus	

Screen Type/Aspect Ratio Control

Both 16:9 and 4:3 screens are fully supported with proper aspect ratio control for both type sources using NEC developed scaling technology. By selecting the screen type in the menus, Aspect Ratio control is reconfigured for that screen type.

- For a 4:3 screen; select "4:3" in the "Screen" menu for proper aspect ratio control of 4:3 and 16:9 sources.
- For a 16:9 screen; select "16:9" in the "Screen" menu for proper aspect ratio control of 4:3 and 16:9 sources.
*Factory default "Screen" setting is "4:3".

Notes

- For screen sizes not indicated on the projection charts, use the formulas below.
- If a value in a chart does not match the results of the formulas, use the values in the chart.
- The ceiling must be strong enough to support the projector and the installation must be in accordance with any local building codes.
- 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.

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 bottom
(screen top for ceiling mounted application)

4:3 Screen Formulas:

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

16:9 Screen Formulas:

W = H x 16/9
H = W x 9/16
Screen Diagonal = W x 18.358/16

Projection Formulas:

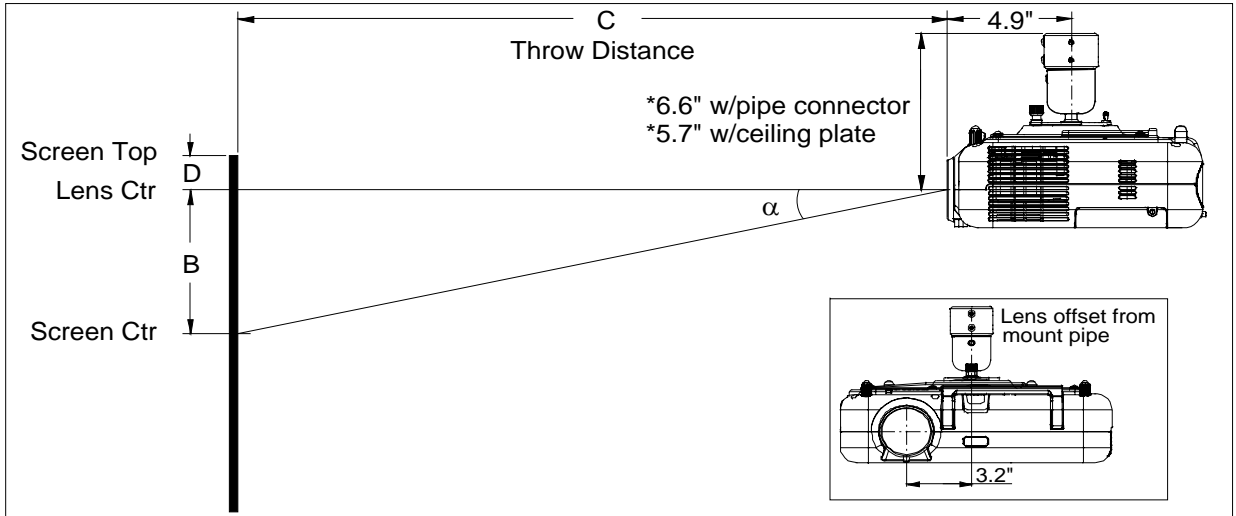
B = 0.3W
C (wide) = 1.4926W – 1.823
C (tele) = 1.8056W – 1.819
D(4:3) = 0.075W
D(16:9) = 0.01875W
 α (wide) = \tan^{-1} (B/C(wide))
 α (tele) = \tan^{-1} (B/C(tele))

Vertical Position for a 16:9 screen: The Vertical Position adjustment moves the 16:9 image up and down in the unused portion of the 4:3 panel. This adjustment is only available when the projector is set for '16:9' in the 'Screen' menu. The range of Vertical Position is dependent on aspect ratio and 3D Reform used. If 3D Reform is not used, the approximate range of Vertical Position is $\pm 0.167H$ (H=Screen Height) when using a 16:9 screen.

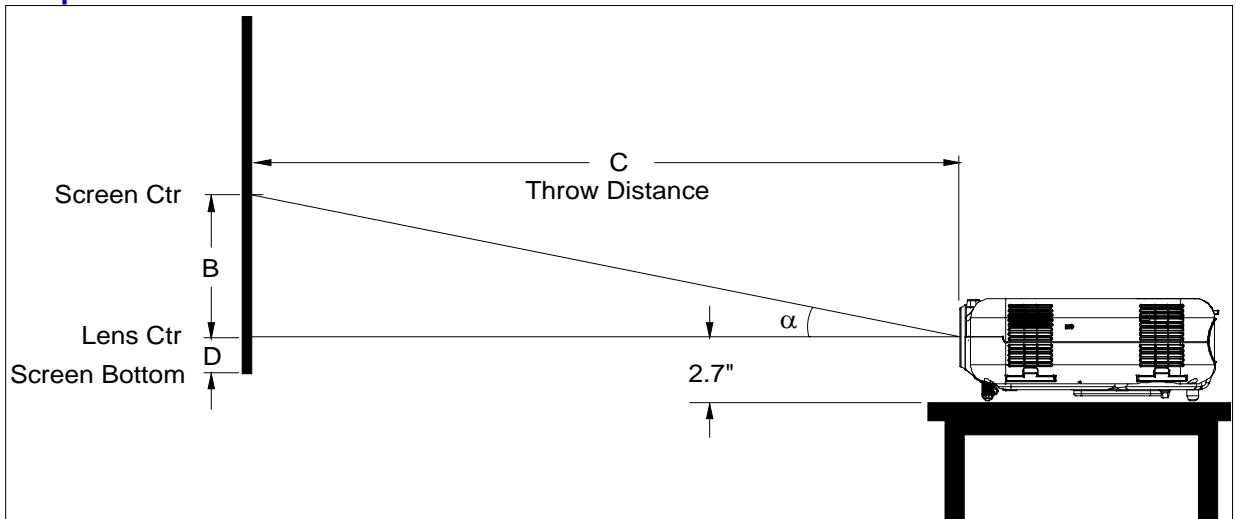
4:3 Screens

The following diagrams show the relationship between projector position and the screen. Refer to the chart below for data. Distances are in inches. For millimeters multiply by 25.4.

Ceiling Mounted Installation



Desktop Setup



Distance chart for popular 4:3 screens

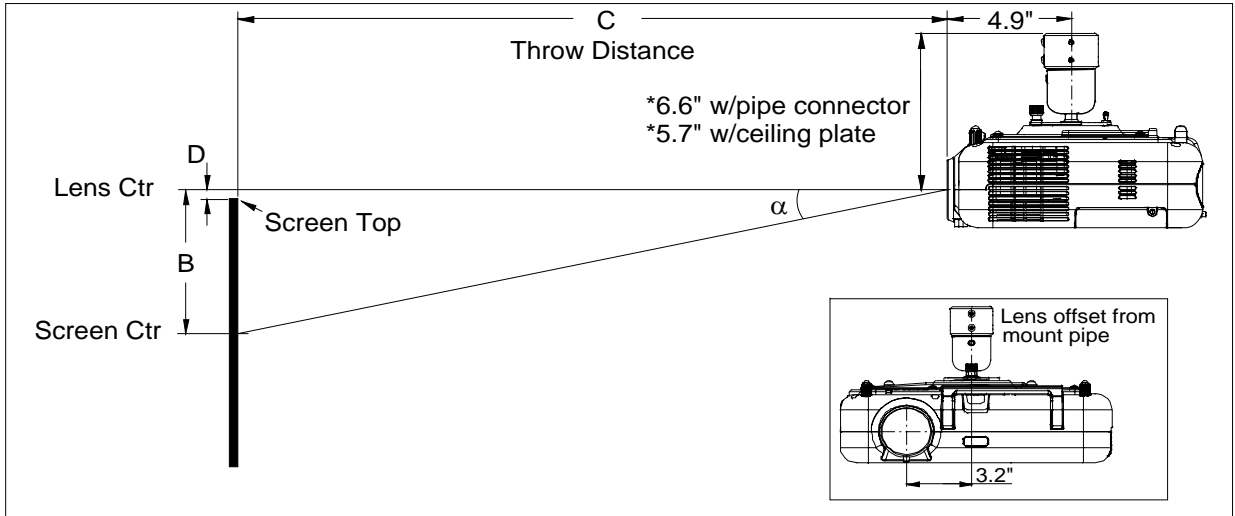
Screen Size (4:3)			B	C	D	α
Diag	W	H				
inches	inches	inches	inches	wide - tele inches	(4:3) inches	wide - tele degrees
25	20	15	6.0	28.0 - 34.3	1.5	12.1 - 9.9
60	48	36	14.4	69.8 - 84.8	3.6	11.7 - 9.6
72	57.6	43.2	17.3	84.2 - 102.2	4.3	11.6 - 9.6
84	67.2	50.4	20.2	98.5 - 119.5	5.0	11.6 - 9.6
90	72	54	21.6	105.6 - 128.2	5.4	11.6 - 9.6
100	80	60	24.0	117.6 - 142.6	6.0	11.5 - 9.6
120	96	72	28.8	141.5 - 171.5	7.2	11.5 - 9.5
150	120	90	36.0	177.3 - 214.9	9.0	11.5 - 9.5
180	144	108	43.2	213.1 - 258.2	10.8	11.5 - 9.5
200	160	120	48.0	237.0 - 287.1	12.0	11.4 - 9.5
250	200	150	60.0	296.7 - 359.3	15.0	11.4 - 9.5
300	240	180	72.0	356.4 - 431.5	18.0	11.4 - 9.5

Note: For screen sizes not indicated on the chart, use the formulas on page 1.

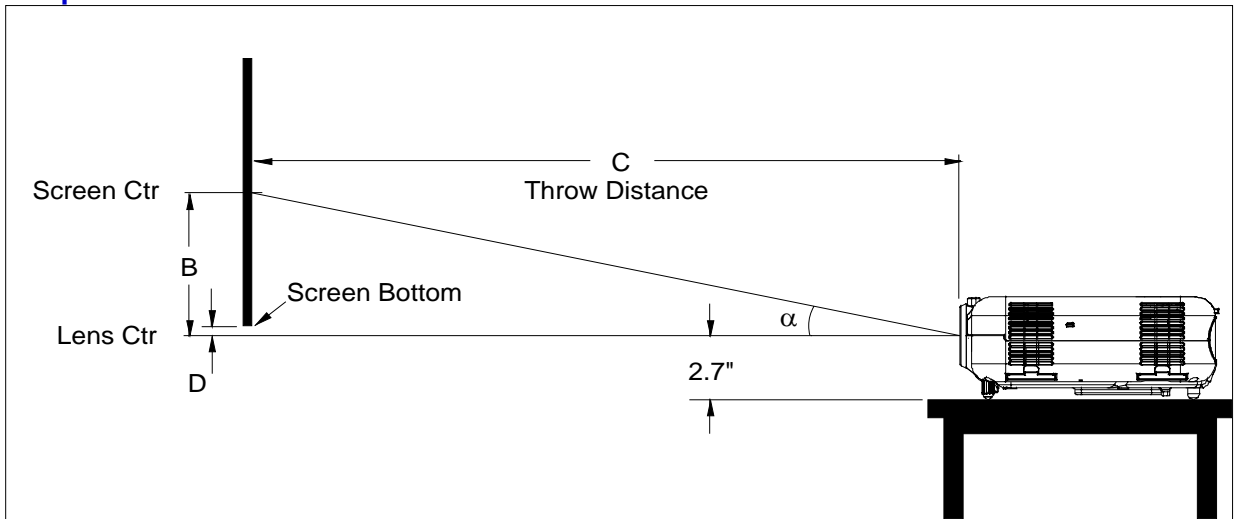
16:9 Screens

The following diagrams show the relationship between projector position and the screen. Refer to the chart below for data. Distances are in inches. For millimeters multiply by 25.4.

Ceiling Mounted Installation



Desktop Setup



Distance chart for popular 16:9 screens

Vertical Position for a 16:9 screen:

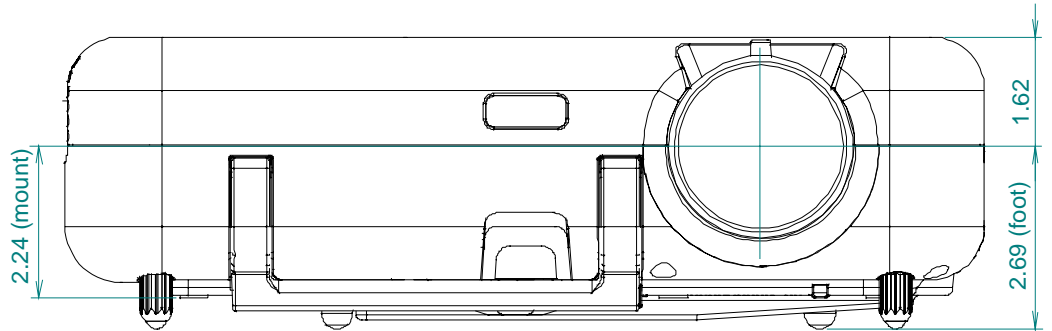
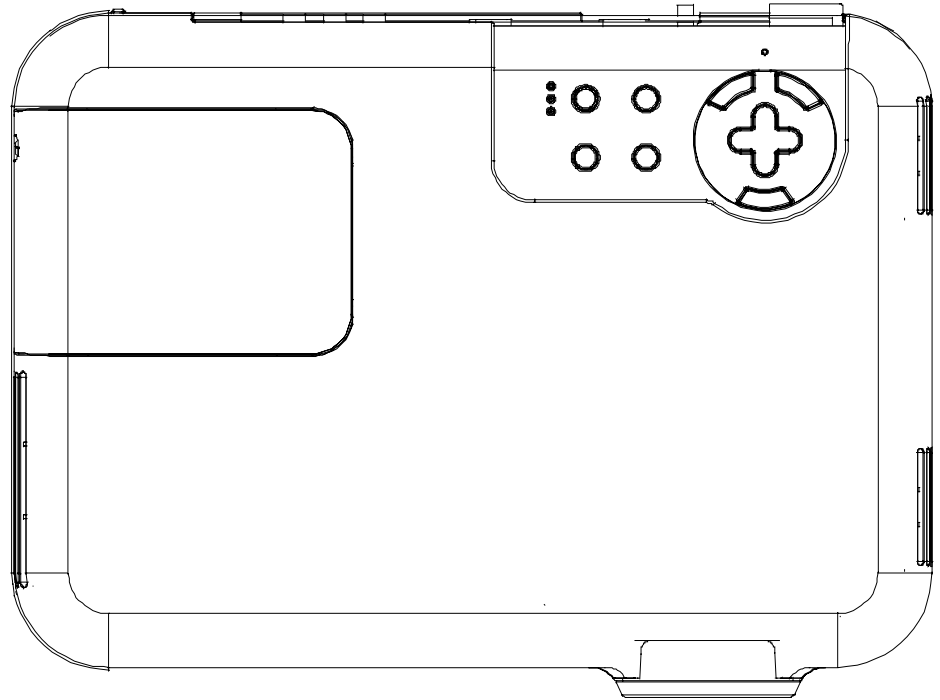
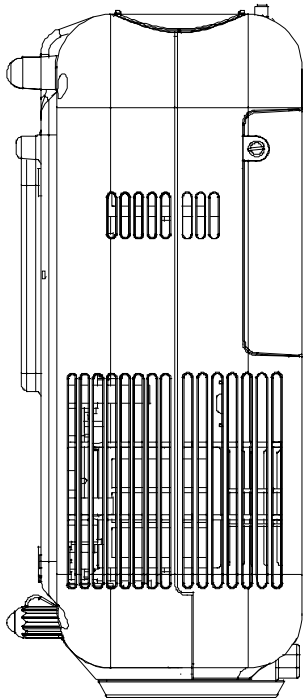
The Vertical Position adjustment moves the 16:9 image up and down in the unused portion of the 4:3 panel. This adjustment is only available when the projector is set for '16:9' in the 'Screen' menu. The range of Vertical Position is dependent on aspect ratio and 3D Reform used. If 3D Reform is not used, the approximate range of Vertical Position is $\pm 0.167H$ (H =Screen Height) when using a 16:9 screen.

Screen Size (16:9)			B	C	D	α
Diag	W	H				
inches	inches	inches	inches	inches	inches	degrees
82	72	40.5	21.6	105.6 - 128.2	1.4	11.6 - 9.6
92	80	45	24.0	117.6 - 142.6	1.5	11.5 - 9.6
100	87	49	26.1	128.0 - 155.3	1.6	11.5 - 9.5
106	92	52	27.6	135.5 - 164.3	1.7	11.5 - 9.5
110	96	54	28.8	141.5 - 171.5	1.8	11.5 - 9.5
119	104	58.5	31.2	153.4 - 186.0	2.0	11.5 - 9.5
123	107	60	32.1	157.9 - 191.4	2.0	11.5 - 9.5
133	116	65	34.8	171.3 - 207.6	2.2	11.5 - 9.5
135	118	66	35.4	174.3 - 211.2	2.2	11.5 - 9.5
159	139	78	41.7	205.6 - 249.2	2.6	11.5 - 9.5
161	140	79	42.0	207.1 - 251.0	2.6	11.5 - 9.5

Note: For screen sizes not indicated on the chart, use the formulas on page 1.

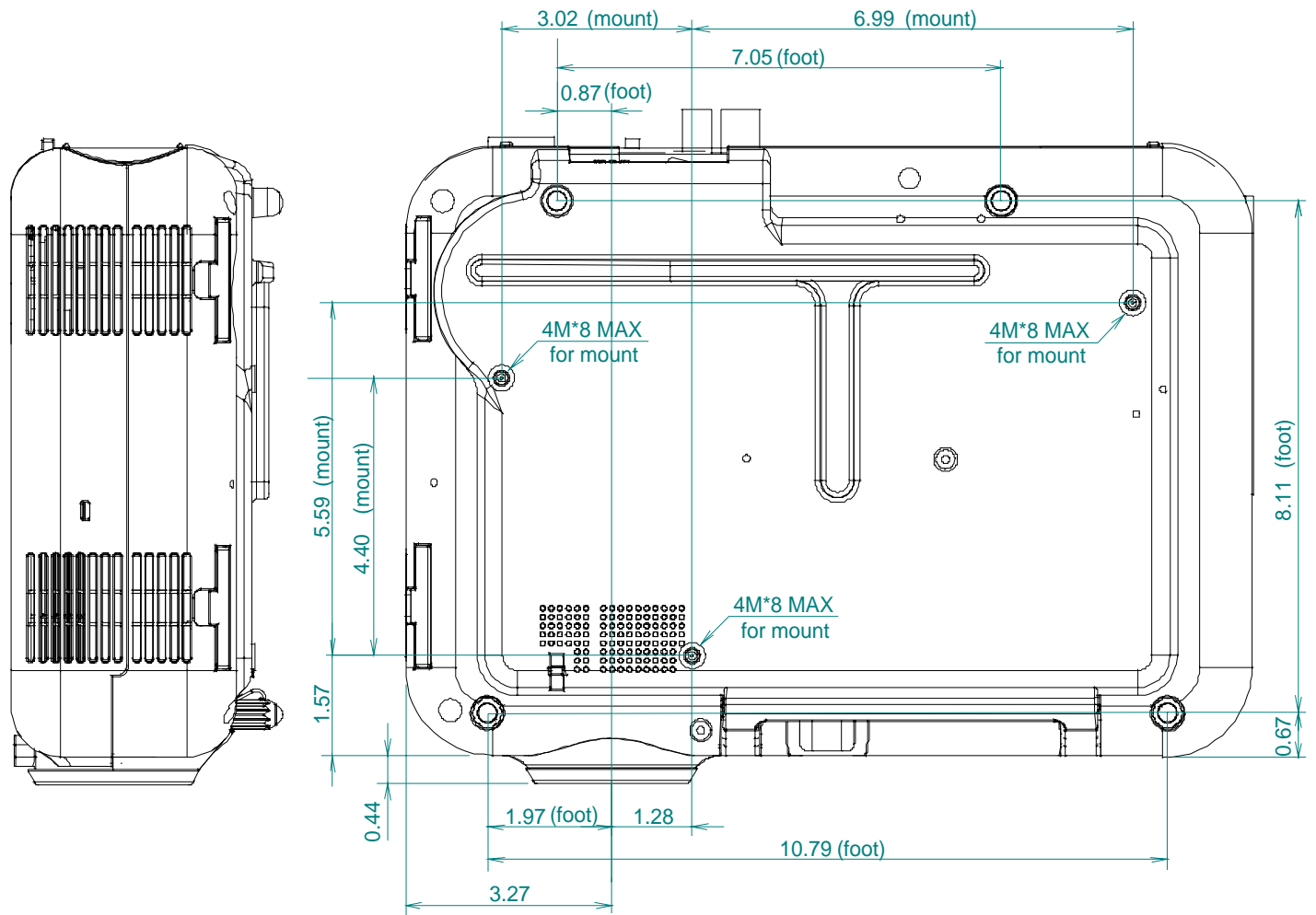
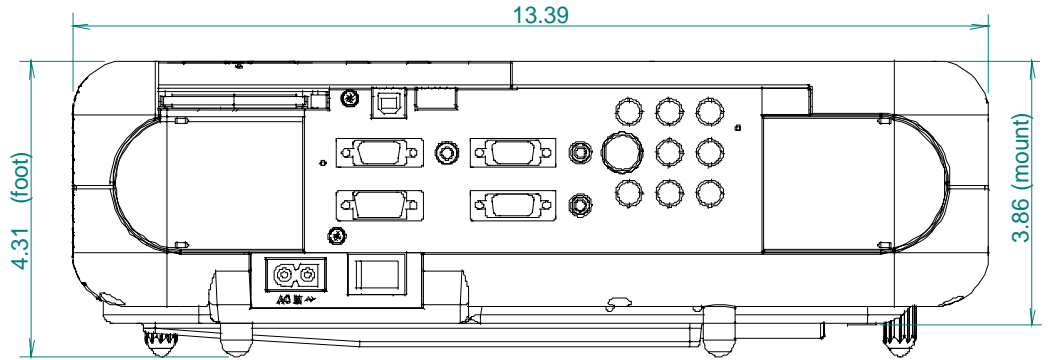
Cabinet Dimensions

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



Cabinet Dimensions (continued)

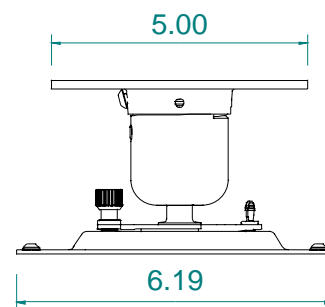
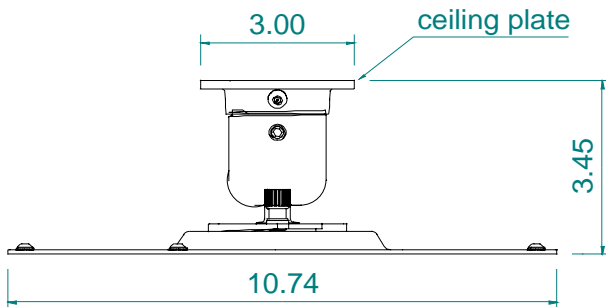
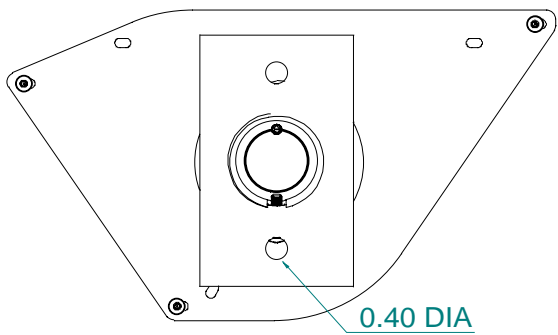
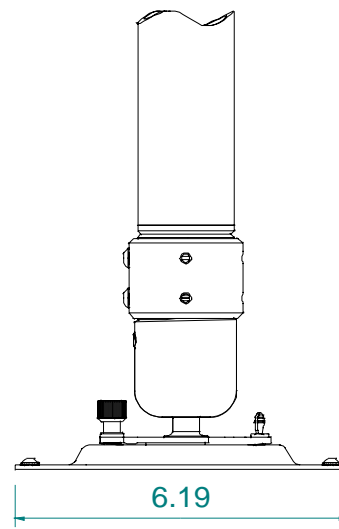
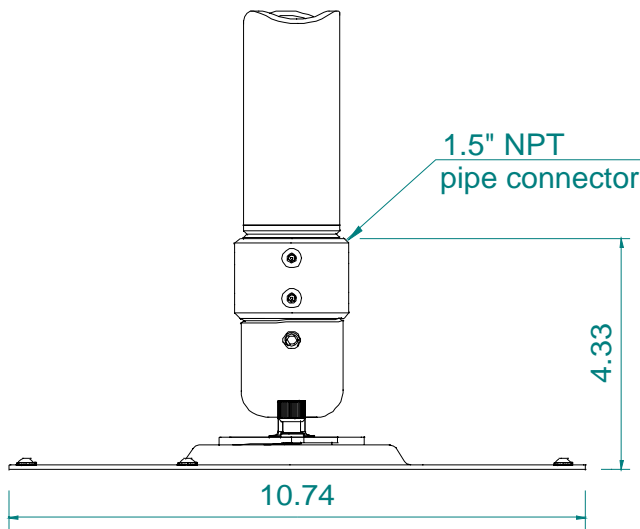
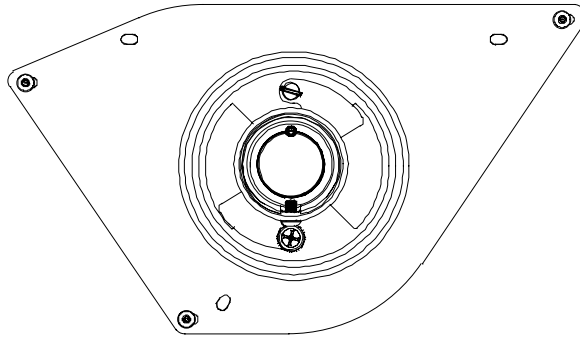
The following drawings show the cabinet dimensions.
 Dimensions are in inches. For millimeters multiply by 25.4.



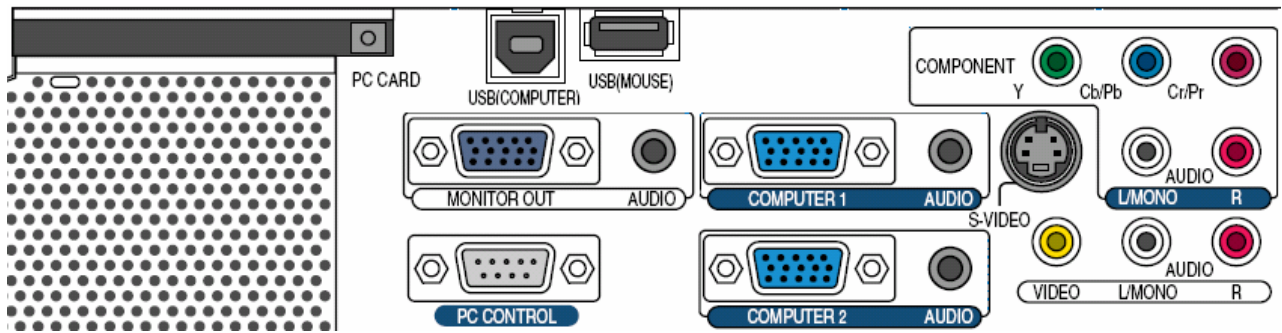
Optional Ceiling Mount Dimensions (Model #: VT65CM)

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

The VT65CM comes with a threaded pipe connector and a ceiling plate for flush mounting and minimal height.



Input Panel



Control Codes

Function	Code Data
POWER ON	02H 00H 00H 00H 00H 02H
POWER OFF	02H 01H 00H 00H 00H 03H
INPUT SELECT COMPUTER 1	02H 03H 00H 00H 02H 01H 01H 09H
INPUT SELECT COMPUTER 2	02H 03H 00H 00H 02H 01H 02H 0AH
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 COMPONENT	02H 03H 00H 00H 02H 01H 12H 1AH
INPUT SELECT VIEWER	02H 03H 00H 00H 02H 01H 1FH 27H
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 Screen)	4:3 03H 10H 00H 00H 05H 18H 00H 00H 00H 00H 30H
	Letterbox 03H 10H 00H 00H 05H 18H 00H 00H 01H 00H 31H
	Widescreen 03H 10H 00H 00H 05H 18H 00H 00H 02H 00H 32H
	Crop 03H 10H 00H 00H 05H 18H 00H 00H 03H 00H 33H
ASPECT RATIO (16:9 Screen)	4:3 Window 03H 10H 00H 00H 05H 18H 00H 00H 00H 00H 30H
	Letterbox 03H 10H 00H 00H 05H 18H 00H 00H 01H 00H 31H
	Widescreen 03H 10H 00H 00H 05H 18H 00H 00H 02H 00H 32H
	4:3 Fill 03H 10H 00H 00H 05H 18H 00H 00H 04H 00H 34H
AUTO ADJUST	02H 0FH 00H 00H 02H 05H 00H 18H

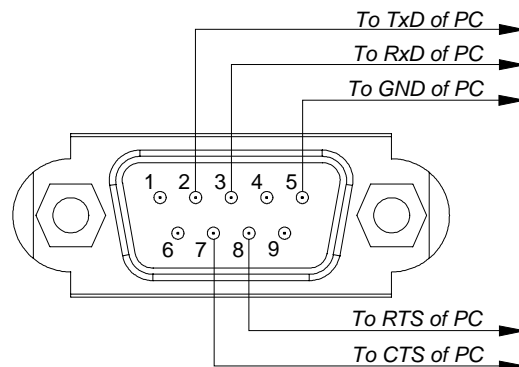
Note: Contact your NEC rep for codes not listed.

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 (D-Sub 9p)



NOTE1: It is recommended to set the projector to "Idle Mode" in the Setup/Standby Mode menu for best Power ON response.

NOTE2: Pins 1, 4, 6, and 9 are used inside the projector.

NOTE3: Jumper "Request to send" and "Clear to Send" together on both ends of the cable to simplify cable connection.

NOTE4: For long cable runs it is recommended to set communication speed to 9600 bps in the Setup menu.