HT410 Installation Guide

Floor and Ceiling Configuration

v1.4

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Product Description

Type:	1 chip DMD™ projector	Color Wheel:	5 Segments (2x)
Resolution:	854 x 480 (16:9 native)	Dimensions:	7.36”(W) x 5.24”(H) x 13.60”(D)
Brightness:	1000 ANSI Lumens	Weight:	6.6 lbs
Contrast Ratio:	1200:1		

Lens Specifications

Throw Ratio:	1.65 - 1.96:1 (approximate)	Manual Focus/Manual Zoom	
Offset Angle:	Min. Lens Shift 5.5° - 6.5° (for 100” Diag)	Lens Shift: Vertical, Manual	
	Max. Lens Shift 13.5° - 16.0° (for 100” Diag)	Focal Length:	19.5mm – 23.0mm
Screen Sizes:	30”-200” diagonal (16:9)	F/#:	2.0 – 2.48

Notes

- For screen sizes not indicated in the projection charts, use the formulas below.
- 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 ±5%.

Formulas

The Projection Formulas use the image width for calculation. 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.

Definitions:
W = Image Width
H = Image Height (Size)
B = Vertical distance between lens center and screen center
C = Throw distance

16:9 Screen Formulas:
W = H x 16/9
H = W x 9/16
Screen Diagonal = W x 18.35756/16

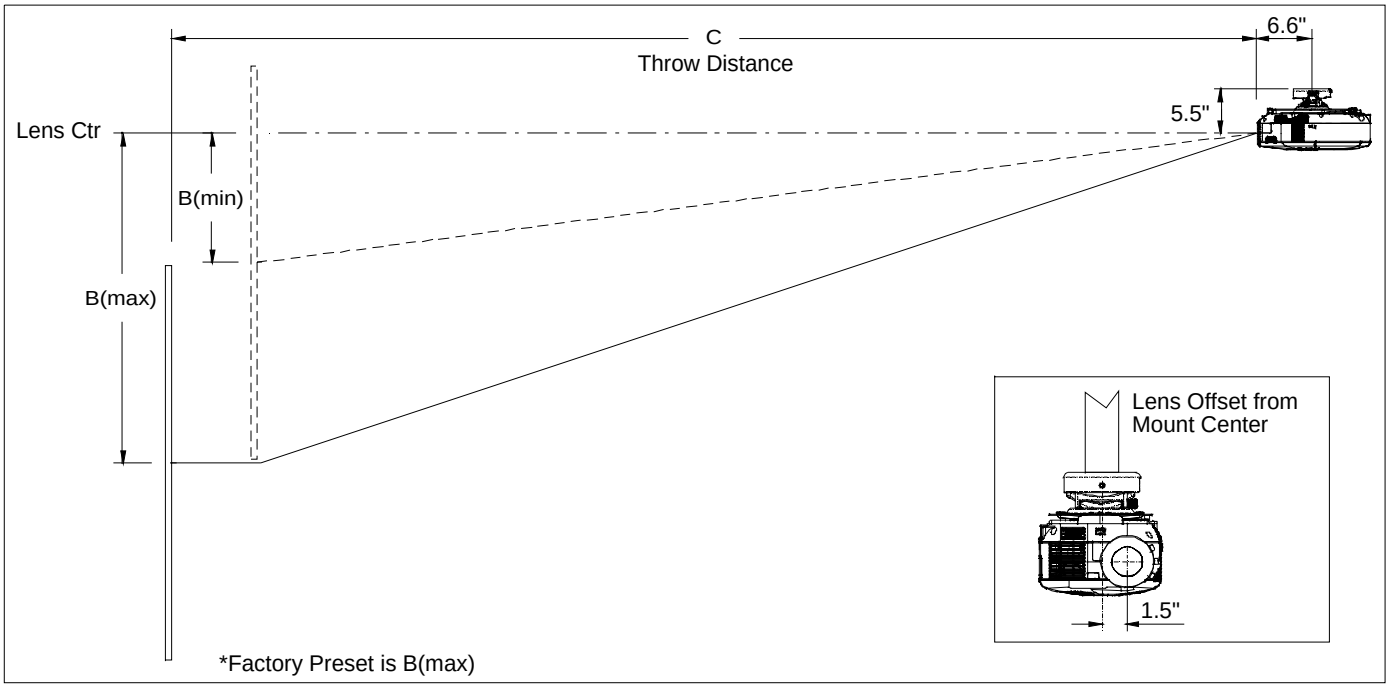
Projection Formulas:
B(min) = 0.1877W
B(max) = 0.4710W
C(wide) = 1.6695W – 1.913
C(tele) = 1.9801W – 1.883
α(wide) = $\tan^{-1}$ (B/C(wide))
α(tele) = $\tan^{-1}$ (B/C(tele))

Note: *Factory preset is B(max)/maximum lens shift.*

Diagrams and Distance Charts

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 Configuration



Note: *Mount shown is NEC HT40CM.*

Distance charts for popular 16:9 screens

Minimum Lens Shift

Screen Size (16:9)			**B**(min)	**C**	**α**
Diag	W	H		wide - tele	wide - tele
inches	inches	inches	inches	inches	degrees
30	26	14.6	4.9	41.5 - 49.6	6.7 - 5.6
55	48	27	9.0	78.2 - 93.2	6.6 - 5.5
60	52.5	29.5	9.9	85.7 - 102.1	6.6 - 5.5
73	64	36	12.0	104.9 - 124.8	6.5 - 5.5
82.6	72	40.5	13.5	118.3 - 140.7	6.5 - 5.5
92	80	45	15.0	131.6 - 156.5	6.5 - 5.5
100	87	49	16.3	143.3 - 170.4	6.5 - 5.5
106	92	52	17.3	151.7 - 180.3	6.5 - 5.5
110	96	54	18.0	158.4 - 188.2	6.5 - 5.5
119	104	58.5	19.5	171.7 - 204.0	6.5 - 5.5
133	116	65	21.8	191.7 - 227.8	6.5 - 5.5
161	140	79	26.3	231.8 - 275.3	6.5 - 5.5
200	174	98	32.7	288.6 - 342.7	6.5 - 5.4

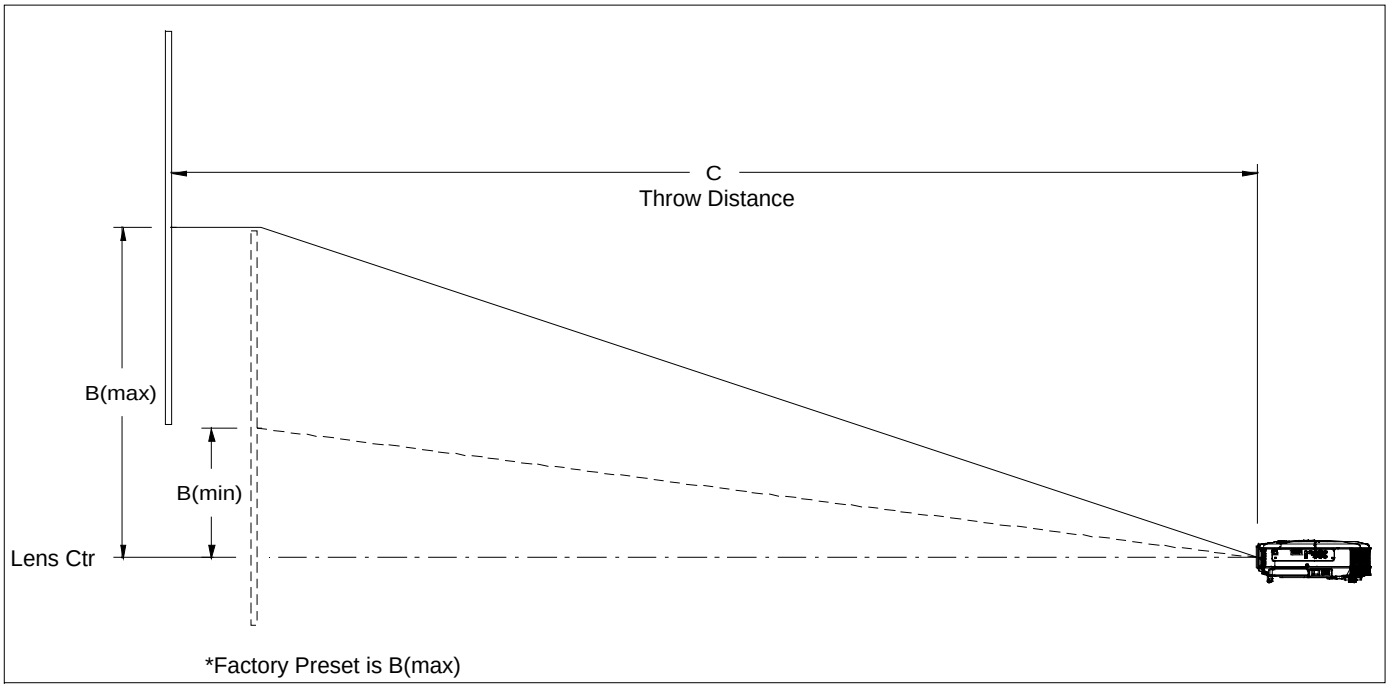
Maximum Lens Shift

Screen Size (16:9)			**B**(max)	**C**	**α**
Diag	W	H		wide - tele	wide - tele
inches	inches	inches	inches	inches	degrees
30	26	14.6	12.2	41.5 - 49.6	16.4 - 13.9
55	48	27	22.6	78.2 - 93.2	16.1 - 13.6
60	52.5	29.5	24.7	85.7 - 102.1	16.1 - 13.6
73	64	36	30.1	104.9 - 124.8	16.0 - 13.6
82.6	72	40.5	33.9	118.3 - 140.7	16.0 - 13.6
92	80	45	37.7	131.6 - 156.5	16.0 - 13.5
100	87	49	41.0	143.3 - 170.4	16.0 - 13.5
106	92	52	43.3	151.7 - 180.3	15.9 - 13.5
110	96	54	45.2	158.4 - 188.2	15.9 - 13.5
119	104	58.5	49.0	171.7 - 204.0	15.9 - 13.5
133	116	65	54.6	191.7 - 227.8	15.9 - 13.5
161	140	79	65.9	231.8 - 275.3	15.9 - 13.5
200	174	98	82.0	288.6 - 342.7	15.9 - 13.5

Diagrams and Distance Charts (cont.)

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.

Floor Configuration



Distance charts for popular 16:9 screens

Minimum Lens Shift

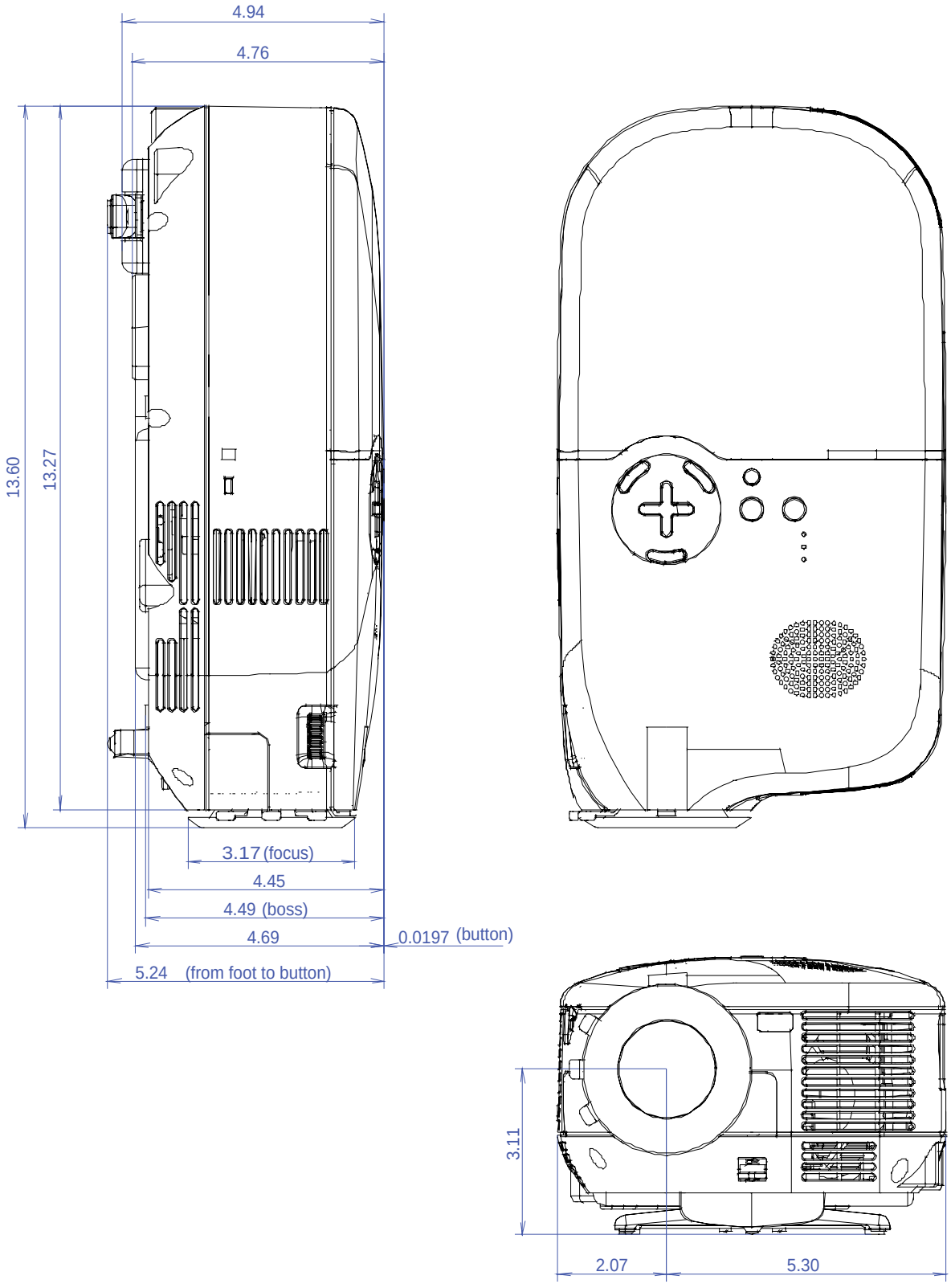
Screen Size (16:9)			B(min)	C	α
Diag	W	H		wide - tele	wide - tele
inches	inches	inches	inches	inches	degrees
30	26	14.6	4.9	41.5 - 49.6	6.7 - 5.6
55	48	27	9.0	78.2 - 93.2	6.6 - 5.5
60	52.5	29.5	9.9	85.7 - 102.1	6.6 - 5.5
73	64	36	12.0	104.9 - 124.8	6.5 - 5.5
82.6	72	40.5	13.5	118.3 - 140.7	6.5 - 5.5
92	80	45	15.0	131.6 - 156.5	6.5 - 5.5
100	87	49	16.3	143.3 - 170.4	6.5 - 5.5
106	92	52	17.3	151.7 - 180.3	6.5 - 5.5
110	96	54	18.0	158.4 - 188.2	6.5 - 5.5
119	104	58.5	19.5	171.7 - 204.0	6.5 - 5.5
133	116	65	21.8	191.7 - 227.8	6.5 - 5.5
161	140	79	26.3	231.8 - 275.3	6.5 - 5.5
200	174	98	32.7	288.6 - 342.7	6.5 - 5.4

Maximum Lens Shift

Screen Size (16:9)			B(max)	C	α
Diag	W	H		wide - tele	wide - tele
inches	inches	inches	inches	inches	degrees
30	26	14.6	12.2	41.5 - 49.6	16.4 - 13.9
55	48	27	22.6	78.2 - 93.2	16.1 - 13.6
60	52.5	29.5	24.7	85.7 - 102.1	16.1 - 13.6
73	64	36	30.1	104.9 - 124.8	16.0 - 13.6
82.6	72	40.5	33.9	118.3 - 140.7	16.0 - 13.6
92	80	45	37.7	131.6 - 156.5	16.0 - 13.5
100	87	49	41.0	143.3 - 170.4	16.0 - 13.5
106	92	52	43.3	151.7 - 180.3	15.9 - 13.5
110	96	54	45.2	158.4 - 188.2	15.9 - 13.5
119	104	58.5	49.0	171.7 - 204.0	15.9 - 13.5
133	116	65	54.6	191.7 - 227.8	15.9 - 13.5
161	140	79	65.9	231.8 - 275.3	15.9 - 13.5
200	174	98	82.0	288.6 - 342.7	15.9 - 13.5

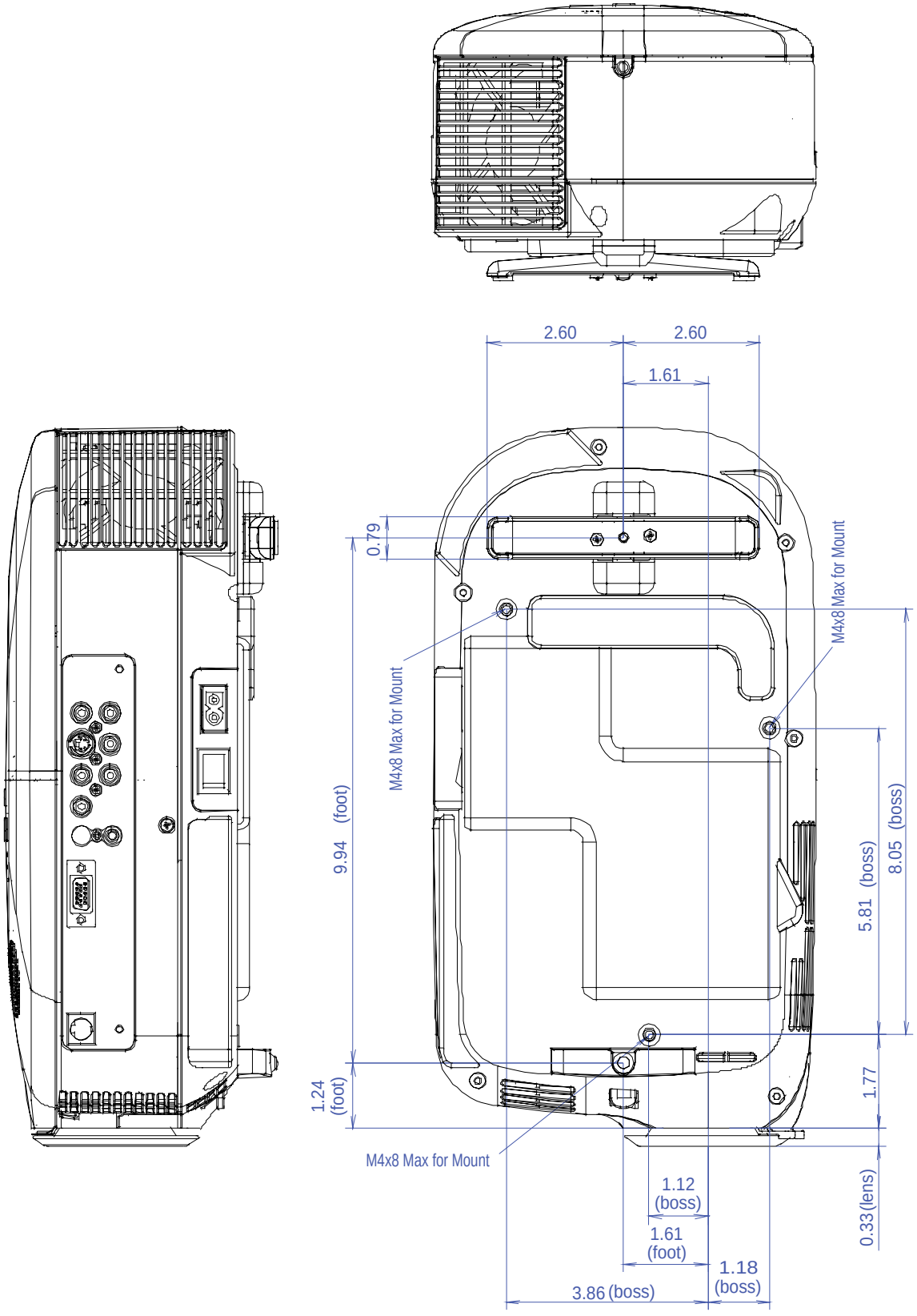
Cabinet Dimensions

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



Cabinet Dimensions (continued)

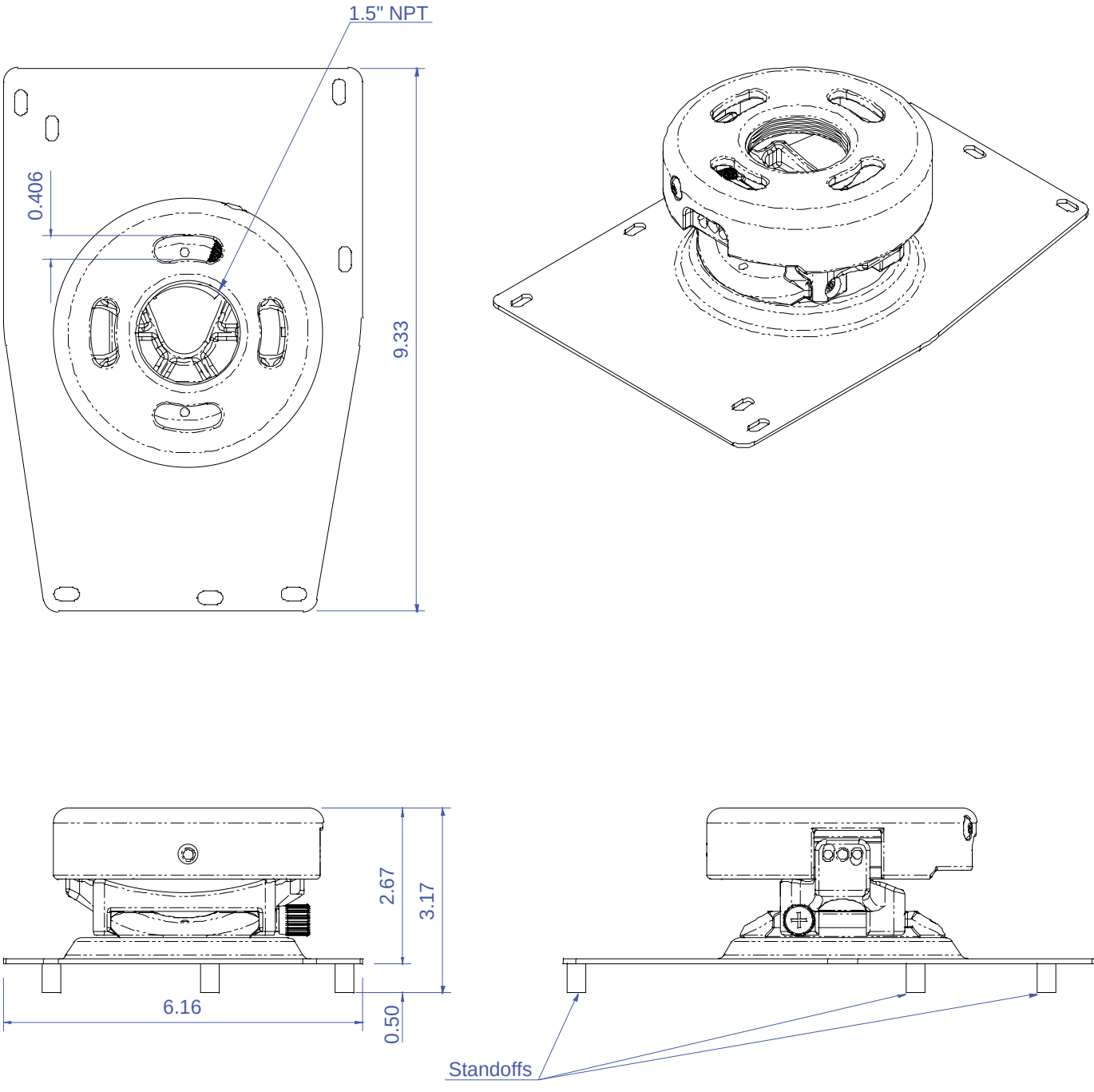
The following drawings show the cabinet dimensions.
Dimensions are in inches. For millimeters multiply by 25.4.



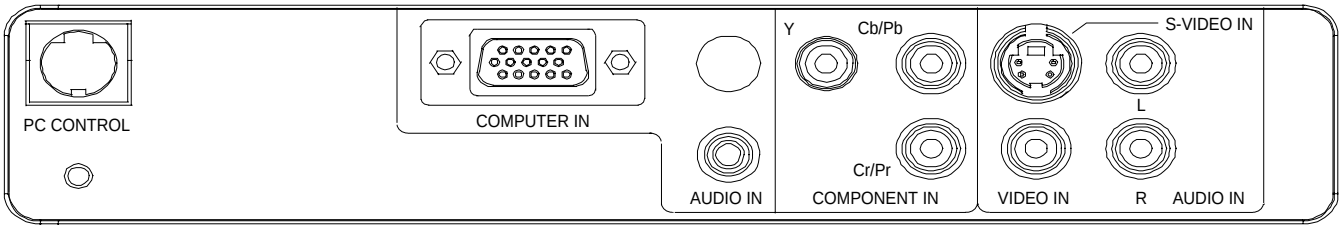
Optional Ceiling Mount Dimensions (Model #: HT40CM)

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

The mount accommodates a 1.5” NPT treaded pipe extension or two 3/8”-16 threaded rod extensions.
Mount adjustments include roll, pitch and yaw.
Contact Peerless Industries for mount accessories at (800) 865-2112.



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	02H	03H	00H	00H	02H	01H	01H	09H
INPUT SELECT COMPONENT	02H	03H	00H	00H	02H	01H	11H	19H
INPUT SELECT VIDEO	02H	03H	00H	00H	02H	01H	06H	0EH
INPUT SELECT S-VIDEO	02H	03H	00H	00H	02H	01H	0BH	13H
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		

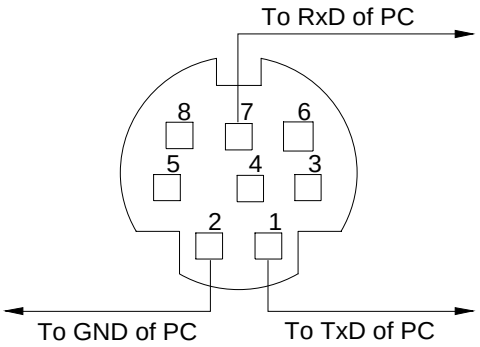
Note: *Checksum (CKS) is already included in the commands above.*
Note: *Contact your NEC rep for codes not listed.*

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: *It is recommended to set the projector to "Idle Mode" in the Setup menu for best Power ON response.*
NOTE 2: *Pins 2, 3, 5, 6 and 8 are used inside the projector.*
NOTE 3: *For long cable runs it is recommended to set communication speed within projector menus to 9600 bps.*

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