

## NP901W Installation Guide

### Ceiling Mounted and Desktop

Rev 1.0

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#### Product Description

Type:	3 panel LCD projector, 0.56" p-Si TFT w/MLA	Brightness:	2000 ANSI Lumens
Resolution:	1280 x 800	Dimensions:	12.2"(W) x 4.9"(H) x 11.4"(D)
Fan Noise:	35 dB / 29dB @ 1 meter	Weight:	8.16 lbs
Power Consumption:	310W (max)	BTU's:	1055 BTU/hour

#### Lens Specifications

Throw Ratio:	1.5 – 1.8:1 (for 100" diagonal)	Focal Length:	17.74mm – 21.30mm
Offset Angle:	8.4° - 10.0° (for 100" diagonal)	F/#:	1.70 – 1.90
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 4:3 aspect ratio.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary  $\pm 5\%$ .

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### Formulas

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. 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 "W" for a 16:10 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:10 screens:

#### 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)

#### 16:10 Screen Formulas:

- $W = H \times 16/10$
- $H = W \times 10/16$
- Screen Diagonal =  $W \times 18.868/16$

#### Projection Formulas:

- $B = 0.271W$
- $C(\text{wide}) = 1.4477W - 1.823$
- $C(\text{tele}) = 1.7386W - 1.820$
- $D = -0.040W$
- $\alpha(\text{wide}) = \tan^{-1}(B/C(\text{wide}))$
- $\alpha(\text{tele}) = \tan^{-1}(B/C(\text{tele}))$

**Note:** Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

### Distance Chart for popular 16:10 screens

Image Size (16:10) on a (16:10) screen			B	C		D	α	
Diagonal	Width(W)	Height (H)		wide - tele			wide - tele	
inches	inches	inches	inches	inches		inches	inches	
85	72	45	20	102	- 123	-3	10.8	- 9.0
92	78	49	21	112	- 134	-3	10.8	- 9.0
98	83	52	23	119	- 143	-3	10.8	- 9.0
102	86	54	23	123	- 148	-3	10.7	- 9.0
111	94	59	25	134	- 162	-4	10.7	- 9.0
113	96	60	26	137	- 165	-4	10.7	- 9.0
123	104	65	28	149	- 179	-4	10.7	- 9.0
125	106	66	29	151	- 182	-4	10.7	- 9.0
147	125	78	34	179	- 215	-5	10.7	- 9.0
149	126	79	34	181	- 218	-5	10.7	- 8.9
213	181	113	49	260	- 313	-7	10.7	- 8.9
255	216	135	59	311	- 374	-9	10.7	- 8.9

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

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### Formulas

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. 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 "W" for a 4:3 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:9 screens:

#### 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)

#### 16:9 Screen Formulas:

- $W = H \times 16/9$
- $H = W \times 9/16$
- Screen Diagonal =  $W \times 18.358/16$

#### Projection Formulas:

- $B = 0.273W$
- $C(\text{wide}) = 1.448W - 1.823$
- $C(\text{tele}) = 1.7399W - 1.820$
- $D = -0.042W$
- $\alpha(\text{wide}) = \tan^{-1}(B/C(\text{wide}))$
- $\alpha(\text{tele}) = \tan^{-1}(B/C(\text{tele}))$

**Note:** Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

### Distance Chart for popular 16:10 aspect ratios on a 16:9 screen

Screen Size (16:9)			Image Size (16:10) on a (16:9) screen			B	C		D	$\alpha$	
Diagonal	Width(W)	Height (H)	Diagonal	Width(W)	Height (H)		wide - tele			wide - tele	
inches	inches	inches	inches	inches	inches	inches	inches		inches	inches	
49	43	24	45	38	24	10	54	- 65	-2	10.8	- 9.0
73	64	36	68	58	36	16	82	- 98	-2	10.8	- 9.0
92	80	45	85	72	45	20	102	- 123	-3	10.8	- 9.0
100	87	49	92	78	49	21	112	- 134	-3	10.8	- 9.0
106	92	52	98	83	52	23	119	- 143	-3	10.8	- 9.0
110	96	54	102	86	54	24	123	- 148	-4	10.7	- 9.0
120	105	59	111	94	59	26	134	- 162	-4	10.7	- 9.0
122	107	60	113	96	60	26	137	- 165	-4	10.7	- 8.9
133	116	65	123	104	65	28	149	- 179	-4	10.7	- 8.9
135	117	66	125	106	66	29	151	- 182	-4	10.7	- 8.9
159	139	78	147	125	78	34	179	- 215	-5	10.7	- 8.9
161	140	79	149	126	79	35	181	- 218	-5	10.7	- 8.9
230	201	113	213	181	113	49	260	- 313	-8	10.7	- 8.9
275	240	135	255	216	135	59	311	- 374	-9	10.7	- 8.9

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

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#### Formulas

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. 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 "W" for a 4:3 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:9 screens:

#### 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:

- $W = H \times 4/3$
- $H = W \times 3/4$
- Screen Diagonal =  $W \times 5/4$

#### Projection Formulas:

- $B = 0.327W$
- $C(\text{wide}) = 1.737W - 1.823$
- $C(\text{tele}) = 2.085W - 1.820$
- $D = -0.050W$
- $\alpha(\text{wide}) = \tan^{-1}(B/C(\text{wide}))$
- $\alpha(\text{tele}) = \tan^{-1}(B/C(\text{tele}))$

**Note:** Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

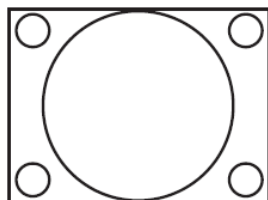
#### Distance Chart for popular 4:3 aspect ratios on a 16:9 screen

Screen Size (16:9)			Image Size (4:3) on a (16:9) screen			B inches	C wide - tele		D inches	$\alpha$ wide - tele	
Diagonal inches	Width(W) inches	Height (H) inches	Diagonal inches	Width(W) inches	Height (H) inches		inches			inches	
49	43	24	40	32	24	10	54	65	-2	10.8	9.0
73	64	36	60	48	36	16	81	98	-2	10.8	9.0
92	80	45	75	60	45	20	102	123	-3	10.8	9.0
100	87	49	82	65	49	21	112	134	-3	10.8	9.0
106	92	52	87	69	52	23	118	143	-3	10.8	9.0
110	96	54	90	72	54	24	123	148	-4	10.7	9.0
120	105	59	98	78	59	26	134	161	-4	10.7	9.0
122	107	60	100	80	60	26	137	165	-4	10.7	8.9
133	116	65	108	87	65	28	149	179	-4	10.7	8.9
135	117	66	110	88	66	29	151	181	-4	10.7	8.9
159	139	78	130	104	78	34	179	215	-5	10.7	8.9
161	140	79	132	105	79	34	181	218	-5	10.7	8.9
230	201	113	188	151	113	49	260	312	-8	10.7	8.9
275	240	135	225	180	135	59	310	373	-9	10.7	8.9

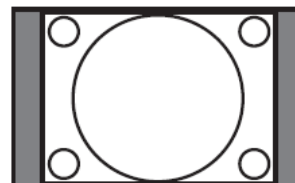
**Note:** For screen sizes not indicated on the projection tables, use the formulas on page above.

Input Signal Aspect Ratio

4:3



4:3 image on a 16:9 screen



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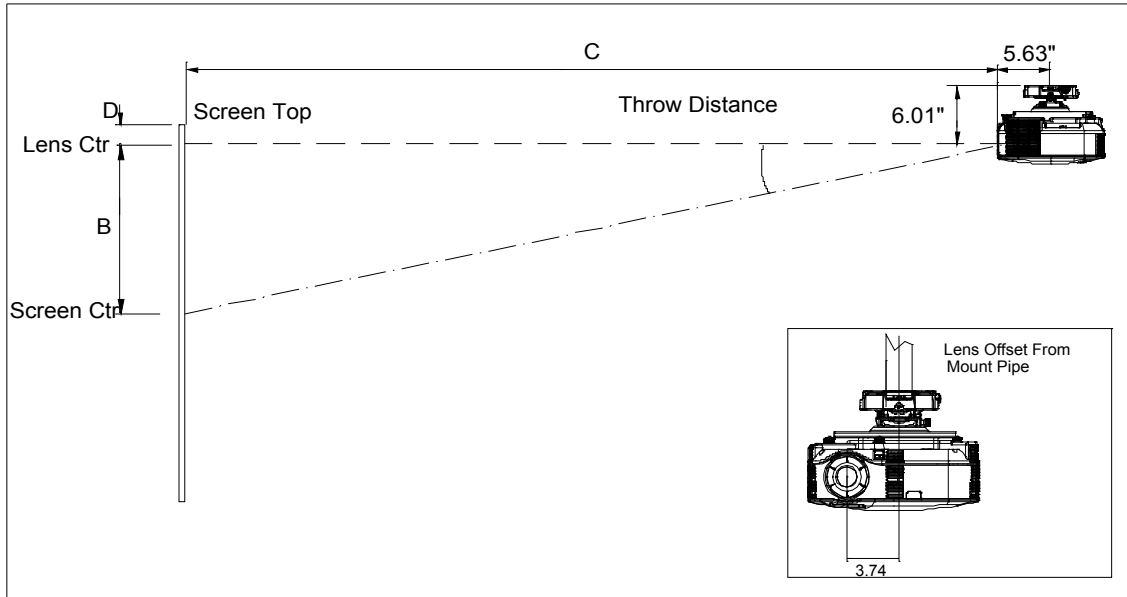
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#### Projection Distance and Screen Size for Ceiling Mount and Desktop

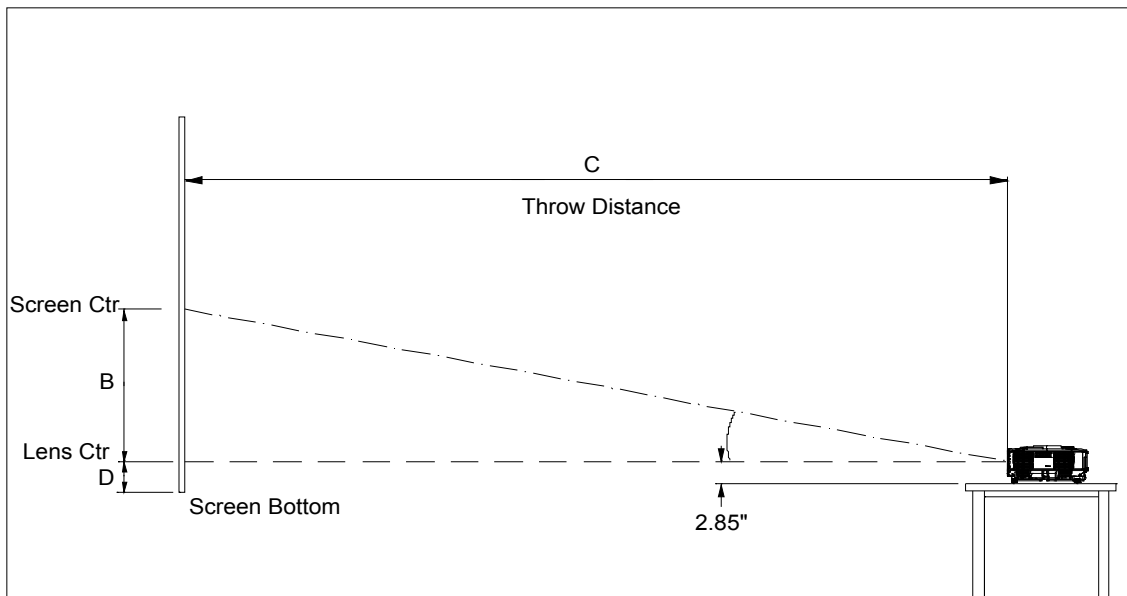
The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation.

Distances are in inches. For millimeters multiply by 25.4.

#### Ceiling Mount Installation



#### Rear Projection Desktop Installation



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

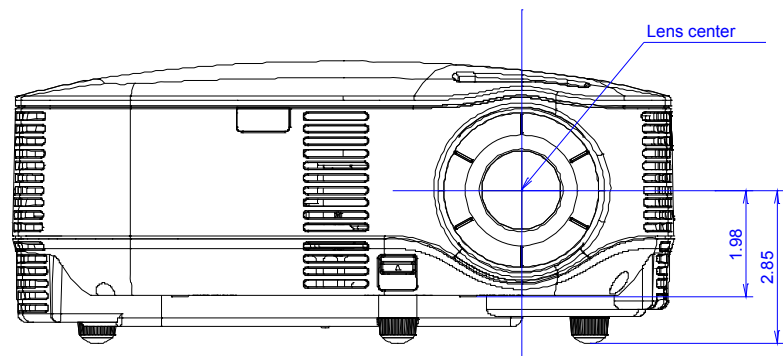
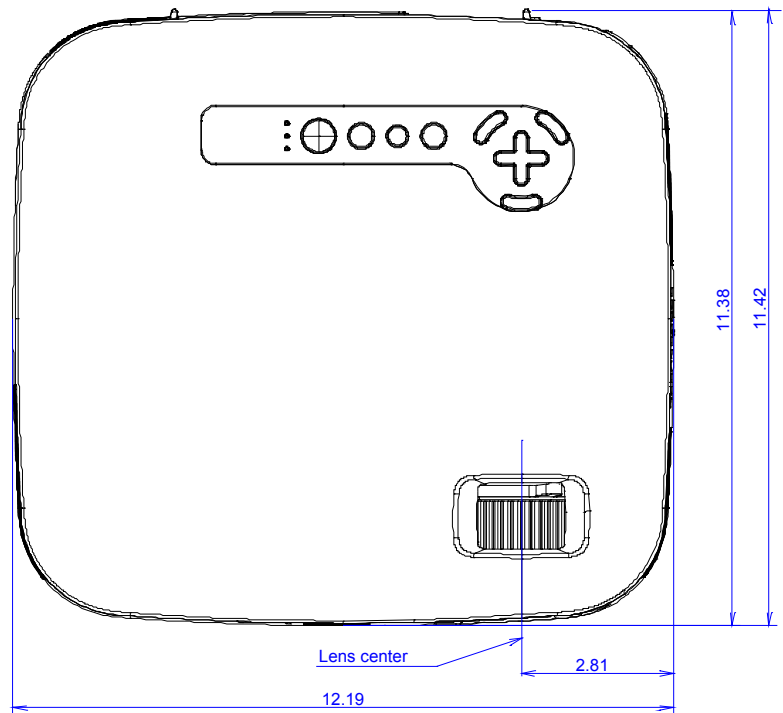
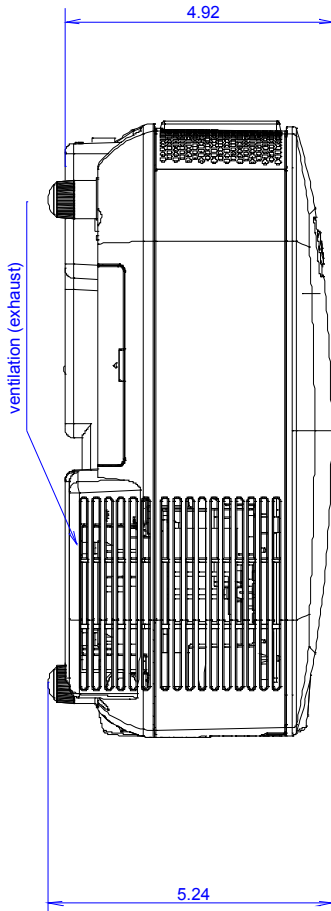
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#### Cabinet Dimensions

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



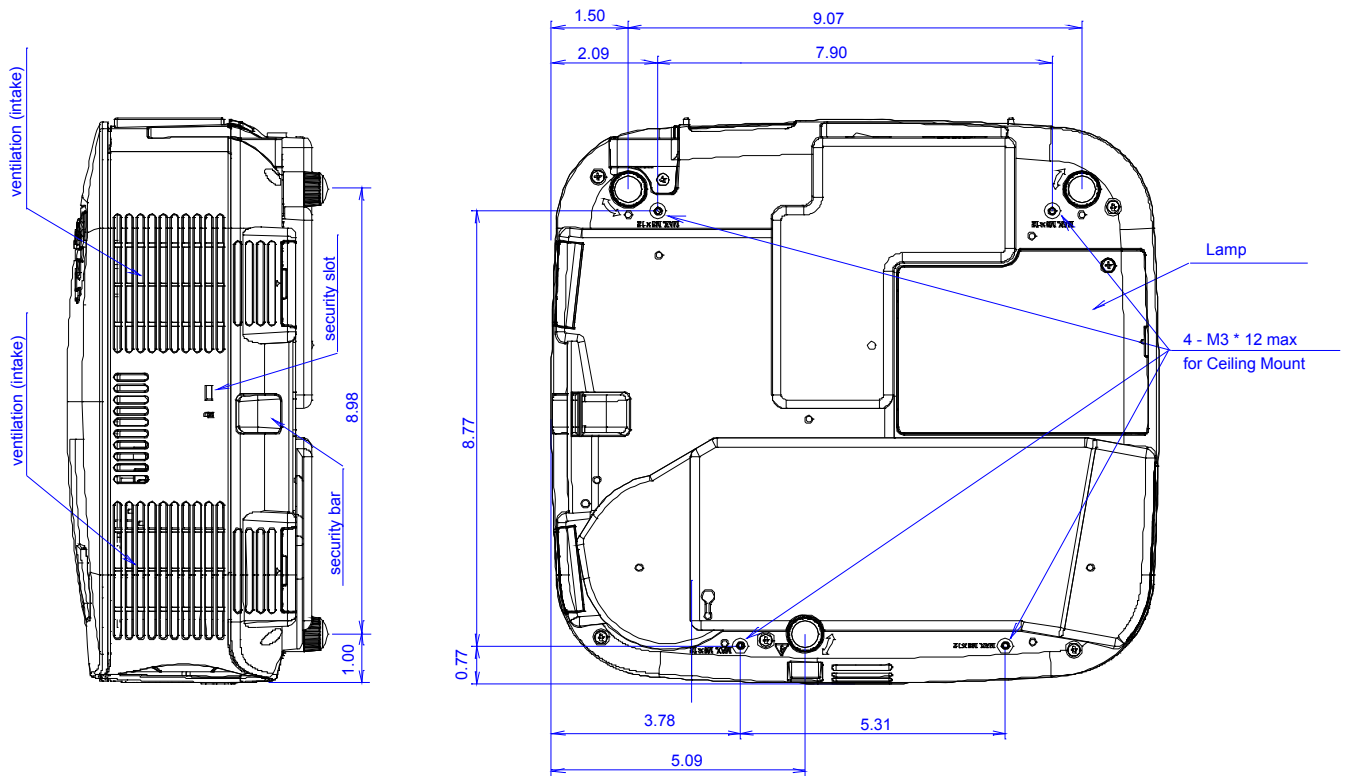
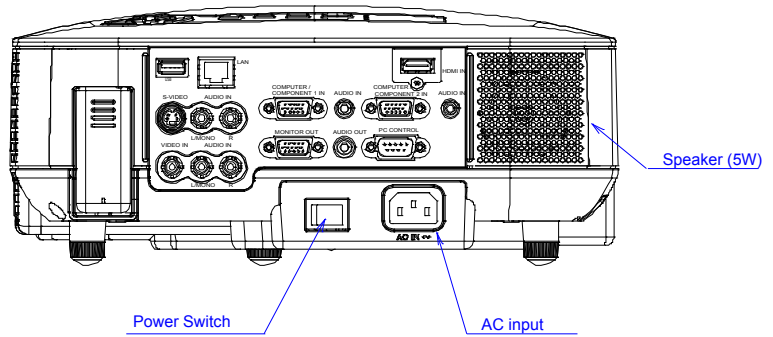
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#### Cabinet Dimensions (continued)

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



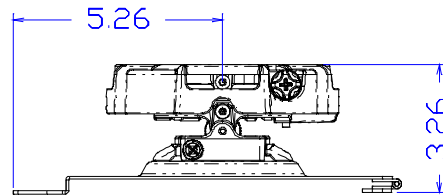
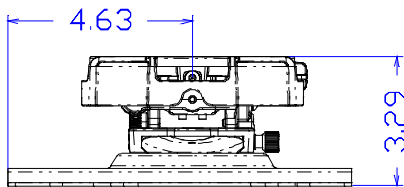
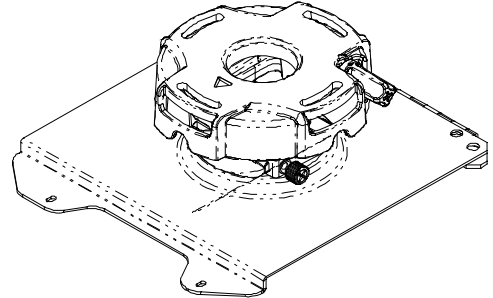
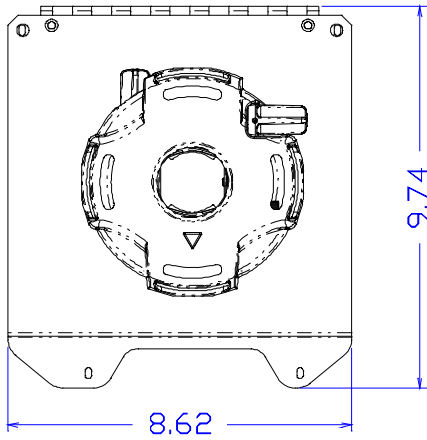
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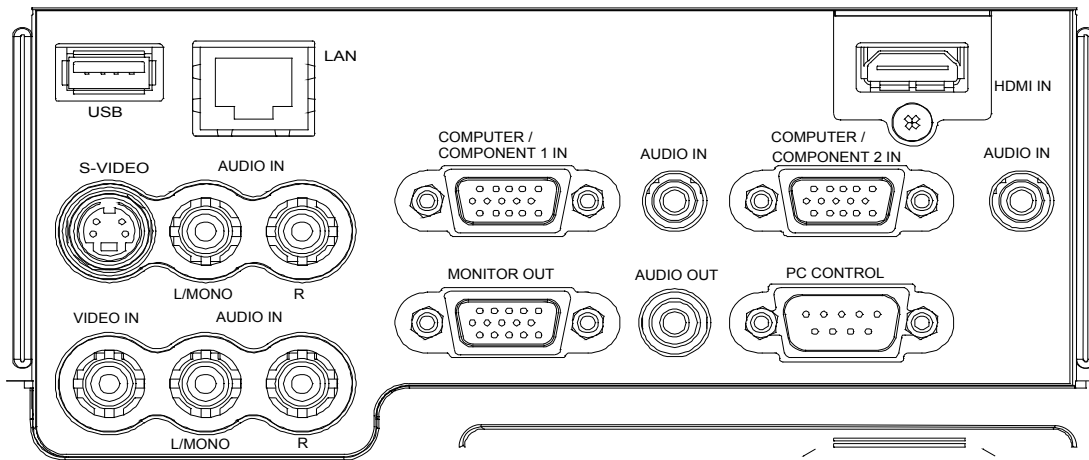
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#### Optional Ceiling Mount Dimensions (Model #: NP900CM)

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



#### Input Panel





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### PC Control Codes

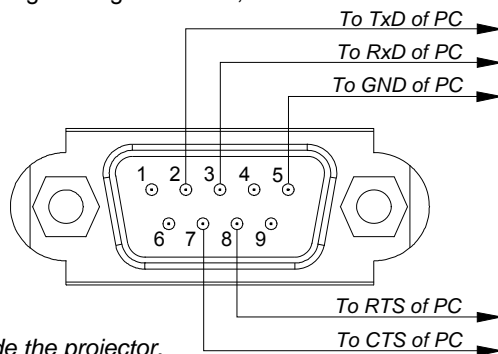
Function	Code Data
POWER ON	02H 00H 00H 00H 00H 02H
POWER OFF	02H 01H 00H 00H 00H 03H
INPUT SELECT COMPUTER 1	02H 03H 00H 00H 02H 01H 01H 09H
INPUT SELECT COMPUTER 2	02H 03H 00H 00H 02H 01H 02H 0AH
INPUT SELECT HDMI	02H 03H 00H 00H 02H 01H 1AH 22H
INPUT SELECT VIDEO	02H 03H 00H 00H 02H 01H 06H 0EH
INPUT SELECT S-VIDEO	02H 03H 00H 00H 02H 01H 0BH 13H
INPUT SELECT 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
ZOOM	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 03H 00H 33H
ASPECT RATIO (RGB)	
4:3	03H 10H 00H 00H 05H 18H 00H 00H 00H 00H 30H
16:9	03H 10H 00H 00H 05H 18H 00H 00H 02H 00H 32H
5:4	03H 10H 00H 00H 05H 18H 00H 00H 0BH 00H 3BH
16:9	03H 10H 00H 00H 05H 18H 00H 00H 0CH 00H 3CH
15:9	03H 10H 00H 00H 05H 18H 00H 00H 0DH 00H 3DH
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 (for cable lengths longer than 20', it is recommended changing to 9600 bps in setup menu)
- Data Length: 8 bits
- Parity: No Parity
- Stop Bit: One Bit
- X on/off: None
- Communications: Full duplex



**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.