

## 68100-4KSS Installation Guide

### Desktop and Ceiling Mount

Rev 1.0

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#### Product Description

<b>Type:</b>	1 chip DMD Reflection Type 0.66 in. TRP DMD	<b>Dimensions:</b> 19.7" (W) x 8.49" (H) x 23.0" (D)
<b>DMD Resolution:</b>	2716 x 1528 (16:9)	<b>Weight:</b> 63.9 lbs. / 29.0kg
<b>Output Resolution:</b>	3840 x 2160 (16:9)	<b>Brightness:</b> 10,000 Lumens
<b>Fan Noise:</b>	43 dB / 39dB @ 1 meter	
<b>Power Consumption:</b>	1220W (max)	<b>BTU's:</b> 4163 BTU/hour
Network Ready, RJ45 Powered: Lens Shift, Horizontal & Vertical /Zoom/ Focus		

#### Lens Specifications

<b>NP39ML-4K:</b> Throw Ratio: ~ 0.38:1 Screen Sizes: 85"-350"	Focal Length: 11.4mm F/#: 1.85	<b>NP19ZL-4K:</b> Throw Ratio: 2.20 -3.67:1 Screen Sizes: 50-300"	Focal Length: 32.9 – 54.2mm F/#: 1.86 – 2.48
<b>NP16FL-4K:</b> Throw Ratio: ~ 0.76:1 Screen Sizes: 50"-300"	Focal Length: 11.6mm F/#: 1.85	<b>NP20ZL-4K:</b> Throw Ratio: 3.54 – 5.36:1 Screen Sizes: 50-300"	Focal Length: 52.8 – 79.1mm F/#: 1.85-2.41
<b>NP17ZL-4K:</b> Throw Ratio: 1.24 - 1.78:1 Screen Sizes: 50"-300"	Focal Length: 18.7 – 26.5mm F/#: 1.85	<b>NP21ZL-4K:</b> Throw Ratio: 5.25 – 8.28:1 Screen Sizes: 50-300"	Focal Length: 78.5 -121.9mm F/#: 1.85-2.48
<b>NP18ZL-4K:</b> Throw Ratio: 1.71 – 2.25:1 Screen Sizes: 50-300"	Focal Length: 26.0 – 34.0mm F/#: 1.70-1.90	<b>NP31ZL-4K:</b> Throw Ratio: 0.74 – 0.93:1 Screen Sizes: 50-300"	Focal Length: 11.3 -14.1mm F/#: 1.96-2.3

#### Screen/Aspect Ratio

**4:3, 16:9 and 16:10 screens are fully supported** with proper aspect ratio control for both type sources using developed scaling technology. Menu selections have settings for each screen type and aspect ratio control for each source type.

#### 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.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary ±5%.

**DUKANE CORP AV SERVICE DEPT**  
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St Charles, IL 60174  
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#### Formulas: 16:10 Aspect Ratio (WUXGA)

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:

#### Projection Formulas:

- NP16FL-4K: C = 0.794W – 1.85
- NP17ZL-4K: C(Wide) = 1.269W – 2.091 ----- C(Tele) = 1.802W – 1.910
- NP18ZL-4K: C(Wide) = 1.748W – 2.673 ----- C(Tele) = 2.290W – 2.633
- NP19ZL-4K: C(Wide) = 2.241W – 3.150 ----- C(Tele) = 3.713W – 3.114
- NP20ZL-4K: C(Wide) = 3.618W – 5.319 ----- C(Tele) = 5.434W – 5.299
- NP21ZL-4K: C(Wide) = 5.412W – 11.622 ---- C(Tele) = 8.438W – 11.531
- NP31ZL-4K: C(Wide) = 0.768W – 1.795 ----- C(Tele) = 0.953W – 1.705
- NP39ML-4K: Ultra-Short Throw lens (See page 3 for Formulas)

#### Definitions:

- W = Image Width
- H = Image Height (size)
- C = Throw distance

#### 16:9 Screen Formulas

- W = H x 16/9
  - H = W x 9/16
  - Screen Diagonal = W x 18.358/16
- #### 16:10 Screen Formulas
- W = H x 16/10
  - H = W x 10/16
  - Screen Diagonal = W x 18.868/16

#### Distance Chart using 16:9 native projector with 16:9 Image (1080p)

Screen Size (16:9)			Rear Lens	Zoom Lenses											
Diagonal	Width(W)	Height (H)	NP16FL-4K	NP31ZL-4K	NP17ZL-4K	NP18ZL-4K	NP19ZL-4K	NP20ZL-4K	NP21ZL-4K						
inches	inches	inches	0.76:1	0.74-0.93:1	1.24-1.78:1	1.71-2.25-1	2.20-3.67:1	3.54-5.36:1	5.25-8.28:1						
			inches	inches	inches	inches	inches	inches	inches						
30	26	15	19.29	18.3	23.2	31.1	45.2	43.0	57.2	55.4	94.0	89.3	136.8	129.9	209.1
59	51	29	38.98	37.7	47.3	63.2	90.8	87.2	115.1	112.1	187.8	180.7	274.1	266.7	422.4
67	58	33	44.51	43.1	53.9	72.0	103.3	99.4	131.1	127.7	213.7	206.0	312.0	304.4	481.2
70	61	34	46.59	45.1	56.4	75.3	108.0	104.0	137.1	133.6	223.4	215.4	326.2	318.6	503.3
83	72	41	55.59	53.8	67.2	89.7	128.4	123.8	163.0	159.0	265.5	256.4	387.8	379.9	598.9
106	92	52	71.50	69.2	86.3	115.1	164.6	158.8	208.9	203.9	339.9	328.9	496.7	488.4	768.0
110	96	54	74.27	71.8	89.7	119.6	170.8	164.9	216.9	211.7	352.9	341.5	515.7	507.2	797.4
126	110	62	85.34	82.5	102.9	137.3	196.0	189.3	248.8	242.9	404.6	392.0	591.4	582.7	915.1
133	116	65	90.19	87.2	108.8	145.0	207.0	199.9	262.8	256.6	427.3	414.1	624.6	615.7	966.6
159	139	78	108.18	104.6	130.4	173.8	247.8	239.6	314.7	307.4	511.4	496.1	747.7	738.4	1157.8
184	160	90	125.48	121.4	151.1	201.4	287.1	277.6	364.6	356.2	592.3	574.9	866.1	856.3	1341.6
202	176	99	137.94	133.4	166.1	221.3	315.3	305.1	400.5	391.4	650.6	631.6	951.4	941.2	1474.0
220	192	108	150.39	145.5	181.0	241.2	343.6	332.5	436.5	426.5	708.8	688.4	1036.6	1026.1	1606.4
263	229	129	180.15	174.2	216.7	288.8	411.1	398.0	522.3	510.5	848.0	824.0	1240.3	1228.9	1922.6
299	261	147	205.06	198.3	246.6	328.6	467.7	452.8	594.1	580.8	964.5	937.5	1410.8	1398.7	2187.4

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#### Formulas: 16:9 Aspect Ratio (WUXGA)

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:

#### Projection Formulas:

**NP39ML-4K:**  $A=C-33.0$   
 $B=0.588*W$   
 $C=(0.351*W)+2.362$   
 $D=0.239*W$   
 $E=0.310*W$

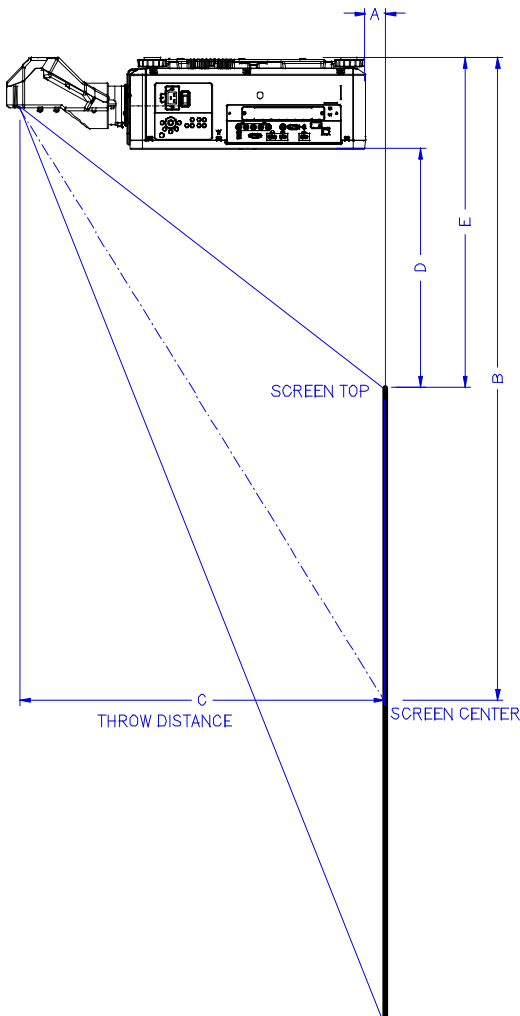
#### Definitions:

W = Image Width  
 H = Image Height (size)  
 C = Throw distance

#### 16:9 Screen Formulas

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

### NP39ML-4 Installation



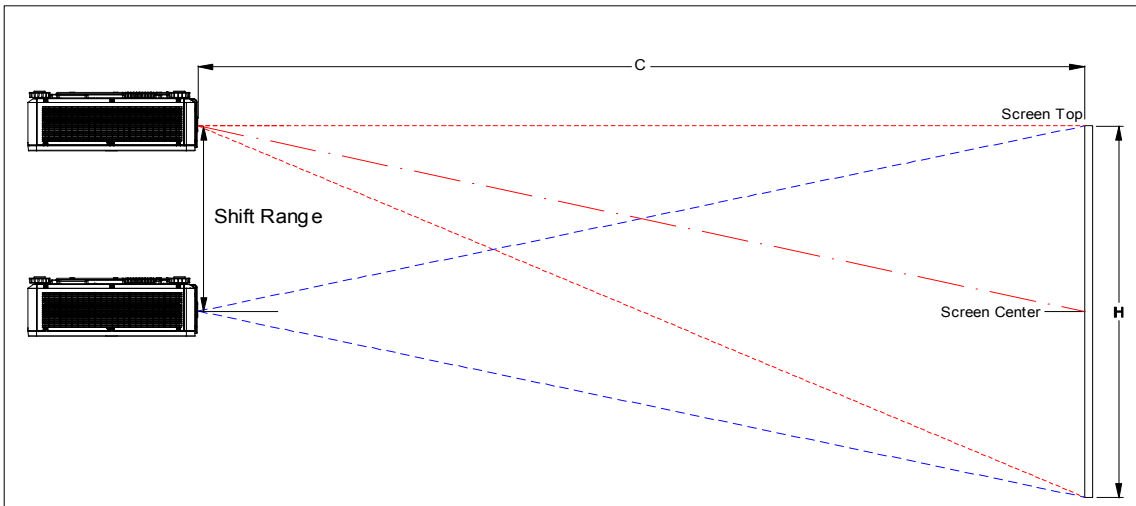
Screen Size (16:9)			A	B	C	D	E
Diagonal	Width(W)	Height (H)					
inches	inches	inches	inches	inches	inches	inches	inches
108	94	53	1	55	35	21	30
113	98	55	3	58	37	23	31
130	113	64	8	67	42	27	36
137	119	67	10	70	44	29	38
164	143	80	18	84	53	37	45
189	165	93	26	97	60	43	52
208	181	102	31	107	66	49	57
226	197	111	37	116	71	54	62
270	235	132	50	138	85	66	74
300	261	147	59	154	94	50	59
350	305	172	74	179	109	88	96

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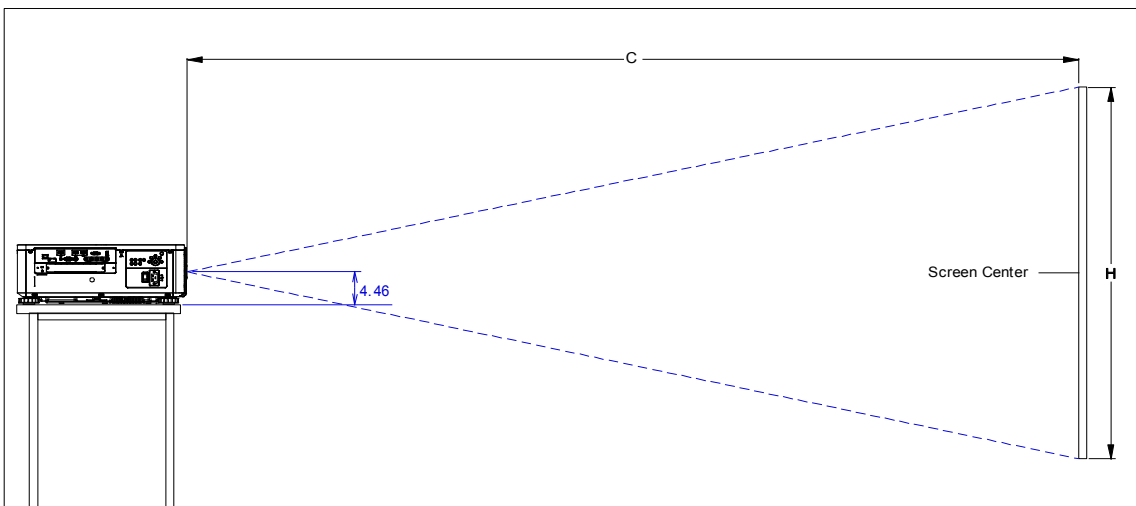
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### Ceiling Mount Installation



**Note:** Lens Shift Feature is not available for the NP16FL. This lens should only be used for “zero degree”/“no-offset” applications.



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### Desktop and Ceiling Mount

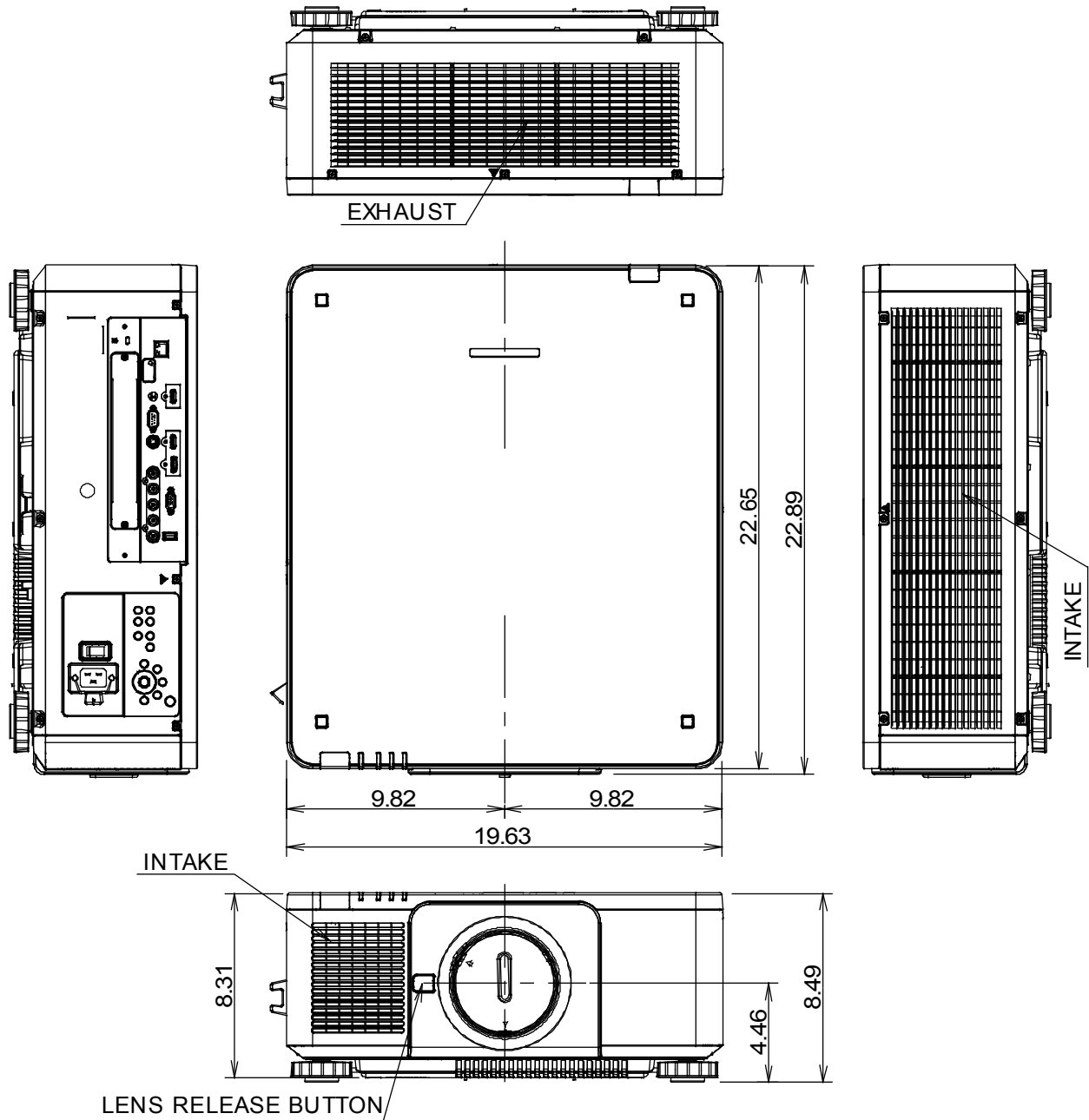
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#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the 68100-4KSS.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without a lens



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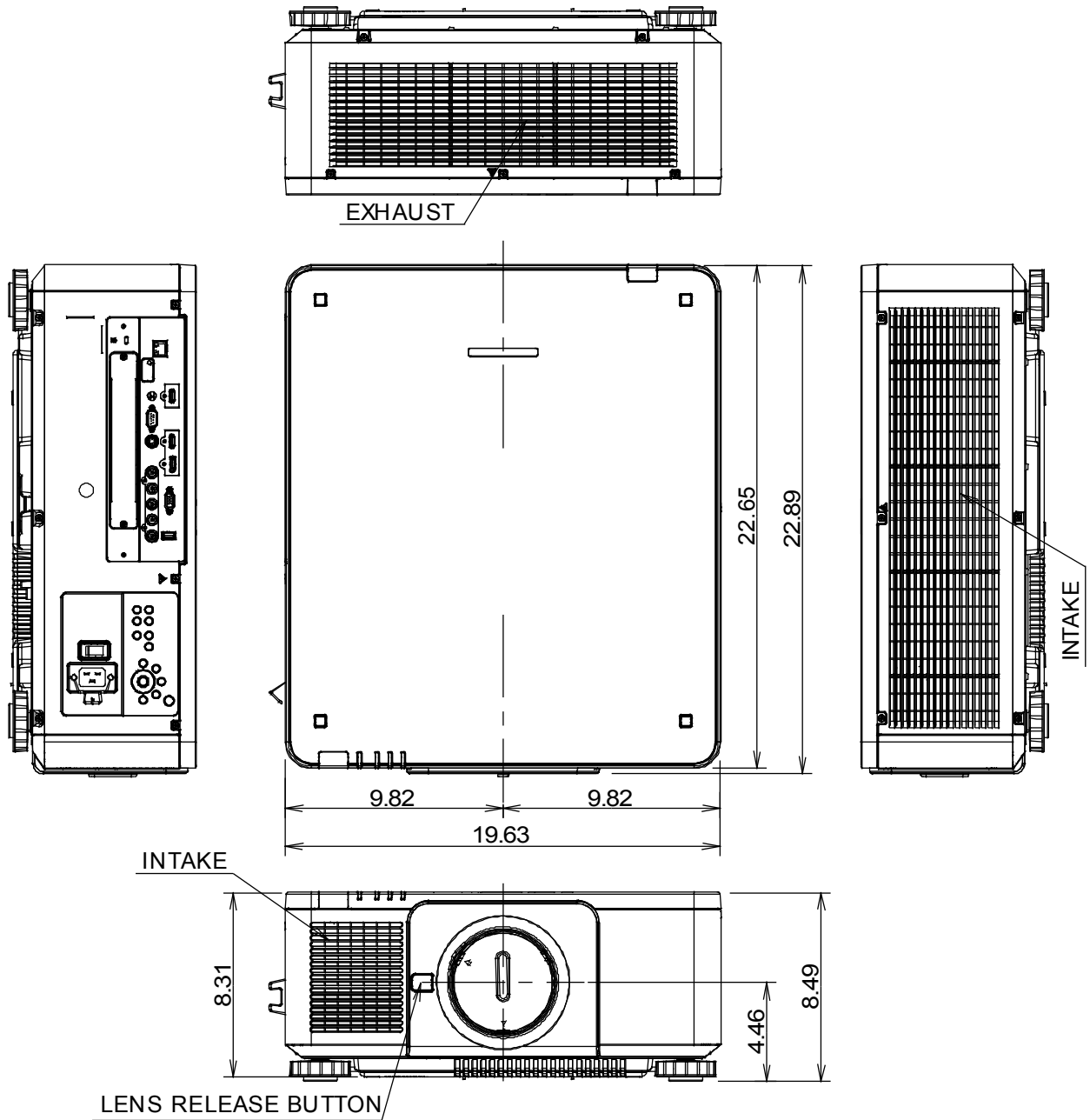
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#### Cabinet Dimensions

The following diagrams show the cabinet dimensions for the 68100-4KSS.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without a lens

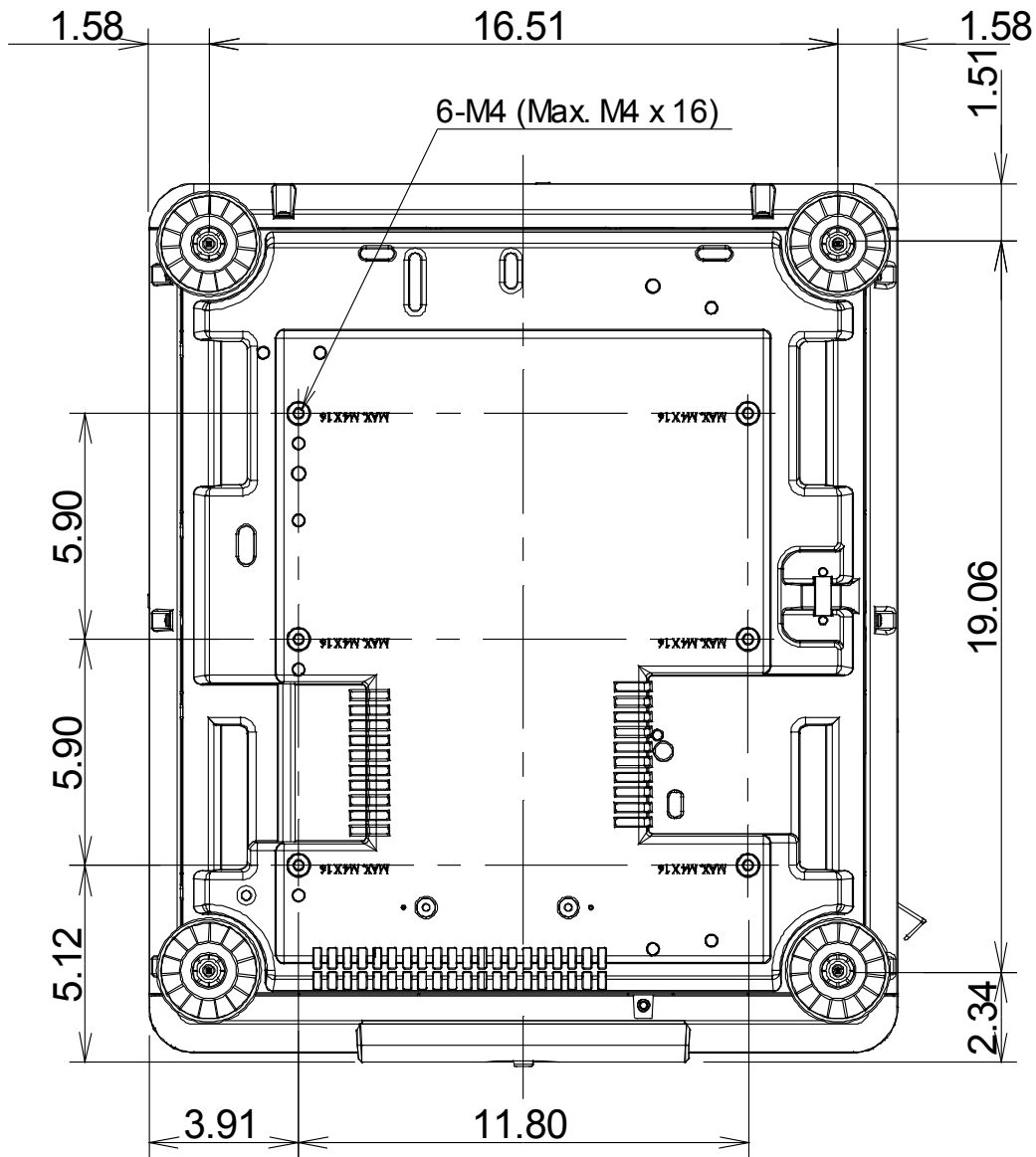


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### Cabinet Dimensions

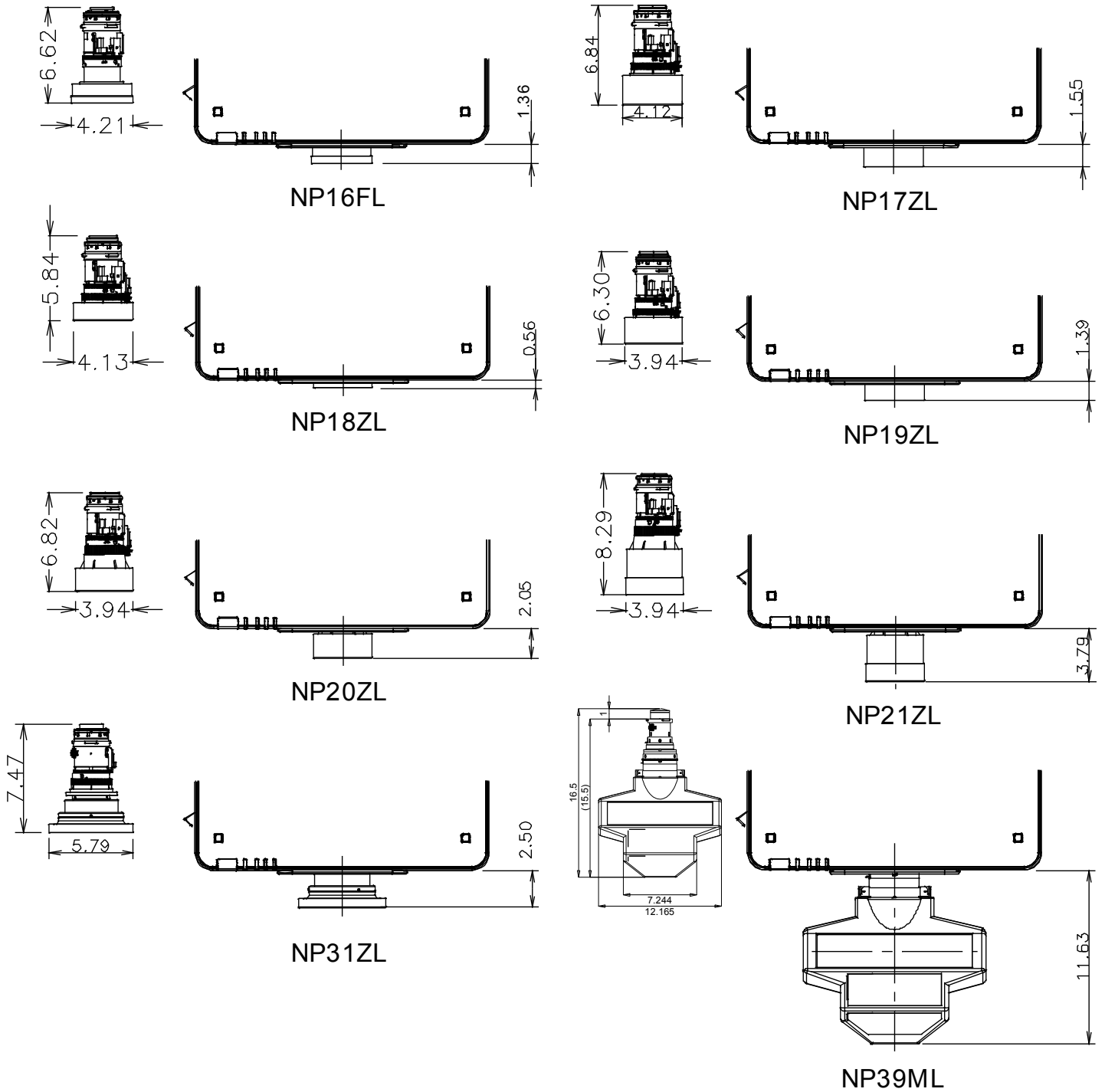


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### Optional Lens Dimensions





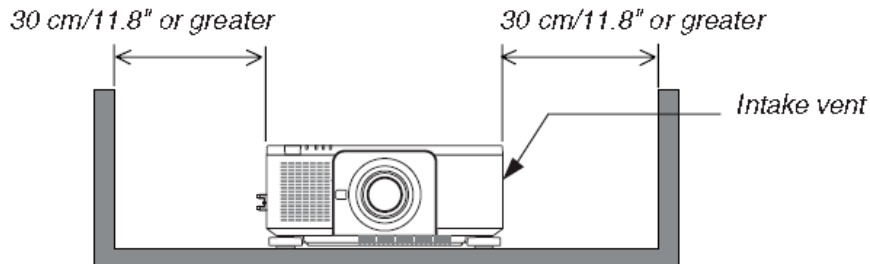
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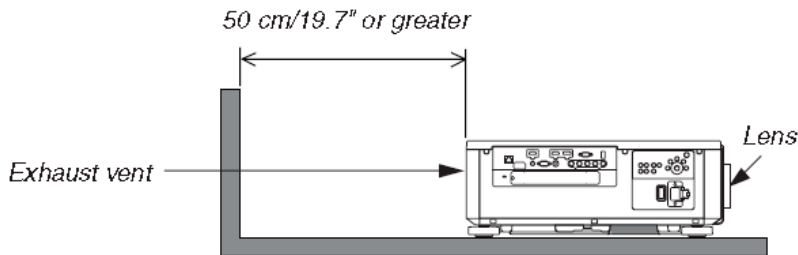
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#### Ventilation Requirements

- If there are walls on both sides of the projector :



- If there's a wall behind the projector :

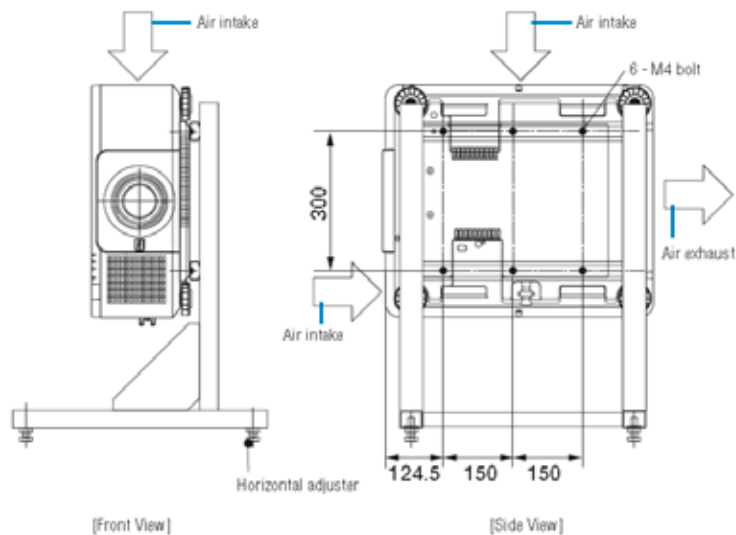


#### Portrait Requirements

##### Reference drawings

\* The drawing showing the dimensional requirements is not an actual stand design drawing.

(Unit: mm)



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### Regulatory Labels



**CAUTION**  
**POSSIBLY HAZARDOUS OPTICAL RADIATION**  
**EMITTED FROM THIS PRODUCT.**  
**DO NOT STARE AT OPERATING LAMP.**  
**MAY BE HARMFUL TO THE EYES.**  
**RISK GROUP 2 IEC 62471:2006**

**VORSICHT**  
Dieses Produkt strahlt eventuelle gefährliche optische Strahlung aus.  
Schauen Sie nicht in die eingeschaltete Lampe.  
Dies kann Ihre Augen gefährden.  
**RISIKOGRUPPE 2 IEC 62471:2006**

**MISE EN GARDE**  
Rayonnement optique éventuellement dangereux émis par ce produit.  
Ne regardez pas fixement la lampe de fonctionnement.  
Cela peut être dangereux pour les yeux.  
**GROUPE À RISQUE 2 IEC 62471:2006**



**COMPLIES WITH 21 CFR 1040.10**  
**AND 1040.11 EXCEPT FOR DEVIATIONS**  
**PURSUANT TO LASER NOTICE No. 50,**  
**DATED JUNE 24, 2007**

**LASER RADIATION**  
**AVOID DIRECT EYE EXPOSURE**  
**CLASS 3R LASER PRODUCT**  
WAVE LENGTH: 450-460 nm  
MAX. PULSE ENERGY: 0.376mJ  
PULSE DURATION: 0.74 ms  
IEC/EN 60825-1:2007  
**CLASS 1 LASER PRODUCT**  
IEC/EN 60825-1:2014

**LASERSTRAHLUNG**  
**DIREKTE EXPOSITION DER AUGEN VERMEIDEN**  
**LASERPRODUKT DER KLASSE 3R**  
WELLENLÄNGE: 450-460 nm  
MAX. PULSENERGIE: 0,376 mJ  
IMPULSDAUER: 0,74 ms  
IEC/EN 60825-1:2007  
**LASERPRODUKT DER KLASSE 1**  
IEC/EN 60825-1:2014

**RAYONNEMENT LASER**  
**ÉVITER D'EXPOSER DIRECTEMENT LES YEUX**  
**PRODUIT LASER DE CLASSE 3R**  
LONGUEUR D'ONDE : 450-460 nm  
ÉNERGIE D'IMPULSION MAX. : 0,376 mJ  
DURÉE DE L'IMPULSION : 0,74 ms  
IEC/EN 60825-1:2007  
**PRODUIT LASER DE CLASSE 1**  
IEC/EN 60825-1:2014

**ЛАЗЕРНОЕ ИЗЛУЧЕНИЕ**  
**ИЗБЕГАЙТЕ ПРЯМОГО ВОЗДЕЙСТВИЯ НА ГЛАЗА**  
**ЛАЗЕРНОЕ ИЗДЕЛИЕ 3R КЛАССА ОПАСНОСТИ**  
ДЛИНА ВОЛНЫ: 450-460 нм  
МАКС. ЭНЕРГИЯ ИМПУЛЬСА: 0,376 мДж  
ДЛИТЕЛЬНОСТЬ ИМПУЛЬСА: 0,74 мс  
IEC/EN 60825-1:2007  
**ЛАЗЕРНОЕ ИЗДЕЛИЕ 1 КЛАССА ОПАСНОСТИ**  
IEC/EN 60825-1:2014

레이저 방사선  
육안으로 쳐다보지 말 것  
등급 3R 레이저 제품  
파장: 450-460nm  
최대 펄스 에너지: 0.376mJ  
펄스 지속 시간: 0.74ms  
IEC/EN 60825-1:2007  
등급 1 레이저 제품  
IEC/EN 60825-1:2014

**LASER APERTURE**  
**LASERÖFFNUNG**  
**OUVERTURE LASER**  
**АПЕРТУРА ЛАЗЕРА**  
**레이저 개구부**

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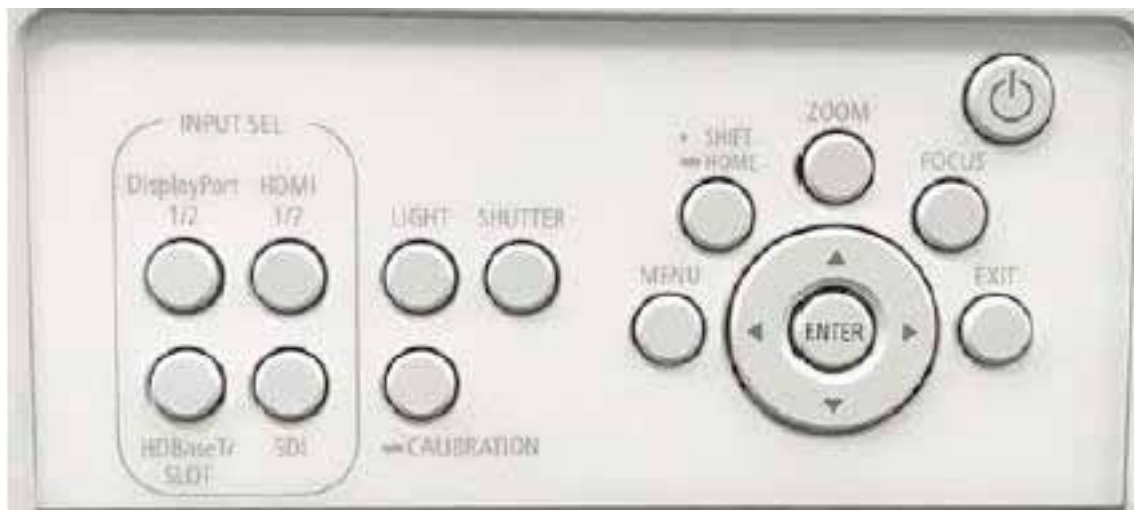
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### Input Panel



### Control Panel



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#### PC Control Codes

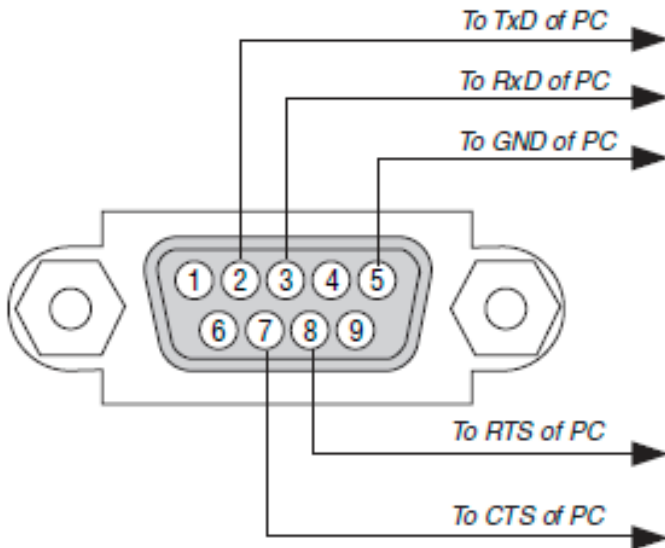
Function	Code Data							
POWER ON	02H	00H	00H	00H	00H	02H		
POWER OFF	02H	01H	00H	00H	00H	03H		
INPUT SELECT COMPUTER	02H	03H	00H	00H	02H	01H	01H	09H
INPUT SELECT HDMI 1	02H	03H	00H	00H	02H	01H	A1H	A9H
INPUT SELECT HDMI 2	02H	03H	00H	00H	02H	01H	06H	0EH
INPUT SELECT DisplayPort 1	02H	03H	00H	00H	02H	01H	A6H	AEH
INPUT SELECT DisplayPort 2	02H	03H	00H	00H	02H	01H	A6H	AEH
INPUT SELECT HDBaseT	02H	03H	00H	00H	02H	01H	20H	28H
INPUT SELECT SLOT	02H	03H	00H	00H	02H	01H	ABH	B3H
INPUT 3G SDI	02H	03H	00H	00H	02H	01H	ABH	B3H
PICTURE MUTE ON	02H	10H	00H	00H	00H	12H		
PICTURE MUTE OFF	02H	11H	00H	00H	00H	13H		

#### 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

##### 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.