

68100WUSS/68100WUSS-B Installation Guide

Desktop and Ceiling Mount

Rev 1.0

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Product Description

Type:	1 chip DMD Reflection Type 0.67 in. 2x LVDS DMD	Dimensions: 19.7”(W) x 8.49”(H) x 23.0”(D)	Weight:	68100WUSS: 63.9 lbs. / 29.0kg
Resolution:	1920 x 1200 (16:10)	Brightness:	68100WUSS: 10,000 Lumens	
Fan Noise:	68100WUSS: 42 dB / 38dB @ 1 meter			
Power Consumption:	68100WUSS: 1220W (max)	BTU’s:	68100WUSS: 4163 BTU/hour	

Network Ready, integrated wired and wireless adapter
Manual: Lens Shift, Horizontal & Vertical /Zoom/ Focus

Lens Specifications

NP39ML: Throw Ratio: ~ 0.38:1 Screen Sizes: 85”-297”	Focal Length: 11.4mm F/#: 1.85	NP19ZL: Throw Ratio: 2.22 -3.67:1 Screen Sizes: 50-300”	Focal Length: 32.9 – 54.2mm F/#: 1.86 – 2.48
NP16FL: Throw Ratio: ~ 0.76:1 Screen Sizes: 50”-300”	Focal Length: 11.6mm F/#: 1.85	NP20ZL: Throw Ratio: 3.60 – 5.40:1 Screen Sizes: 50-300”	Focal Length: 52.8 – 79.1mm F/#: 1.85-2.5
NP17ZL: Throw Ratio: 1.29 - 1.79:1 Screen Sizes: 50”-300”	Focal Length: 18.7 – 26.5mm F/#: 1.85	NP21ZL: Throw Ratio: 5.30 – 8.30:1 Screen Sizes: 50-300”	Focal Length: 78.5 -121.9mm F/#: 1.85-2.48
NP18ZL: Throw Ratio: 1.73 – 2.27:1 Screen Sizes: 50-300”	Focal Length: 25.7 – 33.7mm F/#: 1.64-1.86	NP31ZL: Throw Ratio: 0.75 – 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 NEC 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%.

Note: The Dukane models described in this document are manufactured by NEC and use the same firmware, software programs, control code, and accessory parts. The equivalent Dukane to NEC models are 68100WUSS (NP-PX1004UL-WH), and 68100WUSS-B (NP-PX1004UL-BK).

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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:	$C = 0.794W - 1.85$	
NP17ZL:	$C(\text{Wide}) = 1.281W - 2.094$	$C(\text{Tele}) = 1.825W - 1.913$
NP18ZL:	$C(\text{Wide}) = 1.764W - 2.677$	$C(\text{Tele}) = 2.313W - 2.638$
NP19ZL:	$C(\text{Wide}) = 2.261W - 3.150$	$C(\text{Tele}) = 3.747W - 3.114$
NP20ZL:	$C(\text{Wide}) = 3.654W - 5.319$	$C(\text{Tele}) = 5.492W - 5.299$
NP21ZL:	$C(\text{Wide}) = 5.469W - 11.626$	$C(\text{Tele}) = 8.527W - 11.531$
NP31ZL:	$C(\text{Wide}) = 0.775W - 1.839$	$C(\text{Tele}) = 0.970W - 1.740$

Definitions:

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

16:10 Screen Formulas

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

16:9 Screen Formulas

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

Distance Chart for popular 16:10 Screens (WUXGA)

Screen Size (16:10)			Rear Lens	Zoom Lenses											
Diagonal	Width(W)	Height (H)	NP16FL	NP31ZL	NP17ZL	NP18ZL	NP19ZL	NP20ZL	NP21ZL						
inches	inches	inches	0.76:1	0.75-0.93:1	1.29-1.79:1	1.73-2.27-1	2.22-3.67:1	3.60-5.40:1	5.30-8.30:1						
			inches	inches		inches		inches		inches		inches		inches	
40	34	21	24.83	24.2	30.9	40.9	59.4	56.6	75.1	72.8	122.8	117.5	179.2	172.1	275.0
60	51	32	38.80	37.8	47.9	63.5	91.5	87.6	115.8	112.6	188.7	181.8	275.9	268.4	425.1
68	58	36	43.88	42.8	54.1	71.7	103.2	98.9	130.6	127.1	212.7	205.2	311.0	303.4	479.6
72	61	38	46.43	45.3	57.2	75.8	109.0	104.6	138.0	134.3	224.7	216.8	328.6	320.9	506.9
85	72	45	55.32	54.0	68.1	90.1	129.5	124.3	163.9	159.6	266.7	257.8	390.1	382.1	602.4
108	92	57.5	71.20	69.5	87.5	115.8	166.0	159.6	210.2	204.9	341.6	330.8	500.0	491.5	773.0
113	96	60	74.37	72.6	91.4	120.9	173.3	166.7	219.4	213.9	356.6	345.5	521.9	513.4	807.1
130	110	69	85.81	83.7	105.3	139.3	199.6	192.1	252.7	246.5	410.6	398.1	601.0	592.2	929.8
137	116	72.5	90.25	88.1	110.8	146.5	209.8	201.9	265.7	259.1	431.5	418.5	631.8	622.8	977.6
164	139	87	108.67	106.0	133.3	176.2	252.1	242.9	319.3	311.6	518.5	503.3	759.2	749.7	1175.4
189	160	100	125.19	122.2	153.5	202.9	290.1	279.6	367.4	358.6	596.4	579.3	873.4	863.4	1352.8
208	176	110	137.89	134.6	169.0	223.4	319.3	307.8	404.5	394.8	656.4	637.8	961.3	950.9	1489.2
226	192	120	150.60	147.0	184.5	243.9	348.5	336.0	441.5	431.0	716.3	696.2	1049.2	1038.4	1625.7
270	229	143	179.82	175.5	220.2	291.0	415.6	400.9	526.6	514.2	854.2	830.7	1251.3	1239.7	1939.4
300	254	159	NA	195.0	244.6	376.0	752.4	747.3	1198.4	1181.3	1826.5	1377.5	2154.3	1377.5	2154.3
500	424	265	NA	326.8	409.5	628.9	1257.3	1250.6	2003.6	1977.1	3054.1	2307.2	3603.9	2307.2	3603.9

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	NP31ZL	NP17ZL	NP18ZL	NP19ZL	NP20ZL	NP21ZL						
inches	inches	inches	0.76:1	0.75-0.93:1	1.29-1.79:1	1.73-2.27-1	2.22-3.67:1	3.60-5.40:1	5.30-8.30:1						
			inches	inches		inches		inches		inches		inches		inches	
39	34	19	25.15	24.5	31.2	41.5	60.1	57.3	76.0	73.7	124.3	118.9	181.4	174.3	278.4
59	51	29	38.64	37.7	47.7	63.2	91.2	87.3	115.3	112.2	188.0	181.0	274.8	267.3	423.3
67	58	33	44.20	43.1	54.5	72.2	103.9	99.6	131.5	128.0	214.2	206.6	313.2	305.6	483.0
70	61	34	46.58	45.4	57.4	76.0	109.4	104.9	138.5	134.8	225.5	217.6	329.7	322.0	508.6
83	72	41	55.32	54.0	68.1	90.1	129.5	124.3	163.9	159.6	266.7	257.8	390.1	382.1	602.4
106	92	52	71.20	69.5	87.5	115.8	166.0	159.6	210.2	204.9	341.6	330.8	500.0	491.5	773.0
110	96	54	74.37	72.6	91.4	120.9	173.3	166.7	219.4	213.9	356.6	345.5	521.9	513.4	807.1
126	110	62	85.49	83.4	105.0	138.8	198.8	191.4	251.8	245.6	409.1	396.6	598.8	590.0	926.4
133	116	65	90.25	88.1	110.8	146.5	209.8	201.9	265.7	259.1	431.5	418.5	631.8	622.8	977.6
159	139	78	108.52	105.9	133.1	176.0	251.8	242.5	318.9	311.1	517.7	502.6	758.1	748.6	1173.7
184	160	90	125.19	122.2	153.5	202.9	290.1	279.6	367.4	358.6	596.4	579.3	873.4	863.4	1352.8
202	176	99	137.89	134.6	169.0	223.4	319.3	307.8	404.5	394.8	656.4	637.8	961.3	950.9	1489.2
220	192	108	150.60	147.0	184.5	243.9	348.5	336.0	441.5	431.0	716.3	696.2	1049.2	1038.4	1625.7
263	229	129	179.98	175.6	220.4	291.3	416.0	401.3	527.0	514.6	854.9	831.4	1252.4	1240.8	1941.2
400	339	212	NA	260.9	327.1	502.5	1004.9	998.9	1601.0	1579.2	2440.3	1628.9	2879.1	1842.4	2879.1
500	424	265	NA	326.8	409.5	628.9	1257.3	1250.6	2003.6	1977.1	3054.1	2039.2	3603.9	2307.2	3603.9

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Formulas: 16:10 Aspect Ratio (WUXGA)

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Projection Formulas:

NP39ML:
 $A=C-33.0$
 $B=0.652W$
 $C=0.351W+2.362$
 $D=0.239W$
 $E=D+8.49$

Definitions:

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

16:10 Screen Formulas

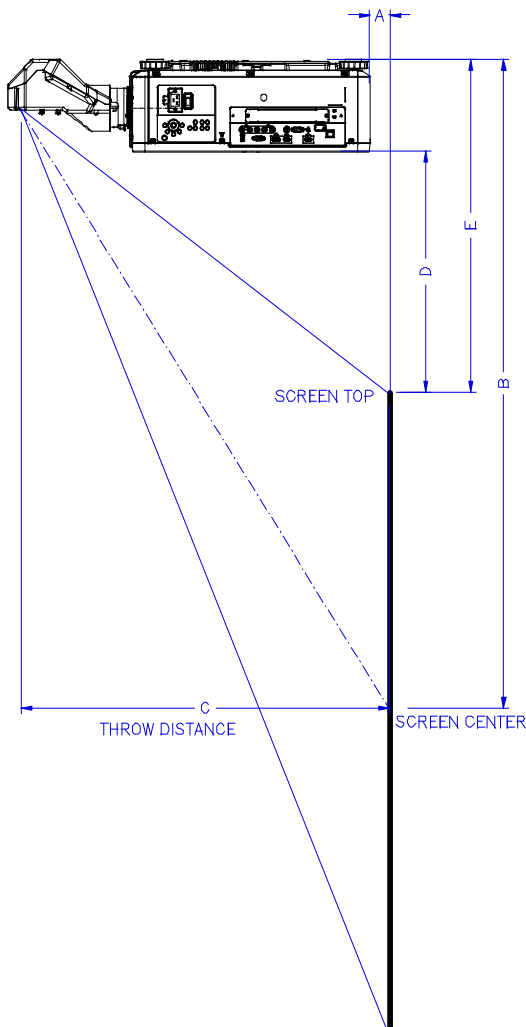
$W = H \times 16/10$
 $H = W \times 10/16$
 Screen Diagonal = $W \times 18.868/16$

16:9 Screen Formulas

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

Distance Chart for popular 16:10 Screens (WUXGA)

NP39ML Installation



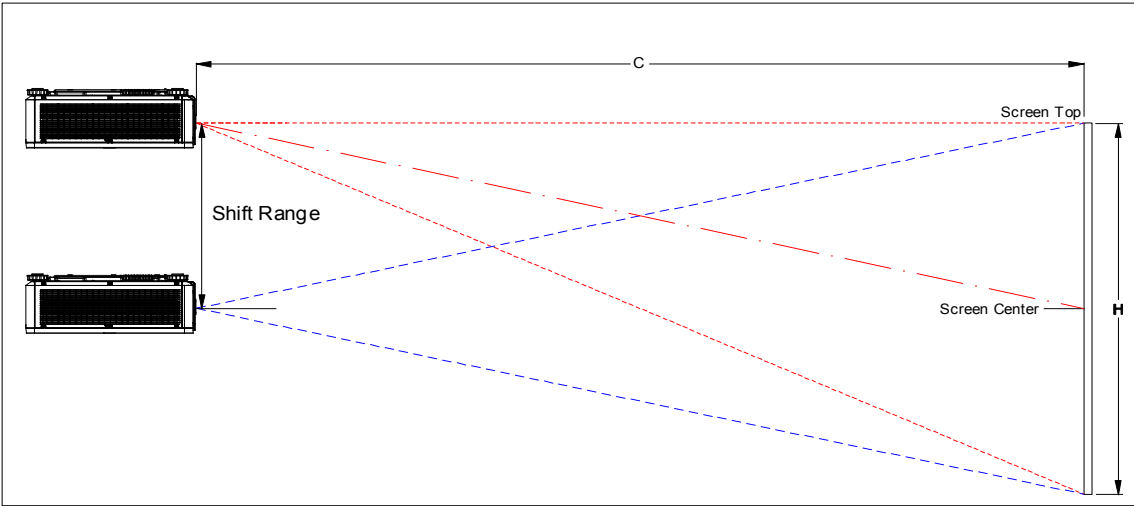
Screen Size (16:10)			A	B	C	D	E
Diagonal	Width(W)	Height (H)					
inches	inches	inches	inches	inches	inches	inches	inches
108	92	58	2	60	35	22	30.5
113	96	60	3	63	36	23	31.4
130	110	69	8	72	41	26	34.9
137	116	73	10	76	43	28	36.2
164	139	87	18	91	51	33	41.8
189	160	100	26	104	59	38	46.7
208	176	110	31	115	64	42	50.6
226	192	120	37	125	70	46	54.4
270	229	143	50	149	83	55	63.2
300	254	159	59	166	92	61	69.3
350	297	186	74	194	107	71	79.4

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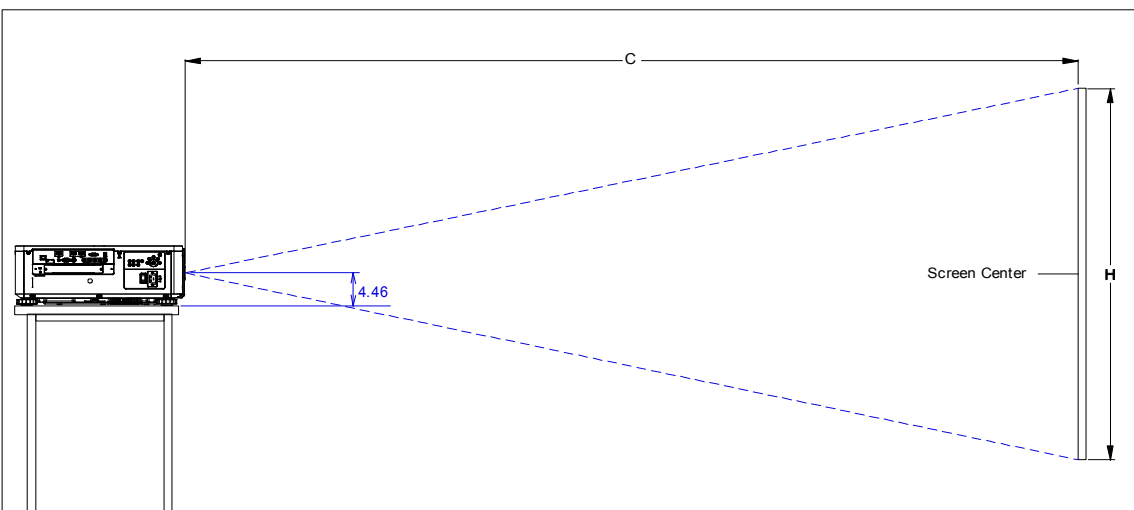
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Ceiling Mount Installation



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

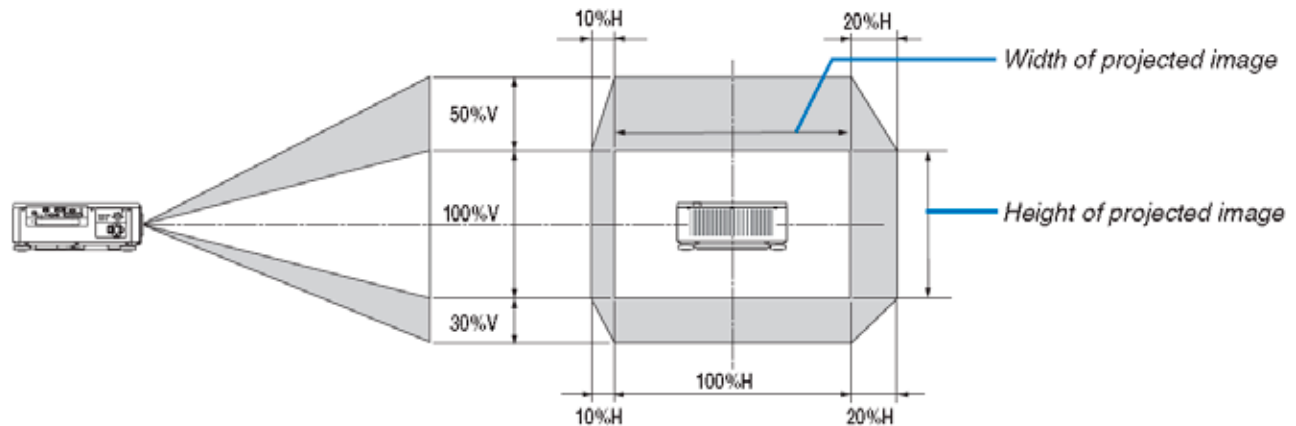


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Lens Shift Adjustable Range



Lens Shift Range for Desktop and Ceiling Mount Application

The diagram below shows the location of the image position in the lens. The lens can be shifted within the shaded area as shown using the normal projection position as a starting point.

Note: Lens shift feature is not available with NP16FL (rear lens). NP16FL should be used only for "zero degree" / no-offset" applications.

Note: Projector is set out of the box at maximum lens shift, which is how it is depicted above.
(W: width of projected image, H: height of projected image)

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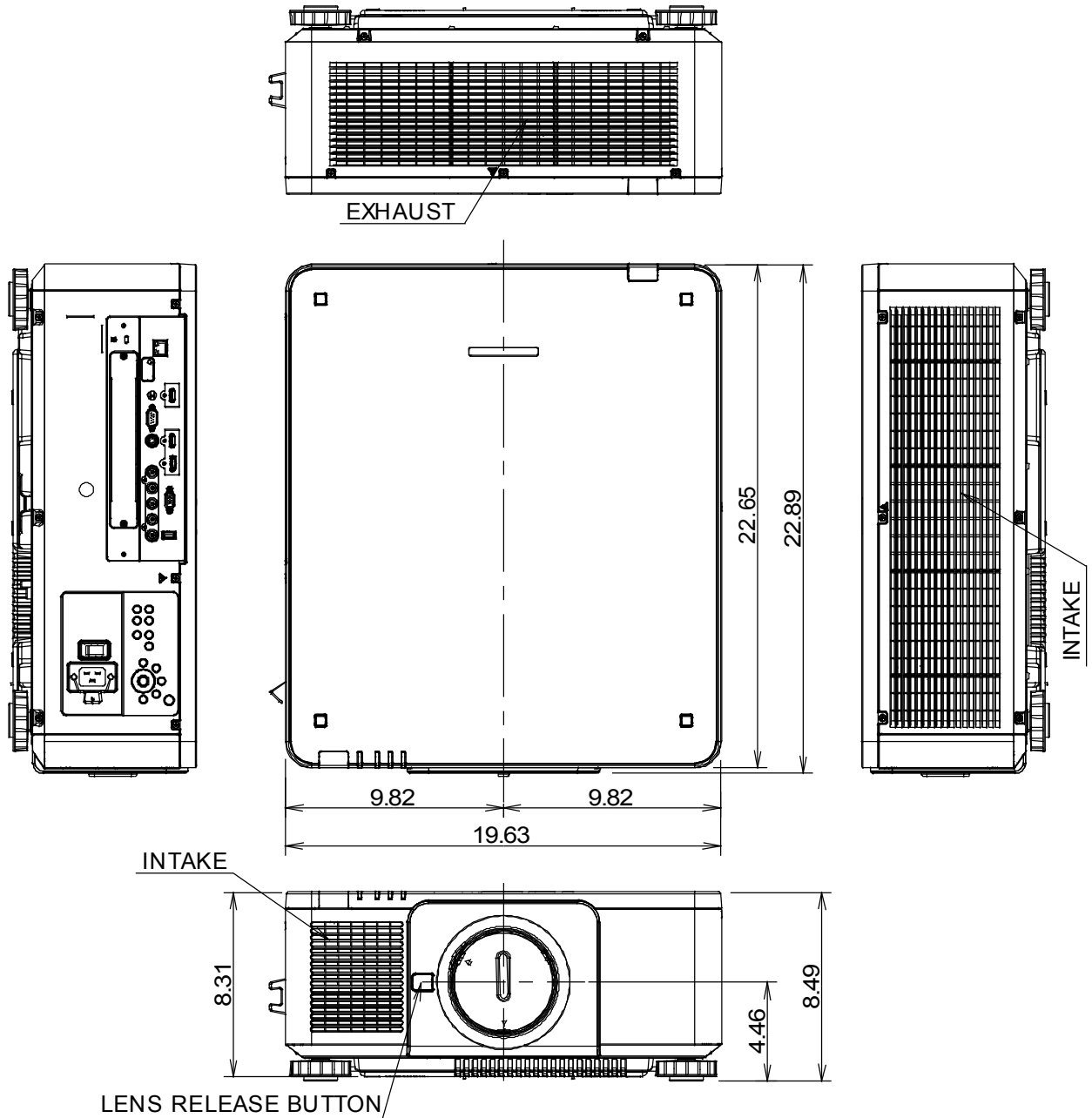
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Cabinet Dimensions

The following diagrams show the cabinet dimensions for the 68100WUSS

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without a lens

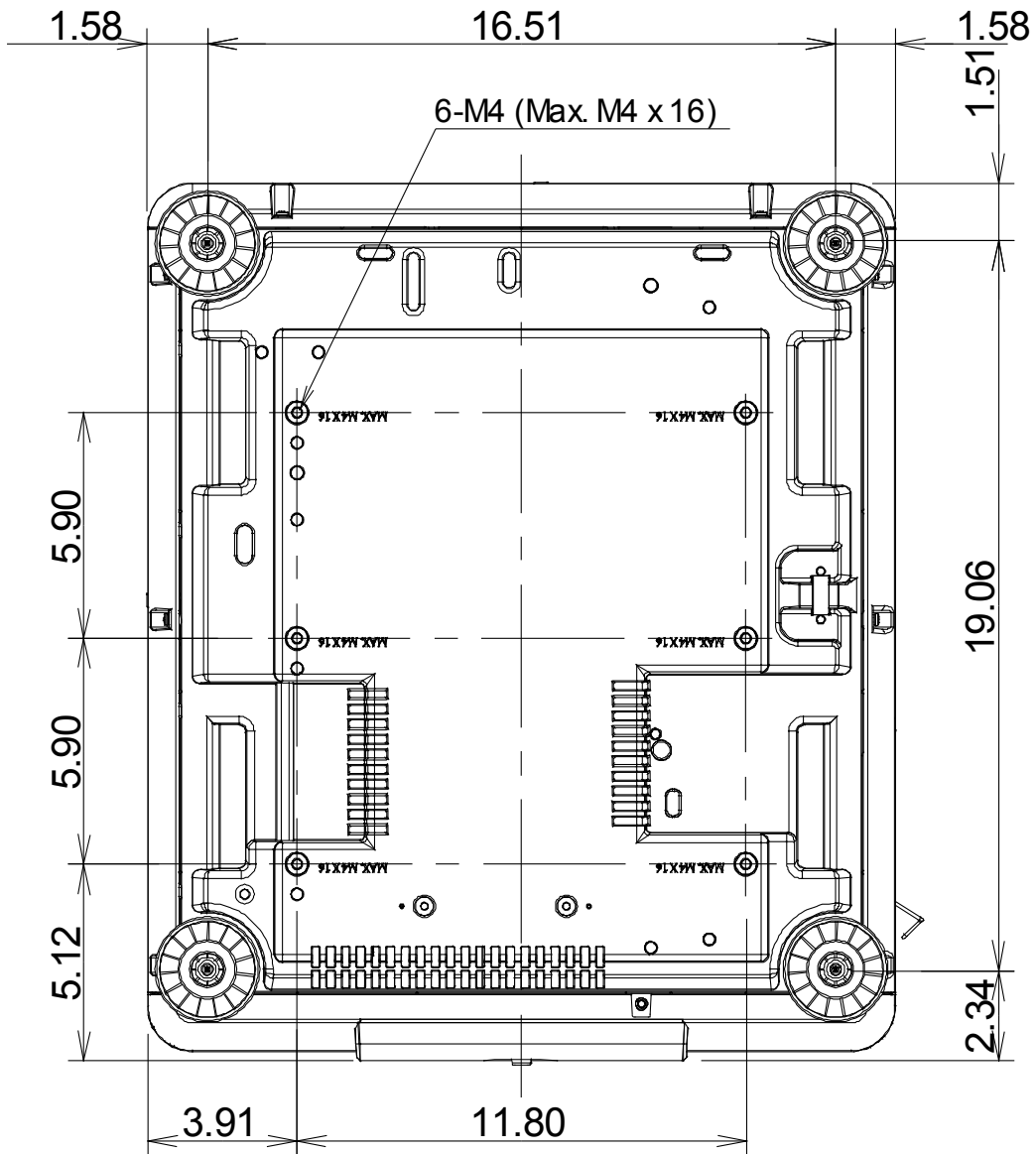


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Cabinet Dimensions

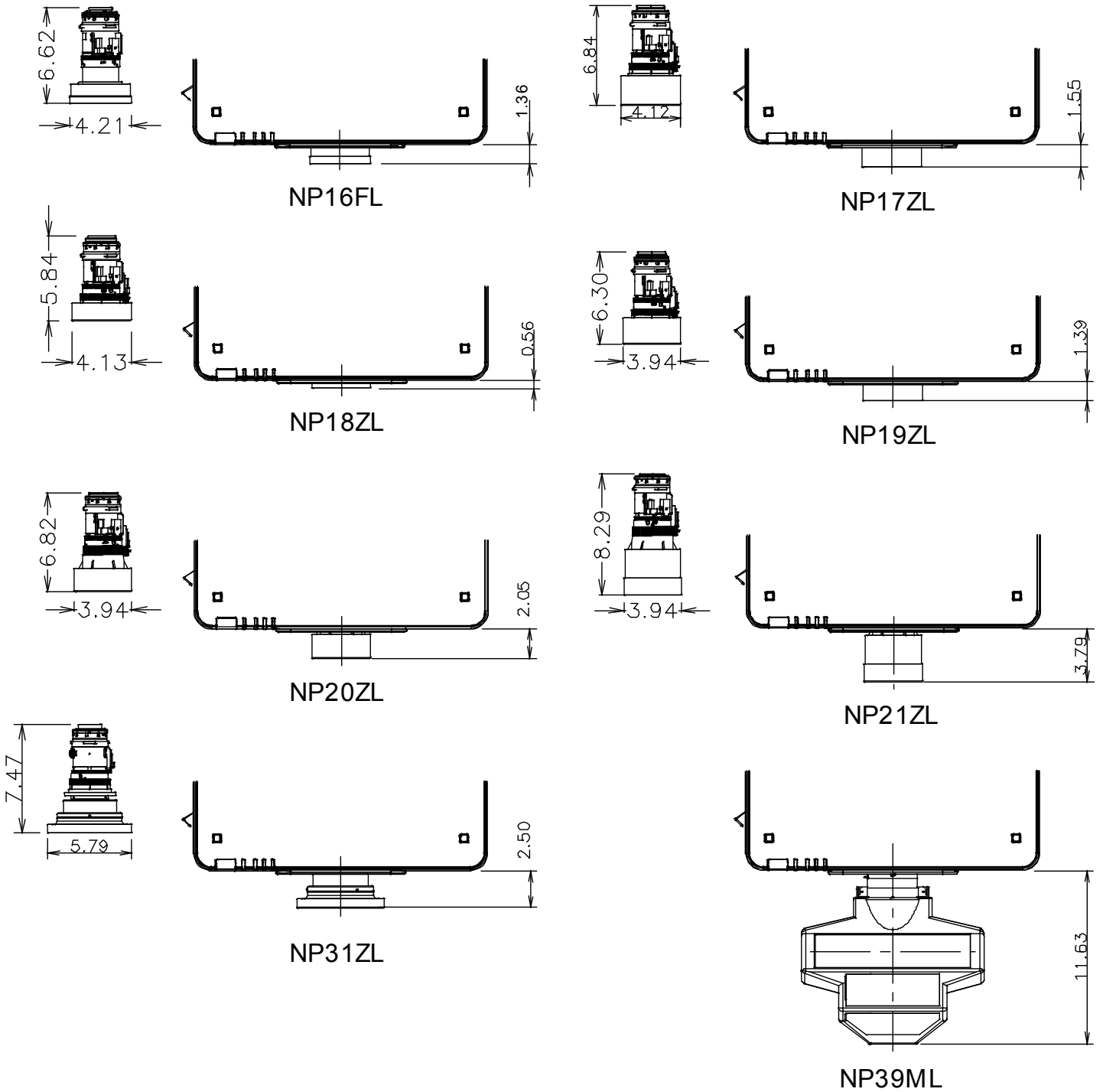


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Optional Lens Dimensions



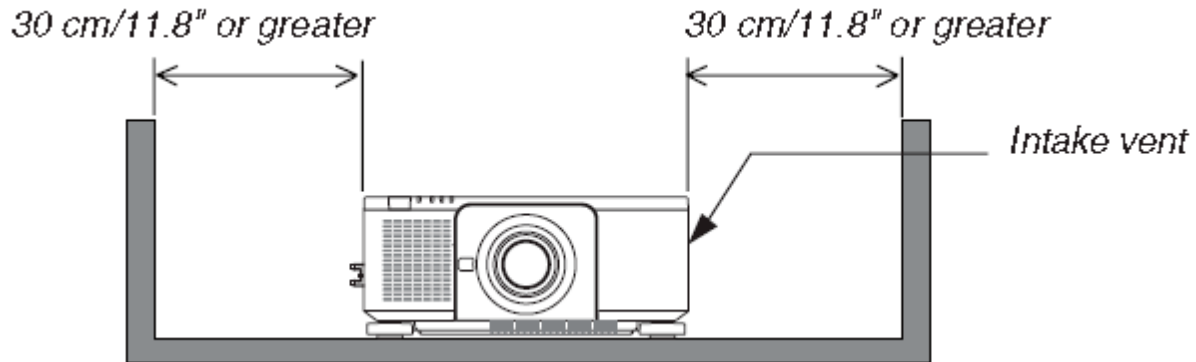
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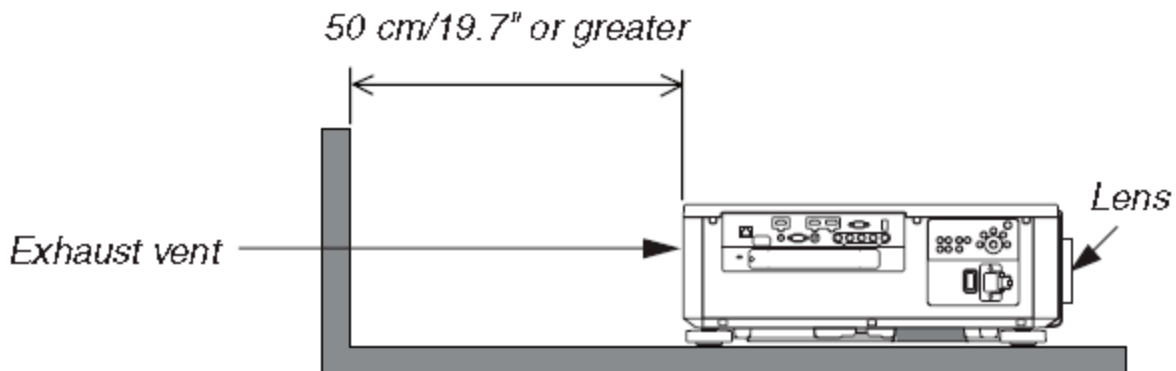
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Ventilation Requirements

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



- If there's a wall behind the projector :



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Regulatory Labels

	<p>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</p>	<p>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</p>	<p>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</p>
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	<p>COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE No. 50, DATED JUNE 24, 2007</p>
<p>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</p>	<p>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</p>
<p>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</p>	
<p>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</p>	
<p>ЛАЗЕРНОЕ ИЗЛУЧЕНИЕ ИЗБЕГАЙТЕ ПРЯМОГО ВОЗДЕЙСТВИЯ НА ГЛАЗА ЛАЗЕРНОЕ ИЗДЕЛИЕ 3R КЛАССА ОПАСНОСТИ ДЛИНА ВОЛН: 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</p>	

<p>LASER APERTURE LASERÖFFNUNG OUVERTURE LASER АПЕРТУРА ЛАЗЕРА 레이저 개구부</p>
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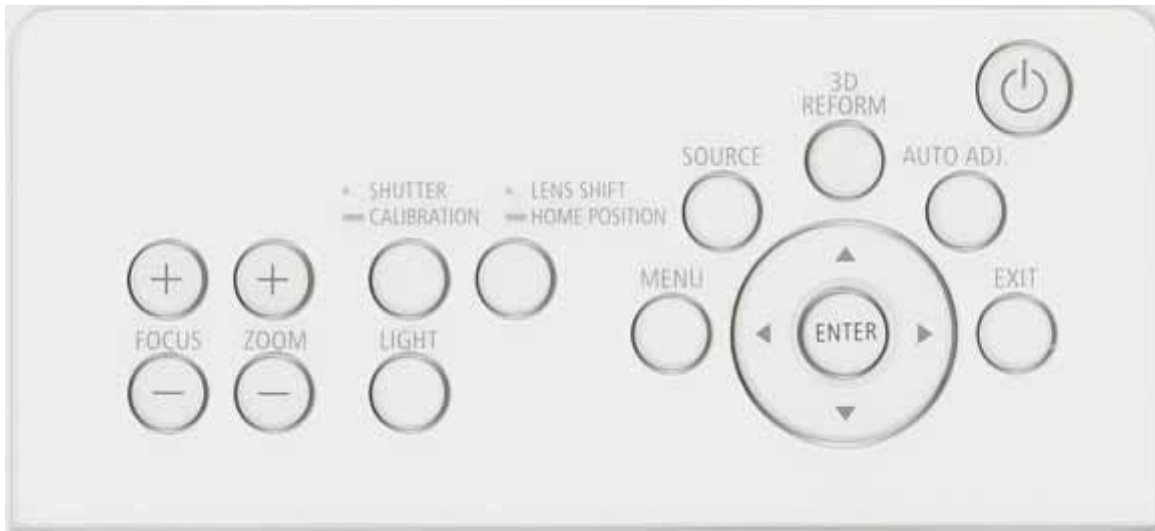
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Input Panel



Control Panel



DUKANE CORP AV SERVICE DEPT
2900 Dukane Drive
St Charles, IL 60174
800-676-2487 / 630-762-4032
Fax 630-584-5156
avservice@dukane.com
www.dukaneav.com

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PC Control Codes

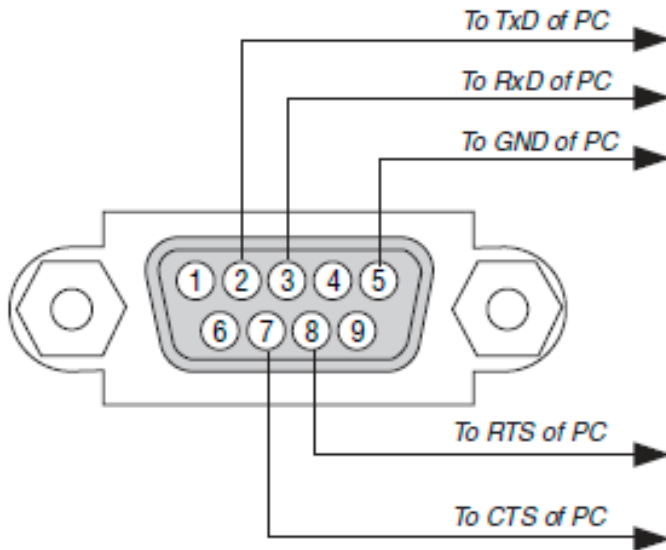
Function	Code Data						
POWER ON	02H	00H	00H	00H	00H	02H	
POWER OFF	02H	01H	00H	00H	00H	03H	
INPUT SELECT COMPUTER	02H	03H	00H	00H	02H	01H	09H
INPUT SELECT BNC	02H	03H	00H	00H	02H	01H	0AH
INPUT SELECT BNC(CV)	02H	03H	00H	00H	02H	01H	0EH
INPUT SELECT BNC(Y/V)	02H	03H	00H	00H	02H	01H	0BH
INPUT SELECT HDMI	02H	03H	00H	00H	02H	01H	A9H
INPUT SELECT DisplayPort	02H	03H	00H	00H	02H	01H	A6H
INPUT SELECT HDBaseT	02H	03H	00H	00H	02H	01H	20H
INPUT SELECT SLOT	02H	03H	00H	00H	02H	01H	ABH
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.