

PH3501QL Installation Guide

Desktop and Ceiling Mount

Rev 1.0

Contents

Product Description, Lens Specs, Screen/Aspect Ratio	
Notes and Specifications	Pg 1
Distance Charts and Formulas	Pg 1-2
Lens Shift Adjustable Range	Pg 3
Cabinet Dimensions (Front, Top, Left, Right, Back)	Pg 4
Cabinet Dimensions (Bottom)	Pg 5
Fly Cage Dimensions	Pg 6-7
Ventilation Requirements	Pg 8
Regulatory Labels	Pg 9
Input Panel and Button Panel	Pg 10
Control Codes	Pg 11



Product Description

Type:	3 chip DMD Reflection Type 1.38 in. 2x LVDS DMD	Dimensions: 27.4"(W) x 17.9"(H) x 46.5"(D)
Resolution:	4096 x 2160 (17:9)	Weight: PH2601QL: 317.6 lbs. / 144kg PH3501QL: 372.6 lbs. / 169kg
Brightness:	PH2601QL: 30,000 Center Lumens, 26,000 ANSI PH3501QL: 40,000 Center Lumens, 35,000 ANSI	Fan Noise: 55 dB / 43dB @ 1 meter
Power Consumption:	PH2601QL: 3665W (max) PH3501QL: 4705W (max)	BTU's: PH2601QL: 12505 BTU/hour PH3501QL: 16054 BTU/hour

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

Lens Specifications

Model	Throw Ratio	Focal Length	Weight
L2K-10F1:	Throw Ratio: 0.93:1 Screen Sizes: 100-1000"	Focal Length: 28.95mm F/#: 2.5	Weight: 15.0lbs. / 6.8kg
L4K-11ZM:	Throw Ratio: 1.24 – 1.73:1 Screen Sizes: 100-1000"	Focal Length: 38.5 – 53.7mm F/#: 2.5	Weight: 19.0lbs. / 8.6kg
L4K-15ZM:	Throw Ratio: 1.52 – 2.10:1 Screen Sizes: 100-1000"	Focal Length: 47.5 – 65.6mm F/#: 2.5	Weight: 17.0lbs. / 7.7kg
L4K-20ZM:	Throw Ratio: 1.98 – 3.34:1 Screen Sizes: 100-1000"	Focal Length: 61.4 – 105.2mm F/#: 2.5	Weight: 19.6lbs. / 8.9kg
L2K-30ZM:	Throw Ratio: 2.71 – 3.92:1 Screen Sizes: 100-1000"	Focal Length: 85.0 – 121.6mm F/#: 2.5	Weight: 15.4lbs. / 7.0kg
L2K-43ZM1:	Throw Ratio: 3.91 – 5.52:1 Screen Sizes: 100-1000"	Focal Length: 122.8 – 172.3mm F/#: 2.5	Weight: 15.7lbs. / 7.1kg
L2K-55ZM1:	Throw Ratio: 4.99 – 7.82:1 Screen Sizes: 100-1000"	Focal Length: 156.5 – 243.1mm F/#: 2.5	Weight: 16.8lbs. / 6.6kg

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%.

PH3501QL Installation Guide

Desktop and Ceiling Mount

Rev 1.0

Formulas: 17:9 Aspect Ratio (4K = 4096x2160)

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:

- L2K-10F1:** C(Wide) = 0.975W – 3.795
- L4K-11ZM:** C(Wide) = 1.251W – 4.371 ----- C(Tele) = 1.739W – 4.843
- L4K-15ZM:** C(Wide) = 1.536W – 4.308 ----- C(Tele) = 2.115W – 5.906
- L4K-20ZM:** C(Wide) = 1.960W + 9.843 ----- C(Tele) = 3.322W + 10.465
- L2K-30ZM:** C(Wide) = 2.735W - 8.744 ----- C(Tele) = 3.955W - 11.760
- L2K-43ZM1:** C(Wide) = 3.937W - 11.327 ----- C(Tele) = 5.554W – 15.060
- L2K-55ZM1:** C(Wide) = 5.028W - 12.866 ----- C(Tele) = 7.865W – 16.996

Definitions:

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

17:9 Screen Formulas

- W = H x 17/9
- H = W x 9/17
- Screen Diagonal = W x 19.231/17

Distance Chart for popular 17:9 Screens (4K = 4096x2160)

Screen Size (17:9)			Zoom Lenses							
			L2K-10F1	L4K-11ZM	L4K-15ZM	L4K-20ZM	L2K-30ZM	L2K-43ZM1	L2K-55ZM1	
Diagonal	Width(W)	Height (H)	0.93:1	1.24-1.73:1	1.52-2.10:1	1.98-3.34:1	2.71-3.92:1	3.91-5.52:1	4.99-7.82:1	
inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	
110	97	51	91.0 - N/A	117.3 - 164.3	145.1 - 199.8	200.4 - 333.5	274.7 - 372.8	371.5 - 525.0	476.1 - 747.8	
131	116	61	109.1 - N/A	140.5 - 196.5	173.7 - 239.0	236.8 - 395.2	308.0 - 446.2	444.6 - 628.1	569.4 - 893.8	
161	142	75	135.0 - N/A	173.7 - 242.7	214.4 - 295.1	288.8 - 483.3	380.5 - 551.1	549.0 - 775.4	702.7 - 1102.4	
192	170	90	161.7 - N/A	208.0 - 290.3	256.6 - 353.1	342.5 - 574.3	455.5 - 659.5	656.9 - 927.6	840.5 - 1317.9	
226	200	106	191.0 - N/A	245.6 - 342.6	302.8 - 416.6	401.4 - 674.1	537.7 - 778.4	775.2 - 1094.5	991.6 - 1554.3	
259	229	121	219.4 - N/A	282.0 - 393.3	347.6 - 478.3	458.6 - 771.0	617.4 - 893.8	890.1 - 1256.5	1138.3 - 1783.7	
292	258	137	247.9 - N/A	318.5 - 444.0	392.4 - 540.0	515.8 - 868.0	697.2 - 1,009.1	1004.9 - 1418.6	1285.0 - 2013.2	
324	286	152	275.5 - N/A	353.9 - 493.2	435.9 - 599.9	571.2 - 961.9	774.6 - 1,121.0	1116.3 - 1575.7	1427.2 - 2235.6	
400	354	187	341.0 - N/A	438.0 - 610.1	539.2 - 741.9	702.9 - 1185.1	958.3 - 1,386.7	1380.8 - 1948.8	1765.0 - 2764.0	
500	442	234	427.1 - N/A	548.6 - 763.8	675.0 - 928.9	876.2 - 1478.8	1200.1 - 1,736.3	1728.8 - 2439.8	2209.5 - 3459.3	
1000	884	468	858.1 - N/A	1101.5 - 1532.4	1354.4 - 1863.7	1742.5 - 2947.1	2409.0 - 3,484.4	3468.9 - 4894.6	4431.8 - 6935.6	

PH3501QL Installation Guide

Desktop and Ceiling Mount

Rev 1.0

Formulas: 16:9 Aspect Ratio (UHD = 3840x2160)

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:

- L2K-10F1:** C(Wide) = 0.999W – 3.988
- L4K-11ZM:** C(Wide) = 1.343W – 4.327 ----- C(Tele) = 1.854W – 3.937
- L4K-15ZM:** C(Wide) = 1.632W – 4.382 ----- C(Tele) = 2.257W – 3.488
- L4K-20ZM:** C(Wide) = 2.089W + 10.012 ----- C(Tele) = 3.550W + 10.488
- L2K-30ZM:** C(Wide) = 2.917W - 9.189 ----- C(Tele) = 4.219W - 12.358
- L2K-43ZM1:** C(Wide) = 4.201W - 11.906 ----- C(Tele) = 5.929W – 15.831
- L2K-55ZM1:** C(Wide) = 5.363W - 13.520 ----- C(Tele) = 8.393W – 17.862

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 18.378/16

Distance Chart for popular 16:9 Screens (UHD = 3840x2160)

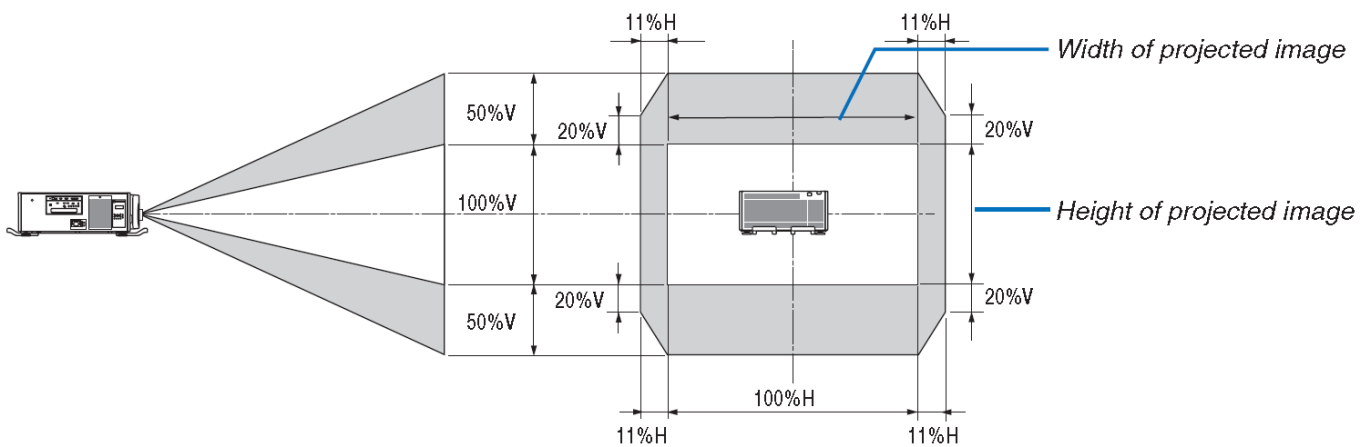
Screen Size (16:9)			Zoom Lenses						
			L2K-10F1	L4K-11ZM	L4K-15ZM	L4K-20ZM	L2K-30ZM	L2K-43ZM1	L2K-55ZM1
Diagonal	Width(W)	Height (H)	0.93:1	1.24-1.73:1	1.52-2.10:1	1.98-3.34:1	2.71-3.92:1	3.91-5.52:1	4.99-7.82:1
inches	inches	inches	inches	inches	inches	inches	inches	inches	inches
110	96	54	91.7 - N/A	124.3 - 173.6	151.9 - 212.7	210.1 - 350.5	270.2 - 391.68	390.4 - 551.97	500.1 - 785.91
131	114	64	109.9 - N/A	148.8 - 207.5	181.7 - 253.9	248.3 - 415.4	323.5 - 468.82	467.2 - 660.37	598.1 - 939.35
161	140	79	136.0 - N/A	183.9 - 255.9	224.4 - 312.9	302.8 - 508.1	399.7 - 579.01	576.9 - 815.22	738.2 - 1158.6
192	167	94	163.0 - N/A	220.2 - 306.0	268.4 - 373.8	359.2 - 603.9	478.4 - 692.87	690.3 - 975.24	882.9 - 1385.1
226	197	111	192.6 - N/A	259.9 - 360.9	316.7 - 440.6	421.0 - 709.0	564.8 - 817.76	814.7 - 1150.7	1041.7 - 1633.5
259	225	127	221.3 - N/A	298.5 - 414.1	363.6 - 505.4	481.1 - 811.0	648.6 - 938.97	935.4 - 1321.1	1195.8 - 1874.7
292	254	143	250.0 - N/A	337.1 - 467.4	410.5 - 570.3	541.1 - 913.0	732.4 - 1060.2	1056.1 - 1491.4	1349.8 - 2115.8
324	282	159	277.8 - N/A	374.5 - 519.0	456.0 - 633.2	599.3 - 1011.9	813.6 - 1177.7	1173.1 - 1656.6	1499.3 - 2349.6
400	348	196	343.9 - N/A	463.4 - 641.7	563.9 - 782.5	737.5 - 1246.7	1006.6 - 1456.9	1451.1 - 2048.9	1854.1 - 2904.9
500	435	245	430.9 - N/A	580.3 - 803.1	706.0 - 979.0	919.4 - 1555.8	1260.6 - 1824.2	1816.8 - 2565.1	2321.0 - 3635.6
1000	871	490	865.7 - N/A	1164.9 - 1610.2	1416.4 - 1961.5	1828.7 - 3101.1	2530.4 - 3660.7	3645.5 - 5146	4655.5 - 7289.1

PH3501QL Installation Guide

Rev 1.0

Desktop and Ceiling Mount

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: 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)

PH3501QL Installation Guide

Desktop and Ceiling Mount

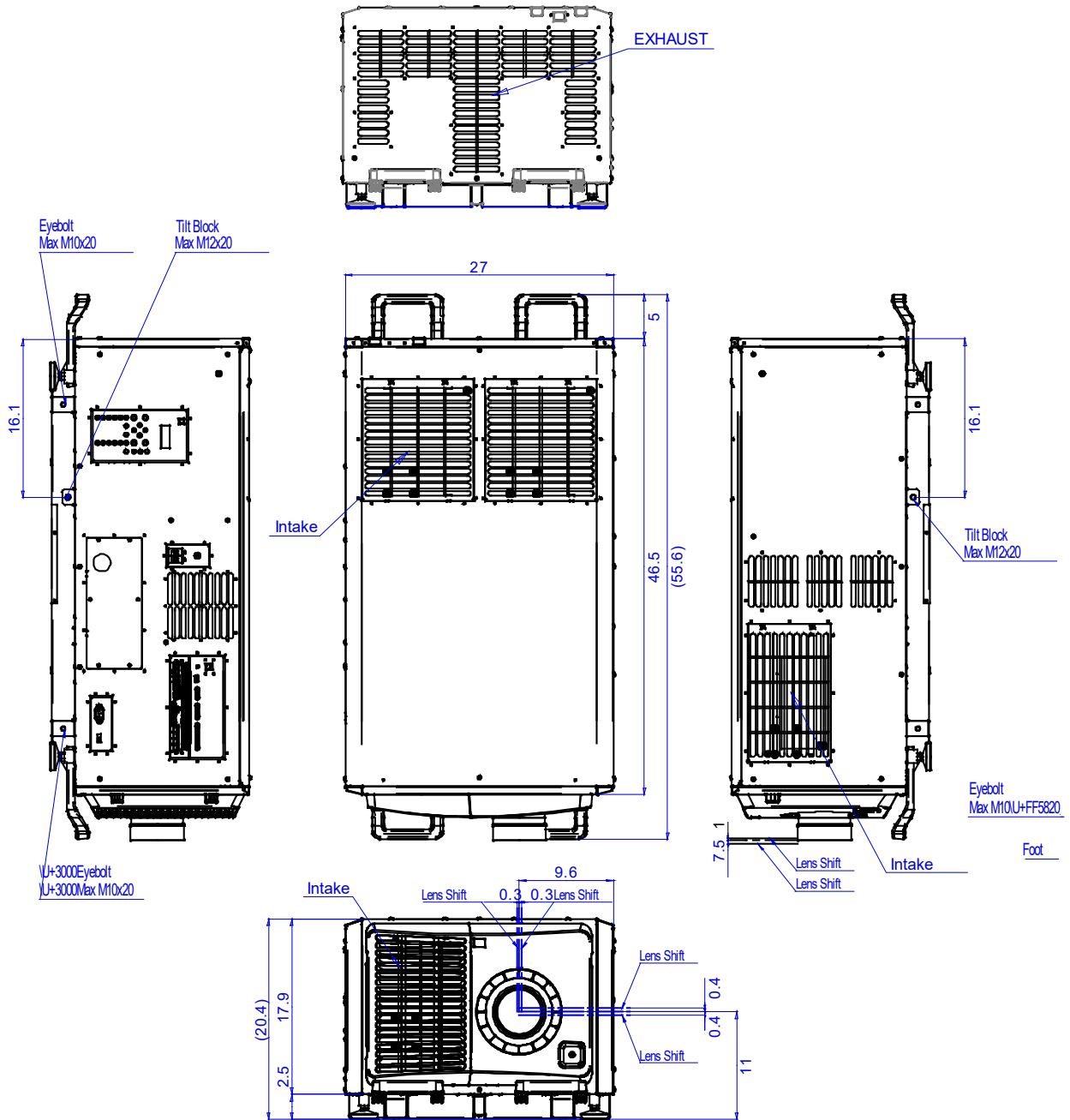
Rev 1.0

Cabinet Dimensions

The following diagrams show the cabinet dimensions for the PH2601QL/PH3501QL.

Dimensions are in inches. For millimeters multiply by 25.4.

Note: Dimensions below shown without lens



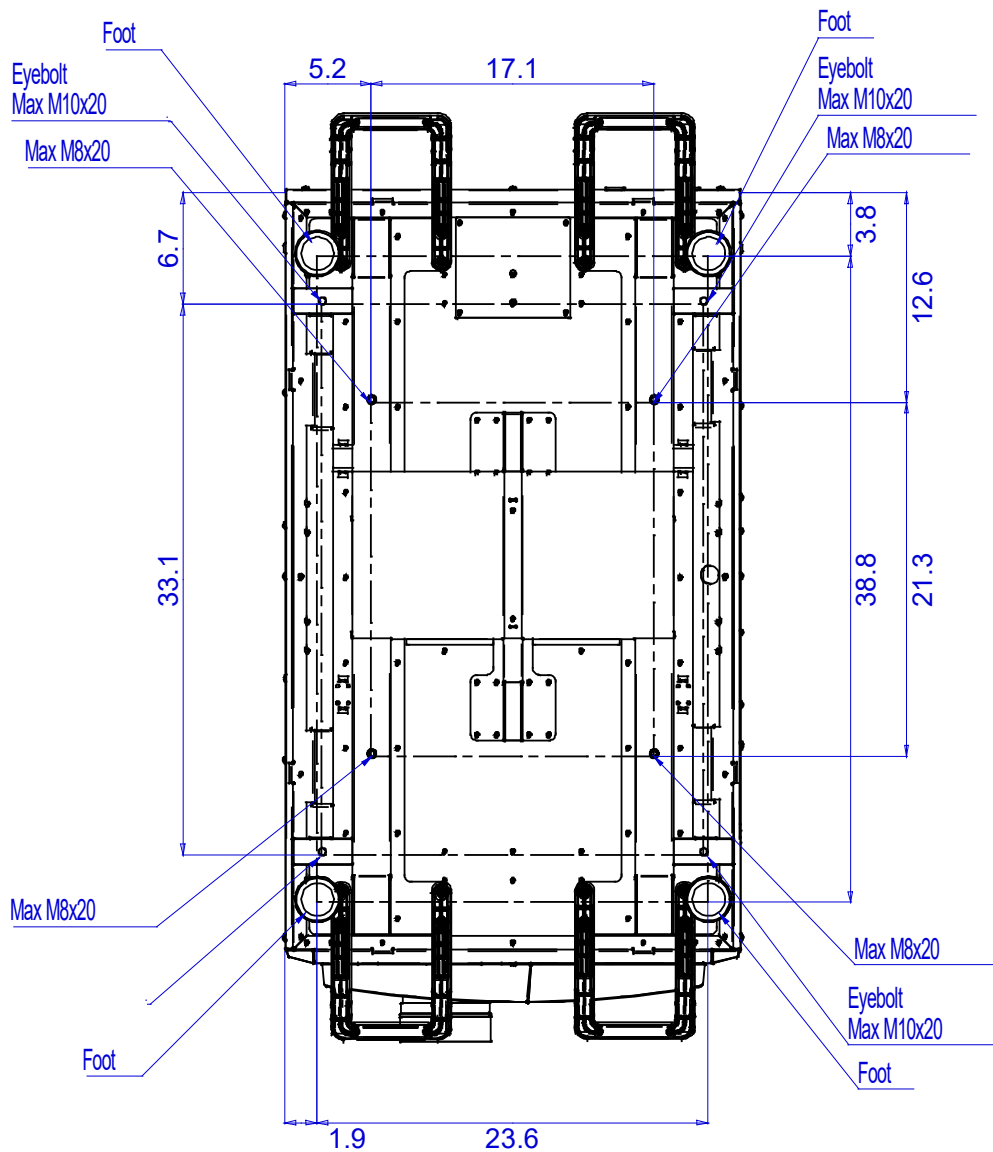
LENS	Optional Lens Protrusion	
	MAX (Tele Position)	MIN (Wide Position)
L2K-10F1	8.46"	8.13"
L4K-11ZM	8.85"	8.52"
L4K-15ZM	8.28"	7.95"
L4K-20ZM	7.32"	6.98"
L2K-30ZM	5.00"	4.67"
L2K-55ZM1	9.66"	7.52"
		9.33"

PH3501QL Installation Guide

Desktop and Ceiling Mount

Rev 1.0

Cabinet Dimensions

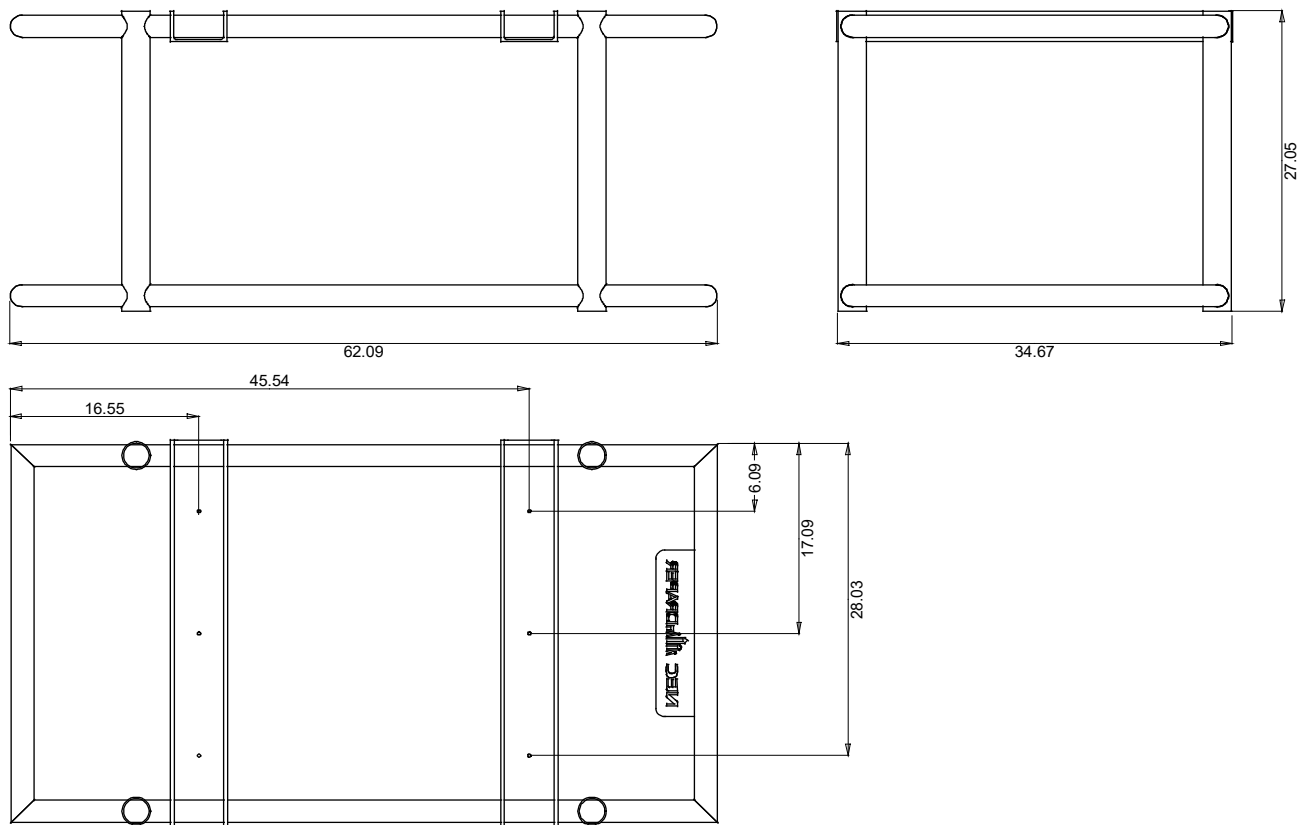


PH3501QL Installation Guide

Desktop and Ceiling Mount

Rev 1.0

Optional Fly Cage Dimensions (PH3501FC)



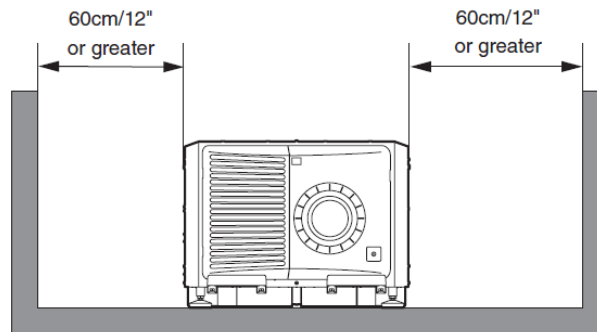
PH3501QL Installation Guide

Rev 1.0

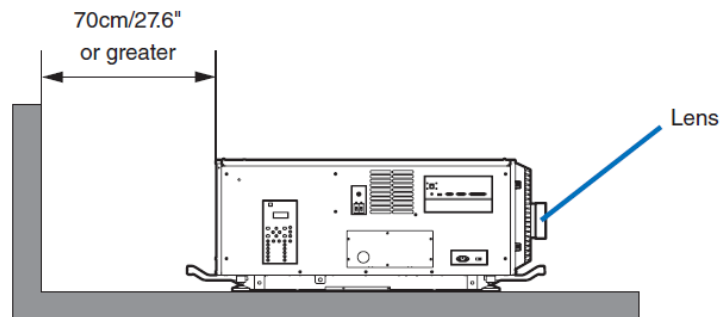
Desktop and Ceiling Mount

Ventilation Requirements

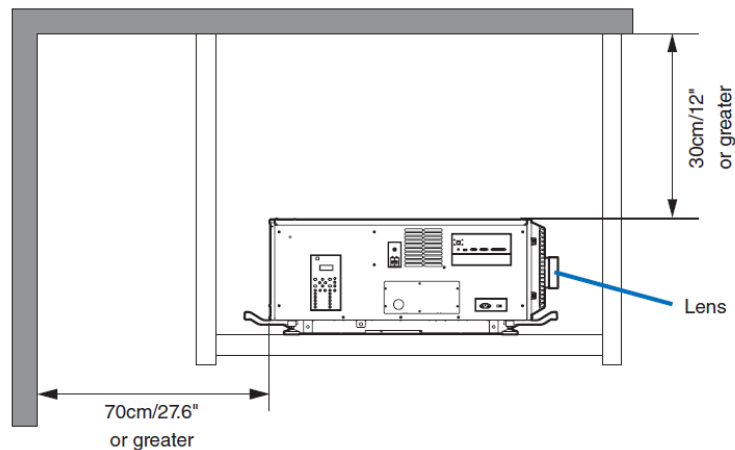
- If there are walls on both sides of the projector :



- If there's a wall behind the projector :



- For ceiling mounting :



PH3501QL Installation Guide

Desktop and Ceiling Mount

Rev 1.0

Regulatory Labels



RISK GROUP 3
WARNING
 DO NOT LOOK INTO THE BEAM.
 NO DIRECT EYE EXPOSURE TO THE BEAM IS PERMITTED.
 HAZARD DISTANCE: REFER TO THE MANUAL.

GROUPE DE RISQUE 3
AVERTISSEMENT
 NE PAS REGARDER DIRECTEMENT DANS LE FAISCEAU.
 L'EXPOSITION DIRECTE DES YEUX AU FAISCEAU EST INTERDITE.
 DISTANCE À RISQUE: SE REPORTER AU MANUEL.

RISIKOGRUPPE 3
WARNUNG
 SCHAUEN SIE NICHT IN DEN STRAHL.
 DIREKTER AUGENKONTAKT MIT DEM STRAHL IST NICHT ERLAUBT.
 SICHERHEITSABSTAND: SIEHE HANDBUCH.

ГРУППА РИСКА 3
ПРЕДУПРЕЖДЕНИЕ
 НЕ СМОТРИТЕ НА ЛУЧ.
 ЗАПРЕЩАЕТСЯ ЛЮБОЕ ПРЯМОЕ ВОЗДЕЙСТВИЕ ЛУЧА НА ГЛАЗА.
 ОПАСНОЕ РАССТОЯНИЕ: СМ. РУКОВОДСТВО ПО ЭКСПЛУАТАЦИИ.

リスクグループ 3
警告
 ビームを見ないこと。
 目へのビームの直接照射を禁止する。
 障害距離:取扱説明書を参照。

위험 그룹 3
경고
 빔을 눈으로 보지 마십시오.
 빔을 직접 눈에 노출하는 것은 허용되지 않습니다.
 위험 거리: 설명서를 참조하십시오.

风险组别 3
警告
 请勿注视光束。
 不允许将眼睛暴露于光束中。
 有害距离: 请参阅手册。
 IEC/EN 62471-5:2015



FOR NORTH AMERICA
RISK GROUP 3
WARNING
 HAZARDOUS OPTICAL RADIATION EMITTED FROM THIS PRODUCT.
 DO NOT LOOK AT OPERATING LIGHT SOURCE.
 EYE INJURY MAY RESULT.
 HAZARD DISTANCE: REFER TO THE MANUAL.
 NO DIRECT EXPOSURE TO BEAM SHALL BE PERMITTED.
 NOT FOR HOUSEHOLD USE.

GROUPE DE RISQUE 3
AVERTISSEMENT
 RADIATIONS OPTIQUES DANGEREUSES EMISES PAR CE PRODUIT.
 NE REGARDEZ PAS DIRECTEMENT LA SOURCE LUMINEUSE.
 CELA POURRAIT ENTRAÎNER DES BLESSURES AUX YEUX.
 DISTANCE À RISQUE: SE REPORTER AU MANUEL.
 L'EXPOSITION DIRECTE AU RAYON DOIT ÊTRE AUTORISÉE.
 NE CONVIENT PAS À UN USAGE DOMESTIQUE.

IEC/TR 62471-2:2009
 IEC/EN 62471:2006



CLASS 1 LASER PRODUCT
LASERPRODUKT DER KLASSE 1
PRODUIT LASER DE CLASSE 1
ЛАЗЕРНОЕ ИЗДЕЛИЕ 1 КЛАССА ОПАСНОСТИ
 1类激光产品
 등급 1 레이저 제품
 IEC 60825-1:2014

激光辐射
 避免眼睛受到直接照射
 4类激光产品
 波长: 红色 632-642 nm
 蓝色 450-470 nm
 最大输出: 红色 750 mW
 蓝色 450 mW
 GB 7247.1-2012

クラス 1 レーザ製品
 JIS C 6802:2014






LASER APERTURE
OUVERTURE LASER

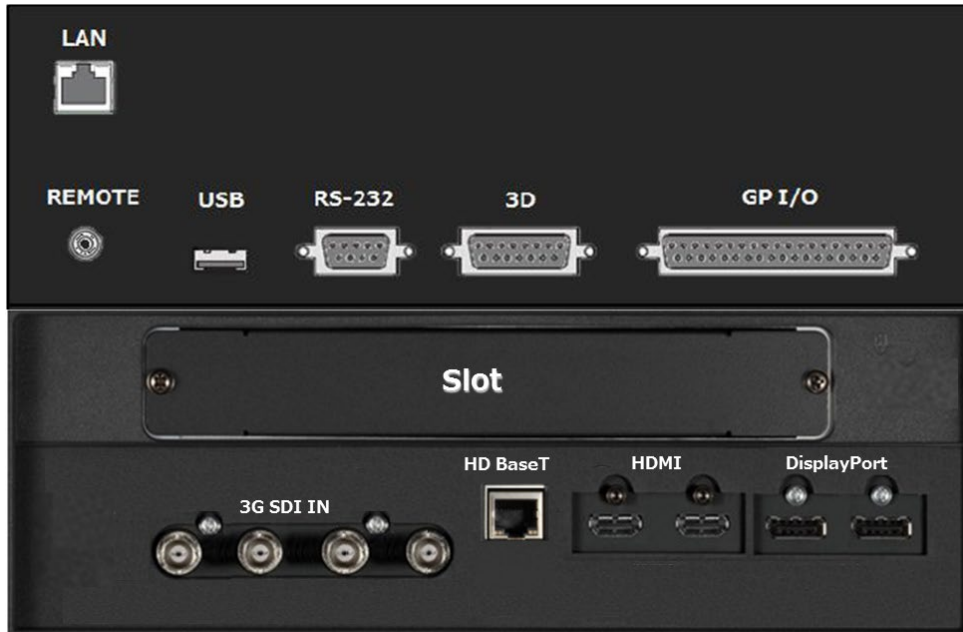
24L81751

PH3501QL Installation Guide

Rev 1.0

Desktop and Ceiling Mount

Input Panel



Button Panel



PH3501QL Installation Guide

Rev 1.0

Desktop and Ceiling Mount

PC Control Codes

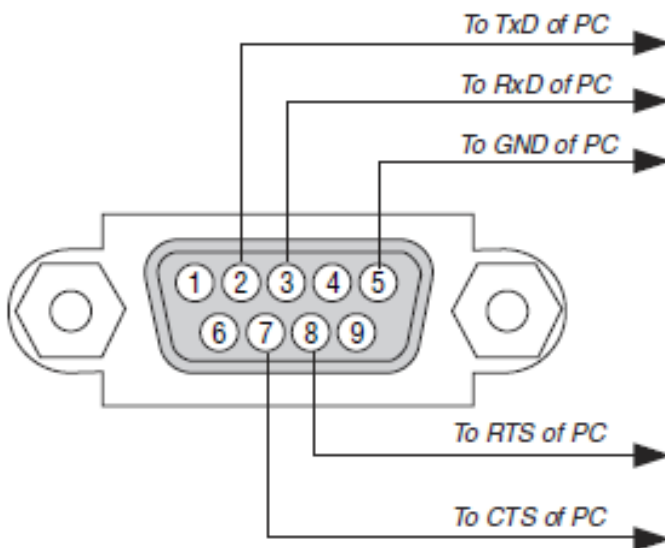
Function	Code Data							
POWER ON	02H	00H	00H	00H	00H	02H		
POWER OFF	02H	01H	00H	00H	00H	03H		
INPUT SELECT HDBaseT	02H	03H	00H	00H	02H	01H	20H	28H
INPUT SELECT HDMI	02H	03H	00H	00H	02H	01H	A1H	A9H
INPUT SELECT DisplayPort	02H	03H	00H	00H	02H	01H	A6H	AEH
INPUT SELECT SLOT	02H	03H	00H	00H	02H	01H	ABH	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.