# Wash Zoom Big B-eye 24*60w moving head
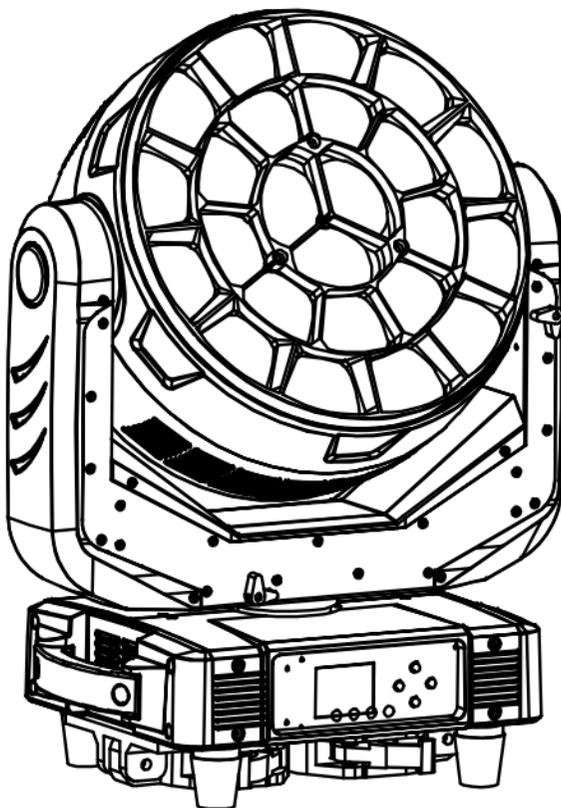
User manual

Please read the instructions carefully before us

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statement

The product has well capability and intact packing when leave factory. All of the user should comply with warning item and manual, any misuse cause of the damages are not included in our guarantee, and also can not be responsible for any malfunction & problem owing to ignore the manual.

1. Safety Instructions

Please keep this User Guide for future consultation. If you sell the unit to another user, be sure that they also receive this instruction booklet.

Unpack and check carefully there is no transportation damage before using the unit.

Before operating, ensure that the voltage and frequency of power supply match the power requirements of the unit.

It's important to ground the yellow/green conductor to earth in order to avoid electric shock.

The unit is for indoor use only. Use only in a dry location.

The unit must be installed in a location with adequate ventilation, at least 50cm from adjacent surfaces. Be sure that no ventilation slots are blocked.

Disconnect main power before replacement or servicing.

Make sure there are no flammable materials close to the unit while operating as it is fire hazard.

Use safety cable when fixes this unit. DO NOT handle the unit by taking its head only, but always by taking its base.

Maximum ambient temperature is Ta: 40℃. DO NOT operate it where the temperature is higher than this Unit surface temperature may reach up to 85℃. DO NOT touch the housing bare-hand during its operation. Turn off the power and allow about 15 minutes for the unit to cool down before replacing or serving.

the event of serious operating problem, stop using the unit immediately.Never try to repair the unit by yourself. Repairs carried out by unskilled people can lead to damage or malfunction. Please contact the nearest authorized technical assistance center. Always use the same type spare parts.

◻ DO NOT touch any wire during operation as high voltage might be causing electric shock.

Warning:

◻ To prevent or reduce the risk of electrical shock or fire, do not expose the unit to rain or moisture.

◻ DO NOT open the unit within five minutes after switching off.

◻ The housing, the lenses, or the ultraviolet filter must be replaced if they are visibly damaged.

Caution:

There are no user serviceable parts inside the unit. DO NOT open the housing or attempt any repairs yourself. In the unlikely event your unit may require service, please contact your nearest dealer.

Installation:

The unit should be mounted via its screw holes on the bracket. Always ensure that the unit is firmly fixed to avoid vibration and slipping while operating. And make sure that the structure to which you are attaching the unit is secure and is able to support a weight of 10 times of the unit's weight. Also always use a safety cable that can hold 12 times of the weight of the unit when installing the fixture.

The equipment must be fixed by professionals. And it must be fixed at a place where is out of the touch of people.

2. Technical Specifications

Light Source: 24*60W 4IN1 RGBW LED
Average lifespan> 50000 hours
Beam Angle:3.5°- 45°
Glass light guide + PMMA high quality optical lens
Power Consumption: 1500W
Power factor PF≥0.95
Power Voltage: AC 100-240V, 50/60Hz
Net Weight: 26 kgs
Dimension: 444mm×376mm×573mm
Working temperature: -10℃～45℃

Control
DMX Channel:21/25/33/129/106 Channels (ArtNet 106CH)
Control Modes: DMX512/mater-Slave/Auto Run/Music/ArtNet

Pan/Tilt
Pan : 540° ,accuracy 2.11°/step, fine-tuning accuracy: 0.008°;
Tilt : 270°,accuracy 0.86°/step, fine-tuning accuracy: 0.0034°;
Using magnetic coded reset system

Construction
Display:2.4-inch TFT color display;Chinese and English languages can be switched,180° reversible TFT Display
Data In/Out socket: 3-pin & 5-pin XLR sockets
Powercon in
Protection Rating: IP20

Electronic control technology:

Menu or console control lamp reset;

0-100% dimming;

Constant current drive mode;

Temperature sensor detection, intelligent adjustment of light source power;

Lamp information query;

Intelligent fan speed control

Features

Full optical domain dimming, 65536-level dimming accuracy; fast strobe 1~25Hz;

Single point control of lamp beads;

Combine the three-in-one effect of dyeing, beam and bee eye;

Preset various kinds of color macro function; preset various kinds of effect macro function

3. How To Control   The Unit

| Menu | Up | Down | Enter |

Display:

MENU   To select the programming functions
DOWN   To go backward in the selected functions
uP   To go forward in the selected functions
ENTER   To confirm the selected functions

Set DMX Address Code

1   Press **"Menu"** to "Set DMX Address",and press**"ENTER"** keys to enter
into

2   Show "Set DMX Address DMX Address:**001**",Press the "**UP and DOWN**"
keys to amended

3   Press **"ENTER"**keys to save and Exit,Press the"**MENU"**Keys does not
     save and Exit

Menu	1.Pan Degree	1) 540 ° , 2)360°	X-axis running angle selection
	2.Mic Sense	001 - 100	Sound sensitivity adjustment
	3.Pan Invert	1.NO 2.YES	X axis forward and reverse settings
	4.Tilt Invert	1.NO 2.YES	Y axis forward and reverse settings
	5.No Signal	1.Black Out 2.Hold	Set the state when the machine has no signal input
	6.Fan Set	1.Auto 2.Low 3.High	Set fan speed
	7. ArtNet Set	ArtNet Enable:1.ON 2.OFF	
		2.Universe:0--255	
		3.IP model:A.2.X.X.X B.10.X.X.X	

Menu	7.ArtNet Set	C.Customer	
		4.Customer IP:192.168.000.001	
		5.SubNetMask:255.000.000.000	
	8.Default	Yes	Reset
		No	
	9.Adjust	Pass Word：****	
		Pan:0 - 255	Change the value of Pan/Tilt/Focus/Rotation to correct the angle; Change the value of R/G/B/W to adjust the white balance
		Tilt:0 - 255	
		Focus:0 - 255	
		Rotation:0 - 255	
		Red:0 - 255	
		Green:0 - 255	
		Blue:0 - 255	
		White:0 - 255	
Address	Setting from 001 - 512		
Model	DMX512		Set control mode
	Auto		
	Sound		
	Manual	1.Pan(X):0--255	Manual
		2.Tilt（Y）:0--255	
		3.Focus:0--255	
		4.Rotation:0--255	
		5.Red：0--255	

Model	Manual	6.Greed：0--255	Manual
		7.Blue：0--255	
		8.White：0--255	
		9.Strobe：0-255	
	Master/Alone	1.Master	Master/Alone
		2.Alone	
Channel	1.21 CH	1.21 CH	Select channel mode
	2.25 CH	2.25 CH	
	3.33 CH	3.33 CH	
	4. 129 CH	4.129 CH	
	5.106 CH	5. 106 CH	
Display	Display	1.YES 2.NO	Display font forward and reverse settings
Language	English or Chinese		Choose a language
Reset	YES or NO		Reset
Information	1. CH Value		Show all channel information
	2.Temp ____℃		Display LED board temperature
	3.Soft V.XXX		
	4.IP		002.050.164.014
	5.Mask		255.000.000.000

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4.DMX Channel List

Model 1 - CH21

Channel	Display	Function	Value
CH-1	Red	Red dimming	0 --- 255
CH-2	Red adjustment	Red adjustment	0 --- 255
CH-3	Green	Green dimming	0 --- 255
CH-4	Green adjustment	Green adjustment	0 --- 255
CH-5	Blue	Blue dimming	0 --- 255
CH-6	Blue adjustment	Blue dimming	0 --- 255
CH-7	White	White dimming	0 --- 255
CH-8	White adjustment	White adjustment	0 --- 255
CH-9	Color temperature	No	0--15
		R100%,G UP,B0%	16--35
		R DOWM,G100%,B0%	36--55
		R0%,G100%,B UP	56--75
		R0%,G DOWM,B100%	76--95
		R UP,G0%,B100%	96--115

CH-9	Color temperature	R100%,G0%,B DOWM	116--135
		R100%,G UP,B UP	136--155
		R DOWM,G DOWM, B 100%	156--175
		R100%G100%B100%W100%	176--195
		2800K	196--200
		3200K	201--205
		4000K	206--210
		4500K	211--215
		5000K	216--220
		5600K	221--225
		6500K	226--230
		7000K	231--235
		7500K	236--240
		8000K	241--255
CH-10	Macro color	No	0--9
		Macro color 1	10--19
		Macro color 2	20--29
		......	......

		Macro color 24	240--249
CH-10	Macro color	Macro color 25	250--255
CH-11	Dimmer	dark to bright linear dimming	0 --- 255
CH-12	Dimmer adjust	Dimmer adjustment control	0 --- 255
CH-13	Strobe	Turn on the light	0---3
		Synchro strobe speed slow to fast (1HZ-25HZ)	4---203
		Random strobe	204--255
CH-14	Pan	Pan control	0 --- 255
CH-15	Pan adjustment	Pan adjustment control	0 --- 255
CH-16	Tilt	Tilt control	0 --- 255
CH-17	Tilt adjustment	Tilt adjustment control	0 --- 255
CH-18	Zoom	Zoom	0-255
CH-19	Lens rotation	0~60°	0-155
		Clockwise infinite rotation	156-205
		Counterclockwise rotation	206-255
CH-20	Dimming Mode	Mode -1	0 --- 49
		Mode -2	50 --- 99
		Mode -3	100---149

		Mode -4	150---255
CH-21	Reset	NO	0-250
		Reset within 5s	251---255

Model 2 - CH25

Channel	Display	Function	Value
CH-1	Pan	Pan control	0 --- 255
CH-2	Pan adjustment	Pan Fine tuning control	0 --- 255
CH-3	Tilt	Tilt control	0 --- 255
CH-4	Tilt adjustment	Tilt Fine tuning control	0 --- 255
CH-5	Pan/Tilt speed	Speed from fast to slow	0 --- 255
CH-6	Zoom	Angle from small to large	0 --- 255
CH-7	Lens rotation	0~60°	0-155
		Clockwise infinite rotation from fast to slow	156-205
		Counterclockwise rotation from slow to fast	206-255
CH-8	Dimmer	dark to bright linear dimming	0 --- 255
CH-9	Strobe	Turn on the light	0---3

CH-9	Strobe	Synchro strobe speed From slow to fast (1HZ-25HZ)	4---203
		Random strobe	204--255
CH-10	R dimming	dark to bright linear dimming	0-255
CH-11	G dimming	dark to bright linear dimming	0-255
CH-12	B dimming	dark to bright linear dimming	0-255
CH-13	W dimming	dark to bright linear dimming	0-255
CH-14	Color temperature	No	0 ---15
		R100%,G UP,B0%	16---35
		R DOWM,G100%,B0%	36---55
		R0%,G100%,B UP	56---75
		R0%,G DOWM,B100%	76---95
		R UP,G0%,B100%	96---115
		R100%,G0%,B DOWM	116---135
		R100%,G UP,B UP	136---155
		R DOWM,G DOWM, B 100%	156---175

CH-14	Color temperature	R100%,G100%,B100%,W100%	176---195
		2800K	196---200
		3200K	201---205
		4000K	206---210
		4500K	211---215
		5000K	216---220
		5500K	221---225
		5600K	226--230
		6500K	231--235
		7000K	236--240
		8000K	241--245
CH-15	Macro color	No	0--9
		Macro color 1	10--19
		Macro color 2	20--29
		....(10 numbers 1 macro color)	....
		Macro color 24	240--249
		Macro color 25	250--255
CH-16	Static pattern	No	0--9
		Monochrome pattern 1	10--12

CH-16	Static pattern	Monochrome pattern 2	13--15
		.........(3 numbers 1 pattern)	.....
		Monochrome pattern 67	208--210
		Mixed color pattern 1	211--213
		Mixed color pattern 2	214--216
		....(3 numbers 1 pattern)	....
		Mixed color pattern 14	250--252
		Mixed color pattern 15	253--255
CH-17	Dynamic pattern	NO	0--9
		Monochrome dynamic pattern 1	10--14
		Monochrome dynamic pattern 2	15--19
		......(5 numbers 1 pattern)	.....
		Monochrome pattern 30	155--159
		Mixed color dynamic pattern 1	160--164
		Mixed color dynamic pattern 2	165--169
		........(5 numbers 1 pattern)	....
		Mixed color dynamic pattern 13	220--224
		Mixed color dynamic pattern 14	225--255
	Dynamic pattern speed	Forward, from fast to slow（with 17CH）	0--127

CH-18		Reverse, from slow to fast(with 17CH)	128--255
CH-19	Dynamic pattern speed (with 17 channels)	No	0--9
		Forward, from fast to slow	10--132
		Go backward, from slow to fast	133--255
CH-20	Back color R	dark to bright linear dimming	0-255
CH-21	Back color G	dark to bright linear dimming	0-255
CH-22	Back color B	dark to bright linear dimming	0-255
CH-23	Back color W	dark to bright linear dimming	0-255
CH-20	Dimming Mode	Mode -1	0 --- 49
		Mode -2	50 --- 99
		Mode -3	100---149
		Mode -4	150---255
CH-25	Reset	NO	0-250
		Reset within 5s	251-255

Model 3 - CH33

Channel	Display	Function	Value
CH-1	Pan	Pan control	0 --- 255
CH-2	Pan adjustment	Pan Fine tuning control	0 --- 255

CH-3	Tilt	Tilt control	0 --- 255
CH-4	Tilt adjustment	Tilt Fine tuning control	0 --- 255
CH-5	Pan/Tilt speed	Speed from fast to slow	0 --- 255
CH-6	Zoom	Angle from small to large	0 --- 255
CH-7	Lens rotation	0~60°	0-155
		Clockwise infinite rotation from fast to slow	156-205
		Counterclockwise rotation from slow to fast	206-255
CH-8	Dimmer	dark to bright linear dimming	0 --- 255
CH-9	Dimming fine-tuning	Dimming fine-tuning control	0--255
CH-10	Strobe	Turn on the light	0---3
		Synchro strobe speed From slow to fast (1HZ-25HZ)	4---203
		Random strobe	204--255
CH-11	Red dimming	Red dimming	0-255
CH-12	Red trim	Red trim	0-255
CH-13	Green dimming	Green dimming	0-255

CH-14	Green trim	Green trim	0-255
CH-15	Blue dimming	Blue dimming	0-255
CH-16	Blue trim	Blue trim	0-255
CH-17	White dimming	White dimming	0-255
CH-18	White trim	White trim	0-255
CH-19	Dimming Mode	Mode -1	0 --- 49
		Mode -2	50 --- 99
		Mode -3	100---149
		Mode -4	150---255
CH-20	Color temperature	No	0 ---15
		R100%,G UP,B0%	16---35
		R DOWM,G100%,B0%	36---55
		R0%,G100%,B UP	56---75
		R0%,G DOWM,B100%	76---95
		R UP,G0%,B100%	96---115
		R100%,G0%,B DOWM	116---135
		R100%,G UP,B UP	136---155

CH-20	Color temperature	R DOWM,G DOWM, B 100%	156---175
		R100%,G100%,B100%,W100%	176---195
		2800K	196---200
		3200K	201---205
		4000K	206---210
		4500K	211---215
		5000K	216---220
		5500K	221---225
		5600K	226--230
		6500K	231--235
		7000K	236--240
		8000K	241--245
CH-21	Macro color	No	0--9
		Macro color 1	10--19
		Macro color 2	20--29
		....(10 numbers 1 macro color)	....
		Macro color 24	240--249
		Macro color 25	250--255

CH-22	Static pattern	No	0--6
		Monochrome pattern 1	7--13
		Monochrome pattern 2	14--20
		.........(7 numbers 1 pattern)	.....
		Monochrome pattern 26	182--188
		Mixed color pattern 1	189-195
		Mixed color pattern 2	196--202
		....(7 numbers 1 pattern)	....
		Mixed color pattern 8	245--251
		Mixed color pattern 9	252--255
CH-23	Dynamic pattern	NO	0--9
		Monochrome dynamic pattern 1	10--12
		Monochrome dynamic pattern 2	13--15
		......(3 numbers 1 pattern)	.....
		Monochrome pattern 57	178--180
		Mixed color dynamic pattern 1	181--183
		Mixed color dynamic pattern 2	184--186
		........(3numbers 1 pattern)	....
		Mixed color dynamic pattern 18	232--234

		Mixed color dynamic pattern 19	235--255
CH-24	Pattern translation (with 23 channels)	Select dynamic pattern scene	0--255
CH-25	Dynamic pattern speed (with 17 channels)	No	0--9
		Forward, from fast to slow	10--132
		Go backward, from slow to fast	133--255
CH-26	Pattern effect fade	Pattern effect fade	0--255
CH-27	Background total dimming	Background total dimming from 0 - 100%	0--255
CH-28	Background strobe	Background strobe	0--255
CH-29	Back color Red	dark to bright linear dimming	0-255
CH-30	Back color Green	dark to bright linear dimming	0-255
CH-31	Back color Blue	dark to bright linear dimming	0-255
CH-32	Back color White	dark to bright linear dimming	0-255
CH-33	Reset	NO	0-250
		Reset within 5s	251-255

Model 4 - CH 129

Channel	Display	Function	Value
CH-1	Pan	Pan control	0 --- 255
CH-2	Pan adjustment	Pan Fine tuning control	0 --- 255
CH-3	Tilt	Tilt control	0 --- 255
CH-4	Tilt adjustment	Tilt Fine tuning control	0 --- 255
CH-5	Pan/Tilt speed	Speed from fast to slow	0 --- 255
CH-6	Zoom	Angle from small to large	0 --- 255
CH-7	Lens rotation	0~60°	0-155
		Clockwise infinite rotation from fast to slow	156-205
		Counterclockwise rotation from slow to fast	206-255
CH-8	Dimmer	dark to bright linear dimming	0 --- 255
CH-9	Dimming fine-tuning	Dimming fine-tuning control	0--255
CH-10	Strobe	Turn on the light	0---3
		Synchro strobe speed From slow to fast (1HZ-25HZ)	4---203
		Random strobe	204--255

CH-11	Red dimming	Red dimming	0-255
CH-12	Red trim	Red trim	0-255
CH-13	Green dimming	Green dimming	0-255
CH-14	Green trim	Green trim	0-255
CH-15	Blue dimming	Blue dimming	0-255
CH-16	Blue trim	Blue trim	0-255
CH-17	White dimming	White dimming	0-255
CH-18	White trim	White trim	0-255
CH-19	Dimming Mode	Mode -1	0 --- 49
		Mode -2	50 --- 99
		Mode -3	100---149
		Mode -4	150---255
CH-20	Color temperature	No	0 ---15
		R100%,G UP,B0%	16---35
		R DOWM,G100%,B0%	36---55
		R0%,G100%,B UP	56---75
		R0%,G DOWM,B100%	76---95
		R UP,G0%,B100%	96---115

CH-20	Color temperature	R100%,G0%,B DOWM	116---135
		R100%,G UP,B UP	136---155
		R DOWM,G DOWM, B 100%	156---175
		R100%,G100%,B100%,W100%	176---195
		2800K	196---200
		3200K	201---205
		4000K	206---210
		4500K	211---215
		5000K	216---220
		5500K	221---225
		5600K	226--230
		6500K	231--235
		7000K	236--240
		8000K	241--245
CH-21	Macro color	No	0--9
		Macro color 1	10--19
		Macro color 2	20--29

		....(10 numbers 1 macro color)	....
CH-21	Macro color	Macro color 24	240--249
		Macro color 25	250--255
CH-22	Static pattern	No	0--6
		Monochrome pattern 1	7--13
		Monochrome pattern 2	14--20
		.........(7 numbers 1 pattern)	.....
		Monochrome pattern 26	182--188
		Mixed color pattern 1	189-195
		Mixed color pattern 2	196--202
		....(7 numbers 1 pattern)	....
		Mixed color pattern 8	245--251
		Mixed color pattern 9	252--255
CH-23	Dynamic pattern	NO	0--9
		Monochrome dynamic pattern 1	10--12
		Monochrome dynamic pattern 2	13--15
		......(3 numbers 1 pattern)	.....
		Monochrome pattern 57	178--180
		Mixed color dynamic pattern 1	181--183

CH-23	Dynamic pattern	Mixed color dynamic pattern 2	184--186
		........(3numbers 1 pattern)	....
		Mixed color dynamic pattern 18	232--234
		Mixed color dynamic pattern 19	235--255
CH-24	Pattern translation (with 23 channels)	Select dynamic pattern scene	0--255
CH-25	Dynamic pattern speed (with 17 channels)	No	0--9
		Forward, from fast to slow	10--132
		Go backward, from slow to fast	133--255
CH-26	Pattern effect fade	Pattern effect fade	0--255
CH-27	Background total dimming	Background total dimming from 0 - 100%	0--255
CH-28	Background strobe	Background strobe	0--255
CH-29	Back color Red	dark to bright linear dimming	0-255
CH-30	Back color Green	dark to bright linear dimming	0-255
CH-31	Back color Blue	dark to bright linear dimming	0-255
CH-32	Back color White	dark to bright linear dimming	0-255
		NO	0-250

CH-33	Reset	Reset within 5s	251-255
CH-34	R1 LED dimming	Red1 LED dimming	0-250
CH-35	G1 LED dimming	Green1 LED dimming	0-250
CH-36	B1 LED dimming	Blue1 LED dimming	0-250
CH-37	W1 LED dimming	White1 LED dimming	0-250
CH-38	....	....	......
CH-126	R24 LED dimming	Red24 LED dimming	0-250
CH-127	G24 LED dimming	Green24 LED dimming	0-250
CH-128	B24 LED dimming	Blue24 LED dimming	0-250
CH-129	W24 LED dimming	White24 LED dimming	0-250

Model 5 - 106 CH (used with ArtNet, 1~10 channels are controlled by ordinary DMX512 signal, 11~106 channels are controlled by ArtNet signal)

| Channel	Display	Function	Value
CH-1	Pan	Pan control	0 --- 255
CH-2	Pan adjustment	Pan Fine tuning control	0 --- 255

CH-3	Tilt	Tilt control	0 --- 255
CH-4	Tilt adjustment	Tilt Fine tuning control	0 --- 255
CH-5	XY speed	Speed from fast to slow	0 --- 255
CH-6	Zoom	Angle from small to large	0 --- 255
CH-7	Lens rotation	0~60°	0-155
		Clockwise infinite rotation from fast to slow	156-205
		Counterclockwise rotation from slow to fast	206-255
CH-8	Reset	NO	0-250
		Reset within 5s	251-255
CH-9	Dimmer	dark to bright linear dimming	0 --- 255
CH-10	Strobe	Turn on the light	0---3
		Synchro strobe speed From slow to fast (1HZ-25HZ)	4---203
		Random strobe	204--255
CH-11	Red 1dimming	Red1 dimming	0-255
CH-13	Green 1dimming	Green1 dimming	0-255
CH-15	Blue1 dimming	Blue1 dimming	0-255
CH-17	White1 dimming	White1 dimming	0-255

....	....		....	......
CH-103	R24	LED	Red24 LED dimming	0-250
	dimming			
CH-104	G24	LED	Green24 LED dimming	0-250
	dimming			
CH-105	B24	LED	Blue24 LED dimming	0-250
	dimming			
CH-106	W24	LED	White24 LED dimming	0-250
	dimming			

6. Shape

224

573

449

376

444

272

444

356

477

466

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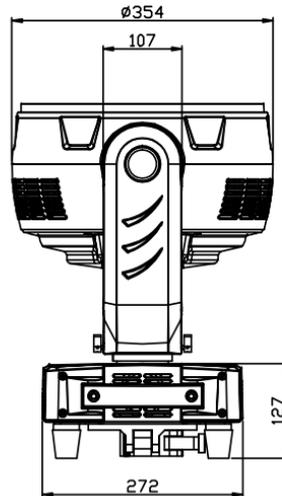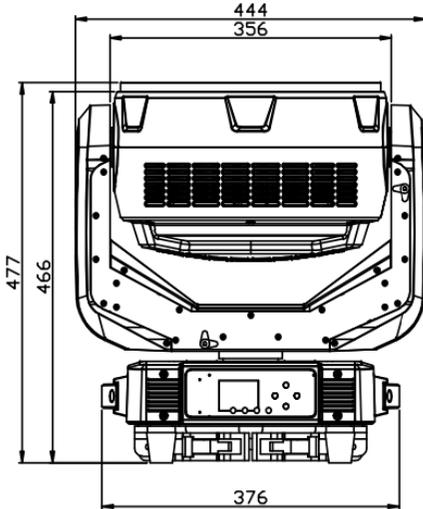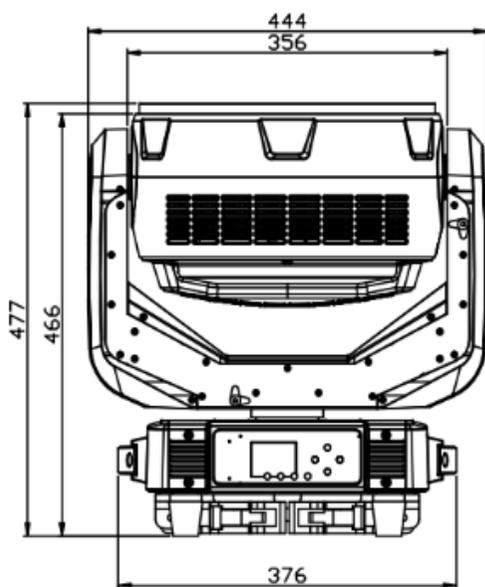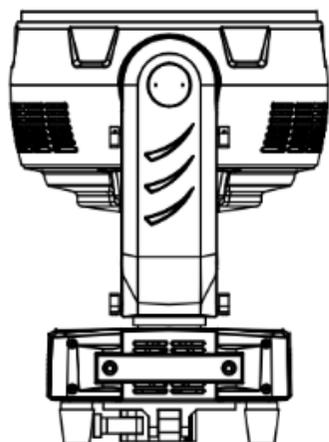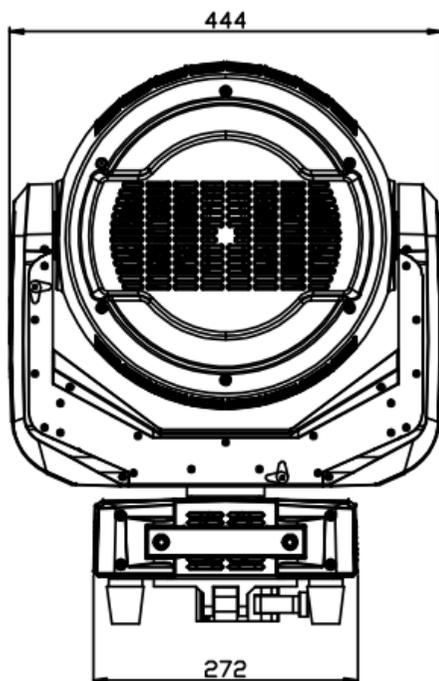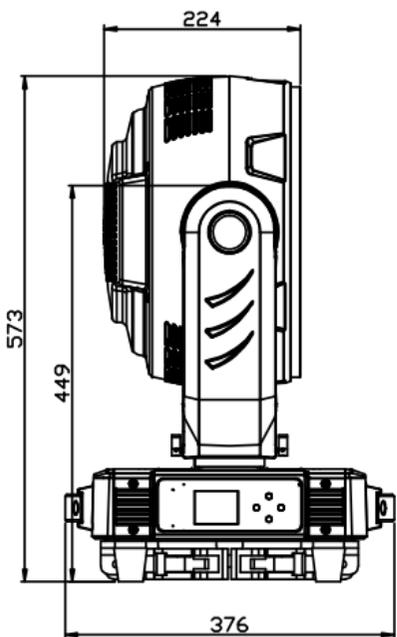
7.LUX Date

Beam Angle =3.5°

R lux	21000	14000	9450	4150
G lux	42300	30700	20500	9520
B lux	8860	6060	3890	1810
W lux	52200	36100	24800	11400
4in1 lux	113000	78200	54000	24800

Beam Angle =45°

R lux	8570	1190	418	178
G lux	17900	2650	991	430
B lux	3520	530	198	86.7
W lux	21300	3090	1150	508
4in1 lux	47200	6690	2560	1120
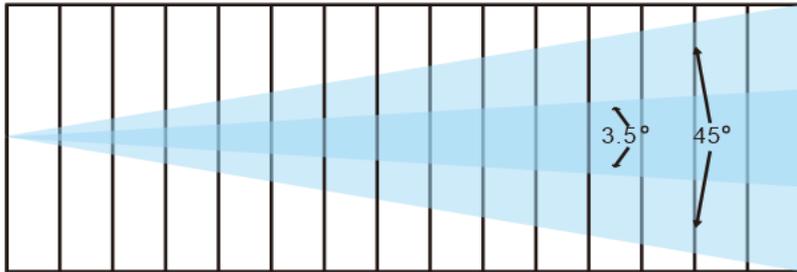
Distance (m)	1	3	5	8
Spot diameter (m) 3.5°	0.34	0.48	080	1.10
Spot diameter (m) 45°	1.2	2.30	4.00	

8.Trouble shooting

Following are a few common problems that may occur during operation. Here are some suggestions for easy troubleshooting:

A. The unit does not work, no light and the fan does not work

1. Check the connection of power and main fuse.
2. Measure the mains voltage on the main connector.

3. Check the power on LED.

B. Not responding to DMX controller

1. DMX LED should be on. If not, check DMX connectors, cables to see if link

properly.

2. If the DMX LED is on and no response to the channel, check the address

settings and DMX polarity.

3. If you have intermittent DMX signal problems, check the pins on connectors or

on

PCB of the unit or the previous one.

4. Try to use another DMX controller.

5. Check if the DMX cables run near or run alongside to high voltage cables that

may cause damage or interference to DMX interface circuit.

C. One of the channels is not working well

1. The stepper motor might be damaged or the cable connected to the PCB is

broken.

2. The motor's drive IC on the PCB might be out of condition.

8. Fixture Cleaning

The cleaning of internal and external optical lenses and/or mirrors must be carried

out periodically to optimize light output. Cleaning frequency depends on the

environment in which the fixture operates: damp, smoky or particularly dirty

surrounding can cause greater accumulation of dirt on the unit's optics.

Clean with soft cloth using normal glass cleaning fluid.

Always dry the parts carefully.

Clean the external optics at least every 20 days. Clean the internal optics at least every 30/60 days.