



September 28, 2009

# LED Streetlight

## SPECIFICATION



RoHS Compliant  

**World-class optoelectronic device manufacturing facility since 1969**  
**25 million products manufactured daily**  
**ISO14001 / ISO9001 / TS16949 Certified**  
**White Licensed**



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## Introduction

VaOpto's Light Emitting Diode (LED) Streetlight Series saves energy and lasts a long life.

### Environmentally Conscious

Energy efficient, lead free, and long life means fewer lamp replacements vs. standard high pressure sodium streetlight.

### Outstanding Energy Efficiency

Compare to standard Incandescent light sources, VaOpto's LED Streetlight Series are reducing energy consumption by 70%-80%. The lamps' optics concentrates light on the target, diminishing wasted extraneous light and increases the CBCP.

### Long Life = Labor Savings

Delivers at least 70% of initial light output after at last 50,000 hours.

### Various Colors

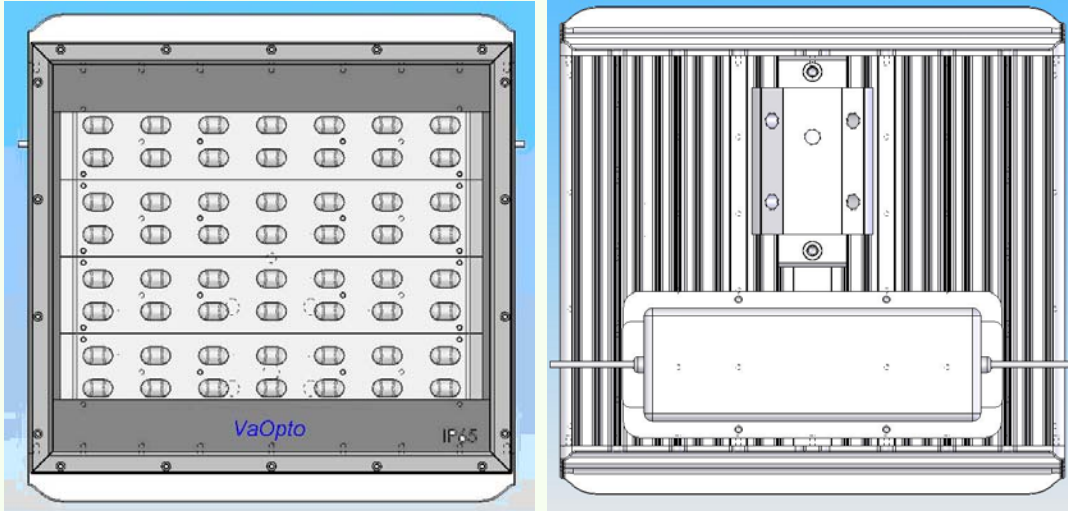
Cool White (5000-10000K)  
Neutral White (3700-5000K)  
Warm White (2600-3700K)

### Excellent Color Rendering

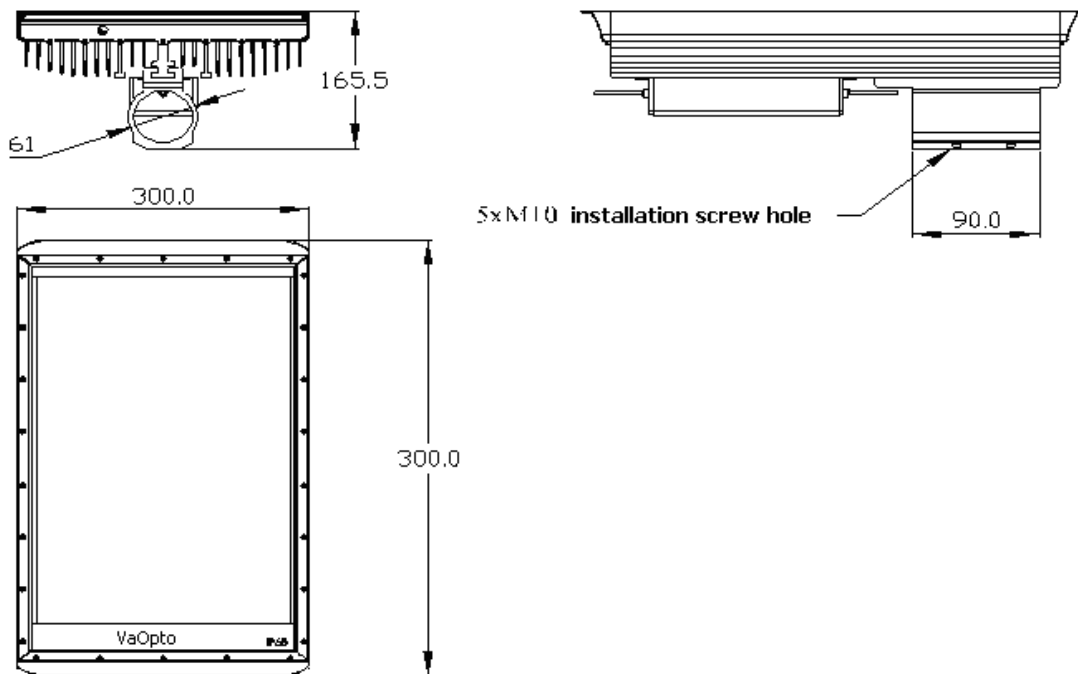
Cool White: CRI > 70  
Neutral White: CRI > 75  
Warm White: CRI > 80

**VO-SL-XW-N56 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

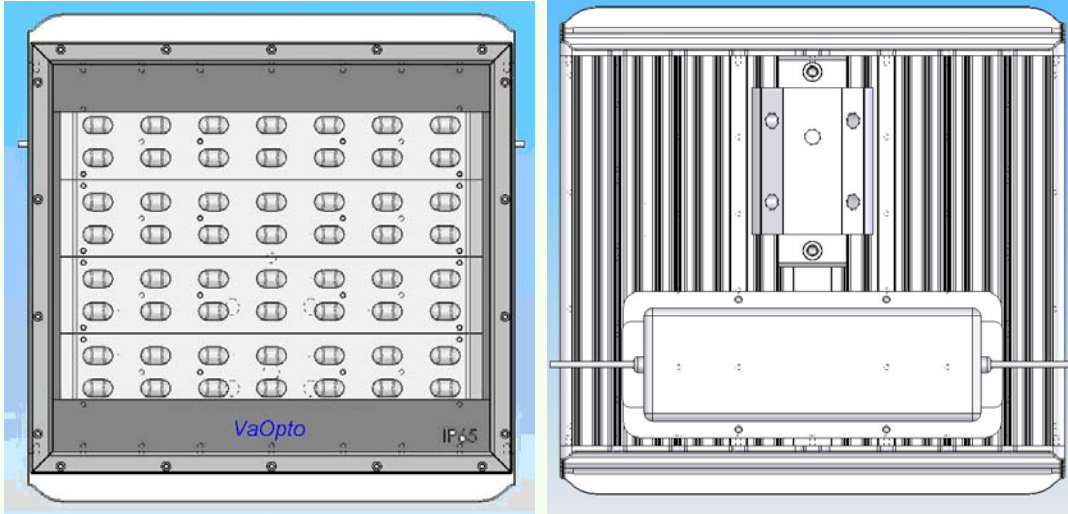
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

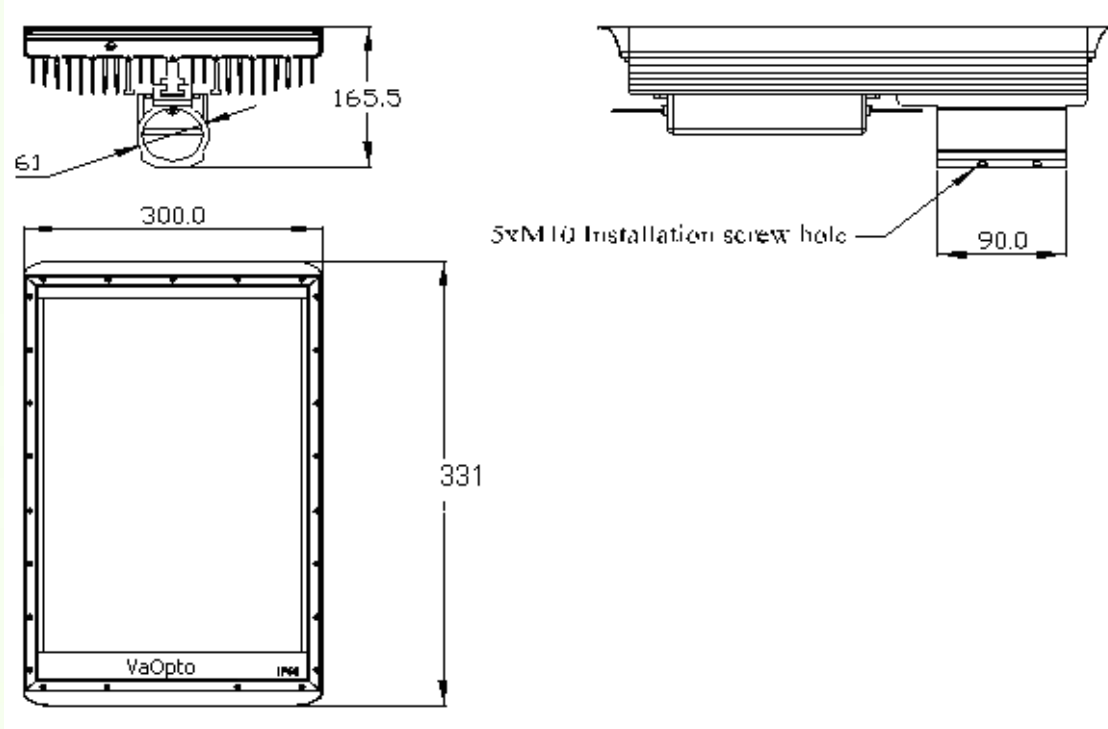
<b>Part No.</b>	VO-SL-CW-N56, VO-SL-NW-N56, VO-SL-WW-N56		
<b>Input Voltage</b>	100-240 VDC		
<b>LED Quantity</b>	56 pcs		
<b>Power</b>	61W		
<b>Power Factor</b>	≥0.97		
<b>Color Rendering</b>	R≥75		
<b>Color Temperature</b>	CW (5000-10000), NW (3700-5000), WW (2600 – 3700)		
<b>Replaceable Light Source</b>	High Pressure Sodium Lamp	Metal Halide Lamp	
<b>Mounting Height</b>	6 – 7m	<b>Fixture Elevation</b>	15 – 20°
<b>Center Illumination</b>	24 lux (Height: 6M)		
<b>Illumination Uniformity (min./avg.)</b>	0.48		
<b>Luminous Efficiency</b>	60 lm/w		
<b>Total luminous FLUX</b>	CW (5600 lm), NW (5040 lm), WW (4480 lm)		
<b>Effective Illuminated Area</b>	23m×8.5m (Height: 5M)		
<b>Working Temperature</b>	-30 – +40 °C (-22 - +104 °F)		
<b>Working Humidity</b>	10% – 90%		
<b>Working Life</b>	>35000h		
<b>IP Rating</b>	IP65		
<b>Fixture Weight</b>	7.5Kg		
<b>Heat Emission</b>	Fixture Temperature <60 °C Environment 26 °C		
<b>Fixture Dimension</b>	331mm (L) ×300mm (W) ×165.5mm (H)		
<b>Carton Size</b>	382×350×220mm		

VO-SL-XW-N70 Series where X may be C, N, or W

Product Appearance



General Dimensions



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

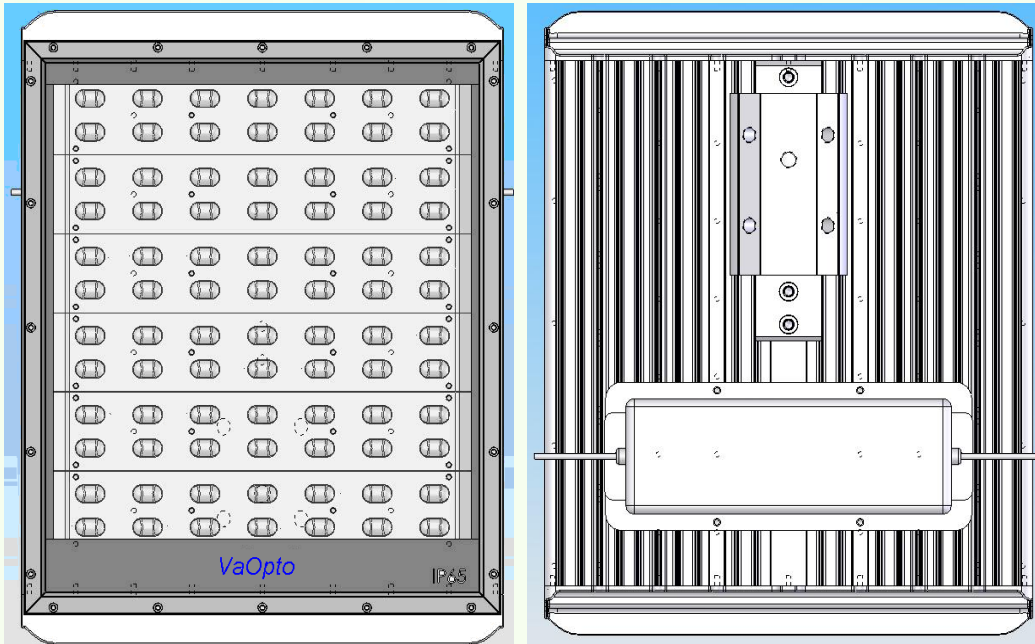
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

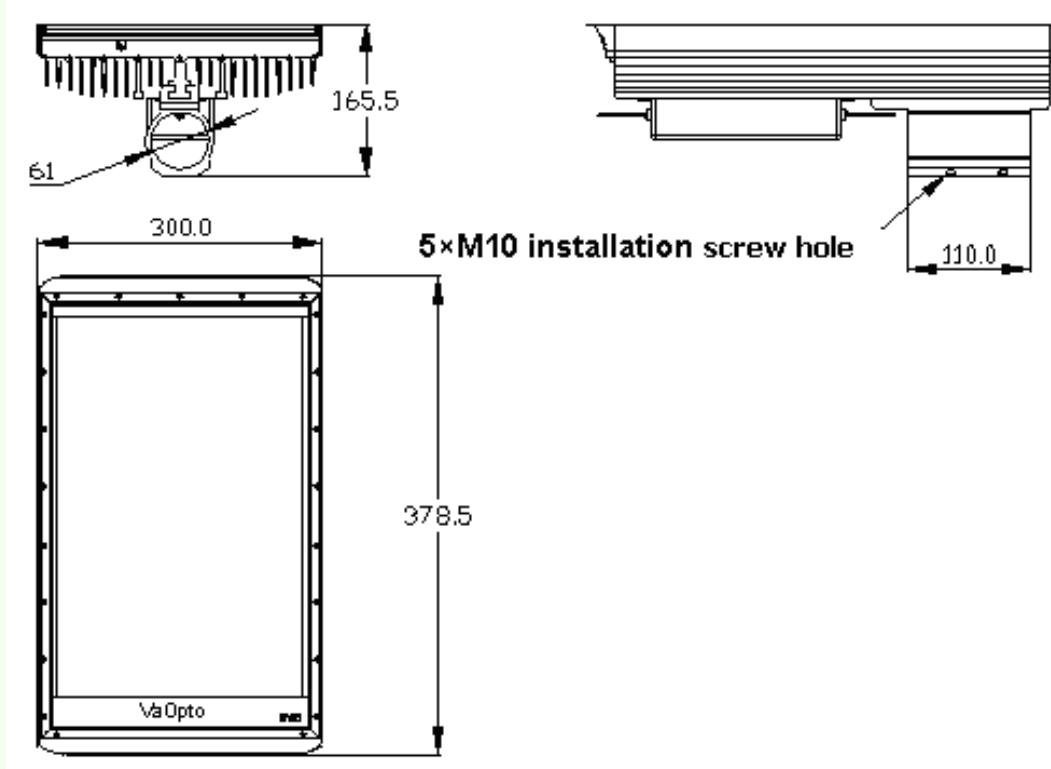
<b>Part No.</b>	VO-SL-CW-N70, VO-SL-NW-N70, VO-SL-WW-N70		
<b>Input Voltage</b>	100-240 VDC		
<b>LED Quantity</b>	70 pcs		
<b>Power</b>	76W		
<b>Power Factor</b>	≥0.97		
<b>Color Rendering</b>	R≥75		
<b>Color Temperature</b>	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
<b>Replaceable Light Source</b>	High Pressure Sodium Lamp	Metal Halide Lamp	
<b>Mounting Height</b>	5—6m	<b>Fixture Elevation</b>	15—20°
<b>Center Illumination</b>	23 lux (Height: 5M)		
<b>Illumination Uniformity (min./avg.)</b>	0.48		
<b>Luminous Efficiency</b>	60 lm/w		
<b>Total luminous FLUX</b>	CW ( 7000lm), NW (6300), WW (5600)		
<b>Effective Illuminated Area</b>	23m×8.5m (Height: 6M)		
<b>Working Temperature</b>	-30—+40°C (-22 - +104 °F)		
<b>Working Humidity</b>	10%—90%		
<b>Working Life</b>	>35000h		
<b>IP Rating</b>	IP65		
<b>Fixture Weight</b>	6.6Kg		
<b>Heat Emission</b>	Fixture Temperature <60 °C Environment 26 °C		
<b>Fixture Dimension</b>	300mm (L) ×300mm (W) ×165.5mm (H)		
<b>Carton Size</b>	350×350×220mm		

VO-SL-XW-N84 Series where X may be C, N, or W

Product Appearance



General Dimensions



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

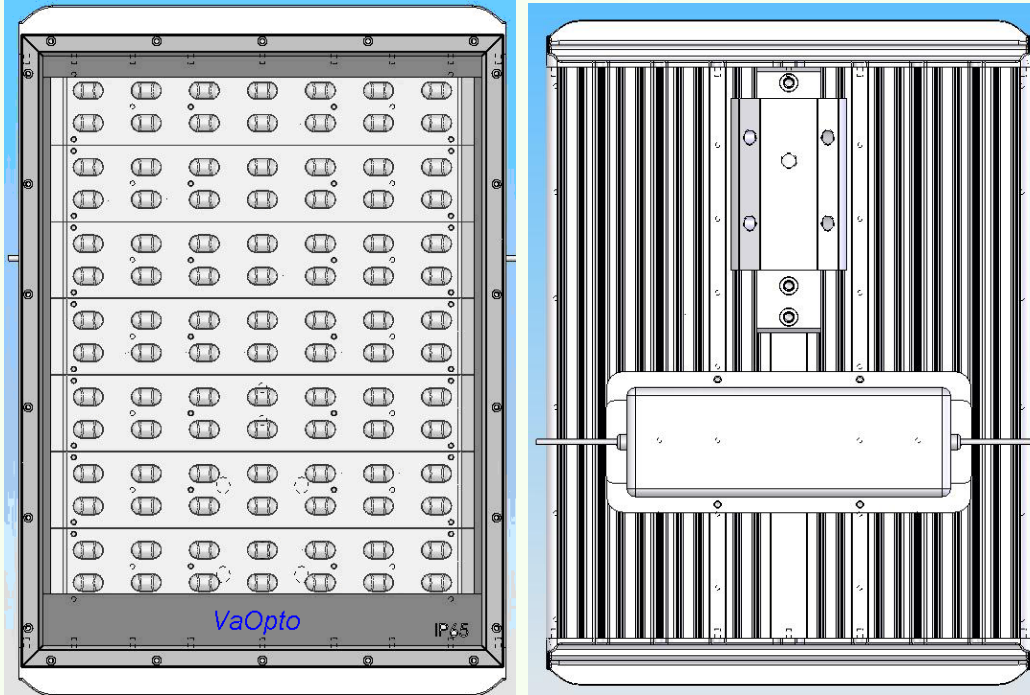
Electro-Optical Characters

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

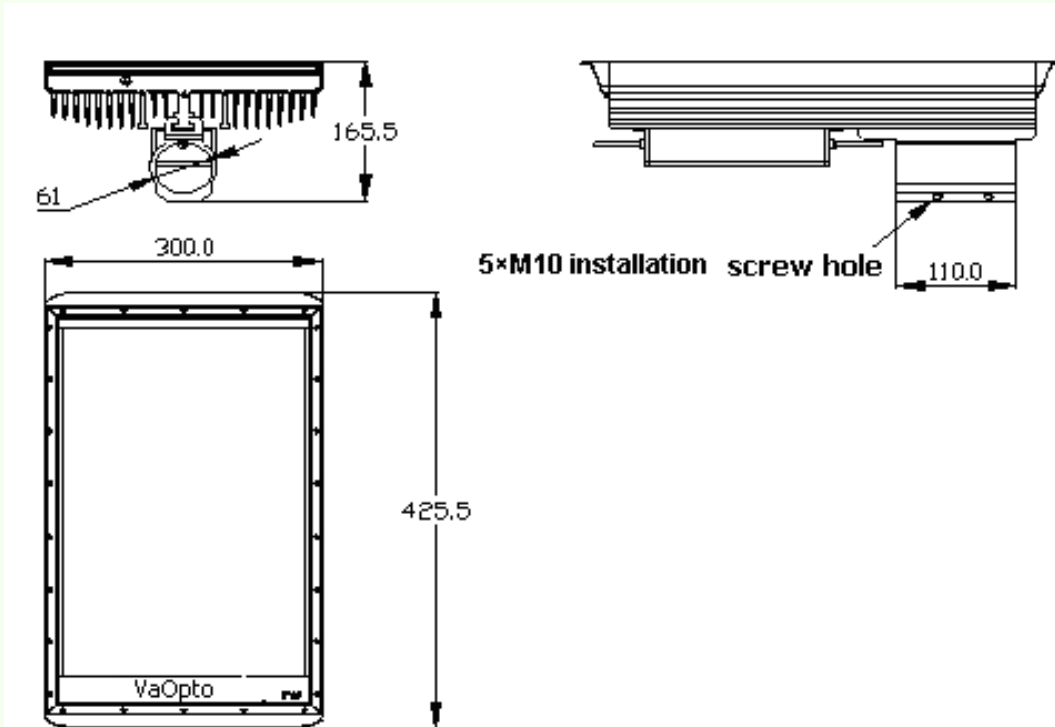
Part No.	VO-SL-CW-N84, VO-SL-NW-N84, VO-SL-WW-N84		
Working Voltage	100-240 VDC		
LED Quantity	84 pcs		
Power	91W		
Power Factor	≥0.97		
Color Rendering	R≥75		
Color Temperature	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
Replaceable Light Source	High Pressure Sodium Lamp	Metal Halide Lamp	
Mounting Height	6—7m	Fixture Elevation	15—20°
Center Illumination	25 lux (Height: 7M)		
Illumination Uniformity (min./avg.)	0.48		
Luminous Efficiency	60 lm/w		
Total luminous FLUX	CW (8400 lm), NW (7560 lm), WW (6720 lm)		
Effective Illuminated Area	26m×9.5m (Height: 7M)		
Working Temperature	-30—+40°C (-22 - +104 °F)		
Working Humidity	10%—90%		
Working Life	>35000h		
IP Rating	IP65		
Fixture Weight	8.3Kg		
Heat Emission	Fixture Temperature <60 °C Environment 26 °C		
Fixture Dimension	378.5mm (L) ×300mm (W) ×165.5mm (H)		
Carton Size	429×350×220mm		

**VO-SL-XW-N98 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

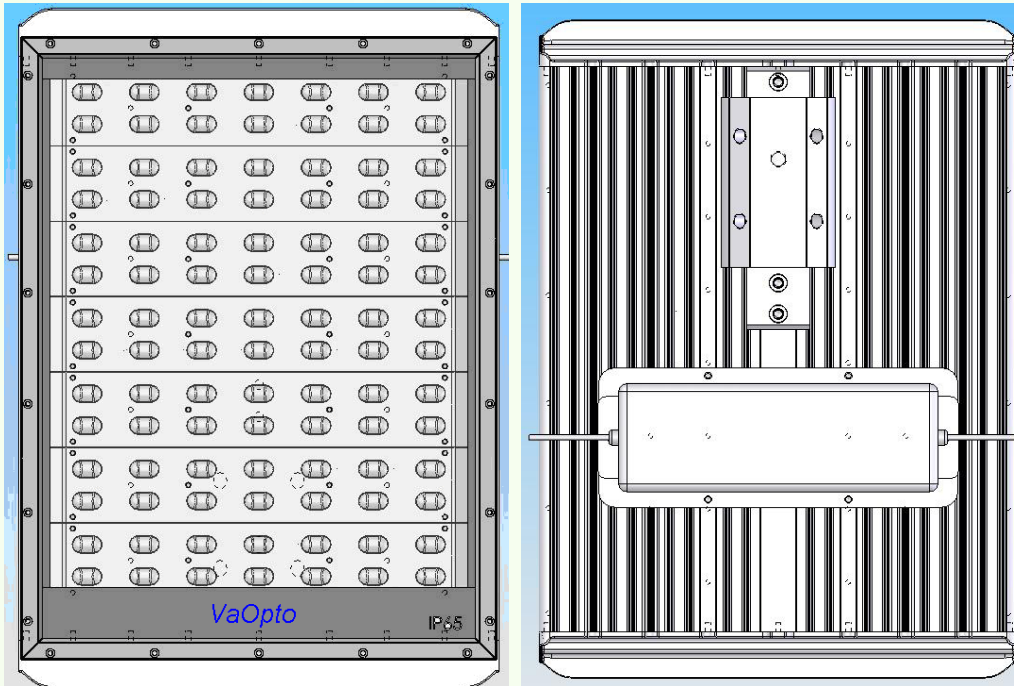
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

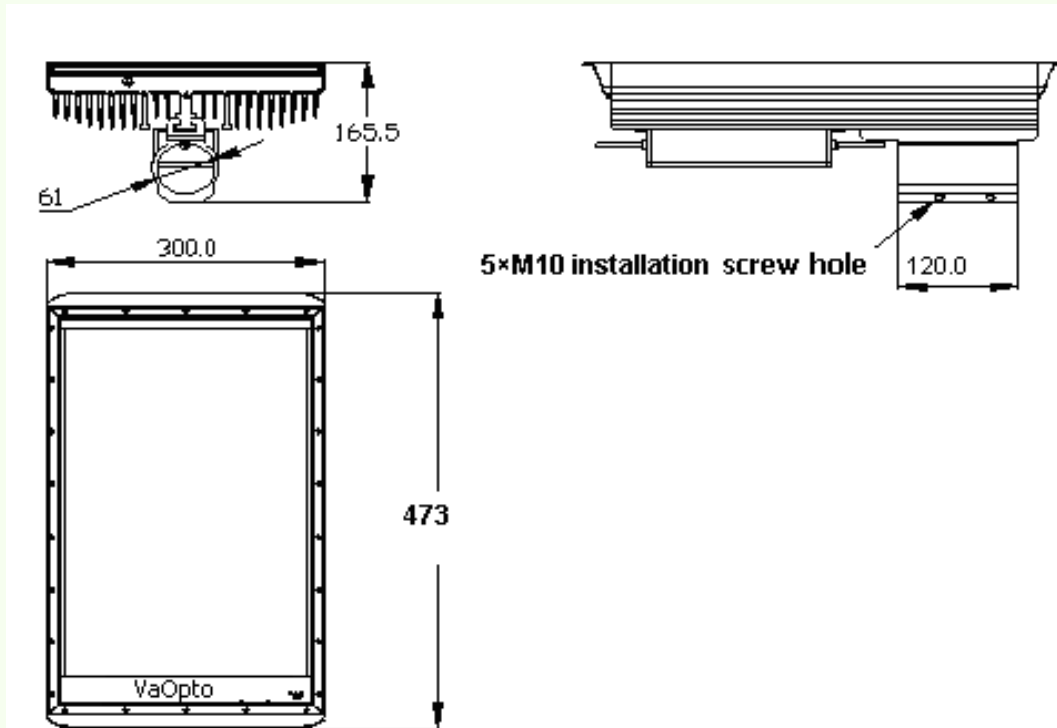
<b>Part No.</b>	VO-SL-CW-N98, VO-SL-NW-N98, VO-SL-WW-N98		
<b>Input Voltage</b>	100-240 VDC		
<b>LED Quantity</b>	98 pcs		
<b>Power</b>	106W		
<b>Power Factor</b>	≥0.97		
<b>Color Rendering</b>	R≥75		
<b>Color Temperature</b>	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
<b>Replaceable Light Source</b>	High Pressure Sodium Lamp	Metal Halide Lamp	
<b>Mounting Height</b>	7—8m	<b>Fixture Elevation</b>	15—20°
<b>Center Illumination</b>	26 lux (Height: 8M)		
<b>Illumination Uniformity (min./avg.)</b>	0.48		
<b>Luminous Efficiency</b>	60 lm/w		
<b>Total luminous FLUX</b>	CW (9800 lm), NW (8820 lm), WW (7840 lm)		
<b>Effective Illuminated Area</b>	31m×11m (Height: 8M)		
<b>Working Temperature</b>	-30—+40°C (-22 - +104 °F)		
<b>Working Humidity</b>	10%—90%		
<b>Working Life</b>	>35000h		
<b>IP Rating</b>	IP65		
<b>Fixture Weight</b>	9.3Kg		
<b>Heat Emission</b>	Fixture Temperature <60 °C Environment 26 °C		
<b>Fixture Dimension</b>	425.5mm (L) ×300mm (W) ×165.5mm (H)		
<b>Carton Size</b>	476×350×220mm		

**VO-SL-XW-N112 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

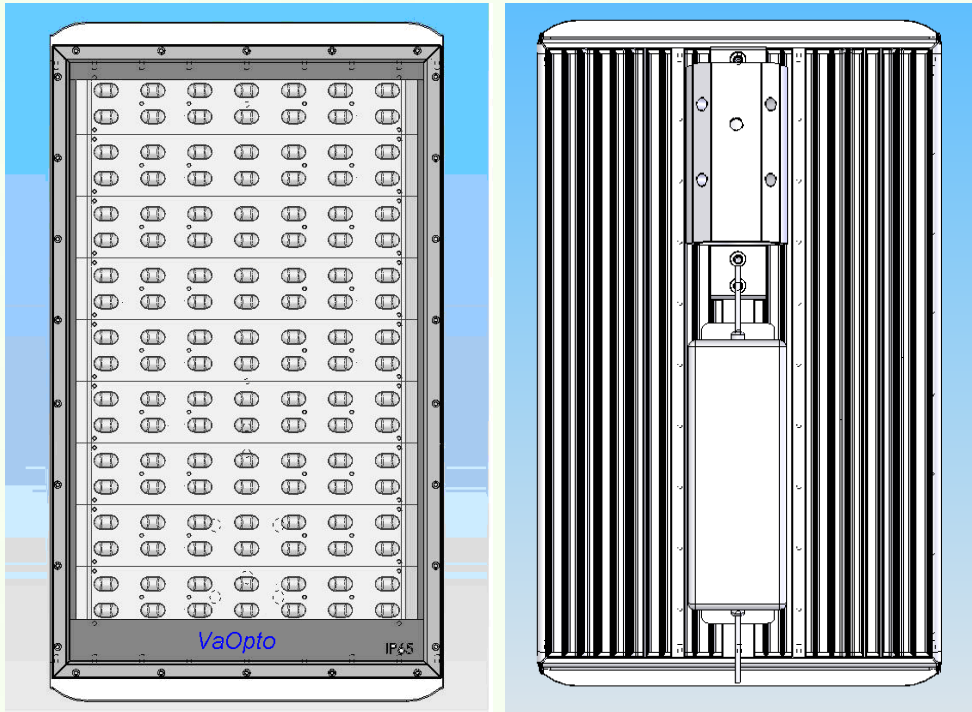
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

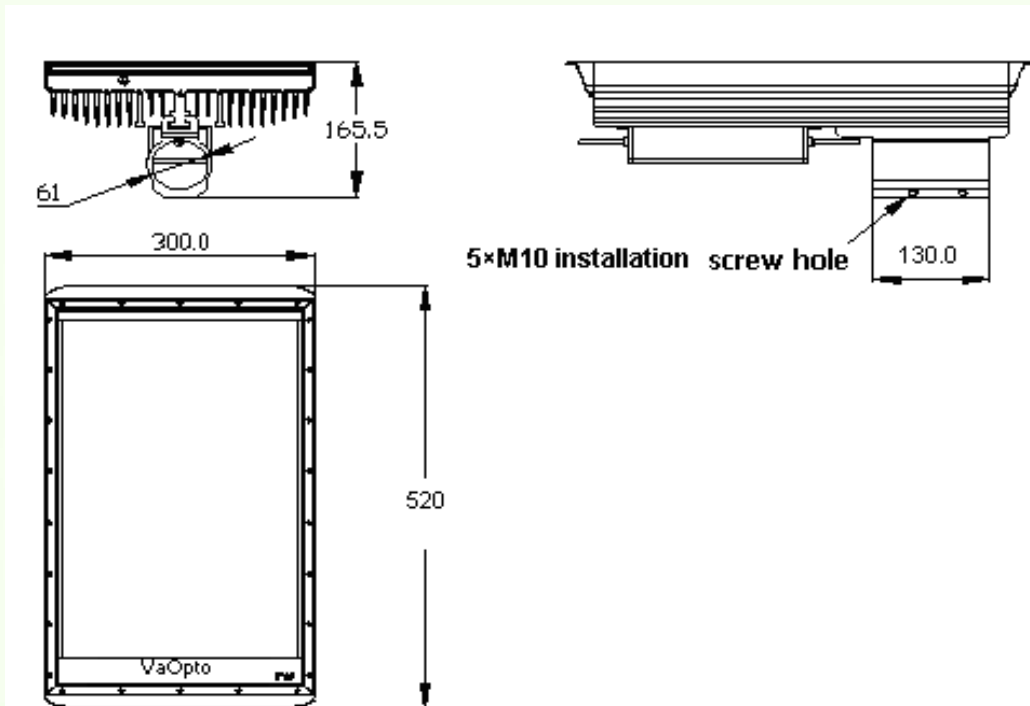
Part No.	VO-SL-CW-N112, VO-SL-NW-N112, VO-SL-WW-N112		
Input Voltage	100-240 VDC		
LED Quantity	112 pcs		
Power	122W		
Power Factor	≥0.97		
Color Rendering	R≥75		
Color Temperature	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
Replaceable Light Source	High Pressure Sodium Lamp	Metal Halide Lamp	
Mounting Height	8—9m	Fixture Elevation	15—20°
Center Illumination	30 lux (Height: 8M)		
Illumination Uniformity (min./avg.)	0.48		
Luminous Efficiency	60 lm/w		
Total luminous FLUX	CW (11200 lm), NW (10080 lm), WW (8960 lm)		
Effective Illuminated Area	31m×11m (Height: 8M)		
Working Temperature	-30—+40°C (-22 - +104 °F)		
Working Humidity	10%—90%		
Working Life	>35000h		
IP Rating	IP65		
Fixture Weight	10Kg		
Heat Emission	Fixture Temperature <60 °C Environment 26 °C		
Fixture Dimension	473mm (L) ×300mm (W) ×165.5mm (H)		
Carton Size	523×350×220mm		

VO-SL-XW-N126 Series where X may be C, N, or W

Product Appearance



General Dimensions



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

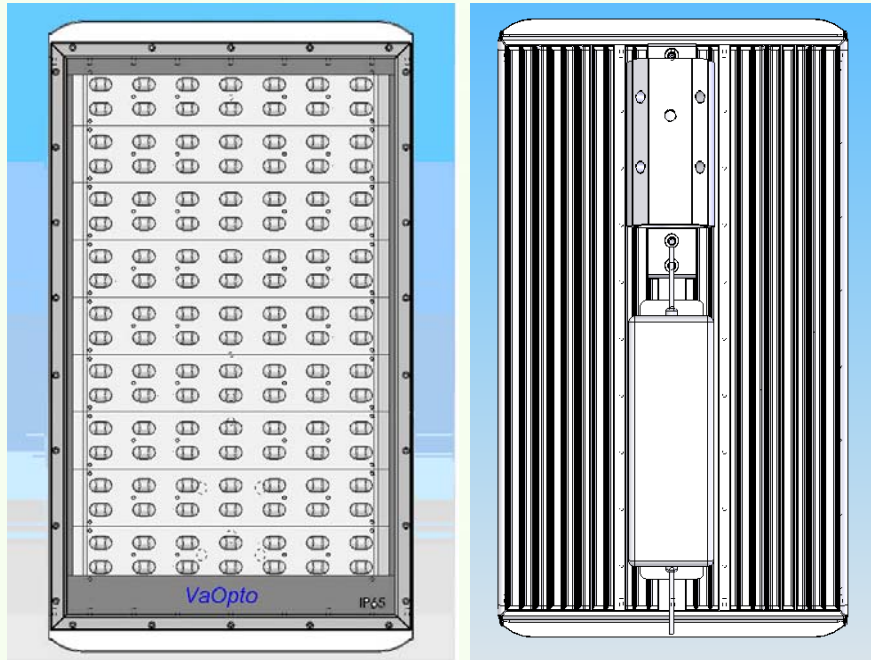
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

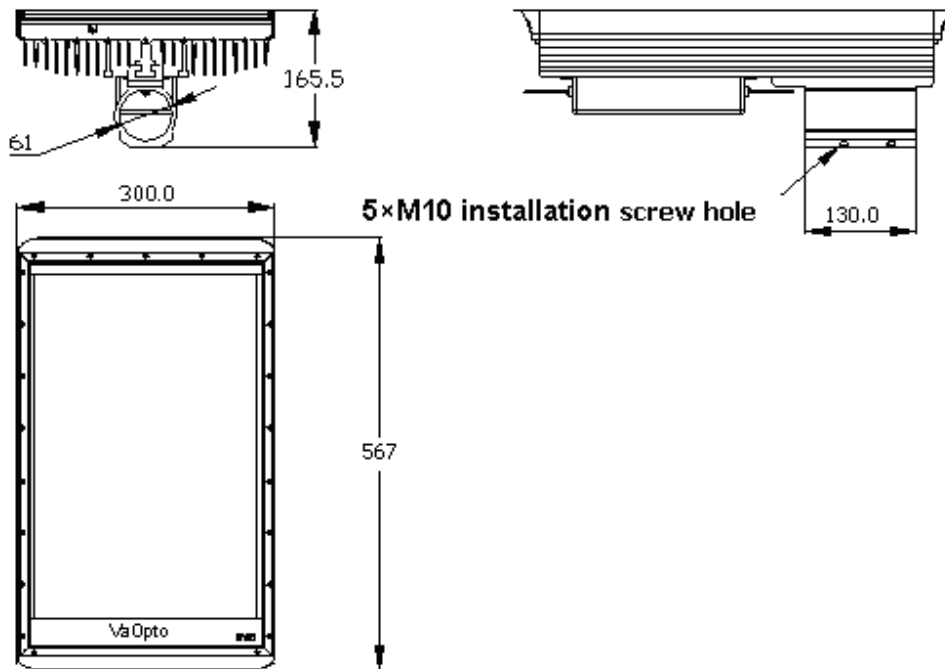
Part No.	VO-SL-CW-N126, VO-SL-NW-N126, VO-SL-WW-N126		
Working Voltage	100-240 VDC		
LED Quantity	126 pcs		
Power	135W		
Power Factor	≥0.97		
Color Rendering	R≥75		
Color Temperature	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
Replaceable Light Source	High Pressure Sodium Lamp	Metal Halide Lamp	
Mounting Height	9—10m	Fixture Elevation	15—20°
Center Illumination	30 lux (Height: 9M)		
Illumination Uniformity (min/avg)	0.48		
Luminous Efficiency	60 lm/w		
Total luminous FLUX	CW (12600 lm), NW (11340 lm), WW (10080 lm)		
Effective Illuminated Area	35m×12m (Height: 9M)		
Working Temperature	-30—+40°C (-22 - +104 °F)		
Working Humidity	10%—90%		
Working Life	>35000h		
IP Rating	IP65		
Fixture Weight	11Kg		
Heat Emission	Fixture Temperature <60 °C Environment 26 °C		
Fixture Dimension	520mm (L) ×300mm (W) ×165.5mm (H)		
Carton Size	570×350×220mm		

**VO-SL-XW-N140 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

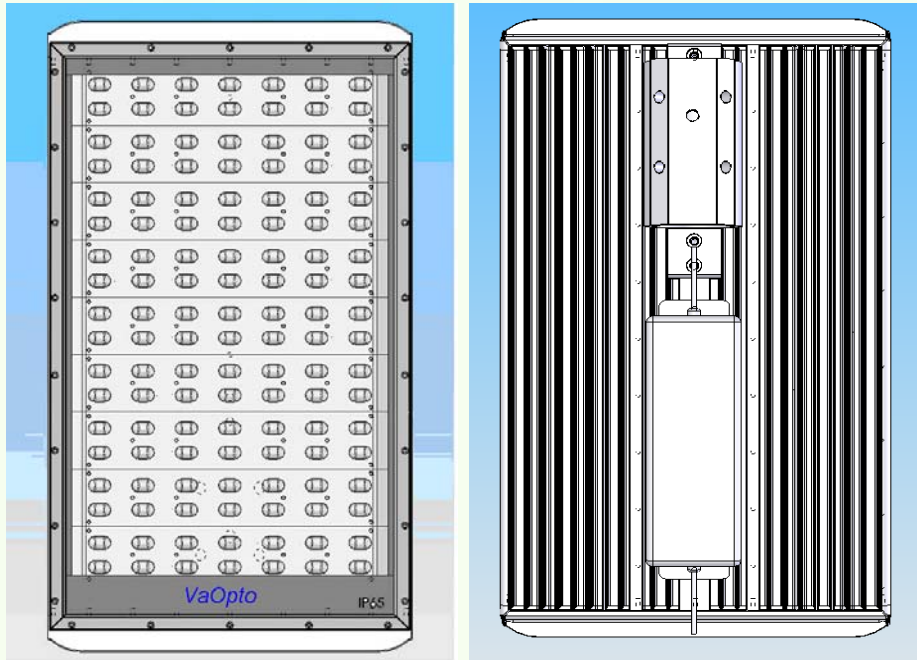
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

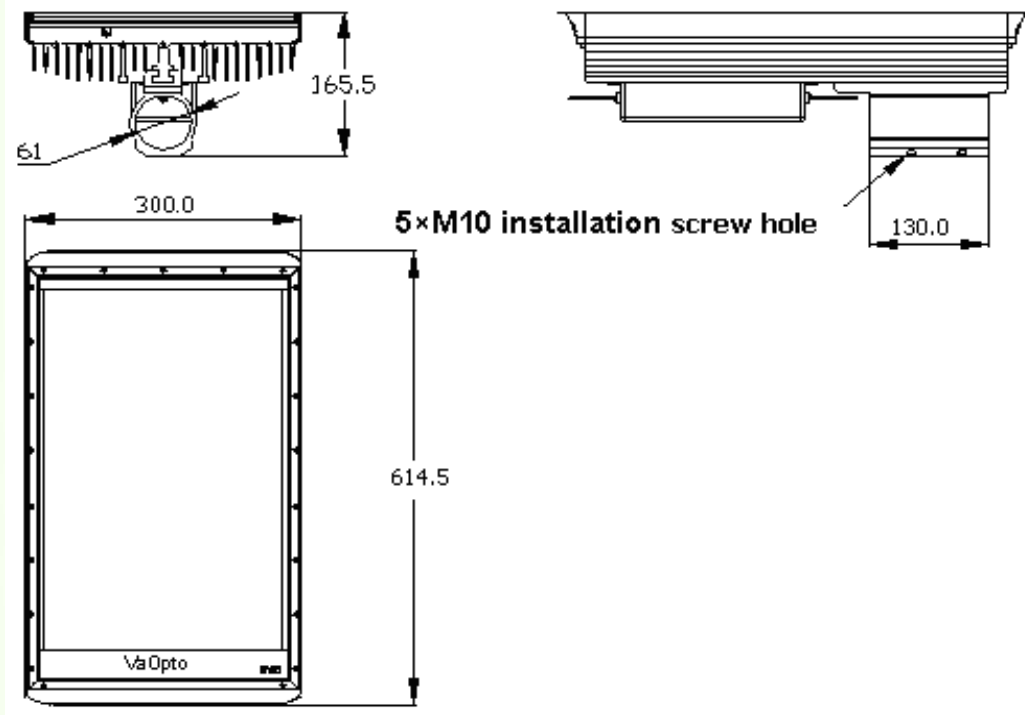
Part No.	VO-SL-CW-N140, VO-SL-NW-N140, VO-SL-WW-N140		
Input Voltage	100-240 VDC		
LED Quantity	140 pcs		
Power	152W		
Power Factor	≥0.97		
Color Rendering	R≥75		
Color Temperature	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
Replaceable Light Source	High Pressure Sodium Lamp	Metal Halide Lamp	
Mounting Height	9—10m	Fixture Elevation	15—20°
Center Illumination	30 lux (Height: 10M)		
Illumination Uniformity (min./avg.)	0.48		
Luminous Efficiency	60 lm/w		
Total luminous FLUX	CW (14000 lm), NW (12600 lm), WW (11200 lm)		
Effective Illuminated Area	38m×14m (Height: 10M)		
Working Temperature	-30—+40°C (-22 - +104 °F)		
Working Humidity	10%—90%		
Working Life	>35000h		
IP Rating	IP65		
Fixture Weight	13Kg		
Heat Emission	Fixture Temperature <60 °C Environment 26 °C		
Fixture Dimension	567mm (L) ×300mm (W) ×165.5mm (H)		
Carton Size	617×350×220mm		

**VO-SL-XW-N154 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

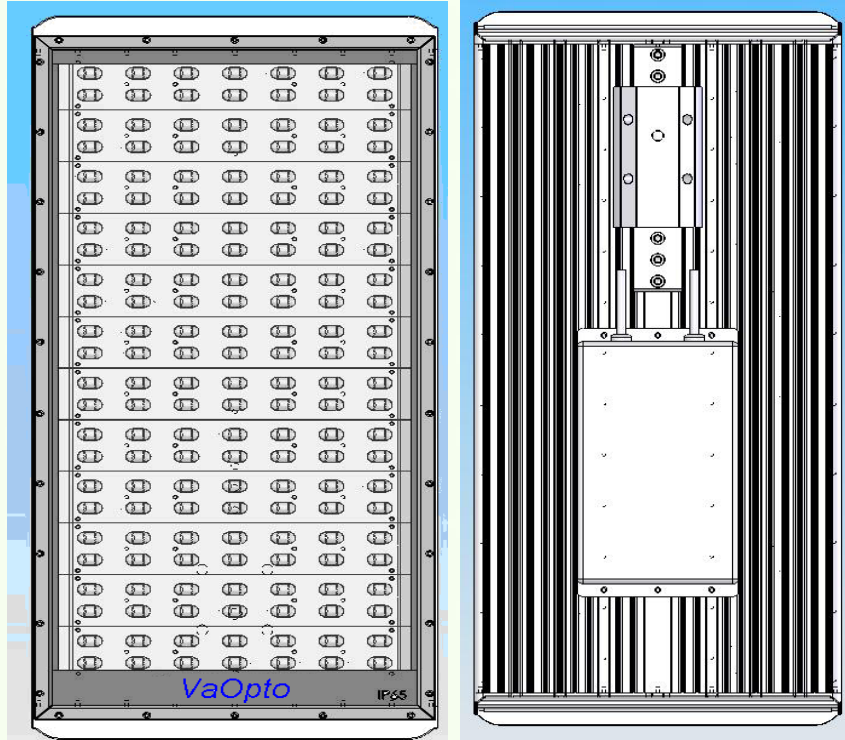
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~+185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

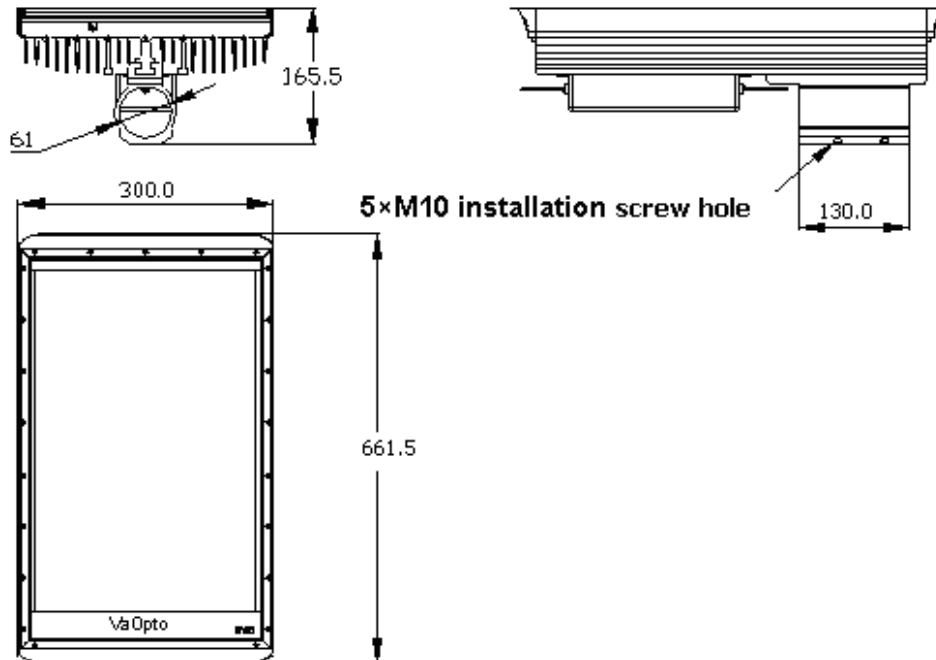
<b>Part No.</b>	VO-SL-CW-N154, VO-SL-NW-N154, VO-SL-WW-N154		
<b>Input Voltage</b>	100-240 VDC		
<b>LED Quantity</b>	154 pcs		
<b>Power</b>	168W		
<b>Power Factor</b>	≥0.97		
<b>Color Rendering</b>	R≥75		
<b>Color Temperature</b>	CW (5000-10000), NW (3700-5000), WW (2600-3700)		
<b>Replaceable Light Source</b>	High Pressure Sodium Lamp	Metal Halide Lamp	
<b>Mounting Height</b>	10—11m	<b>Fixture Elevation</b>	15—20°
<b>Center Illumination</b>	34 lux (Height: 10M)		
<b>Illumination Uniformity (min./avg.)</b>	0.48		
<b>Luminous Efficiency</b>	60 lm/w		
<b>Total luminous FLUX</b>	CW (15400 lm), NW (13860 lm), WW (12320 lm)		
<b>Effective Illuminated Area</b>	38m×14m (Height: 10M)		
<b>Working Temperature</b>	-30—+40°C (-22 - +104 °F)		
<b>Working Humidity</b>	10%—90%		
<b>Working Life</b>	>35000h		
<b>IP Rating</b>	IP65		
<b>Fixture Weight</b>	14Kg		
<b>Heat Emission</b>	Fixture Temperature <60 °C Environment 26 °C		
<b>Fixture Dimension</b>	614.5mm (L) ×300mm (W) ×165.5mm (H)		
<b>Carton Size</b>	664×350×220mm		

**VO-SL-XW-N168 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

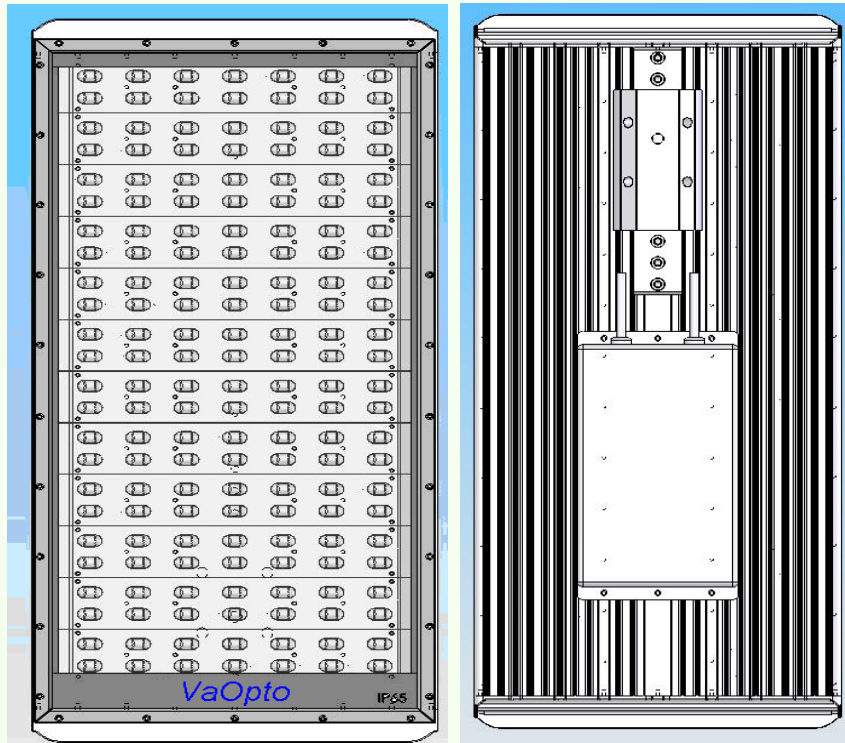
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~ +185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

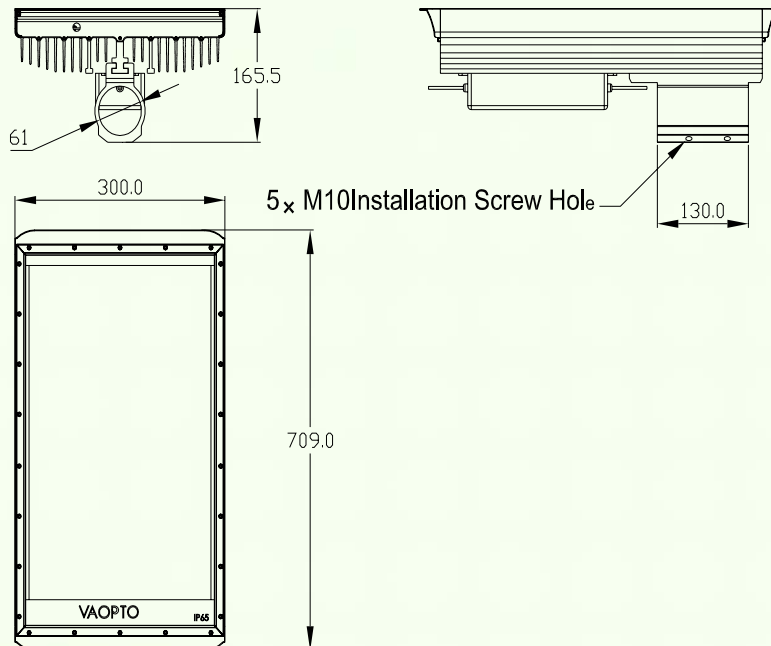
Part No.	VO-SL-CW-N168, VO-SL-NW-N168, VO-SL-WW-N168		
Input Voltage	100-240 VDC		
LED Quantity	168 pcs		
Power	182W		
Power Factor	≥0.97		
Color Rendering	R≥75		
Color Temperature	CW (5000-10000), NW (3700-5000), WW(2600-3700)		
Replaceable Light Source	High Pressure Sodium Lamp	Metal Halide Lamp	
Mounting Height	10—11m	Fixture Elevation	15—20°
Center Illumination	34 lux (Height: 11M)		
Illumination Uniformity (min/avg)	0.48		
Luminous Efficiency	60 lm/w		
Total luminous FLUX	CW (16800 lm), NW (15120 lm), WW (13440 lm)		
Effective Illuminated Area	43m×15.5m (Height: 11M)		
Working Temperature	-30—+40°C (-22 - +104 °F)		
Working Humidity	10%—90%		
Working Life	>35000h		
IP Rating	IP65		
Fixture Weight	15Kg		
Heat Emission	Fixture Temperature <60 °C Environment 26 °C		
Fixture Dimension	661.5mm (L) ×300mm (W) ×165.5mm (H)		
Carton Size	712×350×220mm		

**VO-SL-XW-N182 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**



- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

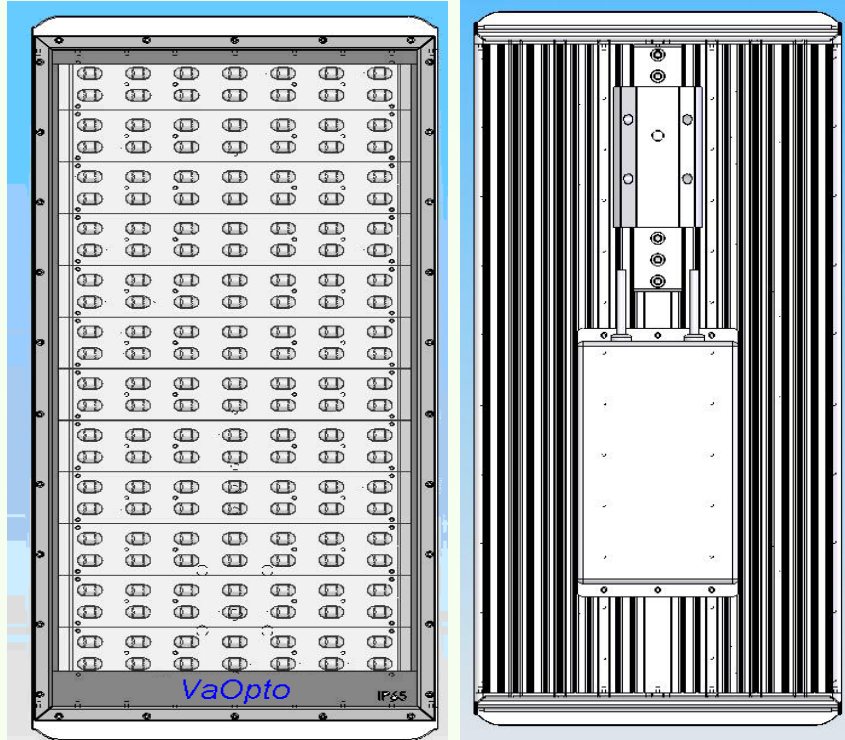
**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~ +185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

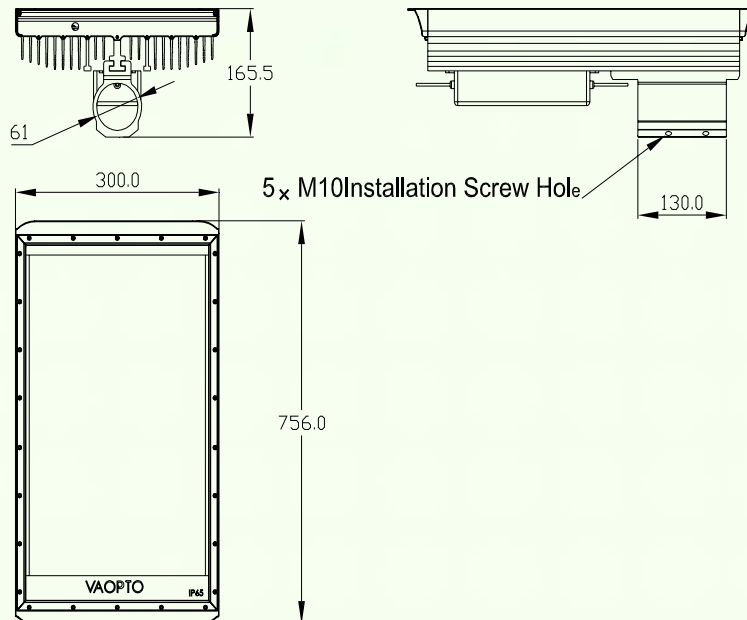
Part No.	VO-SL-CW-N182, VO-SL-NW-N182, VO-SL-WW-N182		
Input Voltage	100-240 VDC		
LED Quantity	182 pcs		
Power	196W		
Power Factor	≥0.97		
Color Rendering	R≥75		
Color Temperature	CW (5000-10000), NW (3700-5000), WW(2600-3700)		
Replaceable Light Source	High Pressure Sodium Lamp	Metal Halide Lamp	
Mounting Height	11—12m	Fixture Elevation	15—20°
Center Illumination	38 lux (Height: 11M)		
Illumination Uniformity (min/avg)	0.48		
Luminous Efficiency	60 lm/w		
Total luminous FLUX	CW (18200 lm), NW (16380 lm), WW (14560 lm)		
Effective Illuminated Area	43m×15.5m (Height: 11M)		
Working Temperature	-30—+40°C (-22 - +104 °F)		
Working Humidity	10%—90%		
Working Life	>35000h		
IP Rating	IP65		
Fixture Weight	16Kg		
Heat Emission	Fixture Temperature <60 °C Environment 26 °C		
Fixture Dimension	709mm (L) ×300mm (W) ×165.5mm (H)		
Carton Size	759×350×220mm		

**VO-SL-XW-N196 Series where X may be C, N, or W**

**Product Appearance**



**General Dimensions**

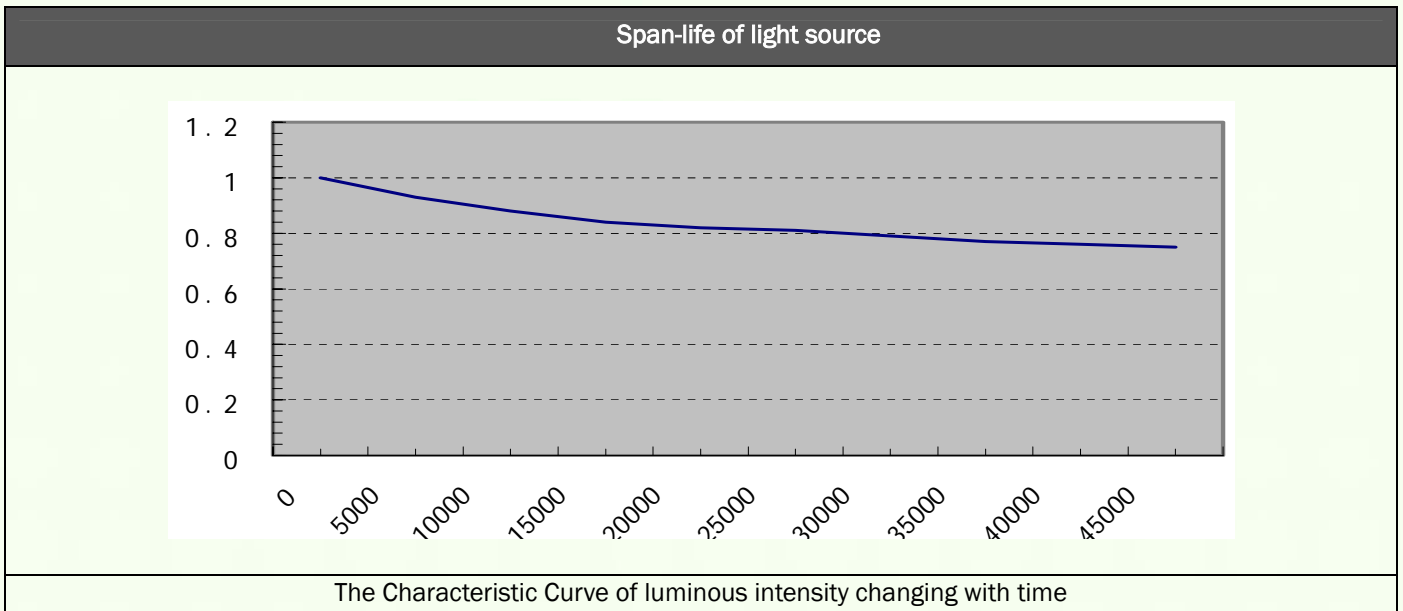
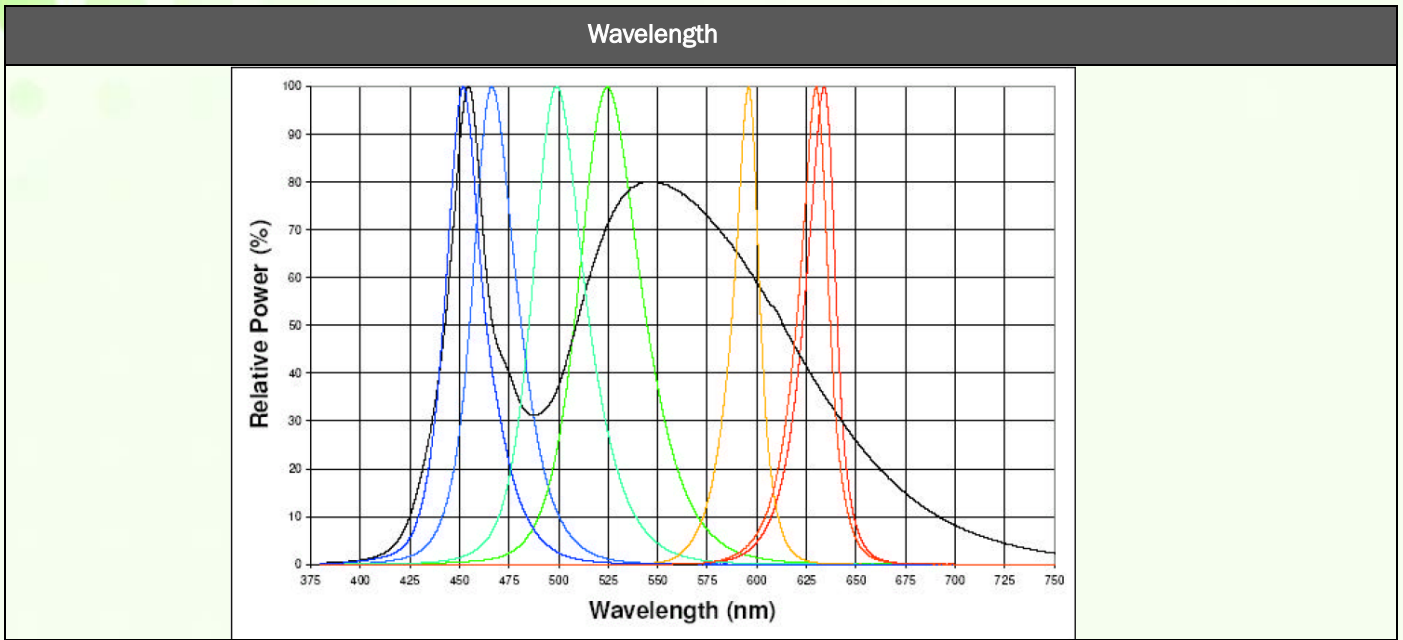


- All dimensions are millimeters.
- Tolerance is 0.2mm unless otherwise noted.

**Electro-Optical Characters**

Absolute Maximum Ratings			
Parameter	Rating	Unit	Condition
Operating Temperature	-40 ~ +85 (-40 ~ +185)	°C (°F)	Ta - 25°C (77 °F)
Storage Temperature	-40 ~ +100 (-40 ~ +212)	°C (°F)	
Median Life Expectancy	50,000	Hours	
Median Life Expectancy	20,000	Hours	Ta - 50°C (122 °F)

<b>Part No.</b>	VO-SL-CW-N196, VO-SL-NW-N196, VO-SL-WW-N196		
<b>Input Voltage</b>	100-240 VDC		
<b>LED Quantity</b>	196 pcs		
<b>Power</b>	210W		
<b>Power Factor</b>	≥0.97		
<b>Color Rendering</b>	R≥75		
<b>Color Temperature</b>	CW (5000-10000), NW (3700-5000), WW(2600-3700)		
<b>Replaceable Light Source</b>	High Pressure Sodium Lamp	Metal Halide Lamp	
<b>Mounting Height</b>	11—12m	<b>Fixture Elevation</b>	15—20°
<b>Center Illumination</b>	38 lux (Height: 12M)		
<b>Illumination Uniformity (min/avg)</b>	0.48		
<b>Luminous Efficiency</b>	60 lm/w		
<b>Total luminous FLUX</b>	CW (19600 lm), NW (17640 lm), WW (15680 lm)		
<b>Effective Illuminated Area</b>	47m×16.8m (Height: 12M)		
<b>Working Temperature</b>	-30—+40°C (-22 - +104 °F)		
<b>Working Humidity</b>	10%—90%		
<b>Working Life</b>	>35000h		
<b>IP Rating</b>	IP65		
<b>Fixture Weight</b>	17Kg		
<b>Heat Emission</b>	Fixture Temperature <60 °C Environment 26 °C		
<b>Fixture Dimension</b>	756mm (L) ×300mm (W) ×165.5mm (H)		
<b>Carton Size</b>	806×350×220mm		



## Precautions

- LEDs are static sensitive devices. Precautions should be taken to ensure that LEDs are well protected from ESD during handling.
- ESD protection for GaP and AlGaAs based chips is still necessary even though the chips are safe in low static-electric discharge events
- AlInGaP, GaN and/or InGaN based chips are STATIC SENSITIVE devices and ESD protection must be taken into consideration in the initial design stages.
- Do not operate LEDs in reverse bias.

## Warranty and Liability Information

- Two years limited warranty.
- The information contained herein is presented only as a guide for the applications of our products.
- No responsibility is assumed by VAOPTO for any infringements of intellectual property or other infringements of the rights of third parties that may result from its use.
- VAOPTO is committed to a process of continuous improvements of the quality and the features of its products and reserves the right to make changes that result in such improvements.
- VAOPTO products are not intended for use in applications where extraordinarily high reliability is required to prevent the loss of human life or where failure could result in bodily injury.
- VAOPTO limits the extent of our liability to the initial component cost and will, in the event of a failure, replace a failed component or refund the purchase price at VAOPTO option.

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