



**ODISHA POWER TRANSMISSION CORPORATION LIMITED**

**TECHNICAL SPECIFICATION**

**FOR**

**SUB STATION LIGHTING**

**SUBSTATION LIGHTING**  
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## 1. GENERAL

The scope comprises design, engineering, supply, installation, testing and commissioning of the following:

- Complete installation and lighting fixtures complete with lamps, supports and accessories; For indoor and outdoor
- Ceiling fans complete with electronic regulators, accessories;
- lighting panels and lighting poles complete with distribution boxes;
- Galvanised rigid steel conduits and fittings, lighting PVC cables GI Earth wire receptacles, switchboards, switches, junction boxes, pull out boxes complete with accessories;
- Lighting transformer.
- Any other items required to complete the indoor and outdoor lighting in complete shape.

The details of area to be illuminated are given in Table 1. along with the required lux levels.

Area	Lux
Control Room	350
PLCC Room	300
LT Room	150
Charger Room	150
Cable Gallery	150
Heating Plant	100
Battery Room	100
Computer Room	300
Entrance lobby	150
Corridor and landing	150
Conference and display	300
Rest Room	250
AHU Room	100
DG Set Building	150
Fire Fighting Pump House	150
Switchyard - Main equipment	50
Switchyard - general equipment and balance	30
Street/Road	30

**Table 1. Areas to be lit and required lux levels**

Contractor shall submit detailed calculation for verifying that the required lux levels will be attained by the proposed lighting system

Any material, cables, wire, conduits, fittings, accessories etc. whether mentioned specifically or not but required for installation of lighting fixtures are included in the scope of Contractor.

## **1. SYSTEM DESCRIPTION**

### **1.1 Normal lighting - AC**

AC lights will be connected to AC lighting panels. All the lights connected to the AC lighting system in different areas will be connected to the main lighting distribution boards to be supplied.

### **1.2 Emergency lighting - AC**

This system will be available in control room building, switchyard and diesel generator building. AC lighting load will be connected to this system which will be normally 'ON'. The lighting panels of this system will be connected to the Emergency lighting board which is fed from diesel generator during the emergency.

### **1.3 Emergency lighting - DC**

DC emergency lighting fixtures operated from the DC system shall be provided in strategic locations so that the operating personnel can safely find their way during a total AC failure. These lights will be normally 'OFF' and will be switched 'ON' automatically when under voltage occurs in the AC mains lighting distribution board.

### **1.4 Emergency lighting - portable**

Emergency portable light shall be provided as per relevant clause of this section. Three portable lights for control room and two portable lights for PLCC room shall be provided for every substation.

### **1.5 Temperature Rise**

All lighting fixtures and accessories shall be designed to have a low temperature rise according to IEC 598 Part-I/ IS 10322 (Part-4). Temperature rise of panels should be as per IS 8623 (Part-I)/IEC 439-1.

## **2. LIGHTING FIXTURES**

### **2.1 General**

Fixture shall conform to latest IS / IEC .and its latest amendment.

All fixtures shall be designed for minimum glare. The finish of the fixtures shall be such that no bright spots are produced either by direct light source or by reflection.

All lighting fixtures shall be complete with required lamps such as LED (to be fitted inside switch yard and all street light ), & LED light (adopt as per Govt norms for energy efficiency) for indoor lighting..

LED lamp fixtures shall be complete with all necessary wiring and accessories such as ballasts, ignitors, power factor improvement capacitors etc if required. These shall be mounted in the fitting assembly only. The Contractor shall indicate starting time of these lamps to attain full light output. Curves for starting characteristics with varying supply voltage etc. are to be furnished by the Contractor.

Flood lighting shall have suitable base plate/frame for mounting on structural steel member.

Each fixture (other than bulk head fixtures) shall have terminal blocks suitable for 2.5 mm<sup>2</sup> stranded flexible copper conductor. The internal wiring should be completed by the manufacturer and terminated on the above terminal blocks. The Contractor shall specifically furnish details of internal size of wires and type of insulation. The terminal blocks shall be as specified under General Equipment and Substation Accessories (GESA) section of this Specification.

Each lighting fixture shall be provided with an earthing terminal suitable for connection to 16 SWG GI earthing conductors.

All metal or metal enclosed parts of the housing shall be suitably constructed so as to ensure satisfactory earthing continuity throughout the fixture up to the earthing terminal.

The mounting facility and conduit knock-outs for the fixtures shall be provided and shall be suitable for 20 mm conduit entry.

On completion of manufacture, all surfaces of the fixtures shall be thoroughly cleaned and degreased. The fixtures shall be free from scale, rust, sharp edges and burrs.

The housing shall be stove-enamelled or vitreous enamelled or anodised aluminium as indicated in the specification of the relevant fixture.

All enamel finishing shall have a minimum thickness of 2 mils for outside surface and 1.5 mils for inside surface. The finish shall be non-porous and free from blemishes, blisters and fading.

The surface shall be scratch resistant and shall show no sign of cracking or flaking when bent through 90 degrees. over 1.5 inch die mandrel.

All light reflecting surfaces shall have optimum light reflecting coefficient so as to ensure the overall light output as specified.

The different types of lighting fixtures to be provided shall be to the approval of the OPTCL.

**REMARKS: ALL THE LAMPS TO BE USED INSIDE & OUTSIDE THE SUB-STATION AREA SHALL BE OF “LED” ONLY. BIDDERS ARE ADVISED TO QUOTE ACCORDINGLY.**

## **2.2 Accessories**

### **2.2.1 Reflectors**

The reflectors shall be manufactured from sheet steel or aluminium more applicable of not less than 22 SWG thickness. They shall be securely fixed and of captive type.

### **2.2.2 Lamp holders**

Lamp holders shall preferably be for LED lamps etc.. Holders shall be designed and manufactured in accordance with relevant standard to give long and satisfactory service.

### **2.2.3 Ballasts(if required)**

Ballasts shall be designed, manufactured and supplied in accordance with IS 3021 and function satisfactorily under site condition specified. The ballasts shall be designed to have a long service life. The power loss in ballasts (if required)for LED lamps shall not be more than the specified watts as per relevant standard and for the fluorescent lamps it shall be the minimum commercially available in the industry.

Ballasts shall be mounted using self locking anti-vibration fixing and shall be easy to remove without dismantling the fixtures. They shall be totally enclosed units.

The ballasts shall be of the inductive, heavy duty type, filled with thermosetting, insulating, moisture repellent polyester compound filled under pressure or vacuum. The ballast wiring shall be of copper wire. Ballasts shall be designed for maximum winding temperature rise of 55C under rated conditions. They shall be free from hum. Ballasts for LED lamps shall be provided with suitable tapping to set the voltage within the range specified. End connections and taps shall be brought out in a suitable terminal block, rigidly fixed to the ballast enclosure.

Separate ballasts for each lamp shall be provided in case of multi-lamp fixtures.

The Contractor shall submit general arrangement and wiring diagram with all terminal details for approval of the OPTCL.

#### 2.2.4 Capacitors

Capacitors shall have a constant value of capacitance and shall be connected across the supply of individual lamp circuits.

Capacitors shall be suitable for operation at the supply voltage as specified and shall have a value of capacitance so as to correct the power factors of its corresponding lamp circuit to the extent of 0.98 lag.

Capacitors shall be hermetically sealed in a metal enclosure.

#### 2.2.5 Lamps

The LED lamps to be supplied shall conform to IS 9974. LED lamps shall be suitable for use in any position. Restrictions, if any, shall be clearly stated. The lamps shall be capable of withstanding small vibrations without breakage of connections at lead-in wires and filament electrodes.

The constructional features of LED lamps for special applications shall be clearly brought out in the bid.

The Bidder shall furnish typical wiring diagrams for all fittings including all accessories. The diagrams shall include technical details of accessories i.e. ignitors, ballasts, capacitors etc.

### 2.3 Receptacles

All receptacles shall be of cast steel or aluminium, heavy duty type, suitable for fixing on wall or column and complete with individual switch.

In general the receptacles to be installed are of the following types:

- Type RO-15A, 240V, 2 pole, 3 pin type with third pin grounded, metal clad with gasket having cable gland entry suitable for 2 core 6 mm<sup>2</sup> PVC armoured cable and a metallic cover fixed to it with a metallic chain. Receptacles shall be suitable for installation in moist location and/ or outdoor. The switch shall be of rotary type. Receptacles shall be housed in an enclosure made out of 2 mm thick GI sheet with hinged doors with padlocking arrangements. Door shall be lined with good quality gaskets. This shall conform to IP 55.
- Type RI-Combination of 5A and 15A, 240V, 3 pin type with third pin grounded, suitable for flush mounting. The switch shall be of piano key type and shall be flush mounted.
- Type RP-63A, 415V, 3 phase, 4 pin interlocked plug and switch with earthing contacts. Other requirements shall be same as type RO. The receptacle shall be suitable for 3½ core 35mm<sup>2</sup> / 3½ core 70mm<sup>2</sup> aluminium conductor cable entry and shall also be suitable for loop-in-loop-out connection of cables of identical size. Receptacle shall be suitable for outdoor application. Receptacles shall be housed in a box made out of 2 mm thick G. I. sheet, with hinged door with padlocking arrangement. Door shall be lined with good quality gaskets. This shall conform to IP 55.

### 3. LIGHTING POLES

The Contractor shall supply, the following types of hot dip galvanised steel tubular lighting poles required for street lighting:

- a) Type A1 street lighting pole - for one fixture
- b) Type E1 post top lantern pole - for one fixture

Street/flood light poles shall conform to the drawings approved by the OPTCL.

Lighting poles shall be complete with fixing brackets and junction boxes. Junction boxes should be mounted above ground level at 1 mtr height from the ground.

The lighting poles shall be steel hot dip galvanised

The galvanised sheet steel junction box for the street lighting poles shall be completely weather proof conforming to IP 55 and provided with a lockable door and HRC fuse mounted on a fuse carrier and

fuse base assembly. The terminals shall be stud type and suitable for two nos. 16mm<sup>2</sup> cables. Necessary arrangement for cable glands along with supply of double compression glands are included in Contractor's scope.

Wiring from junction box at the bottom of the pole (minimum height from the bottom of the pole shall be 1.0mtrs) to the fixture at the top of the pole shall be 2.5 mm<sup>2</sup> wire.

#### **4. LIGHTING WIRES & CABLES**

The wiring used for lighting shall be of 1100V grade, PVC insulated cable of standard products of reputed manufacturers.

The conductor sizes for wires used for point wiring beyond lighting panels shall be single core 4 mm<sup>2</sup>, 6mm<sup>2</sup> and 10mm<sup>2</sup> stranded aluminium wires and 2.5 mm<sup>2</sup> stranded copper wire.

The wires used for connection of a lighting fixture from area rest junction box or for loop-in loop-out connection between two fluorescent fixtures shall be single core copper stranded conductor, 1100V grade flexible PVC insulated cords, unsheathed, conforming to IS 694 with nominal conductor cross sectional areas of 2.5mm<sup>2</sup>.

The Contractor's scope covers supply of all wiring, cabling and accessories.

The wires shall be colour coded as follows:

- Red for R - Phase
- Yellow for Y - Phase
- Blue for B - Phase
- Black for Neutral
- White for DC (Positive)
- Grey for DC (Negative)

#### **5. TESTS AND TEST REPORTS**

Type tests, acceptance tests and routine tests for the lighting fixtures and accessories covered by this specification shall be carried out as per the relevant standard for the respective fixtures and their accessories.

Manufacturer's type and routine test certificates shall be submitted for the fixtures and accessories. Type test certificates shall be furnished along with the bid.

Rates for type tests for all types of fixtures and accessories for light fittings as required under relevant section of this specification shall be provided in the relevant price schedules.

#### **6. LIGHTING SYSTEM INSTALLATION WORKS**

##### **6.1 General**

In accordance with the specified installation instructions as shown on manufacturer's drawings or as directed by Project Manager. Contractor shall supply, erect, install, test and put into commercial use all the electrical lighting equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented. Tolerances shall be as established in manufacturer's drawings or as stipulated by Project Manager.

The Contractor shall prepare the lighting layout and erection drawings and obtain the Project Manager's approval before commencing the erection works.



## **6.2 Flood lights.**

Contractor shall install flood lights on switchyard structures to be erected inside switchyard. The GI structural are also suitable for protection from lightening by providing spikes cones at all the column peak. Proper design in this respect to be carried out along with numbers of such towers required. Plotting of lightening protection area showing details of equipment installed in switch yard. A platform provided in the mast tower shall be used for fixing of lighting fixtures.

Fixtures shall be mounted on galvanised making use of shop provided holes or by suitable clamps. No cutting or drilling of galvanised structure is permitted.

The Contractor shall mount the assembled fittings and install necessary cabling.

## **6.3 Lighting fixtures for flood lights**

Flood lights shall be mounted on steel base facing the tentative direction shown on drawings. Fixing holes shall be provided with slot to turn the fixture by approximately 5 degrees on both sides. Bolts shall be finally tightened with spring washer. The Contractor shall supply and install the steel base, channels, angles etc. for fixing the flood light on the flood light towers. Terminal connection to the flood light shall be through flexible conduits, and these flexible conduits shall be included in the installation rate of fixture itself.

The scope of Contractor shall include the supply of necessary brackets and sundry material, for installation of lighting fixtures.

## **6.4 Lighting panels**

Lighting panels shall be erected at the locations to be indicated in the approved drawings.

Necessary foundations and/or supporting structures for all outdoor type lighting panels and necessary supporting structures for indoor lighting panels shall be provided by the Contractor.

## **6.5 Street lighting poles**

Street lighting poles shall be installed as per the approved drawings.

Steel tubular hot dip galvanised pole,s which are specified for the above purpose are to be installed as per the approved lay out for street lighting system. Contractor shall erect the poles (including foundation works), mount the assembled fittings and install necessary cabling.

## **7. TECHNICAL PARAMETERS OF LIGHTING TRANSFORMERS**

- |       |  |                      |
|-------|--|----------------------|
| i)    | Type of transformer                          | Dry type natural air |
| ii)   | Rating                                       | 1 00 kVA or 75kVA    |
| iii)  | Voltage ratio                                | 415/415 volts        |
| iv)   | No. of phase                                 | Three                |
| v)    | Frequency                                    | 50Hz                 |
| vi)   | Winding connection                           | Dyn 1                |
| vii)  | Class of insulation                          | B class              |
| viii) | Percentage Impedance                         | 4%, $\pm 10\%$       |
| ix)   | No. of taps and steps                        | 5 in steps of 2.5%   |
| x)    | Reference standard                           | IS 2026              |
| xi)   | Any latest amendment standards of the above. |                      |

Transformers shall be located in ACDB room, in separate enclosure. Enclosure shall have degree of protection not less than IP 42 as per IS 2147.

## **8. EMERGENCY PORTABLE LIGHTING FIXTURES**

The portable emergency lighting fixtures supplied shall have a built in battery rated for six hours and be complete with battery chargers and solid state inverters, and be supplied with all necessary supporting brackets of galvanised steel suitable for wall/column mounting..

The portable emergency lighting fixtures shall be of a single unit, completely tropicalised, suitable for prolonged use with no maintenance, and shall light up automatically in the event of failure of normal supply.

The Contractor shall submit schematic along with all details and general arrangement drawing for approval.

## **9. CEILING FANS AND REGULATORS**

The Contractor shall supply 1400 mm sweep ceiling fans complete with electronic regulator and switch, suspension rod, canopy and accessories.

The Contractor shall supply the switch, electronic regulator and board for mounting switch and electronic regulator.

Winding of the fans and regulators shall be insulated with Class-E insulating material. Winding shall be of copper wire.

Electronic regulator with smooth control shall be provided.

Precautions shall be taken in manufacture of fans and regulators to ensure reasonable degree of silence at all speeds.

Type tests, acceptance tests and routine tests for the fans and regulators shall be carried out as per latest relevant standard.

Fans and electronic regulators shall be from established manufacturers or brands.

## **10. FOUNDATION AND CIVIL WORKS**

All foundations and civil works shall be included in the Contractor's scope of work. Civil works shall be in accordance with the relevant part of this specification.

## **11. GROUNDING**

All lighting panels, junction boxes, fixtures, conduits etc. shall be grounded in compliance with the provision of I.E. Rules.

Ground connections shall be made from nearest available station ground grid. All connections to ground grid shall be done by arc welding.

Lighting panels shall be directly connected to ground grid by two 50 x 6mm G.S. flats.

A continuous ground conductor of 16 SWG GI wire shall be connected to each panel ground bus. All junction boxes, lighting fixtures shall be connected to this 16 SWG ground conductor.

All lighting poles shall be earthed as per standard. 16 SWG GI wire shall be taken up to junction box from the lighting fixture.

## **12. TESTING AND COMMISSIONING**

On completion of erection work, the Contractor shall request the OPTCL to undertake the inspection as required by this Specification.

The OPTCL shall arrange for joint inspection of the installation for completeness and correctness of the work. Any defect pointed out during such inspection shall be promptly rectified by the Contractor.

The installation shall be tested and commissioned in the presence of the Contractor and OPTCL

The Contractor shall provide all men, material and equipment required to carry out the tests.

All rectification, repairs or adjustment work found necessary during inspection, testing and commissioning shall be carried out by the Contractor, without any extra cost to the Employer.

The Contractor shall measure and furnish to the Project Manager, the actual lux level in all the areas of the substation to prove compliance to this specification.

**\*\* Armoured PVC cables are to be used for the switch yard lighting, street lighting and any other out door lighting system.**

**\*\* For indoor lighting ,each fixture shall be controlled by one switch.**

**\*\* Minimum two nos 5 Amp multi purpose power sockets with switch are to be provided in each switch.**

**\*\*\* Contractor to furnish the design details for the locations (like Switch yard area,Road street light,Control room building area,Quarter ,Gate etc), which can be adopted after approval from OPTCL. Design to be carried out as per the LUX level indicated at the beginning of this chapter.**

## TECHNICAL SPECIFICATION FOR LED FLOOD / NORMAL LIGHT FITTINGS 1 PH A.C OPERATION

### 1.GENERAL DESCRIPTION

LED Flood/Normal Light luminaries of 240V, A.C,50 Hz ,suitably decided the wattage of the lamp (to be decided after detail Engineering) in Single piece High Pressure Die Cast Aluminium alloy Housing having high conductivity acting as heat sink, with Powder coating with suitable colour with distortion free, clear, Heat Resistant Toughened UV stabilized Glass in the front fixed to the die cast Aluminium frame which shall be fixed to the housing with high quality long lasting Neoprine Rubber gasket duly impregnated with insecticide and water repellent chemical on the periphery of lamp compartment by means of stainless steel screws to render it dust proof, water proof and vermin proof and having minimum IP-65 Protection conforming to IS:10322 (part-2) – 1982.

Note: The capacity LED Luminary is to be suitably decided after conducting the detail Engineering for the locations , where these Luminaries are to be used. The Locations are generally in EHV grade Sub-station switch yard area, Street Lighting, Control Room Building, Colony Quarters etc. Details design for adoption of LED Luminary system to be furnished for review of design and its acceptance. Latest practice of adoption of these system are to be strictly followed.

### 2. TRAINING :

Train the staff on Hardware /Software ,installation, commissioning and maintenance of the Luminaries at different locations (Different Sub-stations).

### 3. TECHNICAL SPECIFICATIONS:

The LED Luminaries are as per the following parameters

a	<b>Mid Power White LED's</b>	Should be of reputed make as indicated in the Tender specification.
b	Wattage of Mid Power White LED,s offered	Low power LED 5252 0.3W
c	LED Lumens	
d	Life span as per LM70( @70%) light output	>50000 Hrs. Or Better
	Lux at centre at height of 4.5 meter	>150 LUX Or Better
e	Uniformity Ratio( $E_{min.}/E_{max.}$ )( mounted at 4.5m height @90 °Angle)	>0.35 Or Better
f	Luminary Efficacy	>65 Or Better
g	Control of Distribution	Fully Cutoff
i	Driver current(With Constant Current Driver)	<100mA/LED Or Better
j	<b>Electronic <u>Efficiency@230V</u></b>	<b>&gt;85% Or Better</b>
k	Beam angle of the Luminary	> 120° Or Better
l	color Temperature of LEDs	6500K to 7500K Or Better

m	P/N junction temperature (High thermal conduction must be achieved by silicon heat conducting greases as adhesive	<85 °C 0r Better
n	Luminary Body Temperature	The Body Temperature shall be <(Ambient+35° C) even after continuous burning of Luminary for 24 Hrs. <b>0r Better</b>
o	color Rendering Index(CRI)	>70 <b>0r Better</b>
p	weight	Preferably less weight & may be of Maximum up to 4 Kgs (comfortably can be carried and fixed)
<b>B</b>	<b>ELECTRICAL</b>	
a	AC Input Voltage Range	100V TO 270V AC
b	AC Input frequency .( The LED circuitry shall function at an operating frequency that must be greater than 120 Hz to prevent perceptible flicker to the unaided eye over the entire voltage range specified above. )	47 ~ 53Hz
c	Power Factor (Source Power Factor varies from 0.5 Lag to 0.5 Lead)	> 0.95 <b>0r Better</b>
d	Luminary Wattage variance at 100 V to 270 V	± 10%
e	Luminary Lux Levels Variance at 100 V to 270 V	± 5%
f	Total Harmonic Distortion(THD)	< 15% <b>0r Better</b>
g	Electrical Connection System	3 wire system (Phase,Neutral & Gnd)
h	System of earthing (The luminaries offered shall conform to Level-1 classification)	Solidly grounded
i	There shall be electrical isolation between input and output circuits	
<b>C</b>	<b>MECHANICAL</b>	
a	Construction of Casing	High Pressure Die Cast Aluminum. Should be durable for extreme climatic conditions.
b	Finish	Powder Coating and gray/black color and should be durable. The colour should not fade in extreme climate conditions.

c	Heat Sink type (It shall be designed in such a way that the heat generated within the LED source is efficiently dissipated to the surrounding atmosphere without abnormal rise in temperature. Any debris build up shall not degrade heat dissipation performance of the luminaries.	Aluminium Metal Core PCB
d	Lamp Cover	Toughened Glass or any suitable material which can be used in the extreme climate and should be durable.
e	Gross Weight and Dimensions (L x W x T) mm of Luminaries (Efforts shall be made to keep the overall outer dimensions as minimum as possible with out compromising on the performance, mainly thermal management of the luminary )	
f	Heat Dissipating Area (Luminary Rating wise)	
g	IP Level –Minimum IP 65	

## **18W AC DOWN LIGHT**

### **DATASHEET**

#### **Applications :**

Area: Indoor

Purpose: Home and Office Lighting.

#### **Features:**

##### **(1) Optical**

- » Optical pattern meets all standard Home and Office Light Standards.
- » Uniform illuminance distribution.

##### **(2) Power**

- » Switched mode constant current power supply.
- » Over-heat, Over-voltage, Over-current protections are provided.
- » Lightning Protection provided.

##### **(3) Thermal**

- » Luminaire surface temperature is 48°C @ Ta=30°C, the temperature variation is controlled under 5°C.
- » Junction temperature is controlled at 70°C @ Ta=30.
- » Overheat protection will operate to adjust as the LED module surface reaches 80°C.

#### (4) Luminaire

- » Optimized thermal design to ensure maximum life to LED. The Heat sink grade aluminium has the highest surface area for efficient heat diffusion and the entire luminaire with Aluminium acts as heat sink.
- » Dust and water protection design meeting IP65 standards.
- » Super-high luminaire efficacy.

### **DETAILED TECHNICAL SPECIFICATION**

#### **Electrical Characteristics:**

PARAMETER	DRIVER RESULT
Input Voltage	160 -300 V AC
Rated Power	18Watt
Maximum Power	21Watt
Efficiency	>85%
Power Factor	>0.9
Voltage Harmonics (THD)	<5%
Current Harmonics (THD)	<10%

#### **Operating Conditions:**

Operating Frequency	100kHz to 200KHz
Operating Temperature Range	-25°C to +70°C
Storage Temperature Range	-65°C to 125°C
Humidity	95% RH

#### **LED Details:**

Led Make	As per approved vendor
No Of LED's	12
Led Viewing Angle	120° by using reflector
Colour Temperature	Cool White (5500 to 6500K)
Luminous Flux	>2160 Lumens
Life Span	> 80,000 Hours
Colour Rendering Index	>70 Ra

### LED Luminary Details:

Body	Alluminium Body
Heat Sink	Optimized thermal design to ensure maximum life to LED. The Heat sink grade aluminium has the highest surface area for efficient heat diffusion and the entire luminary with Aluminium acts as heat sink.
Dust and Water protection	IP 65 Standards

### Protection Parameters:

Over-Current Protection	Inbuilt
Short-Circuit Protection	Inbuilt
Over-Voltage Protection	Inbuilt
Over-Temperature Protection	135 °C
Dust and Water Protection	IP 65
Lightning Protection	Inbuilt

## **50W AC LOW BAY LIGHT**

LED bay light fixture is designed and developed to replace traditional high bay or low bay fixtures for industrial and other rugged applications. Light weighted and easy for installation, the LED High Bay/Low Bay fixtures are all designed to offer maximum energy saving, substantially reduced maintenance costs and superior quality.

### Major Applications :

Factory production floors, Workshop, Warehouses, Road toll gates, Petrol stations, Supermarkets, Sports stadiums, Convention center halls, Airport passenger halls, etc., where high ceiling lighting required.

### Features :

- 1)Low power consumption. More than 60% energy saving compared to conventional HID/HPS.
- 2) Environmental friendly. Lead and mercury free. Long operation life time, above 50,000hours. Low maintenance costs.
- 3)Voltage input 160-300 V AC,
- 4)Instant ON/OFF operation.
- 5)Superior color rendition compared to conventional industrial luminaries.
- 6)Selectable color temperature.
- 7)Single piece 30W-100W high power LED light source with unique multi-chip integration design ensure high light purity, high heat conduction and slow brightness derating.



- 8) Unique heat sink design ensures superior heat management.
- 9) Resistant to shock and vibration.

**Specifications :**

<b>Input Voltage</b>	AC 160-300V
<b>Power Frequency of Driver</b>	47~63Hz
<b>Power Efficiency of Driver</b>	≥85%
<b>LED Power Consumption</b>	50w
<b>Power Factor(PF)</b>	≥0.90
<b>Total Harmonic Distortion</b>	≤10%
<b>Luminaries Efficiency</b>	≥90%
<b>Flux (Lumens)</b>	4000
<b>Color Rendering Index</b>	≥80
<b>Color Temperature</b>	2700~7000K Optional
<b>Beam Angle</b>	90/120 Degree Optional
<b>Light Effect</b>	70~80lm/W
<b>Working Ambient Humidity</b>	-25°C~+45°C
<b>Working Ambient Humidity</b>	15%~90%RH
<b>IP Rating</b>	IP30/IP54 Optional
<b>Service Life</b>	≥50000 Hours
<b>Light Fixture Material</b>	Aluminum Alloy

## **100W AC LED STREET LIGHT**

**DATASHEET**

**Applications :**

Area: Outdoor

Purpose: Street and Roadway Lighting.

**Features:**

(1) Optical

- » Optical pattern meets all standard Street Light Standards.
- » Uniform illuminance distribution.

(2) Power

- » Switched mode constant current power supply.
- » Over-heat, Over-voltage, Over-current protections are provided.

» Lightning Protection provided.

### (3) Thermal

» Luminaries surface temperature is 48°C @ Ta=30°C, the temperature variation is controlled under 5°C.

» Junction temperature is controlled at 70°C @ Ta=30.

» Overheat protection will operate to adjust as the LED module surface reaches 80°C.

### (4) Luminaire

» Optimized thermal design to ensure maximum life to LED. The Heat sink grade aluminium has the highest surface area for efficient heat diffusion and the entire luminaire with Aluminium acts as heat sink.

» Dust and water protection design meeting IP65 standards.

» Super-high luminaire efficacy.

## **DETAILED TECHNICAL SPECIFICATION**

### **Electrical Characteristics**

PARAMETER	PROMPT DRIVER RESULT
Input Voltage	160 -300 VAC
Rated Power	100W
Maximum Power	115W
Efficiency	>85%
Power Factor	>0.9
Voltage Harmonics (THD)	<5%
Current Harmonics (THD)	<10%

### **Operating Conditions:**

Operating Frequency	100kHz to 200KHz
Operating Temperature Range	-25°C to +70°C
Storage Temperature Range	-65°C to 125°C
Humidity	95% RH

### **LED Details:**

Led Make	As per approved vendor
No of LED's	48-70
Led Viewing Angle	120° by using reflector
Colour Temperature	Cool White (5500 to 6500K)
Luminous Flux	>8500 Lumens
Life Span	> 50,000 Hours
Colour Rendering Index	>70 Ra

### **LED Luminary Details:**

Body	Alluminium Die casting Body
Heat Sink	Optimized thermal design to ensure maximum life to LED. The Heat sink grade aluminium has the highest surface area for efficient heat diffusion and the entire luminaire with Aluminium acts as heat sink.
Protection	IP 65 Standards for Dust and Water

**Protection Parameters:**

Over-Current Protection	Inbuilt
Short-Circuit Protection	Inbuilt
Over-Voltage Protection	Inbuilt
Over-Temperature Protection	135 °C
Dust and Water Protection	IP 65
Lightning Protection	Inbuilt

## **120/150W AC LED FLOOD LIGHT**

**DATASHEET****Applications :**

Area: Outdoor

Purpose: Street and Roadway And Area Lighting.

**Features:****(1) Optical**

- » Optical pattern meets all standard Street Light Standards.
- » Uniform illuminance distribution.

**(2) Power**

- » Switched mode constant current power supply.
- » Over-heat, Over-voltage, Over-current protections are provided.
- » Lightning Protection provided.

**(3) Thermal**

- » Luminaries surface temperature is 48°C @ Ta=30°C, the temperature variation is controlled under 5°C.
- » Junction temperature is controlled at 70°C @ Ta=30.
- » Overheat protection will operate to adjust as the LED module surface reaches 80°C.

**(4) Luminaire**

- » Optimized thermal design to ensure maximum life to LED. The Heat sink grade aluminium has the highest surface area for efficient heat diffusion and the entire luminaire with Aluminium acts as heat sink.
- » Dust and water protection design meeting IP65 standards.
- » Super-high luminaire efficacy.

## **DETAILED TECHNICAL SPECIFICATION**

### **Electrical Charatcteristics**

<b>PARAMETER</b>	<b>PROMPT DRIVER RESULT</b>
Input Voltage	160 -300 VAC
Rated Power	120W
Maximum Power	140W
Efficiency	>85%
Power Factor	>0.9
Voltage Harmonics (THD)	<5%
Current Harmonics (THD)	<10%

### **Operating Conditions:**

Operating Frequency	100kHz to 200KHz
Operating Temperature Range	-25°C to +70°C
Storage Temperature Range	-65°C to 125°C
Humidity	95% RH

### **LED Details:**

Led Make	As per approved vendor
No of LED's	48-70
Led Viewing Angle	120° by using reflector
Colour Temperature	Cool White (5500 to 6500K)
Luminous Flux	>8500 Lumens
Life Span	> 50,000 Hours
Colour Rendering Index	>70 Ra

### **LED Luminary Details:**

Body	Alluminium Die casting Body
Heat Sink	Optimized thermal design to ensure maximum life to LED. The Heat sink grade aluminium has the highest surface area for efficient heat diffusion and the entire luminary with Aluminium acts as heat sink.
Protection	IP 65 Standards for Dust and Water

### **Protection Parameters:**

Over-Current Protection	Inbuilt
Short-Circuit Protection	Inbuilt
Over-Voltage Protection	Inbuilt
Over-Temperature Protection	135 °C

Dust and Water Protection	IP 65
Lightning Protection	Inbuilt