

STANDARD TECHNICAL SPECIFICATION COVER SHEET

Specification No. : ENG-GEN-4008

Specification Name : LED Street Light

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27-12-2022	29-12-2022	30-12-2022	02-01-2023	02-01-2023	02-01-2023

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1.0 SCOPE:

This specification covers the technical requirements of design, engineering, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at site/store of LED streets lights complete with all accessories for trouble free and efficient performance.

2.0 APPLICABLE STANDARDS:

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following standards/IS/IEC and shall conform to the regulations of local statutory authorities.

Codes	Description
ES LM 79 -08	Illuminating Engineering Society-Optical and Electrical Measurements of Solid-State Lighting Products
IES LM 80	Illuminating Engineering Society -measuring the lumen maintenance of LED packages, arrays, and modules at various temperature
IS 10322 (part 5 /sec 2 & 3):2012	Particular Requirements: Luminaires for Road and Street lighting
IS 16106:2012	Method of electrical and photometric measurements of solid street lighting (LED) products
IEC 60529:2001	Degree of Protection provided by enclosures (IP Code)
IEC 61000-3-2	Electromagnetic compatibility (EMC) -Part 3-2 limits for harmonic current emissions equipment input currents≤16 A per phase
IS 13383 / Part 2): 1992	Photometry of luminaries -method of measurement

3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:

1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	150cm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Speed	300 Km/hr
9	Earthquakes of an intensity in horizontal direction	Equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	Equivalent to seismic acceleration of 0.15g (g being acceleration

		due to gravity)
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TPCODL/TPNODL/TPSODL/TPWODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed upto 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

4.0 GENERAL TECHNICAL REQUIREMENTS:

Sl. No.	Parameter	Requirement				
1	Light Output Power/ Wattage	45W	70W	90W	120W	150W
2	Application	Outdoor				
3	Input Voltage range	120-280 V _{ac}				
4	Frequency	50Hz				
5	Input Current	0.2A	0.35A	0.45A	0.55A	0.7A
6	Power factor	>=0.95				
7	Luminous Efficacy	>=120 lumens/watt				
8	Luminous Flux	Min. 5400 lm	Min. 8400 lm	Min. 10800 lm	Min. 14400 lm	Min. 18000 lm
9	Correlated Color Temperature (CCT)	5700K (No negative tolerance is allowed)				
10	Output Voltage of driver	As per bidder				
11	Output Current of driver	As per bidder				
12	Beam Angle distribution	135°/85° (Batwing pattern)				
13	Lumens spread	>40 meters				
14	Dimensions	As per bidder				
15	Colour	Cool White				
16	Degree of Protection	IP66				
17	Life Span	>50,000 Hours				
18	CRI	>70				
19	THD	<10%				
20	Surge suppressor	External 10KV along with internal inbuilt 5KV protection				
21	IR	5 Mega Ohm @ 220 V				
22	Safety features	1. When the top cover is open the power supply is cut off from the system 2. Cable entry through suitable cable gland to avoid entry of insects/vermin				
23	Make and Model No.	To be provided by bidder				
24	Weight	To be provided by bidder				

5.0 GENERAL CONSTRUCTIONS:

Raw Material	High Grade
Housing	Aluminium pressure die-cast housing with efficient heat dissipation fins
Finish	Epoxy powder coated metallic silver finish. Anti-ageing & corrosion resistant electrostatic spray processing.
Optics	IESNA Type II optics
Glass	PMMA (Poly methyl meth acrylate), 100% UV and heat resistant

	toughened glass in front
LED driver	In-built constant current driver, replaceable electronic driver with APFC and THD<10%, Output Short Circuit Protection, Surge Voltage Protection & Over Voltage Protection. It shall have Reversed polarity protection feature.
Cable entry	Cable entry through mounting pipe
Mounting System	Suitable (neither very tight nor very loose) for 40 mm O.D. of mounting pipe
Pipe Entry	Adjustable pipe entry
Incoming Cable Connection	Size:0.75 sqmm. Tinned Copper PVC insulated 3 core cable. Earth wire- Green color, Neutral wire- Black color, Phase wire- Red color Cable connected with LED light fixture should be at least 4 meters in length.

6.0 NAME PLATE AND MARKING:

Required embossing on LED light with following details:

- 1) Manufacturer's Name plate and
- 2) Year of manufacture
- 3) Property of TPCODL/TPNODL/TPSODL/TPWODL
- 4) BIS certification marking
- 5) LED power wattage

And ISI mark on incoming cable with size and voltage grade.

7.0 TESTS:

All Routine, Acceptance & Type tests shall be carried out in accordance with the relevant IS/IEC. All Acceptance tests shall be witnessed by TPCODL/TPNODL/TPSODL/TPWODL authorized representative.

All the components shall also be time tested as per the relevant standards.

Type Test:

Test	Reference Standard
IP test	IEC 60529:2001
Surge protection	As per IEC 61000-4-5
Insulation Resistance test	IS 10322 Part 5/Sec 3
Electric Strength test	IS 10322 Part 5/Sec 3
Electrical and Photometric measurements	IES LM 79-08
Resistance to heat, fire and tracking	IS 10322 Part 1/ Sec 13
Endurance test	IS 10322 Part 1/Sec 12
Thermal test	IS 10322 Part 1/Sec 12
Total luminous flux	IES LM 79-08 or IS 16106:2012
THD%	IEC 61000-3-2
Photometric test	IS 13383(Part 2):1992
Protection - Short circuit	IES LM 79-08 or IS 16106:2012
IESNA Type-II optics	IES LM 79-08

Routine Test

Test	Reference Standard
Visual check for finishing and Dimension	IS 10322 Part 1/ Sec 4

check	
Insulation resistance	IS 10322 Part 5/Sec 3
Electric strength	IS 10322 Part 5/Sec 3

Acceptance Test:

Test	Reference Standard
Visual check for finishing and Dimension check	IS 10322 Part 1) Sec 4
Photometric test	IS 13383(Part 2)1992
Resistance to dust & moisture	IS 10322 (Part 1) Sec 9
Protection against electric shock	IS 10322 (Part 1) Sec 8
Electric strength	IS 10322 (Part 5) Sec 3
Insulation resistance	IS 10322 (Part 5) Sec 3
Total luminous flux	IES LM 79-08 or IS 16106:2012
Lamp power	IES LM 79-08 or IS 16106:2012
CCT	IES LM 79-08 or IS 16106:2012
Surge protection	As per IEC 61000-4-5

8.0 TYPE TEST CERTIFICATES:

The bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI / ERDA/NABL accredited LM 79/LM 80 type test certificate as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable, same shall be carried out without any cost implication to TPCODL/TPNODL/TPSODL/TPWODL .

9.0 PRE-DESPATCH INSPECTION:

Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Bidder shall grant free access to the places of manufacture to Purchaser's representatives at all times when the work is in progress. Inspection by the Purchaser or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.

Following documents shall be sent along with material"

- Test reports
- MDCC issued by Purchaser
- Invoice in duplicate
- Packing list
- Drawings & catalogue
- Guarantee / Warrantee card
- Delivery Challan
- Other Documents (as applicable)

10.0 INSPECTION AFTER RECEIPT AT STORES:

The material received at Purchaser's store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department.

11.0 GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by TPCODL/TPNODL/TPSODL/TPWODL up to a period of at least 60 months from the date of

commissioning or 66 months from the date of last supplies made under the contract whichever is earlier.

Further Bidder shall also stand guarantee towards poor workmanship in installation of straight through joint and terminations installed by bidder's jointer up to 60 months from the date of installation.

Bidder shall be liable to undertake to replace/rectify such defects at own costs, within mutually agreed time frame, and to the entire satisfaction of TPCODL/TPNODL/TPSODL/TPWODL, failing which TPCODL/TPNODL/TPSODL/TPWODL shall be at liberty to get it replaced/rectified at bidder's risks and costs and recover all such expenses plus the Company's own charges (@ 20% of expenses incurred), from the bidder or from the "Security cum Performance Deposit" as the case may be.

12.0 PACKING:

Supplier shall ensure that all equipment covered by this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials

13.0 TENDER SAMPLE:

The bidder shall provide a sample of material at the time of offer submission at TPCODL/TPNODL/TPSODL/TPWODL Engineering Dept.

14.0 TRAINING

NA

15.0 QUALITY CONTROL:

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture, bought out items and fully assembled component and equipment including drives. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

16.0 MINIMUM TESTING FACILITIES:

Bidder shall have adequate in-house testing facilities for carrying out all routine tests, acceptance tests as per Indian /International standards.

17.0 MANUFACTURING ACTIVITIES

The bidder shall get the approved drawing and GTP before start of manufacturing activity. The successful bidder will have to submit details of the offered design & components for approval as per specification. CAT-A/CAT-B is mandatory to start manufacturing.

18.0 SPARES, ACCESSORIES & TOOLS:

Not Applicable.

19.0 DRAWINGS & DOCUMENTS:

Following drawings and documents shall be prepared based on Purchaser's specifications and statutory requirements and shall be submitted with the bid:

- a) Completely filled—in clause wise compliance of this specification.

- b) General description of the equipment and all components including brochures.
- c) General arrangement drawings.
- d) Type Test Certificates.
- e) Experience List.
- f) Fixing drawings.
- g) Detail bill of material for individual project.

Following documents shall be submitted after award of RC/PO before manufacturing:

- a) Completely filled-in clause wise compliance of the specification.
- b) General Arrangement Drawing along with Fixing details
- c) Compliances of undertaking submitted during Technical Evaluation
- d) Type test Certificates for each specified test if not submit during technical evaluation

Drawings/documents to be submitted after the award of the contract:

S.No.	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	GA Drawing	√		√
3	Manual/Catalogues of Single LED Unit		√	√
4	Transport/ Shipping dimension		√	√
5	QA & QC Plan	√	√	√
6	Routine, acceptance & Type Test Certificates	√	√	√

All the documents & drawings shall be in English language.

20.0 GURANTEED TECHNICAL PARTICULARS:

Bidder to submit clause wise compliance of this specification.

21.0 SCHEDULE OF DEVITAIONS:

The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless **specifically** mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.

SCHEDULE OF DEVIATIONS: (TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S. No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Designation:
Signature: