



MAZAGON DOCK SHIPBUILDERS LIMITED

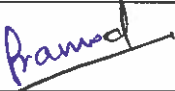


(A Govt. Of India Undertaking)
(Formerly Known as Mazagon Dock Limited)

**SHIPBUILDING DESIGN ELECTRICAL & WEAPON
DOCKYARD ROAD, MUMBAI - 400 010**

Technical Specification for Procurement of LED Lights Fixtures

PROJECT	:	FPV SHIPS
YARD NO	:	16501, 16502, 16503, 16504, 16505, 16506, 16507, 16508, 16509 & 16510
CLIENT	:	INDIAN COAST GUARD
TSP NO.	:	5030
REFERENCE / APPROVAL	:	
CLASSIFICATION NOTATION	:	A1 (E) (Government Service) + AMS NIBS +ACC, FFV1-NS CS-Ready, HELIDK (SRF) by ABS or equivalent of LRS/DNV/GL/BV/IRS/NK

REV. NO.	DATE	DESCRIPTION	AUTHORISED BY
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PRAMOD KUMAR	SUDHIR SONAWANE	P K MODAK
M (D-L)	CM (D-L)	DGM / HOS (D-L&Wn)
PREPARED BY	CHECKED BY	APPROVED BY



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SHIPBUILDERS LTD.,
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Dockyard Road, Mumbai -400010

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General Requirement

1. Application:

The items projected in this specification are for use on FPV Ship for Indian Coast Guard being built by Mazagon Dock Shipbuilders Ltd.

2. Introduction:

- This specification relates to general requirements for supply of Lights Fittings system to be used for ships built by Mazagon Dock Shipbuilders Ltd (MDL).
- Lighting system being supplied should comply with Naval Ocean going vessels duties & details pertaining to evaluation & testing of the equipment as specified in technical requirements.
- In case of conflict between any clauses of general requirements and technical requirements, the provisions of technical requirements prevail.

3. Classification:

The vessel will be built to dual Classification from ABS/LRS/DNV/GUBV/NK rules and IRS as other society. The class notation to be + A1 (E) (Government Service) + AMS NIBS +ACC,FFV1-NS CS-Ready, HELIDK(SRF) by ABS or equivalent of LRS/DNV/GUB/IRS/NK with appropriate class notation applicable to FPV ships.

1. Rules & Regulations. Following rules and regulations as applicable are to be met:-

- Nominated Classification Society Class Rules i.a.w. para 13 (General)
- International load line reg. 1966 as amended by Protocol of 1988 and any other subsequent amendments.
- IMO/MARPOL-73/78 reg and any further / latest amendments including MS Act 58 and their rules.
- COLREG 72 and any further/ latest amendments.
- IMO /Anti Fouling System
- International tonnage 1969 and any further/ latest amendments.
- SOLAS 1992 as amended in 2002 and any further / latest amendments.
- Stability standard as per NES 109.
- Naval Magazine Explosive Regulations (NMER)
- Helo deck Regulation as per IRS Rules and Regulations for construction of Coast Guard Vessels (Ch-2, Part-6) or equivalent ABS/LRS/BV/DNV/GL/NK rules.

4. Certification:

- Manufactures Quality Inspection & Test Certificates**
- Receipt Inspection by MDL**
- The system must meet ABS/IRS/IACS approval certificate requirements.**

5. General Specification:

a. Seaway conditions:

Seaway conditions are defined at a sea water temperature of 1 to + 32 Deg. C, Ambient air temperature of 5 to 45 Deg. C and humidity up to 90% at 35 Deg. C. Salinity of water up



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to 35000 ppm. The equipment shall be capable of efficient and unrestricted operation without any deviation from its normal operating parameters under the seaway conditions, as below:-

Operational (up to sea state 7)	
Roll	Maximum \pm 22.5 degree
Pitch	Maximum \pm 7.5 degree
Survival (up to sea state 7)	
List	Maximum 15 degree from vertical (permanent)
Trim	Maximum 05 degree

b. Environmental conditions:

The equipment shall be suitable for marine applications and achieve specified performance smoothly under tropical marine conditions.

The equipment is to be designed for continuous operation & survival under the environmental conditions specified for ambient conditions as specified table below:-

Sr. No.	Design Parameter	Value
(a)	Air Temperature	Minimum of 5 deg C and Maximum of 45 deg C
(b)	Sea water temperature	32 deg C
(c)	Relative humidity	90% at 35 deg C
(d)	Atmospheric pressure	750 mm of Hg column (1000mbar)

6. Compliance Matrix:

Para-wise compliance matrix, including paras which are not applicable, as per the technical specifications (contained in this document) shall be submitted by the equipment supplier along with the technical offer, in the format as per Annexure-2 (preferably in excel sheet). The technical offer received without Compliance Matrix shall be liable for rejection.

7. Certificate of Conformity: The offer should be complete with "Certificate of Conformity" as per format detailed at Annexure-3. The offer received without the "Certificate of Conformity", duly filled in and signed, may not be considered.

8. Supplier's Offer:

- The offer should be strictly conforming to the details indicated in technical requirements and in the relevant specifications / drawings / documents (All latest issues are to be followed).
- The offer should be complete with all relevant details such as technical specification, material specification, overall dimensions etc.
- No omission in the specifications shall relieve the supplier of his responsibility to ascertain these requirements to perform work and furnish material in accordance with codes specified.
- Any clarification required regarding Technical Specification should be sought before submission of the offer.
- Any incorrect / incomplete submission / non confirmation to any requirement shall lead to non-acceptance of offer.



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- f) Vendor has to ensure complete awareness of the relevant International / Indian / NES standards. Suppliers to note that no kind of correspondence as regards to non-awareness / ignorance on its part will be entertained, post order. Vendor to adhere strictly to all requirements mentioned in technical requirements.
- g) The suppliers' shall submit minimum of the following documents along with the offer for technical evaluation.
- h) General arrangement drawing with BOM/Catalogues along with class approval certificate for equipment to be supplied with offer. Weight details also to be submitted as per format enclosed as Annexure-2.

Incomplete submission will lead to non-acceptance of technical offer.

S. No	DESCRIPTION
1	Compliance matrix (Annexure-2) for each Para of TSP duly filled, signed & stamped
2	Reference list (Annexure-4) of Lighting system supplied for Naval coast guard ships Ocean going vessels i.e. details of past supply with relevant proofs in accordance with Technical Pre-qualification criteria (TPQC).
3	GA drawing with comprehensive part list, overall dimensions, weight, seating details / bolting plan, connection / interface details, face to face dimensions / manufacturing process
4	Performance certificate / inspection certificate / Class approval certificate (if performed earlier)

9. Binding drawing & QAP approval:

Vendor shall submit the binding drawings & QAP for approval to classification society of IRS and ABS for approval within 2 weeks of placement of order. 2 set of binding drawing & QAP to be submitted to MDL as well for review & comments within 2 weeks of placement of order. MDL shall submit the comments on drawings & QAP if any within 2 week. Vendor shall be completely responsible to get drawings & QAP approved from classification society within stipulated time.

10. Inspection:

All equipment/items should be Type approved any of IACS (INTERNATIONAL ASSOCIATION CLASSIFICATION SOCIETY) Members

Receipt inspection shall be done by MDL on receipt of material in stores in the presence of OEM rep to verify completeness of the scope of supply and intactness of the supplied equipment. Defective / damaged parts and deficiency, if any, in supply shall be made good by OEM free of cost. OEM shall be intimated the date of receipt inspection.

11. Test & Trial:

The performance requirement of equipment is to be confirmed during shop test at manufactures work & during the ships trial on board

a. Factory Acceptance (FATS):

The supplier shall prepare Factory Acceptance Trial schedule for complete system in consultation with inspection agency submit to classification society IRS and ABS for vetting and approval at least 03 months prior to commencement of FATs. The schedule should state how the supplier would demonstrate that the delivered system



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will meet the functional and performance requirements indicated in the SOTR. The FAT procedure shall comprise of

- i. Functional Tests
- ii. Verification of design

Manufactures standard factory test procedure will be acceptable for imported equipment of non-classification category

b. Functional Checks For Trials (ops checks):

On board test & trials of equipment to be carried out after installation of equipment which shall broadly include installations check, checks for performance requirement & functional requirement, etc.

- c. Harbour Acceptance Trials/Sea Acceptance Trials:** - On board trials shall be conducted by Shipyard based upon HATs/SATs documentation and ship's trials schedule, which would be planned by shipyard in consultation of equipment suppliers/Trial organizations/Indian Coast Guard. Draft HATs/SATs schedule in accordance to DME 303 D or equivalent International Standards is to be submitted by the firm for concurrence of ICG.

- d. During equipment setting to work and HATs/SATs, equipment suppliers shall assist and offer the respective equipment trials for their successful completion. Equipment testing, tuning and any defect rectification during on board trials shall be undertaken by the equipment supplier in efficient and effective manner.

- e. HATs/SATS documents shall include HATs/SATs schedule, procedure, pre-requisites, data to be recorded, time interval for data recording, formats for data recording, safety and precautions to be observed during trials, estimated time of the trials and all other relevant data/information required for the successful completion of the trials.

- f. Shipyard will prepare GRAQs (General Requirement of Acceptance of Quality), trial document, based on the HATs/SATs document submitted by the supplier. The same shall be forwarded to the supplier for their vetting.

- g. HATs/SATs shall be carried out to the satisfaction of ICG as per approved GRAQ.

- h. Supplier shall offer / assist HATs and SATs of respective equipment and attest the GRAQ forms on their successful completion.

12. Documentation:

- a) Following documentation in hard as well as in soft copy to be submitted by vendor along with equipment.

S. No	Type of Documents / Drawings	Quantity / Yard
(i)	As Fitted Drawings with part list /Catalogue (final GA & manufacturing Drgs)	4
(ii)	Technical, Operating & Maintenance manual	4
(iii)	Inspection Certificates, inspection reports of inspection agency, certified test reports, FATS reports, material test reports, weight certificates etc	4
(iv)	Weight Certificates (Refer Annexure 5)	4
(v)	Soft copy of all above documents in CD or Pen drive	2



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- b) All documents must be in English language only.
- c) All drawings & documents shall contain dimensions & other parameters in S.I. units only.
- d) Documentation is to be forwarded to the consignee in a separate enclosure, along with supplies.
- e) Material/Test/Inspection Certificate is to carry a reference number or any other details so as to relate the certificates with the relevant material.
- f) Manuals must contain brief description, parameter, assembly/subassembly drawings, operational details, maintenance requirement, trouble shooting and spare parts list of the equipment. Should there be any deviation in manual with respect to actual supply, the manuals will be rejected and the supplier is to supply fresh manuals. Supplier must guarantee the correctness of manual and this will be linked up commercially. All documents are to be submitted in English. Documents must be legible and user friendly.

13. On Board Spares (OBS):

The manufacturer's recommended list of On-Board Spares (MRL-OBS) required for servicing and maintenance, including breakdown maintenance for two years of operation after completion of the standard warranty period, should be included in the scope of supply. **An itemized list of OBS**, special tools and special test equipment, which shall be supplied with the main equipment, shall be furnished along with the offer for the main equipment. The OBS and special tools shall cater for all on board maintenance routines and possible repair requirements. Preservation requirement of OBS, if any, shall be indicated in the offer. List of OBS required for auxiliary items also shall be indicated in the offer.

14. Base & Depot (B & D) Spares:

Vendor shall supply Base & Depot spares sufficient for 5 years. An itemized list of B & D spares, special tools and special test equipment, which shall be supplied with the main equipment, shall be furnished along with the offer for the main equipment. Consignee for dispatch of B & D spares will be CGSD (Mumbai). Base & depot spares are to cover spares requirements for major maintenance/overhaul requirements for 5 years including two refits. Recommendation for insurance, on long term storage may be indicated. The firm is to submit Comprehensive Part Identification List (CPIL) and Manufacturer Recommended List of Spares (MRLS) for five years exploitation and maintenance. Itemized list with cost in editable format along with a copy of the maintenance schedule for the equipment is to be provided in the offer. Itemized list (in LMS format to be submitted in soft copy in excel) of Base & Depot spares should include the following (but not limited to): -

- i. All spares required for 5 years exploitation & maintenance.
- ii. At least one set of on board spares.

The B & D Spares shall be procured by MDL on behalf of Indian Coastguard. The B & D Spares shall be ordered at a later date, after ranging and scaling of the Spares done by ICG. The delivery of B&D Spares shall be prior to the Commissioning of the First of Class Ship. Delivery date for the supply of B & D Spares shall be indicated in the Tender Enquiry.

15. Guarantee/Warranty:

The equipment with associated controls/instrumentation shall be guaranteed for stipulated performance for 20 months from the delivery of equipment to MDL or 12 months after planned delivery of ship by MDL to Indian Coast Guard, whichever is later. The equipment supplied shall be warranted from defects for the said period and cover all the defects arising from malfunctioning through design faults, inappropriate material, bad



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production and non-conformance to specifications. Any expense on account of repair/supply of spares against guarantee defects shall be borne by the supplier. If any defective part to be taken back to OEM's factory (i.e. importing and re-exporting from Country of origin), for service purpose the liability of the same shall be borne by the supplier. Supplier shall indicate, in the offer, the rate for extended warranty period, in case the warranty period as detailed above expires.

16. Preservation:

- The equipment should be supplied duly preserved (period to be indicated). The procedure for preservation to be supplied by the firm.
- Initial preservation/packing shall be carried out at the Supplier's works and made suitable for tropical conditions and protected against high humidity.
- All equipment shall be adequately packed and protected with supports to ensure adequate protection during all methods of transportation. Each unit within a package/container shall be clearly marked in English for identification. The container shall clearly indicate the commodity description with caution marks, weight, size, etc. The instrumentation and sensors meters etc. which are likely to be damaged during transit and installation are to be removed from the main equipment and shall be supplied in a separate suitable box/packing.
- On-board spares/installation spares are to be packed in separate cases individually with word "ON BOARD SPARES" and "INSTALLATION SPARES" distinctly marked on each case.
- Items shall be complete in all aspects when supplied.
- All fittings are to be packed in separate cases for each type. Each package is to be clearly marked to indicate its content, quantity, PO number.

17. Tally Plates:

- The following engraved tallies of brass / anodized aluminium suitable for marine application are to be fitted on each equipment:
- Manufacture's tally indicating name, description of the item, part/pattern. No., rating, Sr. No., Year of manufacture, weight etc.
- Functional tallies for switches, lamps, push buttons etc.
- Danger tallies for equipment operating on 220 V and above, the tally should have white letter on red background.
- Special tallies to be provided as applicable viz. Circuit diagram tallies etc.
- Equipment tallies and Cable tallies to be supplied in double quantity for both ends of each cable will be laid by ship yard.

18. System Performance And Responsibility:

Equipment supplier shall be responsible for satisfactory operation and performance of system on board. The firm has to confirm that the finalized scope of supply is adequate for satisfactory operation and performance of the system and no other additional items are required to be ordered at any other stage.

19. Space Constraints:

Ease of operation and maintenance is to be ensured while designing the layout of the system components. The supplier shall indicate the maintenance envelope required to carry out maintenance on board during normal operation and refit. The equipment dimensions would be finalised by Shipyard/Class Approving Authority (CAA). The supplier is to indicate the following limiting dimensions and mass.



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≤	Length	Breadth	Height	Mass/Weight

20. Weight Recording/Weight Certificate:

Net weight of each item shall be recorded in the presence of Inspection Agency on the Weight Certificate attached at Appendix-04. The weight certificate shall be delivered along with the documentation for the main equipment. Also the Weight Control Data Sheet shall be issued in the format as detailed at Appendix-03 along with offer.

21. Receipt Inspection:

Receipt inspection for the major equipment shall be carried out in the presence of OEM rep to verify completeness of the scope of supply and intactness of the supplied equipment. Defective / damaged parts and deficiency, if any, in supply shall be made good by OEM free of cost. The date of receipt inspection shall be intimated to the OEM.

22. Scope of Supply:

Deliverables related to Main Equipment.

Mounts shall be delivered along with Main Equipment.

All mating electrical connectors plug and sockets for assembly with ship's interconnecting cables, Cable Glands for the equipment shall be supplied along with the equipment. Suitable Cable plates/glands/grommets shall be provided for sealing the cable entry points to keep away rodents in case of clean compartments.

Deliverables related to Installation material (including additional Mounts) and Tools required to carry out installation and exploitation of the Equipment shall be delivered along with Main Equipment.

Spares and Tools (including special tools / instruments required to conduct trails) shall be delivered before STW of the System.

OBS should include at least 10% of each type of lamps.

On Board Spares and Tools shall be delivered before STW of the System.

Base & Depot Spares shall be delivered prior to the Commissioning of the First of Class Ship.

Special Tools, items etc. required to carry out preservation of the System at Yard or on Board the ship, shall be supplied along with the System.

23. Information to be supplied when tendering:

- a) Purpose
- b) Type of Lighting items
- c) Power supply voltage, frequency, No. Of phases.
- d) AC Voltage
- e) DC Voltage
- f) Enclosure of Light fittings with material
- g) lighting details
- h) Weight
- i) Overall dimension of Lighting items
- j) Details of lighting arrangement
- k) Efficiency
- l) Confirmation of usage of Naval approved components & bulbs
- m) Details of mounts



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- n) A brief specification of the equipment offered, including a statement showing any way in which the equipment is not expected to meet the stipulated requirement.
- o) Supplier may indicate whether a similar item had been supplied to Coast Guard in the past or passed their qualification for induction with relevant details.
- p) Drawings indicating overall dimensions and proposed fixing arrangement of all equipment with maintenance (envelope) space required.
- q) Estimated total weight, CG in all axes.

24. Scope Of Offer:

- a) As a minimum, the following technical and design details applicable to equipment/item shall be submitted with the technical proposal:
- b) System Overview
- c) Proposed system configuration.
- d) System Description with block diagram, System components, System operation.
- e) System software if any (Software components, brief description of software and architecture), System start up, HMI functionality).
- f) Technical specifications of system.
- g) Environmental Specifications of System.
- h) Description of Interfaces with other on board systems along with block diagram.
- i) Scope of supply/ List of Deliverables included in the standard scope of supply.
- j) List of cables, connectors, installation materials and accessories inclusive / not inclusive in the standard scope of supply.
- k) List of items required for installation and operation of the equipment and not supplied by the manufacturer.
- l) List of special tools, instruments, jigs and fixtures required for lifting, transporting, installing and commissioning of the system.
- m) List of Installation material and commissioning spares.
- n) List of mounts and quantity supplied for each equipment.
- o) List of special tools, items required to carry out preservation at Yard or on board the ship to be included in the offer.
- p) List of recommended OBS.
- q) List of B&D spares.
- r) List of special Tools / instruments and test equipment required for On Board maintenance.
- s) List of accessories inclusive / non inclusive in the standard scope of supply.
- t) Clear demarcation between the scope of supply of firm and that of ship builder.
- u) Itemized price list of system components and other services offered.
- v) Delivery time from receipt of order.
- w) Indicative maintenance plan.
- x) Proposed training plan.
- y) Supply of complete binding data within three weeks of placements of order.
- z) Supply of Documentation.
- aa) Proposal plan for Technical Assistance for System installation including STW, trails.
- bb) Proposed Factory Acceptance Tests.
- cc) Reliability parameters.
- dd) Proposed quality assurance and quality Inspection plan.
- ee) System Integration and interface Plan.



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ff) Confirmation is required that all tests as indicated in this document can be undertaken at the manufactures own works, otherwise any alternate arrangement proposed are to be stated

25. Product Support:

Vendor shall provide product support for ship's life of 25 years. In case the items / products are likely to be obsolescent, the supplier shall notify the MDL with at least two years prior notice, along with valid reasons and recommended solution.

26. Delivery Schedule of Ship: The planned date for delivery of the Ships to the Indian Coastguard by MDL are tabulated below:

Sl. No.	Yard No.	Planned Delivery Date
1.	16501	Mar-2026
2.	16502	Jun-2026
3.	16503	Sep-2026
4.	16504	Dec-2026
5.	16505	Mar-2027
6.	16506	Jun-2027
7.	16507	Sep-2027
8.	16508	Dec-2027
9.	16509	MAr-2028
10.	16510	Jun-2028

27. Prime Contractor Responsibility & Installation Requirements:

- The supplier is to be the prime contractor and should own single point responsibility for the entire scope as detailed in this specification. The offer must clearly indicate work to be under taken or items to be supplied by the shipyard for the installation of the system. However, the responsibility for the system would still remain with the supplier.
- The supplier as a prime contractor may draw up necessary mechanism or suitable specifications, inspection procedures and liaison with the shipyard etc. to meet the prime contractor's overall responsibility for the satisfactory installation / performance of the system.

28. Responsibility:

Approval of binding data, QAP by approving authority and final testing & approval made by the owner's representative / inspector shall not relieve the manufacturer for his own responsibility & contractual obligations including satisfactory working on board the Ship. In case of any irregularities in the operation/ performance of the system or non-conformance to specified parameters observed on integration with ships system, the supplier is bound to rectify the defect. The supplier shall ensure complete responsibility of satisfactory operation of the system on board.



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PART B: Technical and Operating Requirements

1. Lighting System:

Mazagon Dock Shipbuilders Ltd., Mumbai is Premier shipyard of India. The items projected in this specification are for use on Indian Coast Guard Ships. A total of 14 nos. Ships are likely to be built. 230V, 1Ph, 50Hz, AC supply shall be used for general lighting and 24V DC be used for emergency lighting.

Lighting circuit, in general, be fed separately for the machinery room and accommodation spaces. In all Spaces lighting be so grouped that in the event of any supply failure, a portion of lighting still shall be available. Luminous Intensity shall be provided generally as per Class/SES- 10 this TSP covers the manufacturing, testing and commissioning on-board ship. General illumination shall be achieved with marine type LED light fittings.

For darken ship condition, door operated interlock switches that can cut off the illumination within the compartment shall be installed on the door exits to weather deck. Red lights shall be fitted for low level illumination in areas wherein darken ship conditions or night adaptation is required

2. Scope of Supply:-

2.1 First Fitting Items:-

LED lights as per luminous level required by class rules shall be used for all lighting on board ship except where specifically mentioned or not permitted by Class rules/SES 10

i. LED Weather Deck light 12W

WT (IP-56) , LED Weather Deck light fitting of cast aluminium body with polycarbonate white diffuser, 2 Nos. PG type cable entry Glands , LED Modules of approx. 12 W power complete with rubber gasket etc. Light source type CRI 80, Minimum 6500K Input Supply Voltage: 230V AC, 1 phase, 50 Hz.

ii. LED Pendant Light 3W with Red Shade

WT (IP-56), LED type Pendant light fitting with RED Shade of cast aluminium body with polycarbonate diffuser, 2 Nos. PG type cable entry Glands , LED Modules of approx. 03 W power complete with rubber gasket etc. Light source type CRI 80, Minimum 6500K Input Supply Voltage: 230V AC, 1 phase, 50 Hz.

iii. LED Tube Light 24W with Opal diffuser:-

IP-56, Surface Lights of cast aluminum body with polycarbonate white diffuser complete with 2 Nos. cable entry glands, Mounting Brackets and LED Module of approx. 24W power, Light source type CRI>80, Minimum 6500K

Input Supply Voltage: 230V AC, 1 phase, 50 Hz

iv. 24V DC Emergency Pendant LED Light

IP-20, Surface LED type light fittings of cast aluminium body, Polycarbonate white diffuser of approx. 12W power, complete with 2 Nos. cable entry glands, rubber gasket, Mounting Brackets etc.

Light source type CRI>80, Input Supply Voltage: 24V DC

v. LED Pendant Light 12W with Semi Milky Diffuser



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WT (IP-56), LED module type Pendant light fittings of cast aluminium body with polycarbonate white diffuser, 2 Nos. PG type cable entry Glands, LED Module of approx. 12W power, complete with rubber gasket, Mounting Bracket etc.
Light source type CRI>80, Minimum 6500K, Input Supply Voltage: 230V AC, 1 phase, 50 Hz

vi. Bilge light

WT (IP-67), LED type Bilge light fitting of cast aluminium body with polycarbonate white diffuser, 2 Nos. PG type cable entry Glands, LED Modules of approx. 12 W power complete with rubber gasket etc. Light source type CRI 80, Minimum 6500K Input Supply Voltage: 230V AC, 1 phase, 50 Hz.

vii. Water Tight Flood Lights 100W

WT (IP-56) wide beam flood light, minimum 100W LED with cast aluminium body, 2 nos. cable entry gland and mounting bracket. Light source type CRI ≥80, Approx. 6500 K Input Supply Voltage: 230V AC, 1 phase, 50 Hz

3. Technical Specification:

- a. All the LED light fittings must be certified for compliance NABL or third party certified lab with relevant testing certificates.
- b. All the light fittings must be supplied complete with EMI/ EMC compliance certificates and must be certified as suitable for marine use.
- c. All LED Light source are to be of 6500K and having CRI > 80
- d. LEDs in the LED Module should be arranged in the array and in such a manner that failure of single LED does not affect the performance of the balance LEDs in the module
- e. Diagram of proposed light fittings along with polar chart and lux level should be forwarded along with the technical proposal
- f. A sample piece of the fittings along with drawing must be forwarded to MDSL for approval prior to manufacture. This sample if accepted will be merged as a part of inventory
- g. All fittings must be powder coated to colour shade to be define in drawing
- h. Manufacturers test report/ guarantee certificate to be supplied along with the equipment
- i. The firm should adhere to the standards created by the Illuminating Engineering Society of North America (IESNA) applicable for LED lighting
- j. The OEMs of LED luminaries should procure LEDs which are LM-80 certified (IESNA LM-80).
- k. The OEMs of LED luminaries should procure LEDs which are TM-21 certified (IESNA TM-21) for 50,000 hrs. Of operation up to 70% output maintenance.
- l. The firm should produce necessary certificates along with test results for LM-80 and TM-21 certified LEDS.
- m. All above light fittings should have provision for external earthing to hull.

4. Input Supply Voltage:

The system should be designed to operate on 230 V AC, 50 Hz, 1 phase main power supply. Power supply required for operation of the Emergency Lights is 24V DC.



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5. **Spares: -**

Spares are to be recommended by equipment supplier, taking into account operational and maintenance requirements of the equipment. Equipment supplier shall submit comprehensive list of all types of spares & tools along with the technical offer. The list of spares to be supplied should comply with class requirements and those listed in Section II of this document.

6. **Installation Material:**

One set of installation material that includes special tools if any, special cables if any, plugs, adapters, cable glands, JB's, mating flanges, sockets (with accessories), pins, lugs if any for power and control cables, mounts, equipment and cable tallies (cable tallies in double qty) etc., recommended by Supplier for satisfactory completion of system installation on board ship should be supplied. List of all Installation Materials with suitable size shall be included in offer.

7. **Installation:**

On board installation of the equipment will be carried out by the shipbuilder.

8. **Safety Standards:**

The design of equipment is to provide the maximum safety to the operator against the risk of electric shock. Controls essential for normal operation must be accessible. All units are to be provided with earthing bolt. Where units are connected with the ship's main, fuse protection is to be provided. Each unit where dangerous voltages are present will bear a Red Label stating in bold white characters the highest voltages inside the unit. Doors and panels are to be provided with safety door switches, wherever necessary.



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ANNEXURE - 2

(To be filled in by the *SUPPLIER* & submitted as part of the Offer)

COMPLIANCE MATRIX

With reference to the subject Requisition received along with the MDL Inquiry and our QUOTATION No. _____ Dated _____ we hereby confirm / clarify the following :

TSP Para No	Complied / Not Complied	Offer Reference (Page & Para No.)	Deviations with reasons (if any)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

The Bidder should fill in this form for the deviations of his bid from the requirements as stated in the TSP. If no deviation is required, bidder should fill in "NIL" in the deviation column. Deviation listed other than deviation form shall not be considered.

BIDDER'S COMPANY SEAL

BIDDER'S SIGNATURE & DATE



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ANNEXURE - 3

CERTIFICATE OF CONFORMITY

(To be filled in by the **SUPPLIER** & submitted as part of the Offer)

M/s. _____

With reference to the subject **Requisition** received along with the MDL/ GRSE Inquiry and our QUOTATION No. _____ Dated _____ we hereby confirm / clarify the following:

- REGISTRATION WITH DQA (WP) / DQA (N) / MDL / GRSE:**
We are NOT Registered / already REGISTERED (*) with _____ for manufacture and supply of following items
(a) _____
(b) _____
- PAST PERFORMANCE:**
We have NOT Supplied / have SUPPLIED (*) identical / similar (*) ITEM to MDL /GRSE in the past. The relevant Order references are given below :
(a) _____
(b) _____
- REQUISITION / DRAWINGS / SPECIFICATIONS / SOR:**
We ARE NOT / ARE (*) fully aware of the relevant Drawings / Specifications / TSP etc. indicated in the REQUISITION and the related Documents.
- DEVIATION:**
The OFFER is fully in compliance with the Requisition WITHOUT any deviation / EXCEPT for the deviations listed in the attached format (*).
- BINDING DATA:**
OUR Drawings with necessary BINDING DATA such as Overall Dimensions, SEATING Details / Bolting Plan, Connection / Interface Details, Face to Face Dimensions is ENCLOSED / NOT Enclosed (*) with the offer. We have noted that any change in Binding Data shall require specific approval from MDL/IHQ of MoD (N).
- DOCUMENTS / DATA:**
The following Technical Documents / DATA SHEETS are enclosed herewith
(a) (To be specified if applicable)

For M/s. _____

Signature: _____ Date : _____

Stamp:

(*) Strike out which is **NOT APPLICABLE**.



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ANNEXURE-4

REFERENCE LIST

Note: Details of past supply with relevant proofs in accordance with Technical Pre-qualification criteria (TPQC) mentioned in technical requirements are to be mentioned here. All the relevant documents are to be attached along with offer.

S.No	Equipment/Fitting No. (Indicating clear description, type, size, operation etc.)	Material of construction (MOC)	Supplied to	PO Number & PO date	Delivery date	Inspection certificate duly signed by TPI agency	Invoice No. or Proof of delivery

BIDDER'S COMPANY SEAL

BIDDER'S SIGNATURE & DATE



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ANNEXURE - 5

WEIGHT CERTIFICATE

EQUIPMENT DESCRIPTION :

EQUIPMENT NO. :

The form has to be completed by Vendor & to be supplied along with the equipment.

VENDOR'S NAME

Ref. Drg. No.

ADDRESS

TELEPHONE NO.

Part No.

ORDER NO.

EQPT. NO.

METHOD OF WEIGHING :

Vendor to prescribe Method & Equipment Used :

**DATE OF LAST
CALIBRATION**

**SPECIFIED ACCURACY
REQUIREMENT**

NOTE :-

RESULT OF WEIGHING TOTAL EQUIPMENT DRY WEIGHT :

(Excluding packing, temporary protection etc.)

ALLOCATED WEIGHT :

(Weight estimate agreed by purchaser and vendor based on order specs)

REASONS FOR VARIATION BETWEEN ALLOCATED WEIGHT AND CERTIFIED WEIGHT :

WEIGHING ADDRESS :

WITNESSED BY

FOR VENDOR

FOR PURCHASER

Date:

Representative

Representative

Signature / Date & Seal

Signature / Date & Seal



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ANNEXURE - 6

TIMELINES FOR TASKS AND DELIVERABLES (Durations) for LED Light Fixture

DELIVERY OF SYSTEM		
Yard 16401,16402,16403,16404, 16405 & 16406		
Activity	Duration	
Placement of order	P	
1 Binding Data	P + 04 weeks	
2 QAP	P + 04 weeks	
3 Manufacturing Drawing	P + 08weeks	
4 FAT & Certification	NA	
5 Equipment Supply	P + 13 months	
6 Documentation	P + 13 months	
7 Preservation	P + 13 months	
(a) In Stores OR	P + 13 months	
(b) On- board	P + 13 months	
8 Services of Engineers		
(a) Installation	NA	
(b) STW	NA	
(c) HATs	NA	
(d) SATs	NA	
(e) For Routines	NA	
(f) Training	NA	
9 OBS for three years	P + 13 months	
10 Warranty	E+20 or D+12 whichever is later	
11 B&D Spares	E	

* - These end dates will be indicated as calendar dates in the Purchase Order.

P- Placement of Purchase Order, E- Equipment Delivery, D- Planned Delivery



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Appendix-7

MANUFACTURER'S RECOMMENDED LIST OF SPARES TOOLS AND SOFTWARE (MRL-OBS)

VESSEL/ EQUIPMENT: 14 FPV SHIPS

S r N o	Eqpt Part No./ Model no./SI No.	Eqpt Descripti on	OEM Name	Vend or Name	Illustrated Spare Part List (ISPL) Referance/ Part No. of	Desc of Spare	Count ry of Origin	Unit Pric e	Seller Order No. & Date	Curre ncy Code	Tot al Qty	V E D* C at eg or y	Reco mme nded scale for FPV SHIP S Ship	Re mar ks

MANUFACTURER'S RECOMMENDED LIST OF SPARES (MRL-B&D)

VESSEL/ EQUIPMENT: 14 FPV SHIPS

S e r N o	Eqpt Part No./ Model no./SI No.	Eqpt Descripti on	OEM Name	Vend or Name	Illustrated Spare Part List (ISPL) Referance/ Part No. of Spare	Desc of Spare	Count ry of Origin	Unit Pric e	Seller Order No. & Date	Curre ncy Code	Tot al Qty	V E D* C at eg or y	Reco mme nded scale for FPV SHIP S Ship	Re mar ks

*VED- VITAL / ESSENTIAL/ DESIRABLE analysis of spares to be carried out by OEM prior to submission to the Buyer.

Original Equipment Manufacturer (OEM): _____ (Complete Address)

- i. Data regarding maintenance spares/stores like lubricants, sealing compound, gases should be given separately giving source of supply.
- ii. Data furnished as OBD and B&D should also include software backups, as applicable
- iii. In "Remarks" column following information (if applicable) be given:-
 - a) If an item has a shelf/operational life it be marked as 'G' and life be indicated
 - b) Matching set of components be indicated.
 - c) Item which can be locally manufactured in India should be marked 'LM'.
 - d) Items which cannot be manufactured in India due to sophisticated design/ technology may be marked as 'SI' (Special Item).
 - e) If a component/assembly is common to other similar equipment offered by the OEM earlier, these should be marked 'CM' and Name of the equipment be indicated.



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- iv. OBS and B&D spares list should be drawn out of the 'Part List' of the equipment, which should be separately given as part of Technical Manuals.
- v. If the main equipment consists of other equipment, then OBS and B&D spares list should be prepared for them under proper heads. OBS and B&D spares list is to be prepared as per the maintenance concept of the customer.
- vi. Items provided along with the equipment as spares should also be included in OBS and B&D list
- vii. Modules/ Shop Replaceable Unit (SRU) / assemblies should be listed and their components should be included under them so as to relate each item of spare to their module / SRO / assembly.
- viii. OBS and B&D list for test equipment should also be provided on the similar format.
- ix. Cost to be indicated in Price bid only.