

Project: 400/220 kV GIS Substation at Ersama, Paradeep, Odisha  
Customer: Odisha Power Transmission Corporation Limited (OPTCL)  
Name of Item: CT Junction Box  
Ref. No. OPTCL/CT/PQR REV 00

TECHNICAL QUALIFICATION REQUIREMENT

The bidder must have, manufactured, type tested and supplied Junction Boxes in last 7 years from the original scheduled date of techno-commercial bid opening of this tender.

Requisite documents for ROUTE

SUPPORTING DOCUMENTS TO BE SUBMITTED BY BIDDER ALONG WITH TECHNICAL BID		
Sr	Required Criteria	Supporting Documents
1	Manufacturing	Approved Drawings/ GTP /Approved Quality Plan/ Factory Inspection Test Report etc. establishing bidder as manufacturer of offered item in line with TQR.
2	Supply	PO/ Dispatch clearance/ LR/ Material Receipt certificate at site/ installation or commissioning certificate etc. establishing bidder as proven supplier of offered item in line with TQR

वेदनाय यश  
12/4/23  
PREPARED BY

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12/4/23  
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12.4.23  
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VIVEK KADIL/RGM



**BHARAT HEAVY ELECTRICALS LIMITED**  
**TRANSMISSION BUSINESS ENGINEERING MANAGEMENT**  
**NOIDA**

DOCUMENT NO.	TB-420A-316-007A	REV 00	Prepared	Checked	Approved	
TYPE OF DOC.	TECHNICAL SPECIFICATION	NAME	BY	DKS	DKS	
<b>Title:</b> CT Junction Box <i>(Suitable for coastal areas)</i>		SIGN				
		DATE	11.04.2023	11.04.2023	11.04.2023	
		GROUP	TBEM			
		WO No.				

CUSTOMER: ODISHA POWER TRANSMISSION CORPORATION LIMITED

PROJECT: 400/220 kV GIS SUB STATION AT ERSAMA, PARADEEP, ODISHA

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**Remarks:** Bidder to note that data and details of Annexure-C (Guaranteed Technical Particulars) shall not be reviewed during technical evaluation/ scrutiny, hence compliance of guaranteed technical particulars in line with technical specification shall be bidder's responsibility.

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Rev. No.	Date	Altered	Checked	Approved	
Distribution				To	
				Copies	

### **CHECKLIST FOR TECHNICAL EVALUATION**

Along with the technical offer/ bids, the bidder should submit this checklist confirming the inclusion of the enclosures as listed below,

Sl. No.	Documents to be enclosed	Bidder to confirm (Please tick "Confirmed")
1.	Supporting documents for compliance of Technical Qualifying Requirement.	Confirmed
2.	Unpriced BOQ duly mentioning "Quoted" for all the items, signed and sealed.	Confirmed
3.	Annexure- A duly signed and sealed & Annexure- B duly filled, signed and sealed.	Confirmed

Note: Any bidder not meeting the above requirement shall be liable for non-evaluation. The above checklist is reviewed and verified for,

NIT Reference No.:

Name of Bidder:

Name of Project: 400/220 kV GIS Sub Station at Ersama, Paradeep, Odisha

Date:

Bidder's Stamp & Signature

# Bharat Heavy Electricals Limited

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## SECTION 1: SCOPE, PROJECT SPECIFIC TECHNICAL REQUIREMENTS & BILL OF QUANTITIES

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## SECTION 1:

### SCOPE, PROJECT SPECIFIC TECHNICAL REQUIREMENTS & BILL OF QUANTITIES

#### 1. Scope

This technical specification covers the requirements of design, manufacture, inspection including third party inspection and testing at manufacturer's work before supply, proper packing and delivery to project of **CT Junction Box** complete with all fittings and accessories, as applicable for efficient & trouble-free working mentioned under this specification.

The specification comprises of following sections:

Section-1	:	Scope, Project Specific Technical Requirements & Bill of Quantities
Section-2	:	Equipment Specification under scope of Supplies
Section-3	:	Annexures
		Annexure-A: Compliance Certificate to Technical Specification
		Annexure-B: Deviation/ Change Request to Technical Specification
		Annexure-C: Guaranteed Technical Particulars
		Annexure D: Technical Checklist

The following order of priority shall be followed. In case of conflict between requirements specified in various documents, the more stringent one shall be followed. BHEL/ OPTCL concurrence shall, however, be obtained before taking a final decision in such matters.

#### 1. Statutory Regulations

- In particular, the latest version of the following statutory regulations, as applicable, shall be followed for system,
- o Indian Electricity Act
  - o CEA regulations
  - o The Factory Act
  - o Requirements of other statutory bodies as applicable, e.g. CEA etc.

#### 2. Section-1

#### 3. Section-2

#### 4. Codes & Standards

Bidder shall furnish list of conflicts/ ambiguities/ deviations, if any, along with their technical offer and also furnish the basis that is considered for submitting technical offer. BHEL/ OPTCL will resolve listed conflicts prior to award. In case of ambiguity, bidder shall inform BHEL/ OPTCL of their interpretation. In case bidder fails to convey the same prior to award, BHEL/ OPTCL decision on interpretation shall be considered final if need arises during the execution. No additional cost or extra time on account of conflicts/ ambiguities/ deviations shall be admissible.

In general, no deviation from the requirements specified in various clauses of this specification shall be allowed and hence, a certificate to this effect shall have to be furnished along with the offer (Annexure-A), however bidder shall furnish list of conflicts/ ambiguities/ deviations (Annexure-B), if any. Any conflicts/ ambiguities/ deviations mentioned elsewhere in technical offer shall not be reviewed.

The equipment is required for the following project:

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Name of the Customer : **Odisha Power Transmission Corporation Limited**  
Name of Main Contractor : **Bharat Heavy Electricals Limited**  
Name of the Project : **400/220 kV GIS Sub Station at Ersama, Paradeep, Odisha**

The scope of supplies shall be as per commercial terms and conditions enclosed separately with the notice inviting tender/ enquiry.

### 2. Codes & Standards

1. The rating as well as performance and testing of CT Junction Box shall comply with the latest editions and amendments of the following standards as applicable, unless otherwise specified elsewhere in this specification,  
IS 5039 Specification for Low Voltage Switchgear & Control Gear Assemblies  
IS 8623 Specification for Low Voltage Switchgear & Control Gear Assemblies  
IS 13947 Specification for Low Voltage Switchgear & Control Gear Assemblies  
IEC 60439 Low-Voltage Switchgear & Control Gear Assemblies - Part 1: Type-Tested and Partially Type-Tested Assemblies
2. For the purpose of this specification all technical terms used hereinafter shall have the meaning as per IEC/ ISS specification.
3. The equipment meeting with the requirements of other authoritative standards, which ensure equal or better quality than the standards mentioned above shall also be acceptable. Where the equipment offered by the bidder confirms to other standards, salient points of difference between the standards adopted and the specified standards shall be clearly brought out in the offer.
4. In case of imported equipment, standards of the country of origin shall be applicable, if these standards are equivalent or stringent than the applicable Indian standards.
5. The equipment shall also conform to the provisions of Indian Electricity Rules, 1956 and other statutory regulations currently in force in the country.
6. In case Indian standards are not available for any equipment, standards issued by IEC/ BS/ VDE/ IEEE/ NEMA or equivalent agency shall be applicable.

### 3. Specific Technical Requirements

1. **CT Junction Box shall** perform satisfactorily under various other electrical, electromechanical and meteorological conditions of the site of installation.
2. The equipment shall also comply to facilitate erection of equipment, all items to be assembled at site shall be "match marked".
3. In addition to this, the other specific technical requirements for the equipment shall be as per details mentioned in Section-2.

### 4. General Technical Requirements

The general technical requirements for the equipment shall be as follows,

1. Fixing hardware (Nuts, bolts and washers etc.) for mounting CT Junction Box are deemed to be included in the scope of supply.
2. CT Junction Box JB-D45 shall have disconnecting type TBs (Please refer Table-1).

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3. Other standard fittings and accessories, which are not specifically mentioned but are usually provided with equipment of type and rating being offered for efficient and trouble free operation.
4. The bidder must fill up all the details required for offered item/s. Instead of indicating "refer drawing, or as per IS/IEC", the exact value/s must be filled in.

### 5. Bill of Quantities

1. Quantities for CT Junction Box shall be as follows,

Sl. No	Description	Unit	Quantity
1	CT Junction Box JB D-45	No.	4

However, any item not appearing herein but required for completeness of the work and mentioned elsewhere is deemed to be included in bidder's scope.

2. The quantities in BOQ may vary up to  $\pm 20\%$  in line with quantity variation clause. However, individual quantities may be deleted or vary up to any extent.

### 5. Drawings / Documents required for Technical Clearance for Manufacturing

The engineering drawings/ documents, shall be used for providing technical clearance for manufacturing of the equipment, which shall be used for delay analysis, if applicable, by concerned department.

1	<b>Junction Box</b> - OGA, BOM/ Component List with Guaranteed Technical Particulars, Wiring Diagrams
2	<b>Junction Box</b> - Type Test Reports
3	<b>Junction Box</b> - Quality Assurance Plan

Technical clearance for manufacturing shall be issued after approval of drawings in Category-I (approval without any comments)/ Category-II (approval with comments) from customer/ BHEL. In case drawing/ document are not duly stamped in category-1/ category-2 by customer, BHEL stamp in Category-1 & 2 shall be treated final to proceed further.

The successful bidder shall have to extend all possible supports like timely submission/ re-submission of drawings, visit to end customer to facilitate documents approval without any commercial implications to BHEL. Acceptance of bidder's documents shall be subject to end customer/ OPTCL approval.

### 6. Type Testing

Bidder shall ensure that the equipment being procured shall be of proven design and should have valid type test certificates as per specified in IS/ IEC standards (amended up to date) at any NABL accredited laboratories.

The validity of type test reports shall be as per the latest CEA guidelines for the validity period of type test(s) conducted on major electrical equipment in Power Transmission system.

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In case any of Type tests have not been conducted on the offered design or there has been a change in the design due to high altitude requirement/ any other technical issue after the type tests. The requisite tests shall be conducted by bidder on the offered design without any extra cost and delivery impact to BHEL/ OPTCL.

### **7. Quality Plan**

The successful bidder shall submit Quality Assurance Plan with in-process inspection methods, tests, records, etc. for BHEL/ OPTCL approval. Customer hold points will also be included in the plan, which shall be mutually agreed by the BHEL/ OPTCL. In case bidder has reference Quality Assurance Plan agreed with BHEL/ OPTCL same shall be submitted for specific project to BHEL/ OPTCL approval. There shall be no commercial implication to BHEL/ OPTCL on account of Quality Plan approval.

Superior quality control system shall be adopted to assure high product quality. Raw materials of the best commercial grade quality and high reliability shall be used in the manufacture of the equipment. All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved quality plan. The supplier shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the requirements of the specification. Charges for all tests for the equipment shall be deemed to be included in bidder's scope.

### **8. Inspection & Testing**

1. CT Junction Box shall be subject to inspection by BHEL/OPTCL or authorized representative at bidder/ manufacturers' works. Hence, Bidder shall furnish all necessary information concerning the supply to BHEL/ OPTCL.
2. Routine and acceptance tests as listed in relevant standard and section-2, technical specifications shall be complied.

### **9. Packing and Dispatch**

1. CT Junction Box shall be properly packed for selected mode of transportation i.e. sea, rail and road in such a manner that it is protected against the climatic conditions and for any damage during transportation, transit and storage. The panels shall be wrapped in polyethylene sheets before being placed in wooden crates/ cases to prevent damage to the finish. Crates/ cases shall have skid bottoms for handling. Special notations such as 'Fragile', 'This side up', 'Weight', 'Owner's particulars\ 'PO nos.' etc., shall be clearly marked on the package together with other details as per purchase order.
2. CT Junction Box may be stored outdoors for long periods before installation. The packing should also be suitable for outdoor storage areas with heavy rains/ high ambient temperature unless otherwise agreed and hence, Packing shall be suitable for long storage (minimum 1 year).

### **10. Terms Used**

The terms used in this specification namely, "Employer/ Purchaser/ Owner" refers to BHEL/ OPTCL & "Contractor/ Sub-contractor/Manufacturer/ Bidder" refers to successful bidder.

**TABLE-1**  
**TB CHART FOR JB-D45**

<b><u>TB-1</u></b>			<b><u>TB-2</u></b>		
D	1	1S1R	D	1	2S1R
D	2	1S2R	D	2	2S2R
D	3	1S3R	D	3	2S3R
D	4		D	4	
D	5		D	5	
D	6	1S1Y	D	6	2S1Y
D	7	1S2Y	D	7	2S2Y
D	8	1S3Y	D	8	2S3Y
D	9		D	9	
D	10		D	10	
D	11	1S1B	D	11	2S1B
D	12	1S2B	D	12	2S2B
D	13	1S3B	D	13	2S3B
D	14		D	14	
D	15		D	15	
D	16		D	16	AS1R
D	17		D	17	AS2R
D	18		D	18	
D	19		D	19	
D	20		D	20	AS1Y
			D	21	AS2Y
			D	22	
			D	23	
			D	24	AS1B
			D	25	AS2B

**Note:** N- Non-disconnecting type  
D- Disconnecting type

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## SECTION-2

### STANDARD EQUIPMENT SPECIFICATION FOR MARSHALLING KIOSK, JUNCTION BOX & ITS ACCESSORIES

The precedence of order for documents shall be as per follows,

1. Standard Technical Specification
2. Customer Technical Specification

### **OUTDOOR TYPE C.T., P.T. & CVT CONSOLES/ MARSHALING BOX:**

C.T., P.T. & CVT consoles. Marshalling box shall be of aluminium alloy **sheet** of 3mm **thick** are to be supplied along with the C.T., P.T. & CVT equipment. One console box is required for 3 nos. equipment. Details of quantities required are to be engineered by the contractor. These consoles are suitable for outdoor mounting and shall have proper slope at the top for easy discharge of water.

- (I) Marshalling Boxes shall be weather proof with a rating not less than IP 55
- (II) The C.T., P.T. & CVT console shall be of Aluminum alloy sheets having 3 mm thickness.
- (III) The Marshalling box shall be provided with a removable cable gland plate at bottom for mounting cable glands for 1.1KV PVC sheathed 4 x 4 Sq. mm stranded copper conductor cables.
- (IV) The Marshalling box shall be provided with a **double leaf** door in front so as to have easy access of terminals. The door shall have a sealing / locking arrangement and shall be suitable to prevent penetration of moisture and rainwater.
- (V) All terminals shall be clearly marked with identification number to facilitate connection to external wiring.
- (vi) Terminal Block connectors (Reputed make like **Elmex,Wago**) built from cells of molded dielectric and brass stud inserts shall be provided for terminating the outgoing ends of the wiring and the corresponding incoming tail ends of the control cables. All the terminal connectors shall have de-link(disconnecting) facilities. Provision shall be made on each pillar for holding 20% extra connection (10% incoming + 10% outgoing). All blocks shall be shrouded by easily removable shroud molded of transparent dielectric materials. The terminal blocks shall be suitable for 660 volts service and connection with both aluminum and copper cable.
- (vii) **Provision of Illumination lamp, Thermostat control auto heater & 3 pin socket with plug in each Marshalling Box. The Supply shall be 230 V A.C. Necessary wiring in the MB shall also be provided.**
- (viii) **The sizes of the MB for C.T., P.T. & CVT shall be finalized during detailed Engineering.**

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## SECTION 3: ANNEXURES

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### **ANNEXURE-A: Compliance Certificate of Technical Specification**

The bidder shall confirm compliance to the following by signing and stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same.
2. There are no deviation(s) with respect to specification other than those furnished in the schedule of deviations.
3. Only those technical submittals which are specifically asked for in Notice Inviting Tender (NIT) to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of technical offer.
4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.
5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in 'BOQ' of the specification shall not be considered (i.e., technical description & quantities as per the specification shall prevail).

Date:

Bidder's Stamp & Signature

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### ANNEXURE-B: Deviation(s) of Technical Specification

Bidder shall list out all technical potential deviation/ change request (s) along with clause with respect to technical specifications.

Sl. No.	Page No.	Clause No.	Deviation	Reason/ Justification(s)
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Any deviation not specifically brought out in this section shall not be admissible for any commercial implication at later stage. Except to the technical deviations listed in this schedule, bidder's offer shall be considered in full compliance to the tender specifications irrespective of any such deviation indicated / taken elsewhere in the submitted offer.

Date:

Bidder's Stamp & Signature

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### ANNEXURE-C: Guaranteed Technical Particulars

A.	Junction Box	
1	Manufacturer's Name	
2	Indoor/Outdoor application	
3	Degree of protection	
4	Bill of material for all equipment mounted in marshalling kiosk giving following details:	
i)	Make & Type	
ii)	Applicable Standard	
iii)	Voltage rating	
iv)	Current rating	
v)	Duty class if applicable	
vi)	Manufacturer's catalogue No.	
vii)	Total heat load of kiosk (for purpose of ventilation requirement)	
5	Colour of finish paint (as per IS)	
i)	Indoor	
ii)	Outdoor	
6	Control wiring	
7	Space heater rating at 240V AC	
8	Marshalling kiosk drawing showing the following:	
i)	Outline dimension's floor opening, floor/ wall/ pedestal fixing arrangements, weights etc.	
ii)	Front view and inside view showing the mounting arrangement of various equipment	
iii)	Schematic wiring diagram of marshalling kiosk enclosed	
iv)	Interconnection drawing showing external cable connections to the marshalling kiosk enclosed	
9	Type test report to degree of protection enclosed	
10	Terminal blocks	
i)	Make & Type	
ii)	Current rating	
a.	Power terminals	
b.	Outer terminals	

Date:

Bidder's Stamp & Signature

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### ANNEXURE- D Technical Checklist

#### I. APPLICABLE FOR CTJB

**CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER**

**RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED**

The offer may not be considered if the following information and this Checklist are not enclosed with the Offer.

**A)**

(1)	(2)	(3)					(4)	(5)
S.No.	Parameters	Data					Yes / No	Remarks in case reply in Col (4) is <i>NO</i>
1	<b>Applicable Standard</b>	Latest IS -5039,IS-8623, or IEC-60439, IS 13947						
2	<b>Type of JB</b>							
3.0	<b>Construction Feature</b>							
3.1	Thickness of Aluminum alloy sheet	3.0 mm						
3.2	Degree of protection	IP 55 as per IS 13947						
3.3	Control Wiring	4.0/ 2.5 mm <sup>2</sup> , Stranded copper						
3.4	Space Heater / Lamp for illumination /Socket	Provided						
4.0	<b>Type of terminal block (Indenter to tick)</b>	As per Table-2 of Section-1/ 2						
4.1	No. of terminal block <b>(Indenter to tick)</b>	<del>30</del>	45	<del>75</del>	<del>90</del>	<del>130</del>		
5.0	<b>Clearance between TBs</b>							
5.1	Clearance between two rows of terminal blocks (End to End)	150 mm minimum						
5.2	Clearance between first/bottom row of terminal blocks and associated cable gland plate	250 mm minimum						

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(1)	(2)	(3)	(4)	(5)
S.No.	Parameters	Data	Yes / No	Remarks in case reply in Col (4) is <i>NO</i>
6.0	Name plate details, type etc. shall be mentioned in notes of drawings	Yes		
7.0	Door handle with integral lock & master key	Provided		
8.0	TBs fully enclosed with removable covers of transparent, non-deteriorating type plastic material	Provided		
9.0	Fixing Hardware (Nuts, Bolts and Washers) for mounting JB	Provided		

### B) TYPE TESTS

i) Bidder shall ensure that the equipment being procured shall be of proven design and should have valid type test certificates as per specified in IS/ IEC standards (amended up to date) at any NABL accredited laboratories. The validity of type test reports shall be as per the latest CEA guidelines for the validity period of type test(s) conducted on major electrical equipment in Power Transmission system.

(YES / NO)

S.No.	TESTS	REPORT NO.	Date	Conducted at accredited laboratory or witnessed by independent authority
1	Degree of protection test			

ii) If type test reports are not acceptable to BHEL/Customer then above tests shall be conducted by the bidder free of cost. (YES)

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C)

S.No.	Description	Confirmation of Supplier
1.	Bidder to confirm that at all drawings / data sheets/QP/ valid type tests reports/ all relevant information shall be submitted to BHEL for organising approval of ultimate customer.	
2.	Bidder to confirm that it will offer approved Make of the components and fitments at contract stage. In case the offered make is not approved by the customer, then alternate make shall be supplied without any commercial implications to BHEL.	

**Date:**

**Signature of the authorized representative of Bidder**

**Company Seal**