



**ODISHA POWER TRANSMISSION CORPORATION LTD  
OFFICE OF THE SENIOR GENERAL MANAGER,  
CENTRAL PROCUREMENT CELL,  
JANPATH, BHUBANESWAR - 751022**

**TENDER SPECIFICATION NO.  
SR.G.M-CPC -TENDER-DIFERENT TYPES OF RELAYS – 63 / 2016-17**

E-TENDER NOTICE NO 63/2016-17  
FOR PROCUREMENT OF DIFFERENT TYPES OF RELAYS

LOT	Description	Requirement for 2016-17	Requirement for 2017-18	Total requirement
I	Numerical Distance protection relay	60	30	90
II	Numerical differential relay.	30	20	50
III	Feeder Mangement relay	60	60	120
IV	Numerical back up relay	90	90	180
V	Auxiliary relay	50	42	92
	REF relay	30	30	60
	Master trip relay	75	75	150

**Request for online tender documents – From dt-22.12.2016 (10.00 AM)  
to dt- 19.01.2017 (1.00 PM)**

**Last date of submission of online tender - dt- 20.01.2017(1.00 PM)**

**Date of opening of Tender - 21.01.2017(03.00 PM)**

**ODISHA POWER TRANSMISSION CORPORATION LTD.  
REGD. OFFICE: JANPATH, BHUBANESWAR – 751 022,  
ODISHA  
e-TENDER NOTICE NO. CPC-RELAYS-63/ 2016-17**

For and on behalf of ODISHA POWER TRANSMISSION CORPORATION LTD, Sr.G.M. [C.P.C.] invites Tenders from reputed manufacturers in two part bidding system for supply of Different types of Numerical & Electromechanical Relays. The interested bidders would be required to enroll themselves on the tender portal [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL). Complete set of bidding documents is available at [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL) from 22.12.2016 (10.00 Hrs) up to 19.01.2017 (13.00 HRS). Interested manufacturers may visit OPTCL's official web site <http://www.optcl.co.in> and [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL) for detail specification.

**N.B: All subsequent addendum / corrigendum to the tender shall be hosted in the OPTCL's official website <http://www.optcl.co.in>, [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL) only.**

**SENIOR GENERAL MANAGER [C.P.C.]**



**NOTICE INVITING TENDER**  
**ODISHA POWER TRANSMISSION CORPORATION LTD.,**  
**REGD. OFFICE: JANPATH, Bhubaneswar.**  
**e-TENDER NOTICE NO- CPC- 63 /2016-17**

For and on behalf of the ODISHA POWER TRANSMISSION CORPORATION LTD., the undersigned invites bids under two-part bidding system in e-tendering mode only as per the following details.

Tender specification No	LOT	Description of equipment / materials.	Quantity	Earnest money deposit (IN INR)	Cost of Tender specification documents (in INR)	Tender Processing fee (in INR)	Last date of receipt of bids.	Last date of opening of tender
SR.G.M-CPC - TENDER-RELAYS - 63/ 2016-17	I	Numerical Distance protection relay	90	1,11,967/-	10500/-	5750/-	<b>Dt 20.01.2017 up to 13.00hrs</b>	<b>Dt 21 .01.2017 at 15.00 hrs</b>
	II	Numerical Differential relay	50	72,098/-				
	III	Feeder Mangement relay	120	92,250/-				
	IV	Numerical back up relay.	180	1,21,539/-				
	V	Auxiliary relay	92	16,120/-				
REF relay		60						
Master trip relay		150						

The bidders can view the tender documents from website free of cost.

The bidders who want to submit bid shall have to pay Rs. 10,500/- (Rupees Ten thousand five hundred only non-refundable including VAT @ 5%) towards the tender cost, in the form of Demand draft/Cash only, drawn in favour of the D.D.O Headquarters, OPTCL Bhubaneswar.

The bidders shall have to submit non-refundable amount of Rs.5, 750/- (Rupees Five thousand seven hundred fifty) only including Service Tax @ 15.0 %) towards the tender processing fee to K.S.E.D.C.Ltd, in e-payment mode. The e-payment of above amount is to be made to enable the bidder to download the bid proposal sheets & bid document in electronic mode.

The demand draft/pay order for tender cost , processing fee are to be submitted along with the EMD at the office of the undersigned on or before the last date & time of submission of tender.

The bidder shall deposit the tender cost, tender processing fee & EMD BG prior to last date & time for submission of bid as notified in tender notice. Local micro & small enterprisers (MSEs) (In the state of Odisha) registered with respective DICs, Khadi, Village, Cottage & Handicrafts Industries, OSIC and NSIC can

participate without payment of the cost of tender specification. They have to submit notarized hard copy of valid registration as local MSE as above on or before the last date & time of submission of tender.

The prospective bidders are advised to register their user ID, Password, company ID from website [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL) by clicking on hyper link "Register Me".

Any clarifications regarding the scope of work and technical features of the tender can be had from the undersigned during office hours.

***Minimum qualification criteria of bidders: AS STIPULATED IN SECTION-II, (G.T.C.C) OF THE TENDER SPECIFICATION.***

***SENIOR GENERAL MANAGER,  
CENTRAL PROCUREMENT CELL***

**ODISHA POWER TRANSMISSION CORPORATION LTD.  
OFFICE OF THE SR. GENERAL MANAGER  
CENTRAL PROCUREMENT CELL  
FAX NO.:0674 - 2542964  
TELEPHONE NO.:0674 - 2541801**

**JANAPATH, BHUBANESWAR - 751022**

**TENDER SPECIFICATION NO. Sr.G .M.-CPC -TENDER- RELAYS - 63/ 2016-17**

**CONTAINING**

<b><u>PART - I</u></b>	
<b>SECTION - I</b>	<b>: INSTRUCTION TO TENDERERS</b>
<b>SECTION - II</b>	<b>: GENERAL TERMS AND CONDITIONS OF CONTRACT ( G.T.C.C.) (COMMERCIAL)</b>
<b>SECTION - III</b>	<b>: LIST OF ANNEXURES (COMMERCIAL)</b>
<b>SECTION - IV</b>	<b>: TECHNICAL SPECIFICATION</b>
<b><u>PART - II</u></b>	<b>: PRICE BID.</b>

**PART - I.**

**SECTION - I.**

**INSTRUCTIONS TO TENDERERS**

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## COMMERCIAL SPECIFICATION.

### PART-I

### SECTION-I

### INSTRUCTIONS TO TENDERER

#### 1. **Submission of Bids: -**

The bidder shall submit the bid in Electronic Mode only i.e. [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL). The bidder must ensure that the bids are received in the specified website of the OPTCL by the date and time indicated in the Tender notice. Bids submitted by telex/telegram will not be accepted. No request from any bidder to the OPTCL to collect the Bids in physical form will be entertained by the OPTCL.

The OPTCL reserves the right to reject any bid, which is not deposited according to the instruction, stipulated above. The participants to the tender should be registered under ODISHA Sales Tax, Act, VAT Act / Central sales Tax Act.

1. For all the users it is mandatory to procure the Digital Signatures.
2. Contractors / Vendors / Bidders / Suppliers are requested to follow the below steps for **Registration**:
  - a. Click “Register”, fill the online registration form.
  - b. Pay the amount of Rs. 2300/- through **e-payment mode only**.
  - c. Send the acknowledgment copy for verification.
  - d. As soon as the verification is being done the e-tender user id will be enabled.
3. After viewing Tender Notification, if bidder intends to participate in tender, he has to use his e-tendering User Id and Password which has been received after registration and acquisition of DSCs.
4. If any Bidder wants to participate in the tender he will have to follow the instructions given below:
  - a. Insert the PKI (which consist of your Digital Signature Certificate) in your System. (Note: Make sure that necessary software of PKI be installed in your system).
  - b. Click / Double Click to open the Microsoft Internet Explorer (This icon will be located on the Desktop of the computer).
  - c. Go to Start > Programs > Internet Explorer.
  - d. Type [www.tenderwizard.com/OPTCL](http://www.tenderwizard.com/OPTCL) in the address bar, to access the Login Screen.
  - e. Enter e-tender User Id and Password, click on “Go”.
  - f. Click on “Click here to login” for selecting the Digital Signature Certificate.
  - g. Select the Certificate and enter DSC Password.
  - h. Re-enter the e-Procurement User Id Password

To make an request for Tender Document Bidders will have to follow below mentioned steps.

- Click “Un Applied” to view / apply for new tenders.  
Click on Request icon for online request.  
After making the request Bidders will receive the Tender Documents which can be checked and downloaded by following the below steps:
  - Click to view the tender documents which are received by the user.
  - Tender document screen appears.
  - Click “Click here to download” to download the documents.
5. After completing all the formalities Bidders will have to submit the tender and they must take care of following instructions.
    - Prior to submission, verify whether all the required documents have been attached and uploaded to the particular tender or not.
    - Note down / take a print of bid control number once it displayed on the screen
  6. Tender Opening event can be viewed online.
  7. Competitors bid sheets are available in the website for all.
  8. **For any e-tendering assistant contact help desk number mentioned below.**
    - Bangalore – 080- 40482000.

The participants to the tender should be registered under ODISHA Sales Tax, Act,VAT Act/Central sales Tax Act.

## **2. Division of Specification.**

The specification is mainly divided into two parts viz. Part-I & Part-II.

### **Part-I Consists of**

[i] Section-I	Instruction to Tenderers.
[ii] Section-II	General Terms & conditions of contract.
[iii] Section-III	Schedules and forms etc.
[iv] Section-IV	Technical Specification.

### **Part-II Consists of**

[i] Schedule of prices as per Annexure-V

## **3. Tenders shall be in Two Parts.**

The Tenderers are required to submit the tenders in two parts viz. Part-I ( Techno commercial) & Part-II (Price bid).

### **4. Opening of Bids.**

[a] The part-I shall be opened on the date and time fixed by the OPTCL for opening of bids in Electronic mode in presence of such of the Tenderers or their authorized representatives [limited to one person only] on the due date of opening of tender who opt to remain present. After scrutiny of the technical particulars and other commercial terms, clarifications, if required, shall be sought for from the bidders. The Tenderers shall be allowed 15 days' time for such activity.

[b] On receipt of technical clarification, the bids shall be reviewed, evaluated and those not in conformity with the technical Specification / qualifying experience, shall be rejected. If any of the technical proposals requires modification to make them comparable, discussion will be held with the participating bidders.

All the responsive bidders shall be given opportunity to submit the revised technical and revised price proposals as a follow up to the clarification (modification if any) on the technical proposals. The qualified bidders shall be given opportunity to submit revised price proposals within 15 days from the date of such discussion or within time frame mutually agreed, whichever is earlier.

[c] When the revised price proposals are received, the original price proposals will be returned to the bidders unopened along with their original technical proposals. Only the revised technical and price proposals will be considered for bid evaluation. The price bids [Part-II] of such of the Tenderers, whose tenders have been found to be technically and commercially acceptable, including those supplementary revised price bids, submitted subsequently, shall be opened in the presence of the bidder's representative on a date and time which will be intimated to all technically and commercially acceptable Tenderers.

[d] The bidders are required to furnish sufficient information to the Purchaser to establish their qualification, capacity to manufacture and/or supply the materials/perform the work. Such information shall include details of bidder's experience, its financial, managerial and technical capabilities.

[e] The bidders are also required to furnish details of availability of appropriate technical staff and capability to perform after sales services. The above information shall be considered during scrutiny and evaluation of bids and any bid which does not satisfactorily meet these requirements, shall not be considered for price bid evaluation.

[f] The price bids of the technically and otherwise acceptable bids shall only be evaluated as per the norms applicable in terms of this Specification.

## **5. Purchaser's Right Regarding Alteration of Quantities Tendered.**

**The Purchaser may alter the quantities of materials/equipment at the time of placing orders. Initially the purchaser may place orders for lesser quantity with full freedom to place extension orders for further quantity under similar terms and conditions of the original orders. Orders may also be split among more than one tenderer for any particular item, if considered necessary in the interest of the Purchaser to get the goods/equipment earlier.**

## **6. Procedure and opening time of tenders.**

Tenders will be opened in the office of the Senior General Manager [C.P.C.] on the specified date and time in presence of the Tenderers or their authorized representatives [limited to one person only] in case of each bidder who may desire to be present, at the time of opening the bids.

**7. Bidder's Liberty to deviate from Specification.**

The Tenderer may deviate from the specification while quoting, if in his opinion, such deviation is in line with the manufacturer's standard practice and conducive to a better and more economical offer. All such deviations should however be clearly indicated giving full justifications for such deviation. [Read with Clause-9, Section-II of the Specification].

**8. Eligibility for submission of bids.**

Only those manufacturers who have deposited the cost of tender specification are eligible to participate in the tender. The local Micro and small Enterprises (MSEs) (In the state of Odisha) registered with respective DICs, Khadi, Village, Cottage & Handicrafts Industries, OSIC and NSIC can participate without payment of the cost of tender specification

**9. Purchaser's right to accept/reject bids:**

The purchaser reserves the right to reject any or all the tenders without assigning any reasons what so ever if it is in the interest of OPTCL, under the existing circumstances. [Read with clause-10, Section-II of the specification].

**10. Mode of submission of Tenders.**

[A] Tenders shall be submitted in electronic mode only. (www.tenderwizard.com/OPTCL)

[B] **Telegraphic or FAX tenders** shall not be accepted under any circumstances.

**11. Earnest money deposit:**

The tender shall be accompanied by Earnest Money deposit of value specified in the notice inviting tenders against each lot / bid. Tenders without the required EMD as indicated at **Annexure-VIII** will be rejected outrightly.

The local Micro and small Enterprises (MSEs) (In the state of Odisha) registered with respective DICs, Khadi, Village, Cottage & Handicrafts Industries, OSIC and NSIC can participate by submitting Earnest Money Deposit @ fifty percent of the amount indicated in the Notice Inviting Tender.

The earnest money deposit shall be furnished in one of the following forms subject to the conditions mentioned below:

(a) **Cash:-** Payable to drawing & disbursing Officer, OPTCL (Hd.qrs. Office), Bhubaneswar - 751022

(b) **Bank Draft:** -To be drawn in favour of Drawing & Disbursing Officer, OPTCL [H.Qrs.Office], Bhubaneswar-751 022.

(c) Bank Guarantee from any Nationalized/Scheduled Bank strictly as per enclosed proforma vide **Annexure-VI** to be executed on non-judicial stamp paper worth Rs.29.00 or as applicable, as per prevailing laws in force and also to be accompanied by the confirmation letter of the issuing Bank Branch.

**NOTE:**

(i). The validity of the EMD in the form of Bank Guarantee shall be at least for 240 days from the date of opening of tender failing which the tender will be liable for rejection.

(ii) No interest shall be paid on the Earnest Money Deposit.

(iii) E.M.D. in shape of cash may be submitted up to Rs. 25,000/- (Rupees Twenty-five Thousand) only. Above Rs. 25,000/- (Rupees Twenty-five thousand) the Earnest Money Deposit shall be furnished in any one of the forms indicated above (i.e. Through Bank Draft, Bank Guarantee/ National Savings Certificate).

(iv) No adjustment towards EMD shall be permitted against any outstanding amount with the **ODISHA POWER TRANSMISSION CORPORATION LTD.**

(v) The chart showing particulars of EMD to be furnished by Tenderers of different categories is placed at **Annexure-VIII.**

(vi) In the case of un- successful tenderer, the EMD will be refunded after the tender is decided. In the case of successful Tenderer, this will be refunded only after furnishing of security money referred to at clause-19 of Section-II.

(vii) Suits, if any, arising out of this clause shall be filed in a Court of law to which the jurisdiction of High Court of ODISHA extends.

- (vii) EMD will be forfeited if the tenderer fails to accept the letter of intent and/or purchase order issued in his favour or to execute the order, placed on them.
- (viii) Tenders not accompanied by Earnest Money shall be disqualified.

**12. Validity of the Bids: -**

The tenders should be kept valid for a period of **180** days from the date of opening of the tender, failing which the tenders will be rejected.

**13. PRICE: -**

Tenderers are requested to quote-'FIRM' Price. No deviation from **FIRM PRICE** will be entertained irrespective of deviation clause No.7 of this part of the specification.

**14. Revision of tender price by Bidders: -**

[a] After opening of tenders and within the validity of period, no reduction or enhancement in price will be entertained. If there is any change in price, the tender shall stand rejected and the EMD deposited shall be forfeited.

[b] After opening of price bid if the validity period is not sufficient to place purchase order, the tenderer may be asked by the purchaser to extend the validity period of the bid under the same terms and condition as per the original tender.

However, the tender are free to change any or all conditions including price except delivery period of their bids at their own risk, if they are asked by the purchaser to extend the validity period of the bid prior to opening of price bid.

**15. Tenderers to be fully conversant with the clauses of the Specification: -**

Tenderers are expected to be fully conversant with the meaning of all the clauses of the specification before submitting their tenders. In case of doubt regarding the meaning of any clause, the tenderer may seek clarification in writing from the Senior General Manager (Central Procurement Cell) OPTCL. This, however, does not entitle the Tenderer to ask for time beyond due date, fixed for receipt of tender.

**16. Documents to Accompany Bids.**

Tenderers are required to submit tenders in the following manner:

**Part-I of the Tender shall contain the following documents.**

- [i] Declaration Form. [As per Annexure-I]
- [ii] Earnest Money. [As per **Annexure-VIII**]
- [iii] Technical specification and Guaranteed Technical Particulars conforming to the Purchaser's Specification along with drawings, literatures and all other required Annexures, duly filled in.
- [iv] Photostat copies of type test certificates of materials/equipments offered as stipulated in the Technical Specification.
- [v] Abstract of Terms & conditions in prescribed proforma as per **Annexure-II**.
- [vi] General Terms & Conditions of supply offer as per Section-II of the Specification.
- [vii] List of orders executed for similar materials/equipments during preceding 2 (two) years indicating the customer's name, Purchase Order No. & Date, date of supply and date of commissioning etc.
- [viii] Data on past experience **as per Clause-7 of Section-II** of the Specification.
- [ix] Sales tax clearance certificate for the previous year. The permanent account number [PAN] of the firm is required under Income tax Act.
- [x] Audited Balance sheet & profit loss accounts of the bidder, for past (3) three years.
- [xi] Schedule of quantity and delivery in the prescribed Proforma vide Annexure, as appended.
- [xii] List of Orders in hand to be executed.
- [xiii] Deviation schedule.
- [xiv] Notarized hard copy and soft copy of valid registration as local MSE (**In the state of Odisha**) (if any).

**17. Documents/Papers to accompany Part-II Bid.**

- (a) Part – II of the tender shall consist of the following
  - (i) Schedule of prices in the prescribed proforma as per Annexure-V

**18. Conditional Offer:**

Conditional offer shall not be accepted.

**19. General:-**

- (i) Over writing shall be avoided
- (ii) Erasures and other changes shall bear the dated initial of the person signing the tender.
- (iii) In the event of discrepancy or arithmetical error in the schedule of price, the decision of the Purchaser shall be final and binding on the Bidders.
- (iv) For evaluation the price mentioned in words shall be taken if there is any difference in figure and words in the price bid.
- (v) Notice inviting tender shall form part of this Specification.
- (vi) The price bids of the technically and otherwise acceptable bids shall only be evaluated.
- (vii) It should be distinctly understood that the part-II of the bid shall contain only details/documents relating to price, as outlined in clause-17 mentioned herein above. Inclusion of any of the documents/information etc. shall render the bid liable for rejection.
- (viii) The Bidders must submit the EMD amount, cost of tender document (Form Fee) and Tender processing fee in a sealed cover envelope super-scribing the tender specification number, Tender Notice No & Date opening of tender clearly on the cover envelope. The said envelope is to be submitted in the office of the purchaser on or before the last date and time of submission of Bids.

**20.0 Expenses in respect of OPTCL's representative for witnessing the inspection & testing of the offered equipment/materials at the inspection and testing site.**

The testing and inspection of the equipment/ materials at manufacturer works are in the scope of work of the Contractor/Supplier.

OPTCL inspecting officer, on receipt of offer for inspection from the contractor/supplier, proceeds to the manufacturer works to witness the Type/Acceptance/Routine test.

**Important:**

It is hereby informed to all the bidders that the relevant clauses of the contract specification, pertaining to inspection and testing of equipment/materials, are hereby supplemented with following additional terms and conditions.

*The expenses under the following heads, in respect of OPTCL's representative for witnessing the inspection & testing of the offered equipment/materials at the inspection and testing site, shall be borne by the contractor / supplier.*

**a) Hotel Accommodation:**

*I. Single room accommodation in 4 star hotel for the OPTCL inspecting officer of the rank of Assistant General Manager (Grade E-6) and above.*

*II. Single room accommodation in 3 star hotel for the OPTCL inspecting officer of the rank below Assistant General Manager (Grade E-6).*

**N.B.:** *It is the responsibility of the contractor to arrange the hotel accommodation matching with their inspection and testing schedule, so that the inspecting officer can check-in the hotel one day prior to the date of inspection and check out after the completion of the inspection, subject to availability of the return travel ticket. In case of extended duration of inspection or non-availability of the return travel ticket, Contractor/supplier/manufacturer shall arrange for the extended stay of the inspecting officer in the Hotel accordingly. In case there is no hotel with prescribed standard in and around the place of inspection, the contractor/supplier/manufacturer shall suggest alternative suitable arrangement at the time of offer for inspection, which is subjected to acceptability of OPTCL inspecting officer.*

**b) Journey of the inspecting officer:**

**(i)** *To and fro travel expenditure from the Head Quarters of the inspecting officer to the place of inspection/testing shall be borne by the contractor/supplier/manufacturer. Journey from the Head Quarters of the inspecting officer to the nearest Air Port by train (1st/Ind A.C) & A/C Taxi then by*

*Air to the place of inspection/testing or to the nearest place of inspection/testing and then by train (1st/Ind A.C) & A/C taxi to the place of inspection/testing shall be arranged by the contractor/supplier/manufacturer.*

*(ii) For train journey, inspecting officer of the rank Assistant General Manager and above shall be provided with 1st class AC ticket and inspecting officer below the rank of Assistant General Manager shall be provided with 2nd class AC ticket.*

*(iii) The Air-ticket / train-ticket booking/cancellation is the responsibility of the contractor / supplier.*

*(iv) Moreover, if during the journey there is an unavoidable necessity for intermediate travel by road/ waterway/sea-route, the contractor/supplier shall provide suitable conveyance to the inspecting officer for travel this stretch of journey or bear the cost towards this. Any such possibilities shall be duly intimated to OPTCL at the time of their offer for inspection.*

**c) Local Conveyance:**

*At the place of the inspection/testing, for local journey of the inspecting officer between Hotel and inspection/testing site and or any other places, Air-conditioned four wheeler vehicle in good condition shall be provided by the contractor/supplier/manufacturer.*

**d) Following points are also to be considered:**

*(i) All the above expenses shall be deemed to be included in the bidder's quoted price for that supply item. Bidder shall not be eligible to raise any extra claim in this regard.*

*(ii) Contractor/supplier/manufacturer may assume that only in 40% of the inspection and testing offer cases, OPTCL inspecting officer, not below the rank of Assistant General Manager will witness the inspection and testing.*

*(iii) In case of inspection and testing of some critical equipment/materials like Power transformers, OPTCL may depute more than one inspecting officer. (iv) Contractor/supplier/manufacturer shall judiciously plan the inspection/testing schedule and place of inspection/testing, so that optimum number of inspection/testing and minimum time shall be required to cover all the equipment/materials of the relevant contract package.*

***(v) It shall be the responsibility of the Contractor/Supplier to organize the above tour related matters of OPTCL inspecting officer including the matters related to overseas inspection/testing, if any.***

**21. Litigation/Arbitration**

**(i)-** Bidder has to furnish detailed information on any litigation or arbitration arising out of contracts completed or under execution by it over the last five years. A consistent history of litigation by or against the bidder may result in rejection of bid.

**(ii)** The bidder should not have any pending litigation or arbitration with OPTCL with regard to any project or related activity. The bidder should certify/declare the same in unequivocal terms by way of an affidavit duly sworn before a magistrate. Bid furnished by the bidder shall not be eligible for consideration if it is not accompanied by the affidavit. Further, the bid/LOA/LOI shall liable for outright rejection/cancellation at any stage if any information contrary to the affidavit/declaration is detected.

**SECTION – II.**  
**GENERAL TERMS AND CONDITIONS OF CONTRACT [G.T.C.C.]**

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**PART-I**  
**SECTION-II**  
**GENERAL TERMS AND CONDITIONS OF CONTRACT [G.T.C.C.]**

**1. Scope of the contract:**

The scope of the contract shall be to design, manufacture, supply of equipment as per the specification at the consignee's site, and rendering services in accordance with the enclosed technical specification and bill of quantity.

**2.0 Definition of terms:**

For the purpose of this specification and General Terms and Conditions of contract [GTCC], the following words shall have the meanings hereby indicated, except where otherwise described or defined.

2.1 "The Purchaser" shall mean the Senior General Manager[Central Procurement Cell] for and on behalf of ORISSA POWER TRANSMISSION CORPORATION LTD., Bhubaneswar.

2.2 "The Engineer" shall mean the Engineer appointed by the Purchaser for the purpose of this contract.

2.3 "Purchaser's Representative" shall mean any person or persons or consulting firm appointed and remunerated by the Purchaser to supervise, inspect, test and examine workmanship and materials of the equipment to be supplied.

2.4 "The supplier" shall mean the bidder whose bid has been accepted by the purchaser and shall include the bidder's executives, administrators, successors and permitted assignees.

2.5 "Equipment" shall mean and include all machinery, apparatus, materials, and articles to be provided under the contract by the suppliers.

2.6 "Contract Price" shall mean the sum named in or calculated the bid.

2.7 "General Condition" shall mean these General Terms and Conditions of Contract.

2.8 "The Specification" shall mean both the technical as well as commercial parts of the specification annexed to or issued with GTCC and shall include the schedules and drawings, attached thereto as well as all samples and pattern, if any.

2.9 "Month" shall mean "Calendar month".

2.10 "Writing" shall include any manuscript, type written, printed or other statement reproduction in any visible form and whether under seal or under hand.

2.11 "FOR Destination costs" shall mean the cost of equipment and material at the consignee's store/site. The cost is inclusive of Excise duty, Sales tax and other local taxes, packing, forwarding and insurance and freight charges.

2.12 The term "Contract document" shall mean and include GTCC, specifications, schedules, drawings, form of tender, Notice Inviting Tender, covering letter, schedule of prices or the final General Conditions, any special conditions, applicable to the particular contract.

2.13 Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian Contract Act, failing that in the Orissa General Clauses Act.

**3. Manner of execution:**

All equipment supplied under the contract shall be manufactured in the manner, set out in the specification or where not set out, to the reasonable satisfaction of the Purchaser's representative.

**4. Inspection and Testing:**

[i] The purchaser's representative shall be entitled at all reasonable times during manufacture to inspect, examine and test at the supplier's premises, the materials and workmanship of all equipment/materials to be supplied under this contract and if part of the said equipment/material is being manufactured in other premises, the supplier shall obtain for the purchaser's representative permission to inspect, examine and test as if the equipment/material were being manufactured in the contractor's premises. Such inspection, examination and testing shall not relieve the supplier from his obligations under the contract.

[ii] The Supplier shall give to the purchaser adequate time/notice (at least clear 15 days for inside the state suppliers and 20 days for outside the state suppliers) in writing for inspection of materials indicating the place at which the equipment/material is ready for testing and inspection and shall also furnish the shop Routine Test Certificate, Calibration certificates of Testing instruments, calibrated in Govt. approved laboratory with authenticity letter of that

laboratory along with the offer for inspection. A packing list along with the offer, indicating the quantity which can be delivered in full truck load/Mini truck load to facilitate issue of dispatch instruction shall also be furnished.

[iii] Where the contract provides for test at the Premises of the supplier or any of his sub-vendors, the supplier shall provide such assistance, labour, materials, electricity, fuel and instruments, as may be required or as may be reasonably demanded by the Purchaser's representative to carryout such tests efficiently. The supplier is required to produce shop routine test Certificate, calibration certificates of Testing Instruments before offering their materials/equipment for inspection & testing. The test house/laboratory where tests are to be carried out must be approved by the Govt. A letter pertaining to Govt. approved laboratory must be furnished to the purchaser along with the offer for inspection.

[iv] After completion of the tests, the Purchaser's representative shall forward the test results to the Purchaser. If the test results conform to the specific standard and specification, the Purchaser shall approve the test results and communicate the same to the supplier in writing. The supplier shall provide at least five copies of the test certificates to the Purchaser.

[v] The Purchaser has the right to have the tests carried out at his own cost by an independent agency whenever there is dispute regarding the quality of supply.

[vi] If the firm fails to present the offered items for inspection/testing as per their inspection call due to any reason(s) during the visit of inspecting officer at the testing site ,the firm shall have to bear all expenses towards repetition of inspection and testing of the total offered quantity or part thereof.

[vii] For PHASE-II delivery, inspection call is to be offered by the bidder after last day of scheduled period of PHASE-I delivery.

#### 5. **Training facilities.**

The supplier shall provide all possible facilities for training of Purchaser's Technical personnel, when deputed by the Purchaser for acquiring first hand knowledge in assembly of the equipment, its erection, commissioning and for its proper operation & maintenance in service, wherein it is thought necessary by the purchaser.

#### 6. **Rejection of Materials.**

In the event any of the equipment/material supplied by the manufacturer is found defective due to faulty design, bad workmanship, bad materials used or otherwise not in conformity with the requirements of the Specification, the Purchaser shall either reject the equipment/material or ask the supplier in writing to rectify or replace the defective equipment/material free of cost to the purchaser. The Supplier on receipt of such notification shall either rectify or replace the defective equipment/material free of cost to the purchaser within 15 days from the date of issue of such notification by the purchaser. If the supplier fails to do so, the Purchaser may:-

[a] At its option replace or rectify such defective equipment/materials and recover the extra costs so involved from the supplier plus fifteen percent and/or.

[b] Terminate the contract for balance work/supplies, with enforcement of penalty Clause as per contract for the un-delivered goods and with forfeiture of Performance Guarantee/CompositeBankguarantee.

[c] Acquire the defective equipment/materials at reduced price, considered equitable under the circumstances.

#### 7. **Experience of Bidders:**

The bidders should furnish information regarding experience particularly on the following points:

[i] Name of the manufacturer:

[ii] Standing of the firm and experience in manufacture of equipment/material quoted:

[iii] Description of equipment/material similar to that quoted, supplied and installed during the last two years with the name(s) of the Organisations to whom supplies were made wherein, at least one (1) certificate shall be from a state/central P.S.U.

[iv] Details as to where installed etc.

[v] Testing facilities at manufacturer's works.

[vi] If the manufacturer is having collaboration with another firm [s], details regarding the same.

[vii] A list of purchase orders of identical material/equipment offered as per technical specification executed during the last two years along with users certificate. User's certificate

shall be legible and must indicate, user's name, address, designation, place of use, and satisfactory performance of the equipment/materials for at least two years from the date of commissioning. Wherein at least one (1) certificate shall be from a State/Central or P.S.U. Bids will not be considered if the past manufacturing experience is found to be un-satisfactory or is of less than 2 (two) years on the date of opening of the bid and bids not accompanying user's certificate will be rejected..

8. **Language and measures:**

All documents pertaining to the contract including specifications, schedule, notices, correspondence, operating and maintenance instructions., drawings or any other writing shall be written in English language. The metric system of measurement shall be used exclusively in this contract.

9. **Deviation from specification:**

It is in the interest of the tenderers to study the specification, specified in the tender schedule thoroughly before tendering so that, if any deviations are made by the Tenderers,(both commercial and Technical), the same are prominently brought out on a separate sheet under heading "Deviations Commercial" and "Deviations Technical".

A list of deviations shall be enclosed with the tender. Unless deviations in scope, technical and commercial stipulations are specifically mentioned in the list of deviations, it shall be presumed that the tenderer has accepted all the conditions, stipulated in the tender specification, not withstanding any exemptions mentioned therein.

10. **Right to reject/accept any tender:**

The purchaser reserves the right either to reject or to accept any or all tenders if the situation so warrants in the interest of the purchaser. Orders may also be split up between different Tenderers on individual merits of the Tenderer. The purchaser has exclusive right to alter the quantities of materials/ equipment at the time of placing final purchase order. After placing of the order, the purchaser may defer the delivery of the materials. It may be clearly understood by the Tenderer that the purchaser need not assign any reason for any of the above action [s].

11. **Supplier to inform himself fully:**

The supplier shall examine the instructions to tenderers, general conditions of contract, specification and the schedules of quantity and delivery to satisfy himself as to all terms and conditions and circumstances affecting the contract price. He shall quote price [s] according to his own views on these matters and understand that no additional allowances except as otherwise provided there in will be admissible. The purchaser shall not be responsible for any misunderstanding or incorrect information, obtained by the supplier other than the information given to the supplier in writing by the purchaser.

12. **Patent rights Etc.**

The supplier shall indemnify the Purchaser against all claims, actions, suits and proceedings for the infringement of any patent design or copy right protected either in the country of origin or in India by the use of any equipment supplied by the manufacturer. Such indemnity shall also cover any use of the equipment, other than for the purpose indicated by or reasonably to be inferred from the specification.

13. **Delivery:-**

[a] Time being the essence of the contract; the equipment shall be supplied within the delivery period, specified in the contract. The Purchaser, however, reserves the right to reschedule the delivery and change the destination if required. The delivery period shall be reckoned from the date of placing the Letter of Intent/Purchase order, as may be specified in LOI/Purchase order.

[b] The desired delivery period shall be as indicated at Annexure-III (Quantity & Delivery Schedule) of Section-IV (Technical Specification).

14. **Despatch instructions.**

I] The equipment/ materials should be securely packed and dispatched directly to the specified site at the supplier's risk by Road Transport only.

II] **Loading & unloading of Ordered Materials.**

It will be the sole responsibility of the supplier for loading and unloading of materials both at the factory site and at the destination site/store.

The Purchaser shall have no responsibility on this account.

**15. Supplier's Default Liability.**

[i] The Purchaser may, upon written notice of default to the supplier, terminate the contract in circumstances detailed hereunder.

[a] If in the judgement of the Purchaser, the supplier fails to make delivery of equipment/material within the time specified in the contract or within the period for which if extension has been granted by the Purchaser in writing in response to written request of the supplier.

[b] If in the judgement of the Purchaser, the supplier fails to comply with any of the provisions of this contract.

[ii] In the event, Purchaser terminates the contract in whole or in part as provided in Clause-15 (I) of this section, the Purchaser reserves the right to purchase upon such terms and in such a manner as he may deem appropriate in relation to the equipment/material similar to that terminated and the supplier will be liable to the Purchaser for any additional costs for such similar equipment/material and/or for penalty for delay as defined in clause-22 of this section until such reasonable time as may be required for the final supply of equipment.

[iii] In the event the Purchaser does not terminate the contract as provided in clause 15(I) of this Section, supplier shall be liable to the Purchaser for penalty for delay as set out in Clause-22 of this section until the equipment is accepted. This shall be based only on written request of the supplier and written willingness of the Purchaser.

**16 Force Majeure:**

The supplier shall not be liable for any penalty for delay or for failure to perform the contract for reasons of force majeure such as acts of god, acts of the public enemy, acts of Govt., Fires, floods, epidemics, Quarantine restrictions, strikes, Freight Embargo and provided that the supplier shall within Ten (10)days from the beginning of delay on such account notify the purchaser in writing of the cause of delay. The purchaser shall verify the facts and grant such extension, if facts justify .

**17. Extension of time:-**

If the delivery of equipment/material is delayed due to reasons beyond the control of the supplier, the supplier shall without delay give notice to the purchaser in writing of his claim for an extension of time. The purchaser on receipt of such notice may or may not agree to extend the contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract.

**18. Guarantee period: -**

[i] The stores covered by this specification should be guaranteed for satisfactory operation and against defects in design, materials and workmanship for a period of at least 36 [thirty six] months from the last date of delivery. The above guarantee certificate shall be furnished in triplicate to the purchaser for his approval. Any defect noticed during this period should be rectified by the

supplier free of cost to the purchaser provided such defects are due to faulty design, bad workmanship or bad materials used, within one month upon written notice from the purchaser failing which provision of clause 22 (ii) shall apply.

[ii] Equipment/material failed or found defective during the guarantee period shall have to be guaranteed after repair/replacement for a further period of 36 months from the date of receipt at the store/site after such repair/replacement. The Bank Guarantee is to be extended accordingly. Date of delivery as used in this clause shall mean the date on which the materials are received in OPTCL'S stores/site in full & good condition which are released for Despatch by the purchaser after due inspection.

**19 B.G. towards security deposit, 100% payment and performance guarantee:**

[i] For manufacturers situated Inside & out side the state of Orissa.

A Composite Bank Guarantee as per the Proforma enclosed at Annexure-VII of the specification for 10% [ten percent] of the total FORD cost of the purchase order(In case of successful bidder who is a local Micro and small Enterprise(MSEs) (In the state of Odisha)registered with respective DICs, Khadi, Village, Cottage & Handicrafts Industries, OSIC and NSIC 5% (five percent)), shall be furnished from any nationalized/scheduled bank having a place of business at Bhubaneswar, to the office of Sr.General Manager [Central Procurement Cell] OPTCL within 15 days from the

date of issue of the purchase order,. The BG shall be executed on non-judicial stamp paper worth of Rs.29.00 [Rupees twenty nine] only or as per the prevalent rules, valid for a period of 38 months from the last date of stipulated delivery period, for scrutiny and acceptance, failing which the supply order will be liable for cancellation without any further written notices. The BG should be accompanied by a confirmation letter from the concerned bank and should have provision for encashment at Bhubaneswar, before the Bank Guarantee is accepted and all concerned intimated. The B.G should be revalidated as and when intimated to you to cover the entire guarantee period.

[ii] No interest is payable on any kind of Bank Guarantee.

[iii] In case of non-fulfillment of contractual obligation, as required in the detailed purchase order/Specification, the composite Bank guarantee shall be forfeited.

## **20. Import License**

In case imported materials are offered, no assistance will be given for release of Foreign Exchange. The firm should arrange to import materials from their own quota. Equipment of indigenous origin will be preferred.

## **21. (A) Terms of Payment.**

(i) 100% of the ex-works price of RELAYS along with 100% Excise duty, Entry Tax, if any, and sales tax in full as applicable along with freight & Insurance charges will be paid on receipt of materials in good condition at stores/desired site, subject to approval of 10% Composite Bank Guarantee as stipulated under clause-19 of this specification & on prior approval of Test reports and Guarantee certificate.

(ii) Any imposition of new tax or revision of tax shall be paid/reimbursed at the time of dispatch, scheduled or actual whichever is lower (i.e. If delivery is within schedule period, tax variation is applicable, and if delivery is made beyond schedule date, any additional financial implication due to statutory variation in tax shall be to bidder's account).

## **(ii) Payment of Freight & Insurance charges and Entry Tax.**

Freight & Insurance Charges & Entry Tax, incorporated in the Purchase contract shall be paid after receipt of materials at stores/desired site in good condition and on production of authenticated documentary evidence, otherwise no Freight, Insurance charges & entry taxes shall be payable.

**[B]** The supplier shall furnish Composite Bank Guarantee of appropriate amount to OPTCL covering 10% of F.O.R. Destination cost of the purchase order well in advance (within 15 days from the date of issue of the purchase order) before despatch of materials.

## **22. Penalty for Delay in Completion of Contract**

I) If the Supplier fails to deliver the materials/equipments within the delivery schedule, specified in the contract including delivery time extension, if any, granted thereto, the Purchaser shall recover from the Supplier, penalty for a sum of half percent (0.5 percent) of the Ex-works price of the un-delivered equipment for each calendar week of delay or part thereof. For this purpose, the date of receipted chalan shall be reckoned as the date of delivery. The total amount of penalty shall not exceed five percent (5%) of the ex-works price of the unit or units so delayed. Equipment will be deemed to have been delivered only when all its components and accessories as per technical Specification are also delivered. If certain components & accessories are not delivered in time, the equipment will be considered delayed until such time as the missing parts are delivered.

II) If the Supplier fails to rectify /replace the equipment/material within 30 days from the date of intimation of the defect, so noticed by the purchaser within the guarantee period then the penalty for sum of one half of the one percent (0.5%) of the total Purchase order amount for each calendar week of delay shall be recovered by the purchaser within the guarantee period. For this purpose, penalty date will start from the 30<sup>th</sup>. day from the date of issue of letter on defectiveness of equipment/material, so supplied, by the purchaser. The total amount of penalty in this case shall not exceed 10% (TEN PERCENT) of the purchase order amount. The purchase order amount shall mean ex-works price + freight & insurance and all taxes & duties. If the defects so intimated within the guarantee period will not be rectified by the Supplier within the stipulated period as per clause 18 (i), then whole of the B.G. will be forfeited by the purchaser, without any intimation to the Supplier.

**23. Insurance**

The Supplier shall undertake insurance of stores covered by this Specification unless otherwise stated. The responsibility of delivery of the stores at destination in good condition rests with the Supplier. Any claim with the Insurance Company or transport agency arising due to loss or damage in transit has to be settled by the supplier. The Supplier shall undertake free replacement of materials damaged or lost, which will be reported by the consignee within 30 days of receipt of the materials at destination without awaiting for the settlement of their claims with the carriers and underwriters.

**24. Payment Due from the Supplier.** All costs and damages, for which the supplier is liable to the purchaser, will be deducted by the purchaser from any money, due to the supplier, under any of the contract (s), executed with OPTCL.

**25. Sales Tax clearance certificate and Balance sheet and profit & Loss Account:**

- i. Sales Tax clearance certificate for the previous year shall be enclosed with the tender.
- ii. Audited Balance Sheet and Profit & Loss Account of the bidder for the previous three years shall be enclosed to assess the financial soundness of the bidder(s).

**26. Certificate of Exemption from Excise Duty/Sales tax.**

Offers with exemption from Excise duty including sales tax shall be accompanied with authenticated proof of such exemption. Authenticated proof for this clause shall mean attested Photostat copy of exemption certificate. Any claim towards Excise duty/ Sales Tax shall be paid on actual basis subject to production of authenticated documentary evidence.

**27. Supplier's Responsibility.**

Notwithstanding anything mentioned in the Specification or subsequent approval or acceptance by the Purchaser, the ultimate responsibility for design, manufacture, materials used and satisfactory performance shall rest with the Tenderers. The Supplier(s) shall be responsible for any discrepancy noticed in the documents, submitted by them along with the bid(s)

**28. Validity.**

Prices and conditions contained in the offer should be kept valid for a minimum period of 180 days from the date of opening of the tender, failing which the tender shall be rejected.

**29. EVALUATION.**

**(i)** Evaluation of bids will be on the basis of the FOR DESTINATION PRICE (By Road Transport) including Excise Duty, sales Tax & other levies as may be applicable plus installation & commissioning charges. The FORD PRICE shall consist of the following components

- a) Ex-works price.
- b) Packing & Forwarding charges.
- c) Freight
- d) Insurance.
- e) Excise Duty.
- f) Sales Tax.
- g) Other levies.
- h) Mandatory spares, if any for maintenance of equipment. (At the discretion of the purchaser)
- i) Test charges, if any. .
- j) Supervision of erection, testing and commissioning charges, if any.
- k) Any other items, as deemed proper for evaluation by the purchaser.
- l) Loading factors will be taken in to account during evaluation if the prices of some of the items, not quoted.

**(II) Weightage shall be given to the Following factors in the Evaluation & Comparison of Bids.**

In comparing bids and in making awards, the Purchaser will consider other factors such as compliance with Specification, minimum qualification criteria as per clause-30, outright rejection of tenders clause-34 of this tender, relative quality, adaptability of Supplies or services, experience, financial soundness, record of integrity in dealings, performance of materials/equipments earlier supplied, ability to furnish repairs and maintenance services, the time of delivery, capability to perform including available facilities such as adequate shops, plants, equipment and technical organization.

**(III)** The local MSE (In the state of Odisha) bidders shall be required to furnish their willingness to match their bid price with that of the lowest evaluated bidder without any price preference

and in case they agree, they shall be eligible to get up to 30% of the tendered quantity to be distributed suitably among the willing MSE bidders failing which the said 30% of the tendered quantity be awarded to the lowest evaluated bidder.

**30. Minimum Qualification Criteria of Bidders.**

All the prospective bidders are requested to note that their bids for tendered equipment can only be considered for evaluation if:

- i) The bidder should have manufacture and supply experience of above rated or higher capacity equipment for a minimum period of 3 (three) years as on the date of opening of the tender
- ii) At least 50% of the tendered quantity. of above rated or higher capacity equipment should have been supplied within the above-stipulated period.
- iii) The above rated or higher capacity equipment should have at least 3 (three) years successful performance from the date of commissioning. At least one of the performance certificates shall be submitted from Govt. of India/State Govt.(s) or their undertakings.
- iv) The bidder should have conducted type tests on the tendered equipments in Government approved laboratory within five years from the date of opening of the tender..

**31. Jurisdiction of the High Court of Odisha.**

Suits, if any, arising out of this contract shall be filed by either Party in a court of Law to which the jurisdiction of High court of Odisha. extends.

**32. Correspondences.**

- i) Any notice to the supplier under the terms of the contract shall be served by Registered Post or by hand at the Supplier's Principal Place of Business.
- ii) Any notice to the Purchaser shall be served at the Purchaser's Principal Office in the same manner.

**33. Official Address of the Parties to the Contract**

The address of the parties to the contract shall be specified:-

[i] **Purchaser:** Senior General Manager (Procurement)(CPC) OPTCL  
Bhubaneswar-751022 (Orissa)  
Telephone No. 0674 - 2541801  
FAX No. 0674 - 2542964

[ii] **Supplier:** Address  
Telephone No.  
Fax No.

**34. Outright Rejection of Tenders**

Tenders shall be outrightly rejected if the followings are not complied with.

- [i] The tenderer shall submit the bid in electronic mode only and shall submit the tender cost on or before the date and time of submission of technical bid. In case of local Micro and small Enterprises(MSEs) **(In the state of Odisha)** registered with respective DICs, Khadi, Village, Cottage & Handicrafts Industries, OSIC and NSIC participating in the tender they have to submit notarised hard copy of valid registration as local MSE as above on or before the date and time of submission of technical bid.
- [ii] The tenderer shall submit the bid in electronic mode only
- [iii] The Tender shall not be submitted telegraphically or by FAX.
- [iv] The prescribed EMD shall be submitted on or before the date and time of submission of technical bid.
- [v] The Tender shall be kept valid for a minimum period of 180 days from the date of opening of tender.
- [vi] The Tender shall be submitted in two parts as specified.
- [vii] The Tenders shall be accompanied by a list of major supplies effected prior to the date of submission of tender. Data of at least 3 (three) years shall be furnished.
- [viii] The tenderer shall upload the scanned copy of latest type test certificates (for the tests, carried out on the tendered equipment, being offered). Such type tests should have been conducted within last five years from the date of opening of this tender in a Government approved laboratory/CPRI in presence of any Government Organisation's representative(s).

[ix] The schedule of prices should be filled up fully to indicate the break-up of the prices including taxes and duties. Incomplete submission of this schedule will make the tender liable for rejection. Vide Clause-4(ii) of Part-II.

[x] The Tenderer should quote 'FIRM' price only and the price should be kept valid for a minimum period of 180 days from the date of opening of the tender.

(xi) The tenderer shall upload the scanned copy legibly written user's certificate to prove the satisfactory operation of the offered equipments/materials for a minimum period of 3 (three) years from the date of commissioning/use as per the tender specification. User's certificate shall include the detailed address of the user with Equipment/Material, Name and type as per this specification, number of years of satisfactory use/operation & date of issue of this user's certificate with official seal written in English only & clearly visible must be furnished. At least one of the user's certificates shall be from state or Central Govt. or their Undertakings.

(xii) Guaranteed Technical particulars & Abstract of terms and Conditions should be filled in completely.

[xiii] The bidder should not have any pending litigation or arbitration with OPTCL with regard to any project or related activity. The bidder should certify/declare the same in unequivocal terms by way of an **affidavit** duly sworn before a **Magistrate**. Bid furnished by the bidder shall **not be eligible** for consideration, if it is not accompanied by the affidavit. Further the bid/LOA/LOI shall be liable for **outright rejection/ cancellation** at any stage if any information contrary to the affidavit/declaration is **detected**.

35. **Documents to be treated as confidential.**

The supplier shall treat the details of the specification and other tender documents as private and confidential and these shall not be reproduced without written authorization from the Purchaser.

36. **Scheme/Projects**

The materials/equipment covered in this specification shall come under "O&M WORKS "

**SECTION - III.**  
**LIST OF ANNEXURES**  
**[ I TO XII ]**  
**[ PAGE 30 TO 48 ]**  
**SECTION - III**  
**[LIST OF ANNEXURES]**

The following schedules and proforma are annexed to this specification and contained in Section-III as referred to in the relevant clauses.

1	Declaration form	ANNEXURE-I
2	Abstract of terms and conditions to accompany Section-II of Part-I	ANNEXURE-II
3	Schedule of Quantity and Delivery	ANNEXURE-III
4	Abstract of price component [to accompany Part-II of this specification]	ANNEXURE-IV
5	Schedule of prices to accompany Part-II	ANNEXURE-V
6	Bank Guarantee form for earnest money deposit	ANNEXURE-VI
7	Composite Bank Guarantee form for security deposit, payment and performance	ANNEXURE-VII
8.	Chart showing particulars of E.M.D.	ANNEXURE – VIII
9.	Data on Experience.	ANNEXURE – IX
10.	Schedule of spare parts.	ANNEXURE-X
11.	Schedule of Installations.	ANNEXURE-XI
12.	Schedule of deviations(Technical).	ANNEXURE-XII(A)
13.	Schedule of deviations(Commercial).	ANNEXURE-XII(B)
14.	Litigation /Arbitration	ANNEXURE-XIII

**ANNEXURE - I**  
**DECLARATION FORM**

**To**

The Sr. General Manager (CPC)  
OPTCL Head Qrs.BBSR,751022

Sub:- Tender Specification No-\_\_\_\_\_

Sir,

1. Having examined the above specification together with terms & conditions referred to therein \* I/We the undersigned hereby offer to supply the materials/equipments covered therein complete in all respects as per the specification and General conditions, at the rates, entered in the attached contract schedule of prices in the Tender.
2. \* I/We hereby undertake to have the materials/equipments delivered within the time specified in the Tender.
3. \* I/We hereby guarantee the technical particulars given in the Tender supported with necessary reports from concerned authorities.
4. \* I/We certify to have submitted the bid electronically by remitting \*cash/money order/D.D./ remitting the cost of tender, herewith and this has been acknowledged by your letter/ money receipt No. \_\_\_\_\_ Dated, \_\_\_\_\_
5. In the event of Tender, being decided in \*my/our favour, \* I/We agree to furnish the Composite B.G. in the manner, acceptable to ORISSA POWER TRANSMISSION CORPORATION LTD., and for the sum as applicable to \*me/us as per clause-19 of section-II of this specification within 15 days of issue of letter of intent/purchase order failing which \*I/We clearly understand that the said letter of Intent/Purchase order will be liable to be withdrawn by the purchaser, and the EMD deposited by us shall be forfeited by OPTCL

Signed this \_\_\_\_\_ day of \_\_\_\_\_ 2014

Yours faithfully

Signature of the Tenderer with seal of the company

[This form should be dully filled up by the tenderer and uploaded at the time of submission of tender.]

\* (Strikeout whichever is not applicable)

**ANNEXURE-II**

(To be filled up by the tenderer as indicated in the excel sheet )

ABSTRACT OF GENERAL TERMS AND CONDITIONS OF CONTRACT [COMMERCIAL]  
TO ACCOMPANY PART-I

(To be filled up by the tenderer as indicated in the excel sheet)

**ANNEXURE-III**

**SCHEDULE OF QUANTITY AND DELIVERY**

**TO ACCOMPANY PART-I**

(To be filled up by the tenderer as indicated in the excel sheet)

ANNEXURE-IV

**TO ACCOMPANY PART-I**

(To be filled up by the tenderer as indicated in the excel sheet)

ANNEXURE-V.

**TO ACCOMPANY PART-II**

(To be filled up by the tenderer as indicated in the excel sheet)

1. The tenderer should fill up the schedule properly and in full in excel file in e-tender mode. The tender will be rejected, if the schedule of price is submitted in incomplete form. No post tender correspondence will be entertained on break-up of prices. Also, the supplier should agree for delivery at sub-station site.
2. In case, where F&I components are not specifically indicated in this schedule, 5% of the ex-works price shall be taken towards F&I components for the purpose of comparison of price.
3. The Tenderer shall certify in the price bid that MODVAT benefit, if any, has been fully passed on to the purchaser while quoting the tender price.
4. Conditional offers will not be acceptable.
5. The bidder is to clearly indicate the period up to which the tax holidays are available to them.
6. Price bid in any other format will not be acceptable and the offer will be rejected
7. Test charges (Routine/type) if any, mandatory spares, if any, maintenance equipment charges, if any, as per Technical Specification, supervisory charges, if any, ( in case of equipments by taking 30 Man days) shall be indicated separately, row-wise.
8. All the above charges will be taken into account, during bid price evaluation.

ANNEXURE-VI

PROFORMA FOR BANK GUARANTEE FORM FOR EARNEST MONEY DEPOSIT

- |  |     |      |                    |
|--|-----|------|--------------------|
|  | Ref | Date | Bank Guarantee No: |
|--|-----|------|--------------------|
- 1 In accordance with invitation to Bid No. \_\_\_\_\_ Dated \_\_\_\_\_ of ODISHA POWER TRANSMISSION CORPORATION LTD. [OPTCL][herein after referred to as the OPTCL for the purchase of \_\_\_\_\_ Messers \_\_\_\_\_ Address \_\_\_\_\_ wish/wished to participate in the said tender and as a Bank Guarantee for the sum of Rs. \_\_\_\_\_ [Rupees] Valid for a period of 240 days [Two hundred forty days] is required to be submitted by the Tenderer. We the \_\_\_\_\_ [Indicate the Name of the Bank] [Hereinafter referred to as 'the Bank'] at the request of M/S \_\_\_\_\_ [Herein after referred to as supplier (s)] do hereby unequivocally and unconditionally guarantee and undertake to pay during the above said period, on written request by the Sr. General Manager [Procurement] ODISHA POWER TRANSMISSION CORPORATION LTD. \_\_\_\_\_ [Indicate designation of the purchaser] an amount not exceeding Rs. \_\_\_\_\_ to the OPTCL, without any reservation. The guarantee would remain valid up to 4.00 PM of \_\_\_\_\_ [date] and if any further extension to this is required, the same will be extended on receiving instructions from the \_\_\_\_\_ on whose behalf this guarantee has been issued.
2. We the \_\_\_\_\_ do hereby, further undertake [Indicate the name of the bank] to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the OPTCL stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the OPTCL by reason of any breach by the said supplier [s] of any of the terms or conditions or failure to perform the said Bid . Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. \_\_\_\_\_
3. We undertake to pay the OPTCL any money so demanded notwithstanding any dispute or disputes so raised by the contractor [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto, our liability

under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the supplier(s) shall have no claim against us for making such payment.

4. We, the \_\_\_\_\_ further agree that the guarantee  
[Indicate the Name of the Bank]

herein contained shall remain in full force and effect during the aforesaid period of 240 days [two hundred forty days] and it shall continue to be so enforceable till all the dues of the OPTCL under or by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till Managing Director, ODISHA POWER TRANSMISSION CORPORATION LTD. certifies that the terms and conditions of the said Bid have been fully and properly carried out by the said Supplier [s] and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the \_\_\_\_\_

we shall be discharged from all liability under this guarantee thereafter.

5. We, the \_\_\_\_\_ further agree with the OPTCL that  
[Indicate the name of the Bank]

the OPTCL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Bid or to extend time of performance by the said Supplier [s] from time to time or to postpone for any time or from time to time any of the powers exercisable by the OPTCL against the said supplier [s] and to forbear or enforce any of the terms and conditions relating to the said bid

and we shall not be relieved from our liability by reason of any such variation, postponement or extension being granted to the said Supplier [s] or for any forbearance act or omission on the part of the OPTCL or any indulgence by the OPTCL to the said Supplier[s] or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name, style and constitution of the Bank or the supplier [s].

7. We, \_\_\_\_\_ lastly undertake not to revoke this  
[Indicate the name of the Bank]

Guarantee during its currency except with the previous consent of the OPTCL in writing.

8. We the \_\_\_\_\_ Bank further agree that this guarantee shall also be invocable at our place of business at ----- Branch of Bhubaneswar ( indicate the name of the branch)in the state of ODISHA.

Notwithstanding anything contained herein.

- 1) Our liability under this bank guarantee shall not exceed Rs.-----  
----- ( Rupees-----).
- 2) The bank guarantee shall be valid up to dt.-----
- 3) We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only & only if you serve upon us at -----branch at

Bhubaneswar ( indicate the name of the branch)a written claim or demand on or before dt.-----.

Dated \_\_\_\_\_ Day of \_\_\_\_\_

For \_\_\_\_\_  
[Indicate the name of Bank]

Witness ((Signature, names & address)

- 1.
- 2.

## **ANNEXURE-VII**

### **PROFORMA FOR COMPOSITE BANK GUARANTEE FOR SECURITY DEPOSIT PAYMENT AND PERFORMANCE**

This Guarantee Bond is executed this \_\_\_\_\_ day of \_\_\_\_\_ 20-- by us the \_\_\_\_\_ Bank at \_\_\_\_\_

P.O. \_\_\_\_\_ P.S. \_\_\_\_\_

District \_\_\_\_\_ State \_\_\_\_\_

1. WHEREAS the ODISHA POWER TRANSMISSION CORPORATION LTD., a body corporate constituted under the Electricity Act, 2003 [hereinafter called "the OPTCL" which shall include its successors and assigns has placed orders No. \_\_\_\_\_ Date \_\_\_\_\_ [hereinafter called "The Agreement"] on M/s. \_\_\_\_\_ [hereinafter called "The Supplier"] which shall include its successors & assigns for supply of materials.

AND WHERE AS the supplier has agreed to supply materials to the OPTCL in terms of the said agreement AND

WHEREAS the OPTCL has agreed [1] to exempt the supplier from making payment of Security [2] to release 100% payment of the cost of materials as per the said agreement and [3] to exempt from performance guarantee on furnishing by the Supplier to the OPTCL, a Composite bank Guarantee of the value of 10 % [ten percent] of the contract price of the said agreement.

NOW THEREFORE, in consideration of the OPTCL having agreed [1] to exempt the Supplier from making payment of Security [2] releasing 100% payment to the Supplier and [3] to exempt from furnishing performance guarantee in terms of the said agreement as aforesaid, we, the \_\_\_\_\_ [Bank][hereinafter referred to as 'the Bank'] do hereby undertake to pay to the OPTCL an amount not exceeding Rs. \_\_\_\_\_ [Rupees \_\_\_\_\_] against any loss or damage caused to or suffered by or would be caused to or suffered by the OPTCL by reason of any breach by the said Supplier [s] of any of the terms or conditions contained, in the said agreement.

2. We the ( \_\_\_\_\_ Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur,

merely on demand from the OPTCL stating that the amount claimed is due by way of loss or damage caused to or suffered by the OPTCL by reason of any breach by the said Supplier [s] of any of the terms or conditions, contained in the said agreement or by reason of the supplier's failure to perform the said agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.\_\_\_\_\_

[Rupees\_\_\_\_\_]

3. We the \_\_\_\_\_ Bank} also undertake to pay to the OPTCL any money so demanded notwithstanding any dispute or disputes raised by the supplier [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Supplier [s] shall have no claim against us for making such payment.

- 4 We, ( \_\_\_\_\_ Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to do so enforceable till all the dues of the OPTCL under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Managing Director, ODISHA POWER TRANSMISSION CORPORATION LTD. certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said Supplier [s] and accordingly discharges this Guarantee.

Unless a demand or claim under this guarantee is made on us in writing on or before the [Date\_\_\_\_\_], we shall be discharged from all liability under this guarantee thereafter.

5. We,( \_\_\_\_\_ Bank) further agree that the OPTCL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Supplier [s] and we shall not be relieved from our liability by reason of any such variations or extension being granted to the said supplier [s] or for any forbearance, act or omission on the part of the OPTCL or any indulgence by the OPTCL to the said Supplier [s] or by any such matter or thing whatsoever which under the law relating to sureties would but these provisions have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name , style and constitution of the Bank and supplier [s].

7. We,[ \_\_\_\_\_ Bank] lastly undertake not to revoke this guarantee during its currency except with the previous consent of the OPTCL in writing.

8. We the \_\_\_\_\_ Bank further agree that this guarantee shall also be invocable at our place of business at ----- Branch of Bhubaneswar (indicate the name of the branch)in the state of ODISHA.

Notwithstanding anything contained herein.

- 1) Our liability under this bank guarantee shall not exceed Rs.-----  
--( Rupees-----).
- 2) The bank guarantee shall be valid up to dt.-----
- 3) We are liable to pay the guaranteed amount or any part there of under this bank guarantee only & only if you serve upon us at -----branch at Bhubaneswar (Indicate the name of branch) a written claim or demand on or before dt.-----.

Dated \_\_\_\_\_ Day of \_\_\_\_\_

For \_\_\_\_\_  
[Indicate the name of Bank]

Witness ((Signature, names & address)

- 1.
- 2.

#### **ANNEXURE-VIII**

CHART SHOWING PARTICULARS OF EARNEST MONEY DEPOSIT FURNISHABLE BY TENDERERS

1.	Central and State Government Undertakings	Exempted
2.	All other inside & outside state units.	The amount of EMD as specified in the specification /Tender Notice in shape of bank guarantee /DD.

NB: - REFUND OF E.M.D.

- [a] In case of unsuccessful tenderers, the EMD will be refunded immediately after the tender is decided. In case of successful tenderer, this will be refunded only after furnishing of Composite Bank Guarantee referred to in clause No.19 of Section-II of this specification.

Suits, if any, arising out of EMD shall be filed in a court of law to which the jurisdiction of High Court of ODISHA extends.

- [b] Earnest Money will be forfeited if the tenderer fails to accept the letter of intent/purchase order, issued in his favour or revises the bid price[ s] within the validity period of Bid.

**ANNEXURE-IX**

DATA ON EXPERIENCE

- [a] Name of the manufacturer.
- [b] Standing of the firm as manufacturer of equipment quoted.
- [c] Description of equipment similar to that quoted [supplied and installed during the last two years with the name of the organizations to whom supply was made].
- [d] Details as to where installed etc.
- [e] Testing facilities at manufacturer's works.
- [f] If the manufacturer is having collaboration with another firm, details regarding the same and present status.
- [g] A list of purchase orders, executed during last three years.
- [h] A list of similar equipments of specified rating, voltage class, short circuit rating, Designed, manufactured, tested and commissioned which are in successful operation for at least two years from the date of commissioning with legible user's certificate. User's full complete postal address/fax/phone must be indicated. (Refer clause No.7 of the Part-I, Section-II of the specification).

Place:

Date:

Signature of tenderer  
Name, Designation, Seal

**ANNEXURE-X**

SCHEDULE OF SPARE PARTS FOR FIVE YEARS OF NORMAL OPERATION & MAINTENANCE

SL. No	Particulars	Quantity	Unit delivery rate	Total price

Place:

Date:

Signature of Tenderer  
Name, Designation, Seal

**ANNEXURE-XI**

**SCHEDULE OF INSTALLATIONS.**

Rated Amp/mH	Rated Voltage	Place of installation and complete postal address	Year of commissioning

Place: -

Date

Signature of Tenderer:  
Name, Designation, Seal

**ANNEXURE-XII**  
**DEVIATION SCHEDULE.**

**Tenderer shall enter below particulars of his alternative proposal for deviation from the specification, if any.**

**TO ACCOMPANY PART-I**

(To be filled up by the tenderer as indicated in the excel sheet)

**A) Technical deviations**  
**TO ACCOMPANY PART-I**

(To be filled up by the tenderer as indicated in the excel sheet)

**B) Commercial deviations.**  
**TO ACCOMPANY PART-I**

(To be filled up by the tenderer as indicated in the excel sheet)

**ANNEXURE - XIII**  
**LITIGATION HISTORY**

Name of the Bidder:

Bidder should provide information on any history of litigation or arbitration resulting from contracts executed in the last five years or currently under execution.

Year.	Award for or against bidder	Name of client, cause of litigation and matter in dispute	Disputed amount (current value in Rs.)

Place: -

Date

Signature of Tenderer:  
Name, Designation, Seal

**PART – II**  
**PRICE BID**

**1. PRICE:**

- (i) Bidders are required to quote their price(s) for goods offered indicating they are 'FIRM'
- (ii) The prices quoted shall be FOR Destination only at the consignee's site/store inclusive of packing, forwarding, Freight & Insurance. In addition, the break-up of FOR Destination price shall be given as per schedule of Prices in Annexure-V of Section – III. The Bidders has to certify in the price bid that MODVAT benefit if any, has been fully passed on to the Purchaser, while quoting the tender prices.

**2. INSURANCE:**

Insurance of materials/equipments, covered by the Specification should normally be done by the Suppliers with their own Insurance Company unless otherwise stated. The responsibility of delivery of the materials/equipments at destination stores/site in good condition rests with the Supplier. Any claim with the Insurance Company or Transport agency arising due to loss or damage in transit has to be settled by the Supplier. The Supplier shall undertake free replacement of equipments/materials damaged or lost which will be reported by the Consignee within 30 days of receipt of the equipments/materials at Destination without awaiting for the settlement of their claims with the carriers and underwriters.

**3. CERTIFICATE FOR EXEMPTION FROM EXCISE DUTY/SALES TAX:**

Offers with exemption from excise Duty/ Sales tax shall be accompanied with authenticated proof of such exemption. Authenticated proof for this clause shall mean Photostat copy of exemption certificates, attested by Gazetted Officers of State or Central Government.

**4. PROPER FILLING UP OF THE PRICE SCHEDULE:**

- (i) In case where Freight & Insurance charges are not furnished, 5% of the Ex-works price shall be considered as the freight & Insurance charges.
- (ii) The Bidders should fill up the price schedule (Annexure-V of Section-III) properly and in full. The tender may be rejected if the schedule of price is submitted in incomplete form as per clause-34 (ix) of Section-II of the Specification.

**5. NATURE OF PRICE INDICATED IN SPECIFICATION SHALL BE FINAL.**

The nature of price indicated in the Clause-13, Section – I of PART –I of the Specification shall be final and binding.

**ANNEXURE – III**  
**QUANTITY AND DELIVERY SCHEDULE**

**PHASE-I**

<b>LOT</b>	<b>Description</b>	<b>Quantity</b>	<b>Desired delivery</b>	<b>Destination</b>
I	Numerical Distance protection relay	Category(A) = 30 no.s Category(B) = 30 no.s	3 Months from the date of placement of purchase order.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
II	Numerical Differential relay	Category(A) = 15 no.s Category(B) = 15 no.s	3 Months from the date of placement of purchase order.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
III	Feeder Management Relay	60	3 Months from the date of placement of purchase order.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
IV	Numerical back up relay.	90	3 Months from the date of placement of purchase order	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
V	Auxiliary relay-	50	3Months from the date of placement of purchase order.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
	REF relay-	30	3Months from the date of placement of purchase order.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.

	Master trip relay-	75	3 Months from the date of placement of purchase order.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
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### QUANTITY AND DELIVERY SCHEDULE

#### PHASE-II

LOT	Description	Quantity	Desired delivery	Destination
I	Numerical Distance protection relay	Category(B) =30 no.s	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
II	Numerical Differential relay	Category(B) = 20 no.s	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
III	Feeder Management Relay	60	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
IV	Numerical back up relay.	90	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.

V	Auxiliary relay-	42	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
	REF relay	30	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.
	Master trip relay-	75	Within 3 Months from the last day of scheduled period of 1st phase delivery.	Any store or Grid Sub-station within the Odisha State which will be indicated in the purchase order / release order.

**N.B:- The destination Stores /Sub-stations will be intimated at the time of placement of the purchase order/issue of release order.**

**ANNEXURE – IV-B  
(For Testing of Relays)  
(To be filled in by the bidder)**

**CALIBRATION STATUS OF TESTING EQUIPMENTS AND INSTRUMENTS/ METERS**

Name of the Test	Meters & Equipment required for the corresponding test with range, accuracy, make & Sl. No.	Date of Calibration	Due date of Calibration	Name of the Calibrating Agency	Whether Calibrating Agency is Govt. approved	Whether documents relating to Govt. approval of the calibrating Agency furnished	Whether the meters/equipment fulfil the accuracy class as per calibration report.	Whether the calibrating agency has put any limitation towards the use of the particular meter/equipment. If yes state the limitations	Whether the calibrating agency has put any limitation towards the use of the particular meter/equipment. State the colour of the affixed sticker	Inspite of imposed limitations. Whether the particular meter / equipment can still be used ? Justify its use for corresponding test(s)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

**Signature of the tenderer with seal & date**

**ANNEXURE V – A**

**(To be filled in by the bidder)**

**CHECK LIST TOWARDS TYPE TEST REPORTS FOR RELAYS**

Name of the Type Test	Date of Test	Name of the Laboratory where the Test has been conducted	Whether the Laboratory is Government approved	Whether the Test report is valid as per Spn.	Whether the Test report in complete shape alongwith drawings etc. furnished or not ?	Whether the type tested relays fulfills the technical requirements as per TS	If the type tested relays does not fulfill the technical requirements as per this specification, whether the bidder agrees to conduct he particular type test again at their own cost without any financial liability to OPTCL in the presence of OPTCL's representative within the specified delivery period	Remarks
1	2	3	4	5	6	7	8	9

**Signature of the tenderer with seal & date**

## ANNEXURE – VI

**[To be filled in by the bidder]**

### CHECK-LIST FOR DELIVERY SCHEDULE

<b>Phase</b>	<b>LOT No.</b>	<b>Description of the Equipment</b>	<b>Quantity</b>	<b>Delivery Schedule</b>
PHASE-I & II	LOT-I			
	LOT-II			
	LOT-III			
	LOT-IV			
	LOT-V			

Signature of the Tenderer

with seal and date.

## SECTION-IV

### **TECHNICAL SPECIFICATION OF RELAYS**

#### **SPECIFICATION FOR PROTECTION IED.**

##### **A. General**

The Numerical Relays in general shall comply with the following requirements:

1. All relays shall conform to the requirements of IS: 3231/IEC-60255/IEC 61000 or other applicable standards. Relays shall be suitable for flush or semi-flush mounting on the front with connections from the rear.
2. **The offered relays shall be completely numerical.**
  - The communication protocol shall be as per IEC 61850 & IEC60870-5-103
  - The test levels of EMI as indicated in IEC 61850 shall be applicable to these relays.
  - Protection elements should be realised using software algorithm.
  - Hardware based measurement shall not be acceptable.
3. The relay shall be provided with both 1A and 5A CT inputs and shall be selectable at site.
4. It shall be possible to energise the relay from either AC or DC auxiliary supply.
5. The offered relay shall have a comprehensive local MMI for interface. It shall have the following minimum elements so that the features of the relay can be accessed and setting changes can be done locally.
  - At least 48 character alphanumeric backlit LCD display unit Fixed LEDs (for trip, Alarm, Relay available & Relay out of service) & programmable LEDs which can be assigned to Tactile keypad for browsing and setting the relay menuany protection function for local annunciation.
6. The minimum pickup voltage of relay for 220 V DC systems must be 176 V for binary input in order to prevent pick up during DC earth fault condition.
7. The relays supplied should be compatible to redundant communication architecture, shall be complied with the IEC 62439-3 standards of parallel redundancy protocol (PRP).
8. The relays provided should be complied with the international standards of NERC CIP for cyber security to provide protection against unauthorized disclosure, transfer, modification, or destruction of information and/or information systems, whether accidental or intentional.
9. All PCB used in relays should have harsh environmental coating as per standard IEC 60068 (HEC) to increase the particle repellency and thereby increasing the life of relay
10. The offered relays shall be completely numerical and **should comply to IEC 61850 protocol. The relay** must support following requirements for communication ports and protocols,
  - The relays shall generate GOOSE messages as per IEC 61850 standards for interlocking and also to ensure interoperability with third party relays.
  - The relay must have front RS232/USB/RJ45 port for local communication with the device
  - The communication protocol shall be as per IEC 61850
  - The relay should be compatible to redundant communication architecture and shall be complied with IEC 62439-3 standards of parallel redundancy protocol (PRP)

- The relays shall generate GOOSE messages as per IEC 61850 standards for interlocking and also to ensure interoperability with third party relays.
  - Necessary user friendly configuration tool shall be provided to configure the relays. It should be compatible with SCL/SCD files generated by a third party system.
  - GOOSE signals shall be freely configurable for any kind of signals using graphic tool/user friendly software.
  - The offered relay must support at least 4 no's of 61850 clients
  - The relay must support time synchronization through SNTP/IRIG B demodulated.
  - The relays provided should be complied with the international standards of NERC CIP for cyber security to provide protection against unauthorized disclosure, transfer, modification, or destruction of information and/or information systems, whether accidental or intentional.
  - The relay settings shall be provided with adequate password protection. The password of the relay should be of 4 character upper case text to provide security to setting parameter
- 11. The relays shall have the following tools for fault diagnostics**
- Fault record – The relay shall have the facility to store at least 5 last fault records with information on cause of trip, date, time, trip values of electrical parameters.
  - Event record – The relay shall have the facility to store at least 200 time stamped event records with 1ms resolution.
  - Disturbance records – The relay shall have capacity to store the waveforms for a minimum duration of at least 5 secs with settable pre and post fault duration times at a minimum sampling rate of 800 Hz or Higher.
  - Except for differential protection the disturbance recorder must have capability to capture at least 8 analogue channels (IA, IB, IC, IN, VA, VB, VC, and VN) and 15 digital channels (start of protection element, trip of protection element, binary input, trip output etc) selectable at site.
  - For differential protection relay, the disturbance recorder must have capability to capture at least 15 analogue channels and 30 digital channels.
  - Necessary software shall be provided for retrieving and analyzing the records.
12. The relay settings shall be provided with adequate password protection. The password of the relay should be of 4 character upper case text to provide security to setting parameter
13. The relay shall have comprehensive self-diagnostic feature. This feature shall continuously monitor the healthiness of all the hardware and software elements of the relay. Any failure detected shall be annunciated through a output watchdog contact. The fault diagnosis information shall be displayed on the LCD and also through the communication port.
14. The Numerical Relays shall be provided with 1 Set of common support software compatible with both Windows 7 and higher which will allow easy settings of relays in addition to uploading of event, fault, disturbance records, measurements.
- The relay settings shall also be changed from local or remote using the same software.
  - Additional functions can be added to relay by software upgradation and downloading this upgraded software to the relays by simple communication through PC.
15. All protective relays shall be in draw out or plug-in type/modular cases with proper testing facilities. Necessary test plugs/test handles shall be supplied loose and shall be included in contractor's scope of supply.
16. All AC operated relays shall be suitable for operation at 50 Hz. AC Voltage operated relays shall be suitable for 110 Volts VT secondary and current operated relays for 1 amp CT secondary. All DC operated relays and timers shall be designed for the DC voltage specified, and shall operate satisfactorily between 80% and 110% of rated voltage. Voltage operated relays shall have adequate thermal capacity for continuous operation.

17. The protective relays shall be suitable for efficient and reliable operation of the protection scheme described in the specification .Necessary auxiliary relays and timers required for interlocking schemes for multiplying of contacts suiting contact duties of protective relays and monitoring of control supplies and circuits, lockout relay monitoring circuits etc. also required for the complete protection schemes described in the specification shall be provided. All protective relays shall be provided with at least two pairs of potential free isolated output contacts. Auxiliary relays and timers shall have pairs of contacts as required to complete the scheme; contacts shall be silver faced with spring action. Relay case shall have adequate number of terminals for making potential free external connections to the relay coils and contacts, including spare contacts.
18. Timers shall be of solid state type. Time delay in terms of milliseconds obtained by the external capacitor resistor combination is not preferred and shall be avoided.
  - a. No control relay, which shall trip the power circuit breaker when the relay is de-energised, shall be employed in the circuits.
  - b. Provision shall be made for easy isolation of trip circuits of each relay for the purpose of testing and maintenance.
  - c. Auxiliary seal-in-units provided on the protective relays shall preferably be of shunt reinforcement type.
  - d. The setting ranges of the relays offered, if different from the ones specified shall also be acceptable if they meet the functional requirements.
19. Any alternative/additional protections or relays considered necessary for providing complete effective and reliable protection shall also be offered separately. The acceptance of this alternative/ additional equipment shall lie with the OPTCL
20. The relay must be able to continuously measure following parameters with a typical accuracy of  $\pm 1\%$ .
  - Current (0.05 to 3 In)  $\pm 1.5\%$  of reading,
  - Voltage (0.05 to 2 Vn)  $\pm 1.0\%$  of reading
  - Frequency (40 to 70 Hz)  $\pm 0.03$  Hz
  - Phase  $0^\circ$  to  $360^\circ$   $\pm 5.0\%$
  - Power (W)  $\pm 5.0\%$  of reading at unity power factor
  - Reactive power (VARs)  $\pm 5.0\%$  of reading at zero power factor
  - Apparent power (VA)  $\pm 5.0\%$  of reading

**(B) DISTANCE PROTECTION RELAY**

- a. The IEC 60255-121 standard “Functional requirements for distance protection” published in March 2014, specifies the minimum requirements for functional and performance evaluation of distance protection relays, describes the tests to be performed and how to publish the test results. The relay should conform to above standard.
- b. The protection should be fully numerical and be based on a non-switched scheme.
- c. Provide protection for the transmission line from all types of faults-phase to earth faults as well as multiphase faults. The protection algorithm shall have dual redundant distance protection algorithms to detect all types of power system faults so as to arrive at a secure trip decision with correct phase selection and proper direction discrimination in the shortest possible time.
- d. The protection should have non-switched measurement, which implies processing of six possible fault loops ( six -loop measurement )
- e. It should have polygonal characteristics with independently adjustable reactive and resistive reaches for maximum selectivity and maximum fault resistance coverage. The zones shall have independent settable earth fault compensation factors to cater to

adjacent lines with different zero sequence to positive sequence ratios

- f.** Selection shall be so that the first zone of the relay can be set to about 80% - 85% of the protected line without any risk of non-selective tripping.
- g.** The second and third zone elements shall provide back up protection in the event of the carrier protection or the first zone element failing to clear the fault, zone-2 shall cover full protected section plus 50 % of the next section, zone-3 shall normally cover the two adjacent sections completely.
- h.** It must have load encroachment features and must support blocking of the selected zones during heavy load condition.
- i.** It should have adequate number of forward zones (minimum three) and a reverse zone. The zone reach setting ranges shall be sufficient to cover line lengths appropriate to each zone. Carrier aided scheme options such as permissive under reach, over reach, & blocking and non-carrier aided schemes of zone 1 extension and Loss of load accelerated tripping schemes shall be available as standard. Weak in feed logic and current reversal guard also shall be provided.
- j.** In case the carrier channel fails, one out of the non-carrier based schemes cited above should come into operation automatically to ensure high speed and simultaneous opening of breakers at both ends of the line.
- k.** In addition to the conventional impedance measuring algorithm the distance protection relay should have a separate measuring technique in the same hardware completely different to the conventional impedance measuring principal. Both the algorithms should run in parallel and should take trip decisions independently.
- l.** Have a maximum operating time up to trip impulse to circuit breaker (complete protection time including applicable carrier and trip relay time) with CVT being used on the line :
  - For SIR 0.01-4 : as 40ms at the nearest end and 60ms at the other end of line
  - For SIR 4-15 : as 45ms at the nearest end and 65ms at the other end of line
  - With carrier transmission time taken as 20ms.
- m.** Have a secure directional response under all conditions, achieved by memory voltage polarizing and/or healthy phase voltage polarizing as appropriate.
- n.** Shall have an independent Directional Earth Fault ( DEF ) protection element to detect highly resistive faults. This element shall have an inverse time/definite time characteristic with a possibility to configure the DEF as a channel-aided DEF or a channel-independent DEF
- o.** Have logic to detect loss of single/two phase voltage input as well as three phase voltage loss during energisation and normal load conditions. The voltage circuit monitoring logic should in addition to blocking the distance protection element, enable an emergency overcurrent element to provide a standby protection to the feeder till the re-appearance of voltage signal.
  - The VT fuse failure function shall function properly irrespective of the loading on the line. In other words the function shall not be inhibited during operation of line under very low load conditions.
- p.** Have necessary logic to take care of switch-on-to-fault condition. Energisation of transformers at remote line ends and the accompanying inrush current shall not cause any instability to the operation of relay.
- q.** The line protection IED should have power swing blocking feature, with facilities for :
  - i. fast detection of power swing
  - ii. selective blocking of zones
  - iii. settable unblocking criteria for earth faults, phase faults and three phase faults.
- r.** Also the Distance protection IED should have following features in built in it.
  - suitable for single pole or three pole tripping.
  - Shall have inbuilt CT supervision facility. A time-delayed alarm shall be issued if a CT

open circuit is detected.

- Shall have inbuilt Trip circuit supervision facility to monitor both pre- and post close supervision facilities. An alarm shall be generated.  
Shall have inbuilt Circuit Breaker Failure protection based on undercurrent detection and/or circuit breaker auxiliary contact status and/or distance protection reset status. Provision shall be given to initiate the breaker fail logic using a digital input from external protection devices.
- Shall have inbuilt in broken conductor detection by measuring the ratio of  $I_2$  &  $I_1$  .  
The sensitivity of the logic shall not be affected during operation under low load.  
Shall have a fault locator with an accuracy of  $\pm 3\%$ . The display shall be in kilometers, miles or percentage impedance . The fault locator should have built in mutual compensation for parallel circuit.
- s. Be capable of performing basic instrumentation functions and display various instantaneous parameters like Voltage, current, active power, reactive power etc. in primary values. Additionally all sequence current and voltage values shall be displayed on-line. Also the direction of power flow shall be displayed.
- t. The relay shall have a built-in auto-reclose function with facilities for single pole / three pole / single and three pole tripping. It shall be possible to trigger the A/R function from an external protection. A voltage check function which can be programmed for dead line charging/dead bus charging / check synchronising shall be included.
- u. Records containing discrete data on the last five faults shall be made available. In particular the fault resistance value shall be available for each record.
- v. Facility for developing customized logic schemes inside the relay based on Boolean logic gates and timers should be available. Facility for renaming the menu texts as required by operating staff at site should be provided.
- w. **The protection relay should have the following additional elements**
  - i. Under / Over voltage protection. The relay shall have two stages of voltage protections where each stage can be set as under/over voltage. The drop off/Pickup ratio can be set up to 99.5%.
  - ii. The relay shall have built in Circuit Breaker Supervision Functions for Condition based Circuit Breaker Maintenance
  - iii. The relay shall be able to detect any discrepancy found between NO & NC contacts of breaker
  - iv. The relay shall monitor number of breaker trip operations
    - v. The relay shall record the sum of the broken current quantity
    - vi. The relay shall also monitor the breaker operating time
  - vii. In all the above cases the relay shall generate an alarm if the value crosses the threshold value.

### **(C) NUMERICAL TRANSFORMER DIFFERENTIAL RELAY**

- a. **General requirements for transformer protection scheme : The differential protection IED**
  - The offered relay must be suitable providing complete protection for 2 winding transformer, 3 winding transformer and auto transformer
  - **Category-A:** For 3 winding differential Protection, it must have 12 CT input, 3 for phase CT HV side, 3 for phase CT LV side, 3 for Phase CT TV side, 1 for neutral CT HV, 1 for neutral CT LV, 1 for neutral CT TV.

- **Category-B:** For 2 winding differential protection, it must have 8 CT input, 3 for phase CT HV side, 3 for phase CT LV side, 1 Neutral CT HV side, 1 Neutral CT LV side.
- 
- The relay must be suitable for providing low impedance REF protection for auto transformer.
- For 2 Winding transformer, 1 VT input and for 3 winding transformer 4 VT input are required.
- The protection function requirement for Transformer protection relays are as mentioned below,
  - Differential protection (Low Impedance type with 3 slope characteristic)
  - 2 elements of REF Protection for 2 winding transformer and must be selectable between Low Impedance and High impedance REF as per the site requirement's
  - 3 elements of REF protection for 3 winding transformer and must be selectable between Low and High impedance REF
  - REF protection for autotransformers.
  - Backup Over current and Earth fault for each winding
  - Thermal overload protection
  - Over excitation protection
  - Over and Under frequency protection
  - CB Fail protection for each Winding (CT) input
  - Shall be stable during magnetizing inrush and over fluxing conditions. Stabilization under inrush conditions shall be based on the presence of second harmonic components in the differential currents. The second harmonic blocking threshold shall be programmable one.
  - Shall have facility to deactivate harmonic restraint and over fluxing restraint functions.
  - Shall have saturation discriminator as an additional safeguard for stability under through fault conditions.
  - The relay should be capable of detecting the CT saturation. Relay should use appropriate algorithm to detect light saturation condition.
  - It shall be possible in the relay to individually set MVA rating of transformer per winding.
  - Relay should have vector group and magnitude correction. Relay should have facility for filtering zero seq. current for stability of X-mer differential protection (87T) during through fault.
  - Thermal overload protection as per IEC 60255.
  - The relay shall have through fault monitoring element to monitor the HV, the LV or the TV winding to give the fault current level, the duration of the faulty condition, the date & time for each through fault.
- The relay shall have REF protection, be selectable separately for each winding and programmable as either high or low impedance. The REF function should be able to share CT's with the biased differential function. The REF protection provided should be suitable for auto transformer also.
- Shall have all output relays suitable for both signals and trip duties.
- Shall be stable during magnetizing inrush and over fluxing conditions. Stabilization under inrush conditions shall be based on the presence of second harmonic components in the differential currents. The second harmonic blocking threshold shall be programmable one.
- Shall have facility to deactivate harmonic restraint and over fluxing restraint functions.

- Shall have saturation discriminator as an additional safeguard for stability under through fault conditions.
- Shall have software for interposing current transformers for angle and ratio correction to take care of the angle & ratio correction.
- Shall have all output relays suitable for both signals and trip duties.
- Shall have transient bias to enhance the stability of differential element during external fault condition.
- The relay should have combined harmonic blocking and restraint features to provide maximum security during transformer magnetizing inrush conditions

**b. Functional Description.**

**i. Differential Protection**

- The relay shall be biased differential protection with triple slope tripping characteristics with faulty phase identification / indication . The range for the differential pick-up shall be from 0.1 to 2.5 pu. Its operating time shall not exceed 30 ms at 5 times rated current.
- The relay shall have adjustable bias slopes  $m_1$  from 0 % to 150 % and slope  $m_2$  from 15% to 150 % so as to provide maximum sensitivity for internal faults with high stability for through faults.
- The relay shall have an unrestrained highset element to back up the biased differential function and the setting range for it shall have a minimum setting of 5pu and a maximum setting of 30pu.
- The relay shall have the stability under inrush conditions . The ratio of the second harmonic component to the fundamental wave for the differential currents of the measuring system shall serve as the criterion.
- The device shall have reliable detection technique, preferably no gap detection technique to ensure stability during inrush. Any type of time delay is not acceptable to differentiate inrush and fault condition.
- The relay shall provide restraint for over fluxing condition for the transformer by measuring the ratio of the fifth harmonic to the fundamental for the differential current if subjected to transient over fluxing. The fifth harmonic blocking feature should have variable percentage setting.

**ii. Restricted Earthfault Protection ( 64 R )**

This function should be provided to maximise the sensitivity of the protection of earthfaults. The REF function should be selected separately for each winding and programmable as either high or low impedance. The REF function should be able to share CT's with the biased differential function. As in traditional REF protections, the function should respond only to the fundamental frequency component of the currents. The REF protection provided should be suitable for auto transformer also.

**iii. Overfluxing Protection ( 99 GT )**

The relay shall Over fluxing protection Volts/Hertz protection to the transformers protected. By pairs of  $v/f$  and  $t$  , it shall be possible to plot the overfluxing characteristics in the relay so that accurate adaptation of the power transformer Over fluxing characteristics is ensured.

In addition the relay should have a definite time element for alarm. The reset ratio for Overfluxing Protection shall be 98%.

**iv. Overload Protection.**

Shall have thermal overload protection for alarm and trip condition with continuously adjustable setting range of 10-400% of rated current

**v. Overcurrent Protection ( 50,51 )**

The relay shall have three stages of definite time overcurrent protection as backup

operating with separate measuring systems for the evaluation of the three phase currents ,the negative sequence current and the residual current.

In addition the relay shall have three stages of Inverse time overcurrent protection operating on the basis of one measuring system each for the three phase currents ,the negative sequence current and the residual current.

**vi. Over / Under frequency**

The relay shall have four stages of frequency protections where each stage can be set as under/over frequency, under/over frequency with  $df/dt$

**vii. Over / Under Voltage**

The relay shall have two stages of voltage protections where each stage can be set as under/over voltage. The adjustable drop off/Pickup ratio better than 97% should be available.

**viii. Local Breaker Back up protection:**

The relay shall in built LBB protection to detect the failure in the local breaker using the undercurrent criteria and trip the upstream breaker.

**(D) FEEDER MANAGEMENT RELAY**

**Protection and Control function requirements for feeder Management Relay.**

- The Relay provides the following current based protection functions:
- Phase/Neutral/Ground instantaneous overcurrent
  - Phase/neutral/ground time overcurrent
  - Negative sequence Timed overcurrent
  - Phase/neutral directional overcurrent
  - Restricted Ground Fault (87REF)
  - Breaker Failure (50BF)
  - Thermal Model (49)
  - Cold Load Pickup (CLP)
- The Relay provides the following voltage based functions:
  - Phase Over and Under Voltage
  - Neutral Over Voltage
  - Directional Power
  - Forward Power
- The Relay provides the following control functions:
  - 4 Shot Auto Reclose (79)
  - VT Fuse failure (VTFF)
  - Over/Under Frequency (81O/81U)
  - Rate of change of Frequency (81df/dt )
  - Synchrocheck (25)
  - Breaker Failure (50BF)
- At least 5 user configurable commands for local and remote (Remote through SCADA on MMS)
- Configurable one line diagram for the substation bay
- The relay should have 2 switchable setting groups for dynamic reconfiguration of the protection elements due to changed conditions
- Programmable LOGIC
- Relay supports user defined logic to build control schemes supporting logic gates, timers, nonvolatile latches.
- The Relay configuration tool has an embedded graphical user interface to build programmable logic.

### **FRONT-PANEL VISUALIZATION**

- The front panel includes user-programmable LEDs and pushbuttons and navigation keys.
- For bay information that includes user programmable screens for:
  - One line diagram displaying
  - Switchgear operation
  - Access to metering information
  - Alarm panel display.
  - I/O status display.
  - Relay settings

### **(E) BACKUP RELAYS (Current Protection).**

The combined overcurrent and earth-fault relay is connected to the current transformers of the object to be protected. The overcurrent unit and the earth-fault unit continuously measure the phase currents and the neutral current of the object. On detection of a fault, the relay will start, trip the circuit breaker, provide alarms, record fault data, etc., in accordance with the application and the configured relay functions.

### **FUNCTIONAL DESCRIPTION;**

#### **Three-Phase Overcurrent (50/51) & Earth Overcurrent (50N/51N)**

Three independent stages are available either for phase and earth fault protection. For the first and second stage the user may independently select definite time delay (DTC) or inverse time delay (IDMT) with different type of curves (IEC, IEEE/ANSI, IS 3231:1987).

#### **Three-Phase & Earth-Fault Directional Overcurrent (67/67N)**

Each of the three-phase overcurrent stages & earth fault stages can be independently configured as directional protection and with specific characteristic angle (RCA) and boundaries as per IEC, IEEE/ANSI, IS . The phase fault directional elements should be internally polarised by quadrature phase to phase voltages. A synchronous polarising function or any other suitable algorithm may be provided to ensure a correct operation of the overcurrent elements for close-up three phase faults where the collapse of the polarising line voltages occurs.

#### **Under / Over Voltage (27/59)**

Independent under-voltage stage and two or more over-voltage stages may be provided. They should be definite time elements. Each stage can be configured to operate from either phase-neutral or phase-phase voltages. The drop off to pick up ratio should be 99.5%.

#### **Under / Over Frequency (81U/O)**

Time delayed under and over frequency protection on the fundamental form of frequency protection is to be provided When the frequency measured is crossed 6 pre-defined thresholds, the relays should generate a start signal and after a user settable time delay, a trip signal.

#### **Circuit Breaker Failure Protection (50BF)**

The circuit breaker failure verifies the effective opening of the CB by a dedicated undercurrent threshold. The circuit breaker failure function can be activated by trip of a

generic protection or/and external command by the relevant digital input. The circuit breaker failure protection can be used for tripping upstream circuit breakers too.

**F. For numerical relays, the scope shall include the following:**

1. Necessary software and hardware to up/down load the data to/from the relay from/to the personal computer installed in the substation. However, the supply of PC is not covered under this clause.
2. The relay shall have suitable communication facility for connectivity to SCADA.
3. IED should be IEC 61850 compliant.
4. IED should support PRP (Parallel Redundancy Protocol)
5. In case of line protection and transformer/reactor protection, the features like fault recorder and event logging function as available including available as optional feature in these relays shall be supplied and activated at no extra cost to the owner. Also necessary software/ hardware for automatic uploading to station HMI/DR work station (as applicable) shall be supplied.

**E. Technical Particulars of IED**

1. Standards and regulations:

IEEE/IEC/ANSI/CE/IS	IS: 3231/IEC-60255/IEC 61000
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**2. Analogue Inputs and Outputs**

Nominal Frequency fN	50 Hz
Nominal Current	1A/5A
Power Consumption	0.05VAat IN=1A, 0.3VAat IN=5A
Current Overload Capability per Current Input thermal (rms)	100* IN for 1Sec. 30*IN for 10Sec 4*IN continuous
Dynamic (pulse Current)	1250A (half cycle)
Nominal Voltage Ph-Ph rms (VN)	110V
Operating range Ph-Ph rms	0-200V
Continuous	2*VN
10 seconds	2.6*VN

**3. Auxiliary voltage**

Nominal Range	Operative Range
220V dc	180-300Vdc
Power Consumption dc	< 50W
Ripple superimposed AC Voltage	≤ 15% auxiliary nominal voltage.
230VAC	90-270VAC
Power Input AC	< 30VA

**4. Input / output modules**

<b>Binary inputs</b>	
a) number of input	a) Minimum 6 Nos for Backup relays. b) Minimum 16 Nos for feeder management relays c) Minimum 16 Nos for Transformer Differential Relays. d) Minimum 24/16Nos for Distance Protection Relays( <b>Category-A/B</b> )

b) voltage range	240V ±20%
c) power consumption	< 0.4W
<b>Output contacts</b>	
a) number of output contact	a) Minimum 8 Nos for Backup relays. b) Minimum 12 Nos for feeder management relays c) Minimum 8 Nos for Transformer Differential Relays. d) Minimum 32/24 Nos for Distance Protection Relays( <b>Category-A/B</b> )
b) Nominal Voltage	240V DC ±20
c) permissible current	Make & carry 30A for 0.2sec. ANSI C37.90 Continuous; 6A IEEE C37.90

### 5. LED

LED displays:	
Status LED	2.0 Relay Healthy
	3.0 Relay Start
	4.0 Relay Trip
Alarm Indication	Configurable LED for indication. Minimum 8Nos for Backup relays. Minimum 8 Nos for feeder management relays Minimum 8 Nos for Transformer Differential Relays. Minimum 14Nos for Distance Protection Relays.

### 6. Protection Function

<b>DISTANCE PROTECTION RELAY :</b>	
21P	Distance protection 21
21G	Distance protection zones (PDIS)
25	Synchocheck
27/59	Under/Over Voltage (2 stage over voltages)
46	Negative Phase Sequence
46BC	Broken Conductor
50/51,50N/51N	Instantaneous/Time overcurrent.
50BF	Breaker failure
67/67N	Direction Over current
79	Auto Reclose
81	Frequency Function.
FL	Fault Locator
DR	Disturbance Recorder
EL	Event Log.
MES.	Measurement.
CTS	CT Supervision
VTS	VT Supervision
TCS	Trip Ckt Super vision
<b>TRANSFORMER DIFFERENTIAL RELAY</b>	
24	Over-excitation.
27/59	Under/Over Voltage
49	Thermal Overload
46	Negative Phase Sequence
50/51,50N/51N	Instantaneous/Time overcurrent.

50BF 87G 67/67N 87 81 FL DR EL MES. CTS VTS TCS	Breaker failure Restricted Earthfault. Direction Over current Differential Protection. Frequency Function. Fault Locator Disturbance Recorder Event Log. Measurement. CT Supervision VT Supervision Trip Ckt Super vision
<b>BACK UP RELAYS(CURRENT PROTECTION)</b>	
50 51/67 50N 51N/67N 50BF 81	Instantaneous phase overcurrent protection Four step phase overcurrent protection Instantaneous residual overcurrent protection Four step residual overcurrent protection Breaker failure protection (RBR Under frequency
<b>FEEDER MANGEMENT RELAY</b>	
50 51/67 50N 51N/67N 27 /59 50BF 81U 81R 25 32 79 Control	Instantaneous phase overcurrent protection Four step phase overcurrent protection Instantaneous residual overcurrent protection Four step residual overcurrent protection Under Over Voltage Breaker failure protection Under frequency df/dt Check synchronise Power Protection Multi shot Auto Recloser Switchgear Control Capability.

## 7. Secondary Supervision & Communication

<b>Secondary system supervision</b>	
	Current circuit supervision Fuse failure supervision
<b>Monitoring</b>	
	Measurements Event counter Disturbance report Fault locator
<b>Communication</b>	
	IEC61850-8-1 Communication IEC60870-5-103 communication protocol Single command, 16 signals Multiple command and transmit. PRP compliant.
a)Synchronization facility with GPS Cloak b)Front port	IRIG-B RS 232/Ethernet/USB FO and RJ45 port for IEC 61850-8-1

communication c)Rear port d)Optional port	RS232/485
Process Bus Interface IEC 61850-9-2LE	
	If asked.

### 8. Mechanical design

a) type of mounting	Rack or panel mounting
b) degree of protection	IP52 & above
iii. permissible mechanical stress during operation b. permissible mechanical stress during transport Impedance starter	<ul style="list-style-type: none"> <li>•Vibration IEC 60255-21-1:1996 Response Class 2 Endurance Class 2</li> <li>•Shock and bump IEC 60255-21-2:1995 Shock response Class 2 Shock withstand Class 1</li> <li>•Seismic IEC 60255-21-3:1995 Class 2</li> </ul>

### 9. Insulation test:

	As per IEC 60255-5:1977
1. high voltage test on all circuits except auxiliary voltage	2KV for 1 min
2. high voltage test on voltage circuit only	2KV for 1 min
3. impulse voltage test on all circuits	5KV peak,1.2/50 micro s ,0.5

### 10. Noise immunity test

a)	
b) high frequency	IEC 60255-22-1:1988 Class III At 1MHz,for 2s with 200 Source Impedance: 2.5kV peak between independent circuits and independent circuits and case earth. 1.0kV peak across terminals of the same circuit.
c) electrostatic discharge	Electrostatic discharge IEC 60255-22-2:1996 Class 4 15kV discharge in air to user interface, display and exposed metal work. IEC 60255-22-2:1996 Class 3 8kV discharge in air to all communication ports.6kV point contact discharge to any part of the front of the product.
d) radio frequency electromagnetic field, non modulated	C37.90.2:1995 25MHz to 1000MHz,zero and 100%square wave modulated.

e) radio frequency electromagnetic field, amplitude modulated	Field strength of 35V/m.
f) power frequency magnetic field	
g) radio frequency electromagnetic field, pulse modulated	
h) fast transient	IEC 60255-22-4 :1992 Class IV 4kV,2.5kHz applied directly to auxiliary supply 4kV,2.5kHz applied to all inputs.
i) conducted disturbance induced by radio frequency field, amplitude modulated	IEC 61000-4-6:1996 Level 3 10V,150kHz to 80MHz at 1kHz 80%am
Interference emission test a. radio interference voltage b. radio interference field strength	89/336/EEC EN50081-2:1994 EN50082-2:1995

#### 11. Climate stress test

i) permissible ambient temperature during operation	-25 °C to +55 °C
ii) permissible ambient temperature during storage	-25 °C to +55 °C
iii) permissible ambient temperature during transport	-25 °C to +70 °C
iv) permissible humidity	56 days at 93%RH and +40 °C

## **ELECTROMECHANICAL AUXILIARY RELAYS:-**

Relays shall be suitable for semi flush mounting on the panel board. All the relays shall be back connected, protected with dust tight cases for tropical use and finished with dull black enamel paint. The adjusting devices, shall be accessible with the relay mounted on the panel board. Flag type operating indicators and flag indicator reset devices shall be provided. The latter shall be suitable for operation from the front of the relay case, without opening the cover. The relays shall comply in all respects with the requirements of IS: 3231 (latest edition) or equivalent standards and shall be suitable for operation under the climatic condition specified. The relays shall be suitable for operation within a temperature range of 0 deg. to 50 deg. C. The current coils shall be rated for a continuous current of 1 ampere and the voltage coils for 110 V normal. The contacts of the relays shall be silvered and precautions shall be taken to prevent or minimize damage due to arc which have to be successfully broken against 240 V D.C. When open, the contacts shall withstand a voltage of 115% of the normal circuit voltage. The relays shall preferably be provided with suitable seal-in-devices.

### **OTHER PARTICULARS OF AUXILIARY RELAYS:-**

1. The auxiliary relays shall be, designed for continuous operation at 250 V. D.C. and shall withstand 110% rated voltage continuously. This shall also be suitable for satisfactory operation at 85% rated Voltage.

2. All protective relays, auxiliary relays and timers except the lock out relays and interlocking relays specified shall be provided with self reset type contacts. All protective relays and timers shall be provided with externally hand reset positive action operation indicators with inscription subject to Purchaser's approval. All protective relays which do not have built-in hand-reset operation indicators shall have additional auxiliary relays with operating indicators (Flag relays) for this purpose. Similar separate operating indicator (auxiliary relays) shall also be provided in the trip circuits of protections located outside the board such as buchholtz relays, oil and winding temperature protection, sudden pressure devices, fire protection etc.

3. Self reset auxiliary voltage relays rated for specified D.C voltage shall be provided for use in the interlocking schemes for multiplication of contacts suiting contact duties of protective relays and for monitoring of control supplies and circuits. Monitoring relays for lockout relay circuits shall be connected in series with lockout relays coils. The Bidder shall be responsible to ensure that the monitoring relay ratings are such that they shall positively pick-up through the breaker coils / lockout relays coils monitored, but the breakers / lockout relays shall not operate with such a connection.

4. The supply and circuit monitoring relay shall be connected to initiate an alarm upto failure of respective supply / circuit . They shall preferably have reverse flags, which drop when relay is de-energised. Otherwise, an indicating lamp shall be provided with each monitoring relay for indication of its operation.

5. Close positions relays of main supply circuit beakers initiating automatic closure of stand by supply breakers shall have adequate time delay on drop out so that complete closure of stand by supply breaker is ensured . This feature will be used for obtaining limitation of duration of impulse for automatic closure of stand by supply breakers. In case the close position relays with such time delay are not available, additional slugged D.C auxiliary with adequate time delay on drop out may be supplied for automatic reverse closure . The exact arrangement will depend on the actual control schemes and shall be subject to the approval of purchaser.

6. The lockout trip relays shall be multi contact, hand reset type . The latching mechanism shall be positive and insensitive to vibration and shock. The reset devices on the front of the relay panel shall not permit manual tripping . Each lock-out relay shall be furnished with a panel mounted isolating arrangement to permit opening of trip circuits for testing .

**1. AUX. Relay Type- (ALARM ANNUNCIATION), 250 V DC**

Case Size-**3 element**

20 Terminal

Flag -Required

Mounting -Flush

**Aux. Contacts-2 N/O,SR+1 NO and 1 NC H/R for each element**

THREE POLE VOLTAGE OPERATED AUXILIARY RELAY.

Technical specification

Relay type

Aux.current or voltage	220 - 230V dc
Contacts - unit L.H	3 N/O 1 N/C H/R
Contacts - unit CTR	3 N/O 1 N/C H/R

Contacts - unit R.H            3 N/O 1 N/C H/R  
Flag                                Yes  
Mounting                        Flush

**COIL RATING**

D.C.75%-120% of rated voltage

AC.80%-115% of rated voltage

Operating voltage- not greater than 70% of voltage rating.

Operating time-15-20ms typical minimum at nominal voltage.

**Burden-**

2watts for 30,125v

6watts for 50,250v.

**Operation indicator**

Hand reset operation indicator provided

**2. RESTRICTED EARTH FAULT RELAY (ATTRACTED TYPE ELECTRO- MECHANICAL):**

**TYPE: Electro-mechanical**

The REF relay (attracted armature type) to be used along with a stabilising resistor & Metrosil, which is designed for applications where sensitive settings with stability on heavy through faults are required. It is recommended for balanced and restricted earth fault, bus-zone and certain forms of differential protection for auto-transformers, Power Transformers etc. The relay shall operate as a high impedance unit protection scheme & to be connected in the system accordingly. The relay shall be attracted armature unit of simple and robust construction.

The operating coil shall be provided with the accessories like series resonant circuit. Current tapping should be provided for different current setting by making suitable arrangement. The construction of the relay should be simple & electromechanical construction, detection element, and the output contacts should be in the same device, which will make the Operation fast and highly reliable.

The relay circuit, connected & tuned to the supply frequency must rejects the harmonics produced by current transformer saturation & due to system disturbances. The current transformers may develop voltages during maximum internal faults and the relay may be damaged. Therefore total impedance of the relay to be decided by using external series stabilising resistor (non-linear resistor) to prevent over voltage developed. The relay shall be single pole operated.

**Features:**

- High stability on external faults
- Tuned to rated frequency
- 25ms operating time at 5 times current setting
- Simple and robust construction.
- High stability on external faults.
- Sensitive high speed protection on internal faults.
- Tuned to rated frequency.

**Application**

- Differential/REF protection of Power Transformers, auto-transformers and busbars.
- Balanced and restricted earth fault protection of transformer windings.
- Transverse differential protection of generators and parallel feeders.

**General description**

In circulating current protection schemes, the sudden and often asymmetrical growth of the system current during external fault conditions can cause the protective current transformers to go into saturation, resulting in a high unbalance current. To ensure stability under these conditions the relay should be designed to take care, may be by using a voltage operated, high impedance relay, set to operate at a voltage slightly higher than that developed by the current transformers under maximum external fault conditions.

The stabilising resistor to be designed for such applications where sensitive settings with stability on heavy through faults are required.

A slight time delay on operation of relay helps to provide stability on heavy external faults and is to be taken care. This limits the current supplied, and the output unit operates only on the slower part of its time/current curve. The external stabilising resistor to be supplied separately with the relay allows continuous adjustment of the relay voltage setting over a wide range. y spaced current settings. The relay circuit, tuned to the supply frequency, rejects the harmonics produced by CT saturation. A slight time delay on operation helps to provide stability on heavy external faults and is obtain

#### **TECHNICAL DATA**

**Current rating :** 1A

**Frequency :** 50 Hz

**Settings :** 10 - 40% in seven equal steps as standard. Continuously variable external stabilising resistors of 200 ohms or any suitable value for 1A.

**Operating time :**

25 milliseconds at 5 times the current setting (see time/current characteristic in Figure 1).

**Burdens :**

0.9VA at current setting on lowest tap. 1.0VA at current setting on high set tap.

**Accuracy :**

Error class Index E 5.0 as per BS 142-1966 and 5.0 as per IS 3231-1965.

**Operation indicator :**

Hand reset operation indicator provided.

**Contacts :**

Two pairs of make self-resetting contacts are provided on single element relays.

**Short time :**

20 times the setting current for 3 seconds.

**Thermal rating continuous :**

(for 60 degree C rise in coil temperature): Times current setting To be furnished for different taps.

**Case and finish :**

Single pole relays fitted in size 3 MIDOS cases. The relay comply fully with the requirements of IS 3231-1965 and are suitable for use in normal tropical environments

**Provision of Thermistor/ Metrosil :**

To protect from high voltage- Suitable rating thermistor shall be provided.

**Insulation :**

The relay meets the requirements of IS 3231-1965/IEC 255-5 Series C-2 KV for 1 minute

### **3. HIGH SPEED TRIP RELAY**

#### **A. General**

The relay should be multi-contact attracted armature relays conforming to IEC 60255-1 and ESI 48 – 4 EB 2.

1. The relay should be of high speed, high burden, positive action, instantaneous cutoff type.
2. It should be of high burden to give immunity to capacitance discharge current.
3. It should be of robust design for reliable service.

4. Should be draw out type.
5. The number of contacts:
  - i. 10 contacts (8NO+ 2NC)
  - ii. 20 contacts (16NO+ 4NC)
6. It should have hand and electrical contact reset and hand flag reset.
7. The trip relay should be suitable for use in Substation Automation System.

**A. Technical Data**

Rated voltage VN	220 V DC
Operating range	50% to 120% of rated voltage
Operating time	10 ms at rated voltage
Reset time	< 20 ms at rated voltage VN
Contacts	Hand reset and Electrical reset
Flag	Hand reset
No of contacts	10 (8 NO + 2 NC)
Nominal Burden	Operating Coil: < 170 Watts
	Reset Coil: < 70 watts for 20 contacts < 130 watts
Contact Rating	Make and carry continuously 1250 VA AC or 1250 W DC within limits of 660 V and 5 A
	Make and carry for 3 s 7500 VA AC or 7500 W DC within limits of 250 V and 30 A
	Break 1250 VA AC or 100 W (resistive) DC or 50 W (inductive) DC within limits of 250 V and 5 A
Case type & Size.	Panel Cut out Max for i. 10 contacts : (50 X 170mm) ii. 20 contacts : (100 X 170mm) depth should be less than 250mm.

**B. Tests.**

**i. Temperature :IEC 60068-2-1/ IEC 60068-2-2**

Operating	-10°C to +55°C
Storage	-25°C to +70°C

**ii. Humidity : IEC 60068-2-30/IEC 60068-2-78**

Damp heat test, Cyclic	6 days at 250C to 400C and 93% relative humidity
Maximum Altitude of Operation	Up to 2000 m

**iii. Mechanical Test**

Test	Reference	Requirement
Vibration	IEC60255-21-1	Response Class I
Shock and Bump	IEC60255-21-2	Shock response and withstand Class I, Bump Class I
Seismic test	IEC60255-21-3	Class I
Degree of protection	IEC60529	IP50 – Front IP20 – Rear IP40 – Side

Electrical Endurance	IEC 60255-1	10,000 operations at the rate of 600 operations per hour at 250 VAC, 5A (Ref: Std IEC 61810-1)
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#### iv Electrical Test

Test	Standard
Insulation Resistance	IEC 60255-27# 500 V DC, >100M Ohms Between all terminals & earth Between coil terminals & contacts
Impulse Voltage Withstand	IEC 60255-27# 5.0 kV, 1.2/50 $\mu$ s, 0.5J Between all terminals & earth Between coil terminals & contacts
High Voltage (Dielectric)	IEC 60255-27# 2 kV, 50Hz@1min (2.2 kV for 1 s) Between all terminals & earth Between coil terminals & contacts 1 kV AC RMS for 1 min across normally open contacts
Thermal Withstand Continuous	IEC 60255-6 1.2 VN
Thermal withstand for 10 s	IEC60255-6 1.30 VN
Functional	IEC 60255-1
Maximum Allowable Temperature	IEC 60255-6 Max. temperature limit +1000C
AC Ripple on DC supply	IEC 60255-11 Withstand 15% AC ripple on DC

Power Frequency Magnetic Field Immunity	IEC 61000-4-8 Level 4, 30 A/m applied continuously 300 A/m applied for 3 s
Switching Rate	600 Operations per hour
Immunity to capacitance discharge	ENA TS 48-4 Issue 4 2010, Table