

THE WEST BENGAL POWER DEVELOPMENT CORPORATION LIMITED

(A Govt. of West Bengal Enterprise)

OFFICE OF THE GENERAL MANAGER
SANTALDIH THERMAL POWER STATION

P.O. - SANTALDIH THERMAL PLANT

DIST. PURULIA - 723 146

Tel. No. 03251 260 218 / Fax No. 03251 260 217



((Tender Notice for Website))

NIT No. : WBPDC/ Tend-Adv/CC/15-16/06/STPS	Date: 07.04.2015
Tender Ref. No. : STPS/M&C/Press Tender/439/EM(OPH)/13-14/125	Date: 31.03.2015

Tenders are invited from eligible, experienced and resourceful manufacturers only working under Govt. Organizations / Semi Govt. Organizations / PSUs / Reputed Organizations for procurement of 245 kV & 145 kV Current Transformers under EM(OPH) Dept., Santaldih T.P.S. as described in **Annexure-A**. Terms & Conditions in detail will be mentioned in the Tender Document.

Name of the Procurement: Procurement of 245 kV & 145 kV Current Transformers under EM(OPH) Dept., Santaldih T.P.S.

Information to the bidders: This is a three part bidding system containing **Earnest Money (Part-I), Qualifying Requirements (Part-II) and Price Bid (Part-III)**. Tenders will be received and evaluated by Santaldih T.P.S., the WBPDC from technical and financial point of view to make the best selection for the interest of the WBPDC for the complete procurement covered under the Tender Document. Material specifications, Technical details etc. are as per **Annexure-A**.

Earnest Money: The Earnest Money of **Rs. 1,80,000/-** (Rupees One Lac Eighty Thousand only) shall be deposited along with Tender Document in the form of Bank Draft/Pay Order issued by any nationalized Bank from India in favour of **"THE WEST BENGAL POWER DEVELOPMENT CORPORATION LIMITED"** payable at United Bank of India, Santaldih branch or State Bank of India, Purulia branch or payable at Kolkata for other Banks. Govt. Organizations/Undertakings, NSIC/SSI Units are exempted from submission of Earnest Money. Necessary certificate is to be submitted for NSIC/SSI units.

Estimated Cost: Around **Rs. 51,00,000/-** (Rupees Fifty One Lac only)

Cost of Tender Document: **Rs. 5,000/-** (Rupees Five Thousand only)

Qualifying Requirements (Q.R.):

- 1) The bidder must be a reputed original manufacturer of the quoted items.
- 2) The offered items have to be designed, manufactured and tested as per relevant IS/IEC with latest amendments.
- 3) The bidder must have delivered the total quoted quantity during last 07 (Seven) years from the date of NIT.
- 4) The bidder should have Type Test Certificate as per relevant IS/IEC from any Govt. recognized Test House or Laboratory on quoted / similar / higher designed items within 05 (Five) years from the date of NIT.
- 5) Experience of having successfully executed job for supplying quoted items with same or higher voltage grade in any Govt. Organization / Semi Govt. Organization / PSU / Reputed Organization during last 07 (Seven) years ending 28th February, 2015 must be either of the following:
 - a) One similar completed supply order costing not less than the amount equal to 80% of the estimated cost i.e. Rs. 40,80,000/-
 - Or,
 - b) Two similar completed supply orders each costing not less than the amount equal to 50% of the estimated cost i.e. Rs. 25,50,000/-
 - Or,
 - c) Three similar completed supply orders each costing not less than the amount equal to 40% of the estimated cost i.e. Rs. 20,40,000/-

- 6) The average annual turnover of the bidder during the last 03 (Three) years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost.
- 7) The bidder shall submit copies of relevant purchase order(s) & other documentary evidence as proof of satisfactory completion of similar supply & delivery.

Legible photocopies of all the documents as stated below countersigned by the tenderer need to be submitted accordingly in a separate sealed envelope super-scribing '**Qualifying Requirements**', **Tender Notice No. with date, Due date of Opening** and '**Name of the Procurement**', otherwise the tender will be treated as invalid. Original copies of the documents are to be produced on demand.

- a) Credentials regarding Qualifying Requirements (e.g. Purchase Orders etc.),
- b) P&L Account and Balance Sheets for last 03 (Three) years,
- c) PAN Card,
- d) VAT/CST Return,
- e) Trade License.

Important Dates:

Sale of Tender Document:		From 08.04.2015 up to 23.04.2015 between 11:00 Hrs. and 14:30 Hrs.
Last Date of Offer Submission:		29.04.2015 within 15:00 Hrs.
Opening of Tender:	Part I & II	29.04.2015 at 15:15 Hrs.
	Part III	29.04.2015 or later duly intimated to the bidders.

Sale of Tender Document:

Tenders Document shall be obtained from Sr. Manager (M&C), STPS or his authorized representative against written application on any working day except Saturday and holiday between 11:00 Hrs. and 14:30 Hrs. after deposit the cost against the Tender Document at Cash counter, S.T.P.S. by cash only. Tender paper must be sold by each of the applicants.

Opening of Tender:

- a) The tenders shall be opened in presence of representative of the prospective bidders, if available, at the time and date set for opening of tender as mentioned above. In case any extension has been given thereto on the extended tender opening date and time will be notified to all the prospective bidders who have purchased the Tender Documents. Authorized representatives (maximum two persons) of the prospective bidder may attend the opening.
- b) After opening the main cover, the envelope containing E.M.D. (Part-I) shall be opened first and if E.M.D. of requisite amount in proper mode is found the Q.R. (Part-II) will be opened.
- c) Price Bid (Part-III) of the prospective bidders who have qualified in both Part-I & Part-II will be considered only by the WBPDCCL for subsequent opening of Part-III on same or later date eliminating other participants.

Evaluation of Tender:

- a) Issuance of tender document to the participants will not qualify him automatically for the entire tender process.
- b) The WBPDCCL reserves the right to itself to accept any tender or reject any or all tenders or cancel / withdraw the invitation for tender without assigning any reason for such decision. Such decision by the WBPDCCL shall not be subject to question by any prospective bidder and the WBPDCCL shall bear no liability consequent upon such decision and the prospective bidders shall have no claim in this regard against the WBPDCCL.
- c) Evaluation by the WBPDCCL shall be based on the information and documentary evidence submitted by the prospective bidders in response to the tender documents. The requirements as stipulated in the tender notice and documents are the minimum and the WBPDCCL has the right to request for additional information. The WBPDCCL reserves the right to reject any tender, if in the opinion of the WBPDCCL the qualification data / documentary evidence submitted by the prospective bidders are incomplete or prospective bidders are found not qualified to satisfactorily perform the job. The WBPDCCL reserve the right to reject any tender if the prospective bidder is found to be disqualified by giving incorrect and / or false information.

- d) The WBPDCCL does not bind itself to accept the lowest tender and also reserves the right to split the procurement amongst more than one prospective bidder and also reserves the right to reject any or all tender or cancel the tender without assigning any reason whatsoever.
- e) Notwithstanding, anything stated above or elsewhere, the WBPDCCL reserves the right to assess the capability and capacity of the prospective bidders, should the circumstances warrant such assessment in the overall interest of the WBPDCCL.

Encl: 1) Annexure-A

Sd/-

(S. Maity)

General Manager
STPS, The WBPDCCL

ANNEXURE-A

TECHNICAL SPECIFICATIONS FOR 220/132 kV CURRENT TRANSFORMERS

I. Special Instruction to the Bidders:

1. All the drawings, i.e. Elevation, Side view, Plan, Cross-sectional view etc., for offered items shall be submitted with the Qualifying Requirements Bid (Part-II) along with the Quotation.
2. The bidder shall also submit Quality Assurance Plan with the Qualifying Requirements Bid (Part-II).
3. The bidder shall have to submit also all the required Type Test reports along with the Qualifying Requirements Bid (Part-II) for the offered item. **Bid without Type Tests will not be considered for evaluation.**
4. All the CTs must be retrofitted on its existing original base at STPS Switchyard with 1:1 basis.
5. The bidder must have to submit the GTP for the offered item(s) along with the Qualifying Requirements Bid (Part-II).
6. The bidder shall have to arrange for inspections and Routine Tests on Current Transformers at their Works in presence of the WBPDCLEngineers.
7. The bidder should note that the evaluation will be carried out on the strength of bid content only. No further correspondence will be made.
8. The bidder shall bring out all the technical deviation(s) at the specified Annexure only.

II. Technical Specification of Current Transformers:

Sl. No.	Technical Specification of CTs to be procured	Required Quantity																																																																						
1.	<p><u>Item Code: 04C130107</u></p> <p>Oil cooled type Outdoor Current Transformer, Highest System Voltage: 245 kV, Rated voltage: 220 kV, Insulation: 460/1050 (kV/KVP), Frequency: 50 Hz, Short Time Current: 31.5 kA for 3 Sec., Rated Primary Current: 2000 A, IS: 2705:1992, Make- BHEL or equivalent of BHEL Drawing No: 24771051111, Double Stud, Dead tank Type.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Core</u></th> <th style="text-align: left;"><u>Ratio</u></th> <th style="text-align: left;"><u>VA</u></th> <th style="text-align: left;"><u>Class</u></th> <th style="text-align: left;"><u>KPV / Ex. Amp at Vk/2 /sec. Ohm at 75°C</u></th> </tr> </thead> <tbody> <tr> <td>1S1 – 1S2</td> <td>500/1</td> <td>--</td> <td>PS</td> <td>500 V / 80 mA / 2.5Ohm</td> </tr> <tr> <td>1S1 – 1S3</td> <td>1000/1</td> <td>--</td> <td>PS</td> <td>1000 V / 40 mA / 5 Ohm</td> </tr> <tr> <td>1S1 – 1S4</td> <td>2000/1</td> <td>--</td> <td>PS</td> <td>2000 V / 20 mA / 10 Ohm</td> </tr> <tr> <td>2S1 – 2S2</td> <td>500/1</td> <td>--</td> <td>PS</td> <td>500 V / 80 mA / 2.5Ohm</td> </tr> <tr> <td>2S1 – 2S3</td> <td>1000/1</td> <td>--</td> <td>PS</td> <td>1000 V / 40 mA / 5 Ohm</td> </tr> <tr> <td>2S1 – 2S4</td> <td>2000/1</td> <td>--</td> <td>PS</td> <td>2000 V / 20 mA / 10 Ohm</td> </tr> <tr> <td>3S1 – 3S2</td> <td>500/1</td> <td>30</td> <td>0.2, ISF<5</td> <td>-----</td> </tr> <tr> <td>3S1 – 3S3</td> <td>1000/1</td> <td>30</td> <td>0.2, ISF<5</td> <td>-----</td> </tr> <tr> <td>3S1 – 3S4</td> <td>2000/1</td> <td>30</td> <td>0.2, ISF<5</td> <td>-----</td> </tr> <tr> <td>4S1 – 4S2</td> <td>1000/1</td> <td>--</td> <td>PS</td> <td>1000 V / 40 mA / 5 Ohm</td> </tr> <tr> <td>4S1 – 4S3</td> <td>2000/1</td> <td>--</td> <td>PS</td> <td>2000 V / 20 mA / 10 Ohm</td> </tr> <tr> <td>5S1 – 5S2</td> <td>1000/1</td> <td>--</td> <td>PS</td> <td>1000 V / 40 mA / 5 Ohm</td> </tr> <tr> <td>5S1 – 5S3</td> <td>2000/1</td> <td>--</td> <td>PS</td> <td>2000 V / 20 mA / 10 Ohm</td> </tr> </tbody> </table>	<u>Core</u>	<u>Ratio</u>	<u>VA</u>	<u>Class</u>	<u>KPV / Ex. Amp at Vk/2 /sec. Ohm at 75°C</u>	1S1 – 1S2	500/1	--	PS	500 V / 80 mA / 2.5Ohm	1S1 – 1S3	1000/1	--	PS	1000 V / 40 mA / 5 Ohm	1S1 – 1S4	2000/1	--	PS	2000 V / 20 mA / 10 Ohm	2S1 – 2S2	500/1	--	PS	500 V / 80 mA / 2.5Ohm	2S1 – 2S3	1000/1	--	PS	1000 V / 40 mA / 5 Ohm	2S1 – 2S4	2000/1	--	PS	2000 V / 20 mA / 10 Ohm	3S1 – 3S2	500/1	30	0.2, ISF<5	-----	3S1 – 3S3	1000/1	30	0.2, ISF<5	-----	3S1 – 3S4	2000/1	30	0.2, ISF<5	-----	4S1 – 4S2	1000/1	--	PS	1000 V / 40 mA / 5 Ohm	4S1 – 4S3	2000/1	--	PS	2000 V / 20 mA / 10 Ohm	5S1 – 5S2	1000/1	--	PS	1000 V / 40 mA / 5 Ohm	5S1 – 5S3	2000/1	--	PS	2000 V / 20 mA / 10 Ohm	02 Nos.
<u>Core</u>	<u>Ratio</u>	<u>VA</u>	<u>Class</u>	<u>KPV / Ex. Amp at Vk/2 /sec. Ohm at 75°C</u>																																																																				
1S1 – 1S2	500/1	--	PS	500 V / 80 mA / 2.5Ohm																																																																				
1S1 – 1S3	1000/1	--	PS	1000 V / 40 mA / 5 Ohm																																																																				
1S1 – 1S4	2000/1	--	PS	2000 V / 20 mA / 10 Ohm																																																																				
2S1 – 2S2	500/1	--	PS	500 V / 80 mA / 2.5Ohm																																																																				
2S1 – 2S3	1000/1	--	PS	1000 V / 40 mA / 5 Ohm																																																																				
2S1 – 2S4	2000/1	--	PS	2000 V / 20 mA / 10 Ohm																																																																				
3S1 – 3S2	500/1	30	0.2, ISF<5	-----																																																																				
3S1 – 3S3	1000/1	30	0.2, ISF<5	-----																																																																				
3S1 – 3S4	2000/1	30	0.2, ISF<5	-----																																																																				
4S1 – 4S2	1000/1	--	PS	1000 V / 40 mA / 5 Ohm																																																																				
4S1 – 4S3	2000/1	--	PS	2000 V / 20 mA / 10 Ohm																																																																				
5S1 – 5S2	1000/1	--	PS	1000 V / 40 mA / 5 Ohm																																																																				
5S1 – 5S3	2000/1	--	PS	2000 V / 20 mA / 10 Ohm																																																																				
2.	<p><u>Item Code: 04C130108</u></p> <p>Oil cooled type Outdoor Current Transformer, Highest System Voltage: 245 kV, Rated voltage: 220 kV, Insulation: 460/1050 (kV/KVP), Frequency: 50 Hz, Short Time Current: 31.5 kA for 3Sec., Rated Current: 300 A, IS: 2705:1992, Make- BHEL or equivalent of BHEL Drawing No: 24771051113, Single Stud, Dead tank Type.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Core</u></th> <th style="text-align: left;"><u>Ratio</u></th> <th style="text-align: left;"><u>VA</u></th> <th style="text-align: left;"><u>Class</u></th> <th style="text-align: left;"><u>KPV / Ex. Amp at Vk/2 /sec. Ohm at 75°C</u></th> </tr> </thead> <tbody> <tr> <td>1S1 – 1S2</td> <td>150/1</td> <td>--</td> <td>PS</td> <td>300 V / 60 mA / 3 Ohm</td> </tr> <tr> <td>1S1 – 1S3</td> <td>300/1</td> <td>--</td> <td>PS</td> <td>600 V / 30 mA / 6 Ohm</td> </tr> <tr> <td>2S1 – 2S2</td> <td>150/1</td> <td>--</td> <td>PS</td> <td>300 V / 60 mA / 3 Ohm</td> </tr> <tr> <td>2S1 – 2S3</td> <td>300/1</td> <td>--</td> <td>PS</td> <td>600 V / 30 mA / 6 Ohm</td> </tr> </tbody> </table>	<u>Core</u>	<u>Ratio</u>	<u>VA</u>	<u>Class</u>	<u>KPV / Ex. Amp at Vk/2 /sec. Ohm at 75°C</u>	1S1 – 1S2	150/1	--	PS	300 V / 60 mA / 3 Ohm	1S1 – 1S3	300/1	--	PS	600 V / 30 mA / 6 Ohm	2S1 – 2S2	150/1	--	PS	300 V / 60 mA / 3 Ohm	2S1 – 2S3	300/1	--	PS	600 V / 30 mA / 6 Ohm	01 No.																																													
<u>Core</u>	<u>Ratio</u>	<u>VA</u>	<u>Class</u>	<u>KPV / Ex. Amp at Vk/2 /sec. Ohm at 75°C</u>																																																																				
1S1 – 1S2	150/1	--	PS	300 V / 60 mA / 3 Ohm																																																																				
1S1 – 1S3	300/1	--	PS	600 V / 30 mA / 6 Ohm																																																																				
2S1 – 2S2	150/1	--	PS	300 V / 60 mA / 3 Ohm																																																																				
2S1 – 2S3	300/1	--	PS	600 V / 30 mA / 6 Ohm																																																																				

	3S1 – 3S2 150/1 20 0.5, ISF<5 ----- 3S1 – 3S3 300/1 20 0.5, ISF<5 ----- 4S1 – 4S2 1000/1 -- PS 1000 V / 40 mA / 5 Ohm 4S1 – 4S3 2000/1 -- PS 2000 V / 20 mA / 10 Ohm 5S1 – 5S2 1000/1 -- PS 1000 V / 40 mA / 5 Ohm 5S1 – 5S3 2000/1 -- PS 2000 V / 20 mA / 10 Ohm																																					
3.	<p>Item Code: 04C131046</p> <p>Oil cooled type Outdoor Current Transformer, Highest System Voltage: 245 kV, Rated voltage: 220 kV, Insulation: 460/1050 (kV/KVP), Frequency: 50 Hz, Short Time Current: 40 kA RMS for 3 Sec., IS: 2705:1992, Rated Primary current:-800 A, Single Stud, Dead tank Type.</p> <table border="1"> <thead> <tr> <th>Core</th> <th>Ratio</th> <th>VA</th> <th>Class</th> <th>KPV / Ex. Amp at V_k/2 /sec. Ohm at 75°C</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>800/1</td> <td>60</td> <td>0.2</td> <td>-----</td> </tr> <tr> <td>2.</td> <td>800/1</td> <td>40</td> <td>5P20</td> <td>-----</td> </tr> <tr> <td>3.</td> <td>800/1</td> <td>40</td> <td>5P20</td> <td>-----</td> </tr> <tr> <td>4.</td> <td>1600 - 800/1</td> <td>---</td> <td>PS</td> <td>2000 V - 1000 V / 20 mA - 40 mA /10 Ohm - 5 Ohm</td> </tr> <tr> <td>5.</td> <td>1600 - 800/1</td> <td>---</td> <td>PS</td> <td>2000 V - 1000 V / 20 mA - 40 mA /10 Ohm - 5 Ohm</td> </tr> </tbody> </table>	Core	Ratio	VA	Class	KPV / Ex. Amp at V _k /2 /sec. Ohm at 75°C	1.	800/1	60	0.2	-----	2.	800/1	40	5P20	-----	3.	800/1	40	5P20	-----	4.	1600 - 800/1	---	PS	2000 V - 1000 V / 20 mA - 40 mA /10 Ohm - 5 Ohm	5.	1600 - 800/1	---	PS	2000 V - 1000 V / 20 mA - 40 mA /10 Ohm - 5 Ohm	03 Nos.						
Core	Ratio	VA	Class	KPV / Ex. Amp at V _k /2 /sec. Ohm at 75°C																																		
1.	800/1	60	0.2	-----																																		
2.	800/1	40	5P20	-----																																		
3.	800/1	40	5P20	-----																																		
4.	1600 - 800/1	---	PS	2000 V - 1000 V / 20 mA - 40 mA /10 Ohm - 5 Ohm																																		
5.	1600 - 800/1	---	PS	2000 V - 1000 V / 20 mA - 40 mA /10 Ohm - 5 Ohm																																		
4.	<p>Item Code: 04C131047</p> <p>Oil cooled type Outdoor Current Transformer, Highest System Voltage: 245 kV, Rated voltage: 220 kV, Insulation: 460/1050 (kV/KVP), Frequency: 50 Hz, Short Time Current: 40 kA RMS for 3 Sec., IS: 2705:1992, Rated Primary current:- 600 A, Single Stud, Dead tank Type.</p> <table border="1"> <thead> <tr> <th>Core</th> <th>Ratio</th> <th>VA</th> <th>Class</th> <th>ISF / ILF</th> <th>KPV / Ex. Amp at V_k/2 /sec. Ohm at 75°C</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>600/1</td> <td>100</td> <td>1</td> <td>≤ 5</td> <td>-----</td> </tr> <tr> <td>2.</td> <td>600/1</td> <td>30</td> <td>5P20</td> <td>---</td> <td>-----</td> </tr> <tr> <td>3.</td> <td>600/1</td> <td>30</td> <td>5P20</td> <td>---</td> <td>-----</td> </tr> <tr> <td>4.</td> <td>600/1</td> <td>---</td> <td>PS</td> <td>---</td> <td>1000 V / 40 mA / 5 Ohm</td> </tr> <tr> <td>5.</td> <td>600/1</td> <td>---</td> <td>PS</td> <td>---</td> <td>1000 V / 40 mA / 5 Ohm</td> </tr> </tbody> </table>	Core	Ratio	VA	Class	ISF / ILF	KPV / Ex. Amp at V _k /2 /sec. Ohm at 75°C	1.	600/1	100	1	≤ 5	-----	2.	600/1	30	5P20	---	-----	3.	600/1	30	5P20	---	-----	4.	600/1	---	PS	---	1000 V / 40 mA / 5 Ohm	5.	600/1	---	PS	---	1000 V / 40 mA / 5 Ohm	01 No.
Core	Ratio	VA	Class	ISF / ILF	KPV / Ex. Amp at V _k /2 /sec. Ohm at 75°C																																	
1.	600/1	100	1	≤ 5	-----																																	
2.	600/1	30	5P20	---	-----																																	
3.	600/1	30	5P20	---	-----																																	
4.	600/1	---	PS	---	1000 V / 40 mA / 5 Ohm																																	
5.	600/1	---	PS	---	1000 V / 40 mA / 5 Ohm																																	
5.	<p>Item Code: 04C131068</p> <p>Oil cooled type Outdoor Current Transformer, Highest System Voltage: 245 kV, Rated voltage: 220 kV, Insulation: 460/1050 (kV/KVP), Frequency: 50 Hz, Short Time Current: 40 kA RMS for 3 Sec., IS: 2705:1992, Rated Primary current:- 600 A, Single Stud, Dead tank Type.</p> <table border="1"> <thead> <tr> <th>Core</th> <th>Ratio</th> <th>VA</th> <th>Class</th> <th>ISF / ILF</th> <th>KPV / Ex. Amp at V_k/2 /sec. Ohm at 75°C</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>600/1</td> <td>100</td> <td>1</td> <td>≤ 5</td> <td>-----</td> </tr> <tr> <td>2.</td> <td>600/1</td> <td>30</td> <td>5P20</td> <td>---</td> <td>-----</td> </tr> <tr> <td>3.</td> <td>600/1</td> <td>30</td> <td>5P20</td> <td>---</td> <td>-----</td> </tr> <tr> <td>4.</td> <td>1600/1</td> <td>---</td> <td>PS</td> <td>---</td> <td>2000 V / 20 mA / 10 Ohm</td> </tr> <tr> <td>5.</td> <td>1600/1</td> <td>---</td> <td>PS</td> <td>---</td> <td>2000 V / 20 mA / 10 Ohm</td> </tr> </tbody> </table>	Core	Ratio	VA	Class	ISF / ILF	KPV / Ex. Amp at V _k /2 /sec. Ohm at 75°C	1.	600/1	100	1	≤ 5	-----	2.	600/1	30	5P20	---	-----	3.	600/1	30	5P20	---	-----	4.	1600/1	---	PS	---	2000 V / 20 mA / 10 Ohm	5.	1600/1	---	PS	---	2000 V / 20 mA / 10 Ohm	01 No.
Core	Ratio	VA	Class	ISF / ILF	KPV / Ex. Amp at V _k /2 /sec. Ohm at 75°C																																	
1.	600/1	100	1	≤ 5	-----																																	
2.	600/1	30	5P20	---	-----																																	
3.	600/1	30	5P20	---	-----																																	
4.	1600/1	---	PS	---	2000 V / 20 mA / 10 Ohm																																	
5.	1600/1	---	PS	---	2000 V / 20 mA / 10 Ohm																																	
6.	<p>Item Code: 04C130638</p> <p>Oil cooled type Outdoor Current Transformer, Standard- IS: 2705 / IEC: 60044-1, HSV/NSV- 245 kV / 220 kV, Insulation Level kV/KVP: 460/1050, Frequency: 50 Hz, I_{th}: 40 kA/3 Sec., Rated Dynamic Current (I_{Dyn}): 100 kA_p, Rated Primary Current: 1600 A, Twin Stud, Dead tank Type.</p> <table border="1"> <thead> <tr> <th>Core</th> <th>Ratio</th> <th>VA</th> <th>Class</th> <th>ISF/ILF</th> <th>KPV(min.)</th> <th>Ex. Amp at V_k/2</th> <th>R_{ct} at 75°C (Ohm)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1600/1-1-1</td> <td>30</td> <td>0.5</td> <td><5</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>2</td> <td>1600/1-1-1</td> <td>30</td> <td>5P20</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>3</td> <td>1600/1-1-1</td> <td>--</td> <td>PS</td> <td>--</td> <td>800</td> <td>20 mA</td> <td>4</td> </tr> </tbody> </table>	Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V _k /2	R _{ct} at 75°C (Ohm)	1	1600/1-1-1	30	0.5	<5	--	--	--	2	1600/1-1-1	30	5P20	--	--	--	--	3	1600/1-1-1	--	PS	--	800	20 mA	4	01 No.				
Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V _k /2	R _{ct} at 75°C (Ohm)																															
1	1600/1-1-1	30	0.5	<5	--	--	--																															
2	1600/1-1-1	30	5P20	--	--	--	--																															
3	1600/1-1-1	--	PS	--	800	20 mA	4																															
7.	<p>Item Code: 04C130632</p> <p>Oil cooled type Outdoor Current Transformer, Standard- IS: 2705-1992, Highest System Voltage: 145 kV, Rated Voltage- 132 kV, Insulation Level kV/KVP: 275/650, Frequency: 50 Hz, Short Time Current Rating: 31.5 kA/3 Sec., Rated Dynamic Current (I_{Dyn}): 78.75 kA_p, Rated Primary Current: 800 A, Rated Continuous Current: 960 A, Creepage Distance (Min.): 3625 mm, Single Stud, Dead tank Type.</p> <table border="1"> <thead> <tr> <th>Core</th> <th>Ratio</th> <th>VA</th> <th>Class</th> <th>ISF/ILF</th> <th>KPV(min.)</th> <th>Ex. Amp at V_k</th> <th>R_{ct} at 75°C (Ohm)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>800/1</td> <td>30</td> <td>5P20</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>2</td> <td>800/1</td> <td>30</td> <td>5P20</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>3</td> <td>800/1</td> <td>--</td> <td>PS</td> <td>--</td> <td>800 V</td> <td>30 mA</td> <td>≤ 8 Ohm</td> </tr> </tbody> </table>	Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V _k	R _{ct} at 75°C (Ohm)	1	800/1	30	5P20	--	--	--	--	2	800/1	30	5P20	--	--	--	--	3	800/1	--	PS	--	800 V	30 mA	≤ 8 Ohm	01 No.				
Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V _k	R _{ct} at 75°C (Ohm)																															
1	800/1	30	5P20	--	--	--	--																															
2	800/1	30	5P20	--	--	--	--																															
3	800/1	--	PS	--	800 V	30 mA	≤ 8 Ohm																															

	4	800/1	--	PS	--	800 V	30 mA	≤ 8 Ohm	
	5	800/1	100	1.0	≤5	--	--	--	
8.	Item Code: 04C130633 Oil cooled type Outdoor Current Transformer, Standard- IS: 2705-1992, Highest System Voltage: 145 kV, Rated Voltage- 132 kV , Insulation Level kV/KVP: 275/650, Frequency: 50 Hz, Short Time Current Rating: 40 kA/3 Sec., Rated Dynamic Current (I _{Dyn}): 100 kA _P , Rated Primary Current: 600 A, Creepage Distance (Min.): 3625 mm, Single Stud, Dead tank Type.								01 No.
	Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V_k	R_{ct} at 75°C (Ohm)	
	1	600/1	60	0.5	<10	--	--	--	
	2	1000/1	30	5P20	--	--	--	--	
	3	1000/1	30	5P20	--	--	--	--	
	4	1600/1	30	5P20	--	--	--	--	
	5	1600/1	30	5P20	--	--	--	--	
9.	Item Code: 04C131048 Oil cooled type Outdoor Current Transformer, Standard- IS: 2705-1992, Highest System Voltage: 145 kV, Rated Voltage- 132 kV , Insulation Level kV/KVP: 275/650, Frequency: 50 Hz, Short Time Current Rating: 40 kA/3 Sec., Rated Dynamic Current (I _{Dyn}): 100 kA _P , Rated Primary Current: 600 A, Creepage Distance (Min.): 3625 mm, Single Stud, Dead tank Type.								03 Nos.
	Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V_k	R_{ct} at 75°C (Ohm)	
	1	600/1	60	0.2	<10	-----	-----	-----	
	2	600/1	60	5P20	----	-----	-----	-----	
	3	600/1	40	5P20	----	-----	-----	-----	
	4	1600/1	30	5P20	----	-----	-----	-----	
	5	1600/1	30	5P20	----	-----	-----	-----	
10.	Item Code: 04C130637 Oil cooled type Outdoor Current Transformer, Standard- IS: 2705-1992, Highest System Voltage: 145 kV, Rated Voltage- 132 kV , Insulation Level kV/KVP: 275/650, Frequency: 50 Hz, Short Time Current Rating: 24 kA/1 Sec., Rated Primary Current: 600 A, Creepage Distance (Min.): 3625 mm, Single Stud, Dead tank Type.								01 No.
	Core	Ratio	VA	Class	ISF/ILF	KPV(min.)	Ex. Amp at V_k	R_{ct} at 75°C (Ohm)	
	1s1-1s2	100/1	15	5P10	--	--	--	--	
	1s1-1s3	200/1	15	5P10	--	--	--	--	
	2s1-2s2	100/1	30	5P10	--	--	--	--	
	2s1-2s3	200/1	30	5P10	--	--	--	--	
	3s1-3s2	100/1	15	0.2	≤5	--	--	--	
	3s1-3s3	200/1	15	0.2	≤5	--	--	--	
	4s1-4s2	1600/1	--	PS	--	2000 V	20 mA	10 Ohm	
	5s1-5s2	1600/1	--	PS	--	2000 V	20 mA	10 Ohm	

III. Drawings:

- Hard copies of drawings incorporating the following particulars shall be submitted by each bidder with the tender for the purpose of preliminary study.
 - General showing and assembly drawings of equipment.
 - Graphs showing the performance of equipment in regard to magnetizing characteristics, ratio and phase angle error curves and composite error curves.
 - Arrangement of secondary terminal equipment and including of duplicate terminal connection arrangement.
- The successful bidder should submit 02 sets of hard copies of the following drawings for the approval of the purchaser within thirty days of the receipt of the order:
 - Outline dimensional drawing plan, elevation, end-view dimension, shipping dimensions etc. of the CTs.
 - GA drawing.
 - Cross-sectional view of the Current Transformers.
 - Winding diagram with polarity marks.

- (e) Magnetization curves.
 - (f) Diagram plate, electrical connections of component parts of the CTs and terminal arrangement of secondary terminal box.
3. Name and rating plate must be as per Indian Standard 2705. The party has to supply 03 sets of final approved Drawings, operation manuals etc. for records and reference.

IV. Types and Ratings:

1. The current Transformers shall be of outdoor Dead tank type, oil impregnated paper, single phase, 50 Hz, oil immersed, self cooled and suitable for the services indicated and for operation in the climatic conditions specified without protection from sun, rain and dust. The Current Transformer shall be completed in all respects and shall be conformed to the modern practice of design and manufacture.
2. The core shall be high grade non-ageing, electrical, silicon laminated steel of low hysteresis loss and high permeability to ensure high accuracy at both normal and over currents.
3. The Current Transformers shall be provided with prismatic type oil sight window ***with green fluorescent ball of non oil reacting material***, at suitable location so that the oil level is clearly visible with naked eye to an observer standing at ground level.
4. The Current transformer shall be hermetically sealed to climatic breathing and entering air & moisture in the tank, by providing nitrogen cushioning only. The pressure relief valve shall be provided so that overpressure caused by internal faults can be instantaneously relieved and bursting of unit is avoided. The pressure relief valve shall comply as follow:
 - (a) It shall be either of stainless steel or brass material.
 - (b) Spring used shall be of non magnetic stainless steel.
 - (c) It shall conform to relevant IS/IEC standards.
 - (d) It shall be suitably calibrated for the maximum allowed pressure. Bidder shall ensure that during any of the acceptance tests PRV shall not operate.
 - (e) Its satisfactory operation shall be offered during stage inspection.
5. The CT's core to be used for metering shall be accuracy class specified or appropriate class suitable for commercial and industrial metering as per the standard adopted. The saturation factor of this core shall be low enough as not to cause any damage to the measuring instruments in the event of maximum short circuit current.
6. The Current Transformer cores to be used for protective relaying purposes shall be of accuracy class specified or appropriate class suitable for distance protection, back-up over current and earth fault, differential and bus-bar protection.

V. Windings:

1. The rating of the secondary winding shall be as specified in the specification. The secondary terminals shall be brought out in a compartment for easy access. The secondary terminals shall be provided with the shorting arrangements. The secondary taps shall be adequately reinforced to withstand the normal handling without damage. All the secondary winding will be loaded simultaneously.
2. Primary winding shall be made out of high conductivity copper conductors. Unavoidable joints in the primary winding shall be welded type. The details of such welded joints shall be indicated in the drawings submitted with the offer.
3. The outer surface of metal tank shall be Hot Dip Galvanized, whereas, the inner portion shall be painted with oil resistive, insoluble paint or hot dip galvanized.

VI. Terminal Box:

1. All secondary terminals shall be brought out in a weather proof compartment of one side of each Current Transformer for easy access. A terminal board shall have to be arranged for series parallel connections, shorting of secondary terminals of CTs. A cable box along with necessary glands for receiving control cables suitable for mounting on the bottom plate of the terminal box shall be included in the scope of supply.

2. A door with locking arrangement shall be provided on the front of the terminal box so as to permit easy access to the secondary terminals. The door shall have suitable arrangement to check ingress of moisture into the terminal box. The secondary terminal box shall comply with degree of protection IP-65 standards.

VII. Bushing Insulator:

1. The porcelain hollow insulator used for the Current Transformer shall be homogenous, free from lamination cavities and other flaws or imperfection that might affect the mechanical or dielectric qualities. The hollow insulator shall conform to the latest edition of IS: 5621. The puncture strengths of the hollow insulator shall be entirely free from external and internal corona. The total creepage distance of the hollow insulator shall be suitable for heavily polluted atmosphere i.e. the total creepage distance shall be 6125 mm (minimum). The hollow insulator shall have ample insulation, mechanical strength and rigidity for the conditions under which it will be used and shall be designed to prevent accumulation of explosive gases and provide adequate oil circulation to remove internal heat. There shall be no undue stressing of any part of the bushings due to temperature changes and adequate means shall be provided to accommodate conductor expansion.
2. The hollow insulator shall be so designed that when operating at highest system voltage specified, there will be no electric discharge between the conductors and hollow insulator. No corrosion or injury shall be caused to conductor insulation or supports by the formation of substances produced by chemical action. The insulation of hollow insulator shall be co-ordinated with that of the current transformer such that the flashover, if any, will occur only externally to the Current Transformer. The hollow insulator shall not cause radio interference when operated at rated voltage. The specification of the bushing shall be stated in the tender.

VIII. Insulation Oil:

The quantity of insulating for the first filling and the complete specification of the oil shall be stated in the offer. The oil shall comply in all respects with the provisions of the latest edition of IS:335. The oil shall have the following main characteristics or equivalent.

Sl. No.	Characteristics	Requirements	Method of Test
1	Appearance	The oil shall be clear & transparent & free from suspended matter or sediment.	BIS 335
2	Electric strength (RMS, kV)	50 Min.	BIS : 6792 : 1992
3	Water content (ppm)	Max. 20 ppm	BIS : 13567 : 1992
4	Neutralisation value (mg KOH/g)	Max. 0.3	BIS 1448 (P:2) : 1967
5	Sediment & Sludge, % by wt.	Max. 0.02	BIS 1866 Annexure A
6	Dielectric dissipation factor at 90°C	0.002	IS : 6262 : 1971
7	Resistivity X 10 ¹² Ohm.cm	At 27°C, Min. 1.0 At 90°C, Min. 0.1	IS : 6103 : 1971
8	Interfacial Tension at 27°C (mN/m)	Min. 15	IS : 6104 : 1971
9	Flash Point, °C	Min. 140	BIS 1448 (P:21) : 1970

IX. Cleaning and Painting:

1. All ferrous parts of CTs including lifting hook shall be hot dip galvanized. Before filling with oil all ungalvanized parts shall be completely cleaned and free from dust, scale and greases and all external rough surfaces on castings shall be filled by metal disposition. The interior of Instrument Transformer tank shall be cleaned of all scale and rust by sandblasting or other approved method. These surfaces shall be hot dip galvanized or painted with oil resisting varnish or paint.
2. Any damage to galvanizing, during transport and erection shall be made good by thoroughly cleaning the damaged portion and by applying the full number of coats.
3. The hot dip galvanizing shall be done as per relevant IS specifications.

4. **For gasket joints, wherever used, Nitrile Butyl rubber NBR/Viton shall be used. No Cork gaskets shall be used. All gaskets/ "O" rings shall be fixed in a machine groove. The gaskets shall be securely fitted for perfect sealing.**
5. Sealing Test shall be carried out on one randomly selected unit out of every 10 or less offered quantity. In the event of failure of unit during Sealing Test next unit will be randomly selected from the offered lot. Failed unit shall not be accepted. If second unit also fails to clear Sealing Test, whole lot shall be rejected.
6. Arrangement shall be made by manufacturer to maintain required pressure and temperature for the Sealing Test.

X. Acceptance and Routine Tests:

1. Each Current Transformer shall be tested to comply with the requirement of Routine Tests as per the relevant standard in the presence of purchaser's representative.
2. 03 (Three) sets of certified copies of acceptance / Routine Test reports shall be submitted to the Controlling Officer for approval before dispatch.
3. The Purchaser and/or authorised consulting engineer reserves the right to witness any/or all tests. The purchaser will have the right to get any other test(s) of reasonable nature, carried out at his own expense at manufacturer's work or at site or at any other place in addition to the Routine Tests, to confirm that the materials/items comply with the requirements of Specification.
4. The following tests shall be performed on CT:
 - (a) Verification of terminal marking and polarity
 - (b) High Voltage Power Frequency Dry Withstand Test on primary winding
 - (c) High Voltage Power Frequency Dry Withstand Test on secondary winding
 - (d) Over Voltage Inter turn Test
 - (e) Measurement of Partial Discharge Test
 - (f) Determination of Errors & other characteristics
 - (g) Measurement of Dielectric dissipation factor & Capacitance
 - (h) Temperature Rise Test (on any one unit of 220 kV and 132 kV each)
 - (i) Thermal Stability Test (on any one unit of 220 kV and 132 kV each)
 - (j) Temperature Co-efficient Test (On any one unit of 220 kV and 132 kV each).

XI. Inspection of the Equipments:

1. The bidder shall have to arrange for inspections and routine tests on Current Transformers at their works in presence of the WBPDCLEngineers. Inspection call to the WBPDCLEngineer must be intimated at least 01 (One) month before the date of inspection.
2. The WBPDCLEngineers will not inspect incomplete materials. If the WBPDCLEngineers returned without inspections of offered equipments, due to non-readiness of materials at their works, the financial loss to the WBPDCLEngineer, for deputed Engineer representatives will be recovered from the concerned supplier.

XII. Instruction Manuals:

03 (Three) copies of erection, operation & maintenance manuals in English language shall be supplied at the time of delivery of the materials. The manuals shall be bound volumes and contain all the drawings and information required for erection, operation and maintenance of the Current Transformer. One copy of **the manuals in PDF format is to be also submitted**. The manual shall include amongst others the following particulars:

1. Marked erection prints identifying the component parts of the Current Transformer and dispatched with the assembly drawings.
2. Detailed dimensions, assembly and description of all the components.