Corrigendum No: 03

Ref: TPCODL/P&S/1000000107/2020-21, **Date:** 08th Sep 2021

Sub: Corrigendum to open tender number TPCODL/P&S/1000000107/2020-21, Rate Contract for supply of 11kV & 33kV CT .

With reference to above NIT concerned bidders may note following modification to Annexure –1 (Price Schedule containing revised quantities) & Annexure –II (Technical Specification)

(A) **Modification to Annexure-I (Price Schedule)**

Annexure-I Price Schedule is modified as follows:

Sl No.	Package	Item Description	Unit	Quantity (Q)	HSN Code	Unit Price (in Rs.) A	GST (in Rs.) B	Unit Price (All Inclusive) (in Rs.) A+B	Total Amount (in Rs.) Q x (A+B)
1	Lot-1	Supply of 11KV CT Ratio – 300-600/1-1	Each	25					
2		Supply of 11KV CT Ratio – 400-800-1200/1-1-1	Each	25					
3		CT 11KV O/D CTR 200-400-800-1000/1-1-1-1	Each	99					
								Total Value(Rs.)	
1	Lot-2	Supply of 33KV CT – Ratio – 800-400-200/1-1-1	Each	211					
								Total Value(Rs.)	

N.B : Bidder may offer price bid either for Lot-1 or for Lot-2 or for both the packages as per above modified Price Schedule.

(B) Annexure –II (Technical Specification):

Following provisions are included in addition to existing provisions already contained earlier:

Technical Specification for 33 KV Outdoor Type Current Transformer (CT 33KV 800-400-200/1-1-1 AMP)

4.1 INTRODUCTION

This section covers the specification of 33 kV and 11kV Current Transformer suitable for outdoor service. Any other parts not specifically mentioned in this specification but otherwise required for proper functioning of the equipment should be included by the tender in the offer.

4.2 APPLICABLE STANDARDS

Unless otherwise modified in this specification, the Current Transformer shall comply with the latest version of relevant standards (IS 2165, IS 2705(I-IV), IS 2099, IS 5621, IS 2071, IS 335, IS 13947(part I), IEC 185, IEC 270, IEC 44(4), IEC 171, IEC 60, IEC 8263, IS 2147, IS 3347, IS 4201, IS 8603, IEC 815, Indian electricity Rules 2003) or better international standards. This list of standards is for guidance only. The contractor shall be solely responsible to design & manufacture the CT suitable for 33kV & /11 kV systems.

4.3 AMBIENT CONDITIONS

The CT supplied against these specifications shall be suitable for satisfactory continuous operation under the tropical conditions. The detail condition is mentioned in General Technical requirement.

4.4 CLIMATIC CONDITIONS

The service conditions shall be as follows:

1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g(g being acceleration due to gravity)

11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.

13. Environmentally, some of the regions, where the workwill take place includes coastal areas, subject to highrelative humidity, which can give rise to condensation.
14. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may createpollution conditions for outdoor insulators.
15. Some places are in heavily industrial polluted areas. Therefore, Outdoor material and equipment shall bedesigned and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere

4.5 SYSTEM PARTICULARS

33 kv CT ratio 200-400-800/1-1-1
11 kv CT ratio 200-400-800-1000/1-1-1.

4.6 TECHNICAL PARAMETERS OF CT

	33KV CT	11KV CT
Nominal System Voltage	33KV	11KV
Highest System Voltage	36KV	12KV
Rated Frequency	50 HZ	50 HZ
No. Of Phases	Three	
System neutral earthing	Solidly earthed	
One min power freq withstand voltage(rms)	70KV	28KV
Lightning Impulse withstand voltage (KVp)	170KVp	75KVp
System Fault Level	26.3kA for 3 Sec	
Type	Single Phase, Dead Tank, Outdoor, Oil Filled & Hermetically sealed	
Type of mounting	Pedestal Type	
Rated primary current	As per Tender	
Rated Continuous thermal current Primary current	120% of Rated	
Rated short time withstand Requirement for sec. Winding	As per IS 2705 Part-1	
Rated short time withstand current (rms)	25kA for 3 Sec	
Rated dynamic withstand Current (KA rms)	62.5	
Max temp rise	As per IEC-185/IS 2705	
Minimum Creepage distance of porcelain housing(mm)	25 mm/KV	
One minute power frequency Withstand voltage between Secondary terminal & earth	3 KV	
Details of Secondary Cores	Metering/Protection/Special Class	Metering/Protection/Special Class
	As per Tender	
Accuracy Class	0.2/5P20/PS	0.5/5P20/PS
Burden (VA)	30	30
Instrument Safety Factor	≤ 5 for Metering	
Accuracy Limit Factor	≥20 For Protection	
Knee point Voltage	Vk≥ 500 V at 400/1 A Max exciting current at Vk/2 shall not be less than 30mA, Rct=5 ohms	

4.7 PORCELAIN HOUSING

It shall be single piece of homogeneous, vitreous porcelain of high mechanical & dielectric strength. It will be glazed with uniform Brown or Dark brown colour with smooth surface finish. The creepage distance for the porcelain housing shall be at least 25 mm per kV.

4.8 WINDING

1 PRIMARY WINDING

It shall be made of high conductivity rigid copper wire. The primary winding current density shall not exceed the limit of 1.6 Amp per sq. mm for normal rating.

The design current density for short circuit current as well as conductivity of metal used for primary winding shall be as per IS 2705. The calculation for the selection of winding cross section shall be furnished by contractor.

The primary terminal shall be of standard size of 30 mm dia x 80 mm length of heavily tinned (min. thickness 15 micron) electrolytic copper of 99.9 % conductivity.

2 SECONDARY WINDING

shall be made of insulated copper wire of electrolytic grade. Type of insulation used shall be described in the offer. For multi ratio design, the multi ratio will be achieved by reconnection of the primary winding or secondary winding. The excitation current of the CT shall be as low as possible. The contractor shall furnish the magnetization curves for all the cores.

The terminal box shall be dust free & vermin proof. The size of the terminal box shall be big enough to enable easy access and working space with the use of normal tools.

The secondary terminals studs shall be provided with at least 3 nuts and two plain washers, these shall be made of brass duly nickel plated. The min. stud outer dia shall be 6 mm & length 15 mm. The min spacing between the centres of the adjacent studs shall be 1.5 time the outer dia of the stud.

The CT secondary terminals shall be brought out in a weather proof terminal box. The terminal box shall be provided with removable gland plate and gland (s) suitable for 1100 volts grade PVC insulated, PVC sheathed, multicore 4 sq mm stranded copper conductor cable. The terminal box shall be stud-type and provided with ferrules indelibly marked or numbered. The terminals shall be rated for not less than 10 amp. The terminal box shall be dust and vermin proof. Suitable arrangements shall be made for drying of air inside the secondary terminal box. The dimensions of the terminal box and its openings shall be adequate to enable easy access and working space with the use of normal tools. The secondary terminals shall be provided with shorting arrangements.

3 POLARITY

The polarity shall be marked on each CT at the primary and secondary terminals.

4.9 TANK & HARDWARES

The CT will be dead tank type. The tank shall be fabricated of MS steel sheet of min. 3.15 mm for sides & 5 mm for top & bottom. The tank will be finished with min. 2 coats of zinc rich epoxy paint externally. The inner surface shall be painted with oil resistance white enamel paint.

1 All ferrous hardware, exposed **to** atmosphere shall be hot dipped galvanized.

4.10 INSULATION OIL

The first filling of oil in CT shall be in contractor's scope. The oil shall be as per IS 335.

To ensure prevention of oil leakage, the manufacturer will give following details supported by drawings:

i) Location of emergence of Primary & Secondary terminals

ii) Interface between porcelain & metal tanks

iii) Cover of the secondary terminal box

Any nut & bolt and screw used for fixation of the interfacing porcelain bushing for taking out the terminals shall be provided on flanges cemented to the bushings & not on the porcelain.

If gasket joints are used, Nitrite Butyl Rubber gasket shall be used. The grooves shall be machined with adequate space for accommodating gasket under pressure.

The CT shall be vacuum filled with oil after processing. It will be properly sealed to eliminate breathing & to prevent air & moisture from entering the tank. The sealing methods/arrangement shall be described by the contractor & be approved by the owner.

4.11 OIL LEVEL INDICATOR

The CT shall be fitted with prismatic type oil sight window at suitable location so that the oil level is clearly visible with naked eye to an observer standing at ground level.

To compensate oil volume variation due to temperature variation, Nitrogen cushion or the stainless steel bellows shall be used. Rubber diaphragms are not permitted for this purpose.

4.12 EARTHING

Two earthling terminals shall be provided on the metallic tank of size 16 mm dia & 30 mm length each with one plain washer & one nut for connection to the station earth mat

4.13 Junction Box

The junction box shall be of MS sheet having thickness of 2mm, synthetic enamel painted as per procedure mentioned in General Technical Requirement (Min. thickness 55 micron). The shade of junction box shall be 697 of IS: 5. Disconnecting type terminal blocks for CT secondary lead shall be provided. The junction boxes shall be weather proof type with gaskets, as per section-I (Introduction and general technical requirements) conforming to IP-55 as per IS-13947 (Part-I).

4.14 LIFTING & MOUNTING ARRANGEMENT

The CT shall be provided with two lifting eyes to lift the CT. This shall be so positioned so as to avoid any damage to the CT during lifting for instillation or transportation purpose. This shall be detailed in General Arrangement drawing.

The CT shall be of pedestal mounting type suitable for outdoor installation on steel/cement concrete structures. All the clamps, bolts, nut and washers etc. required for mounting the CT on the structure shall be supplied along with the CT and shall be galvanized. The contractor shall supply all the terminal connectors etc. required for connection to the CT.

4.15 TESTING

All applicable Type Tests as per IS 2705 (Latest Revision) are mandatory for each design .

4.16 Terminals and connectors

All the Current Transformers shall be provided with bimetallic solder less clamp type, rigid type terminalconnectors, suitable for maximum conductor size shall be 20mm.
Each terminal connector shall be of universal type, suitable for both horizontal and vertical connections to thetransmission line conductors / station bus bars.
Terminal connectors shall be manufactured and tested as per IS: 5561.

All castings shall be free from blow holes, surface blisters, cracks and cavities. All sharp edges and corners shallbe blurred and rounded off.
No part of a clamp shall be less than 10mm thick.
All ferrous parts shall be hot-dip galvanized conforming to relevant standard.

For bimetallic connectors, copper alloy linear of minimum thickness of 2 mm shall be cast integral with aluminumbody.

All current carrying parts shall be designed and manufactured to have minimum contact resistance.

Connectors shall be designed to be corona free in accordance with the requirements, stipulated in IS:

5561

NB : All other terms & conditions of our above Tender remains un-ultered.

By Order
Chief-Procurement & Store, TPCODL