

ANNEXURE - 2

Technical Datasheet for Indoor type (IP 4X) PCC Panels as per IEC 61439 (To be filled by Vendor & submit with the Technical Bid)

Sr. No.	Description	IUCAA Requirement	Bidder Remark
1	Minimum Eligibility criteria	Panel builder must have workshop with latest ISO 9001 Certifications & shall have Calibrated testing setup for Routine test of LT Panels as per IEC 61439 part 1 and 2. Contractor to provide panel builder documents for verification.	
		Panel builder must have Valid Authorization letter from OEM on OEM Letter head duly signed and stamped to Manufacture and supply Totally Type Tested assemblies designed by OEM & Tested by OEM as per IEC 61439 part 1 and 2. All the type test reports must be from OEM only. Contractor to provide panel builder, OEM documents for verification)	
		Type test certificates - 13 Nos as per IEC 61439 part 1 and 2 for LT Panels shall be submitted by OEM & in the name of OEM Only. Contractor to provide panel builder, OEM documents for verification)	
A	Operating Conditions		
1.0	Altitude	Max 1000 Mtr above Sea level	
2.0	Ambient Temperature	45 Deg as per OEM design, however temp rise to be limited to 90 Deg C	
3.0	Humidity Level	Average 95 %	
4.0	Degree of Pollution	Dusty	
5.0	Installation Type	Indoor	
6.0	Rated Continuous Operating Voltage	415 +/- 10% Volt	

7.0	Rated frequency	50 + 3 % Hz	
8.0	Reference Standard:	Relevant latest IS and IEC 61439-1, IEC 61641	
9.0	Fault Level	Min. 50kA for 1 Sec	
10.0	Auxiliary Supply Voltage		
a	AC in V - 230V	For Spring Charging	
b	AC in V - 230V	For Operation & Indications.	
B	PANEL DATA		
11.0	Panel Make	ABB -ArTuK Double Door, Schneider-Prisma Double Door, Siemens -Sivacon Double Door, L&T - Enersys Double Door	
12.0	Panel Installation and Type	Indoor	
13.0	Reference standard	Panel: IEC 61439 1 & 2, IEC 61641	
14.0	Phase, Frequency, Hz	3 Phase + N, 50 Hz	
15.0	Insulation level 1 min.50 HZ voltage withstand kV rms.	2.5 KV	
16.0	Metal enclosed Construction? Yes/No	Yes	
17.0	Form of Panel	Form 3 B Minimum	
18.0	Degree of Protection		
a	Degree of Protection - Panel	Panel: IP 4X	
19.0	Cable Entry - I/C & O/G	Bottom	
20.0	Neutral Link	To be provided for each breaker Minimum rating shall be 50 % of Rated breaker capacity	

21.0	ACB	Siemens-3WL/Legrand- DMX3/ L& T- Omega	
a	Incomer Breakers	ACB 4 Pole with 100% neutral - EDO Type, Icw = 50kA for 1 Second, Microprocessor based LSIG Protection with OLED/LCD Display, Ics=Icu=Icw=1 sec. Release should have separate indication for Release healthiness during ACB Operation. ACB shall show and store min 10 trip data, fault current and type of protection tripped min 10 trip record. All incomer ACBS shall be equipped with U/V release with settable time delay from 0 - 1- -3-5 sec) 240 V AC All incomer ACBs shall be equipped with Shunt coil 240 V AC	
b	Outgoing Breakers	As per SLD	
c	Bus Coupler ACB	800Amp, 4 Pole ACB with 100% neutral - EDO Type, Icw=50kA 1 Sec, Ics=Icu=Icw=1 sec.	
23	Short circuit current rating		
a	Incomer & Bus coupler Breaker	50 KA Icw 1 Sec	
b	Outgoing Breaker-	50 KA Icw 1 Sec	
c	Panel Main busbar	50 KA Icw 1 Sec	
24	Busbars - (3P+N+E)		
a	Make	Bidder to specify	
b	Material & Grade	Aluminum Grade E91E of IS:5082, Grade Bidder to specify	
c	Reference standard	As per relevant IS/IEC standard	
d	Bus-bar sizes for main Horizontal buses phase=R-Y-B	As per OEM testing, suitable for continuous 2500 A, IP 4X with natural cooling, test reports to be submitted with natural cooling along with technical bid / Bidder to	
e	Bus-bar sizes for neutral busbar (N)	As per OEM design / Bidder to specify	

f	Busbar Shape	As per OEM design / Bidder to specify	
g	Cross sectional area Sq. mm	As per OEM design / Bidder to specify	
h	No. of bars per phase	As per OEM design / Bidder to specify	
i	Current density, A/Sq. mm	0.8 A per Sq. mm	
j	Support spacing, m	As per OEM design / Bidder to specify	
k	Current ratings	As per OEM design / Bidder to specify	
l	Main Bus Bar rating	As per OEM testing, suitable for continuous 2500 A, IP 4X with natural cooling, test reports to be submitted with natural cooling along with technical bid, OEM to submit Test report containing all 13 type tests as per IEC 61439 part 1 and 2 and internal arc test report as per IEC 61641	
m	Temperatures rise over ambient	As per IEC 61439	
n	(i) For rated current	Bidder to specify	
o	(ii) For short circuit current	Bidder to specify	
p	Calculation for temperature rise for both continuous & short circuit	Bidder to specify	
	GROUND BUS		
q	Material	Aluminum Grade E91E of IS : 5082	
r	Size	As per OEM design / Bidder to specify	
s	Thickness of sheet metal	min 1.6mm with strengthening ribs to avoid panel wobbling	

i	Front	Bidder to specify - IK09 as per IEC 61439	
ii	Back	Bidder to specify - IK09 as per IEC 61439	
iii	Side	Bidder to specify - IK09 as per IEC 61439	
iv	Top	Bidder to specify - IK09 as per IEC 61439	
v	Bottom	3 mm	
vi	Base Channel	100 mm height 6mm thick, Black colour	
25	Dimension of vertical section in mm (LxDxH)	Bidder to specify	
26	Total weight of complete cubicle	Bidder to specify	
27	Equipment completely assembled, wired and tested at factory? Yes/No	Yes	
28	Space heater rating	Required, Bidder to specify	
29	Test certificate and compliance as per IEC 61439	Required Along with Technical Bid.	
30	All 13-type test certificate as per IEC 61439	Required Along with Technical Bid. - all reports/certificates shall be in the name of OEM	
31	IP 4X Certification	Required from authorized agencies along with Technical Bid for IP4X enclosure	
32	Routine test certificates	required as per applicable IS/IEC standard	
34	Painting – Powder coated	RAL 7032	
35	Construction		

a	Draw out feature provided for Circuit breaker with Service, Test & Isolated Position Yes /No	Required	
b	Lockable back cover Arrangement	Required	
c	Provision for extension	Required	
d	Minimum clear space at		
i	Front for breaker withdrawal mm	Bidder to specify	
ii	Rear mm	Bidder to specify	
e	Minimum clearance of bars and connections as per IEC 61439		
i	Phase to phase, mm	Bidder to specify	
ii	Phase to ground, mm	Bidder to specify	
f	CURRENT TRANSFORMERS		
i	Make	Bidder to specify	
ii	Type	Bidder to specify	
iii	Applicable standards	Bidder to specify	
iv	Ratio	Bidder to specify	
v	Accuracy class	0.5S	
vi	Rated burden	Bidder to specify	
f	Energy Meter	Accuracy class 0.5s	

g	Temperature Scanner	Temperature monitoring system shall be provided along with alarm panel for temperature measurement at ACB termination, Main Bus Bar, Vertical dropper, Panel micro Ambient temperature	
h	SPACE HEATER/ PLUG SOCKET	Required, Bidder to specify	
36	Indications		
i	Incomer ACB breaker	R, Y, B, On, Off, Trip, Emergency Stop, TNC	
ii	Outgoing ACB breakers	On, Off, Trip, Emergency Stop, NC	
37	Panel Mounting	MS fabricated stand mounted	
38	Other Equipment's		
a	Anti-condensing system		
i	Space Heaters to be provided in each panel.	To be provided	
ii	Thermostat with each Heater.	To be provided	
iii	Toggle switch for heater ON / OFF	To be provided	
b	Cubicle Illumination		
i	Light fitting in in Control and Cable compartment	LED fitting to be provided	
ii	Control switch for fitting.	To be provided	
iii	Door Switch for light fitting	To be Provided	
c	Fittings and accessories		
i	3 Pin Socket	One no per cubicle.	

ii	Handles and Keys	To be provided	
d	Drawings & Inspection		
i	Tentative GA drawing with offer	Required Along with Technical Bid	
ii	Approximate weight of total panel including Breaker and Cubicle in Kg	Pl Specify	
iii	3 sets of Drawing submission to Client within 10 days from date of PO for approval and to obtain manufacturing clearance	To be complied	
iv	3 sets of corrected Drawing (as per comments) submission to Client within 15 days from date of Mfg Clearance for record and reference.	To be complied	
v	Inspection & Tests	Required Factory inspection and routine tests before dispatch	
vi	Witness of acceptance test by IUCAA	Yes, Quality test acceptance by OEM for panel only without canopy	
vii	No. of units on which acceptance tests are to be carried out	All panels offered for inspection and routine testing	
viii	Routine Tests - For all Feeders	As per IS / IEC	
ix	Type Tests	Only certificate to be provided,	
x	Submission of Test Certificates	Along with Technical Bid	

xi	Dispatch / Delivery Clearance	Dispatch / Delivery Clearance to obtain from IUCAA after inspection with submission of compliance	
xii	Lifting location and weight markings on packings	To be marked.	
xiii	Final AS BUILT DRAWING & Operation and Maintenance Manual for equipment's as well as for Bought out items, Test Certificates - submission	To be complied	
39	Commissioning	Commissioning support required from OEM	
40	Warranty	30 Months from Dispatch or 24 Months from Commissioning.	
	Note -	All ACB should be in single tire arrangement only	

NOTE : The bidder should fill-in all the data in above format only. If above mentioned data is not filled properly or partially filled tender shall be liable to rejection.

Seal & Signature of Bidder

Datasheet for Energy Efficient Level 1 - 1000 KVA 11kV/0.415 kV Oil filled Indoor type Hermetically Sealed Corrugated Transformer with OLTC and RTCC Panel confirming to latest applicable IS 1180 Part 1 (To be filled by Vendor & submit with the Technical Bid)

SR. NO.	DESCRIPTION	IUCAA Requirement	Bidder Remarks
a)		The Transformer OEM Must have BIS Certification as mentioned in the requirements for transformer manufacturing and testing. (Contractor to submit OEM documents for verification)	
1	Name of Manufacturer & Type of Transformer	Bidder to specify	
2	Installation	Indoor	
3	KVA Rating	1000 KVA - Energy Efficiency Level -1, IS 1180 Part 1	
4	No. of phases	3	
5	Voltage ratio	11/0.415 kV	
6	Rated frequency	50 Hz	
7	Rated Voltage	11/0.415 kV	
8	Fault level	50 kA for 1 sec	
9	Rated Insulation level	As per IS 1180	
10	Insulation Class	Bidder to specify as per IS 1180	
11	Winding	Copper	
a)	HV Copper winding KV	11 kV	
b)	LV Copper winding KV	0.415 kV	
12	Type of winding connection (Vector group) Symbol & Ambient conditions (as per IS 1180):	Dyn11, HV Side -Delta & LT Side -Star connection	
13	Type of Cooling	ONAN	
14	Tapping	On LOAD Tap Changer	
	Range	+5% to -10% in step of 1.25%	
	Tapping provided on	HV Side	
15	% Impedance	5% as per IS 1180	

16	Maximum losses @	As per IS 1180 level 1 Specify	
a)	50% Load	Maximum loss at 50% will be 2790 Watt & at 100% will be 7700 Watt - Bidder to confirm	
c)	100% Load		
17	Terminal Arrangement		
a)	HV Side	Suitable for terminating 3C X 300 sq.mm. 11 kV XLPE Cable & minimum clearances as per IS 1180	
b)	LV Side	Suitable for terminating 7 Runs of 3.5C X 300 sq. mm Aluminum Armoured cable & minimum clearances as per IS 1180 part 1	
18	RTCC Panel	Bidder to specify & as per given technical specifications & latest applicable IS Standards	
19	Make of OLTC (As per IS 8468)	Bidder to specify as per given technical specifications	
20	Maximum temperature rise in oil Degree Celsius	Bidder to specify Value The permissible temperature-rise shall not exceed the limits of 45°C when measured by resistance method for transformer winding and 40°C measured by thermometer for top oil when tested in accordance with IS 2026 (Part 2).	
21	Maximum temperature rise in winding Degree Celsius		
22	Efficiency at 75°C	Bidder to specify the value for unity P.F. and for 0.8 lagging pf and must confirm to IS 1180 part 1	
a)	At full load		
b)	At 75% load		
c)	At 50% load		
23	Maximum efficiency@ X % load		
24	Regulation at full load and at 75°C		
a)	At unity PF	Bidder to specify the value and must confirm to IS 1180 Part 2	
b)	At 0.8 PF lagging		

25	Maximum Current Density at rated power		
a)	HV winding	Bidder to specify the value and must confirm to IS 1180 part 1	
b)	LV winding	Bidder to specify the value and must confirm to IS 1180 part 1	
26	Winding Type		
a)	HV winding	Bidder to specify	
b)	LV winding	Bidder to specify	
27	Insulation material (AS PER IS 1271)		
a)	HV winding	Bidder to specify	
b)	LV winding	Bidder to specify	
28	Details of core		
a)	Core lamination material	Bidder to specify	
b)	Thickness of lamination	Bidder to specify	
c)	Insulation of lamination Type	Bidder to specify	
29	Details of Main Tank		
a)	Material	As per IS 1180 Part 1	
b)	Thickness of side minimum (mm)		
c)	Thickness of bottom minimum (mm)		
d)	Thickness of cover minimum (mm)		
e)	Thickness of tube minimum (mm)		
f)	No. of limbs (core type)		
32	Details of Oil make & Type	As per IS 335/ IS 12463	
a)	Total Oil required	Bidder to specify	
b)	Whether first filling of Oil with 10% excess in non-returnable drums furnished	Bidder to specify	

c)	Oil conforms to standard	IS 335	
33	Accessories		
a)		Rating and Diagram Plate as per IS 1180 Part 1	
b)		Air Release device	
c)		Explosion vent / PRV with double diaphragm with oil sight glass and equalizer pipe	
f)		Earthing Terminals – 2 Nos.	
g)		Dial type oil temperature indicator with alarm and trip contact	
i)		Marshalling box – 1 No.	
j)		Lifting Lugs for whole transformer as well as for core and winding assembly.	
k)		Inspection cover – 1 No.	
m)		Plain oil level gauge– 1 No.	
n)		Thermometer pocket – 2 Nos.	
o)		Bottom Drain cum filter valve [Single sided flange] – 1 No.	
p)		First fill of oil	
q)		Dial type winding temperature indicator with alarm and trip contact	
s)		On load tap changer	
t)		Remote Control Cubicle Panel [RTCC]	
u)		Automatic Voltage Regulator [AVR]	

v)		Oil surge relay with trip contact.	
w)		Shut off valve for oil surge relay – [Double sided flange] – 1 No	
x)		One filter valve on the upper side of the tank	
y)		Uni/bi directional flat rollers	
34	Mounting Arrangement with Foundation details and GA Drawing	To be submitted by bidder along with Bid.	
35	Warranty	Required. 30 Months from Dispatch or 24 Months from Commissioning.	

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Seal & Signature of Bidder

Datasheet for OLTC - 1000 KVA 11kV/0.415 kV confirming to latest applicable IS 1180 Part 1 (To be filled by Vendor & submit with the Technical Bid)

Sr. No.	Description	Required Parameters		Bidder's Remarks
1	Rated Voltage	11 kV		
2	Max. System Voltage	12 kV		
3	Max Voltage per Step	550 V		
4	Max. No. of Steps	12		
5	Max. No. of Positions	13		
6	Max. Rated through Current	200 Amp		
7	Time per Tap Change	4-6 Seconds		
8	Short Circuit Withstand	3.5kA for 3 Secs.		
9	Oil Volume			
10	Total Weight			
11	Validated for No. of Operations	Min. 500000		
12	Test Voltage :	kV	Impulse (kVp)	
12.1	To Earth	35	110	
12.2	Between Phases	35	110	
12.3	Between Adjacent Contacts	10	40	
12.4	Across Tapping Range	15	60	

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