SECTION 8

GUARANTEED TECHNICAL PARTICULARS

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8.1 GUARANTEED TECHNICAL PARTICULARS OF 33 KV INDOOR TYPE GAS INSULATED SWITCHGEAR (GIS) CUBICLE WITH PROTECTION, CONTROL AND METERING EQUIPMENT

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise bid shall be rejected)

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
	Incoming Feeder/Outgoing Feeder, Auxiliary Transformer Feeder & Bus coupler (With Riser) Switchgear:			
1.	Manufacturer's Name & Address		Shall be mentioned	
1.1	Model		Shall be mentioned	
1.2	Manufacturer & country of origin		Shall be mentioned (Please refer to PE's requirement).	
1.3	Applied Standard		Latest version of IEC 62271 fully complied	
1.4	Rated nominal Voltage	kV	33	
1.5	Rated Voltage	kV	36	
1.6	Rated Frequency	Hz	50	
1.7	Material of Bus-Bar		HDHC Copper	
1.8	Busbar Scheme		Single Bus with Bus Sectionalized	
1.9	Installation		Free Standing	
1.10	Rated Current for Main Bus	Amp	3000	
1.11	Cross Section of bus bar at least	Sq. mm	3000	
1.12	Rated short time current	KA	31.5	
1.13	Short time current rated duration	Sec.	3	
1.14	Pressure relief device is integrated with each gas chamber and pressure relief ducts to the outside the room		Yes	
1.15	Mimic diagram is depicted in front of switchgear panel		Yes	
1.16	Electrical and Mechanical interlock between Circuit breaker, isolator and earth switch		Yes	
1.17	Capacitive Voltage Indicator with interlock contact for ES operation		Yes	
2.	**Circuit Breaker:**			
2.1	Type of interrupter		VCB	
2.2	Class of Circuit Breaker (through necessary Type Test report)		E2M2 or better	
2.3	Internal Arc Classification (as per IEC)		31.5KA, 3s	
2.4	Insulation media		SF6	
2.5	Interrupting media		Vacuum	
2.6	Manufacturer's name and country of origin of vacuum interrupter (Shall be same as mentioned in Type Test report)		Shall be mentioned.	

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
2.7	Manufacturer's model no. of vacuum interrupter		To be mentioned	
2.8	Guaranteed Nos. of operation for Vacuum Interrupter:			
	a) at rated Current switching	Nos	Min. 10000	
2.9	b) at Short circuit current switching	Nos	≥ 50	
2.10	Rated Voltage	KV	36	
2.11	Rated Current (for incoming feeder)	A	2500	
2.12	Rated Current (for outgoing / Aux tr.)	A	1250	
2.13	Rated Current (for Bus coupler)	A	2500	
2.14	Rated Short Ckt. Breaking Current	KA	31.5	
2.15	Rated duration of short circuit current	sec	3	
2.16	Rated Short CKt. Making Current	KA	78	
2.17	Rated Breaking time	Cycle	< 3	
2.18	Opening time	Sec.	< 0.05	
2.19	Closing time	Sec.	< 0.08	
2.20	Rated operating Sequence		O-0.3 sec-CO-3 min-CO	
2.21	Control Voltage	V	DC 110	
2.22	Motor Voltage for spring charge	V	AC 230	
2.23	Power Consumption of Charging motor	W	To be mentioned	
2.24	Power consumption of opening/trip coil	W	To be mentioned	
2.25	Nos. of Trip coils	Nos	2	
2.26	Main Contact:			
	a) Type of contact	-	To be mentioned	
	b) Material of contract surfaces	-	To be mentioned	
	c) Contract resistance	μΩ	Less than 40	
3.	**Three position disconnector Switch with ES (Motorized)**			
3.1	Type		Shall be mentioned	
3.2	Rated Voltage	KV	36	
3.3	Rated Current (for incoming feeder)	A	2500	
3.4	Rated Current (for outgoing feeder/Aux. Tr.)	A	1250	
3.5	Rated Current (for Bus-coupler)	A	2500	
3.6	Rated short time current	KA	31.5	
3.7	Short time current rated duration	S	3	
3.8	Switch Position		close, open, earth	
3.9	Electrical and Mechanical interlock		As per IEC 62271-200	
4.	**Current Transformer:**			
4.1	Type		Ring core / block type with sensor	
4.2	Rated Voltage	KV	36	
4.3	Accuracy Class, Metering		0.2S	
4.4	Accuracy Class, Protection		5P20	
4.5	Rated Current Ratio (for incoming & Bus Coupler)	A	2400-1600/1-1-1A	

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
4.6	Rated Current Ratio (for Outgoing/Aux. Tr.)		800-400/1-1-1A	
4.7	Burden for metering	VA	15 (at max CT ratio)	
4.8	Burden for protection	VA	15 (at max CT ratio)	
4.9	Extended Current Rating for metering	A	120 % of rated Current	
4.10	Instrument Security factor (metering)		≤ 10	
4.11	Rated frequency	Hz	50	
5.	**33 kV Cable Compartment:**			
5.1	Material		Highly Conductive Copper	
5.2	Bus bar type		Single	
5.3	Cross Section	mm^2	3000	
5.4	Nominal Current (for incoming & Bus Coupler)	A	2500	
5.5	Nominal Current (for outgoing/Aux. Tr.)	A	1250	
5.6	Cable connection			
	Incomer and Bus coupler		800 mm^2 single-core Cu compression lugs, with provision for 4 Nos. per phase	
	Outgoing feeder		500 mm^2 single-core Cu compression lugs, with provision for 2 Nos. per phase	
6.	**Voltage Transformer (BUS PT):**			
6.1	Number of Phase		Single Phase	
6.2	Rated Primary Voltage	kV	33/√3	
6.3	Secondary Voltage (Metering)	V	110/√3	
6.4	Secondary Voltage (Protection)	V	110/√3	
6.5	Rated burden, Metering	VA	50	
6.6	Rated burden, Protection	VA	50	
6.7	Accuracy class of secondary core		0.2	
6.8	Accuracy class of tertiary core		3P	
6.9	LV Compartment		IP40	
7.	**Line Voltage Transformer (for incomer only)**			
7.1	Number of Phase		Single Phase	
7.2	Rated Primary Voltage	kV	33/√3	
7.3	Secondary Voltage (Metering)	V	110/√3	
7.4	Secondary Voltage (Protection)	V	110/√3	
7.5	Rated burden, Metering	VA	50	
7.6	Rated burden, Protection	VA	50	
7.7	Accuracy class of secondary core		0.2	
7.8	Accuracy class of tertiary core		3P	
7.9	LV Compartment		IP40	
8.	**SF6 Safety and life**			
8.1	SF6 Pressure	KPa	Shall be mentioned	
8.2	Rated pressure at 20 degree C	KPa	Shall be mentioned	
8.3	Bursting Pressure	KPa	Shall be mentioned	
8.4	Gas leakage rate/year	KPa	≤0.1%	
8.5	Safety indication		To be incorporated	
8.6	Capacitive voltage indicator (feeder panel)		In the front of the panel	

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
8.7	Gas pressure Manometer		As per IEC 62271-1	
8.8	Bus Bar Gas Pressure Manometer		As per IEC 62271-1	
8.9	Life/ Endurance of switchgear switches			
	a) Circuit Breakers		As per IEC 62271-100	
	b) Disconnectors & Earthing switches		As per IEC 62271-102	
8.10	Alarm level for insulation	Kpa	Shall be mentioned	
8.11	Rated filling level for insulation	Kpa	Shall be mentioned	
9.	**Dimension and Weight**			
9.1	Height	mm	Shall be mentioned	
9.2	Width	mm	Shall be mentioned	
9.3	Depth	mm	Shall be mentioned	
9.4	Weight including Circuit Breaker	kg	Shall be mentioned	
10.	**Construction:**			
10.1	Stainless steel tank		Shall be mentioned	
10.2	Equipped with disconnector and earthing switch. The earthing switch shall have full fault-making capacity.		Shall be mentioned	
10.3	Each gas filled compartment shall be equipped with density sensors giving alarm by low gas density.		Shall be mentioned	
10.4	Applied Standard		Shall be mentioned	
11.	**Degree of Protection**			
11.1	Enclosure		IP3X	
11.2	HV Compartment		IP65	
11.3	LV Compartment		IP40	
12.	**Insulation level:**			
12.1	AC withstand voltage 1min. dry	kV	70	
12.2	Impulse Withstand, full wave	kV	170	
13.	**PROTECTION CONTROL & METERING**			
13.1	**IDMT OVER CURRENT & EARTH FAULT RELAY (3 O/C + 1 E/F + 3 Directional O/C + 1 Directional E/F)**			
13.2	Manufacturer's Name & country		Shall be mentioned (Please refer to PE's requirement).	
13.3	Manufacture's Model no.		Shall be mentioned	
13.4	Type of relay		Numerical programmable Multifunction	
13.5	Range of current setting:			
	a) Phase element	% of CT rating	Shall be mentioned	
	b) Each fault element		Shall be mentioned	
13.6	Range of timing settings at 10-time CT rating	Sec	Shall be mentioned	

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
	CT rating			
13.7	Burden of relay at 10-time CT rating	VA	Shall be mentioned	
13.8	Communication Facilities		SCADA Supported	
13.9	Communication Standard		IEC-61850 with FO-LC Port	
13.10	Features: 23 BI (min.), 16 BO (min.), Mimic Display, and others features as per section-7 of technical specification.		Yes	
14.	**Trip Circuit Supervision (TCS) Relay (Separate Relay for each trip coil)**			
14.1	Manufacture's Name			
14.2	Country of Origin		Shall be mentioned	
14.3	Manufacture's Model no.		Shall be mentioned	
14.4	Type of Relay		Shall be mentioned	
15.	**Trip Relay (Separate Relay)**			
15.1	Manufacture's Name		Shall be mentioned	
15.2	Country of Origin		Shall be mentioned	
15.3	Manufacture's Model no.		Shall be mentioned	
15.4	Type of Relay		Shall be mentioned	
15.5	Operating Time		< 10 ms	
15.6	Hand & Electrical reset type for O/C, E/F protection		Yes	
16.	**Annunciator**			
16.1	Manufacture's Name		Shall be mentioned	
16.2	Country of Origin		Shall be mentioned	
16.3	Manufacture's Model no.		Shall be mentioned	
16.4	Windows		12 nos	
16.5	Built in buzzer and buttons for accept, mute, test, reset, etc.		Yes	
17.	**Control Switch**			
17.1	Manufacture's Name		Shall be mentioned	
17.2	Country of Origin		Shall be mentioned	
17.3	Manufacture's Model no.		Shall be mentioned	
17.4	Separate TNC/Discrepancy switch and Local Remote (L/R) selector switch		Yes	
18.	**METERING**			
18.1	**a) Three line VOLT METERS**			
18.1.1	Manufacturer's Name and Country		Shall be mentioned	
18.1.2	Manufacture's Model no.		Shall be mentioned	
18.1.3	Type of Meter		digital	
18.1.4	Class of Accuracy		1	
18.2	**b) Three line AMPERE METERS**			
18.2.1	Manufacturer's Name and Country		Shall be mentioned	
18.2.2	Manufacture's Model no.		Shall be mentioned	
18.2.3	Type of Meter		digital	
18.2.4	Class of Accuracy		1	
18.2.5	Separate A-meter for each phase		Yes	

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
18.3	**d) Multifunctional meter**			
18.3.1	Manufacturer's Name and Country		Shall be mentioned	
18.3.2	Manufacture's Model no.		Shall be mentioned	
18.3.3	Type of Meter		Digital, Import/Export	
18.3.4	Parameters: capable of measuring and displaying MW, MVAR, PF, V, I, f, Φ etc.		Yes	
18.3.5	Class of Accuracy		1	
19.	**STATION AUXILIARY TRANSFORMER SWITCHGEAR UNIT**			
19.1	Manufacturer's Name & Address		To be mentioned	
19.2	Manufacturer country of origin		Shall be mentioned	
19.3	Type		Shall be mentioned	
19.4	Rated nominal Voltage	kV	33	
19.5	Rated Voltage	kV	36	
19.6	Material of Bus-Bar		HDHC Copper	
19.7	Rated Current for main bus	A	3000	
19.8	Cross Section of busbar	mm^2	3000	
19.9	Rated short time current	KA	31.5	
19.10	Short time current rated duration	Sec.	3	
19.11	**Load Break Switch:**			
19.11.1	Rated Voltage	kV	33	
19.11.2	Highest System Voltage	kV	36	
19.11.3	Rated Frequency	Hz	50	
19.11.4	Number of Phases	—	3	
19.11.5	Rated Normal Current	A	630	
19.11.6	Short-Time Withstand Current (3 s)	kA	31.5	
19.11.7	Power Frequency Withstand Voltage (1 min)	kV	70	
19.11.8	Lightning Impulse Withstand Voltage (BIL)	kVp	170	
19.11.9	Insulation Medium	—	SF_6 Gas	
19.11.1	Gas Pressure	MPa	Manufacturer's Standard	
19.11.1	Arc Quenching Medium	—	SF_6	
19.11.1	Operating Mechanism	—	Spring Operated	
19.11.1	Operation	—	Manual & Motorized	
19.11.1	Motor Supply Voltage	V AC/DC	Bidder to Specify	
19.11.1	Closing Time	ms	Manufacturer's Standard	
19.11.1	Opening Time	ms	Manufacturer's Standard	
19.11.1	Mechanical Endurance	Operations	≥10,000	
19.11.1	Electrical Endurance	Operations	As per IEC	
19.11.1	Degree of Protection (GIS Tank)	IP	IP67 or Better	
19.11.2	Degree of Protection (Control Cabinet)	IP	IP54/IP55	
19.11.2	Position Indication	—	ON/OFF	
19.11.2	Auxiliary Contacts	Nos.	Bidder to Specify	
19.11.2	Control Voltage	V DC	110	
19.11.2	Space Heater Supply	V AC	230	

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
19.11.25	Local/Remote Operation	—	Required	
19.11.26	SCADA Compatibility	—	Required	
19.11.27	Cable Termination	—	GIS Compatible	
19.11.28	Busbar Material	—	Copper	
19.11.29	Enclosure Material	—	Stainless Steel/Aluminium Alloy	
19.11.30	Ambient Temperature	°C	50 Max	
19.11.31	Installation	—	Indoor GIS	
19.12	**Circuit Breaker: (if offered)**			
19.12.1	Manufacturer's model no. of vacuum interrupter		Shall be mentioned.	
19.12.2	Rated Voltage	KV	33	
19.12.3	Rated Current	A	1250	
19.12.4	Rated Short Ckt. Breaking Current	KA	31.5	
19.12.5	Rated duration of short circuit current	sec	3	
19.12.6	Rated Short CKt. Making Current	KA	78	
19.12.7	Rated Breaking time	Cycle	<3	
19.13	**DS (if CB offered)**			
19.13.1	Operating Mechanism		motor and manual	
19.13.2	Insulating media		SF6	
19.13.3	Interrupting media		SF6	
19.14	**Insulation level:**			
19.14.1	AC withstand voltage 1min. dry	kV	70	
19.14.2	Impulse Withstand, full wave	kV	170	
19.15	**Degree of Protection**			
19.15.1	Enclosure		IP3X	
19.15.2	HV Compartment		IP65	
19.15.3	LV Compartment		IP40	
19.16	**Dimension and Weight**			
19.16.1	Height	mm	Shall be mentioned	
19.16.2	Weight	mm	Shall be mentioned	
19.16.3	Depth	mm	Shall be mentioned	
19.17	**PROTECTION CONTROL & METERING (PCM) for station transformer (if CB is offered)**			
19.18	**IDMT OVER CURRENT RELAY**			
19.18.1	Manufacturer's Name & country		Shall be mentioned (Please refer to PE's requirement).	
19.18.2	Manufacture's Model no.		Shall be mentioned	
19.18.3	Type of relay		Numerical programmable Multifunction	
19.18.4	Communication Facilities		SCADA Supported	
19.18.5	Communication Standard		IEC-61850 with FO-LC Port	
19.18.6	Features: BI, BO, Mimic Display, and others features as per section-7 of technical specification.		Yes	
19.19	**Trip Circuit Supervision (TCS)**			

Sl. No.	DESCRIPTION	UNIT	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
	Relay (Separate Relay)			
19.19.1	Manufacture's Name		Shall be mentioned	
19.19.2	Country of Origin		Shall be mentioned	
19.19.3	Manufacture's Model no.		Shall be mentioned	
19.19.4	Type of Relay		Shall be mentioned	
19.20	**Trip Relay (Separate Relay)**			
19.20.1	Manufacture's Name		Shall be mentioned	
19.20.2	Country of Origin		Shall be mentioned	
19.20.3	Manufacture's Model no.		Shall be mentioned	
19.20.4	Type of Relay		Shall be mentioned	
19.21	**Annunciator**			
19.21.1	Manufacture's Name		Shall be mentioned	
19.21.2	Country of Origin		Shall be mentioned	
19.21.3	Manufacture's Model no.		Shall be mentioned	
19.22	**VOLT METERS**			
19.22.1	Manufacturer's Name and Country		Shall be mentioned	
19.22.2	Manufacture's Model no.		Shall be mentioned	
19.22.3	Type of Meter		Digital	
19.22.4	Class of Accuracy		1	
19.23	**AMPERE METERS**			
19.23.1	Manufacturer's Name and Country		Shall be mentioned	
19.23.2	Manufacture's Model no.		Shall be mentioned	
19.23.3	Type of Meter		Digital	
19.23.4	Class of Accuracy		1	
19.23.5	Separate A-meter for each phase		Yes	
19.24	**Multifunction Meter**			
19.24.1	Manufacturer's Name and Country		Shall be mentioned	
19.24.2	Manufacture's Model no.		Shall be mentioned	
19.24.3	Type of Meter		Digital, Import/Export	
19.24.4	Class of Accuracy		1	
19.24.5	Parameters: capable of measuring and displaying MW, MVAR, PF, V, I, f, Φ etc.		Yes	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.2 GUARANTEED TECHNICAL PARTICULARS OF SUBSTATION AUTOMATION SYSTEM

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected.)

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
1.	Name of the Manufacturer/Developer	To be mentioned	
2.	Country of Origin	Shall be mentioned (Please refer to PE's requirement).	
3.	Model of the Substation Automation System	To be mentioned	
4.	Design life of Substation Automation System	≥ 20 Yrs.	
5.	Manufacturer's quality assurance system	ISO 9001/ 9002 or equivalent	
6.	Application and implementation of the latest IEC (IEC 62351, etc.) and ISO (ISO/IEC 27001, 27002, ..., 27019, etc.) Standards, considering state-of-the-art communication technology and cyber security	Yes/No	
7.	Communication protocol at all levels	IEC 61850. Fully Complying with the standard.	
8.	Relative humidity	20 to 90 % non-condensing	
9.	Base of Station HMI	Active X or other state-of-the-art	
10.	Temperature range (min/max) Computer	0° to 50° C	
11.	System performance and inter-operability test among ABB, Siemens, Alstom, Schneider, GE, SEL or other internationally reputed IEDs done in the system verification center.	Yes	
12.	Number of years of proven field experience of Offered system. (Note: Proof of experience should be furnished. The components used in the offered system and those with field experience should be the same)	5Yrs.	
13.	Serial communication interface included?	YES	
14.	Protection & Control IED's connected same bus?	Yes (IEC 61850)	
15.	Self-monitoring	To be provided	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
16.	Display of measured values	To be provided	
17.	Remote parameterization	To be provided	
18.	Disturbance record upload & analysis	To be provided	
19.	Availability Calculation shall be furnished for each equipment & as well as for the entire system	To be provided with Bid.	
20.	The Automation Panel shall be from the origin of the manufacturer of the system	Yes	
21.	Engineering and Assembling of the substation automation system shall be from the origin of the system.	Yes	
22.	Dimensions of cubicle		
i)	Width	mm	
ii)	Depth	mm	
iii)	Height	mm	
iv)	Floor load	N/sq. m max. 600	
23.	Station Level Equipment		
i)	Station Controller	To be Provided	
ii)	MTBF (Hours)	To be mentioned	
iii)	MTTR (Mean time to repair) (Hrs.)	To be mentioned	
iv)	Station computer dual connection to Ethernet	To be Provided	
v)	Dual Station Computers Provided in redundant hot standby configuration	YES	
vi)	Hot standby takeover time	Seconds	
vii)	Number of years of proven field experience of offered software	5 Yrs.	
viii)	Operating System	Windows	
ix)	All standard picture as per technical specification included in HMI	To be provided	
x)	Process Status Display & Command Procedures	To be provided	
xi)	Event processing as per technical specification	To be provided	
xii)	Alarm processing as per technical specification	To be provided	
xiii)	Reports as per technical specification	To be provided	
xiv)	Trend Display as per technical specification	To be provided	
xv)	User Authority levels as per technical	To be provided	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
	specification		
xvi)	System supervision & monitoring as per technical specification	To be provided	
xvii)	Automatic sequence control as per technical specification	To be provided	
xviii)	High quality SCD file complete with ICD files & station topology	To be provided	
24.	Separate Gateway to Central Control Room	(2 Nos.)	
i)	Name of manufacturer & Country of origin	To be provided	
ii)	Model no.	To be provided	
iii)	Number of years of proven field experience of offered unit	5Yrs	
iv)	Insulation tests	IEC60255-5	
v)	Fast disturbance tests	IEC 61000-4-4, Calss4	
vi)	Industrial environment	EN50081-2, Class A	
vii)	Industrial grade hardware with no moving parts (PC- based gateway is not accepted)	To be provided	
viii)	Design life of offered equipment	20Yrs	
ix)	Redundant communication channel	To be provided	
x)	Redundant CPU	To be provided	
xi)	Redundant DC/DC Supply	To be provided	
xii)	MTBF (Mean time between Failures) (Hrs)	To be mentioned	
xiii)	MTTR (Mean time to repair) (Hrs)	To be mentioned	
xiv)	Manufacturer's Catalogue	To be provided	
25.	Station Bus:		
(i)	Physical Medium	Armoured Glass fiber optic	
26.	Inter bay Bus		
(i)	Physical Medium	Armoured Glass fiber optic	
27.	Printer Server		
i)	MTBF (Hours)	To be mentioned	
28.	Hard Copy Printer		
i)	MTBF (Hours)	To be mentioned	
29.	Remote Terminal Unit	One nos. RTU for each Switching station.	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
i)	Country of origin	To be mentioned	
ii)	Model no	To be mentioned	
iii)	Manufacturer Name and Address	To be mentioned	
iv)	Number of years of proven field experience of offered unit	5 Yrs.	
v)	Digital Inputs, Digital Outputs and Analogue Inputs	Minimum 100 BI, 100 BO and 50 AI handling capacity through single or multiple I/O RTU modules AI will be for voltage, power, frequency, power factor, and fault quantities. Resolution ≥ 12-bit, accuracy ≤ 0.5% FS, floating-point values supported. Modular and expandable. Number of BI, BO, and AI should include all bay-level and station auxiliary signals that are not already incorporated in the bay IEDs with 20% spare.	
vi)	Communication Ports	4 x Serial (RS-232/RS-485), 2 x Ethernet (10/100Base-T), 2 x USB/RJ45	
vii)	Protocols	DLMS/COSEM, MODBUS(RTU/TCP); IEC 61850	
viii)	Time Synchronization	GPS/IRIG-B/NTP/SNTP support	
ix)	Sequence of Event (SoE) Capture	1 ms time stamping, hardware input debounce and precise time sync	
x)	Certification, Manufacturer & Model	IEC 61850, IEC 60870	
xi)	Power Supply	110 VDC	
xii)	Mounting	Should be compatible to the SAS panel	
xiii)	IED Communication	IEC 61850 (preferably via SAS or integrated IED interface)	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
xiv)	Start Up	Automatic re-initialization & event reporting after power restore, with master station alarm	
xv)	RTU Database Download	Download/upload via SAS or serial/Ethernet or USB	
xvi)	RTU Upgrading	Modular upgrades via installable cards/modules	
xvii)	Supervisory Controls	Accept/queue controls from all authorized masters and local maintenance station	
xviii)	Supervisory Control - SBO	"Select Before Operate" on all controls, min 3 logical states: States (open, closed, in-transit/ do not believe)	
xix)	Control Types	Trip/Close, Raise/Lower (timed), Setpoint (pre-defined, programmable)	
xx)	Isolated Dry Contact	All digital inputs dry, opto-isolated	
xxi)	Sensing Voltage Supply	110 VDC range; available from RTU or external	
xxii)	Sensing Voltage Source	Isolated for all digital voltage inputs to avoid interference	
xxiii)	MTBF (Hours)	To be mentioned	
30.	Master Clock – GPS (Global Positioning System) Receiver:		
i)	Name of the manufacturer & Country of origin	To be mentioned	
ii)	Manufacturer' s address	To be mentioned	
iii)	Model	To be mentioned	
iv)	Network Interface	RJ-45 Network Connection 10/100 MBit	
v)	Power supply	100-240 VDC	
vi)	Universal Serial Bus (USB) Ports	1x USB Port in front panel	
vii)	Network Time Protocol (NTP)	NTP v2 -v4 SNTP v3-v4, Synchronization of IEC 61850 compliant devices by using SNTP	
viii)	MTBF (Hours)	To be mentioned	
31.	Ethernet Switch		
i)	Name of manufacturer &. address	Shall be mentioned	
ii)	Country of Origin	Shall be mentioned.	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
iii)	Model number	Shall be mentioned	
iv)	Type	Industrial Grade, rack able 19"-24 ports (min.)	
v)	Port	Up to 4 GbE ports (optical, electrical or combo ports)	
vi)	Redundant Power supply	To be provided	
32.	Operator Work Station (OWS)	(2 nos)	
i)	Brand	Any International reputed brand.	
ii)	Model	To be mentioned	
iii)	Type	IEC-61850-3 Certified Power Automation Computer	
iv)	Country of Manufacture	To be mentioned	
v)	Processor	Latest generation Intel core i7 or latest	
vi)	Clock Speed	Latest generation 4.8 GHz (min), 24 MB Cache Memory (min)	
vii)	Bus Speed	Latest generation Min. 5200 MHz or higher	
viii)	RAM	Latest generation 32 GB DDR, Expandable to 64 GB (min)	
ix)	Storage	Latest generation (M.2 PCIe NVMe 1 TB SSD)	
x)	Mouse	Same Brand USB Scroll Optical Mouse	
xi)	Keyboard	Same brand USB Keyboard	
xii)	Monitor	Same brand LED 32", 2560x1600, Full HD	
xiii)	Certification:	To be mentioned	
xiv)	EMC	CE, FCC, IEEE 1613	
xv)	Safety	CB, UL	
xvi)	Shock Protection	IEC 60068-2-27	
xvii)	Vibration Protection	EC 60068-2-64	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
xviii)	Ethernet	4 x RJ-45, 10/100/1000 Base-T, 2,500V isolation	
xix)	I/O	External USB 3 x USB 3.2 Gen1 (rear), 2 x USB 3.2 Gen1 (front), Serial, 2 x RS-232/422/485 (DB9 connectors) 2,500V	
xx)	Power	2 x hot-swappable redundant power supply	
xxi)	Mounting	Rack mount 19U	
xxii)	Ingress Protection	IP20	
xxiii)	OS Support	Latest generation Windows 11 Professional/ Windows Server 2022 or latest	
xxiv)	OS	License windows with recovery kit	
xxv)	Software	Licensed Anti-Virus Software	
33.	Engineer Work Station (EWS) (LAPTOP)	(1 nos)	
i)	Brand	Any International reputed brand.	
ii)	Model	To be mentioned	
iii)	Type	Industrial Grade	
iv)	Country of Origin	To be mentioned	
v)	Processor	Latest generation Intel core i7 or latest	
vi)	Clock Speed	Latest generation 5,4 GHz (min), 36 MB Cache Memory (min)	
vii)	Bus Speed	Latest generation Min. 5600 MHz or higher	
viii)	RAM	Latest generation 16 GB DDR, Expandable to 64 GB (min)	
ix)	Storage	Latest generation (M.2 PCIe NVMe 1 TB SSD)	
x)	Mouse	Same Brand USB Scroll Optical Mouse	
xi)	Keyboard	Same brand USB Keyboard	
xii)	Monitor	Same brand LED 24", 2560x1600, Full HD	
xiii)	OS Support	Windows 11 professional or latest	
xiv)	OS	License windows with	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
		recovery kit	
xv)	Software	Licensed Anti-Virus Software	
34.	Laser Color Printer		
i)	Brand	Any International reputed brand.	
ii)	Model	To be mentioned	
iii)	Country of Origin	Shall be Mentioned	
iv)	Toner type	Toner and associated drum unit in single case, No starter toner.	
v)	Resolution	1200 x 1200 dpi (Minimum)	
vi)	Printing Speed	48 PPM (monochrome) 24 PPM (A4) 12 PPM (A3) (min.)	
vii)	First Page Print Out	As fast as 12 seconds	
viii)	Memory	256 MB (Minimum) Expandable to 1 GB	
ix)	Trays	100 sheet multi-purpose input tray, 2 x 500 sheet input tray 50-sheet face up output tray, 250-sheet face down output tray	
x)	Media Sizes	Letter, Legal, A3, A4, A5, B5 and custom sizes	
xi)	Media Types	Paper (Plain, Preprinted, Letterhead, Bond, Color, Recycled, Rough), Transparencies, Labels	
35.	System Performance:		
i)	Exchange of display (First reaction)	<2S	
ii)	Presentation of a binary change in the Process display	<1S	
iii)	Presentation of an analogue change in the process display	<1S	
iv)	From order to process output	<1S	
v)	From order to updated of display	<1S	
36.	UPS		
i)	UPS Type	Online Double Conversion (VFI) with pure sine wave	
ii)	Brand	Any International reputed brand.	
iii)	Model	To be mentioned	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
iv)	Rated Capacity	3 kVA (min. 2.4 kW)	
v)	Input Voltage	230V ±10% AC, 1-phase	
vi)	Input Frequency	50 Hz ±10%	
vii)	Output Voltage	230V ±1% (on inverter)	
viii)	Power Factor	≥ 0.8 lagging	
ix)	Output THD	≤ 3% linear load	
x)	Crest Factor	≥ 3:1	
xi)	Efficiency	≥ 92% (AC-AC)	
xii)	Backup Time	2 hours at full load	
xiii)	Battery Type	VRLA/SMF sealed maintenance-free	
xiv)	Battery Capacity	To be mentioned with calculation	
xv)	Battery System Voltage	192–240 V DC	
xvi)	Charger Type	Auto float/boost, temp-compensated	
xvii)	Overload Capability	110% for 10 min (typical)	
xviii)	Protection	O/L, S/C, Battery Low, Over-Temp, Input faults	
xix)	Display	LCD showing V/I, load, battery, alarms	
xx)	Communication	USB/RS-232,	
xxi)	Noise Level	≤ 55 dB at 1 m	
xxii)	Warranty	UPS 2 years, Battery 1 year (min.)	
37.	Protocol Converter / IO module, if required		
i)	Brand	To be mentioned	
ii)	Model	To be mentioned	
iii)	Country of Origin	To be mentioned	
38.	Substation Industrial Firewall		
i)	Brand	Any International reputed brand.	
ii)	Model	To be mentioned	
iii)	Type	Industrial	
iv)	Country of Origin	To be mentioned	

SL. No.	DESCRIPTION	WZPDCL'S REQUIREMENT	BIDDERS GUARANTEED VALUES
v)	IEC 61850-3 and IEEE 1613 for EMI, EMC, and environmental performance.	Shall comply	
vi)	Minimum 4× Gigabit Ethernet ports (RJ45/SFP)	Shall comply	
vii)	Redundant power supply input.	Shall comply	
viii)	Features like Deep-Packet-Inspection (DPI) and Firewall Learning Mode (FLM) ensure packet data integrity, protect networks from malicious intents and make device configuration easy	Shall comply	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.3 GUARANTEED TECHNICAL PARTICULARS OF 110V 3X1(2)A, 3-PHASE, 4-WIRE, 3-ELEMENT, SOLID STATE INDOOR TYPE MULTI TARIFF PROGRAMMABLE METER

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected)

Sl No	Description	Unit	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
1.	Reference standard		Relevant ANSI /IEC standard	
2.	Manufacturer's name & address		Shall be mentioned (Please refer to PE's requirement).	
3.	Manufacturer's type & model		To be mentioned	
4.	Construction / Connection		3-phase, 4-wire solidly grounded neutral	
5.	Installation		Indoor Installation in A socket [for socket type]	
6.	Number of elements		3	
7.	Rated voltage	Volt	110	
8.	Minimum Biasing Voltage	Volt	40	
9.	Variation of frequency	%	2	
10.	Variation of voltage	%	+10, -20	
11.	Accuracy class		0.2S	
12.	Rated current			
	I) Basic current	A	1A	
	II) Maximum current	A	2A	
13.	Register type		LCD Display	
14.	Number of digit (integer)	Nos.	6+2 (Programmable)	
15.	Starting current	mA	To be mentioned	
16.	Auxiliary Supply	DC	110 V	
17.	Losses at nominal load	Watt & VA	To be mentioned	
18.	Meter constant	Imp. / KWh.	To be mentioned	
19.	Integration period		30 (thirty) minutes	
	Resetting period		1 (one) month	
	Cumulative MD transfer		Built-in	
	cycle timing device		Built-in	
20.	Size of the digit of display	W x H in mm	4 X 8	
21.	No. of terminal	Nos.	10 (Minimum)	
22.	Type of Socket/enclosure and Country of origin		To be mentioned	

Sl No	Description		Unit	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
23.	Battery service life and Shelf life		Year	10(Ten) & 15 (fifteen)	
24.	Year of manufacture			To be mentioned	
25.	List of recommended spare parts (If any)			To be mentioned	
26.	Warranty		Year	3 (Three)	
27.	Meter Service life (minimum)		Year	15 (fifteen)	
28.	Weight of meter		Kg	To be mentioned	
29.	Dimensions		mm x mm x mm	To be mentioned	
30.	Outlines, drawings & leaflets			To be mentioned	
31.	Performance curve for balanced & unbalanced load			To be mentioned	
32.	Meter sealing condition			Hermetically or Ultrasonic welded	
33.	a) Country of origin b) Place of manufacture c) Place of testing			To be mentioned	
34.	Memory storage			Shall To be mentioned by putting Yes / No	
	i)	Equipment identification code.			
	ii)	Security code			
	iii)	Access code			
	iv)	Number of power interruption with date & time			
	v)	Latest power failure time & date			
	vi)	Event log.			
	vii)	Cumulative KWh, KVarh (Q_1+Q_4) reading			
	viii)	Load Profile with 30 min interval at least 90 days for:			
		KWh, kVarh (Q_1+Q_4)			
		Phase voltage or Vh			
		Phase amps or Ah			
35.	Communication Facilities			RE, RS 232, RS 485, RJ45, DLMS/ COSEM, GSM-GPRS and Modbus or IEC 61850.	
36.	GSM-GPRS Modem			Yes	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.4 GUARANTEED TECHNICAL PARTICULARS OF 33 KV OUTDOOR TYPE VACUUM ~~CIRCUIT~~ BREAKER

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected.)

Sl. No.	Description	Unit	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
1.	Manufacturer's Name & Country	-	To be mentioned (Please refer to PE's requirement).	
2.	Manufacturer's model no.	-	To be mentioned	
3.	Maximum Rated Voltage	KV	36	
4.	Frequency	Hz	50	
5.	Rated Normal current	A	2500 A	
6.	No. of phase	-	3	
7.	No. of break per phrase	-	To be mentioned	
8.	Interrupting medium	-	Vacuum	
9.	Manufacturer's name and country of vacuum interrupter	-	To be mentioned	
10.	Manufacturer's model no. of vacuum interrupter	-	To be mentioned	
11.	Impulse withstand on 1.2/50 ⊠s wave	KV	170	
12.	Power Frequency Test Voltage (Dry), at 50Hz, 1 min.	KV	70	
13.	Short time withstand current, 3 second, rms	KA	31.5	
14.	Breaking capacity:			
	a) Symmetrical, rms	KA	31.5	
	b) Asymmetrical, rms	KA	As per IEC	
15.	Short circuit making current, peak	KA	78	
16.	First phase to clear factor	-	To be mentioned	
17.	Rated transient recovery voltage at 100% rated short circuit breaking current	KVp	To be mentioned	
18.	Rated line charging breaking current	A	To be mentioned	
19.	Rated cable charging breaking current	A	To be mentioned	
20.	Rated out of phase breaking current	A	To be mentioned	
21.	Is circuit breaking restrike free?	Yes/ No	Yes	
22.	Trip coil current	A	To be mentioned	
23.	Trip coil voltage	V, DC	110	
24.	Is the circuit breaker trip free?	Yes/ No	Yes	
25.	Type of arc contacts or arc control Device	-	To be mentioned	
26.	Main Contact:			
	a) Type of contact	-	To be mentioned	
	b) Material of contract surfaces	-	To be mentioned	

Sl. No.	Description	Unit	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
	c) Contract resistance	μΩ	Less than 40	
27.	Does magnetic effect of load Currents increase contact pressure?	Yes/ No	To be mentioned	
28.	Length of each break/ phase	mm	To be mentioned	
29.	Length of stroke	mm	To be mentioned	
30.	Weight of circuit breaker unit complete, without operating mechanism and structure	Kg	To be mentioned	
31.	Weight of circuit breaker complete with all fittings as in service.	Kg	To be mentioned	
32.	Maximum shock load imposed on floor or foundation when opening under fault conditions (state compression or tension)	N	To be mentioned	
33.	Maximum pressure rises in circuit Breaker due to making or breaking of Rated current in outer chamber	KN/ m^2	To be mentioned	
34.	Routine pressure test on circuit Breaker tanks or chamber	KN/ m^2	To be mentioned	
35.	Design pressure type test on circuit Breaker tanks or chamber	KN/ m^2	To be mentioned	
	Operating Particulars:			
36.	a) Opening time: without current at 100% of rated breaking current			
	b) Breaking time	sec.	0.05 (maximum)	
	c) Closing time	Cycle	2 or 3 cycles	
		ms	To be mentioned	
37.	Maximum arc duration of any duty Cycle of IEC 56-2	ms At...%	To be mentioned	
38.	Current at which maximum arc duration occurs (critical current)	A	To be mentioned	
39.	Make time	ms	To be mentioned	
40.	Minimum time for arc extinction to Contract remark when adapted for auto re-closing	ms	To be mentioned	
41.	Time from closing of control switch to completion of closing stroke during fault making	ms	To be mentioned	
Constructional Features:				
42.	Is an external series break Incorporated in the breaker?	Yes/ No	To be mentioned	
43.	Is any device used to limit transient Recovery voltage?	Yes/ No	To be mentioned	
44.	Method of closing	-	To be mentioned	
45.	Method of tripping	-	To be mentioned	
46.	Number of close/ trip operation possible on one spring charge	Nos.	To be mentioned	

Sl. No.	Description	Unit	WZPDCL'S REQUIREMENT	BIDDER'S GUARANTEED VALUES
47.	Rated voltage of spring winding motor for closing	V.AC	230	
48.	Spring winding motor current	A	To be mentioned	
49.	Closing release coil current	A	To be mentioned	
50.	Closing release coil voltage	V.DC	110	
51.	Minimum clearance in air:			
	a) Between phase	mm	370	
	b) Phase to earth	mm	325	
	c) Across circuit breaker poles	mm	To be mentioned	
	d) Live conductor to ground level	mm	To be mentioned	
	e) Live insulator to ground level	mm	To be mentioned	
52.	Material of tank or chamber	-	To be mentioned	
53.	Material of moving contract tension rod	-	To be mentioned	
54.	Period of time equipment has been in commercial operation	Year	To be mentioned	
55.	No. of tripping coil	Nos.	2	
56.	Circuit breaking terminal connector	-	Copper	
57.	Creepage distance (min)	KV/mm	25	
58.	Method of indicating VCB ON/ OFF	Mech. & Elect.	To be mentioned	
59.	Life of interrupter	Years	To be mentioned	
60.	Pressure in vacuum tube for VCB	Bar	To be mentioned	
61.	Guaranteed nos. of operation for vacuum Interrupter:			
	a) at rated Current switching	Nos.	To be mentioned	
	b) at Short circuit current switching	Nos.	≥ 50	
62.	Circuit Breaker Class shall be (through necessary type test Report)	-	E2, M2 Class	
63.	Rated operating sequence	-	O-0.3sec-CO-3m-CO	
64.	All current carrying parts of VCB Shall be made of	-	Copper	
65.	Standard	-	IEC 62271-100	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.5 GUARANTEED TECHNICAL PARTICULARS OF 33KV SINGLE PHASE LIGHTNING ARRESTER

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected)

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
1.	Manufacturer's Name and Country	-	To be mentioned	
2.	Manufacturer's model No.	-	To be mentioned	
3.	Type of the Arrester	-	Metal Oxide (ZnO), Gapless	
4.	Rated Arrester Voltage	kV	36	
5.	Max. System Voltage (P-P)	KV	42	
6.	Continuous Operating Voltage	kV	30	
7.	Nominal Discharge Current (8/20micro sec)	KA	10	
8.	Power Frequency withstand voltage of the Arrester Housing, Dry & Wet	kV rms	70 (Dry) & 70 (Wet)	
9.	Impulse withstand Voltage of the Arrester Housing.	kV (peak)	170	
10.	Lightning Impulse Residual Voltage (8/20 micro-second wave)	kV (peak)	105	
11.	Maxm. Steep Current Impulse Residual Voltage at 10 KA of 1 micro second front time.	kV (peak)	120	
12.	High Current Impulse Withstand Value (4/10 micro second)	KA	Min 100KA	
13.	Temporary Over voltage capability:			
	a) 0.1 Second	kV (peak)	To be mentioned	
	b) 1.0 Second	kV (peak)	To be mentioned	
	c) 10 Second	kV (peak)	To be mentioned	
	d) 100 Second	kV (peak)	To be mentioned	
14.	Leakage Current at rated voltage	mA	< 1 mA	
15.	Total Creepage distance (minimum)	mm/ kV	25	
16.	Overall dimension:			
	a) Height	mm	To be mentioned	
	b) Diameter	mm	To be mentioned	
17.	Total weight of Arrester	Kg.	To be mentioned	
18.	Line discharge class	-	Shall be mentioned	
19.	Minimum Energy Discharge capability (KJ/KV) at rated voltage	-	6.5	
20.	Min. Bending load (kgm)		500	
21.	Surge Counter /Monitor		Shall be provided	
22.	Cable for Connecting Surge Counter		Shall be provided	
23.	Standard	-	IEC-60099-4	
24.	Counter		Yes	
25.	Insulated PVC Cable, 1 kV, Cu 1 x 120 mm2, approximately 10 – 15 meters, as required, with all connectors, for connection of 33 kV Surge Arresters & Counters, complete, with all accessories		Yes	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.6 GUARANTEED TECHNICAL PARTICULARS OF 33 KV OFF-LOAD ISOLATOR WITHOUT EARTH BLADE

(To be filled up by the Manufacturer in Manufacturer Letter Head Pad with appropriate data)

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
	General Description of Disconnecting Switch			
1.	Manufacturer's Name and country	-	To be mentioned	
2.	Manufacturer's Model no.	-	To be mentioned	
3.	Frequency	Hz	50	
4.	System Nominal Voltage	KV	33	
5.	System Maximum Voltage	KV	36	
6.	Basic Insulation Level	KV	170	
7.	Rated Normal Current	A	2500	
8.	Power Frequency Withstand Voltage (for 1 min)	KV	70	
9.	Rated short time withstand current (for 3sec.)	KA	31.5	
10.	Installation	-	Outdoor	
11.	Type	-	Single Vertical Break	
12.	Construction	-	Open	
13.	Mounting Position	-	Vertical	
14.	Number of Pole	nos.	3 (Three)	
15.	No. of break per pole	nos.	one	
16.	Air gap between pole of phase	mm	1000	
17.	Insulator Material		Porcelain	
18.	Creepage distance of Insulator	mm/KV	25	
19.	**Contract**			
	Materials of the current carrying path		Copper with Nickel Plating	
	Contract Resistance	μΩ	Less than 50	
20.	**Contact Area:**			
	Moving Blade	Sq. mm	To be mentioned	
	Terminal Pad	Sq. mm	To be mentioned	
21.	Contact type		Spring loaded contact	
22.	Operation	-	Gang	
23.	Type of main DS operating mechanism	-	Manual & Motor	
24.	Number of main DS operating mechanism per set	Nos	1	
25.	Nos. of Auxiliary Contracts (NO/NC) For Isolator	-	Isolator- 4NO-4NC	
26.	Locking facility in the operating box in both and open position		Yes	
27.	**Operating GI Pipe Dimensions:**			
	For main DS		OD- 42 mm, ID –36 mm, Length – 6 meters	
28.	**MS Solid Square Shaft Dimensions for gang operation (Hot Dip Galvanized):**			
	For main DS		To be mentioned	

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
29.	Total weight of Isolator	Kg	To be mentioned	
30.	Total weight of Unit	Kg	To be mentioned	
31.	Outline Dimensional & Cross-section Drawings of Offered type 33KV Isolator & Mounting Structure Arrangement	-	To be mentioned	
32.	Manufacturer's Printed Catalogue describing Specification & Technical Data of Offered type Equipment.	-	To be mentioned	
33.	Line charging current breaking capacity	A	To be mentioned	
34.	Magnetizing current breaking capacity	A	To be mentioned	
35.	Standard	-	IEC-62271-102	
Note: All exposed MS parts should be Hot Dip Galvanized				

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.7 GUARANTEED TECHNICAL PARTICULARS OF 33 KV OFF-LOAD ISOLATOR WITH EARTH BLADE

(To be filled up by the Manufacturer in Manufacturer Letter Head Pad with appropriate data)

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
	General Description of Disconnecting Switch			
1.	Manufacturer's Name and country	-	To be mentioned	
2.	Manufacturer's Model no.	-	To be mentioned	
3.	Frequency	Hz	50	
4.	System Nominal Voltage	KV	33	
5.	System Maximum Voltage	KV	36	
6.	Basic Insulation Level	KV	170	
7.	Rated Normal Current	A	2500	
8.	Power Frequency Withstand Voltage (for 1 min)	KV	70	
9.	Rated short time withstand current (for 3sec.)	KA	31.5	
10.	Installation	-	Outdoor	
11.	Type	-	Single Vertical Break	
12.	Construction	-	Open	
13.	Mounting Position	-	Vertical	
14.	Number of Pole	nos.	3 (Three)	
15.	No. of break per pole	nos.	one	
16.	Air gap between pole of phase	mm	1000	
17.	Insulator Material		Porcelain	
18.	Creepage distance of Insulator	mm/KV	25	
19.	**Contract**			
	Materials of the Earth Switch & current carry-ing path		Copper with Nickel Plating	
	Contract Resistance DS and ES	μΩ	Less than 50	
20.	**Contact Area:**			
	Moving Blade DS	Sq. mm	To be mentioned	
	Moving Blade ES	Sq. mm	To be mentioned	
	Terminal Pad	Sq. mm	To be mentioned	
21.	Contact type		Spring loaded contact	
22.	Operation	-	Gang	
23.	Type of main DS operating mechanism	-	Manual & Motor	
24.	Number of main DS operating mechanism per set	Nos	1	
25.	Type of Earth Switch operating mechanism		Manual	
26.	Number of Earth Switch operating mechanism per set	Nos	1	
27.	Nos. of Auxiliary Contracts (NO/NC) For Isolator& Earth Switch -Isolator	-	Isolator- 4NO-4NC & Earth switch – 4NO-4NC	
28.	Locking facility in the operating box in both and open position		Yes	
29.	Electrical/Mechanical Interlocking Facility be-tween DS & ES		Yes	

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
30.	**Operating GI Pipe Dimensions:**			
	For main DS		OD- 42 mm, ID –36 mm, Length – 6 meters	
	For Earth Switch		OD- 42 mm, ID –36 mm, Length – 6 meters	
31.	**MS Solid Square Shaft Dimensions for gang operation (Hot Dip Galvanized):**			
	For main DS		To be mentioned	
	For Earth Switch		To be mentioned	
32.	Total weight of Isolator	Kg	To be mentioned	
33.	Total weight of earth switch	Kg	To be mentioned	
34.	Total weight of Unit	Kg	To be mentioned	
35.	Outline Dimensional & Cross-section Drawings of Offered type 33KV Isolator & Mounting Structure Arrangement	-	To be mentioned	
36.	Manufacturer's Printed Catalogue describing Specification & Technical Data of Offered type Equipment.	-	To be mentioned	
37.	Line charging current breaking capacity	A	To be mentioned	
38.	Magnetizing current breaking capacity	A	To be mentioned	
39.	Standard	-	IEC-62271-102	
Note: All exposed MS parts should be Hot Dip Galvanized				

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.8 GUARANTEED TECHNICAL PARTICULARS OF BATTERY

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected.)

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
1.	Manufacturer's name & country	-	To be mentioned	
2.	Manufacturer's model no.	-	To be mentioned	
3.	Type	-	Nickel Cadmium Alkaline (enclosed type)	
4.	Operating Voltage	V DC	110	
5.	Continuous Discharge Current at rate of 10 hour & Final Cell Voltage 1.1 Volt	Amp	10	
6.	Short Time Discharge Current at rate of 2 hour & Final Cell Voltage 1.1 Volt	Amp	50	
7.	Electrolyte type	-	To be mentioned	
8.	Capacity at 5-hour rate	AH	100	
9.	Discharge Voltage	Volt	1.3 Per Cell	
10.	Charging Voltage (Normal)	Volt	1.6 Per Cell	
11.	Number of cells	Nos.	92 nos. + 5 nos. Spare	
12.	Voltage per cell	V	1.2	
13.	Charging Voltage (Maximum)	Volt	1.75 Per Cell	
14.	Normal float charge rate	A	To be mentioned	
15.	Maximum boost charge rate	A	To be mentioned	
16.	Amp hour efficiency at:			
	a) 5-hour rate	%	To be mentioned	
	b) 1-hour rate	%	To be mentioned	
17.	Size of cell	mm	To be mentioned	
18.	Weight of cell and electrolyte	kg	To be mentioned	
19.	Standard	-	As per Latest Edition of applicable IEC-60623	

Seal and Signature of Manufacturer

Seal and signature of Bidder

8.9 GUARANTEED TECHNICAL PARTICULARS OF BATTERY CHARGER

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected.)

Sl. No.	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
1.	Manufacturer's name & country	-	To be mentioned	
2.	Manufacturer's model no.	-	To be mentioned	
3.	Rating	-	To be mentioned	
4.	Rated Input voltage range (3-phase)	V AC	415 V ± 10%	
5.	Rated Frequency	Hz	50Hz	
6.	No of Phase	-	3	
7.	Output voltage range			
	a) normal charge	V DC	120 V ± 1%	
	b) Float charge	V DC	120 V ± 1%	
	c) boost charge	V DC	150 V ± 1%	
8.	Voltage drops at output thru Dropper Diodes during Boost Mode	Yes/ No	Yes	
9.	Normal/ boost charge independent units?	Yes/ No	To be mentioned	
10.	Output current	A	50	
11.	Rated Battery Current	A	20	
12.	Efficiency	%	To be mentioned	
13.	Ripple Voltage	%	3%	
14.	Type of AVR	-	Static	
15.	Installation Break Down Voltage	KV	2 KV for 1 Minute	
16.	Type of rectifier	Thyristor/ SMPS	To be mentioned	
17.	MCCB			
	a) Quantity	Nos.	To be mentioned	
	b) Rating	A	To be mentioned	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

8.10 GUARANTEED TECHNICAL PARTICULARS OF LV AC / DC DISTRIBUTION PANEL

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad with appropriate data)

Sl No	Description	Unit	WZPDCL's Requirement	BIDDER'S GUARANTEED VALUES
DC DISTRIBUTION PANEL				
1.	Manufacturer's name & country		To be mentioned	
2.	Rated normal current of Bus-bar	A	200	
3.	No. and size of fuse circuits	Nos./ A	To be mentioned	
4.	Thickness of sheet steel (enclosure)	mm	To be mentioned	
5.	Dimension	mm x mm x mm	To be mentioned	
6.	Weight	Kg	To be mentioned	
7.	MCCB			
	a) Manufacturer's Name and Country		To be mentioned	
	b) Manufacturer's model no.		To be mentioned	
	c) Rated voltage		To be mentioned	
	d) Rated current		To be mentioned	
8.	Other features		As per section 7	
AC DISTRIBUTION PANEL				
1.	Manufacturer's name & country		To be mentioned	
2.	Rated normal current of Bus-bar	A	400	
3.	No. and size of fused circuits	nos/ A	3	
4.	Thickness of sheet steel (enclosure)	mm	4	
5.	Dimension	mm x mm x mm	To be mentioned	
6.	Weight	Kg	To be mentioned	
7.	a) Manufacturer's Name and Country		To be mentioned	
	b) Manufacturer's model no.		To be mentioned	
	c) Rated voltage		To be mentioned	
	d) Rated current		To be mentioned	
8.	Energy Meter, LT CT & Other Features		As per section 7	

Seal & signature of Manufacturer

Seal & signature of bidder

8.11 GUARANTEED TECHNICAL PARTICULARS OF 33/ 0.415 KV, 3-PHASE, 200KVA AUXILIARY TRANSFORMER

(To be filled up by the Manufacturer in Manufacturer Letterhead Pad, otherwise the bid shall be rejected)

Sl. No.	Description	WZPDCL'S Requirement	BIDDER'S GUARANTEED VALUES
1.	Manufacturer's Name & Address	To be mentioned	
2.	Manufacturer's Type & Model No.	To be mentioned	
3.	KVA Rating	200	
4.	Number of Phases	3	
5.	Rated frequency, Hz	50	
6.	Rated primary voltage, KV	33	
7.	Rated no load sec. voltage, V	415	
8.	Vector group	Dyn11	
9.	Highest system voltage of :		
	a) Primary winding, KV	36	
	b) Secondary winding, V	457	
10.	Basic insulation level, KV	170	
11.	Power frequency withstand voltage, KV		
	a) HT Side	70	
	b) LT Side	2.5	
12.	Type of cooling	ONAN	
13.	Max. Temp. Rise over 40°C of ambient supported by Calculation (to be submitted) of Load Loss, Temperature Rise and Heat Dissipation by Radiator on the basis of Design Data:		
	a) Windings deg. C	65	
	b) Top oil deg. C	60	
14.	Type of primary tapping off load, %	+1x2.5%, 0,-3x 2.5%	
15.	Percentage Impedance at 75° C, %	5%	
16.	No-load loss, Watts	650	
17.	Load losses at rated full load at 75°C, Watts	2910	
18.	Magnetising current at normal voltage, Amps	To be mentioned	
19.	Efficiency at 75°C and 100% load:		
	a) at 1.0 power factor, %	To be mentioned	
	b) at 0.8 power factor, %	To be mentioned	
20.	Efficiency at 75°C and 75% load:		
	a) at 1.0 power factor, %	To be mentioned	
	b) at 0.8 power factor, %	To be mentioned	
21.	Efficiency at 75°C and 50% load:		
	a) at 1.0 power factor, %	To be mentioned	
	b) at 0.8 power factor, %	To be mentioned	
22.	Efficiency at 75°C and 25% load:		
	a) at 1.0 power factor, %	To be mentioned	
	b) at 0.8 power factor, %	To be mentioned	
23.	Regulation at full load:		
	a) at 1.0 power factor, %	To be mentioned	
	b) at 0.8 power factor, %	To be mentioned	
	Transformer Oil:		
24.	a) Type of oil	Mineral Insulating Oil	
	b) Manufacturer's Name & Address	To be mentioned	
25.	Total weight of oil, Kg	To be mentioned	

Sl. No.	Description	WZPDCL'S Requirement	BIDDER'S GUARANTEED VALUES
26.	Breakdown Voltage at 2.5mm gap between electrodes	> 50 kV	
	Transformer Core:		
27.	Manufacturer's Name & Address	To be mentioned	
28.	Total weight of core, Kg	To be mentioned	
29.	Material of core & grading	To be mentioned	
30.	Core Loss/ Kg, supported by Characteristic Curve & Core Manufacturer's Brochure	To be mentioned	
31.	Thickness of core, mm	To be mentioned	
32.	Core Dia, mm	To be mentioned	
33.	Max. magnetic flux density, Tesla	< 1.7	
	Transformer Windings:		
34.	Copper Conductor's Manufacturer Name & Address	To be mentioned	
35.	Material of windings	copper	
36.	Winding resistance of:		
	a) H.T. winding, Ohm. (per phase at 75° C)	To be mentioned	
	b) L.T. winding, milli-Ohm. (per phase at 75° C)	To be mentioned	
37.	Current density of:		
	a) H.T. winding, Amps/sq. mm	To be mentioned	
	b) L.T. winding, Amps/sq. mm	To be mentioned	
38.	Outer, Inner & Mean dia of copper winding:		
	a) H.T. winding, mm	To be mentioned	
	b) L.T. winding, mm	To be mentioned	
39.	Size of Copper Conductor:		
	a) H.T. winding SWG, dia. in mm & area in mm^2	To be mentioned	
	b) L.T. winding SWG, area in mm^2	To be mentioned	
40.	Number of Turns:		
	a) HT winding, nos.	To be mentioned	
	b) LT winding, nos.	To be mentioned	
41.	Copper weight of windings:		
	a) HT winding, Kg	To be mentioned	
	b) LT winding, Kg	To be mentioned	
42.	Total weight of copper windings, Kg	To be mentioned	
43.	Dimension of Transformer:		
	a) Width, mm	To be mentioned	
	b) Length, mm	To be mentioned	
	c) Height, mm	To be mentioned	
	d) Tank Sheet thickness of top, bottom & side, mm	To be mentioned	
	e) Total weight of transformer tank, Kg	To be mentioned	
44.	a) Total weight of active part (core, coil and other accessories), Kg	To be mentioned	
	b) Total weight of complete Transformer including fittings & oil, Kg	To be mentioned	
45.	Type of breathings	To be mentioned	
46.	Name of relevant IEC or other Equivalent	To be mentioned	

Sl. No.	Description		WZPDCL'S Requirement	BIDDER'S GUARANTEED VALUES
	Standards for Design, manufacture, testing and performance.			
47.	Drawing:			
	a)	General Arrangement & Outline Dimensions	To be submitted	
	b)	Internal Construction Details/ Sectional drawing of active parts including Insulation arrangement	To be submitted	
	c)	HT & LT Bushings with dimension & current ratings	To be submitted	
	d)	Cross-section & Dimensional drawing of Core & Windings	To be submitted	
	e)	Radiator with detail dimensional drawing	To be submitted	
	f)	Tap changer with dimension & current ratings.	To be submitted	
48.	Routine Test Report:			
	a)	Measurement of turn ratio test.	To be submitted	
	b)	Vector group test.	To be submitted	
	c)	Measurement of winding resistance.	To be submitted	
	d)	Measurement of insulation resistance.	To be submitted	
	e)	Measurement of no-load loss & no-load current.	To be submitted	
	f)	Measurement of impedance voltage & load loss.	To be submitted	
	g)	Dielectric withstands Tests.	To be submitted	
	h)	Transformer oil test (including Tan delta).	To be submitted	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder