



BANGLADESH POWER DEVELOPMENT BOARD

BIDDING DOCUMENT

For

Electrification at Bhashanchar of Noakhali District
(Single Stage Two Envelope Bidding Process)

Bidding Document

(Volume 3 of 3 of the Bidding Document)

Invitation for Tender No: 27.11.0000.101.14.079.25-2337, Dated: 14/09/2025

Secretary

Bangladesh Power Development Board
Wapda Building (1st Floor), Motijheel, C/A.
Dhaka, Bangladesh

SEPTEMBER, 2025

Guaranteed Technical Particulars (GTP)
of
Electrification at Bhashanchar of Noakhali District Project

The following GTP to be filled up appropriately, then Seal & Signed by both manufacturer and bidder on Manufacturer's Letterhead Pad. Otherwise his bid shall be non-responsive.

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key:

probably unnecessary to specify likely covered by system performance
attention

Guaranteed Technical Particulars (GTP)

1. **Technical Guarantee Parameters of the Entire system**

(i) **Technical Guarantee Parameters of the PV System**

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

Technical Guarantee	Minimum (or Maximum, as appropriate) Requirement
A. PV Plant (during Commissioning and Operational Acceptance)	<p>i. PV plant to meet the minimum nominal installed DC Capacity [10MWp]</p> <p>ii. PV Plant to meet minimum installed AC capacity [8 MWac] measured on 11kV busbar.</p> <p>iii. The Bidder shall ensure that the proposed PV Plant achieves a minimum Performance Ratio (PR) of 80% at the time of commissioning. The methodology for PR calculation is detailed in Appendix 9.</p> <p>If the Contractor fails to achieve the guaranteed performance levels, the Contractor shall at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the test within the stipulated time span. Subsequent to rectification the production shall be re-tested, if the values are again below the guaranteed performance levels.</p>
B. At Final Acceptance Certificate	<p>iv. The DC capacity of the PV Plant for the purpose of Performance Ratio (PR) calculation shall take into account the degradation of the PV modules. The degradation rate shall be considered in accordance with the values specified in the Guaranteed Technical Particulars (GTP) of the PV modules provided by the Contractor.</p> <p>v. The Contractor shall maintain a monthly Performance Ratio (PR) of at least 80% during the first two (2) years of operation.</p> <p>N.B: Failure to achieve the guaranteed PR shall trigger remedies but not limited to, the Contractor being required, at its own cost and expense, to make such changes, modifications, and/or additions to the Facilities or any part thereof that are necessary to attain the guaranteed PR, and to request the Employer to repeat the Guarantee Test.</p>

(ii) **Technical Guarantee parameters of the Battery Energy Storage System (BESS)**

Technical Guarantee	Minimum Requirement
C. BESS (during Commissioning and Operational Acceptance)	<p>i. Available Energy capacity [16MWh] discharged/charged (on high tension side of 11 kV step up transformer)</p> <p>ii. Nominal [5MW] and Max Reactive Power [5 MVAR] Capacity for the life of the installation.</p>

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Guaranted Technical Particulars (GTP)

	iii. Uptime of [97%] iv. Round-trip efficiency of [90%]
D. for Final Acceptance Certificate (2 years after Operational Acceptance)	v. Available Energy capacity [] discharged/charged (on high tension side of 11 kV step up transformer considering BESS capacity degradation factor. vi. Capacity degradation of less than [3.5% p.a], from Energy Capacity measured at Operational Acceptance vii. Nominal [5MW] and Max Reactive Power [5 MVar] Capacity for the life of the installation. viii. Uptime of [97%] ix. Round-trip efficiency of []; considering degradation factor
If the Contractor fails to achieve the Technical Guarantee , the Contractor shall at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the test within the stipulated time span	

The value given within the square bracket [] is indicative for each guarantee parameter mentioned in the above table. If the Contractor fails to meet the full **Technical Guarantee but achieves the minimum levels, it shall modify or upgrade the Facilities at its own cost.



2. Guaranteed Technical Particulars (GTP) of Solar Photovoltaic Module

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Description of the Item	Solar PV Module	
2	Name of the Manufacturer	To be mentioned	
3	Address of the Manufacturer	To be mentioned	
4	Standard	IEC61215:2021/IEC61730:2023/IEC61701 / IEC62716 / IEC60068/IEC62804/ISO9001:2015/ISO14001:2015/ISO45001:2018	
5	Model number	To be mentioned	
6	Type of solar Cells	Mono Crystalline/mono crystalline bifacial	
7	Rated Power /Maximum Power (Pmax)	Minimum 650 Wp at STC, (Standard Testing Conditions)	
8	Power Tolerance (STC)	0~+3%	
9	Voltage at Pmax (V mp)	To be mentioned	
10	Current at Pmax (I mp)	To be mentioned	
11	Open circuit voltage (V _{oc})	To be mentioned	
12	Temperature Co-efficient (Pmax)	Maximum -0.29%/°C or better	
13	Temperature Co-efficient (Voc)	Maximum -0.25%/°C or better	
14	Number of cells in series	To be mentioned	
15	Module Efficiency	Minimum 22.5%	
16	Front Glass	Minimum 2.00 mm, Anti-reflection Coating, High Transmission, Low Iron, Tempered Glass	
17	Frame	Anodized Aluminum Alloy	
18	Operating Temperature	-40°C to +85°C	
19	Minimum Static Load front and back (e.g. wind)	Front 5400Pascal Rear 2400Pascal	
20	Junction Box	IP 68 rated	
21	Connector	MC4	
22	Cables Cross Section	Min 4.0 mm ²	
23	Cable Length	(-) 1200 mm and (+) 1200 mm	
24	Expected Life	25 years	
25	Maximum 1 st year Degradation	2.0%	
	Maximum Annual Degradation over 25 years life of Module	0.50%	
26	Linear Power Warranty	Minimum 25 years	
27	Product Warranty	Minimum 12 years	
28	Certifications	UL, TUV , ISO or equivalent	
29	Weight and Dimension	To be mentioned	
30	Catalogue	To be submitted	

Seal and Signature
of the manufacturer:Seal and Signature
of the Bidder:

3. Guaranteed Technical Particulars (GTP) of Grid Tied Inverter

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	Grid Tied Inverter	
2	Name of the Manufacturer	To be mentioned	
3	Address of the Manufacturer	To be mentioned	
4	Standard	IEC 62109-1/-2, IEC 62920, IEC 60947-2, EN 50549-2, IEC 61683	
5	Certifications	To be mentioned	
6	Model number	To be mentioned	
INPUT			
7	Max Input Voltage	1500 V	
	Startup Voltage	To be mentioned	
	Minimum No of Independent MPP input	Optional	
OUTPUT			
8	Nominal AC Output Power	Minimum 250 kW	
	Nominal Output Voltage	To be mentioned	
	AC Frequency, adjustable	50 ± 5% Hz	
	AC Grid Connection	3 phase, 4 wire	
9	Idle power	< 6W	
10	Total Harmonic Distortion	< 3%	
11	Typical efficiency	Minimum 98%	
12	Power Factor	0.8 leading to 0.8 lagging	
13	Reverse Current Protection	To be incorporated	
14	DC Reverse Polarity Protection	To be incorporated	
15	Anti-Islanding Protection	To be incorporated	
16	Ground Fault Monitoring	To be incorporated	
17	Degree of Protection	IP66	
18	Communication	RS485	
19	Display monitor	LED. WLAN+APP or Bluetooth+APP	
20	Topology	Transformerless	
21	Weight and Dimension	To be mentioned	
22	Warranty	Minimum 5 years	
23	Catalogue	To be submitted	

Seal and Signature
of the manufacturer:

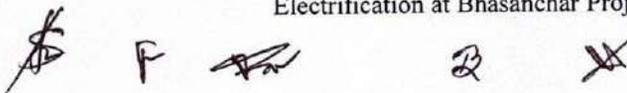
Seal and Signature
of the Bidder:

4. Guaranteed Technical Particulars (GTP) of PCS/Battery Inverter

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1.	Model Name	To be mentioned	
2.	Name of the Manufacturer	To be mentioned	
3.	Address of the Manufacturer	To be mentioned	
4.	Standard	Design, manufacturing, performance & testing shall be in accordance to the IEC, BS, BDS or equivalent international standards.	
DC Input			
5.	Max. DC input voltage	1500 V	
	Min. DC input voltage	To be mentioned	
AC Output			
6.	Rated AC output power	Minimum 200 kW	
	Rated output voltage	To be mentioned	
	Grid connection type	Three-phase / PE	
	Nom. grid frequency/grid frequency range	50 ± 5% Hz	
	AC current THD	<3%	
7.	Max. efficiency	98.0%	
8.	Standby consumption	< 30 W	
9.	Cooling System	Air Cooling	
10.	User interface and display	LED indicators, Wi-Fi	
11.	PCS inverter monitoring	Ethernet /Modbus RS485	
12.	Degree of Protection	IP 66(Outdoor)/IP 54(indoor)	
13.	Black start/Grid Forming	Yes	
14.	Overvoltage protection	Yes	
15.	Grid monitoring	Yes	
16.	Dimensions (WxHxD)	To be mentioned	
17.	Weight	To be mentioned	
18.	Warranty	5 years	
19.	Catalogue	To be submitted	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:



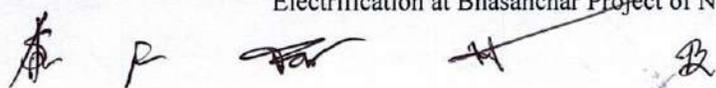
Guaranteed Technical Particulars (GTP)

5. Guaranteed Technical Particulars (GTP) of Battery Energy Storage System (BESS)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	Battery Energy Storage System	
2	Name of the Manufacturer	To be mentioned	
3	Address of the Manufacturer	To be mentioned	
4	Standard	Design, manufacturing, performance & testing shall be in accordance to the IEC, BS, BDS or equivalent international standards.	
5	Certifications	To be mentioned	
6	Model number	To be mentioned	
7	Battery Chemistry	To be mentioned	
8	Proyection & Housing	IP55 & Container Based	
9	Rated Unit Capacity	Maximum 2 MWh	
10	Cell capacity	Maximum 300 Ah	
11	Cell Voltage	To be mentioned	
12	Rated Unit voltage	Left to the bidder	
13	Charge/Discharge Rate	0.5C	
14	Cooling	Liquid cooling/Air Cooling	
15	Ambient (Outside) Temperature Range	-20°C~55°C	
16	Relative Humidity Range	5%~100%	
17	Noise	< 75dB	
18	Black start/Grid Forming	Yes	
20	Certifications of Standards	IEC 62133 (cell), IEC 62619 (ESS). UL 1642 (cell), UL 9540 (ESS), IEEE 1547 2018 (inverter), UL 1741 (inverter)	
21	Dimension	To be mentioned	
22	Warranty	Min 10 yrs for all part	
23	Communication	Modbus TCP/IP	
24	PCMS connection	Yes	
25	Cell level monitoring	yes	
26	Catalogue	To be submitted	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:



6. Guaranteed Technical Particulars (GTP) of Power Transformer

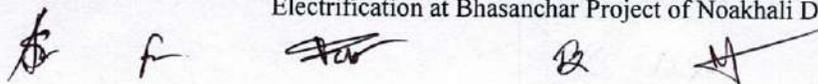
Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Description of the Item	Multi-winding Step Up Transformer	
2	Manufacturer's Name	To be mentioned	
3	Country of the Origin	To be mentioned	
4	Manufacturer's Type/ Model No.	To be mentioned	
5	Installation	Outdoor, Tropical, High Rainfall & Humidity	
6	Type	Core	
7	Coolant	Mineral oil	
8	Method of Cooling	ONAN	
9	kVA Rating	Minimum 3400 KVA	
10	Number of Phases	3	
11	Rated frequency, Hz	50	
12	Rated primary voltage, V	To be mentioned	
13	Rated no load sec. Voltage, kV	11	
14	Vector group	DYn11	
15	Highest system voltage of :		
	a) Primary winding, V	To be mentioned	
	b) Secondary winding, kV	12	
16	Basic insulation level, KV	75 kV Peak (1.2/50 μ s)	
17	Power frequency withstand voltage, kV		
	a) HT Side	12	
	b) LT Side	To be mentioned	
18	No-Load Loss (W)	To be mentioned	
19	Full Load Loss (W)	To be mentioned	
20	Percentage Impedance	To be mentioned	
21	Type of cooling	ONAN	
22	Catalogue	To be submitted	
H.T WINDING			
1	Nominal Rated voltage	11 KV	
2	Maximum system voltage	12 KV	
3	Basic insulation level (minimum)	As per IEC Standard	
4	Tap Changer	+2x2.5%, 0, -2x2.5% of rated kV & all fully rated capacity. Tap Changer shall be on off load type	
5	Inter phase connection	Wye	
6	Bushings	Porcelain, outdoors type with arcing horns of standard gap, mounted on top of tank. Quantity- 3 Nos.	
7	Power frequency withstand voltage for one minute	As per IEC Standard	
L.T WINDING:			
1	Nominal Rated voltage	To be mentioned (in accordance with the inverter output voltage)	

Guaranted Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
2	Highest system voltage	To be mentioned	
3	Basic insulation level (minimum)	To be mentioned	
4	Bushings	Porcelain, outdoors type with arcing horns of standard gap, mounted on top of tank. Quantity- 3 Nos.	
5	Power frequency withstand voltage for one minute	To be mentioned	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:



Guaranteed Technical Particulars (GTP)

7. Guaranteed Technical Particulars (GTP) of Energy meter (11kV CT/PT Meter)

Sl. No.	Description	Purchaser's Requirement	Manufacture's particulars
1	Reference Standard	Relevant ANSI / IEC Standard	
2	Manufacturer's name & address	Shall be mentioned	
3	Manufacturer's type & model	Shall 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 element	3 (Three)	
7	Rated Voltage , Volt	110V	
8	Minimum Biasing Voltage , Volt	40V	
9	Variation of Frequency, %	± 2%	
10	Variation of Voltage, %	+ 10, -20%	
11	Accuracy class	0.2 (point two)	
12	Rated Current		
	i) Nominal Current , A	= 5	
	ii) Maximum Current , A	≥ 6	
13	Resister Type	LCD Display	
14	Number of Digits (Integer with Decimal), Nos.	5 with 1 (Programmable)	
15	Starting Current , ma	0.1% of Nominal Current	
16	Losses at Nominal Load , Watt	Shall be mentioned	
17	Meter Constant , Imp./	Shall be mentioned	
18	Integration Period	30 (Thirty) Minutes	
	Resetting Period	1 (one) month	
	Cumulative MD transfer	Built in	
	Cycle Timing Device	Built in	
19	Size of the Digit of Display, E x H in mm	4 x 8	
20	No. of Terminal , Nos.	10 (Ten) min	
21	Type of socket and country of origin	To be mentioned	
22	Battery Service life and shelf Life (minimum), Year	10 (ten) & 15 (fifteen)	
23	Year of manufacture	Shall be mentioned	
24	List of Recommended spare parts (if any) , any	Shall be mentioned	
25	Warranty , Year	3 (three)	
26	Meter Service Life (Min), Year	15 (fifteen)	
27	Weight of meter , Kg	Shall be mentioned	
28	Dimensions , mm x mm x mm	Shall be mentioned	
29	Outlines, Drawings & Leaflets	Shall be mentioned	
30	Performance Curve for Balanced & Unbalanced load	Shall be mentioned	
31	Meter sealing condition	Hermetically or Ultrasonic welded	
32	a) Country of Origin b) Place of Manufacture c) Place of Testing	Shall be mentioned	
33	Memory Storage		

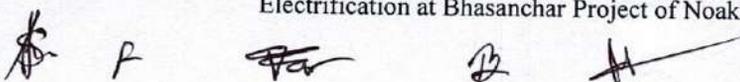
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Guaranted Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacture's particulars
i)	Equipment Identification Code	Shall be mentioned by putting Yes/ No.	
ii)	Security code		
iii)	Access code		
iv)	Number of Power Interruption with Date & Time		
V	Latest Power Failure-Time & Date		
Vi	Event logs		
vii)	Cumulative kWh, kVarh (Q ₁ + Q ₄) Reading for previous two months		
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		

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:



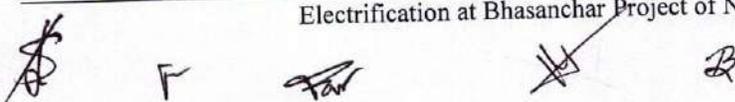
Guaranteed Technical Particulars (GTP)

8. Guaranteed Technical Particulars (GTP) of Pyranometer and Data Logger

SL No	Description	Purchaser's Requirement	Manufacturer's Particulars
Pyranometer			
01	Description of the Item	Pyranometer	
02	Name of the Manufacturer	To be mentioned	
03	Standard	Design, manufacturing, performance & testing shall be in accordance to the IEC or equivalent international standards.	
04	Model number	To be mentioned	
05	Spectral Range	285 to 2800 nm	
06	Sensitivity	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	
07	Response Time	< 5 s	
08	Zero Offset A	< 7 W/m^2	
09	Zero Offset B	< 2 W/m^2	
10	Direction Error (up to 80° with 1 Sun irradiance)	< 10 W/m^2	
11	Operating Temperature Range	-40° C to +80° C	
12	Temperature Dependence of Sensitivity (-40° C to +80° C)	< 1%	
13	Maximum Solar Irradiance	4000 W/m^2	
14	Field of View	180 °	
Data Logger			
01	Description of the Item	Data Logger	
02	Name of the Manufacturer	To be mentined	
03	Standard	Design, manufacturing, performance & testing shall be in accordance to the IEC or equivalent international standards.	
04	Model number	To be mentioned	
05	Local Communication	USB 2/ Optical Port	
06	Remote Access	RS232/485 modem interface port	
07	Display	Alphanumeric LCD	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:



9. Guaranteed Technical Particulars (GTP) of 11/0.4kV, 250kVA Distribution Transformer

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Manufacturer's Name & Address	To be mentioned	
2	Manufacturer's Type/ Model No.	To be mentioned	
3	KVA Rating	250	
4	Number of Phases	3	
5	Rated frequency, Hz	50	
6	Rated primary voltage, KV	11	
7	Rated no load sec. voltage, V	415	
8	Vector group	Dyn11	
9	Highest system voltage of :		
	a) Primary winding, KV	12	
	b) Secondary winding, V	457	
10	Basic insulation level, KV	75	
11	Power frequency withstand voltage, KV		
	a) HT Side	28	
	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, % (supported by type test report)	4%	
16	No-load loss, Watts (supported by type test report)	520	
17	Load losses at rated full load at 75°C, Watts (supported by type test report)	3180	
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	

Guaranteed Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
26	Breakdown Voltage at 2.5mm gap between electrodes	> 50 kV	
Transformer Core (Stack Core or Wound Core):			
27	Manufacturer's Name & Address	To be mentioned	
28	Total weight of core, Kg	To be mentioned	
29	Material of core & grading (CRGO/Amorphos)	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	To be mentioned	
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 (supported by type test report)	To be mentioned	
	b) Length, mm (supported by type test report)	To be mentioned	
	c) Height, mm (supported by type test report)	To be mentioned	
	d) Tank Sheet thickness of top, bottom & side, mm	5, 5 & 4	
	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 (supported by type test report)	To be mentioned	
45	Type of breathings	To be mentioned	
46	Name of relevant IEC or other Equivalent Standards for Design, manufacture, testing and performance.	To be mentioned	
47	Drawing :		

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Guaranted Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
	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	
49	Type Tests report along with details test result and drawings for 11/0.415KV, 250KVA, 3-Phase, Dyn11 Distribution Transformer from an independent testing Laboratory as per IEC 60076 Standards.		
	a) Impulse Voltage Withstands test.	To be submitted	
	b) Temperature Rise test.	To be submitted	
50	Short-circuit Tests Report for the offered 11/0.415KV, 250KVA, 3-Phase, Dyn11 Distribution Transformer as per relevant IEC with detail test results & drawings from reputed independent testing Laboratory/ Institution and detail calculation on the basis of design data by the manufacturer.	To be submitted	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

10. Guaranteed Technical Particulars (GTP) of 11/0.4kV, 100kVA Distribution Transformer

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Manufacturer's Name & Address	To be mentioned	
2	Manufacturer's Type/ Model No.	To be mentioned	
3	KVA Rating	100	
4	Number of Phases	3	
5	Rated frequency, Hz	50	
6	Rated primary voltage, KV	11	
7	Rated no load sec. voltage, V	415	
8	Vector group	Dyn11	
9	Highest system voltage of :		
	a) Primary winding, KV	12	
	b) Secondary winding, V	457	
10	Basic insulation level, KV	75	
11	Power frequency withstand voltage, KV		
	a) HT Side	28	
	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, % (supported by type test report)	4%	
16	No-load loss, Watts (supported by type test report)	245	
17	Load losses at rated full load at 75°C, Watts (supported by type test report)	1635	
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	

Guaranted Technical Particulars (GTP)

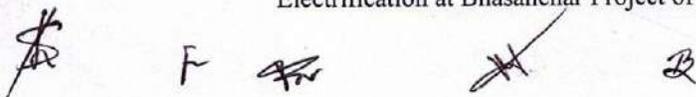
Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
26	Breakdown Voltage at 2.5mm gap between electrodes	> 50 kV	
Transformer Core (Stack Core or Wound Core):			
27	Manufacturer's Name & Address	To be mentioned	
28	Total weight of core, Kg	To be mentioned	
29	Material of core & grading (CRGO/Amorphos)	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	To be mentioned	
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 (supported by type test report)	To be mentioned	
	b) Length, mm (supported by type test report)	To be mentioned	
	c) Height, mm (supported by type test report)	To be mentioned	
	d) Tank Sheet thickness of top, bottom & side, mm	4, 3 & 3	
	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 (supported by type test report)	To be mentioned	
45	Type of breathings	To be mentioned	
46	Name of relevant IEC or other Equivalent Standards for Design, manufacture, testing and performance.	To be mentioned	
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	

Guaranted Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
	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	
49	Type Tests report along with details test result and drawings for 11/0.415KV, 100KVA, 3-Phase, Dyn11 Distribution Transformer from an independent testing Laboratory as per IEC 60076 Standards.		
	a) Impulse Voltage Withstands test.	To be submitted	
	b) Temperature Rise test.	To be submitted	
50	Short-circuit Tests Report for the offered 11/0.415KV, 100KVA, 3-Phase, Dyn11 Distribution Transformer as per relevant IEC with detail test results & drawings from reputed independent testing Laboratory/ Institution and detail calculation on the basis of design data by the manufacturer.	To be submitted	

Manufacturer's Seal & Signature

Bidder's Seal & Signature



11. Guaranteed Technical Particulars (GTP) of 11/0.4kV, 50kVA Distribution Transformer

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
1	Manufacturer's Name & Address	To be mentioned	
2	Manufacturer's Type/ Model No.	To be mentioned	
3	KVA Rating	50	
4	Number of Phases	3	
5	Rated frequency, Hz	50	
6	Rated primary voltage, KV	11	
7	Rated no load sec. voltage, V	415	
8	Vector group	Dyn11	
9	Highest system voltage of :		
	a) Primary winding, KV	12	
	b) Secondary winding, V	457	
10	Basic insulation level, KV	75	
11	Power frequency withstand voltage, KV		
	a) HT Side	28	
	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, % (supported by type test report)	4%	
16	No-load loss, Watts (supported by type test report)	155	
17	Load losses at rated full load at 75°C, Watts (supported by type test report)	810	
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	

Guaranted Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
26	Breakdown Voltage at 2.5mm gap between electrodes	> 50 kV	
Transformer Core (Stack Core or Wound Core):			
27	Manufacturer's Name & Address	To be mentioned	
28	Total weight of core, Kg	To be mentioned	
29	Material of core & grading (CRGO/Amorphos)	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	To be mentioned	
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 (supported by type test report)	To be mentioned	
	b) Length, mm (supported by type test report)	To be mentioned	
	c) Height, mm (supported by type test report)	To be mentioned	
	d) Tank Sheet thickness of top, bottom & side, mm	4, 3 & 3	
	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 (supported by type test report)	To be mentioned	
45	Type of breathings	To be mentioned	
46	Name of relevant IEC or other Equivalent Standards for Design, manufacture, testing and performance.	To be mentioned	
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	

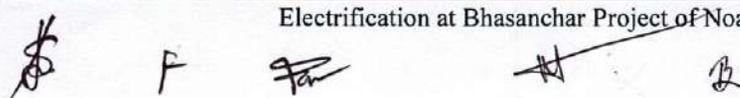
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Guaranted Technical Particulars (GTP)

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
	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	
49	Type Tests report along with details test result and drawings for 11/0.415KV, 50KVA, 3-Phase, Dyn11 Distribution Transformer from an independent testing Laboratory as per IEC 60076 Standards.		
	a) Impulse Voltage Withstands test.	To be submitted	
	b) Temperature Rise test.	To be submitted	
50	Short-circuit Tests Report for the offered 11/0.415KV, 50KVA, 3-Phase, Dyn11 Distribution Transformer as per relevant IEC with detail test results & drawings from reputed independent testing Laboratory/ Institution and detail calculation on the basis of design data by the manufacturer.	To be submitted	

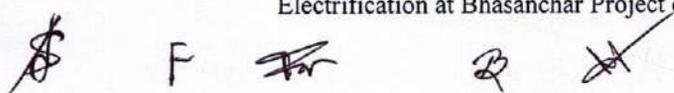
Manufacturer's Seal & Signature

Bidder's Seal & Signature



12. Guaranteed Technical Particulars (GTP) of 11/0.4kV, 10kVA Distribution Transformer

Sl. No.	Technical Particulars	BPDB'S Requirement	Manufacturer's Particulars
1	Manufacturer's Name& Address	To be mentioned	
2	Design standard	ANSI C57.12.00 , C57.12.20 & C57.12.90 (Revisions from 2010 to the latest revision)	
3	Type	Single-phase wound core	
4	KVA Rating	10KVA	
5	Winding material	High conductivity Cu	
6	Core material	Cold Rolled Grain Oriented Silicon Strip Steel(CRGO)/Amorphos	
7	Nominal voltage	HT = 6350V LT = 240V	
8	BIL	HT winding = 95 KV LT winding = 30 KV or as per latest ANSI requirement	
9	% impedance at rated KVA (For 5 KVA to 37.5 KVA)	2.5% (with + 10% Tolerance)	
10	Polarity	Additive	
11	Cooling method	Class- OA (Self-cooled)	
12	Temperature rise:		
	a) Winding	Shall not exceed 65°C (Resistance method)	
	b) Insulating liquid	Shall not exceed 65°C	
13	Bushings		
	a) Type & material	Out door type, Porcelain	
	b) Connectors	Bolted ring type	
	c) Quantity	HT = 1, LT = 2	
	d) Mounting position	HT-on the tank cover LT- on the tank side	
14	Tank		
	a) Design	Sealed type complete with cover & gasket	
	b) Grd. Provision	With bolted ring type connector	
	c) LV grd. Provision	With removable Cu strap	
	d) Lifting facilities	Facilities for lifting the core & coil	
	e) Support lug	Shall have support lugs	
	f) Pressure release device	Self sealing pressure release device	
	g) Min.size (dxh) (mm)	As per table - 2 of specification	
	h) Painting	Light Gray, ANSI Color # 70	
15	Insulating Oil	New, unused, mineral oil as per ANSI/ASTM D3487-79	
16	Guaranteed Load loss in Watt at rated voltage of 85°C :		
	a) 1/2 load	To be mentioned	
	b) 3/4 load	To be mentioned	
	c) Full load	To be mentioned	
17	Guaranteed No load loss in Watt	To be mentioned	
18	Core Loss , watt/kg (supported by loss curve)	To be mentioned	

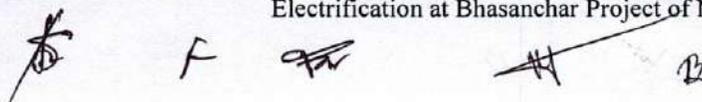


Guaranted Technical Particulars (GTP)

Sl. No.	Technical Particulars	BPDB'S Requirement	Manufacturer's Particulars
19	HT & LT Weight of Copper with percent of purity.	To be mentioned	
20	HT & LT Conductor Sizes (Dia in mm & Area in sq.mm)	To be mentioned	
21	Current Densities (in Amps / sq.mm)	To be mentioned	
22	Number of Turns at HT & LT Side	To be mentioned	
23	Excitation current in Amp	To be mentioned	
24	Regulation at unity & 0.8 P.F	To be mentioned	
25	Full load current in amp	To be mentioned	
26	% Resistance at rated KVA	To be mentioned	
27	Efficiency at unity P.F.	To be mentioned	
	a) 1/2 load		
	b) 3/4 load		
	c) Full load		
28	Weight in Kg.	To be mentioned	
	a) with oil		
	b) without oil		
29	Drawing showing general arrangement and out line dimension.	To be submitted with the offer.	
30	Test Reports	Test reports must be submitted for the offered transformer. As per ANSI Standard ANSI C57.12.00 , C57.12.20 & C57.12.90 (Revisions from 2010 to the latest revision)	
	a) Routine test		
	b) Temperature rise test		
	c) Impulse test		
	d) Short circuit test		
31	Loss value from test report	To be filled up from test report	
	a) No load loss in KW		
	b) Full load loss in KW at 85°C		
32	Test Lab.	Should be reputed Independent Testing Laboratory	
33	Packing & Shipping Box	Packing shall be as per specification and Shipping box shall be per design no. 2 of Exhibit E-2 of bid document.	

Manufacturer's Seal & Signature

Bidder's Seal & Signature



13. Guaranteed Technical Particulars (GTP) of Switchgear, Control & Protection Panel

SI No	Description	Purchaser's Requirement	Manufacturer's Particulars
1.	Description of the Item	MV Switchgear and Metering Panel	
2.	Standard	Relevant ANSI / IEC Standard	
3.	System nominal voltage kV	11	
4.	Maximum System Voltage, kV	12	
5.	Rated Frequency Hz	50	
A	Vacuum Circuit Breaker of 630 A		
	Description of the Item	Vacuum Circuit Breaker	
	Certifications	To be mentioned	
	Model Number	To be mentioned	
	Rated Frequency	50 Hz	
	Rated Nominal Voltage	33 kV	
	Maximum Rated Voltage	36 kV	
	Rated Nominal Current	630 A	
	Number of Breaks Per Phase	To be mentioned	
	Interrupting Medium	Vacuum	
	Insulation	SF6	
	Basic Insulation Level	170 kV peak (1.2/50 μ s)	
	Power Frequency Withstand Voltage	70 kV (For 1 Minute @ 50 Hz)	
B	Vacuum Circuit Breaker of 1250A		
	Description of the Item	Vacuum Circuit Breaker	
	Certifications	To be mentioned	
	Model Number	To be mentioned	
	Rated Frequency	50 Hz	
	Rated Nominal Voltage	33 kV	
	Maximum Rated Voltage	36 kV	
	Rated Nominal Current	1250 A	
	Number of Breaks Per Phase	To be mentioned	
	Interrupting Medium	Vacuum	
	Insulation	SF6	
	Basic Insulation Level	170 kV peak (1.2/50 μ s)	
	Power Frequency Withstand Voltage	70 kV (For 1 Minute @ 50 Hz)	
C. PROTECTION CONTROL & METERING			
6.	Differential Relay		
	Manufacturer's Name	Shall be mentioned	
	Country of Origin	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Relay	Numerical programmable	
	The Relay protocol	IEC 61850 type	
7.	Restricted Earth Fault Relay		
	Manufacture's Name & Country of Origin	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Relay	Numerical programmable	
	The Relay protocol	IEC 61850 type	
8	IDMT OVER CURRENT & EARTH FAULT RELAY		
	Manufacture's Name Country of Origin	To be mentioned	







Guaranteed Technical Particulars (GTP)

	Manufacture's Model no.	Shall be mentioned	
	Type of relay	Numerical Multifunction	programmable
	The Relay protocol	IEC 61850 type	
9	Separate Auxiliary Flag Relays for Transformer self-protection (OTA, OTT, WTA, WTT, BA, BT, OLTC Surge, PRD for main tank.		
	Manufacture's Name	Shall be mentioned	
	Country of Origin	Shall be mentioned	
	Manufacture's Model no	Shall be mentioned	
	Type of Relays	Shall be mentioned	
10	Trip Circuit Supervision (TCS) Relay (Separate Relay for each trip coil)		
	Manufacture's Name	Shall be mentioned	
	Country of Origin	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Relay	Shall be mentioned	
11	Trip Relay (Separate Relay)		
	Manufacture's Name	Shall be mentioned	
	Country of Origin	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Operating Time, ms	<10	
	Self-reset type for O/C, E/F protection	Yes	
	Hand & Electrical reset type for Differential, REF and Transformer Self-protection	Yes	
12	Annunciator		
	Manufacture's Name	Shall be mentioned	
	Country of Origin	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Windows, nos.	24	
	Built in buzzer and buttons for accept, mute, test, reset, etc.	Yes	
13	Control Switch		
	Manufacture's Name & Country	Shall be mentioned	
	Manufacture's Model/Type No.	Shall be mentioned	
	Separate TNC/Discrepancy switch and Local Remote (L/R) selector switch	Yes	
14	AVR Relay: Transformer incomer PCM panel shall be equipped with AVR relay and control switch for RTCC operation along with necessary indication system (Tap position, oil temperature, winding temperature etc.).	Yes	
20	METERING AND INSTRUMENTATION		
20.1	KWH & kVARH Meter		
	Manufacture's Name & Country	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Meter	Numerical Multifunction	programmable
	Class of Accuracy	0.2	
20.2	VOLT METERS with Selector Switch		
	Manufacturer's Name and Country	Shall be mentioned	

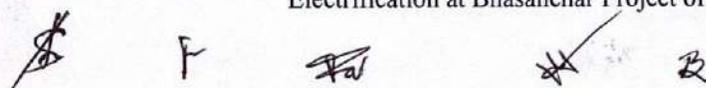
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Guaranted Technical Particulars (GTP)

	Manufacture's Model no.	Shall be mentioned	
	Type of Meter	Analogue, 90 degree scale range	
	Class of Accuracy	1.0	
20.3	AMPERE METERS		
	Manufacturer's Name and Country	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Meter	Analogue, 240 degree scale range	
	Class of Accuracy	1.0	
	Separate A-meter for each phase	Yes	
	Mega Watt (MW) Meter		
	Manufacturer's Name and Country	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Meter	Analogue, Import/Export	
	Class of Accuracy	1.0	
20.4	Mega VAR (MVAR) Meter		
	Manufacturer's Name and Country	Shall be mentioned	
	Manufacture's Model no.	Shall be mentioned	
	Type of Meter	Analogue, Import/Export	
	Class of Accuracy	1.0	
21	The PCM Panel Shall be complied all the technical specification mentioned in Section-6.	Yes	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

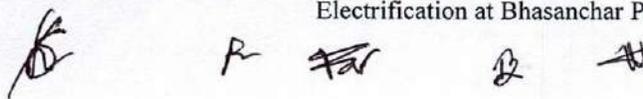


14. Guaranteed Technical Particulars (GTP) of PCMS Server

SL. No.	Description	Purchaser's Requirement	Manufacturer's Particulars
PCMS Server			
1.	Manufacturer	To be mentioned	
2.	Country of origin	To be mentioned	
3.	Type	To be mentioned	
4.	Standards	IEC	
	Type of housing	Industrial 19" rack	
Characteristics			
5.	Auxiliary supply voltage	To be mentioned	
6.	Rated auxiliary supply voltage, V	To be mentioned	
7.	Dual power supply	Yes	
8.	Processor type	To be mentioned	
9.	Processor clock, GHz	To be mentioned	
10.	Memory type	To be mentioned	
11.	Memory capacity, MB	To be mentioned	
12.	Video display adapter type	To be mentioned	
13.	Video display adapter memory	To be mentioned	
14.	Hard disc type	To be mentioned	
15.	Rotating hard disc, Yes/No	To be mentioned	
16.	Hard disc capacity, GB	To be mentioned	
17.	Number of hard discs, pcs.	To be mentioned	
18.	RAID controller type	To be mentioned	
19.	DVD RW type	To be mentioned	
20.	Serial interface RS232	Yes	
21.	Number of serial interfaces	Min. 2	
22.	Fast Ethernet network interface card	To be mentioned	
23.	Number of fast Ethernet network interface cards, pcs.	4	
24.	Fans , Yes/No	Insert	
25.	Monitor 19", pcs.	1	
26.	Manufacturer	To be mentioned	
27.	Country of origin	To be mentioned	
28.	Type , TFT	To be mentioned	
29.	Standards	IEC	
30.	Supply voltage	To be mentioned	
31.	Rated auxiliary supply voltage, Va.c	To be mentioned	
32.	Power consumption, W	To be mentioned	
33.	Vertical frequency, Hz	To be mentioned	
34.	Max. resolution	To be mentioned	

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of the Bidder:



Guaranteed Technical Particulars (GTP)

15. Guaranteed Technical Particulars (GTP) of PCMS /EMS Software(Open Source Software)

No.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
	PCMS Software			
1. Basic PCMS server software				
(i)	Basic PCMS server software	pcs.	2	
(ii)	Communication with 2 higher level control centres		Yes	
(iii)	Real-time database management		Yes	
(iv)	Data processing		Yes	
(v)	Data acquisition		Yes	
(vi)	Alarm and event processing		Yes	
(vii)	Data archiving		Yes	
(viii)	Report generation and printing		Yes	
(ix)	Redundancy management		Yes	
2. Operator workstation software		pcs.	2	
3. Communication software		pcs.	2	
(x)	Communication with 2 higher level control centres		Yes	
4. Application libraries		pcs.	1, optional	
5. Software tools		pcs.	1	
(xi)	Database creating, maintaining and		Yes	
(xii)	User interface definition		Yes	
(xiii)	Report definition		Yes	
(xiv)	System configuration		Yes	
(xv)	Historical data maintaining		Yes	
(xvi)	Database and historical data		Yes	
(xvii)	Analysis and diagnostic tools		Yes	
(xviii)	Training simulator		Yes	
	Other software tools according to Contractor's concept:		Insert	

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16. Guaranteed Technical Particulars (GTP) for EMS

Sl. No	Description	Minimum Requirements	Guaranteed
1	Hardware interoperability	The hardware's/controller for BESS, PV and Diesel Generator must be interoperable and	
2	Plant Control	Ability to control BESS, solar PV plant and generator under all their intended control modes including black start Maximize sustainable power penetration in all control mode Complete system checks of each subsystem for safe operation of the system Log all faults and generate Alarm Able to operate the plant in 100% RE mode Remotely accessible via GSM	
3	BESS Control	Capability to adapt BESS SoC limits when load shifting to ensure full local-grid support functionality at all times The EMS BESS controller capable of transforming the BESS operating mode between grid-forming or grid-following and also able to run in droop mode (acting as a virtual synchronous generator)	
4	Generator Control	Capability to adapt to different configurations of generator (s) (including outages for maintenance) while ensuring redundancy requirements are met. Provision for accommodating typical response times of connected generator(s) to dispatch commands, including start-up of additional generators (in case of future expansion)	
5	PV Generation Plant Control	Capability to adjust Solar output based on Load , Generator set points and BESS set points Capability to use real-time local irradiance data to estimate capacity of curtailed solar PV and utilize this in dynamically allocating spinning reserve.	
6	Control Setpoints	Need to have user configurable (tuneable) settings for inputs to dynamic spinning reserve calculation, ramp times, delays, limits, and conditions for state transition.	
7	Stand Alone Operations	Be operable as a stand-alone system with Generator, even when the BESS or solar PV is off-line for maintenance. The EMS should also support (prevent disruption of) operations that do not require the BESS and solar PV plant, including black start (ensuring compatible setting of solar PV and BESS state, mode, or other requirement, including their respective switchgear, and communicating status with the thermal system) Be separable, such that the existing thermal power plant can continue to operate if the EMS is off-line	
8	Communication	Use Modbus TCP communications and fibre optic connections Be capable of interfacing with remote equipment via optic fiber or 4G communications	

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Guaranteed Technical Particulars (GTP)

		<p>Be capable of interfacing with solar PV plant with SunSpec protocols, and associated switchgear</p> <p>Be capable of interfacing with other BESS and micro-grid controllers operating in the network (subject to above expectations on interface and communications, and cooperation of the supplier / operator of that equipment); may require definition of a response profile for management of that other equipment</p>	
9	HMI	Include a with remote web access capability, also accessible on the power station operator workstation	
10	Future Plant Expansion	<p>Provide expansion capability to add or reconfigure BESS, solar PV, or thermal generators over the EMS life (up to 100% of initial connections as spare)</p> <p>The EMS must provide flexibility for future upgrade requirements. Future upgrade requirements may include addition of new generators or configuration changes in the network, or adopting improvements in available EMS software. EMS vendor will be required to offer product support and support for such requirements (which may include remote support and site visits if needed).</p>	
11	Software	<p>Open source code for all software shall be utilized wherever this option is available.</p> <p>Open source code shall be provided as a deliverable, including documentation.</p> <p>If proprietary software is utilised, then in the event that an OEM is unable to meet the required commitment to support any proprietary software needed for operations, then this software must be made available to the Employer in a standard, usable, source code form with documentation of such software.</p> <p>Provision to meet this requirement through a third party shall be made in advance (prior to Completion) in the event OEM is unavailable to release software.</p>	
12	Weather forecasting predictive operation	To be compatible with leading sky imager solutions, enabling it to predict the weather and PV production and take counter-measures if needed (in case the BESS has reached its lower setpoint SoC), for example starting up the required number of genset in due time before clouds reduce PV production – and keeping gensets running if forecasts indicate that PV production will drop again shortly.	

Manufacturer's Seal & Signature

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Guaranteed Technical Particulars (GTP)

17. Guaranteed Technical Particulars (GTP) of Battery Charger

SL	Description	Minimum Requirements		Guaranteed
		Unit	Data	
1.	Manufacturer			
2.	Type designation			
3.	Type		Thyristor controlled	
4.	Country of origin		-	
5.	Standards		IEC	
6.	Rated input voltage	V	3 x 400 / 230	
7.	Rated input current (at rated output)	A	To be mentioned	
8.	Input voltage variation	%	±5	
9.	Power factor	l	> 0,80	
10.	Efficiency	%	> 85	
11.	Degree of protection		IP42	
12.	Noise level	dB	< 65 dB max	
13.	Type of rectifiers		Modular with MCU	
14.	Number of modules (n+2)	pcs	To be mentioned	
15.	Module rated output current	A	To be mentioned	
16.	MCU protocol		IEC 61850	
17.	Charging characteristic		Both constant current &	
18.	Rated frequency	Hz	50	
19.	Insulation - HV, between input and output/ground	V AC,	1000 V AC, 1 min	
20.	Insulation resistance	MW; V DC, min	10 MW, 500 V DC, 1 min	
21.	Rated capacity	kVA	To be mentioned	
22.	Rated output voltage	V d.c.	220	
23.	Rated output current	A	100	
24.	Rated frequency	Hz	50	
25.	Voltage & Frequency variation	%	±5	
26.	Voltage ripple	%	±5	
27.	Ripple frequency	Hz	±2	
28.	Charge modes	-	3 levels: charge, float &	
29.	Float voltage per cell	V	1.42	
30.	Boost voltage per cell	V	1.53	
31.	Float & Boost voltage adjustable	-	Yes	
32.	Measurement		Input voltage Output voltage Output current Battery current Load current Earth-fault voltage	

Manufacturer's Seal & Signature

Bidder's Seal & Signature

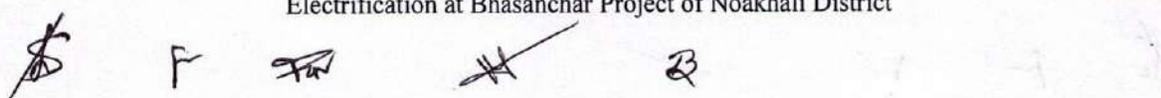
Guaranteed Technical Particulars (GTP)

18. Guaranteed Technical Particulars (GTP) of UPS/Battery

Sl. No.	Item	To be Proposed by the Bidder
1.	Manufacturer	
2.	Country of Manufacture	
3.	Model	
4.	Voltage output (V)	
5.	Regulation (\pm %)	
6.	Frequency (Hz)	
7.	Power Rating (VA)	
8.	Load Power Factor	
9.	Load Crest Factor	
10.	Transfer Time (ms)	
11.	Current (A)	
12.	Overload Capability (%)	
13.	Waveform	
14.	Distortion (< %)	
15.	Transient Regulation (\pm 5%)	
UPS Input		
16.	Voltage (V)	
17.	Voltage Range (+% -%)	
18.	Frequency (Hz)	
19.	Maximum Current (A)	
20.	Power Factor	
UPS Battery		
21.	Type	
22.	Rating (V – Ah)	
23.	Number of Cells	
24.	Autonomy Time at full load (min)	
25.	Recharge Time to 90% capacity as multiple of outage time	

Manufacturer's Seal & Signature

Bidder's Seal & Signature



19. Guaranteed Technical Particulars for 12M, 450daN Galvanized Telescopic Steel Pole

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	--	12M 450daN, Galvanized Telescopic Steel Pole	
2	Name of the Manufacturer	--	Shall be mentioned	
3	Address of the Manufacturer	--	Shall be mentioned	
4	Standard	--	Performance Design and Testing shall be in accordance to the BS, IEC, ASTM, BDS or equivalent International standards.	
5	Manufacturer's code no of pole	--	Shall be mentioned	
6	Overall length	Meter	12 Meter	
7	Depth of Plantation	Meter	1/6 of the length	
8	Tapper Ratio	mm/Meter	Shall be mentioned	
9	Number of Sections	nos.	2	
10	Length of each section	Meter	Shall be mentioned	
11	Outside diameter (Top & Bottom) of each section	mm	Shall be mentioned	
12	Thickness of each section	mm	Shall be mentioned	
13	Overlapping of each section	mm	Shall be mentioned	
14	Total Weight of Pole	Kg	Shall be mentioned	
15	Minimum Tensile strength of Steel	N/mm ²	Shall be mentioned	
16	Minimum Yield strength of Steel	N/mm ²	280	
17	Galvanization Coating	--	Hot Dip Galvanized after Fabrication as per BS EN ISO 1461:1999	
18	Type of anti-corrosive paint	--	Shall be mentioned	
19	Thickness of anti-corrosive paint a) Outside b) Inside	Micron Micron	2 x 100 1 x 100	
20	Number of Longitudinal Joint per section	nos.	2 (max)	
21	Factor of Safety of Pole on Yield Strength	--	2 (min)	
22	The Steel Poles shall be complied all the technical specification mentioned in Bid Document.		Yes	

Seal and Signature
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of the Bidder:

20. Guaranteed Technical Particulars for 12M, 350daN Galvanized Telescopic Steel Pole

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	--	12M 350daN, Galvanized Telescopic Steel Pole	
2	Name of the Manufacturer	--	Shall be mentioned	
3	Address of the Manufacturer	--	Shall be mentioned	
4	Standard	--	Performance Design and Testing shall be in accordance to the BS, IEC, ASTM, BDS or equivalent International standards.	
5	Manufacturer's code no of pole	--	Shall be mentioned	
6	Overall length	Meter	12 Meter	
7	Depth of Plantation	Meter	1/6 of the length	
8	Tapper Ratio	mm/Meter	Shall be mentioned	
9	Number of Sections	nos.	2	
10	Length of each section	Meter	Shall be mentioned	
11	Outside diameter (Top & Bottom) of each section	mm	Shall be mentioned	
12	Thickness of each section	mm	Shall be mentioned	
13	Overlapping of each section	mm	Shall be mentioned	
14	Total Weight of Pole	Kg	Shall be mentioned	
15	Minimum Tensile strength of Steel	N/mm ²	Shall be mentioned	
16	Minimum Yield strength of Steel	N/mm ²	280	
17	Galvanization Coating	--	Hot Dip Galvanized after Fabrication as per BS EN ISO 1461:1999	
18	Type of anti-corrosive paint	--	Shall be mentioned	
19	Thickness of anti-corrosive paint a) Outside b) Inside	Micron Micron	2 x 100 1 x 100	
20	Number of Longitudinal Joint per section	nos.	2 (max)	
21	Factor of Safety of Pole on Yield Strength	--	2 (min)	
22	The Steel Poles shall be complied all the technical specification mentioned in Bid Document.		Yes	

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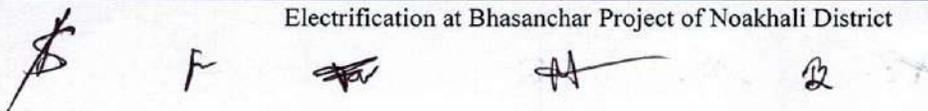
Guaranteed Technical Particulars (GTP)

21. Guaranteed Technical Particulars for 9M, 300daN Galvanized Telescopic Steel Pole

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	--	9M 300daN, Galvanized Telescopic Steel Pole	
2	Name of the Manufacturer	--	Shall be mentioned	
3	Address of the Manufacturer	--	Shall be mentioned	
4	Standard	--	Performance Design and Testing shall be in accordance to the BS, IEC, ASTM, BDS or equivalent International standards.	
5	Manufacturer's code no of pole	--	Shall be mentioned	
6	Overall length	Meter	9 Meter	
7	Depth of Plantation	Meter	1/6 of the length	
8	Tapper Ratio	mm/Meter	Shall be mentioned	
9	Number of Sections	nos.	2	
10	Length of each section	Meter	Shall be mentioned	
11	Outside diameter (Top & Bottom) of each section	mm	Shall be mentioned	
12	Thickness of each section	mm	Shall be mentioned	
13	Overlapping of each section	mm	Shall be mentioned	
14	Total Weight of Pole	Kg	Shall be mentioned	
15	Minimum Tensile strength of Steel	N/mm ²	Shall be mentioned	
16	Minimum Yield strength of Steel	N/mm ²	280	
17	Galvanization Coating	--	Hot Dip Galvanized after Fabrication as per BS EN ISO 1461:1999	
18	Type of anti-corrosive paint	--	Shall be mentioned	
19	Thickness of anti-corrosive paint a) Outside b) Inside	Micron Micron	2 x 100 1 x 100	
20	Number of Longitudinal Joint per section	nos.	2 (max)	
21	Factor of Safety of Pole on Yield Strength	--	2 (min)	
22	The Steel Poles shall be complied all the technical specification mentioned in Bid Document.		Yes	

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of the manufacturer:**

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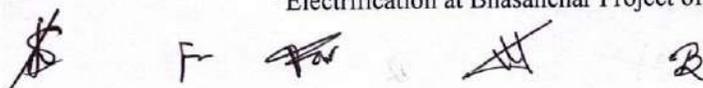
Guaranteed Technical Particulars (GTP)

22. Guaranteed Technical Particulars for 9M, 200daN Galvanized Telescopic Steel Pole

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	--	9M 200daN, Galvanized Telescopic Steel Pole	
2	Name of the Manufacturer	--	Shall be mentioned	
3	Address of the Manufacturer	--	Shall be mentioned	
4	Standard	--	Performance Design and Testing shall be in accordance to the BS, IEC, ASTM, BDS or equivalent International standards.	
5	Manufacturer's code no of pole	--	Shall be mentioned	
6	Overall length	Meter	9 Meter	
7	Depth of Plantation	Meter	1/6 of the length	
8	Tapper Ratio	mm/Meter	Shall be mentioned	
9	Number of Sections	nos.	2	
10	Length of each section	Meter	Shall be mentioned	
11	Outside diameter (Top & Bottom) of each section	mm	Shall be mentioned	
12	Thickness of each section	mm	Shall be mentioned	
13	Overlapping of each section	mm	Shall be mentioned	
14	Total Weight of Pole	Kg	Shall be mentioned	
15	Minimum Tensile strength of Steel	N/mm ²	Shall be mentioned	
16	Minimum Yield strength of Steel	N/mm ²	280	
17	Galvanization Coating	--	Hot Dip Galvanized after Fabrication as per BS EN ISO 1461:1999	
18	Type of anti-corrosive paint	--	Shall be mentioned	
19	Thickness of anti-corrosive paint a) Outside b) Inside	Micron Micron	2 x 100 1 x 100	
20	Number of Longitudinal Joint per section	nos.	2 (max)	
21	Factor of Safety of Pole on Yield Strength	--	2 (min)	
22	The Steel Poles shall be complied all the technical specification mentioned in Bid Document.		Yes	

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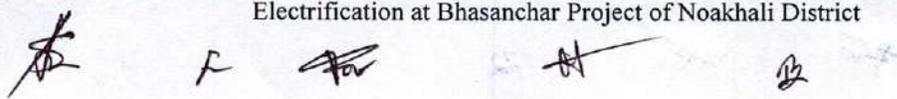
Guaranteed Technical Particulars (GTP)

23. Guaranteed Technical Particulars for ACSR DOG Conductor

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		ACSR DOG	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, IEC, ASTM, BDS or equivalent International standards.	
5	Installation		Overhead	
6	Type		Stranded	
7	Material		Hard drawn Aluminium steel reinforced	
8	Overall diameter	mm	14.15	
9	Nominal cross sectional area of conductor	mm ²	118.47	
10	Number/diameter of Aluminium Strand	No./mm	6/4.72	
11	Nominal Aluminium cross sectional area	mm ²	104.93	
12	Number/diameter of Steel Strand	No./mm	7/1.57	
13	Nominal Steel cross sectional area	mm ²	13.56	
14	Weight of conductor	Kg/KM	394	
15	Drum wound length	M	1700	
16	Net weight	Kg	Shall be mentioned	
17	Gross weight	Kg	Shall be mentioned	
18	Maximum DC Resistance of Conductor at 20 °C	Ω/KM	0.2733	
19	Minimum breaking Load of Conductor	Kg	3335	
20	Maximum working tension of conductor	KN	Shall be mentioned	
21	Current rating at 35°C rise over 40°C ambient temperature (75°C)	Amps.	272 (min)	
22	Practical (final) modulus of elasticity	hbar	7500	
23	Co-efficient of linear expansion	/°C	19.8 x 10 ⁻⁶	
24	Aluminum to Steel Ratio		Shall be mentioned	
25	Lay length for Outermost Layer of Aluminium	mm	Shall be mentioned	
26	Lay direction for Outermost Layer of Aluminium		Right hand	
27	Lay ratio for Outermost Layer of Aluminium		10-14	
28	Treated Wooden Drum Standard		AWPA C ₁ – 82, C ₂ –83, C ₁₆ –82, P ₅ –83.	

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24. Guaranteed Technical Particulars for AAC WASP (Insulated) Conductor

Sl. No.		Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		AAC WASP (Insulated)	
2	Description		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, BDS or equivalent International standards.	
5	Installation		Overhead	
6	Type		Stranded	
7	Material		Hard drawn Aluminium	
8	Overall diameter	mm	15.57	
9	Diameter of bare conductor	mm	13.17	
10	Number/diameter of Aluminium	No./mm	7/4.39	
11	Nominal cross sectional area of conductors	mm ²	106.00	
12	Type & Colour of Insulation		PVC, Black	
13	Insulation thickness (min.)	mm	0.8	
14	Weight of bare conductor	Kg/KM	290	
15	Weight of insulated conductor	Kg/KM	389	
16	Drum wound length	M	1300	
17	Net weight	Kg	Shall be mentioned	
18	Gross weight	Kg	Shall be mentioned	
19	Maximum DC Resistance of Conductor at 20 °C	Ω/KM	0.2702	
20	Minimum breaking Load of Conductor	Kg	1632	
21	Maximum working tension of conductor	KN	Shall be mentioned	
22	Current rating at 35°C rise over 40°C ambient temperature (75°C)	Amps.	260 (min)	
23	Practical (final) modulus of elasticity	hbar	5900	
24	Co-efficient of linear expansion	/°C	2.30 x 10 ⁻⁶	
25	Lay length of Outermost Layer	mm	Shall be mentioned	
26	Lay direction of Outermost Layer		Right hand	
27	Lay ratio of Outermost Layer		10-14	
28	Treated Wooden Drum Standard		AWPA C ₁ - 82, C ₂ - 83, C ₁₆ - 82, P ₅ - 83.	

**Seal and Signature
of the manufacturer:**

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of the Bidder:**

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25. Guaranteed Technical Particulars for AAC ANT (Insulated) Conductor

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		AAC ANT (Insulated)	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, BDS or equivalent International standards.	
5	Installation		Overhead	
6	Type		Stranded	
7	Material		Hard drawn Aluminium	
8	Overall diameter	mm	11.70	
9	Diameter of bare conductor	mm	9.30	
10	Number/diameter of Aluminium	No./mm	7/3.10	
11	Nominal cross sectional area of conductors	mm ²	52.84	
12	Type & Colour of Insulation		PVC pressure insulation, Black	
13	Insulation thickness (min.)	mm	0.8	
14	Weight of bare conductor	Kg/KM	145	
15	Weight of insulated conductor	Kg/KM	200	
16	Drum wound length	M	2200	
17	Net weight	Kg	Shall be mentioned	
18	Gross weight	Kg	Shall be mentioned	
19	Maximum DC Resistance of Conductor at 20 °C	Ω/KM	0.5419	
20	Minimum breaking Load of Conductor	KN	8.28	
21	Maximum working tension of conductor	KN	Shall be mentioned	
22	Current rating at 35°C rise over 40°C ambient temperature (75°C)	Amps.	172 (min)	
23	Practical (final) modulus of elasticity	hbar	5900	
24	Co-efficient of linear expansion	/°C	2.30 x 10 ⁻⁶	
25	Lay length of Outermost Layer	mm	Shall be mentioned	
26	Lay direction of Outermost Layer		Right hand	
27	Lay ratio of Outermost Layer		10-14	
28	Treated Wooden Drum Standard		AWPA C ₁ – 82, C ₂ –83, C ₁₆ –82, P ₅ –83.	

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of the manufacturer:**

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of the Bidder:**

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26. Guaranteed Technical Particulars (GTP) for Platform Structure for Distribution Transformer

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Guaranteed Data
1.	Manufacturer's Name & address	To be mentioned	
2.	Materials	Mild Steel	
3.	Minimum Yield Strength of Material	245 N/Sq. mm	
4.	Galvanization	Hot Dip Galvanized as per BS 729	
6.	(a) Size of Base Angle	150 x 100 x 8 x 3000 mm	
	(b) Size of Fuse Mount Channel	100 x 50 x 6 x 3000 mm	
	(c) Size of Transformer Base Bracing Angle	90 x 90 x 6 x 1150 mm	
7.	Dimension Tolerances:		
	a) Material Size	+ 1 mm	
	b) Thickness	-0%, +10%	
8.	All Dimensions and Hole Size	Shall be as per Drawing (To be confirmed)	
9.	Bill of Materials and Dimensions of all other accessories (J-bolt, Clamp for bracing, Clamp for fuse mount channel, Pole band, Nuts and Bolts etc.)	Shall be as per Drawing (To be confirmed)	
10.	Weight, Kg		
	(a) Base Angle (each)	To be mentioned	
	(b) Fuse Mount Channel (each)	To be mentioned	
	(c) Transformer Base Bracing Angle (each)	To be mentioned	
	(d) J-bolt (each)	To be mentioned	
	(e) Clamp for bracing (each)	To be mentioned	
	(f) Clamp for fuse mount channel (each)	To be mentioned	
	(g) Pole band (each)	To be mentioned	
	(h) Nuts and Bolts-Type A, M16x50 (each)	To be mentioned	
	(i) Nuts and Bolts-Type A, M16x63 (each)	To be mentioned	
	(j) Nuts and Bolts-Type A, M16x300 (each)	To be mentioned	
11.	Standards	BS 729, BS 4190, BS 4360, BS 4870	

**Seal and Signature
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of the Bidder:**

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27. Guaranteed Technical Particulars (GTP) for Diesel Generator

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Guaranteed Data
1	Description of the Item	Diesel Generator Set	
2	Battery Charger	Built in Automatic Battery Charger system with Charger failure indicator/voltage level indicator	
3	Canopy	Sound proof Canopy. Sound Level: 67db@ 7 meter	
4	Design Lifetime	Minimum 20 years	
5	Weight and Dimension	To be mentioned	
6	Warranty	Minimum 3 years	
Engine			
1	Description of Engine	Internal Combustion Diesel Engine	
2	Country of Origin	To be mentioned	
3	Name and Address of the Manufacturer	To be mentioned	
4	Standard	Design, manufacturing, performance & testing shall be in accordance to the IEC, BS, BDS or equivalent international standards.	
5	Certifications	To be mentioned	
6	Model Number	To be mentioned	
7	Type of Engine	Compression Ignition Engine	
8	Noise at a distance of 100 metres	To be mentioned	
9	Engine rated speed, rpm	1500rpm	
10	Critical speed above and below rated speed	To be mentioned	
11	Engine Starting System	To be mentioned	
12	Max. starting time required from standstill to full speed, min	To be mentioned	
13	Max. vibration limit, mm/sec	To be mentioned	
14	Number of Cylinders	6 Nos	
15	Type and arrangement of Cylinders	Vertical in Line	
16	Number of strokes	4 Stroke	
17	Ignition mode	Compression Ignition	

18	Speed Governing system	Mechanical	
20	Induction	Turbocharged	
21	Fuel consumption	Maximum 32.0 ltr/hr at 75% Load and 42.0 ltr/hr at 100% Load	
22	Fuel Tank Capacity	Minimum 350 Litre	
23	Lube Oil Tank Capacity	Minimum 15 Litre	
24	Cooling System	To be mentioned	
25	Weight and Dimension	To be mentioned	
Alternator			
1	Description of Alternator	Three phase AC alternator	
2	Country of Origin	To be mentioned	
3	Name and Address of the Manufacturer	To be mentioned	
4	Standard	Design, manufacturing, performance & testing shall be in accordance to the IEC, BS, BDS or equivalent international standards.	
5	Certifications	To be mentioned	
6	Model Number	To be mentioned	
7	No of Phase and wire	Three phase, four wire	
8	Rated Capacity at Site condition, KVA	Minimum 200 KVA	
9	Rated output at 0.85pf	Minimum 170kW	
10	Rated Voltage, V	415 V	
11	Frequency, Hz	50 Hz	
12	Excitation System	PMG	
13	Voltage Sensing	2 Phase	
14	Material Insulation Class	H	
15	Bearing Arrangement	Single	
16	Weight and Dimension	To be mentioned	

**Seal and Signature
of the manufacturer:**

**Seal and Signature
of the Bidder:**

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28. Guaranteed Technical Particulars (GTP) Double Cabin Disel Pick Up

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Guaranteed Data
1	General		
	a) Country of Origin	To be mentioned	
	b) Country of make	To be mentioned	
	c) Name of Manufacturer	To be mentioned	
	d) Year of manufacture	2024 or latest	
	e) Model	To be mentioned	
	f) Brand	To be mentioned	
2	Body		
	a) Overall length	To be mentioned	
	b) Overall width	To be mentioned	
	c) Overall height	To be mentioned	
	d) Wheel base	To be mentioned	
	e) Ground clearance	To be mentioned	
	f) Total weight	To be mentioned	
	g) Number of doors	4(four)	
	h) Seating Capacity	5 Seated	
	i) Loading Capacity (Kg)	1000 Kg	
	j) Color	Manufacturer's standard	
k) Drive	Right hand drive (RHD)		
3	Engine		
	a) Model	To be mentioned	
	b) Type	4- Stroke, 4- cylinder, in line	
	c) Fuel system	Diesel	
	d) Fuel tank	80 Litre (Minimum)	
	e) Displacement (CC)	2700 (Minimum)	
	f) Maximum H.P./RPM	221 HP @ 3400 RPM	
	g) Fuel consumption Km/litre	To be mentioned (Fuel consumption curve is preferable)	
4	Transmission system		
	a) Transmission System	Part time manual 4x4	
	b) Gearbox	Automatic	
	c) Rear Differential	Manual locking	
5	Steering System	Power	
6	Brake System		
	Front Brake	Ventilated discs	
	Rear Brake	Drums	
	Parking Brake	Manual	
7	Suspension System		
	Front	Coil Type	
	Rear	Leaf	
8	Tires and Wheel size	To be mentioned	
9	Battery Volt	12 Volts	
10	Built in equipment & Accessories	As per Specification	
11	Type of AC included	Auto Air-Conditioned (Front-Rear) (Built-in)	
12	Repair tools	To be mentioned	

13	Spares	To be mentioned	
14	List of Standard Tools	To be mentioned	
15	List of Accessories	To be mentioned	
16.	Black Smoke Emission	65 HSU	

**Seal and Signature
of the manufacturer:**

**Seal and Signature
of the Bidder:**

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29. Guaranteed Technical Particulars (GTP) of Electric Vehicle

Sl. No.	Description	Purchaser's Requirement	Manufacturer's Guaranteed Data
1	General		
	a) Country of Origin	To be mentioned	
	b) Country of make	To be mentioned	
	c) Name of Manufacturer	To be mentioned	
	d) Year of manufacture	2024 or latest	
	e) Model	To be mentioned	
	f) Brand	To be mentioned	
2	Body		
	a) Overall length	To be mentioned	
	b) Overall width	To be mentioned	
	c) Overall height	To be mentioned	
	d) Wheel track- front/rear (mm)	To be mentioned	
	e) Wheel base	To be mentioned	
	f) Ground clearance	To be mentioned	
	g) Gross Vehicle weight, kg	To be mentioned	
	h) Number of doors	4(four)	
	i) Seating Capacity	5 Seated	
	j) Loading Capacity, kg (Min/Max)	To be mentioned	
	k) Color	Manufacturer's standard	
l) Drive	Right hand drive (RHD)		
3	Electric Motor		
	a) Model	To be mentioned	
	b) Type	Permanent magnet synchronous motor	
	c) Power, kW	100 (Minimum)	
	d) Torque, N.m.	300 (Minimum)	
4	Performance		
	a) Acceleration 0-100 km/h, s	11 (Maximum)	
	b) Driving range: WLTP-Combined, km	340 (Minimum)	
5	Battery		
	a) Battery type	Blade Battery	
	b) Battery Capacity, kWh	49.50 (Minimum)	
6	Brake		
	a) Front Brake	Ventilated Disc	
	b) Rear Brake	Disc	
7	Suspension System		
	Front Suspension	Macpherson strut	
	Rear Suspension	Multi-link	
8	Tyre		
	Wheel Type	Alloy	
	Tyre Size	215/60 R17 (Minimum)	
9	Built in equipment & Accessories	As per Specification	
10	Type of AC included	Automatic Air-Conditioning (Front-Rear) (Built-in)	
11	Repair tools	To be mentioned	
12	Spares	To be mentioned	

13	List of Standard Tools	To be mentioned	
14	List of Accessories	To be mentioned	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

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30. Guaranteed Technical Particulars for Single-Core, 35 mm² PVC Insulated and PVC Sheathed Copper Cable

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		1CX35 sq. mm PVC Insulated and PVC Sheathed Cables	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, IEC, BDS or equivalent International standards.	
5	Cable Size	mm ²	1CX35	
6	Material		PVC Insulated and PVC Sheathed plain annealed copper.	
7	Numbers & Diameter of wires	mm	19/1.53	
8	Maximum resistance at 20 deg. C	Ω/KM	0.524	
9	Nominal thickness of insulation	mm	1.2	
10	Nominal thickness of sheath	mm	1.8	
11	Colour of sheath		Black	
12	Approximate outer diameter	mm	13.9	
13	Approximate weight	Kg/K M	482	
14	Continuous permissible service voltage	V	600/1000	
15	Current rating at 30 deg. C ambient temperature U/G	Amps	155	
16	Current rating at 35 deg. C ambient in air	Amps	160	
17	Drum wound length	M	500	
18	Net Weight	Kg	Shall be mentioned	
19	Gross weight	Kg	Shall be mentioned	
20	Treated Wooden Drum Standard		AWPA C ₁ - 82, C ₂ - 83, C ₁₆ - 82, P ₅ - 83.	
21.	Manufacturer must comply all the features of mentioned in Technical Specification (Section 7)		Yes	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

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31. Guaranteed Technical Particulars for Single-Core, 25 mm² PVC Insulated and PVC Sheathed Copper Cable

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		1CX25 sq. mm PVC Insulated and PVC Sheathed Cables	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, IEC, BDS or equivalent International standards.	
5	Cable Size	mm ²	1CX25	
6	Material		PVC Insulated and PVC Sheathed plain annealed copper.	
7	Numbers & Diameter of wires	mm	7/2.14	
8	Maximum resistance at 30 deg. C	Ω/KM	0.727	
9	Nominal thickness of insulation	mm	1.2	
10	Nominal thickness of sheath	mm	1.8	
11	Colour of sheath		Black	
12	Approximate outer diameter	mm	12.4	
13	Approximate weight	Kg/K M	363	
14	Continuous permissible service voltage	V	600/1000	
15	Current rating at 30 deg. C ambient temperature U/G	Amps	130	
16	Current rating at 35 deg. C ambient in air	Amps	125	
17	Drum wound length	M	500	
18	Net Weight	Kg	Shall be mentioned	
19	Gross weight	Kg	Shall be mentioned	
20	Treated Wooden Drum Standard		AWPA C ₁ – 82, C ₂ –83, C ₁₆ –82, P ₅ –83.	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

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32. Guaranteed Technical Particulars for PVC Insulated Quadruplex Copper Cable (4×16rm)

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		PVC Insulated Self Supported Quadruplex Copper Cable (4×16rm)	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, IEC, BDS or equivalent International standards.	
5	Installation		Outdoor overhead, high humid, rainfall and temperature	
6	Type		Self-supported, weather proof PVC insulated	
7	Continuous permissible service voltage	V	600/1000	
8	Cable Size	mm ²	3x16rm+16rm	
9	Number of Core		4 Single Core (3 Phase + 1 Neutral)	
10	Cable Construction		Each single core cable spirally arranges to form a self-supporting assembly without any cover	
11	Twisted Assemblies	mm	25 to 45 times the diameter of one of the insulated conductors	
12	Pitch length	mm	Shall be mentioned	
13	Conductor Material			
	a) Phase Conductor		Plain annealed copper conductor	
	b) Neutral Conductor		Hard drawn copper conductor	
14	Insulation Material		High quality electric grade weather proof PVC over core for water tightness but ensuring ease of stripping	
15	Colour			
	a) Phase Conductor		Black	
	b) Neutral Conductor		Green	
16	Thickness of insulation	mm	1.6 (Minimum)	
17	Sheath		None	
18	Numbers & Diameter of wires	mm	7/1.71	
19	Cross Sectional area of Cond. (Phase & Neutral)	Sq. mm	16	
20	Maximum dc resistance at 20 deg. C	Ω/KM	1.15	
21	Overall Diameter of Conductor			
	a) Phase Conductor	mm	Shall be mentioned	
	b) Neutral Conductor	mm	Shall be mentioned	
22	Weight of Conductor	Kg/K M	≥ 765	
23	Continuous Current rating at 35 deg. C ambient in air	Amps	≥ 75	

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24	Maximum allowable tension	Kg	Shall be mentioned	
25	Minimum Breaking Load of Conductor			
	a) Phase Conductor	Kg	Shall be mentioned	
	b) Neutral Conductor	Kg	Shall be mentioned	
26	Net Weight of conductor in a drum/Reel	Kg	Shall be mentioned	
27	Gross weight of Drum/Reel including conductor	Kg	Shall be mentioned	
28	Drum wound length	M	500	
29	Treated Wooden Drum Standard		AWPA C ₁ – 82, C ₂ –83, C ₁₆ –82, P ₅ –83.	

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of the Bidder:

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33. Guaranteed Technical Particulars for PVC Insulated Quadruplex Copper Cable (4×6rm)

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		PVC Insulated Self Supported Quadruplex Copper Cable (4×6rm)	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, IEC, BDS or equivalent International standards.	
5	Installation		Outdoor overhead, high humid, rainfall and temperature	
6	Type		Self-supported, weather proof PVC insulated	
7	Continuous permissible service voltage	V	600/1000	
8	Cable Size	mm ²	3x6rm+6rm	
9	Number of Core		4 Single Core (3 Phase + 1 Neutral)	
10	Cable Construction		Each single core cable spirally arranges to form a self-supporting assembly without any cover	
11	Twisted Assemblies	mm	25 to 45 times the diameter of one of the insulated conductors	
12	Pitch length	mm	Shall be mentioned	
13	Conductor Material			
	a) Phase Conductor		Plain annealed copper conductor	
	b) Neutral Conductor		Hard drawn copper conductor	
14	Insulation Material		High quality electric grade weather proof PVC over core for water tightness but ensuring ease of stripping	
15	Colour			
	a) Phase Conductor		Black	
	b) Neutral Conductor		Green	
16	Thickness of insulation	mm	1.6 (Minimum)	
17	Sheath		None	
18	Numbers & Diameter of wires	mm	7/1.05	
19	Cross Sectional area of Cond. (Phase & Neutral)	Sq. mm	6	
20	Maximum dc resistance at 20 deg. C	Ω/KM	3.030	
21	Overall Diameter of Conductor			
	a) Phase Conductor	mm	Shall be mentioned	
	b) Neutral Conductor	mm	Shall be mentioned	
22	Weight of Conductor	Kg/K M	≥ 370	

23	Current rating at 35 deg. C ambient in air	Amps	≥ 41	
24	Maximum allowable tension	Kg	Shall be mentioned	
25	Minimum Breaking Load of Conductor			
	a) Phase Conductor	Kg	Shall be mentioned	
	b) Neutral Conductor	Kg	Shall be mentioned	
26	Net Weight of Conductor in a Drum/Reel	Kg	Shall be mentioned	
27	Gross weight of Drum/Reel including Conductor	Kg	Shall be mentioned	
28	Drum wound length	M	1000	
29	Treated Wooden Drum Standard		AWPA C ₁ - 82, C ₂ -83, C ₁₆ -82, P ₅ -83.	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

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34. Guaranteed Technical Particulars for PVC Insulated Duplex Copper Cable (4rm)

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item		PVC Insulated & Twisted Duplex Copper Cable	
2	Name of the Manufacturer		Shall be mentioned	
3	Address of the Manufacturer		Shall be mentioned	
4	Standard		Performance Design and Testing shall be in accordance to the BS, IEC, BDS or equivalent International standards.	
5	Installation		Outdoor overhead, high humid, rainfall and temperature	
6	Type		Self-supported, weather proof PVC insulated	
7	Cable Size	mm ²	4rmX4rm	
8	Number of Core		2 Single Core (1 Phase + 1 Neutral)	
9	Cable Construction		Each single core cable spirally arranges to form a self-supporting assembly without any cover	
10	Twisted Assemblies	mm	25 to 45 times the diameter of one of the insulated conductors	
11	Pitch length	mm	Shall be mentioned	
12	Conductor Material			
	a) Phase Conductor		Plain annealed copper conductor	
	b) Neutral Conductor		Hard drawn copper conductor	
13	Insulation Material		High quality electric grade weather proof PVC over core for water tightness but ensuring ease of stripping	
14	Colour			
	a) Phase Conductor		Black	
	b) Neutral Conductor		Green	
15	Thickness of insulation	mm	1.6 (Minimum)	
16	Numbers & Diameter of wires	mm	7/0.85	
17	Maximum resistance at 20 deg. C	Ω/KM	4.61	
18	Overall Diameter of Conductor			
	a) Phase Conductor	mm	Shall be mentioned	
	b) Neutral Conductor	mm	Shall be mentioned	
19	Approximate weight	Kg/K M	140	
20	Continuous permissible service voltage	V	600/1000	
21	Current rating at 35 deg. C ambient in air	Amps	35	
22	Drum wound length	M	1000	
23	Maximum allowable tension	Kg	Shall be mentioned	

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24	Minimum Breaking Load of Conductor			
	a) Phase Conductor	Kg	Shall be mentioned	
	b) Neutral Conductor	Kg	Shall be mentioned	
25	Net Weight	Kg	Shall be mentioned	
26	Gross weight	Kg	Shall be mentioned	
27	Treated Wooden Drum Standard		AWPA C ₁ - 82, C ₂ -83, C ₁₆ -82, P ₅ -83.	

Seal and Signature
of the manufacturer:

Seal and Signature
of the Bidder:

35. Guaranteed Technical Particulars of 11kV, XLPE, 3C x 70mm² COPPER CABLE

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
1	Name of the Item	-	3C x70mm ² 11 kV XLPE Insulated Copper Cables	
2	Manufacturer's name & address With website, official domain email.	-	To be mentioned	
3	Year of Manufacturing	Yr.	Not before 2025	
4	Standard	-	Performance, Design and Testing shall be in accordance to the BS, IEC, BDS or equivalent International standards.	
	Country of Origin	-	To be mentioned	
5.	VOLTAGE Voltage between phases of three Phase circuit U U _{max}	kV kV	11 12	
6.	CORES Number of Cores	No.	Three	
7.	Manufacturing Process		To be mentioned	
8.	CONDUCTOR material cross sectional area Min. No. & Dia of wires	mm ² Nos./m m	Electrolytic annealed copper 70 19/ To be mentioned	
9.	CONDUCTOR SCREEN Material Nominal Thickness Diameter over screen	mm mm	semi-conducting XLPE 0.8 To be mentioned	
10.	INSULATION Material Type of dry curing Nominal Thickness Diameter of over Insulation	mm mm	XLPE Inert gas 3.4 To be mentioned	
11.	CORE SCREEN Material Nominal Thickness Diameter over screen	mm mm	semi-conducting XLPE 0.8 To be mentioned	
12.	METALLIC SCREEN Number and diameter of copper screen strands or Copper Wire with helically applied Copper Tape	No./mm or No./mm with Thickne ss of tape	Based on Design Calculation	
13.	INNER JACKET Material Nominal Thickness External diameter	mm mm	Extruded PVC (ST-2) 1.4 To be mentioned	
14.	ARMOUR Number & diameter of amour wire or	No./mm or	38/ To be mentioned	

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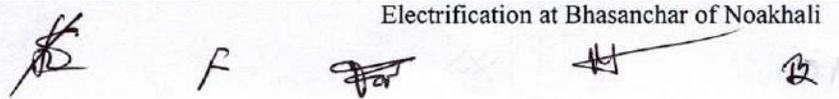
Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
	Thickness of Corrugated Aluminium sheath	mm		
15.	OUTER COVERING Material Minimum average thickness	mm	Black extruded MDPE 2.6	
16.	COMPLETED CABLE Overall diameter Weight per metre Maximum drum length	mm kg m	57 5.58 500	
17.	CABLE DRUMS Material Overall diameter Width Gross weight (with cable)	mm m kg	Steel To be mentioned To be mentioned To be mentioned	
18.	CONTINUOUS CURRENT CARRYING CAPACITY Based on the conditions specified: In Air One circuit at 30°C In Ground One circuit at 30°C	A A	253 220	
19.	PERMISSIBLE OVERLOAD In Service Conditions For a period of	% Hours	To be mentioned To be mentioned	
20.	MAXIMUM CONDUCTOR TEMPERATURE Laid direct in ground Drawn into ducts Erected in air	°C °C °C	90 90 90	
21.	CONDUCTOR SHORT CIRCUIT CURRENT Carrying capacity for one second, Cable load as above prior to Short circuit and final conductor Temperature of 250°C	KA	10.01	
22.	METALIC SCREEN EARTH FAULT CURRENT Carrying capacity for one second, Cable loaded as above prior to Earth fault	KA	10 (with detail calculation)	
23.	MINIMUM RADIUS OF BEND Around which cable can be laid	m	20 times of overall diameter of cable	
24.	MAXIMUM DC RESISTANCE Per km of cable at 20°C of conductor of metallic layer	ohm ohm	0.2680 To be mentioned	
25.	MAXIMUM AC RESISTANCE Of conductor per km of cable at Maximum conductor temperature	ohm	0.348	
26.	INSULATION RESISTANCE Per km of cable per core at 20°C at maximum rated temperature	Megohm m	400 40	

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Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturer's Particulars
		Megohm		
27.	MAXIMUM ELECTROSTATIC CAPACITANCE Per Km of cable	μ F	0.290	
28.	MAXIMUM INDUCED VOLTAGE On metallic layer/sheath Under fault condition	V	To be mentioned	
29.	MAXIMUM CHARGING CURRENT Per core per metre of cable at Nominal voltage U ₀	mA	To be mentioned	
30.	Working Inductance	mH/km	0.34	
31.	MAXIMUM PULLING TENSION	kg	To be mentioned	
32.	Manufacturer must comply all the features of Technical Specification (Section 7)	-	Yes	

Seal & Signature of the Manufacturer

Seal & Signature of the Bidder

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36. Manufacturer's Guaranteed Technical Data Schedule For Of 230 Volt, 10(60) A, Single Phase Digital Energy Meter

Sl. No.	Description	Unit	Purchaser's Requirement	Manufacturers Particulars
1	Manufacture's Name and Country	-	To be mentioned	
2	Manufacture's Meter Type/Model	-	To be mentioned	
3	Type	-	Electronic	
4	Connection	-	Single phase, two-wire whole current(Unidirectional)	
5	Rated voltage	volt	230	
6	Rated current I) Basic current II) Maximum current	Amp	10 60	
7	Accuracy class	Class	1.0	
8	KWh register type	-	LCD Display	
9	Number of digits (Integral + decimal)	Nos.	5+1	
10	Meter constant	Impulse/KWh	To be mentioned	
11	Voltage circuit loss at rated voltage	VA & W	10 & 2.0	
12	Current circuit loss at rated current	VA	4	
13	Impulse withstand voltage	KV	6	
14	Starting current (minimum)	MA	0.4% of basic current	
15	Size of display (minimum)	W x H	4 x 8 mm	
16	Service life (Minimum)	Year	15 (Fifteen)	
17	Weight of meter	kg	To be mentioned	
18	Overall dimensions (height, width, depth)	mm	To be mentioned	
19	Terminal hole diameter	mm	16 mm.	
20	Reference standard	-	To be mentioned	
21	Type of Battery	-	Lithium	
22	Battery Reserve & Life	-	10 Years	
23	Built in clock	-	To be mentioned	
24	Rated frequency	Hz	50	
25	Place of manufacture/year of manufacture	-	To be mentioned	
26	Variation of voltage	%	±30%	
27	Variation of Power factor		0.5 lag to 0.8 lead	
28	Terminal	-	Minimum 4 (four) terminal to accommodate 16 sq. mm. size of cable	
29	Warranty(Minimum)	Years	3 Years	
30	Any other facility (if any)	-	To be mentioned	
31	Valid calibration		To be mentioned	

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	certificate of the KWH sub-standard meter			
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Seal & Signature of the manufacturer:

Seal & Signature of the bidder:



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Guaranted Technical Particulars (GTP)

37. Manufacturer's Guaranteed Technical Data Schedule For 110v, 3x5(6)A, 3-Phase, 4-Wire Accuracy Class 0.2s Solid State Double Tariff Programmable Energy Meter.

Sl. No.	Name of Items	Unit	Purchaser's Requirement	Full Technical Specification & Standard (to be mentioned)
01	Reference standard		Relevant IEC standard	
02	Manufacturer's Name and address		To be mentioned	
03	Meter's Type & Model		To be mentioned	
04	Country of origin		To be mentioned	
05	Country of Manufacture		To be mentioned	
06	Year of manufacture		To be mentioned	
07	Connection		3-phase, 4-wire solidly grounded neutral	
08	Number of element	Nos.	03 (three)	
09	Rated voltage (P-P)	Volt	110V	
10	Minimum Biasing Voltage (P-P)	Volt	40V	
	Rated current			
11	I) Basic current (I_b)	Amp	5 A	
	II) Maximum current (I_{max})	Amp	6 A	
12	Frequency	Hz	50	
13	Variation of frequency	%	± 2.5	
14	Variation of voltage	%	-20% to +10%	
15	Accuracy class		0.2 (point two)S	
16	Register type		LCD display	
17	Number of digit (integer with decimal)	Nos.	5 with 3 (programmable)	
18	Starting current	Amp	0.1% of Basic Current (I_b)	
19	Losses at nominal load	Watt &	To be mentioned	
20	Meter constant	Imp./KW	To be mentioned	
21	Integration period		30 (thirty) minutes	
22	Resetting period		1 (one) month	
23	Cumulative MD transfer cycle timing device		Built-in	

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Guaranted Technical Particulars (GTP)

24	Size of the digit of display	(W x H) in mm	4 X 8	
25	No. of terminal	Nos.	10 (min)	
26	Diameter of Terminal & Bore	Mm	To accommodate 6 Sq. mm size of cable.	
27	Battery service life and Shelf life (minimum)	Year	15 (fifteen)	
28	Type of Battery		Lithium-ion Battery (non- rechargeable)	
	Country of origin		To be mentioned	
	Voltage	V	Upto 6 Volt	
	Capacity	mAh	min1400-1700 mAh	
	Lifetime	yrs	Min 10(ten)yrs	
29	Clock		Built in Real Time Clock(RTC) as per IEC	
30	Warranty	Year	3(three)	
31	Meter Service life (minimum)	Year	15 (fifteen)	
32	Weight of meter	Kg	To be mentioned	
33	Dimensions	mm x mm x mm	To be furnished	
34	Outlines, drawings & catalogue		To be mentioned	
35	Performance curve for balanced & unbalanced load		To be mentioned	
36	Meter Body sealing condition		Hermetically sealed/ Ultrasonic welded with mechanically interlocked. (means break to open)	
37	Meter parameter configuration		To be configured: Both software and hardware lock as per sub-clause 7.01.03.02	
38	Country of manufacture		To be mentioned	
39	Place of testing		To be mentioned	
40	Losses at nominal load	Watt &	To be mentioned	
41	Voltage Circuit Loss at rated voltage	Watt &	To be mentioned	
42	Current Circuit Loss at rated current	VA	To be mentioned	

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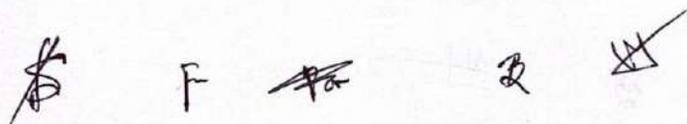
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Guaranted Technical Particulars (GTP)

43	Communication		Plug & Play 4G Communication module	
44	Application Protocol		DLMS/COSEM	
45	Memory storage		Shall 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 logs.			
	VII) Cumulative KWh (Total, Peak & Off-peak) KVarh (Q ₁ +Q ₄)			
	VIII) Load Profile with 30 min interval at least 365 days for:			
	<ul style="list-style-type: none"> • KWh, kVarh (Q₁+Q₄) • Phase Voltage • Phase Amps • Power Factor (PF) 			
46	List of recommended spare parts (If any)		To be mentioned	
47	All other technical particulars which is mentioned in section-07.	Yes/No	Yes	
48	Manufacturer must comply all the features of Technical Specification (Section 7)		Yes	

Seal & Signature of the manufacturer:

Seal & Signature of the bidder:



38. Manufacturer's Guaranteed Technical Data Schedule For 400v, 3x10(60) A, 3-Phase, 4-Wire Solid State Double Tariff Fully Programmable Energy Meter

Sl. No.	Name of Items	Unit	Purchaser's Requirement	Full Technical Specification & Standard (to be mentioned)
01	Reference Standard		Relevant ANSI /IEC standard	
02	Manufacturer's Name & Address		To be mentioned	
03	Manufacturer's Type & Model		To be mentioned	
04	Construction / Connection		3-phase, 4-wire solidly grounded neutral	
05	Installation		Indoor/ Outdoor Installation	
06	Number of element	Nos.	3 (three)	
07	Rated voltage(P-P)	Volt	400V	
08	Minimum Biasing Voltage (P-P-N)	Volt	80V	
09	Variation of Frequency	%	±2	
10	Variation of Voltage	%	+10, -20	
11	Accuracy Class		1.0 (One)	
12	Rated Current I) Nominal (Base) Current (I _b) II) Maximum Current (I _m)	Amp Amp	10 A ≥60 A	
13	Register Type		LCD display	
14	Number of digit (integer with decimal)	Nos.	6 integer with 1 decimal	
15	Starting current	Amp	0.4% of Nominal Current	
16	Losses at nominal load	Watt & VA	To be mentioned	
17	Meter constant	Imp./K wh	To be mentioned	
18	Integration period Resetting period Cumulative MD transfer cycle timing device	Minutes Months	30 (thirty) minutes 1 (one) month Built-in Built-in	
19	Size of the digit of display	(W x H) in mm	4 X 8	
20	No. of Terminal	Nos.	8 (min.)	
21	Type of Socket and Country of Origin		To be mentioned	

[Handwritten signatures and marks]

Guaranteed Technical Particulars (GTP)

22	Battery service life and Shelf life (minimum)	Year	15 (fifteen)	
23	Year of manufacture		To be mentioned	
24	List of recommended spare parts (If any)		To be mentioned	
25	Warranty	Year	3(three)	
26	Meter Service life (minimum)	Year	15 (fifteen)	
27	Weight of meter	Kg	To be mentioned	
28	Dimensions	mm x mm x mm	To be mentioned	
29	Outlines, drawings & leaflets		To be mentioned	
30	Performance curve for balanced & unbalanced load		To be mentioned	
31	Meter Sealing Condition		Hermetically sealed/ Ultrasonic welded/ mechanically interlocked. Hermetically sealed means break to open	
32	a) Country of Origin b) Place of Manufacture c) Place of Testing		To be mentioned	
33	Memory storage : 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 logs(Terminal Cover open, Body cover open etc.) Cumulative KWh (Peak, Off-Peak, Total), VII) Cumulative Total KVarh (Q ₁ +Q ₄), Cumu. MD reading etc, VIII) Load Profile with 30 min interval at least 180 days for: • KWh, kVarh (Q ₁ +Q ₄)		Shall be mentioned by putting Yes / No	

[Handwritten signatures and marks]

Guaranted Technical Particulars (GTP)

	<ul style="list-style-type: none"> • Phase Voltage • Phase Amps • MD With Date & Time. 			
34	All other technical particulars which is mentioned in section-07.			

The Tenderer should complete all the columns as required]

Signature:
Name & Designation of tenderer

Signature
Name and Designation of Manufacturer

The Tenderer shall fill up all the Guaranteed Technical Particulars in accordance with the purchaser's requirements

Signature:	<i>[insert signature of authorised representative of the Tenderer]</i>
Name:	<i>[insert full name of signatory with National ID]</i>
In the capacity of:	<i>[insert designation of signatory]</i>
Duly authorised to sign the Tender for and on behalf of the Tenderer	

[Handwritten signatures and initials]