

Corrigendum No. – III

Tender Enquiry No- TPSODL/OT/2021-22/061

Work Description (Revised) - Rate Contract for supply of Accucheck Meters (1 Phase, 3 Phase and HT/LT Combined)

1.1 Scope of Work: Revised Scope of Work shall be as mentioned below: -

S. No.	Description	Quantity	UoM	EMD Amount (Rs. in Lakhs)	Tender Fee Incl. GST (Rs.)
1.	Accucheck Meter 1 Ph.	8	Nos.	1.20	5,000
2.	Accucheck Meter 3 Ph. meter	20	Nos.		
3.	Accucheck Meter HT/LT Combined	6	Nos.		

ANNEXURE-I: Schedule of Items: Revised Schedule of Items is as follows.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sr. No.	Description	Qty. (Q)	UoM	Ex. Work (In Rs.) A	GST (In Rs.) B	Unit Price with GST (In Rs.) A+B	Amount (In Rs.) Q x (A+B)
1	Accucheck Meter 1 Ph.	8	No.				
2	Accucheck Meter 3 Ph. meter	20	No.				
3	Accucheck Meter HT/LT Combined	6	No.				
Total BOQ Value (All inclusive) (Rs.)							

ANNEXURE-II: Technical Specification: Revised Tech Spec is as below.

- 1) Accucheck Meter 1 Ph & 3 Ph: ENG-C-18 Specs of Accucheck_1Ph, LT & HT: Attached separately.
- 2) Accucheck Meter HT/LT Combined: ENG-C-18A Combined unit for LT & HT: Attached separately.

All other terms & conditions of the original tender document & subsequent Corrigendum shall remain same.


Regards

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TP SOUTHERN ODISHA DISTRIBUTION LIMITED
(A Tata Power and Odisha Government Joint Venture)

Courtpeta | Berhampur | Ganjam | Odisha - 760 004


Note-This document does not require signature.

	TP SOUTHERN ODISHA DISTRIBUTION LIMITED, BERHAMPUR	
	TECHNICAL SPECIFICATION	
Doc. Title	Specification for LT and HT Accucheck	
Doc. No	ENG-C-18	Eff. Date: 01.03.2021
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Initiator		HOG (Engineering)	
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1.0 SCOPE:

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at store/site and performance of **LT and HT Accucheck**.

2.0 APPLICABLE STANDARDS:-

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian/International standards and shall conform to the regulations of the local statutory authorities.

IEC60687	: Alternating current static watt- hour meters for active energy (Cl 0.2S and 0.5 S)
IS12346	: Testing equipment for AC Electricity – Energy Meters
IEC 62053-22	: Electricity Metering Equipment (A.C.)

3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:

The material shall be suitable for following climatic conditions,

1. Maximum altitude above sea level	1,000m
2. Maximum ambient air temperature	50°C
3. Maximum daily average ambient air temperature	35°C
4. Minimum ambient air temperature	0°C
5. Maximum relative humidity	95%
6. Average number of thunderstorm days per annum (isokeraunic level)	70
7. Average number of rainy days per annum	120
8. Average annual rainfall	150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of	0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of	0.15g
(g being acceleration due to gravity)	
11 .Wind velocity:	300 km/hr, 200 km/hr and 160 km/hr.

Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.


Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere

The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.

4.0 GENERAL TECHNICAL REQUIREMENTS:

S.NO.	CHARACTERISTICS	STANDARD VALUES	STANDARD VALUES	STANDARD VALUES
1	Material Description	LT Accucheck	LT Accucheck	HT Accucheck
2	Suitable for	1 Ph static Meters	3 Ph Whole Current Meter & LTCT Meter	3 Ph 3W/ 4WHT Meters

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3	Accuracy Class	1 or better	0.1S for Direct Mode /0.2 S for Clamp on Mode	0.1S for Direct Mode /0.2 S for Clamp on Mode
4	Automatic error computation	Available	Available	Available
5	Optical sensor for electro mechanical and electronic meters	Available	Available	Available
6	Test Results storage facility	500 test results	500 test results	500 test results
7	Voltage	240 V \pm 1 %	240 V \pm 1 %	110 V \pm 1 %
8	Current in Direct Mode using Ring CT (I _{min} to I _{max})	200m Amp to 10 Amp	1 -2 Amp & - 10Amp (separate terminals)	1 -2 Amp & - 10Amp (separate terminals)
9	Current using Clamp on CT (I _{min} to I _{max})	60m Amp to 500 Amp	100/ 200/ 300/ 500 Amp	100/ 200/ 300/ 500 Amp
10	Frequency	50 Hz \pm 5%.	50 Hz \pm 5%.	50 Hz \pm 5%.
11	Power Factor	Zero lag to Zero lead.	Zero lag to Zero lead.	Zero lag to Zero lead.
12	Degree of Protection	IP 51	IP 51	IP 51
13	Display	Backlit LCD	Backlit LCD	Backlit LCD
14	Dimensions	To be submitted by the bidder	To be submitted by the bidder	To be submitted by the bidder
15	Weight along with the case	Less than 1 Kg	Less than 2.5 Kg	Less than 2.5 Kg

5.0 GENERAL CONSTRUCTION:

5.1 Manufacture:

LT Accucheck is used to test the single phase, LTCT Meter sand three phase Whole Current energy meters at site without interrupting the customer service connections. LT Accucheck computes the error in the field and the test report can be printed using a portable printer.


HT Accucheck is used to test three phase HT meters at site without interrupting the customers service connections. HT Accucheck can be used for various configurations of 3-ph 3-wire, 3-ph 4-wire in both HT network.

All the materials, electronic and power components ICs used in the manufacturing of the reference standard meter shall be of highest quality and reputed make to ensure higher reliability, longer life and sustained accuracy. The electronic components shall be mounted on the PCB using latest surface mount technology (SMT).

The Accucheck shall be of rugged construction, lightweight and shall be of portable, handy and compact type. It shall have ergonomic design. The Accucheck shall be suitable for laboratory and field testing of single phase electronic/electromechanical meters (house service meters) of accuracy class 1 and 2 as per relevant standard.

An error calculator shall be incorporated in the Accucheck which shall have facility to calculate error in percentage of meter under test by feeding the meter constant and number of revolutions / pulses for which meter was tested with RSM, through the inbuilt key board.

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The Accucheck shall consist of display window with features elaborated in cl 5.4 and keypad with sealed membrane with alpha numeric keypad with separate keys for alphabets and numbers. The enclosure shall be of high strength and Calibration LED shall be available for Primary Calibration.

The RSM shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal working conditions, so as to ensure especially;

- i. Personal safety against electric shock
- ii. Personnel safety against effects of excessive temperature

All parts which are subject to corrosion shall be suitably protected and shall not be liable to damage by normal handling.

The Portable Electronic Reference Standard Meter should be capable of conducting an automatic built in internal test which verifies all indicators whenever it is turned on

- It should do display initialization at power up.
- It should do self test of LCD for 2 Seconds.

An error calculator shall be incorporated in the RSM which shall have facility to calculate error in percentage of meter under test by feeding the meter constant and number of revolutions / pulses for which meter was tested with RSM, through the inbuilt key board.

5.2 Measurement Mode :

The RSM shall have two measurement modes as follows:

Direct Mode: Ring CT shall be provided in the RSM to measure the current from 200mAmp to 10 Amp in direct mode. In case of low current, testing facility using more number of turns from the ring CT shall be provided. The accuracy class shall be 0.2 in this range.

Clamp On CT Mode: One number clamp on type current transformer (CT) shall be provided along with suitable connecting cable length to measure from 500mAmp to a maximum current of 60 Amp. It shall be possible to use the clamp on CT with cables having overall diameter not more than 10 mm². The accuracy class shall be 0.5 at UPF in this range.

5.3 Operating Mode :

Auto mode: A compatible common scanner shall be provided along with the equipment to test electromechanical meters by sensing the rotor mark and static (electronic) meters by sensing the LED pulses


Manual mode: The equipment shall have facility to test in manual mode using snap switch. Snap switch along with detachable lead to start and stop the test shall be supplied along with the RSM.

An additional facility, that the accucheck shall be directly connected with the meter through optical port while calibration in case non availability of TTB in the meter

5.4 Communication Facility :

The Accucheck shall have facilities for data transfer through RS- 232 communication. The BCS software shall be supplied by the bidder for free of cost. Training for the use of the software shall also be provided by the bidder. Accucheck shall be software calibrated at factory and modifications in calibration shall not be possible at site by any means. The Accucheck shall have provision for interfacing with the scanner which can sense a pulses / rotor mark up to 200 Hz and Snap switch to count pulses.

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5.5 Accessories :

The bidder shall supply following accessories along with the every Accucheck:

- i) Adaptor for charging, however, the accucheck shall also have the feasibility of powered by measuring circuit
- ii) Clamp on CT with Cable
- iii) Cable for direct mode with plugs
- iv) Cable assembly for voltage input with clips
- v) Scan Head for LED/Disc
- vi) Snap Switch
- vii) Carrying Case

The bidder shall supply following accessories along with the every LOT of Accucheck:


- i) Universal Stand for Scan Head
- ii) BCS Software in CD

5.6 Display Parameters :

The display shall have day light visibility and LCD backlight. There shall be following parameters shall be available in the display and subsequently saved in the memory along with the consumer information upto 500 test results for LT Accucheck and 500 test results with search facility for HT Accucheck:

1. Real Time
2. R phase Voltage (Vr)
3. Y phase Voltage (Vy)
4. B phase Voltage (Vb)
5. Line current R phase (Lr)
6. Line current Y phase (Ly)
7. Line current B phase (Lb)
8. Active current R phase (Ir)
9. Active current Y phase (Iy)
10. Active current B phase (Ib)
11. Active current B phase (Ib)
12. Reactive current R phase (ir)
13. Reactive current Y phase (iy)
14. Reactive current B phase (ib)
15. Frequency
16. Three phase Active power (Fundamental)
17. Three phase Reactive power
18. Three phase Apparent power
19. Active power R phase
20. Active power Y phase
21. Active power B phase
22. Reactive power R phase
23. Reactive power Y phase
24. Reactive power B phase
25. Apparent power R phase
26. Apparent power Y phase
27. Three phase average Power Factor
28. Power factor R phase

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29. Power factor Y phase
30. Power factor B phase

In addition to the above, during the test duration user shall be able to see the following incremental energies values-

1. Active Energy
2. Reactive Energy (lag / lead)
3. Apparent Energy

In addition to the above, the accucheck shall have following Connection Check Parameter-

1. Phase Sequence (Forward or Reverse)

6.0 CONNECTION CHECK:

The equipment shall have auto connection check facilities for following:

1. Over Current
2. Over Voltage
3. Low Voltage
4. Reverse Current
5. Missing Current

7.0 OPERATOR DATA ENTRY:

The Accucheck shall have facility to input/enter following information:


S.No.	Data Entry Parameter	Resolution/ No of characters/ digits	Type
1.	MUT Serial number	10	Alphanumeric
2.	Consumer ID	10	Alphanumeric
3.	Consumer Number	20	Alphanumeric
4.	Meter Type	10	Alphanumeric
5.	Meter Make	10	Alphanumeric
6.	Meter constant of Meter Under Test (MUT)	7	Numeric
7.	Test Revolutions / Pulses per kWh	5	Numeric
8.	PT Ratio	10	Alphanumeric
9.	CT Ratio	10	Alphanumeric
10.	Test Duration	10	Alphanumeric
11.	Percentage Error Active, Reactive (Lag/ Lead), Apparent Energy	10	Alphanumeric
12.	Energy Recorded comparison i.e. RSM Vs MUT for Active, Reactive (Lag/ Lead), Apparent Energy	10	Alphanumeric

8.0 EMBOSSING AND MARKING

The equipment shall be provided with durable and legible embossed, effectively secured against removal as per the relevant standards. The Accucheck shall be embossed with the following:

- a) Property of TPSODL, Berhampur
- b) Purchase Order No with date
- c) Item Code Number

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- d) Manufacturer's name
- e) Serial number
- f) Month and Year of manufacture

9.0 Tests:

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine & acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the Accucheck in addition to others specified in IS/IEC standard.

9.1 Calibration tests:

The bidder shall furnish the calibration Certificates for the following tests relevant for respective Accuchecks:

- 1 Active & Reactive energy measurement (for clamp on CT) in 3 Phase 4 Wire
- 2 Active energy measurement (for clamp on CT) in 1 Phase 2 Wire
- 3 Active & Reactive energy measurement (for 5A internal CT) in 3 Phase 4 Wire
- 4 Active & Reactive energy measurement (for 5A internal CT) in 3 Phase 4 Wire
- 5 Active & Reactive energy measurement (for 1A internal CT) in 3 Phase 4 Wire
- 6 Active & Reactive energy measurement (for 1A internal CT) in 3 Phase 4 Wire

9.2 Routine tests:

- 1 Visual Examination and Dimensions Test
- 2 Accuracy Test

9.3 Acceptance tests:

1. Marking
2. Visual Examination and Dimensions

10.0 CALIBRATION CERTIFICATES:

The bidder shall furnish the Calibration Certificates for the tests as mentioned above as per the corresponding standards. Calibration test should have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to the Purchaser.


11.0 PRE- DESPATCH INSPECTION:

Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to the Purchaser's representatives at all times when the work is in progress. Inspection by the Purchaser or its authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.

Following documents shall be sent along with material:

- a) Test reports
- b) MDCC issued by Purchaser
- c) Invoice in duplicate

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- d) Packing list
- e) Drawings & catalogue
- f) Guarantee / Warrantee card
- g) Delivery Challan
- h) Other Documents (as applicable)

12.0 INSPECTION AFTER RECEIPT AT STORE:

The material received at the Purchaser store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Contracts department.

13.0 GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of 60 months from the date of commissioning or 66 months from the date of last supplies made under the contract, whichever is earlier. Bidder shall be liable to undertake to replace/rectify such defects at his own costs, within mutually agreed timeframe, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be. In case of insulated mats fails within the guarantee period the purchaser will immediately inform the bidder who shall take back the defective mats within 15 days from the date of intimation at his own cost and replace insulated mats within forty-five days of date of intimation with a roll over guarantee. The outage period i.e. period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

14.0 PACKING:

bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

15.0 TENDER SAMPLE:

Bidder should demonstrate **1 nos sample each to TPSODL for the approval** of the product before finalization of tender i.e. before price bid opening.

16.0 QUALITY CONTROL:


The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

17.0 MINIMUM TESTING FACILITIES:

Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests as per Indian /International standards.

18.0 MANUFACTURING ACTIVITIES:

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The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

19.0 SPARES, ACCESSORIES AND TOOLS :

To be provide by bidder.

20.0 DRAWING AND DOCUMENTS:

Following drawings and documents shall be prepared based on Purchaser specifications and statutory requirements and shall be submitted with the bid:

- Completely filled in Technical Particulars
- General description of the equipment and all components including brochures.
- General arrangement for Accucheck
- Experience List
- Type test certificates

After the award of the contract, four (4) copies of following drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval.


Sr. No.	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	GA Drawing of Accucheck	√		√
3	Installation Instruction			√
4	Manual/Catalogues		√	
5	QA & QC Plan	√		√
6	Test Certificates	√	√	√

Bidder shall subsequently provide four (4) complete sets of final drawings,. Soft copy (Compact Disk CD) of all the drawing, GTP, Test certificates shall be submitted after the final approval of the same to purchaser.

All the documents & drawings shall be in English language.

Instruction Manuals: Bidder shall furnish two softcopies (CD) and four (4) hard copies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.


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21.0 GUARANTEED TECHNICAL PARTICULARS:

S.NO.	CHARACTERISTICS	STANDARD VALUES	STANDARD VALUES
1	Material Description		
1.1	Manufacturer Make		
1.2	Model No		
2	Suitable for		
3	Accuracy Class		
4	Automatic error computation		
5	Optical sensor for electro mechanical and electronic meters		
6	Test Results storage facility		
7	Voltage		
8	Current		
9	Frequency		
10	Power Factor		
11	Error Percentage		
12	Degree of Protection		
13	Battery		
14	Display		
15	Dimensions		
16	Weight		

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22.0 SCHEDULE OF DEVIATION:

The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless **specifically** mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.

(TO BE ENCLOSED WITH THE BID)

All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S. No.	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature:

Designation:

Initiator		HOG (Engineering)	
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TP SOUTHERN ODISHA DISTRIBUTION LIMITED, BERHAMPUR		
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1.0 Scope:

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at store/site of Combined unit of LT& HT Accucheck.

2.0 Applicable Standards: -

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian/International standards and shall conform to the regulations of the local statutory authorities.

IEC60687	: Alternating current static watt- hour meters for active energy (Cl 0.2S and 0.5 S)
IS 14697	: Alternating current static transformer operated watthour and VAR-Hour meters, class 0.2s and 0.5s
IS12346	: Testing equipment for AC Electricity – Energy Meters
IEC 62053-22	: Electricity Metering Equipment (A.C.)

3.0 Climatic conditions Of the Installation:

The material shall be suitable for following climatic conditions,

1. Maximum altitude above sea level	1,000m
2. Maximum ambient air temperature	50°C
3. Maximum daily average ambient air temperature	35°C
4. Minimum ambient air temperature	0°C
5. Maximum relative humidity	95%
6. Average number of thunderstorm days per annum (isokeraunic level)	70
7. Average number of rainy days per annum	120
8. Average annual rainfall	150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of	0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)	
11 .Wind velocity:	300 km/hr, 200 km/hr and 160 km/hr.

Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.

Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere

The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.

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4.0 GENERAL TECHNICAL REQUIREMENTS:

S.NO.	CHARACTERISTICS	STANDARD VALUES		
1	Material Description	LT & HT Accucheck		
2	Application	HT Meters, LT-CT Meters, Whole current meters (1Ph & 3Ph) & Ratio Test of CT		
3	Current Suitable for	Direct Mode	LT Clamp on CT mode (200mA to 300 A/500 A)	HT Clamp on CT mode (50mA to 10A)
4	Accuracy Class	0.1s	0.2s	0.2s
4	Automatic error computation	Available		
5	Optical sensor for electro mechanical and electronic meters	Available		
6	Test Results storage facility	8000 test results		
7	Voltage	240 V \pm 1 %		
9	Current using Clamp on CT (Imin to Imax)	200mA to 300 A/500 A		50mA to 10A
10	Frequency	50 Hz \pm 5%.		
11	Power Factor	Zero lag to Zero lead.		
12	Degree of Protection	IP 51		
13	Display	Backlit LCD		
14	Dimensions	To be provided by bidder		
15	Weight along with the case	To be provided by bidder		

5.0 GENERAL CONSTRUCTION:

5.1 Manufacture:

In LT mode, Accucheck is used to test the single phase, LTCT Meter and three phase Whole Current energy meters at site without interrupting the customer service connections. Accucheck computes the error in the field and the test report can be printed using a portable printer.

In HT mode, Accucheck is used to test three phase HT meters at site without interrupting the customers service connections. Accucheck can be used for various configurations of 3-ph 3-wire, 3-ph 4-wire in both HT network.

All the materials, electronic and power components ICs used in the manufacturing of the reference standard meter shall be of highest quality and reputed make to ensure higher reliability, longer life and sustained accuracy. The electronic components shall be mounted on the PCB using latest surface mount technology (SMT).

The Accucheck shall be of rugged construction, lightweight and shall be of portable, handy and compact type. It shall have ergonomic design. The Accucheck shall be suitable for laboratory and field testing of

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single phase electronic/electromechanical meters (house service meters) of accuracy class 0.2s as per relevant standard.

An error calculator shall be incorporated in the Accucheck which shall have facility to calculate error in percentage of meter under test by feeding the meter constant and number of revolutions / pulses for which meter was tested with RSM, through the inbuilt key board.

The Accucheck shall consist of display window with features elaborated in cl 5.4 and keypad with sealed membrane with alpha numeric keypad with separate keys for alphabets and numbers. The enclosure shall be of high strength and Calibration LED shall be available for Primary Calibration.

The RSM shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal working conditions, so as to ensure especially;

- i. Personal safety against electric shock
- ii. Personnel safety against effects of excessive temperature

All parts which are subject to corrosion shall be suitably protected and shall not be liable to damage by normal handling.

The Portable Electronic Reference Standard Meter should be capable of conducting an automatic built in internal test which verifies all indicators whenever it is turned on

- It should do display initialization at power up.
- It should do self-test of LCD for 2 Seconds.

An error calculator shall be incorporated in the RSM which shall have facility to calculate error in percentage of meter under test by feeding the meter constant and number of revolutions / pulses for which meter was tested with RSM, through the inbuilt key board.

5.2 Operating Mode :

Auto mode: A compatible common scanner shall be provided along with the equipment to test electromechanical meters by sensing the rotor mark and static (electronic) meters by sensing the LED pulses

Manual mode: The equipment shall have facility to test in manual mode using snap switch. Snap switch along with detachable lead to start and stop the test shall be supplied along with the RSM.

An additional facility, that the accucheck shall be directly connected with the meter through optical port while calibration in case non availability of TTB in the meter

5.3 Communication Facility:

The Accucheck shall have facilities for data transfer through RS- 232 communication. The BCS software shall be supplied by the bidder for free of cost. Training for the use of the software shall also be provided by the bidder. Accucheck shall be software calibrated at factory and modifications in calibration shall not be possible at site by any means. The Accucheck shall have provision for interfacing with the scanner which can sense a pulses / rotor mark up to 200 Hz and Snap switch to count pulses.

5.4 Accessories :

The bidder shall supply following accessories along with the every Accucheck:

- i. Adaptor for charging, however, the accucheck shall also have the feasibility of powered by measuring circuit

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- ii. High current range Clamp on CT with Cable
- iii. Low current range Clamp on CT with Cable
- iv. Cable for direct CT
- v. Cable assembly for voltage input with clips
- vi. Scan Head for LED/Disc
- vii. Snap Switch
- viii. Carrying Case
- ix. Cable for field & laboratory use
- x. Optical probe for DLMS dial test
- xi. BCS
- xii. Scanner with stand

The bidder shall supply following accessories along with every LOT of Accucheck:

- i. Universal Stand for Scan Head
- ii. BCS Software in CD

5.5 Display Parameters:

The display shall have day light visibility and LCD backlight. There shall be following parameters shall be available in the display and subsequently saved in the memory along with the consumer information upto 500 test results for LT Accucheck and 500 test results with search facility for HT Accucheck:

1. Real Time
2. R phase Voltage (Vr)
3. Y phase Voltage (Vy)
4. B phase Voltage (Vb)
5. Line current R phase (Lr)
6. Line current Y phase (Ly)
7. Line current B phase (Lb)
8. Active current R phase (Ir)
9. Active current Y phase (Iy)
10. Active current B phase (Ib)
11. Active current B phase (Ib)
12. Reactive current R phase (ir)
13. Reactive current Y phase (iy)
14. Reactive current B phase (ib)
15. Frequency
16. Three phase Active power (Fundamental)
17. Three phase Reactive power
18. Three phase Apparent power
19. Active power R phase
20. Active power Y phase
21. Active power B phase
22. Reactive power R phase
23. Reactive power Y phase
24. Reactive power B phase
25. Apparent power R phase
26. Apparent power Y phase
27. Three phase average Power Factor
28. Power factor R phase

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29. Power factor Y phase

30. Power factor B phase

In addition to the above, during the test duration user shall be able to see the following incremental energies values-

1. Active Energy
2. Reactive Energy (lag / lead)
3. Apparent Energy

In addition to the above, the accucheck shall have following Connection Check Parameter-

1. Phase Sequence (Forward or Reverse)

6.0 CONNECTION CHECK:

The equipment shall have auto connection check facilities for following:

1. Over Current
2. Over Voltage
3. Low Voltage
4. Reverse Current
5. Missing Current
6. Missing Voltage

7.0 OPERATOR DATA ENTRY:

The Accucheck shall have facility to input/enter following information:

S.No.	Data Entry Parameter	Resolution/ No of characters/ digits	Type
1.	MUT Serial number	10	Alphanumeric
2.	Consumer ID	10	Alphanumeric
3.	Consumer Number	20	Alphanumeric
4.	Meter Type	10	Alphanumeric
5.	Meter Make	10	Alphanumeric
6.	Meter constant of Meter Under Test (MUT)	7	Numeric
7.	Test Revolutions / Pulses per kWh	5	Numeric
8.	PT Ratio	10	Alphanumeric
9.	CT Ratio	10	Alphanumeric
10.	Test Duration	10	Alphanumeric
11.	Percentage Error Active, Reactive (Lag/ Lead), Apparent Energy	10	Alphanumeric
12.	Energy Recorded comparison i.e. RSM Vs MUT for Active, Reactive (Lag/ Lead), Apparent Energy	10	Alphanumeric

8.0 EMBOSsing AND MARKING

The equipment shall be provided with durable and legible embossed, effectively secured against removal as per the relevant standards. The Accucheck shall be embossed with the following:

- a) Property of TPSODL, Berhampur
- b) Purchase Order No with date
- c) Item Code Number

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- d) Manufacturer's name
- e) Serial number
- f) Month and Year of manufacture

9.0 Tests:

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine & acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the Accucheck in addition to others specified in IS/IEC standard.

9.1 Calibration tests:

The bidder shall furnish the calibration Certificates for the following tests relevant for respective Accuchecks:

- 1 Active & Reactive energy measurement (for clamp on CT) in 3 Phase 4 Wire
- 2 Active energy measurement (for clamp on CT) in 1 Phase 2 Wire
- 3 Active & Reactive energy measurement (for 5A internal CT) in 3 Phase 4 Wire
- 4 Active & Reactive energy measurement (for 5A internal CT) in 3 Phase 4 Wire
- 5 Active & Reactive energy measurement (for 1A internal CT) in 3 Phase 4 Wire
- 6 Active & Reactive energy measurement (for 1A internal CT) in 3 Phase 4 Wire

9.2 Routine tests:

- 1 Visual Examination and Dimensions Test
- 2 Accuracy Test

9.3 Acceptance tests:

1. Marking
2. Visual Examination and Dimensions

10.0 CALIBRATION CERTIFICATES:

The bidder shall furnish the Calibration Certificates for the tests as mentioned above as per the corresponding standards. Calibration test should have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to the Purchaser.

11.0 Pre- Despatch Inspection:

Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to the Purchaser's representatives at all times when the work is in progress. Inspection by the Purchaser or its authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.

Following documents shall be sent along with material:

- a) Test reports
- b) MDCC issued by Purchaser
- c) Invoice in duplicate
- d) Packing list
- e) Drawings & catalogue

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- f) Guarantee / Warrantee card
- g) Delivery Challan
- h) Other Documents (as applicable)

12.0 Inspection After Receipt at Store:

The material received at the Purchaser store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Contracts department.

13.0 Guarantee:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of 60 months from the date of commissioning or 66 months from the date of last supplies made under the contract, whichever is earlier. Bidder shall be liable to undertake to replace/rectify such defects at his own costs. within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be. In case of insulated mats fails within the guarantee period the purchaser will immediately inform the bidder who shall take back the defective mats within 15 days from the date of intimation at his own cost and replace insulated mats within forty-five days of date of intimation with a roll over guarantee.

The outage period i.e. period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

14.0 Packing:

bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

15.0 Tender Sample:

Bidder should demonstrate **1no sample to TPSODL for the approval** of the product before finalization of tender i.e. before price bid opening.

16.0 Quality Control:

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

17.0 Minimum Testing Facilities:

Bidder shall have adequate in-house testing facilities for carrying out all routine tests, acceptance tests as per Indian /International standards.

18.0 Manufacturing Activities:

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan

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submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

19.0 Spares, Accessories and Tools:

To be provide by bidder.

20.0 Drawing And Documents:

Following drawings and documents shall be prepared based on Purchaser specifications and statutory requirements and shall be submitted with the bid:

- Completely filled in Technical Particulars
- General description of the equipment and all components including brochures.
- General arrangement for Accucheck
- Experience List
- Type test certificates

After the award of the contract, four (4) copies of following drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval.

Sr. No.	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	GA Drawing of Accucheck	√		√
3	Installation Instruction			√
4	Manual/Catalogues		√	
5	QA & QC Plan	√		√
6	Test Certificates	√	√	√

Bidder shall subsequently provide four (4) complete sets of final drawings,. Soft copy (Compact Disk CD) of all the drawing, GTP, Test certificates shall be submitted after the final approval of the same to purchaser.

All the documents & drawings shall be in English language.

Instruction Manuals: Bidder shall furnish two softcopies (CD) and four (4) hard copies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

21.0 GUARANTEED TECHNICAL PARTICULARS:

Bidder shall submit the guaranteed technical particulars as per the technical specification for approval of TPSODL.

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22.0 Schedule of Deviation:

The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.

(TO BE ENCLOSED WITH THE BID)

All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S. No.	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature:

Designation:

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