



JODHPUR VIDYUT VITARAN NIGAM LIMITED
OFFICE OF THE SUPERINTENDING ENGINEER (MM&C)
NEW POWER HOUSE, INDUSTRIAL AREA, JODHPUR –342 003
Corporate Identity Number (CIN)-U40109RJ2000SGC016483 GST No. 08AAACJ8578R1ZJ

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Mail Address: semmcjdvnln@gmail.com**SPECIFICATION NO. JDVVNL/SE (MM&C)/TN-1507**

Tenders are hereby invited in e-tender system for purchase of Static LTCT METER of class 0.5s are to be submitted online in electronic format on website <http://www.eproc.rajasthan.gov.in>. The details are as under-

S.No.	Name of Item	Quantity (Approx)
1.	Static LTCT METER of class 0.5s	50992 Nos.

A.	NIT No.	TN-1507
B.	Last date for receipt of tenders	04.04.2019 upto 12:00 PM
C.	Date & time of tender opening	04.04.2019 at 3:00 PM
D.	Cost of Specification	Rs. 2,950.00 (Two Thousand Nine Hundred & Fifty only) For MSME: Rs. 1,475 (One Thousand Four Hundred & Seventy Five only)
E.	Processing of RISL	Rs. 1,000.00 per set (One Thousand only)
F.	Bid security to be deposited	General Bidder : Rs 1523641.00 Sick Unit : Rs 761820.00 SSI unit of Rajasthan: Rs. 380910.00 *
G.	Validity	120 days from the next date of opening of techno-commercial bid.

*In case SSI unit of Rajasthan quotes the less than the tendered quantity , then they are required to furnish Bid security @ 0.5% of the value of the quantity offered by them, failing which bid shall be considered non-responsive.

The micro , small & Medium Scale Industries of Rajasthan and sick Industries , other than Small Scale Industries , whose cases are pending before the Board of Industrial and Financial Reconstruction (BIFR) shall furnish self attest documentary evidence duly attested by notary to claim the above

IMPORTANT DATES

S.N.	Events	Date & Time	Location
1.	Last Date of downloading of tender specifications	Up to 03.04.2019 (04:00 PM)	www.jdvnln.com & http://www.eproc.rajasthan.gov.in
2.	Last Date of Deposit of cost of Tender Specifications, Processing fee & Bid Security	Up to 03.04.2019 (4:00 PM)	Office of Sr. A.O (Cash & CPC), JdVVNL , New Power House, Industrial Area, Jodhpur
3.	Last Date & time of submission of electronic bid	Up to 04.04.2019 (12:00 PM)	http://www.eproc.rajasthan.gov.in
4.	Opening of Technical Bid	04.04.2019 (03:00 PM)	http://www.eproc.rajasthan.gov.in
5.	Opening of Price Bid	To be intimated separately to the qualified bidders	http://www.eproc.rajasthan.gov.in

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1. Tender documents will be made available on e-Tendering portal www.eproc.rajasthan.gov.in The bidders, in their own interest are requested to read very carefully the tender document before submitting the bid only through online on website www.eproc.rajasthan.gov.in . The bidders can download bid up to 04:00 p.m. one day prior to schedule date of opening of respective bid mentioned above documents and submit their bids online up to 12:00 p.m. on schedule of respective bid mentioned above.
2. Eligible bidders should submit their bid well in advance instead of waiting till last date JdVVNL will not be responsible for non-submission of bids due to any website related problems.
3. The cost of Tender specification **Rs. 2950/- / 1475/-** (Non-Refundable) to be paid by Demand Draft in Favour of the Sr. Accounts officer(Cash & CPC), JdVVNL, Jodhpur and tender processing fees Rs. **1000/-** shall be payable by demand draft in favour of The Managing Director RISL, Jaipur (Non- Refundable). The bidders are required to deposit all these payments in the office of the SE(MM&C), JdVVNL, Jodhpur up to 4.00 PM one day prior to date of tendering otherwise their bids are liable to be rejected.
4. The Bid Security amount (as applicable) to be paid by demand draft/banker's cheque in favours of SR.AO(CASH & CPC), JDVVNL, Jodhpur (Payable at jodhpur) **342003 up to 4.00 p.m upto one WORKING day prior to schedule date of opening** of respective bid or Bank guarantee, in specified format, of a scheduled bank in favour of superintending Engineer (MM&C), JDVVNL, Jodhpur be deposited to the Sr. Accounts Officer (MM&C), JdVVNL, New Power House, Industrial Area,Jodhpur-342003 **up to 4.00 p.m. up to one WORKING day prior to schedule date of opening** of respective bid and obtain a receipt/acknowledgement thereof. No other mode of deposit shall be accepted. At the time of depositing the Bid Security amount or Bank Guarantee, the bidder shall also furnish self attested and duly attested by Notary, the documentary evidence of SSI unit of Rajasthan or of sick unit (as applicable) along with affidavit as per schedule XI on Non-Judicial Stamp of Rs. 100/-.

The Bank Guarantee against Bid Security be issued by Nationalized / Scheduled Bank. The same may be accepted after confirmation by issuing Bank. If any Bid Security Bank Guarantee not is proper format / not confirmed by the issuing Bank the same would not be accepted and the bidder would be immediately shorted out from bid process.

SECTION-III**TECHNICAL SPECIFICATION No. JdVVNL/SE (MM&C) /TN-1507 FOR THREE PHASE STATIC LT CT METER OF -/5 AMP/ SPECIFIED METER CT RATIO WITH DLMS PROTOCOL AND POLYCARBONATE METER CASE AND BACKLIT LCD DISPLAY.****3.0 SCOPE**

This specification covers the design, engineering, manufacture, assembly stage-testing, inspection and testing before supply of A.C. 3-ph static LT CT energy meter of -/5 Amp with DLMS Protocol and polycarbonate meter case and backlit LCD display as per requirement given in this specification. The meter shall be supplied in suitable packing so as to withstand transit shock. The meter should be three phase, four wire, three element type capable to record and display energy in kWh and demand in kW, for three phase four wire A.C balanced / unbalanced loads for power factor range of zero lag – unity zero lead, as per requirement given in this specification.

It is not the intent to specify completely herein all the details of the design and construction of material. However the material shall conform in all respects of high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in a manner acceptable to the purchaser, who will interpret the meanings of drawings and specification and shall have the right to reject any work or material which in his judgment is not in accordance therewith. The offered materials shall be complete with all components, accessories necessary for their effective and trouble free operation of the system for energy measurement. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in this specification and / or the commercial order or not.

The offered meter shall have BIS certification i.e. the offered meters shall be ISI marked and bidder shall have to furnish the ISI license as on date of bid opening.

3.1 STANDARDS APPLICABLE

Unless otherwise specified elsewhere in this specification, the meter shall conform in all respects including performance and testing thereof to the following Indian / International Standards to be read with up to-date and latest amendments / revisions thereof.

S.N.	Standard No.	Title
1.	IS 14697-1999	: AC Static Transformer Operated Watt-hour and VAR-Hour Meter class 0.2S & 0.5S.

2. IEC 62052-11 : Electricity metering equipments (AC) – General requirements & test conditions Part 11 metering equipments.
3. IEC – 61000-4-5 (2001-04) : Electromagnetic capability, Testing and measurement Techniques, Surge immunity test.
4. IEC 62056- 2.1 (latest version) : Data exchange for meter reading and direct local data exchange.
5. IEC 687- 1992 : AC Static Watt-hour Meters for Active Energy, class 0.2S & 0.5S
6. IEC 62053-61 : Electricity Metering Equipment (a.c)- Particular requirement- Part- 61- Power consumption and voltage Requirements.
7. CBIP, Report No. TR325 read with latest amendments issued till date : Specification for AC static electrical energy meters.
8. CBIP Technical Report No.111 Revised July 1996 : Specification for Common Meter Reading Instrument.
9. IS : 9000 : Basic Environmental testing Procedures for Electronic & Electrical items.
10. RERC Metering regulations,2007 : Salient technical specifications for consumer meters.
11. CEA (Installation and Operation of meters) Regulations, 2006. : Salient technical specifications as applicable for consumer meters.
12. IS 15959:2011(with latest amendments) : Data Exchange for Electricity Meter Reading, Tariff And Load Control Companion Spec having all amendment (DLMS requirement is applicable only to optical port)

In case of any conflict or discrepancy the order of precedence shall be (i) IS (ii) IEC (iii) CBIP technical report-325 (read with latest amendments). In case of any difference between the provisions of these standards and the provisions of this specification, the provisions contained in this specification shall prevail.

3.2 SERVICE CONDITIONS (CLIMATIC CONDITIONS)

The meters to be supplied against this specification should be capable of performing and maintaining required accuracy under extreme hot, cold, tropical and dusty climate and solar radiation typically existing in state of Rajasthan (India). The meter shall be required to operate satisfactorily and continuously under the following tropical climatic conditions.

- | | |
|---|---------------|
| a) -Maximum ambient air temperature. | - 55 deg.C |
| b) -Maximum ambient air temperature in shade. | - 45 deg.C |
| c) -Maximum temperature attainable by the meter exposed to sun. | - 60 deg. C |
| d) -Minimum ambient temperature. | - (-) 5 deg.C |
| e) -Average daily ambient air temperature. | - 40 deg.C |
| f) -Maximum relative humidity. | - 95 % |
| g) -Number of months of tropical monsoon condition. | - 4 months |
| h) -Maximum altitude above mean sea level. | - 1000 meters |
| i) -Average annual rain fall. | - 10-100 cm |
| j) -Maximum wind pressure. | - 200 kg/sq.m |
| k) -Isoceraunic level (days per year). | - 40 |
| l) -Seismic level (horizontal accn.). | - 0.30 g |
| m) -Permitted noise level. | - 45 db |

3.3 PRINCIPAL PARAMETERS

The meter shall conform to following parameters

S.No.	Item	Specification
1.	Type of installation	Outdoor installation insides meter box
2.	System Voltage	3x240 V, -40% to +20%
3.	System frequency	50 Hz \pm 5%
4.	No. of phases	Three phase four wire
5.	System of earthing	Solidly grounded

3.4 TECHNICAL REQUIREMENTS

The meter shall have following reference technical parameters:

- | | | |
|----|----------------------|---|
| a) | Rated voltage (Vref) | 3X240 V phase to neutral
(3phase 4wire system)
3X415 V phase to phase |
| b) | Rated current | Basic current 5A (I_b),
Max. Current 10A (I_{max}) |

The meter shall be required to operate satisfactorily and continuously under the tropical climatic conditions mentioned at clause 3.2 above.

3.4.1 SUPPLY SYSTEM & POWER SUPPLY VARIATION

The supply system shall be LT 240 volts phase to neutral, three phase four wire. The extreme power supply variation for which an operating meter should withstand without damage and without degradation of its metrological characteristics when it is subsequently operated under its normal operating conditions shall be as follows:

Specified operating range:	0.80 to 1.1 Vref
Limit range of operation:	0.60 to 1.2 Vref

However, the bidder can offer meters that can withstand higher variations.

Voltage variation: -40% to +20 %. However meter shall be able to register energy even if the voltage falls up to 60% of the rated voltage i.e. 96 V at 500mA at balance load condition (no accuracy required). The limits of error shall be as under:

Influence quantities		Value of current	Power factor	Limits of variation in % error
i)	Voltage variation between – 40% to +20%	I_b	1	0.2
		I_b	0.5 lag	0.4
ii)	10% of 3 rd harmonic in current circuit	I_b	UPF	0.1
		I_{max}	UPF	0.1

3.4.2 POWER FACTOR RANGE

The meter shall be suitable for full power factor range from zero (lagging) through unity to zero (leading)

3.4.3 ACCURACY

Class of Accuracy of the meter shall be 0.5S. The accuracy should not drift with time.

3.4.4 POWER CONSUMPTION

a) Voltage circuit: The active and apparent power consumption in each voltage circuit including the power supply of meter at reference voltage, reference frequency and reference temp shall not exceed **1.0 watt** per phase and **8 VA** per phase respectively on balanced load condition.

b) Current circuit: The apparent power taken by each current circuit at basic current, reference frequency and reference temperature shall not exceed **0.5 VA**.

3.4.5 STARTING CURRENT

Meter should start registering the energy at 0.1% I_b at UPF in each phase.

3.4.6 RUNNING WITH NO – LOAD

When 70% and 120% of rated voltage is applied with no current flowing in current circuit, the test output of the meter shall not produce more than one pulse / count. The minimum test period for this test shall be as per relevant CBIP TR 325 standard, clause 5.6.4.

3.4.7 AUXILIARY POWER

The power shall be drawn from any of three phases and the meter should be able to remain powered up if any two phases or any one phase and neutral are available. Maximum power consumption of the auxiliary circuit shall be 5 Watt.

3.5 GENERAL AND CONSTRUCTIONAL REQUIREMENTS

Meter shall be designed and constructed in such a way so as to avoid causing any danger during use and under normal conditions. The following should be ensured:

- (a) Personnel safety against electric shock.
- (b) Personnel safety against effects of excessive temperature.
- (c) Protection against spread of fire.
- (d) Protection against penetration of solid objects, dust and water
- (e) Protection against fraud
- (f) Prevention against pilferage.

3.5.1 METER CASE:-

- a) Meter case (base and cover) and extended terminal block (ETBC) shall be made of unbreakable high grade flame retardant polycarbonate with minimum thickness of 2.0mm **with tolerance of $\pm 5\%$** and of good dielectric and mechanical strength.
- b) Meter case (base and cover) and extended terminal block (ETBC) should be injection moulded in UV stabilized polycarbonate in natural colour. The ETBC shall be kept fully transparent and the meter case (base and cover) except the window portion shall be semitransparent / non-transparent / opaque. The moulded meter case should not change in colour, Shape, size, dimensions when subjected to 200 hrs on UV test as per ASTM D 53. It should withstand 650 deg. C. glow wire test and heat deflection test as per ISO 75.
- c) The manufacturer shall emboss on the base/cover the name of the material they have used in an abbreviated form e.g. PCFR (to denote what they have used - flame retardant poly carbonate).
- d) The window portion shall be of transparent, unbreakable UV stabilized polycarbonate for easy reading of all the displayed values/ parameters, nameplate details and calibrating LED. It should not fade in course of time and become opaque causing inconvenience for reading.
- e) The meter cover should be ultrasonically welded with meter base. The cover shall not just be held with base on two points of sealing. It should be supported by at least

additional two internal locks/**guides** as well, so that even before ultrasonic welding, it is not possible to lift the cover from the base at all.

The ultrasonic welding shall be continuous in nature. In case any attempt to open the meter cover from base, there should be visible evidence of opening/tampering of ultrasonic welding.

- f) The sample meter to be sent along with the tender may not be ultrasonically welded with the meter base as at the time of sample testing it has to be opened to ascertain conformity of meter as per specification. However, before commencement of supply, sample has to be got approved with ultrasonic welding by the successful bidder.
- g) The meter case shall have the following properties of plastic material:-

S.N	Property	Units	Value	Standards
1.	Physical water absorption	%	Max. 0.35	ASTMD 570/ IS:5133(part 2) :1969
2.	Electrical Dielectric strength at 90 deg. C. in oil.	KV/ MM	Min 16	ASTMD 149
3	Thermal HDT	Deg.C	Min. 125	ASTMD 648/ ISO 75
4.	Flammability a) Rating b) Glow wire test 650 deg.C.		FV 2 Passes	UL94/IS:11000 (part 2-sec-1) IEC-60695-2-1-12 & IS:11000-2-1
5.	Mechanical a)Tensile strength b)Flexural strength c)Modulus of Elasticity d) I _{zod} impact strength notched 23 Deg. C.	MPa MPa Mpa KJ/Sq.M	Min. 50 Min. 90 Min. 2000 Min. 8	ISO 527/equivalent standard ISO 178/ equivalent standard ISO 178/ equivalent standard ISO180-1A/equivalent standard

3.5.2 TERMINAL BLOCK, TERMINAL AND EXTENDED TERMINAL BLOCK COVER:

- a) The terminal block shall be moulded type made of non-hygroscopic, flame-retardant material having good dielectric and mechanical strength. The moulded terminal block shall be made from best quality phenol formaldehyde conforming to IS: 14697 -1999 (latest amended) having adequate insulating properties and mechanical strength with brass inserts for connecting terminals.

The terminal block should satisfy all the conditions specified in **IS:14697** and IEC 62052-11. The material of the terminal block should fulfill the requirement of following tests:

- (i) The flame retardant rating of V0 as per UL 94 testing
- (ii) The glow wire test for temperature of 960 deg. C as per IS: 11000 (Part -2/Sec.1) or IEC 60695-2-1.
- (iii) Heat deflection temperature (HDT) test of 135 deg. C. as per ISO 75 or ASTM D-648
- (iv) Ball pressure test at 125 deg. C. as per IEC 60335-1

b) The base of the meter should extend to enclose the three sides (back and two sides) of the terminal block.

c) The current circuit conductors of the meter shall be connected to its current terminals from inside the meter terminal block adopting procedure prescribed in either B-1 or B-2 of the recommended methods under IS:14697. Any other method which meets these requirements in a better manner/way shall also be considered. The bidder should elaborate the arrangement adopted.

d) The meter terminal block shall have tin-plated brass terminal inserts. The terminals shall have suitable construction with barriers and cover to provide firm and safe connections of incoming and outgoing leads. The terminal screws shall have flat bottom so as not to pierce in the external conductors. The terminals shall be of suitable rating to carry continuously 150% I_{max} . Current and made of electroplated (or tinned) brass and shall be of replaceable type. Any other provision which meets this in a better manner / way shall also be considered. The bidder should elaborate the provision adopted.

e) The manner of fixing the external conductors to the terminal block shall ensure adequate and durable contact such that there is no risk of loosening or undue heating. All parts of each terminal shall be such that the risk of corrosion is minimized. Two screws shall be provided in each incoming and outgoing terminal for effectively clamping the external leads. Each screw shall engage at least 3 threads in the terminal. Electrical connections shall be so designed that contact pressure is not transmitted through insulating material. The manner of fixing of incoming and outgoing leads into the terminals shall be through thimbles/lugs/reducer type terminals and the supplier shall supply the same along with each meter without any extra cost.

f) The internal diameter of the terminal holes should be suitable and adequately designed for inserting **2.5 mm² for potential terminals & 4.0 mm² stranded copper or aluminum armoured cable and shall be capable of carrying current up to 100% of I_{max}** . The holes in the insulation material of the terminal block, which form an extension of the terminal holes, shall be of sufficient size to accommodate the insulation of the conductors also. The clearance and creepage distances shall not be less than values specified in IS:14697:1999. Further, the supporting webs between the two terminals of the terminal block should be sufficiently high to ensure that dust does not bridge the two neighboring terminals or a flash over does not take place.

- g) The voltage circuit and the current circuit shall not be connected inside the meter body. A firm connection shall be established within the meter case to energize the voltage circuit.
- h) The termination of current circuit wires, if used, inside the meter (i.e. CT primary conductor / shunt) on the terminal block should be through lugs and washers of proper size. The loop length of the primary current circuit should be kept minimum. Alternatively the CT primary conductor / shunt may be flattened to form a 'lug' like shape for proper terminating on terminal block without using lug or any other better arrangement may also be provided.
- i) The meter shall be supplied with extended terminal block cover (ETBC). The ETBC shall be extended by **50mm±5% mm** below the terminal block.

The terminal cover of the meter should have seals with screws / snap- fit type. It should not be possible to open the terminal cover once in locked position after installation without breaking the terminal cover or leaving visible evidence of tempering. The ETBC shall be designed such that the meter's internal parts are not accessible for tempering etc. without breaking seals. The terminal cover shall be engraved/ screen printed with logo of manufacturer & purchaser i.e. JdVVNL.

3.5.3-DISPLAY PARAMETERS AND TYPE OF DISPLAY

A) The meter should have bright LCD electronic display with backlit having **minimum description of parameters (e.g. words like kWh, kVAh, KW, Power factor, BP Values etc)/character height X width of 10mm X 5mm or higher** and with minimum 6 digits (without decimal digit). However, in Push button mode, all parameters shall be displayed with one decimal digit to read up to one tenth of KWH, in addition to 6 whole digits. The decimal digit shall be clearly distinguished from integral digits. **“The accuracy of display parameters on LCD display for all parameters shall be matching with the accuracy class of meters as per IS.”**

The LCD shall be of STN (Super Twisted Kneumatics-160 degC) type, construction suitable for temperature withstand of 80 deg. C (storage) and 65 deg. C (operation). The LCD Display should have a wide viewing angle of 45 deg to 60 deg cone, up to one meter distance.

The registered parameter shall not be affected by loss of power. The display shall not be affected by electrical & Mechanical disturbances. The Non-volatile Memory (NVM) shall have a minimum retention time of 12 years under un-powered condition i.e. the NVM shall have a storage life (without use) of 12 years. The battery back up memory will not be considered as NVM. When the meter is placed in oven at a constant temperature of 65° C for **period of 120** minutes, the character of LCD should not deform. After keeping the meter at a constant temperature of 80° C for **period of 120 minutes** and when restored at normal temperature, the LCD should work satisfactorily.

For clear visibility of the display of meter readings at a distance, large viewing area with large display icons shall be provided. The intensity of LCD characters shall be adequate to clearly display the specified parameters particularly in direct sunlight. **The**

display size shall be sufficient to accommodate 6+1 digits of specified size with inter-digit gap of 1 mm and side gap of 2mm on all four sides.

LCD Specifications:

Type: STN, FSTN, Seven segment type, Industrial Grade

Viewing angle: 45 deg to 60 deg cone

Background type: Yellow/ Green/ Grey/ White

Connector: Pin type

Polarizer Mode: Transreflective/ transmissive

Segment Colour: Black/ Dark Blue

Life time: Preferably 12 years

Temp range operative: -20 to 65 deg C

Temp range storage: -40 to 80 deg C

Voltage: 3.0/5.0 V

Drive Method: $^{1/4}$ / $^{1/3}$ bias

Testing: High temp test as per specs for 72 hrs

Low temp test as per specs for 72 hrs

Temperature Shock Test: 10 cycle's temperature shock of low and high temperature.

Result: After test the LCD should not get damaged.

B) The display of various parameters shall be as specified in continuous display mode. The meter shall be capable to measure & display continuously 'Active energy KWH' at all the loads & power factors i.e. Zero lag – Unity – zero lead. The meter should also have provision for Automatic recording of cumulative kWh at 24.00 Hrs on the last day of the month for each calendar month & the same should go to memory.

C) DISPLAY SEQUENCE:

Continuous Display Mode:

The following parameters shall be displayed simultaneously in continuous display mode in the manner shown below under power on & off conditions:

- a) Cumulative Active Energy Import (kWh forwarded) reading. (KWH Counter)
- b) Instantaneous demand (KW) display. (Instantaneous Load in KW)
- c) Active Energy Import (kWh forwarded) reading of pre-defined date and time for billing purpose (BP kWh) of last consumption month.
- d) Maximum demand (KW) up to pre-defined date and time for billing purpose (BP KW) of last consumption month.

- e) Connection checks and OK display (including phase association if any thing wrong it must indicate as **Not O.K**). Connection check O.K. shall be indicated when all CT connection, PT connection & their phase association are in right order.
- f) Cover open tamper status with date and time.
- g) Magnet tamper details with date and time till the removal of magnet.

Alternatively incase meter CT ratio is specified as 100/5A or 200/5A in place of - /5A, the continuous display mode shall display two parameters at a time alternately i.e. once cumulative kWh & Bill-point kWh (In six whole digits) and second time Instantaneous Demand in KW & Billing point Max. Demand in KW (In three whole digits & one decimal digit) for a period of 10 seconds with a time interval of appx. 5 seconds between the two scrolls each with status of connection OK/ Not OK.

The display shall be normal single line display and height of digit shall be 8 mm.

Push Button Mode of Display

The following parameters in the sequence given below shall be available in memory for access through pushbutton in respect of meters under Option-A & B of clause 3.6". The instantaneous load for pushbutton activated parameters at item (f) shall be total instantaneous load in KW. Each parameter should display for minimum 10 secs for respective measured values except LCD segment check which shall have display for 05 seconds under auto scrolling of Push Button Parameters. If the Push button is pressed continuously for 02 minutes during power off condition, then battery should become disabled till next push button operation.

- a) LCD segment check
- b) Real time
- c) Date DD/MM/YY
- d) Meter Sr. No.
- e) Cumulative Active (forwarded) energy (kWh)
- f) Instantaneous load(KW)
- g) Instantaneous power factor / phase
- h) Instantaneous phase Voltage
- i) Instantaneous phase current
- j) Average power factor of last month.
- k) Cumulative active energy (kWh) for each calendar month for previous 12 months
- l) Maximum demand KW with 30 minutes integration and maximum of these in a calendar month for previous twelve months.
- m) Instantaneous load in watts / phase
- n) Power-ON hours of each calendar month for last twelve months.
- o) Average power factor for each calendar month for last twelve months with one whole digit plus three decimal digits.

- p) Present status with type of tamper, date & time of last tamper occurrence & restoration with cumulative tamper count conditions & magnet tamper events.

D. LCD Least Count

Even though the display shall be with one decimal digit in suitable mechanism mode and without decimal digit in auto scroll mode, the internal least count of energy recording shall not be more than 0.01kWh. Hence, every 0.01 kWh consumption will be internally stored. Also, there be no loss of energy registration on account of frequent power outages due to high start up time of the meter.

To verify the above, the meter will be switched ON/OFF 40 times at rated parameters and energy recording on display with decimal digit should be within 0.4 kWh of the energy, it should register, as per its accuracy at that load. This will be verified during inspection of meters.

E. Meter reading at power outage:-

Provision to read the meter in no power condition for displaying the auto scroll mode parameters shall be made. Such a provision shall be provided either rechargeable super capacitor or rechargeable battery or primary battery for taking meter reading in power off condition as under:

- i) Directly in the form of rechargeable Super Capacitor back-up without push button for continuous display for 48 hours from instant of power failure without back lit (the push button shall not be operated in this case). The charging time of super capacitor shall not be more than 6 hours and no parallel rechargeable battery to be used.
- ii) With primary battery or rechargeable battery during power failure capable of at least 50,000 such operations during the meter lifetime of 15 years. NO Power shall be consumed from this circuit when mains are available.

In any case, RTC Battery Power shall not be used for display under Power off Condition.

The performance of the supercap may be verified by removing all the batteries (primary or rechargeable) from the circuit in any meter during sample testing or Inspection.

F - Maximum Demand Registration and MD Resets

Meter shall continuously monitor and calculate the average maximum demand of each demand interval time of 30 minutes and maximum of these in a calendar month shall be stored. The maximum demand shall automatically reset at 24.00 hrs. of the last date of each calendar month for which minimum 30 years calendar shall be programmed by the manufacturer. The cumulative kWh should also be recorded at 24.00 hrs. on the last date of each calendar month for previous twelve months.

G - Providing Meter CT Ratio:

The purchaser may opt to purchase LT CT Meters with meter CT Ratio of 100/5A & 200/5A in place of -/5Amp. In such case Meter name plate shall be clearly distinguishable with specified colour for 100/5A & 200/5A by providing one round circle of specified colour with a technical leaflet with each meter having description of display sequence and meter CT ratio for direct reading with external CT s of appropriate ratio. The formula for overall MF incase external CTs of other ratio is provided shall also be mentioned in such leaflet.

The provisions of relevant IS shall be complied in respect of display of measured values, number of digits required for specified roll-over limits and name plate markings required consequent upon inclusion of meter CT Ratios of 100/5A & 200/5A in continuous display /two scroll display and push-button mode of display.

H- TIME OF DAY TARIFF:

The meter shall have provision for registering energy, maximum Demand and average PF in two tariff registers (peak and off-peak).

Peak hours – 6:00 AM to 10:00PM

Off Peak hours – 10:00 PM to 6:00 AM

This data for the last 12 months shall be download by CMRI.

3.5.4- OUTPUT DEVICE

The meter shall have a test output device in the form of calibration LED of red colour and minimum intensity 10 mCD (milli-Candela) accessible from the front and shall be capable of being monitored conveniently with suitable testing equipment while in operation at site. The location of calibration LED should be such that the calibration pulses can be sensed easily through the sensor. The clearance of calibration LED from any of the sides of window portion shall be approximately 20mm.

The relation between test output and the indication on display shall comply with the marking on the name plate (impulse per kwh). The bidder shall state the necessary number of pulse count(s) to ensure measurement accuracy of at least 1/10th of class of the meter at the different test points.

The resolution of the test output pulse(s) should be sufficient to enable conduction of the starting current in less than 10 minutes and accuracy test at the lowest load with desired accuracy within 5 minutes.

3.6 COMMUNICATION CAPABILITY: Meter shall have Optical Communication Port as well as LPRF for facility of meter reading.**(A) Optical Communication Port:**

The meters shall have a galvanically isolated optical communication Port as per IEC1107 provided on the front of the meter downloading the history data to a CMRI/Base

computer. It shall not be possible to re-programme or make any change in the meter through CMRI.

- No editing shall be possible on CMRI and base computer by any means. The software shall have capability to convert the entire data into ASCII format.
- The protocol used in the meter shall have to be provided at the time of supply for the purpose of automatic meter reading system.
- It shall be responsibility of the meter manufacturer to provide the required software and all the facilities free of cost to enable the use of optical port and LPR Communication facility for reading and retrieving the data from the meter through CMRI and to necessary upgrades of software shall be supplied free of cost for downloading simultaneously the existing parameters and any parameters added in future specifications of meters.
- The same CMRI should be capable of downloading, reading the meter data through wireless communication using LPRF point to point technology.
- The CMRI should have the provision to connect the external RF module through a nine PIN D-type serial connector, so that module of the different makes can be connected to CMRI to read and retrieve the data of their respective makes of meter.
- Indication on CMRI shall be provided for confirmation of successful data transfer from meter to CMRI. During this period the energy recording should not be affected. The offered common meter reading instrument should work as a one way communicating interface between various make static energy meters and a base computer station for the purpose of exchange of data. The meter Reading instrument shall be supplied with necessary accessories which should be capable of interrogating with various makes of AC static energy meters when loaded with the corresponding meter's specific software called meter reading instrument programme.

It shall be responsibility of the meter manufacturer to provide the required software and all the facilities required by JdVVNL to use the CMRI for reading and retrieving the data from the meter and to download the data to PC free of cost up to guarantee period. Readings to be downloaded with CMRI: In addition to all the above, the following parameters should be downloaded by CMRI:

- Meter Sr. No.
- Time & Date.
- Instant Load in KW, Voltage, Current & Power Factor
- Billing kWh (BP kWh) for the last 12months at 0:00 hrs of the last day of the month.
- MD KW with 30 min. integration on real time basis for each phase with date and time stamp for the last 12 months.
- Average power factor of the last consumption month upto pre-defined date & time for the last 12months.
- Power on Hours and minutes for each of previous 12months
- The snap shot of each event with date & time of minimum 40 events (either occurrence or restoration consider an event) for following tamper condition:
 - (i)The tamper data as per Cl. 3.11.1 (iv) of this specification

- Any other information if manufacturer proposes may indicate in their offer. Any other information if manufacturer proposes may indicate in their offer. The meter shall also have a storage capacity for at least 75 days load survey with 30 minutes IP for the following parameters in the non-volatile memory for recording, logging, and downloading of Power On hours per day and kWh consumed for each day starting from 00.00 to 24.00 hours.

- (i) Real time clock, date and time.
- (ii) Current Ir.
- (iii) Current Iy.
- (iv) Current Ib.
- (v) Voltage Vrn.
- (vi) Voltage Vyn.
- (vii) Voltage Vbn
- (viii) Block Energy-KWh
- (ix) Block Energy-KVARh(lag)
- (x) Block Energy-KVARh(lead)
- (xi) Block Energy-KVAh

Such data shall be made available in the form of bar chart as well as spreadsheet. The BCS shall have the facility to give complete load survey data both, in numeric and graphic form with option for either of them. The meter shall possess a suitable fast reliable optical communication port as well as LPR communication Port for automatic transfer of data to CMRI and through CMRI to the base computer.

The CMRI shall possess easily replaceable battery and shall be capable of storing data for at least 200 Nos. meters at one time. It shall be possible to read the meter from outside the meter box. The data transfer (from meter to CMRI) rate of billing data downloading shall be 60 Seconds and for total data within 5 minutes for each meter.

The downloaded data along with date and time stamp of such reading shall remain on CMRI with suitable encryption and it shall not be possible to preprogram or manipulate the recorded data on the CMRI before downloading the same with the serial number of CMRI on computer.

The CMRI shall also download the name of meter manufacturer and year and month of manufacture of meter. The Supplier shall supply Software (compatible with Windows 98 system or higher) and training free of cost for the use of software at multiple data collection and billing premises of the utility.

The CMRI shall have a polling feature to read multiple meters within range without preprogramming the meter serial numbers on CMRI in advance. After successful downloading of meters data to CMRI, the calibration LED shall continuously glow for a

period of one minute/ any other indication on CMRI for confirmation of successful data transfer. During this period the energy recording should not be affected. Necessary upgrades shall be possible in CMRI software and shall be supplied free of cost for downloading simultaneously the existing parameters and any parameters added in future specifications of meters.

A copy of operation manual for each CMRI shall be supplied. The Supplier shall provide meter reading protocols free of cost which shall not be complicated and easily understandable by utility officials to introduce compatibility between meters and CMRIs of different makes. The bidder shall indicate relevant standard to which the protocol for communication between meter and CMRI shall comply.

(B) LPR Port Communication Facility:

LPRF Module technical Specification

Semiconductor Used	TI / ATML/ SiLABS/ AD/ ST
Frequency Band	865 to 867 MHz
Antenna Options	Internal
Networking topologies	Point to Point,

The meter reading instrument shall be capable of retrieving data and capable of transferring them to the base computer service centre for energy audit and billing purpose. The bidder shall quote for the -/5 Amp. meters with LCD Display with communication facility for meter reading with LPRF Communication Facility. The meter shall be compatible for spot billing. The meter shall have facility for communicating with a Meter reading instrument through LPRF with proper security & without error to facilitate for auto-reading and downloading the billing and history data to base computer. The interface for communication between CMRI & Base computer shall be supplied free of cost. The software required for CMRI as well on base computer system to use the remote reading feature with necessary security provisions shall also be supplied free of cost with following features:

- (i) **In case of failure of power supply, it shall be possible to download the reading at least two times in an interval of maximum 10 minutes through an in-built battery with use of push button.**
- (ii) **The LPRF module shall have software to communicate with all CMRI being supplied by the bidder.**
- (iii) The frequency range for LPRF equipment shall be 865-867 MHz frequency range.

- (iv) The meter shall use license free frequency band for communication so that license for use LPRF equipment to read energy meter at site is not required.
- (v) It should not be possible to reset the energy reading in the meter with the CMRI.
- (vi) The LPRF module of the meter shall be completely enclosed in the meter body having no physical access from outside the meter without opening.
- (vii) There should not be any degradation or interference on internal circuitry of meter because of LPRF module.
- (viii) The compatibility of CMRI with the meter and the base computer system due to any change in language or any other reasons, the manufacturer/ supplier shall modify it at their own cost within guarantee period. The CMRI along with battery charger and for direct communication cords shall be supplied free of cost in the ratio of one for each 500 Nos. meters supplied. The CMRI shall possess a specific Serial No. which cannot be changed. The guarantee of supplied CMRI would be 5 years.
- ix) The CMRI shall have facility to store 200 Nos. of meter data. Further, there should be facility to be provided to transfer the meter data to computer through RS 232 / USB Port.
- x) The above mentioned all sorts of communication shall be of "One way" type i.e one can download the meter data through CMRI and data alteration facility in CMRI and from CMRI to meter should not be possible in any case.

The bidder has to give an undertaking that the CMRI supplied by them shall be capable for downloading reading of other make of meters in the instant tender as well as for next 5 years of any make of meters as well as existing DLMS make three phase LT CT meters.

READINGS TO BE DOWNLOADED WITH CMRI THROUGH LPRF PORT

- Meter Sr. No.
- Time & Date
- Instant Load in KW, Voltage, Current & Power Factor
- Current cumulative forwarded KWh energy (total)
- Billing kWh (BP kWh) for the last 12 months at 0:00 hrs of the last day of the month.
- MD KW with 30 min. integration on real time basis for each phase with date and time stamp for the last 12 months.
- Average power factor of the last consumption month upto pre-defined date & time for the last 12 months.

- Power on hours and minutes for each of previous 12 months.

- The snap shot of occurrence with date and time of minimum 40 events (either occurrence or restoration consider an event)for following tamper conditions:
 - i) The tamper data as per CI No.3.11.1 (iv) & (viii) of this specification.
 - ii) Voltage less than 160 V, P-N.

(C). General requirement for Optical Port & LPRF port:-

- I. The same CMRI should be capable of downloading and reading the meter data through wireless communication using LPRF point to point technology
- II. **The CMRI should have the provision to connect the external RF module so that module of the different makes can be connected to CMRI to read & retrieve the data of their respective make of meters. . No internal module in CMRI will be accepted.**
- III. **1 No. DOS based CMRI with optical port interface as well as RF communication Capability to read meters for communication between meter and CMRI along with communication cable & its accessories shall be supplied free of cost for every 500 Nos. meters supplied.**

Minimum Salient features of CMRI shall be as under:-

- | | |
|---------------------------------------|-------------------------------|
| i) Display | - 16 lines. |
| ii) Internal flash memory(RAM) | - 16.5 MB.(minimum) |
| iii) ROM | - 8 MB(minimum) |
| iv) Speed of processor | - 400 MHz. & above |
| v) Battery backup | -24 hours. |
| vi) Operating system | -DOS |
| vii) Certified standard | - CBIP-111 |

- IV. The LPRF should be able to read meter at a distance of minimum 100 meters in clear line to sight.
- V. It shall be the responsibility of the meter manufacturer to provide the required software and all the facilities required by purchaser to use the CMRI for reading and retrieving the data from the meter and to download the data to PC free of cost upto guarantee period
- VI. Any other information if manufacturer proposes to record may indicate in their offer. The BCS shall have the facility to give complete load survey data both in numeric and graphic form with option for either of them.
- VII. The CMRI shall possess' easily replaceable battery and shall be capable of storing data for at least 200 Nos. meters at one time. It shall be possible to read the meter from outside the meter box. The data transfer (from meter to CMRI) rate for Billing data downloading shall be less than 60 Sec. and for total data within 5 Minutes for each meter.

- VIII.** The Supplier shall supply Software (compatible with Windows 98 system or higher) and training free of cost for the use of software at multiple data collection and billing premises of the utility.

3.6.1 Load survey capability: The each option of meter shall have load survey capability as mentioned below:

The meter shall also have data storage capacity for at least last 75 days in a non-volatile memory for recording, logging and down-loading of **KW**, KVA, Power factor and average value of phase wise voltage & current for each demand interval time of 30 minutes. Such data should be available in form of bar chart as well as in spreadsheet. The BCS shall have the facility to give complete load survey data both in numeric and graphic form with option for either of them. 20 event snap shot occurrence is the requirement of CMRI for downloading of 3 specified tamper data.

All downloadable parameters from CMRI as specified above shall also be made available at BCS end. The figure of 24 hours kWh import should also be made available under each date in the load survey and it should be possible to represent this at BCS end.

Minimum two hundred (200) events (occurrence & restoration) of all types of tamper with date and time shall be available in the meter memory on first-in, first-out basis is the memory requirement of meter. It shall be possible to retrieve the tamper data along with all related snap-shots' data through the meter's LPR port with the help of a CMRI through infrared port and download the same to the BCS where it shall be available for viewing. All this information shall be available in simple and easily understandable format. Three compartments having 50% memory space for current related tampers, 25% for potential related tampers and remaining 25% memory space shall be for current unbalance & other misc tampers. **Total downloading time for complete load survey data of meter shall be not more than 5 minutes. However, in case of billing data downloading shall be less than 60 seconds for each meter.**

3.7- SEALING ARRANGEMENT OF THE METER

The meter cover shall be permanently ultrasonic welded to the meter base. It shall not be possible to open the meter cover without permanently damaging the meter cover or base visible from the front. **The provision of sealing shall be integral part of the meter and shall not be supplied loose with the meter. The seal inserting arrangement shall also be integral part of mould case.**

Additionally two sealing holes for sealing wire shall be provided on meter case suitable for of min. 2mm dia.

3.8- FIXING ARRANGEMENT OF METER

The meter shall have minimum two fixing holes on meter base.

3.9- MARKING OF METER

The meter terminal marking and mounting arrangement should be as per Indian installation practices. The marking on every meter shall be in accordance with IS: 14697/IEC 62052-11. Every meter shall have name plate beneath the meter cover window portion such that the name plate cannot be accessed without opening the meter cover. The marking on the name plate shall be indelible, distinct and readable from outside the meter. The name plate marking should not fade or otherwise be adversely affected by UV exposure with lapse of time. The basic markings on the meter name plate shall be as follows:

- i. Manufacturer's name or trade mark and place of manufacture.
- ii. Designation of type.
- iii. Number of phases and wires for which the meter is suitable.
- iv. Serial number.
- v. Reference voltage, frequency.
- vi. Month and year of manufacture.
- vii. Basic current and rated maximum current in Amps.
- viii. Principal unit(s) of measurement.
- ix. Meter constant (imp/ kWh).
- x. Class index of meter.
- xi. "Property of JDVVNL".
- xii. Purchaser's order Number & date.
- xiii. Guarantee period- 5 Years.
- xiv. Bar Coding of serial number, month & year of manufacture of the meter.
- xv. Sign of insulation.
- xvi. Ultrasonic welded.
- xvii. "Communication Port"

3.10- CONNECTION DIAGRAM AND TERMINAL MARKINGS

The connection diagram of the meter shall be clearly shown on the name plate and shall be of permanent nature. Alternatively, connection diagram can be permanently engraved on the inside portion of terminal cover. Further to this terminal marking i.e. M1,V1,L1, M2,V2,L2 & M3,V3,L3 etc. required for LT CT Meters as per IS:14697 should be clearly embossed on terminal block which is visible from distance.

3.11- SALIENT FEATURES:

The meter shall have following additional salient features.

- i) The meter shall be compact in design. The entire design and construction shall be capable of withstanding stresses likely to occur in actual service and rough handling during transportation. The meter shall be convenient to transport and immune to shock and vibration during transportation and handling.
- ii) Even if phase to phase voltage i.e. 450 volts is applied for 5 minutes between phase and neutral of the meter, the meter should not get damaged and continue to record correctly within **class 0.5S accuracy** after restoration of normal supply.
- iii) The meter should not saturate up to 200% Ib and should record energy accurately for P.F. range low power factor lag – unity – low power factor lead.
- iv) The short-time over current rating shall be 20 I_{max} for one half cycle at rated frequency as per of IS: 14697.
- v) The meter shall withstand impulse voltage test at the rated impulse voltage of 6 KV (for meters of protective class-II) as per clause no. 7.3.2 of IEC:62052-11 with latest amendmend.
- vi) The meter should not have any form of mechanical adjustments such as trim-pots potentiometer etc. for calibration. The meter shall be tested, calibrated and sealed at manufacturer's works before dispatch. Further, no modification of calibration shall be possible at site by any means what so ever. The meter shall be software calibrated at manufacturer's works.
- vii) The meter shall be provided with CT/shunt in all the 3 phases.
- viii) LEDs shall be provided for following indications
 - Test output pulse – Red (imp/kwh)
 - Indication for healthy PT/Voltage supply for each phase Red-Yellow-Green. Except for the test output pulse LED, other LEDs can be alternatively provided as icons on the LCD display.
- ix) The location of calibration LED (preferably at the center) should be such that the calibration pulses can be sensed easily through the sensor. The clearance of calibration LED from any of the sides of window portion shall be approximately 20mm.
- x) The meter shall have internal rechargeable battery & super capacitor with sufficient capacity to enable the meter reader to take meter reading even under power off conditions. The super capacitor shall be capable to display the auto-cycle parameters continuously for a period of 48 hours under the power off conditions. The display should be powered up automatically immediately after the power failure has taken place. (This arrangement is in addition to primary battery activated through suitable mechanism mode during power failure capable of at least 50,000 such operations during the meter life of 15 years). The manufacturer must provide a certificate to the aforesaid effect.
(As per specification two primary batteries (One for NVM & another for power-off display) and one rechargeable super capacitor are required for specified purposes. (The requirement of super capacitor is optional. Alternative arrangement for taking meter reading during power off conditions is also acceptable.)

3.11.1 TAMPER AND FRAUD PROTECTION:

The meter should have following features so as to continue to register active energy accurately under the following conditions:

- i. **Missing Potential:** The meter shall be capable of detecting and recording phase wise occurrences and restoration events of missing potential (one phase or two phases) as on meter terminals which can happen due to intentional/accidental disconnection of potential links (leads) with date and time, along with the total number of such events for all phases. Absence of one or more phase voltage from mains side should not be recorded as missing potential.
- ii. **Current Reversal:** The meter shall be capable of detecting and recording phase wise occurrence and restoration of current reversal of one or more phases, however, meter shall record energy in forward direction only, irrespective of direction of current.
- iii. Meter should remain functional even when either of any phases or any one phase along with neutral is available to the meter and record correct energy.
- iv. The meter shall either remain immune to tamper through application of external magnetic field (AC electro magnet or DC magnet) as per value specified in CBIP 325 or if the metering gets affected then meter shall record energy at I_{max} , rated voltage and unity P.F. as per CBIP 325 and same should also be logged as event with date & time.

Also In case of abnormal permanent magnetic field either meter shall either remain immune or if the metering gets affected then meter shall record energy at I_{max} , rated voltage and unity P.F and same should also be logged as event with date & time.

- v. The meter should work accurately irrespective of phase sequence of mains supply.
- vi. The meter should record energy as per voltage measured between incoming phase and neutral terminals when DC signal is injected on the neutral terminal of the meter through Diode. The test in this condition will be carried out at V_{ref} . applied to incoming phase & input terminal of diode. the circuit diagrams for DC injection test(s) is enclosed.
- vii. The accuracy of the meter should not be affected with the application of abnormal voltage/frequency generating device such as spark discharge of approximately 35 KV. The meter shall be tested by feeding the output of this device to meter in any of the following manner for 10 minutes:

- I. On any of the phases or neutral terminals
- II. On any connecting wires of the meter
- III. Voltage discharge with 0-10 mm spark gap
- IV. Spark on meter body.
- V. At any place in load circuit

The accuracy of meter shall be checked before and after the application of above device(s) with site conditions. The fail or pass criteria is that after carrying out this test for 10 minutes, the meter display should not be affected during and after the test and the meter shall measure energy within specified accuracy of class 0.5S during the tampering and

after removal of such device. **The LCD display of meter should neither permanently damage nor becomes OFF during test and again ON after removal of device.**

- viii If the meter cover is opened, the meter shall log this as tamper and shall display “Open” with date and time of such opening and should not restore in any condition(in power on as well as power off condition) in blinking display on the LCD alongwith other display parameters , so, that it is immediately noticed by the meter reader/ engineer and the same shall be downloaded in CMRI.
- ix. Current Circuit Open (Failure) and current bypass/short Tamper: The meter shall be capable of detecting and recording occurrences and restorations of opening (failure) of any one or two phases of current circuit when the meter is connected to a 3phase 4 wire system or 3phase 3 wire system. The no-load condition should be recorded as tamper. Similarly, the meter shall be capable of detecting and recording occurrences and restorations of current by pass tamper events.
- x. Current unbalance: The meter shall be capable of detecting and recording occurrences and restorations of current unbalances as a tamper event only. The threshold value for voltage , current and power factor etc. for the purpose of logging occurrence and restoration of various type of tamper shall be as per Annexure-’A’.

3.12-GENERAL

- i- All electrically live screws shall be of brass/ nickel tin plated. All other screws shall be electro plated.
- ii- The meter shall draw its power from all three phases, one phase and neutral or any two phases.
- iii- The terminal inserts shall be of heavily tinned brass and shall be replaceable type.
- iv- The meter shall conform to the degree of protection IP 51 of IS:12063/IEC.60529 and IEC 62052-11 clause 5.9, for protection against ingress of dust, moisture and vermin.
- v- There should not be any creep age in the meter even at 120% & 70 % of supply voltage.
- vi- The meter should be free from jumps during sudden switching of heavy loads / or transient voltage spikes.
- vii- Meter shall be of 100/5A and if used with external CTs of 100/5A, the MF shall be “one” and if Meter shall be of 200/5A and if used with external CTs of 200/5A, the MF shall be “one”.
- viii- The meter shall display total energy on display and record fundamental energy & total energy (Fundamental energy+ harmonics) at BCS end.

3.13- ELECTROMAGNETIC COMPATIBILITY AND INTERFERENCE REQUIREMENT

The meter shall meet EMI/EMC requirements as specified in the relevant standards described in clause 3.0 of this specification and shall also be protected against radiated interference from either magnetic or radio frequency sources.

The meter shall be designed in such a way that the conducted or radiated electromagnetic disturbance as well as electrostatic discharge do not damage or substantially influence the meter.

The disturbance(s) to be considered are:

- i) Harmonics
- ii) Voltage dips and short interruptions
- iii) Fast transient burst test
- iv) External D.C. and A.C. magnetic fields
- v) Electromagnetic H.F. fields
- vi) Electrostatic discharges
- vii) Radio frequency interference suppression

3.14- MANUFACTURING ACTIVITIES:

Following points shall be adhered to in the manufacturing of meters at the works.

- a) All the materials, electronics and power components, ICs used in the manufacture of the meter shall be of highest quality and reputed make to ensure higher reliability, longer life and sustained accuracy.
- b) The manufacturer should use application specific integrated circuit ASIC or Micro controller for metering functions.
- c) The electronic components shall be mounted on the printed circuit board using latest surface mounted technology (SMT) except power components by deploying automatic SMT pick and place machine and re-flow solder process. No wave soldering or solder bath will be used.
- d) The electronic components used in the meter shall be of high quality and there shall be no drift in the accuracy of the meter at least up to 10 years. Further, the Bidder should own or have exclusive access (through hire, lease or sub-contract) of the afore-mentioned facilities.
- e) Adequate documents regarding exclusive hire or exclusive lease shall be made available. In case of sub-contract, it shall be ensured that the sub-contractor is not carrying out sub-contracting for any other bidder in the above tender. The bidder shall indicate with the name and location of such facility along with an undertaking and certificate from the utility and any ambiguity on such a confirmation shall result in immediate disqualification of the bidder.
- f) The above shall be verified during works inspection or material inspection also and if any ambiguity is found, it shall be considered as a breach of contract by the successful bidder.

- g) Bidders without in-house design, development and manufacturing facility as above or who are buying populated PCBs will not be considered as meter manufacturers. The PCB material should be of glass epoxy FR-4 grade conforming to relevant standards.
- h) All insulating materials used in the construction of meters shall be non-hygroscopic, non-aging and of tested quality. All parts which are likely to develop corrosion shall be effectively protected against corrosion by providing suitable protective coating.
- i) Quality should be ensured at the following stages.
 - At PCB manufacturing stage, each board shall be subjected to bare board testing
 - At insertion stage, all components should undergo testing for conforming to design parameters and orientation
 - Complete assembled and soldered PCB should undergo functional testing using test equipments (testing jig).
 - Prior to final testing and calibration, all meters shall be subjected to accelerated ageing test to eliminate infant mortality.
- j) The calibration of meters shall be with software and done in-house.
- k) The bidder should submit the list of all components used in the meter along with the bid.
- l) A detailed list of bought-out items which are used in the manufacture of the meter should be furnished indicating the name of firms from whom these items are procured. The bidder shall also give the details of quality assurance procedures followed by him in respect of the bought – out items.
- m) The details of testing facilities available for conducting the routine and acceptance tests and other special tests on the meter shall be furnished with the bid. The facility available if any for conducting type test may also be furnished.

3.15- TYPE TEST

- a) The bidders shall be required to furnish valid type test reports in respect of LT CT meter with optical port as per requirement of IS 14697/ relevant IEC standard (latest amendment) and under mentioned additional type tests shall also be furnished along with the tender. The Type test certificate from any one of the standard laboratories such as NPL/ERTL/ CPRI /ERDA (NABL accredited for particular equipment /test) shall only be considered which should not be older than **three years** as on the date of opening of techno-commercial bid. For this purpose date of conducting type test will be considered.
- b) The type test certificates shall be furnished either in original or copy duly attested by notary.
- c) The bids of only those bidders shall be considered to be meeting the type test criteria who furnishes complete type test certificates along with the bid as per above provision.
- d) Additional Type Test:

- i) The test of influence of supply voltage shall be carried out as per IS:14697, except the interruption time should be variable from 10 ms. to 5 sec. instead of fixed time
- ii) Test of voltage variation as per this specification
- iii) Compliance of anti-tamper features as per tender specification as per Clause 3.11.1 above.
- iv) The meter shall withstand impulse voltage test at the rated impulse voltage of 6 KV (for meters of protective class-II) as per clause 7.3.2 of IEC 62052-11:2003.

The type test certificates of the above additional tests may also be submitted within 30 days of bid opening.

The following information should be clearly mentioned in the type test reports.

- (i) Type of Display i.e. whether counter type or LCD display.
- (ii) Details of Shunts / CT used in all phases
- (iii) Accuracy at different loads and PF for all phases separately.

e) Verification/testing of Material supplied:

- i) After receipt of approval of pre- commencement sample meters with seals, the successful bidder shall offer first lot of meters comprising minimum 5,000 Nos. of meters (or 20% of ordered quantity, whichever is less) within 30 days. After clearance from purchaser, the material shall be dispatched to Nigam's stores.
- ii) After receipt of first lot of meters, samples shall be selected for all the Type Tests, additional type tests and Tamper Tests as incorporated in the technical specification from CPRI (Bhopal/ Bangalore)/ ERDA only.
- iii) Three samples for conducting tests as above shall be selected & sealed by a Committee consisting of XEn(O&M) to be nominated by the circle SE, XEN(M&P) to be nominated by the concern SE(M&P) and ACOS from the first lot received in the stores. The samples so selected shall be sealed by at least 3-4 seals/ stickers by the Committee Members. The selected samples shall be sent to SE (MM&C) along with complete details of meters & seals (including manufacturer's seals) provided by the Committee members. The SE (MM&C) shall further send the meters with complete details for type tests, additional type tests and tamper tests, as per specification at CPRI (Bhopal/Bangalore)/ ERDA only. The complete type test report under a cover of registered letter shall be sent directly to the purchaser.
- iv) In addition to above three sample of meter and samples of 6 Kg. raw material of each of meter case, meter box and terminal block shall be drawn by the inspecting officers during the 1st inspection & sealed by the aforesaid procedure which shall be sent to CIPET/ any NABL accredited test house for

verification of properties of plastic material of meter case (base & cover) & Terminal Block as mentioned at clause 3.5.1 & 3.5.2 of specification.

- v) The type test charges shall be borne by the supplier. The purchaser however in first instance may pay testing charges to the testing agency which shall be recovered by Sr. AO(CPC/ Cash) from the bill of the supplier alternatively a sum of Rs. 3 Lac may be got deposited by the supplier with first inspection call.
- vi) The supplies, at the option of purchaser, may be utilized in the field after successful testing of sample meters in respect of the tests as mentioned at clause 3.15 (e) (ix) below, at purchaser's MT lab. The supplier can continue supplying material in anticipation of successful type test(s) results. 70% of the payment shall be released after receipt of successful purchaser's MT lab tests report and balance payment shall be released after receipt of successful type test reports.
- vii) In case of successful type test results, supplies shall be continued. However, in case the meter(s) do not meet the requirement as per ISS/CBIP/ Specification in type test(s), three more samples shall be selected from the supplies already received to get them type tested as per clause 3.15 (e) (ii) above at supplier's cost. In case of repeat failure in type test(s), the order of balance quantity including the quantity lying unused in the stores/ field shall be cancelled. The guarantee period of quantity already supplied & used shall be doubled and payment for used meters shall be arranged after deducting 10% cost.
- viii) However, purchaser may allow the supplier to re-offer the material after change/ modification in the design of meters. The balance material shall be accepted only after successful type testing. The type testing charges shall be borne by the supplier.
- ix) Besides above type tests, samples from each lot/ sub-lot shall be selected and subjected to the following test(s) at purchaser's lab on an automatic test bench of ERSS 0.02 class. The samples shall be as per sampling plan indicated at Annexure-E of IS: 14697/1999 (considering lot of 10,000 Nos. meters) if quantity offered for inspection is 20,000 Nos. or more, if less than this, the lot shall remain 5,000 Nos.) on pro-rata basis. The samples shall be selected by the committee consisting of XEN (MM-IV) and T.A. To Chief Engineer (MM) with the Computer PSUEDO –RANDOM method & be intimated to the concerning ACOS. The samples so selected shall be sealed by seals/ stickers by the ACOS and put in the primary packing of the meter (which shall be sealed by sticker seals) and then all the meters selected to be put in the primary packing corrugated box supplied with the meters and again sealed by sticker seals by the committee members. The selected samples shall be sent to SE (M&P), Jodhpur along with complete details of meters & seals. The supplies shall be utilized in the field only after successful testing (in respect of under mentioned tests) of sample meters:-

S. No	Particulars of Tests	No. of samples to be tested
1.	Starting Current Test and No Load Test.	32 Nos.
2	A.C. High Voltage Test, Limits of error, test of meter constant & Power consumption test for voltage and current circuits.	8 Nos. out of above 32 Nos.
3.	Repeatability of error.	3 Nos. out of above 8 Nos.
4.	Voltage Variation, Tamper & fraud protection, D.C. Component in A.C. Circuit for each phase circuits), Magnetic Immunity Test (Permanent magnet test of 0.27 Tesla), Accuracy test after application of 450 Volts for 5 minutes, D.C. Injection at neutral using diode, Saturation test and high voltage / high frequency generating spark etc. test of specification, Cover open tamper.	3 Nos. out of above 8 Nos. subjected to the condition that all the 8 meters pass the tests at S.No. 2 above successfully otherwise whole lot shall be considered rejected without going for further testing.

The acceptability criteria of the lot or otherwise shall be generally as per relevant ISS: 14697:1999 (latest amended) for only the tests at at Sr. No. 1, 2 & 3 above.

- x) In case of failure of samples of lot/ sub-lot in the test(s) detailed at clause No. (vi) above, the similar testing shall be repeated on fresh samples selected by the committee & fresh testing as mentioned at 1 to 4 above shall be carried out. If the samples meet the requirement of above tests, the lot shall be accepted and if it fails consecutive second time, the entire quantity of respective lot/sub-lot shall be rejected and shall have to be replaced by the supplier at his own cost. Repeated failure/ poor results in the testing may render cancellation of order.
- xi) Due notice shall be given to supplier for testing thereof to enable them to be present for the same if so desired by them. If the supplier or his authorized representative fails to attend the sample testing, the same shall be carried out unilaterally by the purchaser and the results thereof shall be binding upon the supplier.
- xii) The purchaser also reserves the right to get additional samples for all or any of the selected tests at purchaser's cost at any independent test house at any stage of supply if so considered necessary to ensure that the quality of meters being offered for inspection is same as already got type tested. In case of failure, the guarantee period of the quantity already supplied by the supplier shall be doubled and purchaser reserves the right to cancel the balance quantity.

3.16- INSPECTION AND TESTING:

A- Pre dispatch inspection shall be carried out as per clause 1.27 of General Conditions of Contracts (GCC).

B- All Acceptance tests as laid down in the ISS/IEC and this tender specification shall be carried out.

C- Following tests shall also be carried out as Acceptance tests by adopting methods specified in ISS: 14697/IS: 9000/as per relevant IEC standard/ CBIP 325 (latest amended). The inspecting officer shall verify that no DC supply/ signal is given to reference meter during the DC injection test.

i- AC voltage test

ii- Test of meter constant

iii- Tests of limits of error as per cl. 11.1 of IS 14697 including at I_b , 200% I_b at pf 0.5 lag, 0.8 lag & unity.

iv- Vibration test

v- Shock test

vi- Vibration & shock test shall be carried out as acceptance test by adopting procedure laid down in IS: 9000 and its latest amendments.

vii- Voltage variation test as per specifications.

viii- Test of no load condition at 70% and 120 % of rated voltage. The minimum test period for this test shall be as per Clause 8.3.2 of IEC: 62053 – 21-2003.

ix- Diode test

x- Verification of all anti tampers conditions, as per clause 3.11.1 of this specification.

xi- The accuracy of display parameters shall be verified at the time of inspection in line with class of accuracy of meter.

xii- Number of samples for test from each lot shall be selected as per provision of IS. The criteria for selection of No. of samples and for acceptance of lot will be as under.

S. No.	Particular of tests	Sampling plan for the lot of 1001 and above	Criteria for acceptance of lot
1.	HV. A.C. test & I.R. test. No load test and minimum starting current test	32 nos.	As per clause E-3.1 of ISS
2.	All other acceptance tests including meter constant test as per IS & GTP except repeatability of error test, vibration test and shock test in sequence to be mutually agreed between manufacturer and inspecting officer.	8 nos out of above 32 samples passing tests at s. no. 1.	As per clause E-3.2 of ISS Annex.C

3.	Repeatability of error test, vibration test and shock test, in sequence.	3 Nos. out of above 8 samples passing tests at s. no. 2	Each sample should pass all three tests.
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The sampling plan shall be as per IS: 14697-1999 except the maximum lot size may be read as 10,000 Nos. meters only for minimum offered quantity of 20,000 Nos. for Inspection otherwise the maximum lot size shall remain 5,000 Nos. meters. The sub-lot size shall be taken accordingly i.e. either 5,000 Nos. or 10,000 Nos. as applicable. The offered lot of meters shall be divided into sub lots each of maximum 5,000 Nos. meters. 32 Samples shall be selected at random from the each sub lot of maximum 5,000 Nos. meters and acceptance test as per relevant standards and additional acceptance test as per technical specification shall be carried out on these samples.

3.17- PACKING AND FORWARDING OF ENERGY METERS:

Each meter shall be packed in superior quality three-ply corrugated cardboard carton or thermocol packing box. Such single cartons shall be additionally packed in five (5) ply corrugated cardboard carton accommodating 12-24 meters for easy transportation, storage & handling.

3.18- SAMPLES:

(a) Samples along with bid – The bidder shall furnish **Eight meters** conforming to this specification duly sealed along with routine test certificates in the office of SE (MM&C), JdVVNL, Jodhpur one day prior to the date of opening of Tender. If the samples are not received, the bid shall be considered as Non-responsive.

Out of the above eight sample meters, six sample meters (one set of 3 samples for Electrical testing and another set of 3 samples for Environmental & Mechanical tests) and one sample shall be tested as per IS 15959 for one port (**optical port**) at CPRI, Bhopal/ Bangalore or ERDA, Vadodara in the presence of firm's representative. The testing charges shall be borne by the bidder. The tentative testing charges **Rs. 6.5 lac** shall be deposited by the bidder in the form of Demand Draft in favour of the Sr. Accounts Officer (Cash & CPC), Jodhpur Discom, Jodhpur.

In case sample meters submitted by the bidder with bid don't conform the Type tests, Addl. Type Tests and Tamper tests of specification/ IS, the financial bid of that bidder shall not be opened.

(b) One sample meter shall be checked / tested for mechanical/ physical features in Nigam's Lab. Sample meter shall be broken to verify components of the meter.

Note: - The bidders are required to furnish one no. CMRI and LPR Module along with communication cables so that the bid stage samples may be got checked/ verified.

(c) Bid stage samples shall be accepted in the office of SE (MM&C), JDVVNL, Jodhpur, by the committee of following officers.

- i. XEN (CTL), JDVVNL, Jodhpur.
- ii. XEN-TA to CE (MM), JDVVNL, Jodhpur.

- iii. XEN (MM-IV), JDVVNL, Jodhpur
- iv. AEN-VII (MM Division), JDVVNL, Jodhpur.
- v. AEN (MT), JdVVNL, Jodhpur

The officers/committee which is authorised to accept the bid samples shall physically examine & match the details of sample items i.e. it's make, SL. No., Seal no. etc. with the letter having the detail of the sample submitted by the bidder. RTC check shall also be performed on all sample meters while physically examining & accepting the bid stage samples. The received samples shall not be checked by powering up with AC supply.

After physically examining the details, the sample accepting officers/ committee & bidders representative shall put their signatures with permanent marker or provide sticker seals on the samples. There after samples of meter shall be packed by the committee, in the same carton boxes in which these were received from the bidder. The committee members & bidders representative will again put their signature/sticker seal on the sample carton box at various positions. This sample acceptance and sealing procedure shall be done one day before the bid opening date.

The committee shall prepare a sample sealing statement and hand over the sealed samples to AEN in-charge of sample room, for safe custody in the sample room.

There shall be a separate sample room with proper lock and key arrangement in the office of SE (MM&C) for safe custody of samples. It can only be opened by opening of two locks simultaneously, key of one lock will remain in the custody of XEN (MM-IV) and key of other lock will remain in the custody of AEN in-charge of sample room.

In-charge of the sample room shall maintain a register and shall enter the detail of sample item, TN, Sl. No., Seal etc. in the register. When the independent test agency is decided, the in-charge of the sample room shall hand over the samples to the same committee which has accepted & sealed the samples for packing in big cartons for safe transportation. The committee shall get the samples packed in its presence and then hand over these packed samples to the courier agency for transporting these samples to the independent Test House.

Whenever, the sample room will be opened, the reason of opening with date and time of opening and closing and signature of persons in presence of room was opened will be recorded in register also. In case of delay in sending the packed samples by courier agency, the packed cartons will again be stored in the sample room.

At the independent test house the samples shall be opened in presence of Nigam's representative. After verification, the test house shall accept the sample for type test etc. and issue acknowledgment of receipt to the Nigam's representative.

(d) Additional type tests and Tamper Tests to be conducted on bid stage samples are as under:

- i) The test of influence of supply voltage shall be carried out as per IS:14697, except the interruption time should be variable from 10 ms. to 5 sec. instead of fixed time
- ii) Test of voltage variation as per this specification
- iii) Compliance of anti-tamper features as per tender specification as per Clause 3.11.1 above.

- iv) The meter shall withstand impulse voltage test at the rated impulse voltage of 6 KV (for meters of protective class-II) as per clause 7.3.2 of IEC 62052-11:2003.

(e) Sample before Commencement of supplies:

The supplier shall furnish duly sealed three sample meters along with CMRI having all the features conforming to specification within one month from the date of receipt of PO, for Electrical testing, verification of physical features and communication capability of meters in Nigam's lab. Sample meter shall be broken to verify components of the meter. In case of major deviation in Electrical testing, physical features and communication capability, the supplier be allowed to furnish second set of sample. In case of failure of second set of sample order may be cancelled.

The delay in submission of before commencement samples beyond one month from the date of receipt of PO will be supplier's account.

Before commencement, samples will be deposited by the supplier directly in the office of the concerning Superintending Engineer (MM&C) of Discom.

Note: - A committee comprising of M&P wing and IT wing will examine the Communication capability of sample meter and CMRI with different make of meters supplied in the Discom as per requirement of the technical specification at the time of approval of pre commencement sample.

- f) The samples furnished by bidders at various stages of tender and the samples selected for store testing shall be tested on automatic testing bench, which has accuracy of 0.02.

3.19- REPLACEMENT OF DEFECTIVE METERS:

The meters declared defective by the consignees and /or by meter testing lab shall be replaced by the supplier up to the full satisfaction of the purchaser at the cost of supplier as per relevant clause of GCC within one month of intimation by purchaser/stores officer.

3.20- MAINTENANCE & GUARANTEE:

(a) It shall be governed by clause 1.40 of GCC except that the guarantee shall be for a period of 5 years (**for meter as well as CMRI**) from the date of dispatch. The meter/ CMRI found defective within the guarantee period shall be replaced by the supplier free of cost within 30 days from the date of receipt of information. If defective meter/ CMRI is not replaced within the specified period as above, the cost of GP failed meters shall be deducted from firm's financial hold and Performance security shall be operated to recover the cost. The meter will be declared defective within guarantee period after testing in the meter testing lab.

(b) If the performance period of the supplied material is over and some quantity of guarantee period defective meters are still lying pending for want of replacement than fresh Bank Guarantee equal to the cost of these guarantee period defective meters may be accepted by Nigam and original Performance security shall be released.

3.21- QUALITY ASSURANCE PLAN:

The design life of the meter shall be minimum 20 years and to prove the design life, the firm shall have at least the following quality Assurance Plan:-

- 1- The factory shall be completely dust proof.
- 2- The testing rooms shall be temperature and humidity controlled as per relevant standards.
- 3- The testing and calibrating equipments should be automatic and all test equipment shall have their valid calibration certificates.
- 4- Power supplies used in testing equipment shall be distortion free with sinusoidal wave-forms and maintaining constant voltage current and frequency as per the relevant standards.
- 5- During the manufacturing of the meters the following checks shall be carried out.
 - i - Meter frame dimensions tolerance shall be minimum.
 - ii- The assembly of parts shall be done with the help of jigs and fixtures so that human errors are eliminated.
 - iii- The meters shall be batch tested on automatic, computerized test bench and the results shall be printed directly without any human errors.
- 6- The bidder shall invariably furnish the following information along with his bid, failing which his bid shall be liable for rejection. The information shall be separately given for individual type of material offered.
 - a) Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards according to which the raw materials are tested, list of tests normally carried out on raw material in presence of bidder's representative and copies of test certificates.
 - b) Information and copies of test certificates as in (i) above in respect of bought out accessories.
 - c) List of manufacturing facilities available.
 - d) Level of automation achieved and list of areas where manual processing exists.
 - e) List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections.
 - f) List of testing equipment available with the bidder for final testing of equipment specified and test-plant limitations, if any, vis-a-vis the type, special acceptance and routine tests specified in the relevant standards and this specification. These limitations shall be very clearly brought out in schedule of deviations provided with the tender.

3.22 ACCURACY OF METERS:

The supplier shall furnish written undertaking on Rs. 100.00 Non Judicial Rajasthan Govt. Stamp paper that there will be no drift in the accuracy of the meters supplied against this purchase order for a period of 10 years (life time) from the date of supply. In case any drift is noticed/ found beyond permissible limits during this period, they shall recalibrate such a meter for correct accuracy, and in the event recalibration is not possible, replace such meter(s) with new meter(s) without any extra cost.

3.23 PRICES:

Tenderer must quote 'FIRM' prices. The quoted prices shall be FOR price separately indicating Ex-works, F&I and GST.

3.24 DELIVERY SCHEDULE:

Commencement period 30 days from the date of receipt of purchase order and completion within 7 months at equal monthly rate from the date of approval of pre-commencement sample. Firm is required to furnish pre commencement sample within 15 days of receipt of purchase order. The delay in furnishing of pre commencement sample beyond 15 days shall be on the part of the supplier and such delayed period shall be reduced from the stipulated delivery schedule. It will be ensured by Nigam to convey approval of pre-commencement sample within 15 days of receipt of sample.

3.25 GENERAL INFORMATION

- a) Frequent changes in specifications during currency of contract will be avoided and if required the same shall be effected on mutually agreed basis.
- b) Nigam is not averse to deciding tenders on differential prices to get better quality meters.

3.26 ADDITIONAL ORDER Repeat orders for additional quantities, up to a maximum of 50% of original ordered quantities, may be placed by the Nigam, on the same rates, terms and conditions given in the contract.

3.27 As GST act has been effected from 01.07.2017, therefore, BOQ has been prepared accordingly with applicability of GST. Further, old tax structure wherever appearing in ITB/GCC/Specification may be replaced by GST as per notification. Further, GST registration number of Jodhpur Discom is 08AAACJ8578R1ZJ.

3.28 Every Micro, Small & Medium enterprises of Rajasthan shall be required to submit an affidavit in schedule-XI, along with duly filled bid document.

Appendix-II**Tamper Logics****Persistence time: 5 Min.****Restoration Time: 1 Min. (60 Sec.)**

Tamper Events	Occurrence	Restoration
1. Missing Potential		
a. Voltage	< 20% Vb	> 40% Vb
b. Current	> 10% Ib	Ignored.
2. CT Polarity Reversal		
a. Line Current in tampered phase	> 5% Ib (in reverse direction)	> 10% Ib (in forward direction)
b. Power Factor.	>0.1	>0.1
3. CT Open		
a. Line current in tampered phase	< 2% Ib	> 5% Ib.
b. Line current in other phases	> 10% Ib	> 5% Ib.
c. Load current in tampered phase	> 10% Ib	Ignore
4. CT Bypass		
a. By Pass Current	> 20% Ib	< 10% Ib (current in tampered phase)
5. Current unbalance		
a. Maximum current – Minimum current	> 30% Ib	< 10% Ib
6. Neutral Disturbance		
a. DC current injected on neutral from load side by mean of electronic circuit using diodes after removal/disconnection of neutral.	If meter detect voltage greater than 1.25 times of Vref.	removal of DC injection
7. Interference of Magnetic field		
a. Presence of Magnetic field	Magnetic field which affects accurate Meter recording.	Removal of magnetic field.

SCHEDULE-I**SCHEDULE OF REQUIREMENT**

S.N	Description of equipment	Quantity	Remarks
1	Three Phase Static LT CT meter of -/5 amp/ specified meter CT ratio having DLMS protocol with polycarbonate meter case and backlit LCD display of accuracy class 0.5s	50992 Nos.	Quantity for each option i.e., CTR 100/5, 200/5 may be finalized as per requirement and decision of competent authorities at the time of finalization of tender.

NOTE: The quantities mentioned above are tentative & may be increased or decreased as per requirement.

SCHEDULE- II

PURCHASE OF THREE PHASE STATIC LT CT METERS OF CLASS 0.5s AND RATING -/5A HAVING DLMS PROTOCOL WITH POLYCARBONATE METER CASE AND BACKLIT LCD DISPLAY AGAINST TN-1507

PRICE ARE `FIRM`

SCHEDULE – III**JODHPUR VIDYUT VITRAN NIGAM LIMITED**

**A Govt. of Rajasthan Undertaking
Prescribed technical specification for supply of**

(Name of Material/Equipment/Machinery/T&P etc.)

S.No.	Technical specification particulars to which material/equipment/ Machinery/T&P shall confirm	Name of IS/other standard specification to which material should confirm	Other if any.
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Certified that we agree to all the aforesaid technical specification except at S.No..... for which our technical specification shall be as under:-

S.No.	Technical specification to which material/equipment/ Machinery/T&P shall confirm	Name of IS/other standard specification to which material should confirm	Other particulars if any.
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(Signature)
Name & Designation
with seal of the bidder.

SCHEDULE – III (A)

**PRE-QUALIFICATION REQUIREMENT****THREE PHASE STATIC LT CT METER OF -/5 AMP/ SPECIFIED METER CT RATIO HAVING DLMS PROTOCOL WITH POLYCARBONATE METER CASE AND BACKLIT LCD DISPLAY AND ACCURACY CLASS 0.5s**

- The bidder should fulfill following qualifying requirements for successful participation in the tender along with relevant documentary evidence supporting each qualifying requirement without which the offer shall be considered non-responsive & rejected.
- I) The bidder should be a Manufacturer of offered items. The offers from Sole Distributor / Sole Selling Agent / Authorized Dealer shall not be entertained.
- II) (a). The bidder shall have BIS Certification for offered item as on date of bid opening **and copy of which must be submitted along with the bid, failing which offer of the bidder shall be treated as non-responsive.**
- (b). Bidder must possess valid ISO 9001 latest amended (certification for meter manufacturing), ISO 27001 latest amended (certification for information security management system) & ISO 14001 latest amended (certification for environmental management system) and copy of which must be submitted along with the bid, failing which offer of the bidder shall be treated as non-responsive.
- (c). The bidder should have NABL accreditation for testing of meters for acceptance test as prescribed in IS: 14697-1999 (with latest amendments). Documentary evidence of NABL accreditation **and scope of accreditation for acceptance test is required to be submitted along with the bid.** Offers of the bidders not having the same shall be treated as Non-responsive
- III) The bidder is required to quote for minimum 20% of the tendered quantity failing which offer of the bidder shall be treated as Non-Responsive.
- IV) The bidder should have designed, manufactured / fabricated, tested and supplied to utility / Discoms / Govt. Departments at least 2XQQ (QQ being the quoted quantity) of **tender item/ LT TVM of class 0.5s or better** in last three financial years from the date of opening of techno-commercial bid. In support of fulfillment of the past supply criteria, the bidder shall furnish documentary evidence in the form of certificate from Chartered Accountant in the following manner:-

1. The CA certificate should be furnished by the firm duly notarized by the notary public along with the signature & seal of CA.
2. The CA certificate should be furnished on the letter head of CA and information should be in prescribed format of QR.
3. The CA certificate should have the membership no. with name & address of the CA.
4. The CA certificate clearly indicate the quantity supplied, type of material supplied, voltage, current and accuracy class etc. of the material year wise.
5. The CA certificate should be signed by concerning firm/supplier along with seal. Any deviation to format or information diverted format, will not be considered and rejected.

Note:-The material supplied and accepted for same or better rating for Turnkey projects to a licensed power utility/Govt. shall be considered for the purpose of evaluation criteria. The certificate given by C.A. shall indicate above quantity **separately**.

- V) The bidders shall be required to furnish valid type test reports in respect of LT CT meter with optical port as per requirement of IS 14697/ relevant IEC standard (latest amendment) and under mentioned additional type tests shall also be furnished along with the tender. The Type test certificate from any one of the standard laboratories such as NPL/ERTL/ CPRI /ERDA (NABL accredited for particular equipoment /test) shall only be considered which should not be older than **three years** as on the date of opening of techno-commercial bid. For this purpose date of conducting type test will be considered.

The type test certificates shall be furnished either in original or copy duly attested by notary.

The bids of only those bidders shall be considered to be meeting the type test criteria who furnishes complete type test certificates along with the bid as per above provision.

- VI) (a) Samples along with bid – The bidder shall furnish **Eight meters** conforming to this specification duly sealed along with routine test certificates in the office of SE (MM&C), JdVVNL, Jodhpur one day prior to the date of opening of Tender. If the samples are not received, the bid shall be considered as Non-responsive.

Out of the above eight sample meters, six sample meters (one set of 3 samples for Electrical testing and another set of 3 samples for Environmental & Mechanical tests) and one sample shall be tested as per IS 15959 for one port (**optical port**) at CPRI, Bhopal/ Bangalore or ERDA, Vadodara in the presence of firm's representative. The testing charges shall be borne by the bidder. The tentative testing charges **Rs. 6.5 lac** shall be deposited by the bidder in the form of Demand Draft in favour of the Account Officer (CASH&CPC), Jodhpur Discom, Jodhpur.

In case sample meters submitted with bid don't conform the Type tests, Addl. Type Tests and Tamper tests of specification/ IS, the financial bid shall not be opened.

- (b) One sample meter shall be checked / tested for mechanical/ physical features in Nigam's Lab. Sample meter shall be broken to verify components of the meter.

Note: - The bidders are required to furnish one no. CMRI and LPR Module along with communication cables so that the bid stage samples may be got checked/ verified.

- VII)** The bidder shall furnish BG/DD/Pay Order for Rs.5.0 Lac and undertaking that in case an order is awarded, the samples before commencement of supply shall be furnished conforming fully to the requirement of this specification. In case the bidder fails to furnish sample conforming to our specification before commencement of supplies their Bank Guarantee/ DD/ Pay Order will be invoked / forfeited (Proforma for submitting undertaking a Bank Guarantee is enclosed at Schedule-IIIB). The initial validity of B.G. shall be nine months.

VIII) PERFORMANCE CRITERIA:-

- i) If a bidder has supplied up to 50% of ordered quantity in previous tender up to date of opening of subsequent tender and scheduled delivery period expired, the bid of such bidder will not be opened in the Discom for that item.
- ii) However, if the supplies have been completed for a quantity more than 50% but not completed up to date of opening of subsequent tender and scheduled delivery period expired, the quantity equal to the quantity pending in previous tender for that item shall be reduced from the subsequent tender quantity to be allocated to the bidder.

IX) POOR RECORD OF PERFORMANCE & DELIVERY:-

The bidder who has been black listed or with whom business relations have been severed or debarred in any of the Rajasthan state Discoms only, shall not be considered.

- X)** The bidder shall clearly indicate the deviations such as Technical Deviations & Commercial Deviations in the prescribed proforma only. The deviations indicated elsewhere in the bid shall not be accepted.
- XI)** The bidder must clearly fill up each and every particular of Guaranteed Technical Particulars annexed with Technical Specification otherwise he will be responsible for Technical Non-Responsiveness.
- XII)** The bidder shall possess fully / semi-automatic computerized meter testing system with printer and static source and duly calibrated Electronic Reference Standard (ERS) meter of Class 0.1 Accuracy or better.

- XIII)** Requirement of quantity manufactured, minimum quantity to be quoted and amount of Bank Guarantee to be furnished shall be reduced to 25% for Rajasthan based units.
- XIV)** DELIVERY SCHEDULE: - Commencement period 30 days from the date of receipt of purchase order and completion within 7 months at equal monthly rate from the date of approval of pre-commencement sample. Firm is required to furnish pre commencement sample within 15 days of receipt of purchase order. The delay in furnishing of pre commencement sample beyond 15 days shall be on the part of the supplier and such delayed period shall be reduced from the stipulated delivery schedule. It will be ensured by Nigam to convey approval of pre-commencement sample within 15 days of receipt of sample.

SCHEDULE – III (B)

BANK GUARANTEE IN LIEU OF FURNISHING OF SAMPLE

(NOT AS PER SPECIFICATION)

**(On Rajasthan Non-Judicial Stamp Paper worth 0.25% of BG Value or
maximum upto Rs. 25,000/-)**

To,

The Superintending Engineer (MM&C),
Jodhpur Vidyut Vitran Nigam Limited,
New Power House,
Jodhpur.

Dear Sir,

Whereas Jodhpur Vidyut Vitran Nigam Limited, Jodhpur (hereinafter called the Purchaser) has issued a tender enquiry under TN_____ for procurement of _____(name of material).

Whereas M/s. _____(hereinafter called the bidder) has furnished a bid for supply of _____ to the Superintending Engineer (MM&C), Jodhpur Vidyut Vitran Nigam Limited, Jodhpur or his nominated officer(s).

Whereas in accordance with the provision of the specification of the aforesaid TN_____, the bidder can deposit a bank guarantee in lieu of the requirement of furnishing the sample as per specification.

Whereas M/s._____ (the bidder) have requested us (Name of the Bank) to furnish the bank guarantee, in lieu of the sample, for an amount equivalent to Rs._____(in words also) only.

Under this Bank Guarantee, we (Name of the Bank) hereby undertake unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to the purchaser on his first demand without whatsoever right to objection on our part and without his first claim to the bidder, in the amount not exceeding (amount of guarantee in figures and words).

Payment pursuant to this undertaking will be demanded by the Purchaser from the Bank and will be met by the Bank without question in the case in which the bidder, on receipt of the order and /or after the acceptance of this tender, makes default in furnishing the required sample. As to whether the occasion or ground has arisen for such demand the decision of the Superintending Engineer(MM&C), Jodhpur Vidyut Vitran Nigam Limited shall be final.

The liability of the Bank shall not at any time exceed Rs._____
(Rupees _____).

The undertaking will be determined on but will not withstanding such determination, continue to be in force till the expiry of 9 months from that date.

No indulgence or grant of time by the purchaser to the bidder without acknowledgement of the Bank will discharge the liabilities of the Bank under this guarantee.

The guarantee herein contained shall not be affected by any change in the constitution of the bidder.

All disputes arising under the said guarantee between the Bank and the bidder or between the bidder and the purchaser pertaining to the guarantee shall be subject to the jurisdiction of Courts only at JODHPUR in Rajasthan.

The Bank further undertake not to revoke this guarantee during its currency except with the previous consent of the Superintending Engineer (MM&C), Jodhpur Vidyut Vitran Nigam Limited, Jodhpur.

Notwithstanding anything contained herein before, the Bank's liability under this guarantee i.e. restricted to Rs. _____ (Rupees _____) and the guarantee shall remain in force upto _____. Unless demand or claim in writing is presented on the Bank within nine months from that date, the Bank shall be released and discharged from all liabilities there-under. However, the validity of the bank guarantee shall be extended as and when required by the purchaser.

IN WITNESS WHEREOF the Bank has executed these presents the day _____ month _____ and year _____ .

faithfully,

Yours

(Bankers)
EXECUTANT

Witnesses;

1.

2.

SCHEDULE-IV `A`**Must be filled-in by the tenderer and attach with technical bid (Part-I)**

To,
The Superintending Engineer (MM&C),
Jodhpur Vidyut Vitran Nigam Limited,
Jodhpur.

Dear Sir,

With reference to your tender invitation against Specification No.JDVVNL/SE (MM&C)/ EIVA VII/TN-1507, we agree to supply following quantity.

S.No	Particulars of item	Tendered Qty.	Qty. Offered
1	Three phase 4 wires static LT CT Meter of accuracy class 0.5s having DLMS Protocol with polycarbonate meter case and backlit LCD Display.	50992 Nos.	

1. The offer is valid for a period of 120 days from the date of opening of this tender.
2. The prices are FIRM.
3. It is noted that the quantities as mentioned in the specifications are approximate and we agree to supply any quantity as per your requirement.
4. The delivery shall strictly be in accordance with our delivery clause as given in schedule-VIII of this specification. In case we fail to deliver the material as indicated in clause 1.23, we shall pay penalty as per clause 1.24 of GCC (Section-II of this specification) enclosed with this specification.
5. The material shall confirm to your specification No. JDVVNL/SE (MM&C)/ EIVA IV/TN-1507 and as per relevant standard/ISS in all respect.
6. We confirm that we agree to all the terms and conditions as well as the technical stipulations of your specification No. JDVVNL/SE (MM&C)/ EIVA IV/TN-1507 and there are no deviations other than as specified in the Schedule-VI (A&B).

Dated :

Signature of Tenderer & Seal

SCHEDULE-V



JODHPUR VIDYUT VITRAN NIGAM LIMITED

A Govt. of Rajasthan Undertaking

Statement of guaranteed technical particulars and other performance data for supply of
 (Name of material) against specification
 no.....

S.No.	Particulars of technical & other performance data guaranteed.
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Certified that we agree to all the aforesaid technical particulars and other performance data except following:-

S.No.	Particulars of technical & other Performance data	Reasons for deviations/departure.
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(Signature)
 Name & Designation
 with seal of the bidder.

SCHEDULE-V(A)**GUARANTEED TECHNICAL PARTICULARS OF THREE PHASE STATIC ENERGY METERS OF CLASS 0.5s HAVING DLMS PROTOCOL WITH POLYCARBONATE METER CASE AND LCD BACK-LIT DISPLAY OF RATING -/5A UNDER TN-1507.**

SN	Particulars	To be furnished by Bidder
1a	Name & Address of Manufacturer	
b.	Work's Address	
c.	GST No.	
2	Type / Designation of meter offered	
3	Class of Accuracy	0.5s
4	Applicable Standards	
5	Type of Meter (no. of phases & wire / elements)	
6	Rating and General Particulars	
	i) Reference Voltage	
	ii) Basic current (I_b)	
	iii) Maximum current (I_{max})	
	iv) Maximum withstand current (i.e.150% of I_{max})	
	v) Does meter withstand 450 V for 5 minutes	
	vi) Power supply variation (-40% to +20% V_{ref})	
7	Whether meter is suitable for working with following supply system variation range	
	i) Specified operating range	
	ii) Limit range of operation	
	iii) Frequency	
	iv) Power factor range	
	v) Ambient temperature range	
8	Insulation resistance between:	
	a) Meter current circuit and voltage circuit	
	b) Current and voltage circuit coupled and all non-current carrying parts connected together	
9	Min. starting current/ phase (in Amps)	
10	Details of meter fixing arrangements:	
	Is the meter fixing arrangement with the base of meter box, is as per the provision of this specification?	
11	A) Detail of sealing arrangement:	
	i) No. of integral push fit seals provided on meter body.	
	ii) The name/ logo of manufacturer and purchaser is printed on the seals?	
	iii) The Sr No on the seals is same as meter Sr No?	
	iv) Is the Sr No. on seals is laser hatched?	

SN	Particulars	To be furnished by Bidder
	B) Whether base and cover are ultrasonically welded and have min 2 internal locks to prevent lifting of cover from base even before ultrasonic welding?	
	C) Whether seals are visible from front side of meter?	
12	Details of meter base and cover	
	a) Degree of protection of meter case? Whether Type Test Certificate enclosed?	
	b) Thickness and material of Meter base and cover.	
13	Details of terminals block and its cover	
	a) Whether Material of terminal block used, conforms to relevant clause of this specification?	
	b) Thickness and material of Terminal cover	
	c) Minimum center to center distance between adjacent terminals	
	d) Details of screws provided on each terminal for fixing aluminum stranded wires (no. & dimensions)	
	e) Minimum internal diameter of terminal holes? Is it suitable & adequately designed for inserting 2.5 mm ² for potential terminals and 4.0 mm ² stranded copper or aluminum armoured cable and shall be capable of carrying current up to 100% of I _{max} ?	
	f) Whether terminal cover is of extended type. Please give extended length of terminal cover below terminal block.	
	g) Whether terminal cover is snap fit type, as per specification and not possible to open after installation without breaking/ leaving visible evidence?	
14	Whether window portion is as per specification?	
15	Details of CT's / Shunts provided	
	a) CT(s)/ Shunt(s) provided in phase(s)	
	b) Size of secondary wire of CT / Size of Shunt(s) used	
	c) No. of turns of secondary winding of CT	
	d) Whether CTs and Shunts have been properly fixed on base/PCB/ current terminals?	
16	Whether components on the PCB are surface mounted except power components?	
17	Whether PCB material is glass epoxy FR-4 grade?	
18	Whether all parts those are likely to develop corrosion effectively protected against corrosion?	

SN	Particulars	To be furnished by Bidder
19	<p>Name the name plate provided on meter bears the following information in addition to marking required as per specification:</p> <p>i) Manufacturer's name or trade mark</p> <p>ii) Designation of type</p> <p>iii) Number of phases and wires for which the meter is suitable</p> <p>iv) Serial Number</p> <p>v) Month and year of manufacture</p> <p>vi) Reference voltage, frequency.</p> <p>vii) Principal unit(s) of measurement</p> <p>viii) Basic current and rated maximum current in Amps</p> <p>ix) Meter constant (Imp/kWh)</p> <p>x) Accuracy class</p> <p>xi) Property of JdVVNL</p> <p>xii) Purchase Order Number and Date</p> <p>xiii) Guarantee period</p> <p>xiv) The sign of insulation</p> <p>xv) Bar coding of Sr. No., month & year of manufacture</p> <p>xvi) Ultrasonic welded.</p>	
20	Power consumption of voltage circuit per phase (watt & VA)	
21	Power consumption of current circuit per phase (VA)	
22	Overall dimension of the meter with \pm % tolerance	
23	Weight of the meter with \pm % tolerance	
24	Does meter has Short time over current withstand capability of 20 I _{max} for one half cycle at reference frequency?	
25	Does the meter comply with Impulse voltage withstand capacity of 6 KV as per IEC?	
26	<p>Does the meter have any type of mechanical adjustment (trim-pots, potentiometer etc) for calibration?</p> <p>Are the meters software calibrated? (Yes/No)</p>	
27	<p>Display sequence</p> <p>A) Whether following billing parameters are available in continuous display mode? If yes, please also describe of method of auto display</p>	

SN	Particulars	To be furnished by Bidder
	a) Active energy import (kWh forwarded) reading of predefined date and time for billing purpose (BP kWh)? b) Maximum demand (KW) of predefined date and time for billing purpose (BP kW) of last consumption month? c) Current Cumulative Active energy import (kWh forwarded) reading? d) Instantaneous demand (KW) Display. e) Connection check & O.K. (Including phase association if anything wrong it must indicate "Not O.K.")	
B)	Following parameters shall be available in meter memory and shall be downloadable through CMRI and available at BCS end for accessing through pushbutton.	
	a) LCD segment check b) Real time (IN METER MEMORY also, & DOWNLOADABLE THRU CMRI) c) Date DD/MM/YY (On instrument CMRI/ Not on meter) d) Meter Sr. No. e) Cumulative Active (forwarded) energy (kWh) f) Instantaneous load(KW) g) Instantaneous power factor / phase h) Instantaneous phase Voltage i) Instantaneous phase current J) Average power factor of last month. k) Cumulative active energy (kWh) for each calendar month for previous 12 months l) Maximum demand KW with 30 minutes integration and maximum of these in a calendar month for previous twelve months. m) Instantaneous load in watts / phase	
	n) Power-ON hours of each calendar month for last twelve months. o) Average power factor for each calendar month for last twelve months. p) Number of tamper event occurrence and all type of tamper details of each calendar month for last twelve months including logging with date & time.	
28	Display details	

SN	Particulars	To be furnished by Bidder
	a) Type of Display, minimum character height & no. of Digits and size. Clearances as specified.	
	b) Is the display having back lit?	
	c) Does display have no decimal digit in continuous display mode and have one decimal digit in suitable mechanism mode?	
	d) Is NVM having min retention time of 12 years provided?	
	e) Accuracy of RTC (minutes/year)?	
	f) Internal Least count of energy recording (Test as per cl 3.5.3(d)?	
	g) Provision to read meter during no power condition is provided?	
	Is the provision is in the form of rechargeable super capacitor backup for continuous display of 48 hours.	
	Is the provision is in the form of rechargeable or primary battery and Is the above provision capable of 50,000 such operations during life time of 15 years of meters?	
29	COMMUNICATION CAPABILITY	
	For Meters with LPR Port as applicable.	
	(a) Whether It is possible to read the meter at a distance of minimum 100 meters in open area without obstructions.	
	(b) Whether CMRI have facility to store at least 200 Nos. of meter data. (Min. 16.5 MB RAM & 8 MB ROM Capacity or more to accommodate complete meter data as per specifications)	

SN	Particulars	To be furnished by Bidder
(c)	<p>Whether the following parameters can be downloaded by CMRI.</p> <ul style="list-style-type: none"> • Meter Sr. No. • Time & Date • Instant Load in KW, Voltage, Current & Power Factor • Current Cumulative forwarded KWh energy • Billing kWh (BP kWh) for the last 12 months. • MD KW with 30 min. integration on real time basis for each phase and cumulative (BP MD) with date and time stamp for the last 12 months. • Average power factor of the last consumption month up to pre-defined date & time for the last 12 months. • Power-ON hours of each calendar month for last 12 months. • Number of tamper event either occurrence or restoration and all type of tamper details of each calendar month for last 12 months along with logging details with date & time of at least 10 numbers each for magnet tampers as per CBIP-325. <p>Any other information if manufacturer proposes to record may indicate in their offer.</p>	
(d)	Whether total downloading time for all stored data for each meter does not exceed more than 5 minutes by CMRI	
(e)	Relevant standard to which the protocol for communication between meter and CMRI shall comply.	
(f)	In case of failure of power supply, it shall be possible to download the continuous display parameters at least twice (reading) through an in-built battery or similar facility.	
(g)	The Supplier shall supply BCS Software (compatible with Windows 98 system or higher) and training free of cost for the use of software at multiple data collection and billing premises of the utility. The CMRI shall have a polling feature to read multiple meters within range without preprogramming the meter serial numbers on CMRI in advance.	

SN	Particulars		To be furnished by Bidder
	(h)	After successful downloading of meters data to CMRI, the calibration LED shall continuously glow for a period of one minute/ any other indication on CMRI for confirmation of successful data transfer. During this period the energy recording should not be affected.	
	(i)	Necessary upgrades shall be possible in CMRI software and shall be supplied free of cost for downloading simultaneously the existing parameters and any parameters added in future specifications of meters. A copy of operation manual for each CMRI shall be supplied.	
30	Whether indications provided for following:		
	a)	RED LED for test output pulse (Imp/kWh)	
	b)	LED/ LCD icon for healthy RYB phases	
	c)	Earth LED blinks in case measurement is through Neutral circuit.	
31	a)	Year since when the design offered is in vogue.	
	b)	Whether the offered design is completely type tested and certified by BIS	
32	a)	Please confirm that meter does not get damaged even if 450V is applied for 5 minutes between phase and neutral and continue to record correctly after restoration of normal supply?	
	b)	Whether meter perform within class 0.5s accuracy up to 200% I_b for power factor range 0.5 lagging, 0.8 leading & unity?	
	c)	Whether meter is capable to record energy even if voltage falls up to 60% of rated voltage at I_b to I_{max}	
	d)	The meter shall be capable of measuring fundamental energy as well as total energy including harmonic energy separately.	
33	Indicate guaranteed accuracy of meters at different ranges of voltages / P.F.		
		Influence quantity	Current P.F. Limits of variation of % error
	a)	Voltage variation between – 15% to 10%	I_b unity I_b 0.5 lag
	b)	Voltage variation between – 40% & -15% & + 20% to + 10%	I_b unity I_b 0.5 lag
34	Does the meter comply each of the tamper conditions specified in clause 3.11.1 of tender specifications.		
35	Whether meter is packed in corrugated Box / Thermocol packing boxes as per specification		

SN	Particulars	To be furnished by Bidder
36	Does the meter comply to running with no load of 70% and 120% of rated voltage - as per this specification?	
37	Does meter meets the Magnetic Immunity Levels of A.C. and D.C. magnets filed prescribed in CBIP Technical report 325 with latest amendments as per specification.	
38	Does meter record energy as per rated parameters of respective phase, even when the neutral from incoming and/or outgoing side is disconnected and only one or two phases are present?	
39	Does the meter record energy as per voltage measured between incoming phase and neutral terminals when DC signal is injected on neutral terminal, through diode?	
40	Does the bidder own the facilities of SMT manufacturing or have access thru' hire, lease or sub-contract the facilities?	
	Does the bidder have exclusive access to these facilities and have furnished adequate documents as proof?	
41	Does the bidder have in-house design, development and manufacturing facilities?	
42	Any other information, if any.	

Sign. of tenderer

SCHEDULE – VI (A)



JODHPUR VIDYUT VITRAN NIGAM LIMITED

A Govt. of Rajasthan Undertaking

DEPARTURE/DEVIATION FROM TECHNICAL SPECIFICATION

The bidder shall state under this schedule the departure from the Purchaser's specification in respect of technical is as under:-

S.No.	Main Deviations from Technical Specification.
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Certified that we agree to all the technical specification of the NIT except for the deviation to the extent indicated above.

(Signature)
Name & Designation
with seal of the bidder.

SCHEDULE – VI (B)



JODHPUR VIDYUT VITRAN NIGAM LIMITED

A Govt. of Rajasthan Undertaking

**DEPARTURE FROM COMMERCIAL TERMS & CONDITIONS OF THE
SPECIFICATION**

The bidder shall state under this schedule the departure from the Purchaser's specification in respect of Commercial terms & conditions:-

S.No.	Main Deviations from Specification.
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Certified that we agree to all the commercial terms & conditions as laid down in General Conditions of Contract to the specification except for the deviation to the extent indicated above.

(Signature)
Name & Designation
with seal of the bidder.

SCHEDULE – VII**JODHPUR VIDYUT VITRAN NIGAM LIMITED****A Govt. of Rajasthan Undertaking****LIST OF PAST SUPPLIES**

The bidder shall state under this schedule whether material and equipments, similar to those offered in the tender have been previously supplied by him. A list shall be given of such orders executed by him together with information regarding the names of purchasing organizations, quantities supplied and when the supplies were affected. This list should be in form given below:-

S.No.	Detailed particulars items supplied	Qty in Nos.	Order No. & Date	Name & details of purchasing authority	Date of Completion
1	2	3	4	5	6

If executed partially to be mentioned (Qty. in Nos.)	whether still to be executed	Delivery stipulated in order	Remarks
7	8	9	10

Note: Separate schedules are to be furnished by the bidder for past supply to the JdVVNL, Jodhpur other State Electricity Boards and other Departments /Organizations.

(Signature)

Name & Designation
with seal of the bidder.

SCHEDULE –VII (A)

PROFORMA FOR C.A. CERTIFICATE FOR QUANTITY VERIFICATION
TN No.1507

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s. _____
(complete with address) have manufactured and supplied the goods / equipments / material during the following financial year(s) to the Electrical utilities / Government Department / Discoms / Organization as detailed out below:

S. No.	Financial Year in which material supplied	Detailed particulars of item(s) supplied	Name & particulars of Purchasing Authority	Order No. & date against which item(s) supplied.	Unit	Ordered		Actual supplied upto		Remarks
						Qty.	Value (Rs.)	Qty.	Value (Rs.)	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.

Signature,
Name & Designation
With Seal of the Bidder
Date _____
Place _____

Seal & Signature of C.A
Name:
Address:

Membership No

The above particulars are true and correct based on explanations, records and books of accounts produced before us. Further the above certificate has been issued on the request of the company.

CA Firm (_____)

Note: - The C.A. certificate must be signed by the bidder and C.A. firm on the letter head of C.A. The details i.e. address of C.A. & membership No. shall clearly be mentioned on C.A. certificate. In case C.A. certificate is not signed by the bidder/furnished without membership No. & address of C.A. then same may not be considered for which responsibility rests with the bidder.

SCHEDULE –VIII**JODHPUR VIDYUT VITRAN NIGAM LIMITED****A Govt. of Rajasthan Undertaking****DELIVERY SCHEDULE****PART – A**

The delivery schedule of the material by the Purchase Officer is as mentioned hereunder:-

S.No.	Particulars of Material	Commencement period per Month.	Rate of supply per Month	Period for completion of delivery of entire material
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As per Clause No. 3.24 of Section III (Tender specifications).

PART-B

In case bidder deviates from the delivery schedule mentioned by the purchaser in Part-A then the delivery schedule shall be indicated/mentioned by the bidder as under:-

S.No.	Particulars of Material	Commencement period per Month.	Rate of supply per Month	Period for completion of delivery of entire material
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- Note:**1. During the commencement period the process of model assembly and submission of B.O.M. for approval shall be got completed.
2. During the commencement period the contractual formalities shall be got completed.

(Signature)

Name & Designation
with seal of the bidder

SCHEDULE – IX



JODHPUR VIDYUT VITRAN NIGAM LIMITED

A Govt. of Rajasthan Undertaking

List of Equipments and Technical Hands Available with the Firm

(To be filled in by the bidders & enclosed with the bid)

Manufacturers and / or their authorized agents who are quoting against this bid are requested to furnish the following information along-with the bid. The Purchaser will have the discretion to ignore the bid without the under noted particulars and/or ignore the bid particulars.

1. Name and Address of Manufacturer.
2. Place where works exist.
3. Details of machinery particularly with B.H.P. of each item installed.
4. Details of staff employed in the works.
5. Date when started the manufacturing of item under reference.
6. List of items manufactured.
7. Literature and drawings of items manufactured showing their description, size, design and other important technical particulars.
8. Details of order so far, executed along with the names of organization to whom supplied.
9. Manufacturing capacity.
10. Is the workshop open for inspection by the representative of the board, if required?
11. Statement of financial resources and Banking Reference along with Balance-Sheet for previous two years.
12. Testing facilities available for the manufactured articles in the testing laboratory of works.
13. Whether the Firm is a small/medium/large scale industry.
14. Registration No. with :-
 - i. Small Scale, National/State.
 - ii. DGTD
 - iii. State Industries Department.

(Signature)

Name & Designation

with seal of the bidder.

Schedule – X**GENERAL PARTICULARS ABOUT THE TENDER IN BRIEF**

**JODHPUR VIDYUT VITARAN NIGAM LIMITED
OFFICE OF THE SUPERINTENDING ENGINEER (MM&C)
NEW POWER HOUSE, INDUSTRIAL AREA, JODHPUR –342 003**

TELEPHONE: 0291-2651376**FAX: 0291-2746539****BID DOCUMENTS FOR PURCHASE OF STATIC LTCT METER OF CLASS 0.5S UNDER. SPECIFICATION NO. JDVVNL/SE (MM&C)/TN-1507**

A	NIT No.	TN-1507
B	Last date for receipt of tenders	04.04.2019 upto 12:00 PM
C	Date & time of tender opening	04.04.2019 At 3:00 PM
D	Cost of Specification	Rs. 2,950.00 (Two Thousand Nine Hundred & Fifty only) For MSME: Rs. 1,475 (One Thousand Four Hundred & Seventy Five only)
E	Processing of RISL	Rs. 1,000.00 per set (One Thousand only)
F	Bid security to be deposited	General Bidder : Rs 1523641.00 Sick Unit : Rs 761820.00 SSI unit of Rajasthan: Rs. 380910.00 *
G	Validity	120 days from the next date of opening of techno-commercial bid.

*In case SSI unit of Rajasthan quotes the less than the tendered quantity , then they are required to furnish Bid security @ 0.5% of the value of the quantity offered by them, failing which bid shall be considered non-responsive.

The micro , small & Medium Scale Industries of Rajasthan and sick Industries , other than Small Scale Industries , whose cases are pending before the Board of Industrial and Financial Reconstruction (BIFR) shall furnish self attest documentary evidence duly attested by notary to claim the above

VERY VERY IMPORTANT

1. The bidders, in their own interest are requested to read very carefully the tender document before submitting the bid only through online on website <http://www.eproc.rajasthan.gov.in/nicgep/app>. The bidders can download bid documents and submit their bids **upto 12.00 p.m.** same day **prior** to schedule date of opening of respective bid mentioned above.
2. The cost of Tender specification **Rs. 2950/- / 1475/-** (Non-Refundable) to be paid by Demand Draft in Favour of the Sr. Accounts officer(Cash & CPC), JdVVNL, Jodhpur and tender processing fees Rs. **1000/-** shall be payable by demand draft in favour of The Managing Director RISL, Jaipur (Non- Refundable). The bidders are required to deposit all these payments in the office of the SE(MM&C), JdVVNL, Jodhpur up to 4.00 PM one day prior to date of tendering otherwise their bids are liable to be rejected.

3. The Bid Security amount (as applicable) to be paid by demand draft/banker's cheque in favours of SR.AO(CASH & CPC), JDVVNL, Jodhpur (Payable at jodhpur) 342003 up to 4.00 p.m upto one WORKING day prior to schedule date of opening of respective bid or Bank guarantee, in specified format, of a scheduled bank in favour of superintending Engineer (MM&C), JDVVNL, Jodhpur be deposited to the Sr. Accounts Officer (MM&C), JdVVNL, New Power House, Industrial Area,Jodhpur-342003 up to 4.00 p.m. up to one WORKING day prior to schedule date of opening of respective bid and obtain a receipt/acknowledgement thereof. No other mode of deposit shall be accepted. At the time of depositing the Bid Security amount or Bank Guarantee, the bidder shall also furnish self attested and duly attested by Notary, the documentary evidence of SSI unit of Rajasthan or of sick unit (as applicable) along with affidavit as per schedule X on Non-Judicial Stamp of Rs. 100/-.
4. The bidders are required to **upload the** receipt of depositing all above payments along with their tender at the relevant place on the scheduled date & time otherwise their bids are liable to be rejected.
5. Eligible bidders should submit their bid well in advance instead of waiting till last date. JDVVNL will not be responsible for non-submission of Bid due to any website related problems.

Note: - All eligible interested bidders are required to get enrolled on e-Tendering portal <http://www.eproc.rajasthan.gov.in/nicgep/app>.

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Schedule – XI

Format of Affidavit
(ON NON JUDICIAL STAMP OF RS. 100/-)

I _____ S/o _____ Aged _____ Yrs. _____
Residing at _____

_____ Proprietor/Partner/Director of
M/s _____ do hereby solemnly affirm and declare that:

(a) My/Our above noted enterprise M/s _____ has been issued acknowledgement of Entrepreneurial Memorandum Part II by the District Industries Centre _____. The acknowledgement No. is _____ dated _____ and has been issued manufacture of following items:

Name of Items	Production Capacity (Yearly)
---------------	------------------------------

- (i)
- (ii)
- (iii)
- (iv)
- (v)

(b) My/Our above noted acknowledgement of Entrepreneurial Memorandum Part-II has not been cancelled or withdrawn by the Industries Department and that the enterprise is regularly manufacturing the above items.

(c) My/Our enterprise is having all the requisite plant and machinery and is fully equipped to manufacture the above noted items.

Place _____

Signature of
Proprietor/Director Authorized Signatory
With Rubber Stamp and date

GENERAL
Amendments in GCC & ITB

- 1) Wherever EMD and Security Bank Guarantee (SBG), are appearing in the ITB, GCC & other Bidding Documents, same is hereby replaced by BID SECURITY as under:-

BID SECURITY

Bid security shall be 2% of the estimated value of subject matter of procurement put to bid. In case of Small Scale Industries of Rajasthan it shall be 0.5% of the quantity offered for supply and in case of sick industries, other than Small Scale Industries, whose cases are pending with Board of Industrial and Financial Reconstruction, it shall be 1% of the value of bid. Every bidder, if not exempted, participating in the procurement process shall be required to furnish the bid security as specified in the notice inviting bids.

In case SSI unit of Rajasthan quotes the less than the tendered quantity, then they are required to furnish Bid Security @ 0.5% of the value of the quantity offered by them, failing which bid shall be considered non-responsive.

The Bid Security amount (as applicable) to be paid by Demand Draft/Banker's Cheque in favour of SR. AO (CASH & CPC), JDVVNL, Jodhpur (payable at Jodhpur) 342003 upto 4.00 p.m. upto one WORKING day prior to schedule date of opening of respective bid or Bank Guarantee, in specified format, of a scheduled bank in favour of Superintending Engineer (MM&C), JDVVNL, Jodhpur, be deposited to the Sr.Accounts Officer (MM&C), JDVVNL, New Power House, Industrial Area,Jodhpur-342003 upto 4.00 p.m. upto one WORKING day prior to schedule date of opening of respective bid and obtain a receipt/acknowledgement thereof. No other mode of deposit shall be accepted. At the time of depositing the Bid Security amount or Bank Guarantee, the bidder shall also furnish self attested and duly attested by Notary, the documentary evidence of SSI unit of Rajasthan or of sick unit (as applicable) along with affidavit as per schedule X on Non-Judicial Stamp of Rs. 100/-.

The Bank Guarantee against Bid Security be issued by Nationalized / Scheduled Bank. The same may be accepted after confirmation by issuing Bank. If any Bid Security Bank Guarantee not is proper format / not confirmed by the issuing Bank the same would not be accepted and the bidder would be immediately shorted out from bid process.

The Micro, Small & Medium Scale Industries of Rajasthan and sick industries, other than Small Scale Industries, whose cases are pending before the Board of Industrial and Financial Reconstruction (BIFR) shall furnish self-attested documentary evidence duly attested by Notary to claim the above.

- 2) Wherever Performance Bank Guarantee (PBG) and Composite Bank Guarantee (CBG) are appearing in the ITB, GCC & other Bidding Documents, same are hereby replaced by PERFORMANCE SECURITY as under:-

PERFORMANCE SECURITY

- (i) Performance security shall be solicited from all successful bidders except the department's of the State Government and undertakings, corporations, autonomous bodies, registered societies, co-operative societies which are owned or controlled or managed by the State Government and undertakings of the Central Government. However, a performance security declaration shall be taken from them. The State Government may relax the provision of performance security in particular procurement or any class of procurement.**
- (ii) Performance security from the successful bidder shall be 5% of the amount of supply order (in case of established suppliers)/ 1% of the amount of supply order (in case of Micro, Small & Medium scale industries of Rajasthan)/ 2% of the amount of supply order (in case of sick industries) / 10% of the amount of supply order (in case of other suppliers). In case of successful bidder, the amount of bid security may be adjusted in arriving at the amount of the performance security, or refunded if the successful bidder furnishes the full amount of performance security.**

3) VENDOR REGISTRATION

The relaxation/exemption given to the registered vendors of the Nigam in respect of EMD/SBG, wherever appearing in the ITB, GCC & other Bidding documents, are hereby WITHDRAWN.

- 4) The indirect taxes i.e. Excise Duty, Service Tax, VAT/CST, Entry Tax etc. mentioned in G.C.C., may now be read as G.S.T.**

5) Due Date of payment:

Payment shall be due and payable by the purchaser in accordance with the provision of the contract within a reasonable period from the date of receipt of each invoice by the contractor / supplier duly supported by a certificate of the Engineer. The purchaser will take all possible effort to make payment to the contractor / supplier generally on 45th day after receipt of duly verified challans / receipts / bill in the office of paying authority (Sr. Accounts Officer (Cash &CPC) Jodhpur Discom, Jodhpur / Concerned Circle Accounts Officer) and completion of contractual formalities. But in case of delay in payment the purchaser shall not be liable to pay any interest on the outstanding amount to the contractor / supplier

APPENDIX-A

Bank Guarantee No. _____.
Security Amount : _____.
Issued on dated : _____.
Valid upto : _____.
Claim upto / Grace period: _____.

PERFORMA OF BANK GUARANTEE FOR BID SECURITY

(Bank Guarantee in lieu of bid Security on non-judicial Stamp Paper of Rajasthan State of 0.25% of the B.G. value or Rs.25,000/-, whichever is less)

To,

The Superintending Engineer (MM&C),
Jodhpur Vidyut Vitaran Nigam Limited,
Jodhpur.

1. Whereas _____ (name of the Bidder) (hereinafter called “the Bidder”) has submitted its bid dated _____ (date of submission of bid) for _____ (name of contract/ name of the material with Bid no. / TN No. _____) (hereinafter called ‘the Bid”).
2. **KNOW ALL PEOPLE** by these presents that WE _____ (name and address of branch of Bank) of _____ (name of country), having our registered office at _____ (addresses of bank) (hereinafter called ‘the Bank”), are bound unto _____ (name of Purchaser) (hereinafter called “the Purchaser”) in the sum of Rs. * _____ for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents sealed with the Common Seal of the said Bank this _____ day of _____ 20____.
3. **THE CONDITIONS** of this obligation are :
 - i. If the bidder withdraws its Bid during the period of bid validity specified by the Bidder in the Bid Form; or
 - ii. If the bidder refuses to accept the correction of error in his Bid; or
 - iii. If the bidder, having been notified of the acceptance of its Bid by the purchaser during the period of bid validity:
 - a. Fails or refuses to execute the Contract Agreement within the time specified in purchase / work order, if required, or
 - b. Fails or refuses to furnish the performance security within the time specified in purchase / work order in accordance with the GCC, or
 - c. Fails to commence supply of goods or services or execute work as per purchase / work order within time specified.
 - iv. If the bidder breaches any provision of the Code of integrity specified in the RTPP Act and Chapter VI of the RTPP Rules.
4. We undertake unconditionally and irrevocably to guarantee as primary obligator and not as surety merely to pay to the purchaser a sum of Rs. _____ (in words Rs. _____) upon receipt of its first written demand, without the purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of

one or all of the above three conditions specifying the occurred condition or conditions.

5. The decision of the Superintending Engineer (MM&C), Jodhpur Vidyut Vitaran Nigam Limited, Jodhpur shall be final whether breach has been committed on the right to demand the amount of guarantee from us which has accrued to the purchaser.
6. This guarantee shall not cease or determine, if the purchaser grants time or indulgence or vary the terms of the contract with the Contractor or without our consent or knowledge.
7. The guarantee herein contained shall not be affected by any change in the constitution of the Contractor.
8. We _____(Bank Name) further undertake not to revoke this guarantee during its currency except with the previous consent of the Superintending Engineer (MM&C), Jodhpur Vidyut Vitaran Nigam Limited, Jodhpur.
9. All disputes arising under the said guarantee between the Bank and the Nigam or between the Contractor and the Nigam pertaining to the guarantee, shall be subject to the jurisdiction of the Courts in Jodhpur, Rajasthan alone.
10. This guarantee will remain in force up to and including one hundred eighty (180) days after the date of the opening of bids, i.e. upto _____, with a further grace period of Ninety (90) days and any demand in respect thereof should reach the Bank not later than the above date.

Yours faithfully,

Bankers (EXECUTANT)

Signed by the above named Bank in presence of :
(signature with full Name and Address)

Witness :

1. _____.
2. _____.

Attested by Notary Public, First Class Magistrate or directly confirmed by the executing Bank.

* The Bidder should insert the amount of the guarantee in words and figures
denominated in the currency of bid.

Note : In case the bid is submitted by a Joint Venture, the Bid Bank guarantee shall be in the name of Lead partner or in the name of joint venture partners submitting the Bid covering all the partners of the joint venture.

IMPORTANT INSTRUCTION

As discussed following instructions/clarifications are required to be incorporated in the tender specification:

1. All the intending bidders are requested to submit hard copy of all the document(s), uploaded on the e-procurement web-portal, in a sealed envelop in the office of the SE (MM & C), JdVVNL, Jodhpur. This sealed envelop shall be opened on the same date of bid opening i.e. on website of e.proc.rajasthan.
2. Bidders are requested to read the bid documents very carefully and upload their bid well in time. Please note that in the event of shortcoming in any tender document(s), the bid is likely to be rejected.
3. At the time of accepting counter offer given or at the time of negotiation, bidders change the quantity of original offer & give the conditional acceptance of counter offer which is not in accordance with RTPP rules and Act therefore Negotiation with the bidders or counter offer given to bidder shall be accepted in terms of price only. Restriction on quantity to be supplied or any other conditional offer shall not be accepted. If any conditional offer is given then that bidder shall be treated for violation of the code of integrity in terms of sec 11 of RTPP Act and Rule 80 of RTPP Rules and action shall be taken against defaulter bidder in accordance with RTPP Rules and Act.
4. In case of bid security deposited, the firm deposits lesser security than the required amount, bid shall be rejected.
5. As per notification SO 165 issued by Fin. Dept. dt. 19.11.2015 on reference to RTPP rules, "clause 8(A)" bidding document shall be provided to MSME at 50% of prescribed cost.
6. RTPP Act 2012 & RTPP rules 2013 shall be applicable for the procurement process.
7. A declaration regarding debarment/blacklisting/code of integrity shall be given by bidder in Annx- 'A' .

ANNEXURE-A

SELF ATTESTED UNDERTAKING TO BE GIVEN ON FIRM'S LETTER HEAD

We, the undersigned declare that:

1. Our firm, its affiliates of subsidiaries including any subcontractor or suppliers for any part of the contract have not debarred by the state government or the procuring entity or a regulatory authority under any applicable law.
2. We declare that we have complied with and shall continue to comply with the provision of the code of integrity including conflict of interest as specified for bidders in the RTPP Act 2012, RTPP Rules 2013 and the bidding document during the procurement process and execution of contract till completion of all our obligation under contract.

Firm's Name
Seal & Signature