

## 2.13 ENERGY METERING

No.	Item	Units	Required	Tendered
<b>A</b>	<b>General</b>			
A.1	Name of the Manufacturer			
A.2	Address of the Manufacturer			
A.3	Country of Manufacture			
A.4	Make			
	Model No.			
	Manufacturers Catalogue Ref. No.			
A.5	Type		3P4W	
A.6	Applicable Standards		As per clause 2.0	
<b>B</b>	<b>Principle Parameters</b>			
B.1	Reference voltage and operating range	V	110	
B.2	Standard Rated Current	A	1	
B.3	Rated Maximum Current (Imax)		1.2 times of the rated current	
B.4	Starting Current of Meter		at 0.001 of basic current	
B.5	Auxiliary Supply	V	60-240 V AC/DC	
<b>C</b>	<b>Basic Features</b>			
C.1	Limit of errors		Class 0.2S	
	1. Active Energy 2. Reactive Energy		Class 2	
C.2	Capability of measurement in full p.f range		Accuracy in full p.f range	
C.3	TOD measurement		Yes	
	Minimum TOD intervals		6	
C.4	Demand integration period	min	15	

C.5	Maximum demand reset both Locally and Remotely		Yes	
C.6	Password Authorization Levels		Min 2 levels	
C.7	No. of Blinking LEDs		Min 2	
	Blinking LED analogues to 1. Active Energy consumption 2. Reactive Energy consumption		Yes Yes	
C.8	Battery lifetime of calendar clock battery		Min 10 years	
C.9	Display Sequence		As per in Clause 3.2.8 of this specification	
C.10	Meter Sampling rate		30s or less	
C.11	Memory retention period (months)		12 months	
C.12	Programming parameters		As per Clause 3.2.9 of this specification	
C.13	Logging Load profile		as per Clause 3.2.9 of this specification	
C.14	Event log		as per Clause 3.2.9 of this specification	
C.15	Display memory type		non-volatile	
<b>D</b>	<b>Remote/ Local Communication</b>			
D.1	Types of communication ports available		Optical Port	
			RS 232	
			Ethernet	
D.2	Remote meter access via a GSM and 2G/3G/4G modem		Yes	
D.3	Software and manuals		As per Clause 3.3.4 of this specification	
D.4	Meter communication 1. software name 2. version			
D.5	Facilities provided by remote operation			
	(a) To programme each meter		Yes	

	(b) To take the relevant meter reading individually		Yes	
	(c) To download stored data from meter		Yes	
D.6	Type of Modem		Dual band GSM modem (900/1800 MHz) or 2G/3G/4G modem	
D.7	Mounting of Modem		Built In	
D.8	Power Supply to the modem		Through Meter	
D.9	Minimum speed of the modem (kbps)			
D.10	Type of the Network Switch		Unmanageable	
D.11	Number of IP Ports and the speed		Minimum 24 No.s 10/100 Mbps	
D.12	Download data to be stored in MS Access/SQL		Yes	
D.13	Tamper proof SIM card holder		Yes	
D.14	DLMS based communication enable		Yes	
D.15	APIs are provided		Yes	
<b>E</b>	<b>Mechanical Requirement</b>			
E.1	Protective class		Class 2 (Double Insulation)	
E.1	Type of meter cover and terminal cover		As per clause 3.4.1 and 3.4.3 of this specification	
E.2	Bore Size of the terminals and number of screws provided		As per clause 3.4.2 of this specification	
E.3	Degree of protection (IP Category)		IP 51 (minimum)	
E.4	No. of digits in the LCD display		Minimum 10 including three decimals	
E.5	Size of numbers in the LCD display		Minimum 4mm high and 4 mm width	
E.6	Seal-ability of meters to prevent from: <ul style="list-style-type: none"> <li>• Access to adjustment or calibration devices on meter</li> <li>• Access to terminals of incoming current or potential wiring</li> </ul>		Yes  Yes	

<b>F</b>	<b>Climate Condition</b>			
F.1	Operating Temperature range		As per table 5 of IEC 62052-11 for indoor meters	
F.2	Conform to operate accurately under Maximum Relative Humidity of 90%		Yes	
<b>G</b>	<b>Electrical Requirement</b>			
G.1	Active and apparent power consumption in the voltage and current circuits of the meter at a reference voltage, frequency, temperature		not more than that stipulated in table 1 of IEC 62053-22	
G.2	Permissible error due to voltage variation		conform to the table 7 of IEC 62052-11	
G.3	Meter operation during Voltage dips and short interruptions		conform to Clause 7.1.2 of IEC 62052-11	
G.4	Meter operation during short time over current		as per the clause 7.2 of IEC 62053-22.	
G.5	Variation of error due to self – heating		not exceed the value given in IEC 62053-22	
G.6	Reference Temperature and Temperature coefficient			
G.7	Insulation Level			
	(a) Power Frequency Withstand voltage for 1 min	kV	4	
	(b) Impulse Voltage at 1.2/50 $\mu$ sec	kV	6	
<b>H</b>	<b>Electromagnetic compatibility</b>			
H.1	meter operation conform to the clause 3.7 of this specification		Yes	
<b>I</b>	<b>Accuracy Requirements</b>			
I.1	Limits of error due to variation in current and influence quantities		do not exceed the limit given in IEC 62053-22 for class 0.2S	
I.2	Meter starting and running with no-load		conform to the clause 3.8 (a) of this specification	
I.3	Meter constant		conform to the clause 3.8 (b) of this specification	

<b>J</b>	<b>Marking of Meters</b>			
J.1	Making of Meters		as per clause 3.9 of this specification is possible	
<b>K</b>	<b>Quality Assurance</b>			
K.1	Quality Assurance conforming ISO 9001		Yes	
K.2	ISO/IEC 17025 accreditation for the Laboratory		Yes	
<b>L</b>	<b>Additional Requirements</b>			
L.1	Guaranteed Life Span of the meters and communication module		10 years	
L.2	Warranty for meters and accessories		5 years minimum	
<b>M</b>	<b>Testing, Installation and Commissioning</b>			
M.1	Test certificate			
	Test of insulating properties			
M.1.1	Impulse test voltage		Required	
M.1.2	A.C. Voltage Test		Required	
	Test of Accuracy requirements			
M.1.3	Test of meter constant		Required	
M.1.4	Test of starting condition		Required	
M.1.5	Test of no-load condition		Required	
M.1.6	Test of influence quantities		Required	
	Test of electrical requirements			
M.1.7	Test of power consumption		Required	
M.1.8	Test of influence of supply voltage		Required	
M.1.9	Test of influence of short-time current		Required	
M.1.10	Test of influence of self-heating		Required	
M.1.11	Test of influence of heating		Required	
M.1.12	Test of immunity to earth fault		Required	
	Test of electromagnetic compatibility			

M.1.13	Radio interference suppression		Required	
M.1.14	Fast transient burst test		Required	
M.1.15	Damped oscillatory waves immunity test		Required	
M.1.16	Test of immunity to electromagnetic RF fields		Required	
M.1.17	Test of immunity to conducted disturbances, induced by radio-frequency fields		Required	
M.1.18	Test of immunity to electrostatic discharges.		Required	
M.1.19	Surge immunity test		Required	
	Tests of the effect of the climatic environments			
M.1.20	Dry heat test		Required	
M.1.21	Cold test		Required	
M.1.22	Damp heat cyclic test		Required	
M.1.23	Solar radiation test		Required	
	Mechanical Tests			
M.1.24	Vibration Test		Required	
M.1.25	Shock test		Required	
M.1.26	Spring Hammer Test		Required	
M.1.27	Tests of protection against penetration of dust and water		Required	
M.1.28	Test of resistance to heat and fire		Required	
M.2	Acceptance / Sample tests		as per clause 5.2 of this specification	
<b>N</b>	<b>Technical Literature and Drawings</b>			
N.1	Submission of complete set of technical literature on installation, calibration and operation and maintenance of the meter		Required	
N.2	Submission of User Manuals for communication software		Required	