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	TECHNICAL SPECIFICATION			
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1	SCOPE	This specification covers the technical requirements of design, manufacturing, testing at meter manufacturer's works ,packing, forwarding, supply and unloading at store/site of Three Phase Four Wire, HT (CT and VT operated) AC Static Smart Meters of accuracy class 0.5s (here after referred as meters) complete with all accessories for efficient and trouble free operation with communication module (NIC) compatible with 4G and fall back to 2G technology. It is not the intent to specify completely herein all the details of tech design and construction of material. However, the material shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in manner acceptable to the TPCODL, who will interpret the meanings of drawings and specification and shall have the power to reject any work or material shall be complete with all components necessary for their effective and trouble free operation. 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.		
2	APPLICABLE	a.	IS 16444 part 2:	A.C. Static Transformer operated watt hour and VAR-
	STANDARDS	h	2017	nour meters, class 0.2s, 0.5s & 1.05 (Smart Meters)
		U.	2017	load control
		C.	IS 14697	A.C. Static Transformer operated watt hour and VAR-
				hour meters, class 0.2s, 0.5s & 1.0S
		d.	IEC 60687	AC Static Watthour Meters for active energy (class 0.2s
			(1992-06)	and 0.5s)
		e.	IS 9000	Basic Environmental testing procedure for electrical and electronic items.
		f.	IS 12346: 1999	Testing Equipment For Ac Electrical Energy Meters
		<u>g</u> .	IS 11000	Fire Hazard Testing
		h.	IEC 62052 Part 11 : 2003	Electricity metering equipment (AC) - General requirements , tests and test conditions – metering equipment
		i.	i. IEC 62053 Part 22: 2003 Electricity metering equipment (a.c.) - Particula Requirements - Part 22: Static meters for active energ (classes 0.2 S and 0.5 S)	
		j.	IS 15707: 2006	Testing Evaluation installation and maintenance of ACElectricityMeters- Code of practice.
		k.	IEC 60068	Environmental testing.
		I.	CBIP-TR	Specification for A.C. Static Electrical Energy Meters
			No.325	(latest amendment)
		m.	(2019)	Installation and operation of meters
		n.	IS 60529	Degree of protection provided by enclosure
		0.	IEC 62056-61	Electricity metering- Object Identification system (OBIS)
		р.	ASTM D648	Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
		q.	IS 11731-1	Methods of test for determination of the flammability of solid electrical insulating materials when exposed to an igniting source, Part 1: Horizontal specimen method
		r.	IS 11731-2	Methods of Test for Determination of Flammability of Solid Electrical Insulating Materials When Exposed to An Igniting Source, Part 2: Vertical Specimen Method
		S.	ISO 75 Part 1&2	Determination of temperature of deflection under load

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3	CLIMATE CONDITIONS OF THE INSTALLATION	<ul> <li>a) Max. Ambient Temperature</li> <li>b) Max. Daily average ambient temp.</li> <li>c) Min Ambient Temp</li> <li>c) Min Ambient Temp</li> <li>d) Maximum Humidity</li> <li>g5%</li> <li>e) Minimum Humidity</li> <li>10%</li> <li>f) Average No. of thunderstorm days per annum</li> <li>50</li> <li>g) Maximum Annual Rainfall</li> <li>750 mm</li> <li>h) Average No. of rainy days per annum</li> <li>60</li> <li>i) Rainy months</li> <li>j) Altitude above MSL not exceeding</li> <li>k) Wind Pressure</li> <li>126 kg/sq m up to an elevation at 10 m.</li> </ul> The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g		
4	GENERAL TECHNICAL	<b>SNO</b>	DESCRIPTION	REQUIREMENT
	REQUIREMNTS	4.01	meter	Transformer (CT) and Voltage Transformer (VT) operated Watthour and Var-hour Smart Meter. It consists of measuring elements(s), time of use of register(s) and display and plug in type bi-directional communication module all integral within the meter housing. The meter design shall be such that only CT MF is required for energy calculation. CT /PT Ratio- programmable. Meter must be compatible to communicate with HES of TPCODL
		4.02	Accuracy Class of the meter	<ol> <li>Active Energy Measurement,</li> <li>a. For 11kV - 0.5s</li> <li>b. For 33kV - 0.5s</li> </ol>
		4.03	Basic Current (Ib) & rated Maximum Current (Imax)	<ul> <li>a. For 11kV – lb = 5A; Imax= 10 Amps (Balanced and Unbalanced Load)</li> <li>b. For 33KV – lb = 5A; Imax= 10 Amps</li> </ul>
		4.04	Reference conditions for testing the performance of the meter	Vref = 63.5 V (phase to neutral) Frequency = 50Hz Temperature= 27ºC
		4.05	Operating Voltage	Meter shall be operational with required accuracy from 0.6 Vref to 1.2 Vref, however meter shall withstand the maximum system voltage of 110V between phase and neutral (for minimum 5 min).
		4.06	Operating Frequency	50 Hz± 5%.
		4.07	Power	Voltage circuit: Maximum 5W and 15 VA
			Сонзатрион	Current Circuit :Maximum 1VA (The additional power requirement during data transmission shall not exceed 7W as mentioned in IS 16444 part-2 whichever is lower, per communication module)
		4.08	Starting Current	0.1% of Ib – (5mA for Ib 5A)
		4.09	Short time over	20 times of Imax for 0.5sec

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		Current	
4	.10	Influence of heating	Temperature rise at any point of the external surface of the meter shall not exceed by more than 20K with an ambient temperature at 45 <sup>o</sup> C.
4	.11	Rated Impulse withstand voltage	6 kV (shall be applied ten times with one polarity and then repeated with the other polarity and minimum time between each impulse to be 3 sec)
4	.12	AC withstand Voltage for 1 min	4 kV
4	.13	Minimum Insulation resistance at test voltage 500+/- 50 V dc a)Between frame & current ,voltage	a) 5 M ohm
		circuits as well as auxiliary circuits connected together: b)Between each current (or voltage circuit) & each and every other circuit:	b) 50 M ohm.
4	.14	Mechanical requirements	Meter shall be in compliance with clause 12.3 of IS 14697& IS16444 part 2
4	.15	Resistance to heat and fire	The terminal block and Meter case shall ensure safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them as per clause 6.8 of IS 14697. Fire retardant material shall be used.
4	.16	Protection against penetration of dust and water.	Degree of protection: IP 51 as per IS 12063/60529, but Without suction in the meter. Meter shall comply with clause 6.9 and 12.5 of IS 14697
4	.17	Resistance against Climatic influence.	Meter shall be in compliance with clause 12.6 of IS 14697.
4	.18	Electromagnetic Compatibility (EMC)	Meter shall be in compliance with clause CBIP report 325 and IS
4	.19	Accuracy requirements	Meter shall be in compliance with clause 11 of IS14697 & IS16444 part-2
	.20	Power factor range	Zero lag to Zero lead. Meter shall be programed at default Lag only configuration i.e. Lead to be treated as unity for kVA & kVAh calculations'
	.21	Energy measurement	Fundamental energy +Energy due to Harmonics
4	.22	Connection Diagram	The connection diagram for the system shall be provided on terminal cover.
4	.23	Self-Diagnostic feature	<ul> <li>The meter shall have logging with date and time in memory for un satisfactory / non-functioning of</li> <li>1. Real Time Clock</li> <li>2. RTC battery</li> <li>3. Non Volatile Memory</li> <li>4. Status of NIC (installed/ discovered/ normal)/ Signal Strength</li> </ul>

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4.	24 Ini me	itial start-up of eter	Meter shall be fully functional within 5 sec after reference voltage is applied to the meter terminals (as per clause 11.4.1 of IS 14697).
4.	25 Alt su	ternate mode of upply to the meters	In case of meter power failure, reading/data should be retrieved with the help of battery or other power source.
4.	26 Int the De ter	ternal diameter of e terminal holes: epth of the rminal holes:	5 mm ( minimum ) 20 mm (minimum)
4.	27 Cle ad	learance between djacent terminals	10 mm ( minimum)
4.	28 Dis	isplay	Backlit LCD, Scrolling, 10 seconds for each parameter minimum 8 digits for reading LCD display
4.	29 Se	ecurity feature	Programmable facility to restrict the access to the information recorded at different security level such as read communication, write communication, firmware selection from remote etc.
4.	31 So co co	oftware and ommunication ompatibility	The bidder shall supply software required for local HHU & remote (AMI) connectivity including required training to use the software free of cost. If this software can be used in a device readily available in market and can connect to meter through optical port or other communication port without any security checks or with MR securities which OEM will provide; then, OEM can provide only software, else the device on which this software will run is also to be provided along with technical specification of this device.
4.	32 Ce	alibration	Meters shall be software calibrated at factory and modifications in calibration shall not be possible at site by any means. There shall be provision for firmware update to change payment mode from Prepaid to Postpaid and vice versa; similarly for metering mode from Import only to Export-Import (NET mode) and vice versa, through proper authentication process remotely over the air (OTA). The change should be recorded as Transaction Event. Billing should be done at that time of firmware upgrade so that readings at which this upgrade has happened are logged in meter and system.
4.	33 Us	sage Application	Indoor
4.	34 Uli Ch	ltrasonic welding / hemical Bonding	Meter cover and body should be continuous and seamless ultrasonically welded with an overlapping of 5 mm (min.) or should be seamlessly chemically bonded, so that meter should not open without leaving clear mark.

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		4.35	Communication module of meter for AMI	As per clause no 1.4 (b) of IS 16444 part-2. Meter should have provision of communication module compatible with both the variant mentioned in IS 16444 part-2. This module should be able to get connected to the NAN / WAN network of service provider (4G). Meter should be able to provide required power supply to NIC card provided by communication provider .
		4.36	Communication Layer Protocol	Should be as per clause 8.3 of IS 16444 part 2
		4.37	Key Management and Security Feature	Should be as per IS 15959 part 2 and 3
		4.38	Harmonics recording	The meter should record the current and voltage THD. The meter should record harmonics up to 20th harmonic Average THD of all phase for voltage THD and current THD. THD values shall have 30/15 minutes (as applicable) integration period in load survey. Accuracy of harmonics recording shall be as per meter accuracy class. The meter shall generate a flag whenever the threshold (user configurable) of the 5% THD of the load current and voltage is breached.
		4.39	The terminal pin arrangement	The terminal pin shall be 10 pin Zigzag arrangement with phase voltage terminal in between current terminals as mentioned in clause no 5.2.11
4.1	NIC MODULE DETAILS & INTEGRATION	With the primary of meter da a) i i i i i i i i i i i i i i i i i i	arrangement       with phase voltage terminal in between in terminals as mentioned in clause no. 5.2.11         the service providers offering 4G services, TPCODL intends to leverage 44         ry communication technology with hot swappable 2G Interface Card as a fall data acquisition.         )       The Network Interface Card for 4G shall be modular and pluggable. The NIC interoperable for service provider         )       NIC card shall support remote Device Management Capability such a Configuration, Log Check, Ping, and over the air Firmware upgrade         )       NIC shall support two-way communications between smart meter & head-en such as data exchange, configuration parameters exchange, alarms, op commands, firmware upgrade of the meter as defined in IS16444 and IS1595         )       NIC shall support push services, alarms services of the smart meter as d IS16444 and IS15959.         )       AG NIC card shall support communication protocols as prescribed by supplier.         NIC shall also support on-demand / schedule reading, time sync, configuration ever the air firmware upgrade from the head-end system.         )       NIC shall have persistent network connectivity throughout as defined standards. It shall support self-configuring features.         )       NIC shall operate 24*7 and shall recover from any deadlock situation imme the field.         Support for possibility for provision of a unique certificate/key in each card frauthentication with the HES from security point of view.         NIC shall support standard security protocols.       NIC shall be compliant with cyber securi	

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		m)	Attributes such as Firmware version, Hardware version, Signal strength values, packet error rate, should be pushed periodically to HES for effective communication
		n)	management.
		o)	LED indication for System, Power ON indicator.
		p)	Colour coded LED (a) For latching on to the network (b) For latched on to the network
		a)	(c) For data flow indication. Meter display should have provision for showing if NIC card if : 1. Installed, 2. Getting
		4/	Network, 3. Latched with HES, 4. Communicating with HES
4.2	Communication capabilities and software feasibilities	4.3.1	The meter shall have facilities for data transfer locally through Meter Reading Instrument (MRI) (Using optical port/NIC card) and remotely by 4G with proper security via Plug in type NIC. Data transfer locally through optical port via MRI is desired along with data transfer through NIC card. The data downloaded in MRI/hand held device shall be integrated to TPCODL HES data base.
		4.3.2	It should be the responsibility of the bidder to ensure integration of meter into HES of TPCODL. For cellular fallback, the Module should have backward compatibility. The fall back provision shall be taken through optical port with external modem by TPCODL. Meter should be capable for sending all data from 4G NIC and optical port.
		4.3.3	It shall be possible to reconfigure the meters for RTC, TOD slots reprogramming, DIP (Demand Integration period), billing date , display parameters etc. through proper authentication process locally through MRI and remotely over the air (OTA). Meter data should remain intact with timings. And billing should be done whenever any above mentioned attribute is changed. The change should be recorded as upgrade event.
		4.3.4	Necessary keys if required for performing this reconfiguration operation should also be provided along with supply of meter lot & training to TPCODL staff on how to use it free of cost. Bidder to provide this support on a later stage also on the request of TPCODL without any cost implication.
		4.3.5	Optical Communication port shall be available for communication. Communication ports shall not be affected by any type of injection /unauthenticated signals and having proper sealing arrangement. The complete data shall be downloaded within 5 minutes OTA.
		4.3.6	Bidder to ensure integration of meter data with head end for data transfer as mentioned in specification.
		4.3.7	Meter should be supplied to TPCODL along with integrated NIC card. NIC card should be plug in type with proper sealing arrangement.
		4.3.8	The bidder shall supply software required for local (MRI) & remote (AMI) connectivity including required training to use the software free of cost. Bidder shall provide the communication protocol / APIs for communication with meter through local (MRI) / remote (AMI) as and when required by TPCODL free of cost during life time of meter. The bidder should provide DLMS compliance for Communication with the meter at Optical port and at HES.
		4.3.9	Bidder should also provide software for changing/upgrading meter firmware in mass and should support integration of this software with HES. Bidder should also provide base computer software (BCS) for viewing the data downloaded through

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	HES/MRI/laptop/HHU in separate PC/laptop. Android based or windows based HHU shall be preferred.
4.3.10	For purpose of exercising control, like outage management, the meter should send abnormalities at the consumers' end like Power failure (Last Gasp) instantly, Power Restoration (First Breath) as event. Additional exceptional events should also be communicated to HES by meter immediately after the occurrence. It should also indicate the restoration of the same event.
4.3.11	List of events to be reported should be configurable over the air(OTA). The meter should have "Last Gasp" and "First Breath" feature to facilitate sending alerts to the HES during fully powered off / On condition.
4.3.12	If there are 2 requests given for communication one from HES and other from local device, request from local device should supersede.
4.3.13	Last mile mesh network must support auto-registration and self-healing feature to continue operation using easiest possible available route in case of failure of any communication device in the mesh. Self-registrations in first communication.
4.3.14	Meter Serial no will be used for tagging of all data of the meters in all database ( at HES / MDM/ DCU level etc). However, it will be the responsibility of the Bidder to establish the complete communication solution involving all the meters in the system. Also, the Bidder must ensure that, the mode of communication used for 4G shall be consistent with the Government of India stipulations. Bidder should come out with it requirements for integration of meter with HES and MDMS clearly during tender submission.
4.3.15	The Bidder's supplied meter with third party communication module should have suitable hand-shaking features to allow a third-party MDMS( procured by TPCODL) to configure, command, read and control smart meters installed at site. The Bidder shall extend all necessary assistance in developing the adaptor software through a third-party for facilitating the above.
4.3.16	Integration of meter software's with HES / MDMS for seamless transfer of data will also be in scope of bidder till the expiry of warranty of the meters. It is desired meter firmware up gradation/selection should be available over the air. Meter should be able to change to prepaid mode if required with firmware upgrade. The required firmware and any required support for integration with HES shall be provided free of cost till the useful life of the meter.
4.3.17	Communication of the meter at optical port /OTA (NAN/WAN) should be as per IS 15959 (Part-2):2016. The optical port should be with proper lockable mechanism
4.3.18	Communication NIC/network should be immune with any external Magnetic field/ESD/Jammer/HV voltage influence such that it shall not affect the normal overall functionality.
4.3.19	Meter once powered up with NIC card should be self-detected by 4G network and its basic name plate details & current readings are transferred to HES.
4.3.20	The required OBIS codes will be finalized with successful bidder. The bidder can offer desired codes from Blue Book ensuing the codes reserved or standardized by Bureau of Indian standards. The reserved codes in BIS are to be used/utilized as per guidelines of BIS and remaining codes from blue book can be used for

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		<ul> <li>communication of additional features mentioned in this specifications. This is to be done strictly with written approval from TPCODL after verification of proposed codes by manufacturer. In future if BIS adds any OBIS codes then the bidders to provide upgraded firmware with desired changes after in consultation and approval of TPCODL competent authority.</li> <li>4.3.21 Meter display should have provision for showing if NIC card if : 1. Installed, 2. Getting Network, 3. Latched with HES, 4. Communicating with HES</li> <li>4.3.22 If any tamper occurs in power off situation, it should be pushed as soon as the meter is powered on.</li> <li>4.3.23 Bidder to provide facility for Up-gradation / Modification of Firmware</li> <li>4.3.24 Following parameters may be updated multiple times during life cycle of meters over the air : Post Paid to Prepaid mode and vice versa Import mode to export Mode and vice versa. Accordingly Display parameters shall be updated remotely.</li> </ul>	
4.3	Immunity against external influencing signals	<ul> <li>4.3.1 Magnetic Field: Meter shall record accurate energy in case of any external influencing signing in line with IS 14697:1999 CI.11.2 and variation in limits of error (up to 1 lmax) shall be as per the table 13 of IS 14697. Meter shall be immune to magnetic field such that it shall not affect the normal overall function However, in case of abnormal magnetic field as defined below meter perform as per the following actions:</li> <li>a. Meter shall log the event in its memory as" Magnet" with date and time stallong with snapshot and the event logging threshold values as per table 1 in 4.5</li> <li>b. The energy recording to shift on I max, Vref. with UPF.</li> <li>Abnormal Magnetic field is defined as below:</li> <li>a. Continuous DC magnetic induction: &gt;0.20 Tesla ± 5% (Value of the magmetive force to be applied shall be generally &gt;10000 AT.</li> <li>b. AC magnetic induction: &gt;10 milli Tesla ( if produced with circular metall and the circular metal and the circular metall and the circular metalland the circular metal and the circular metalland the circular metal and the circular metalland the circular metal and the circular metalland the circular metal and the circular meta</li></ul>	
		<ul> <li>4.3.2 Electrostatic Discharge (ESD) Meter shall be immune up to 50 kV and shall record accurate energy as per 14697:1999/CBIP-325. Meter shall log the event into memory as 'ESD' with a &amp; time stamp for any ESD greater than 50 kV with snap shot, the event log threshold values as per table no. 1 in 4.5.</li> <li>4.3.3 The shielding around the meter shall be such that it does not get affected by I Values and high energy as per using a state of the st</li></ul>	
		<ul> <li>from any side.</li> <li>Meter should immune to high/low free event in its memory as" JAMMER" we snapshot the threshold values as pre-</li> </ul>	equency jammer devices. Meter shall log the vith date and time stamp along with er table no. 1 in 4.5
		5 The meter should be immune or log magnetic field of any frequency wa threshold values as per table no. 1 in	the tamper on application of any other higher aves, micro waves like magnetron etc. the n 4.5.
4.6	Event	For event compartments IS 15959 P	Part-3 shall be referred.
	Compartments	2 The size of the event compartments no.1 and other required events defin	should be such that all above events (in table ned in various clauses of this documents) are

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		accommodated in the assigned event category compartment. i.e. if in case of voltage compartment assigned to 4 number of events then the minimum size of this compartment should be such that it should accommodate sum of all maximum number of events as marked above table 1.			
5	GENERALCONST RUCTIONS	4.6.3 Transaction events compartment size shall be minimum 20 events. The Meter shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal conditions, so as to ensure especially personal safety against electric shock, safety against effect of excessive temperature, protection against spread of fire, protection against penetration of solid objects, dust and water. All parts, which are subject to corrosion under normal working conditions, shall be protected effectively. Any protective coating shall not be liable to damage by ordinary handling or damage due to exposure to air, under normal working conditions. The meters shall be designed and manufactured using SMT (Surface Mount Technology) components. All the material and electronic power components used in the manufacture of the meter shall be of highest quality and reputed make to ensure higher reliability, longer life and sustained accuracy as given below or any other equivalent make with the strict approval of TPCODL			
		SNo	Component Function	Requirement	Makes and Origin
		1	Measurement/c omputing chips	The Measurement/ computing chips used in the meter should be with the Surface mount type along with the ASICs	USA: Analog Devices, Cyrus Logic, Atmel, Phillips, Free scale semiconductor, Texas Instruments, South Africa: SAMES, Japan: NEC
		2	Memory chips/NVM	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges. The life of NVM shall be 15 years.	USA: Atmel, National, Semiconductors, Texas Instruments, Phillips, Microchip, Japan: Hitachi or Oki, Swiss: STMicro
		3	Display modules	The display modules should be well protected from the external UV radiations. The display visibility should be sufficient to read the meter mounted between height of 0.5m and 2m. The construction of the modules should be such that the displayed quantity should not disturbed with the life of display. Should be with Green LED background. It should be trans- reflective STN type industrial grade with extended temperature range.	Taiwan: Holtek, Singapore: Bonafied, Technologies, Korea: Advantek, China: Xiamen, Truly semiconductor
		4	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily. It should be magnetic locking type	USA: National, Semiconductors, Holland / Korea: Phillips, Taiwan: MAXIM, Everlight, Japan: Hitachi

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		5	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm	A class consumer
		6	Electronic components	The active & passive components should be of the surface mount type & are to be handled & soldered by the state of art assembly processes.	USA: National, Semiconductors, Atmel, Phillips, Texas, Instruments, Vishay, Japan: Hitachi, Oki, AVX or Ricoh, Korea: Samsung,
		7	Battery	Lithium-ion battery with guaranteed life of 15 years	Varta / Tedirun / Vitzrocell / Sanyo or equivalent.
		8	Microcontroller and RTC having separate battery	The accuracy of RTC shall be as per relevant IEC / IS standards and RTC shall be provided with separate battery in its circuit. The micro controller shall be of superior quality from reputed make with long life.	USA: Philips , Dallas, Atmel, Motorola, Texas Instruments, Japan: Renesas, NEC or Oki
5.1	Meter Body	5.1.1	Meter body shall be made of unbreakable, high grade, fire retardant reinforce Insulating virgin material (protective Class II) with FV0 Fire Retardant, self extinguishing, UV stabilize, recyclable and Anti oxidation properties.		fire retardant reinforced 0 Fire Retardant, self - 1 properties.
		5.1.2	The minimum thickness of the meter enclosure shall be 2mm.		
		5.1.3	Meter base shall be opaque with virgin polycarbonate LEXAN 500R or equivalent (i.e. chart of Lexan 500R compared with the alternative material) on prior approval from the TPCODL. (If different material offered the bidders should submit material data sheet in technical bid )		
		5.1.4	Meter cover shall be transparent with virgin polycarbonate LEXAN 143R/943A or equivalent (i.e. chart of Lexan 500R compared with the alternative material) on prior approval from the TPCODL. (If different material offered the bidders should submit material data sheet in technical bid )		
		5.1.5	Meter cover & base shall be provided with continuous and seamless Ultrasonic welding such that it cannot be opened without breaking the enclosure. Front cover & base shall be such that it is not possible to cut & open the meter without certainly damaging the meter body and by no means shall an attempt to reassemble would not leave physical evidence. The damage evidences should be visible externally& should be traceable in such a way that attempts can be proved in court of law.		
		5.1.6	The meter body shall be sealed in such a way that opening of meter base and cover is possible only after breaking the seal(s).		
		5.1.7	During meter manufacturing the meter seal fixing should be tightened such that the seal body should be close to meter body.		
		5.1.8	Unidirectional scr	ews to be used on meter covers where	ever required.
		5.1.9	The Meter body electronic parts (in body such as m	shall be such that the liquid or chem n installed condition), if liquid is injecte neter terminals, push button, display	ical shall not reach the d from any side of meter , NIC card casing etc.

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			Necessary protection and water tight sealing to be provided at terminals and Push buttons etc.
5.2	Terminals, Terminal Block	5.2.1	Even after any attempts the terminal block should get disengaged, opened or loosen from any side. Any attempt to disengage the terminal block should certainly damage the meter body with physical evidences. The damage evidences should be visible externally& should be traceable in such a way that attempts can be proved in court of law.
		5.2.2	Terminals may be grouped in terminal block having adequate insulating properties and mechanical strength. In order to satisfy such requirements when choosing insulating virgin materials for the terminal block adequate testing of materials shall be taken into account.
		5.2.3	Terminal block and terminal cover shall be of a material which complies with the requirements of IS11731 (part 1) method FH1. The material of which the terminal block is made shall be capable of passing the Heat Deflection temperature test given in ISO 75 for temperature of 135°C and pressure of 1.8 MPa as mentioned in IS 14697. Tested as per ISO 75-2/A or ASTM D648. The terminal block shall be of opaque with virgin polycarbonate LEXAN500R or equivalent (complying with above requirement) on prior approval from the TPCODL. (The bidders should submit material data sheet in technical bid )
		5.2.5	The terminal block, the terminal cover and the meter case shall ensure reasonable safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them. The material and plating details of terminals screw shall be submitted by the bidder.
		5.2.6	The manner of fixing the conductors to the terminals shall ensure adequate and durable contact such that there is no risk of loosening or undue heating. Terminal & screw should not be damaged during regular opening and tightening.
		5.2.7	<b>Temperature sensor</b> to be provided for sensing the temperature and meter should be programmed in such way that on reaching the threshold value set (as per tamper table no. 1) the event/alert should go to HES.
		5.2.8	Internal diameter of the terminal holes shall be minimum 5 mm; minimum clearance between adjacent terminals shall be 10 mm. Minimum Depth of the terminal holes shall be of 20 mm.
		5.2.9	Minimum two number of terminal screws to be provided per terminal wire.
		5.2.10	Terminal block shall be such that the risk of corrosion resulting from contact with any other metal part is minimized. Electrical connections shall be so designed that contact pressure is not transmitted through insulating material.
		5.2.11	Meter terminal should have 10 terminals arrangement. The terminals should have center to center distance of min. 11.5mm. Terminal configuration shall be R-Cin, R volt, R-Cout, Y-Cin, Y volt, Y-Cout, B-Cin, B-volt, B-Cout, Neutral.
5.3	Terminal Cover	5.3.1	Terminal cover shall be short type and transparent with virgin polycarbonate LEXAN 143R/943A or equivalent on prior approval from the TPCODL (the bidders should submit the relevant material data sheet in technical bid).
		5.3.2	Appropriate space shall be available for incoming /outgoing cables without damaging/stressing terminal cover (terminal cover design shall be as per the TPCODL approval). After sealing the cover, terminals shall not be accessible

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			without breaking the seals. Terminal cover should be of short type 20-25 mm length. The system connection diagram shall be provided on the terminal cover.				
		5.3.3	The terminal cover des on cover should have r	ign should be such nin dimension of 3	that the sealing screw lockin mmx3mm. (Excluding seal lo	g provision ock hole)	
		5.3.4	5.4 The terminal cover should open on the top side, during connection of the cables. The side opening of terminal cover is not acceptable due to additional opening space requirement.				
5.4	Sealing of meter, terminal cover and NIC cover	5.4.1	5.4.1 The system connection diagram shall be provided on the terminal cover. Reliable sealing arrangement shall be provided to make the meter tamper evident and to avoid fiddling or tampering by unauthorized persons.			er. Reliable dent and to	
		5.4.2	5.4.2 For this, one no. Polycarbonate seal and three no. Hologram seal with unique serial numbers (on Left, Right & Top side) shall be provided by the bidder. One no polycarbonate seal shall be provided by the TPCODL. This seal shall be fix on right hand side of meter.				
		5.4.3	All the seals with uniqu at his works before cal	e serial numbers sl ling for inspection.	hall be fixed on meter body by	y the bidder	
		5.4.4	5.4.4 Two sealing provision shall be provided at meter terminal cover, such that terminal shall not be accessible without breaking the seals. All the seals shall be provided on front side only and as per the TPCODL specification. Rear side sealing arrangement shall not be accepted. Bidder shall provide seals be as per CEA regulation (2006). Only patented seals to be used as per CEA requirements.				
		5.4.5	5.4.5 The bidder shall provide TPCODL(MMG store and MTL) the soft record of polycarbonate seal and hologram seal serial number and NIC card serial number used against each meter serial number along with its position (RHS/LHS/Top/Meter body/ NIC Cover) in tabular form for every lot of meter.				
		5.4.6	Plug in type NIC card of be sealed with manufa	cover should have cturer's polycarbor	proper sealing arrangement nate seal.	and should	
5.5	TOD Feature	The m IMPOF time of be pro	eter shall be capable of RT and IMPORT – EXPO day (TOD) registers ha grammable by MRI/ Ove	of measuring Cum DRT mode, wherev ving 8 zones & 02 er the air with ade	ulative Energy (kWh & kV/ ver applicable and MD (kW & seasons (no. of zones & tim quate security level and in o	Ah)both for kVA) with e slot shall one to one	
			Slots	Time Slot	Jan-Dec		
			Off-peak	2200-0600	Register 1		
			Normal	0600-2200	Register 2		
		# The bidder to ask TPCODL for latest TOD timing slots before manufacturing of every lot.					
5.6	MD Integration	The MD integration period shall be 15 minutes, as applicable (integration period- programmable by MRI/HHU at site and also through HES with adequate security level). The MD resetting shall be automatic at the 1st of the month i.e. 0000 hours of 1 <sup>st</sup> day of the month. Manual MD reset button shall not be available. Last 12 MD values shall be stored in the memory. MD shall be recorded and displayed with minimum three digits before decimal and minimum three digits after decimal points. MD integration shall be of sliding Type at an interval of 10 min.					
5.7	Parameters in Meter/HES	All the PC/La Memore time of	ese parameters shall b ptop. All the parameter ry (NVM). The correspon f 15 years. It is to be en	e downloaded lo s shall be recorde ding Non Volatile N sured that any dat	cally or remotely and inte ed and memorized in its N Memory shall have a minimu ta which is pushed / pulled t	erpreted in on Volatile m retention from meter	

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		<ul> <li>must have Meter Sr. No. as one of the parameters.Time-sync with RTC and over-writes on drift threshold. Clarity on event logged in memory and server time-stamps matching.</li> <li>'Fail' to be log in memory in the following conditions: <ul> <li>a) RTC fail</li> <li>b) NVM memory fail</li> <li>c) Rettory fail</li> </ul> </li> </ul>				
571	Load survey (for	Meter serial number and NIC serial	number shall be recorded and a	ommunicated for all		
5.7.1	pre-paid post-	profiles of data. The meter shall h	number shall be recorded and co	tes average of the		
	naid & NFT meter	following parameters for at least las	t 45 days	ites average of the		
	mode)	a) Voltage for each phase				
		b) Current of each phase				
		c) Average PF				
		d) Average kWh				
		e) Average kVAh (lag only, for	import only)			
		f) kVArh(Lagging)				
		g) kVArh(Leading)				
		h) Demand (KW)				
		i) Demand(KVA)	block (°C)			
		k) THD Voltage phase wise	DIOCK (C)			
		I) THD Current phase wise				
		Meter shall be capable of record	ing daily Energy and Demand	00:00 to 24:00 Hrs		
		kWh/kVAh, kW/kVÅ for 45 days. N	lidnight energy value of cumulativ	e KWh, KVAh along		
		with H1 KW and KVA along with daily consumption kWh should be available in meter				
		memory for last 45 days.				
		Load survey data should be at least	with 5 decimal place			
5.7.2	Instantaneous	Meter serial number and NIC serial number shall be recorded and communicated for all				
	Parameters	profiles of data. Meter shall be capable for following instantaneous Parameters in Memory and should be available in HES				
		Meter Sr.No.				
		NIC Sr. No.				
		Meter Type	3P HT			
		Meter date & Time	DD MM YYYY HH MM SS			
		Voltage –R	000.000V			
		Voltage –Y	000.000V			
		Voltage –B	000.000V			
		Line Current –R	00.000A			
		Line Current –Y	00.000A			
		Line Current –B 00.000A				
			00.000A			
		Active Current –R	00.000A 00.000A			
		Active Current –R Active Current –Y	00.000A 00.000A 00.000A			
		Active Current –R Active Current –Y Active Current –B	00.000A 00.000A 00.000A 00.000A 00.000A			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-R Reactive Current-P	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R Power factor-Y	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 0.000 0.000 0.000			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R Power factor-Y Power factor-B	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 0.000 0.000 0.000			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R Power factor-Y Power factor-B Average Power factor	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 0.000 0.000 0.000 0.000 0.000 0.000			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R Power factor-Y Power factor-B Average Power factor Instantaneous Frequency	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000Hz			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R Power factor-R Power factor-B Average Power factor Instantaneous Frequency Instantaneous Load	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 0.000 0.000 0.000 0.000 0.000 0.000 0.000 A 0.000 0.000 0.000 A 0.000 A 0.000 A Active ,Reactive Lag/Lead,			
		Active Current –R Active Current –Y Active Current –B Reactive Current-R Reactive Current-Y Reactive Current-B Power factor-R Power factor-R Power factor-Y Power factor-B Average Power factor Instantaneous Frequency Instantaneous Load	00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 00.000A 0.000 0.000 0.000 0.000 0.000 0.000 0.000 Active ,Reactive Lag/Lead, Apparent			
		Active Current -R         Active Current -Y         Active Current -B         Reactive Current-R         Reactive Current-Y         Reactive Current-B         Power factor-R         Power factor-P         Power factor-B         Average Power factor         Instantaneous Frequency         Instantaneous Load         Present Cumulative Energy	00.000A           0.000           0.000           0.000           0.000           0.000           0.000Hz           Active ,Reactive Lag/Lead,           Apparent           Active ,Reactive Lag/Lead,			

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		Cumulative Power Off Duration	00000		
		Cumulative Power ON Duration	00000		
		Cumulative Tamper count	00000		
		Terminal Block Temperature (°C)			
		Cumulative Billing Count	00000		
		Last Billing date	dd:mm:yy		
		No of Power failure	00000		
		Vector/phasor diagram In case			
		one of the voltage is missing,			
		vector should be made with 2			
		voltage and all currents.			
5.7.3	General	Meter shall be capable for providing	below mentioned general param	eters in memory	
	Information				
		Meter Serial nun	nber		
		Firmware Version	1		
		Manufacture Nam	ne		
		Manufacture Date	e (DD/MM/YYYY)		
		Meter Type			
		Meter Class			
		Meter Constant			
		Meter Voltage Ra	iting		
		Meter Current Ra	ting		
		TOD profile showing timing and seasons #			
		NIC Sr. No.			
		# if any additional key is required to a	see this value, it should be provid	ded without any	
		additional cost to TPCODI		deu without any	
574	Billing Parameters	1) Meter serial number and NIC ser	ial number shall be recorded an	d communicated for	
0.7.4	Dining Furameters	all profiles of data All those bala	w montioned data should be a	vailable for Import	
		Mode and Export Import Mode			
		mode and Export-import mode, as applicable.			
		2) Cumulative kWh, kVAh (lag only for import mode) kVArh lead lag (all import and			
		export) and TOD1 kWh TOD2 k	$\Lambda$ in the model, $\Lambda$ is a set of the set o	import mode) TOD2	
		export) and TODT KWII, TOD2 K	For was set and last 40 Deser		
		kVAh (lag only for import mode), For present and last 12 Resets (reset date for all			
		resets/history, time zone register	wise).		
		2) Maximum Damand Abaaluta Aa	tive Lond and Absolute Annous	ant lead and TOD1	
		3) Maximum Demand Absolute Act	tive Load and Absolute Appare	ent load and TOD'	
		kW,TOD2 kW, TOD1 kVA (lag or	nly for import mode),TOD2 kVA	(lag only for import	
		mode), for present and last 12	Resets ( reset date for all reset	s/history, time zone	
		register wise) along with date and	l time stamp.		
		4) Consumption (Reading date, Cu	rrent Month & 12 History, time	zone register wise)	
		<u>kWh and kVAh.</u>			
		5) Billing Dates (12 History)			
			6) Cumulative Billing count		
		6) Cumulative Billing count			
		<ul><li>6) Cumulative Billing count</li><li>7) TOD details with day time and se</li></ul>	ason wise.		

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5.7.5	Transactions	Cumulative energy parameters kWh, kVAh (lag only for import mode), kVArh lead, lag (all import and export) and TOD1 kWh, TOD2 kWh, , TOD1 kVAh (lag only for import mode), TOD2 kVAh (lag only for import mode) . The meter shall be capable of measuring Cumulative Energy (kWh & kVAh) both for IMPORT and IMPORT – EXPORT mode, wherever applicable. Note : Meter must have provision of 8 time zones. All the changes in software of meter to be logged along with date & time stamp and				
		do billing if any transaction is done.	programmed.	Meter should		
5.7.6	Tamper Events	All events should be logged as per table no-1. The meter shoul logging or any logic other than desired in specs. If any other I has to disclose during tender and offering of lot and get approv not mentioned in specification should be removed or disable approved by TPCODL.	ld not have ai ogic is prese al for same. <i>I</i> ed in meter fi	ny other event nt then bidder All other logics rmware if not		
5.8	Auto Scroll mode & Push-button mode for Import and Export-Import Modes in the Meter	The display unit shall be Pin type built-in liquid crystal display (Permanently backlit type LCD). The LCD shall be of STN (Super Twisted Nematic) construction suitable for maximum temperature withstands 65°C and minimum temperature withstands 0 °C during normal operating condition. The LCD display shall have a wide viewing angle of 120 degree. When the meter is not energized the electronic display need not be visible. The display shall not be affected by electrical, magnetic disturbances and ESD. The display should be readable in direct sunlight. <b>The back lit must be green in color for good visibility of digits in sunlight.</b> The kWh & kVAh register shall have minimum 8 digits LCD display and size of the digits shall be minimum 10mmx5mm. Cumulative energy (kWh & kVAh) shall be displayed without decimal in auto scroll mode. (However decimal shall be available in push button mode for high resolution display for testing). Persistence time for each parameter shall be 10 second. Values followed by header shall be avoided. (I.e. if MD1 is displayed in Auto scroll mode, Header (MD1) and value (say 025.238 kW) shall be shown simultaneously; it shall not be shown in successive displays. Off time shall not be available in auto scroll mode between each cycle. Auto scroll mode is restored after 10 sec, if push button is not operated. Display should not be stuck for any tamper events. Following shall be continuously displayed in auto scroll and push button mode in the given order:				
		For IMPORT Mode: Display Display 1 Display 2				
		Scroll Process	Auto	Push		
		LCD Check	1	1		
		Meter Sr. No	2	2		
		Date	3	3		
		Time	4	4		
		Cum. kWh 5 5				
		Cum. kVAh 6 6				
		Cum. kVARh (Lag) 7 7				
			8	8		
			9,10	9,10		
			11,12	10		
			13	13		
		Last Month (history 1) kWh	15	15		
	1		10	15		

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	Last Month (history 1) kVAh			16
	_ast Month (history 1) TOD Cum. kWh (T1,T2	2)	17,18	17,18
	Last Month (history 1) TOD Cum. kVAh (T1,T2)			19,20
	Last Month (history 1) MD kW			21
	Last Month (history 1) MD kVA		22	22
	Last Month (history 1) Power Factor		23	23
	Phase Voltages (Vr, Vy, Vb)		24,25,26	24,25,26
	Phase Currents (Ir, Iy, Ib)		27,28,29	27,28,29
	Inst. Active Power (kW)		30	30
	Inst. Apparent Power (kVA)		31	31
	Inst.Power Factor		32	32
	Voltage Sequence (R-Y-B)		33	33
	Current Sequence (R-Y-B)		34	34
	High Resolution kWh		-	35
	High Resolution kVAh		-	36
	High Resolution kVARh (Lag)		-	37
	High Resolution kVARh (Lead)		-	38
	Magnetic Tamper count		-	39
	Latest Magnetic tamper occurrence date		-	40
	Latest Magnetic tamper occurrence Time		-	41
	ESD Tamper count		-	42
	Latest ESD tamper occurrence date		-	43
	Latest ESD tamper occurrence time		-	44
	TC Open tamper count		-	45
	TC Open occurrence date of very first event		-	46
	TC Open occurrence time of very first event		-	47
For IMP	<u>ORT-EXPORT Mode:</u> Display	Display 1	I Display	y 2
	Scroll Process	Auto	Push	1
	LCD Check	1	1	
	Meter Sr. No	2	2	
	Date	3	3	
	Time	4	4	
	Cum. Import kWh	5	5	
	Cum. Import kVAh	6	6	
	Cum. Import kVArh (Lag) 7		7	
	Cum. Import kVArh (Lead)	8	8	
	Cum. Export kWh	9	9	
	Cum. Export kVAh	10	10	
	Cum. Export kVARh (Lag)	11	11	

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		Cum. Export kVARh (Lead)	12	12	
		TOD Cum. Import kWh (T1,T2)	13, 14	13, 14	
		TOD Cum. Import kVAh (T1,T2)	15,16	15,16	
		TOD Cum. Export kWh (T1,T2)	17,18	17,18	
		TOD Cum. Export kVAh (T1,T2)	19,20	19,20	
		Current Month MD kW	21	21	
		Current Month MD kVA	22	22	
		Phase Voltages (Vr, Vy, Vb)	23,24,25	23,24,25	
		Phase Currents (Ir, Iy, Ib)	26,27,28	26,27,28	
		Inst. Active Power (kW)	29	29	
		Inst. Apparent Power (kVA)	30	30	
		Inst.Power Factor	31	31	
		Voltage Sequence (R-Y-B)	32	32	
		Current Sequence (R-Y-B)	33	33	
		High Resolution kWh	-	34	
		High Resolution kVAh	-	35	
		High Resolution kVARh (Lag)	-	36	
		High Resolution kVARh (Lead)	-	37	
		<ul> <li>front. This device shall be suitable for using benches or reference standard meters. Meter on the name plate as imp / KWh &amp; imp/kVAr actual without multiplying factor.</li> <li>5.9.2 Communication LCD indicator-Meter disp context to NIC. The blinking should be slow w be fast when NIC had searched the networl successfully latched to the HES.</li> <li>5.9.3 Phase indication : Individual phases should be and shall glow with minimum operating voltage.</li> </ul>	y with sensing er constant sh h. <b>Meter con</b> blay shall hav then NIC is de k and it shou e displayed o ge (as defined	a probe used we hall be indelibly istant shall be indelibly istant shall be indicated; blinking id be stable with the stable of GT	with test printed as per ation in should hen it is of meter R)
0.0	AND MARKING	<ul> <li>Meters shall have a name plate clearly visible and effectively secured against removal. The name plate data should be laser printed. The base color of Name plate shall be blue (Pantone 2727C) indelibly and distinctly marked with all essential particulars as per relevant standards along with the following:         <ul> <li>i.Manufacturer's name</li> <li>ii.Type designation</li> <li>iii.Number of phases and wires</li> <li>iv. Serial number (Meter serial number shall be laser printed on name plate instead on sticker).</li> <li>v.Month and Year of manufacture (MM/YYYY)</li> <li>vi.Unit of measurement</li> <li>vii.Reference voltage ,frequency</li> <li>viii.Ref. temperature if different from 27 deg. C</li> <li>ix.Rated basic and maximum Current</li> <li>x.Meter constant (imp/kWh, Imp/kVArh)</li> <li>xi.'BIS' Mark</li> </ul> </li> </ul>			

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		xiii. "Property of TPCODL "						
		xiv.F	Purchase Orde	er No. & dat	е			
		xv.0	Guarantee peri	iod.				
		XVI.H	Rated frequend	cy				
		XVII.S	Sign of double	square				
			xin.country of manufacture.					
			xx.Filliwale version for meter					
			xx. Calegory					
		xxii.0	Communication	n Technolog	av is IHD su	w) bptrodau	ith carrier fre	equency).
		However the	following shal	l be printed	in bar code	e on the me	ter namepla	te(shall be laser
		printed on na	me plate inste	ad of any st	icker). All d	ata shall be	laser printe	d òn meter along
		with Sr.NO a	nd date of mar	nufacturing.	No sticker	to be used	to avoid loss	s of data in event
		of fire. Conte	nt Format for t	bar code: Ti	PCODL MN	IYY XXXX	<b>XXXX</b> (9-di	git Serial no.)
		The PCB Ser	rial number sh	ould be prir	ited on the	PCB instea	d of sticker.	
		Bidder shou	ld ensure tha	t each NIC	provided i	n meters a	re having la	ser printed Sr.
		No., MFG da	ate, 'Property	of TPCOE	)L' marked	I, PO date	and no. (sa	ame as that of
7.0	TEOTO	meter PO)				· · ·		
7.0	12313	All routine, a		ype lesis s with the rele	nall be car	Call routin	ine meier a	and meler body
		witnessed by	the TPCODI	/his author	ized repres	entative Al	the compo	nents shall also
		be type test	ed as per the	e relevant	standards.	Following	tests shall	be necessarily
		conducted in	addition to the	e tests spec	ified in IS/I	EC from CP	RI/ERDA.	,
7.1	TYPE TEST	1) All type-te	ests defined in	IS 16444 (I	Part-2) and	IS 15959 (F	Part-3):2016	
		2) Test agai	2) Test against abnormal magnetic influence as per CBIP TR 325.					
		3) Test for M	laterial used for	or Terminal	Block and	meter body	as per relev	ant standards.
		4) IP test for	IP 51 as per l	S 60529	<b>.</b>			
		5) Bidder/BA	A MUST SUDMIT	Valid BIS I	cense for r	nanutacturi	ng smart en	ergy meters as
72			Voltane test (C	lause no 1	2763 of $1$	2 14607)	510115.	
		2) Insulation	test (Table 18	of Clause	no 12760	of IS $14697$	)	
		3) Test on li	mits of error (C	Clause no. 1	1 of IS 146	97)	/	
		4) Test of st	arting current (	(Clause no.	12.13 of IS	5 14697)		
		5) Test of no	o load condition	n (Clause n	o. 12.12 of	IS 14697)		
		6) Communication check of NIC (Table27 of IS 15959 (Part 3); Clause no. 9.5 & 10 of IS						
7.2	ACCEDTANCE	16444 Pa	rt -2)		0700.4	0 44007)		
1.3	TEST	1) AC High v	voltage test (C	ause no. 1	2.1.0.3 OF R	5 14697) sf 19 14607	N N	
	1231	3) Test on li	mits of error (C	Clause no 1	1 of IS 146	97) with fol	) Iowing loads	
		120%	Imax	Ib (5A)	0.1 lb	0.02 lb	0.05lb	0.01lb
		Imax	(10A)					
		UPF, 0.8	UPF, 0.8	UPF,	UPF,	UPF,	UPF	UPF
		lead and	lead and	0.8 lead	0.8 lead	0.8 lead		
		0.5 lag	0.5 lag	and 0.5	and 0.5	and 0.5		
				lag	lag	lag		
		(1) Test of m	eter constant (	Clause no	12 11 of 19	14607)		
		5) Test of st	arting current (	Clause no.	12.13 of IS	14697)		
		6) Test of no	load condition	n (Clause n	o. 12.12 of	IS 14697)		
		7) Test of re	7) Test of repeatability of error (Clause no. 12.16 of IS 14697)					
		8) Test of po	wer consump	tion (Clause	e no. 12.7.1	of IS 1469	7)	
		9) Test for Ir	nmunity agains	st external i	nfluencing	signal as pe	r the TPCOE	DL specification
		10) Test for Ir	nmunity again	st DC Immu	unity as per	the TPCOL	DL specifica	tion
		11) Test for Ir	nmunity again	st lamper of		as per the T	PCODL spe	ecification
		12) Error mea	asurements wit	in all abhor	mai conditio	on along wit	n ESD, mag	net, jammer

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		<ol> <li>13) Test to Influence of Harmonics (Table 13 of IS 14697)</li> <li>14) Supply voltage and frequency variation test (Clause 11.2 &amp; 12.10 of IS 14697)</li> <li>15) Testing of self-diagnostic features (as per this technical specification)</li> <li>16) Tamper count increment and logging with date and time in meter database (as per this technical specification)</li> <li>17) All tests as defined in IS 15959(Part-3):2017 (clause 27 &amp; 28)</li> <li>18) Functionality of communication module IS 16444 part2</li> <li>19) Meter reading on HES demand. Scheduled meter reading from HES remote firmware</li> </ol>
		upgrade from HES and all programming request from HES to be simulated and checked during inspections (as per this technical specification). 20) Physical check of NIC and replaceable ease of the NIC module in meter (as per this
		technical specification). 21) Any other test required as per latest IS 16444, 15999 and relevant parts shall be tested during inspections.
7.4	Special Test	The bidder shall demonstrate the communication capability of the meter through communication modes as defined in the specification before conducting acceptance tests
8.0	TYPE TEST CERTIFICATE	The bidder shall furnish the type test certificates of the meter for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ ERDA as per BIS 16444 part-2. For communication testing any national approved laboratory or international acclaimed lab or equivalent will also suffice at the discretion of TPCODL.
		For technical evaluation of the tender, we may consider Type test report as per IS 14697. In such case the Bidder should provide IS16444-2 compliant test report before starting of supply of meters. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL
11.0	GUARANTEE	Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the TPCODLup to a period of at least 60 months from the date of commissioning or 66 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Company, failing which the TPCODL will be at liberty to get it replaced/rectified at bidder's risks and costs and recover all such expenses plus the Company's own charges (@ 20% of expenses incurred), from the bidder or from the "Security cum Performance Deposit" as the case may be. Bidder shall own responsibility for all internal component with an end to end agreement with individual component manufacturer.
12.0	PACKING	<ol> <li>Bidder shall ensure that all material covered under this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. The material used for packing shall be environmentally friendly. Packing and transportation shall be as per IS 15707:206 clauses 9.1 and 9.2.</li> <li>Individual meter should be packed in separate box. Routine test report (with manufacturing company logo) of the individual meter shall be kept inside each card board carton of the meter.</li> <li>On back side of routine test certificate (RTC) the bidder shall print a picture of the meter with its small details like for consumer to know about meter or display parameters sheet.</li> <li>The soft copy of the routine test certificate of each meter to be provided with each lot to TPCODL, MMG lan at Bhubaneswar.</li> <li>The routine test certificate shall contain results &amp; all tests of clause no. 7.2.</li> </ol>

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		6. Bar code containing information of meter Sr. No should be pasted on the outer most					
		box in which single / group of meters are transported					
11.0	TRAINING	Outitable d					
14.0	IRAINING	of every	of every software and hardware regarding communication between meter & HHU meter				
		& HES, v	vithout any cost implications tow	ards TPCODL.		a mile, meter	
15.0	CONTROL	<ul> <li>of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</li> <li>Quality should be ensured at the following stages:</li> <li>At PCB manufacturing stage, each board shall be subjected to computerized bare board testing.</li> </ul>					
		<ul> <li>At in confo</li> <li>Comp Autor</li> </ul>	sertion stage, all component rming to design parameter and o plete assembled and soldered matic Test Equipment (ATEs)	s should unde orientation. PCB should un	rgo computeriz dergo functiona	ed testing for I testing using	
		Prior (i.e. r atmos meter	to final testing and calibration, s meters will be kept in ovens spheric humidity under real-life should work satisfactorily.	sample meters s for 24 hours at condition at its f	shall be subjecte 55 Deg. C ter ull load current.	d to aging test mperature and After 24 hours	
		TPCODL bidder's/r	's engineer(s) or its nominated manufacturer's works to carry ou	representative(s it inspections.	) shall have free	e access to the	
16.0	MINIMUM TESTING FACILITIES	Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards. The bidder shall have duly calibrated Reference Standard meter of Class 0.1 accuracy or better.					
17.0	MANUFACTURING ACTIVITIES	The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart shall be in line with the Quality assurance plan submitted with the offer.					
18.0	SPARES, ACCESSORIES AND TOOLS	<ol> <li>Bidder to be provide free of cost 02 nos. of jig (irrespective of order lot) for retrieving data from memory of meter with every new design of meter in which previous jig is supplied cannot be used. Jig should be such that NVM can be push fit on this jig and data can be retrieve from this NVM.</li> <li>Five (5) nos. of optical cord against each 100 meter lot on pro-rata basis for retrieving the data of meter through optical port should be provided, if design of optical port is changed from those of previously supplied meters.</li> </ol>					
19.0	DRAWINGS AND	Following	g drawings & Documents shall I	prepared bas	ed on TPCODL	specifications	
	DOCUMENTS	and statu	Itory requirements and shall be solution to the solution of th	submitted with th	e bid:		
		b) Gene	ral arrangement drawing of the	meter			
		c) Terminal Block dimensional drawing					
		<ul> <li>a) Mounting arrangement drawings.</li> <li>b) General description of the equipment and all components with makes and technical</li> </ul>					
		requirement f) Type Test Certificates					
		g) Experience List					
		After the award of the contract, soft copies of following drawings, drawn to scale,					
		aescribin	g me equipment in detail shall b	e forwarded for a	approval:	Final	
		5. NO.	Description	Approval	Information	Submission	

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1	Technical Parameters			$\checkmark$
2	General Arrangement			$\checkmark$
	drawings			
3	Terminal block Dimensional			$\checkmark$
	drawings			
4	Mounting arrangement			$\checkmark$
	drawing.			
5	Manual/Catalogues			
6	Transport/ Shipping			$\checkmark$
	dimension drawing			
7	QA &QC Plan			
8	Routine, Acceptance and			
	Type Test Certificates			
Bidder s	hall subsequently provide sof	t copy of all the	drawings. GTP	. data-sheet of
dis-conn	ector switch. data-sheet/ co	mparative anal	vsis (of materi	al of terminal
block, te	erminal cover, terminal screw	, meter body, r	neter base). Te	st certificates
and integ	gration documents with HES for	or the final appr	oval of TPCOD	_, before mass
manufac	turing. All the documents & d	rawings shall b	e in English lar	iguage.

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#### **ANNEXURE I: OBIS CODES**

S. No.	Instantaneous Profile	OBIS Code	OBIS Source
	Instantaneous Profile	1.0.94.91.0.255	IS15959-Part3
1	Real Time Clock - Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Current - IR	1.0.31.7.0.255	IS15959-Part3
3	Current - IY	1.0.51.7.0.255	IS15959-Part3
4	Current - IB	1.0.71.7.0.255	IS15959-Part3
5	Voltage - VRN	1.0.32.7.0.255	IS15959-Part3
6	Voltage - VYN	1.0.52.7.0.255	IS15959-Part3
7	Voltage - VBN	1.0.72.7.0.255	IS15959-Part3
8	Power Factor - R phase	1.0.33.7.0.255	IS15959-Part3
9	Power Factor - Y phase	1.0.53.7.0.255	IS15959-Part3
10	Power Factor - B phase	1.0.73.7.0.255	IS15959-Part3
11	Three Phase Power Factor - PF	1.0.13.7.0.255	IS15959-Part3
12	Frequency	1.0.14.7.0.255	IS15959-Part3
13	Apparent Power - KVA	1.0.9.7.0.255	IS15959-Part3
14	Signed Active Power - kW (+ Forward; -Reverse)	1.0.1.7.0.255	IS15959-Part3
15	Signed Reactive Power - kvar (+ Lag; - Lead)	1.0.3.7.0.255	IS15959-Part3
16	Number of power failures	0.0.96.7.0.255	IS15959-Part3
17	Cumulative power-failure duration in Min	0.0.94.91.8.255	IS15959-Part3
18	Cumulative Tamper count	0.0.94.91.0.255	IS15959-Part3
19	Cumulative Billing count	0.0.0.1.0.255	IS15959-Part3
20	Cumulative programming count	0.0.96.2.0.255	IS15959-Part3
21	Billing Date	0.0.0.1.2.255	IS15959-Part3
22	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
23	Cumulative Energy - kWh, Export	1.0.2.8.0.255	IS15959-Part3
24	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part3
25	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part3
26	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part3
27	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part3
28	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
29	Cumulative Energy - kVAh, Export	1.0.10.8.0.255	IS15959-Part3
30	MD kW, Import/Forwarded	1.0.1.6.0.255	IS15959-Part3
31	MD kVA, Import/Forwarded	1.0.9.6.0.255	IS15959-Part3
32	Temperature	0.0.96.9.128.255	TPCODL Specific
33	Neutral current	1.0.91.7.0.255	IS15959-Part2
34	%THDV R- Phase (up to 11th harmonic)	1.0.32.7.124.255	TPCODL Specific
35	%THDV Y- Phase (up to 11th harmonic)	1.0.52.7.124.255	TPCODL Specific
36	%THDV B- Phase (up to 11th harmonic)	1.0.72.7.124.255	TPCODL Specific

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37	%THDI R- Phase (up to 11th harmonic)	1.0.31.7.124.255	<b>TPCODL</b> Specific
38	%THDI Y- Phase (up to 11th harmonic)	1.0.51.7.124.255	TPCODL Specific
39	%THDI B- Phase (up to 11th harmonic)	1.0.71.7.124.255	TPCODL Specific

S. No.	BillingProfile	OBIS Code	OBIS Source
	Billing Profile	1.0.98.1.0.255	IS15959-Part3
1	Billing Date	0.0.0.1.2.255	IS15959-Part3
2	System Power Factor For Billing Period for	1 0 12 0 0 255	IS1EDED Dart2
2	Import/Forwarded	1.0.15.0.0.255	1313939-Parts
3	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
4	Cumulative Energy kWh TZ1, Import/Forwarded	1.0.1.8.1.255	IS15959-Part3
5	Cumulative Energy kWh TZ2, Import/Forwarded	1.0.1.8.2.255	IS15959-Part3
6	Cumulative Energy kWh TZ3, Import/Forwarded	1.0.1.8.3.255	IS15959-Part3
7	Cumulative Energy kWh TZ4, Import/Forwarded	1.0.1.8.4.255	IS15959-Part3
8	Cumulative Energy kWh TZ5, Import/Forwarded	1.0.1.8.5.255	IS15959-Part3
9	Cumulative Energy kWh TZ6, Import/Forwarded	1.0.1.8.6.255	IS15959-Part3
10	Cumulative Energy kWh TZ7, Import/Forwarded	1.0.1.8.7.255	IS15959-Part3
11	Cumulative Energy kWh TZ8, Import/Forwarded	1.0.1.8.8.255	IS15959-Part3
12	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
13	Cumulative Energy kVAH TZ1, Import/Forwarded	1.0.9.8.1.255	IS15959-Part3
14	Cumulative Energy kVAH TZ2, Import/Forwarded	1.0.9.8.2.255	IS15959-Part3
15	Cumulative Energy kVAH TZ3, Import/Forwarded	1.0.9.8.3.255	IS15959-Part3
16	Cumulative Energy kVAH TZ4, Import/Forwarded	1.0.9.8.4.255	IS15959-Part3
17	Cumulative Energy kVAH TZ5, Import/Forwarded	1.0.9.8.5.255	IS15959-Part3
18	Cumulative Energy kVAH TZ6, Import/Forwarded	1.0.9.8.6.255	IS15959-Part3
19	Cumulative Energy kVAH TZ7, Import/Forwarded	1.0.9.8.7.255	IS15959-Part3
20	Cumulative Energy kVAH TZ8, Import/Forwarded	1.0.9.8.8.255	IS15959-Part3
21	MD kW, Import/Forwarded	1.0.1.6.0.255	IS15959-Part3
22	MD kW TZ1, Import/Forwarded	1.0.1.6.1.255	IS15959-Part3
23	MD kW TZ2, Import/Forwarded	1.0.1.6.2.255	IS15959-Part3
24	MD kW TZ3, Import/Forwarded	1.0.1.6.3.255	IS15959-Part3
25	MD kW TZ4, Import/Forwarded	1.0.1.6.4.255	IS15959-Part3
26	MD kW TZ5, Import/Forwarded	1.0.1.6.5.255	IS15959-Part3
27	MD kW TZ6, Import/Forwarded	1.0.1.6.6.255	IS15959-Part3
28	MD kW TZ7, Import/Forwarded	1.0.1.6.7.255	IS15959-Part3
29	MD kW TZ8, Import/Forwarded	1.0.1.6.8.255	IS15959-Part3
30	MD kVA, Import/Forwarded	1.0.9.6.0.255	IS15959-Part3
31	MD kVA TZ1, Import/Forwarded	1.0.9.6.1.255	IS15959-Part3
32	MD kVA TZ2, Import/Forwarded	1.0.9.6.2.255	IS15959-Part3
33	MD kVA TZ3, Import/Forwarded	1.0.9.6.3.255	IS15959-Part3
34	MD kVA TZ4, Import/Forwarded	1.0.9.6.4.255	IS15959-Part3
35	MD kVA TZ5, Import/Forwarded	1.0.9.6.5.255	IS15959-Part3

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36	MD kVA TZ6, Import/Forwarded	1.0.9.6.6.255	IS15959-Part3
37	MD kVA TZ7, Import/Forwarded	1.0.9.6.7.255	IS15959-Part3
38	MD kVA TZ8, Import/Forwarded	1.0.9.6.8.255	IS15959-Part3
39	Billing Power ON Duration in Mins	0.0.94.91.13.255	IS15959-Part3
40	Cumulative Energy - kWh Export	1.0.2.8.0.255	IS15959-Part3
41	Cumulative Energy - kVAh Export	1.0.10.8.0.255	IS15959-Part3
42	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part3
43	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part3
44	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part3
45	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part3
46	Cumulative MD kW Import/Forwarded	1.0.1.2.0.255	TPCODL Specific
47	Cumulative MD kVA Import/Forwarded	1.0.9.2.0.255	TPCODL Specific
48	Billing Reset Type	1.0.96.50.2.255	TPCODL Specific

S. No.	Block Load Profile	OBIS Code	OBIS Source
	Block Load Profile	1.0.99.1.0.255	IS15959-Part3
1	RTC	0.0.1.0.0.255	IS15959-Part3
2	Average Current - IR	1.0.31.27.0.255	IS15959-Part3
3	Average Current - IY	1.0.51.27.0.255	IS15959-Part3
4	Average Current - IB	1.0.71.27.0.255	IS15959-Part3
5	Average Voltage - VRN	1.0.32.27.0.255	IS15959-Part3
6	Average Voltage - VYN	1.0.52.27.0.255	IS15959-Part3
7	Average Voltage - VBN	1.0.72.27.0.255	IS15959-Part3
8	Block Energy - kWh. Import/Forwarded	1.0.1.29.0.255	IS15959-Part3
9	Block Energy - kWh. Export	1.0.2.29.0.255	IS15959-Part3
10	Block energy. kVArh-Q1/Lag	1.0.5.29.0.255	IS15959-Part3
11	Block energy. kVArh-Q2	1.0.6.29.0.255	IS15959-Part3
12	Block energy. kVArh-Q3	1.0.7.29.0.255	IS15959-Part3
13	Block energy. kVArh-Q4/Lead	1.0.8.29.0.255	IS15959-Part3
14	Block Energy - kVAh. Import/Forwarded	1.0.9.29.0.255	IS15959-Part3
15	Block Energy - kVAh. Export	1.0.10.29.0.255	IS15959-Part3
16	R Phase Block Energy - kWh. Import/Forwarded	1.0.21.29.0.255	TPCODL Specific
17	Y Phase Block Energy - kWh. Import/Forwarded	1.0.41.29.0.255	TPCODL Specific
18	B Phase Block Energy - kWh. Import/Forwarded	1.0.61.29.0.255	TPCODL Specific
19	Average Frequency	1.0.14.27.0.255	TPCODL Specific
20	Average Neutral current	1.0.91.29.0.255	TPCODL Specific
21	%THDV R- Phase Average(up to 11th harmonic)	1.0.32.128.124.255	TPCODL Specific
22	%THDV Y- Phase Average(up to 11th harmonic)	1.0.52.128.124.255	TPCODL Specific
23	%THDV B- Phase Average(up to 11th harmonic)	1.0.72.128.124.255	TPCODL Specific
24	%THDI R- Phase Average (up to 11th harmonic)	1.0.31.128.124.255	TPCODL Specific
25	%THDI Y- Phase Average(up to 11th harmonic)	1.0.51.128.124.255	TPCODL Specific
26	%THDI B- Phase Average(up to 11th harmonic)	1.0.71.128.124.255	TPCODL Specific

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27	Average R Phase PF	1.0.33.29.0.255	TPCODL Specific
28	Average Y Phase PF	1.0.53.29.0.255	TPCODL Specific
29	Average B Phase PF	1.0.73.29.0.255	TPCODL Specific

Note: Load Profile parameters are required to be field programmable, a TPCODL specific OBIS code will be used for this purpose and on changing capture objects LS data will be reset.

S. No.	Daily Load Profile	OBIS Code	OBIS Source
	Daily Load Profile	1.0.99.2.0.255	IS15959-Part3
1	Real Time Clock - Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
3	Cumulative Energy - kWh, Export	1.0.2.8.0.255	IS15959-Part3
4	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
5	Cumulative Energy - kVAh, Export	1.0.10.8.0.255	IS15959-Part3
6	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part3
7	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part3
8	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part3
9	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part3

S. No.	Name Plate Profile	OBIS Code	OBIS Source
	Name Plate Profile	0.0.94.91.10.255	IS15959-Part2
1	Meter Serial number	0.0.96.1.0.255	IS15959-Part2
2	Device ID	0.0.96.1.2.255	IS15959-Part2
3	Manufacturer Name	0.0.96.1.1.255	IS15959-Part2
4	Firmware Version for meter	1.0.0.2.0.255	IS15959-Part2
5	Meter Type (1Phase/3P-3W/3P-4W)	0.0.94.91.9.255	IS15959-Part2
6	Category	0.0.94.91.11.255	IS15959-Part2
7	Current rating	0.0.94.91.12.255	IS15959-Part2
8	Meter Year of TPCODL	0.0.96.1.4.255	IS15959-Part2
9	Internal CT Ratio	1.0.0.4.2.255	IS 15959 Part1
10	Internal PT Ratio	1.0.0.4.3.255	IS 15959 Part1

S. No.	Profile for Voltage events	OBIS Code	OBIS Source
	Voltage related events Profile	0.0.99.98.0.255	IS15959-Part3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code (voltage events)	0.0.96.11.0.255	IS15959-Part3
3	Current - IR	1.0.31.7.0.255	IS15959-Part3
4	Current - IY	1.0.51.7.0.255	IS15959-Part3
5	Current - IB	1.0.71.7.0.255	IS15959-Part3
6	Voltage - VRN	1.0.32.7.0.255	IS15959-Part3
7	Voltage - VYN	1.0.52.7.0.255	IS15959-Part3

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8	Voltage - VBN	1.0.72.7.0.255	IS15959-Part3
9	R Phase Pf	1.0.33.7.0.255	IS15959-Part3
10	Y Phase Pf	1.0.53.7.0.255	IS15959-Part3
11	B Phase Pf	1.0.73.7.0.255	IS15959-Part3
12	kWh Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
13	kWh Export	1.0.2.8.0.255	IS15959-Part3
14	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part3
15	kVAh Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
16	R Phase active Current	1.0.31.7.128.255	TPCODL Specific
17	Y Phase active Current	1.0.51.7.128.255	TPCODL Specific
18	B Phase active Current	1.0.71.7.128.255	TPCODL Specific
19	Neutral current	1.0.91.7.0.255	IS15959-Part2
20	Total PF	1.0.13.7.0.255	IS15959-Part3

S. No.	Profile for Current events	OBIS Code	OBIS Source
	Current related events Profile	0.0.99.98.1.255	IS15959-Part3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code ( Current events )	0.0.96.11.1.255	IS15959-Part3
3	Current - IR	1.0.31.7.0.255	IS15959-Part3
4	Current - IY	1.0.51.7.0.255	IS15959-Part3
5	Current - IB	1.0.71.7.0.255	IS15959-Part3
6	Voltage - VRN	1.0.32.7.0.255	IS15959-Part3
7	Voltage - VYN	1.0.52.7.0.255	IS15959-Part3
8	Voltage - VBN	1.0.72.7.0.255	IS15959-Part3
9	R Phase Pf	1.0.33.7.0.255	IS15959-Part3
10	Y Phase Pf	1.0.53.7.0.255	IS15959-Part3
11	B Phase Pf	1.0.73.7.0.255	IS15959-Part3
12	kWh Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
13	kWh Export	1.0.2.8.0.255	IS15959-Part3
14	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part3
15	kVAh Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
16	R Phase active Current	1.0.31.7.128.255	TPCODL Specific
17	Y Phase active Current	1.0.51.7.128.255	TPCODL Specific
18	B Phase active Current	1.0.71.7.128.255	TPCODL Specific
19	Neutral current	1.0.91.7.0.255	IS15959-Part2
20	Total PF	1.0.13.7.0.255	IS15959-Part3

S. No.	Profile for Power Fail events	OBIS Code	OBIS Source
	Power Fail event profile	0.0.99.98.2.255	IS15959-Part3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code ( power fail events )	0.0.96.11.2.255	IS15959-Part3

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S. No.	Profile for Transaction events	OBIS Code	OBIS Source
	Transaction event Profile	0.0.99.98.3.255	IS15959-Part3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code ( transaction events )	0.0.96.11.3.255	IS15959-Part3

S. No.	Profile for Others events	OBIS Code	OBIS Source
	Others related events Profile	0.0.99.98.4.255	IS15959-Part3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code ( Others events )	0.0.96.11.4.255	IS15959-Part3
3	Current - IR	1.0.31.7.0.255	IS15959-Part3
4	Current - IY	1.0.51.7.0.255	IS15959-Part3
5	Current - IB	1.0.71.7.0.255	IS15959-Part3
6	Voltage - VRN	1.0.32.7.0.255	IS15959-Part3
7	Voltage - VYN	1.0.52.7.0.255	IS15959-Part3
8	Voltage - VBN	1.0.72.7.0.255	IS15959-Part3
9	R Phase Pf	1.0.33.7.0.255	IS15959-Part3
10	Y Phase Pf	1.0.53.7.0.255	IS15959-Part3
11	B Phase Pf	1.0.73.7.0.255	IS15959-Part3
12	kWh Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
13	kWh Export	1.0.2.8.0.255	IS15959-Part3
14	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part3
15	kVAh Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
16	R Phase active Current	1.0.31.7.128.255	TPCODL Specific
17	Y Phase active Current	1.0.51.7.128.255	TPCODL Specific
18	B Phase active Current	1.0.71.7.128.255	TPCODL Specific
19	Neutral current	1.0.91.7.0.255	IS15959-Part2
20	Total PF	1.0.13.7.0.255	IS15959-Part3

S. No.	Profile for Non Rollover events	OBIS Code	OBIS Source
	Non Rollover event profile	0.0.99.98.5.255	IS15959-Part3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code ( non-rollover events )	0.0.96.11.5.255	IS15959-Part3

S. No.	Profile forTPCODL Specific events compartments	OBIS Code	OBIS Source
	TPCODL Specific events compartments profile	0.0.99.98.128.255	TPCODL Specific
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Event Code ( Non Standard events )	0.0.96.11.128.255	TPCODL Specific
3	Current - IR	1.0.31.7.0.255	IS15959-Part3
4	Current - IY	1.0.51.7.0.255	IS15959-Part3
5	Current - IB	1.0.71.7.0.255	IS15959-Part3
6	Voltage - VRN	1.0.32.7.0.255	IS15959-Part3
7	Voltage - VYN	1.0.52.7.0.255	IS15959-Part3

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8	Voltage - VBN	1.0.72.7.0.255	IS15959-Part3
9	R Phase Pf	1.0.33.7.0.255	IS15959-Part3
10	Y Phase Pf	1.0.53.7.0.255	IS15959-Part3
11	B Phase Pf	1.0.73.7.0.255	IS15959-Part3
12	kWh Import/Forwarded	1.0.1.8.0.255	IS15959-Part3
13	kWh Export	1.0.2.8.0.255	IS15959-Part3
14	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part3
15	kVAh Import/Forwarded	1.0.9.8.0.255	IS15959-Part3
16	R Phase active Current	1.0.31.7.128.255	TPCODL Specific
17	Y Phase active Current	1.0.51.7.128.255	TPCODL Specific
18	B Phase active Current	1.0.71.7.128.255	TPCODL Specific
19	Neutral current	1.0.91.7.0.255	IS15959-Part2
20	Total PF	1.0.13.7.0.255	IS15959-Part3
21	Temperature	0.0.96.9.128.255	TPCODL Specific

S. No.	Profile for Digital Input events Compartments	OBIS Code	OBIS Source
	Digital Input event Profile	0.0.99.98.130.255	TPCODL Specific
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part2
2	Event Code (Digital Input events )	0.0.96.11.129.255	TPCODL Specific

S. No.	Event Push Profile	OBIS Code	OBIS Source
1	Device ID	0.0.96.1.2.255	IS15959-Part3
2	Event Push SM to HES	0.4.25.9.0.255	IS15959-Part3
3	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
4	Event Status Word 1	0.0.94.91.18.255	IS15959-Part3

S. No.	Phasor profile	OBIS Code	OBIS Source
	Phasor Profile	1.0.99.128.128.255	TPCODL Specific
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part3
2	Current - IR	1.0.31.7.0.255	IS15959-Part3
3	Current - IY	1.0.51.7.0.255	IS15959-Part3
4	Current - IB	1.0.71.7.0.255	IS15959-Part3
5	Voltage - VRN	1.0.32.7.0.255	IS15959-Part3
6	Voltage - VYN	1.0.52.7.0.255	IS15959-Part3
7	Voltage - VBN	1.0.72.7.0.255	IS15959-Part3
8	Signed Power Factor – R phase	1.0.33.7.0.255	IS15959-Part3
9	Signed Power Factor – Y phase	1.0.53.7.0.255	IS15959-Part3
10	Signed Power Factor – B phase	1.0.73.7.0.255	IS15959-Part3
11	Three Phase Power Factor – PF	1.0.13.7.0.255	IS15959-Part3
12	Frequency	1.0.14.7.0.255	IS15959-Part3
13	Apparent Power - kVA	1.0.9.7.0.255	IS15959-Part3

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14	Signed Active Power - kW (+ Forward; -Reverse)	1.0.1.7.0.255	IS15959-Part3
15	Signed Reactive Power - kvar (+ Lag; - Lead)	1.0.3.7.0.255	IS15959-Part3
16	Signed R Phase Active Power	1.0.21.7.0.255	TPCODL Specific
17	Signed Y Phase Active Power	1.0.41.7.0.255	TPCODL Specific
18	Signed B Phase Active Power	1.0.61.7.0.255	TPCODL Specific
19	Angle Between Y- R Phase voltage	1.0.81.7.10.255	TPCODL Specific
20	Angle Between B- R Phase voltage	1.0.81.7.20.255	TPCODL Specific
21	Angle between two phase voltage	1.0.81.7.128.255	TPCODL Specific
22	Phase Sequence	1.0.128.7.0.255	TPCODL Specific

S. No.	Programable Parameters	OBIS Code	OBIS Source
1	Real Time clock change	0.0.1.0.0.255	IS15959-Part3
2	Demand Integration Period change	1.0.0.8.0.255	IS15959-Part3
3	Profile captured period	1.0.0.8.4.255	IS15959-Part3
4	single-action schedule for billing dates	0.0.15.0.0.255	IS15959-Part3
5	Activity calendar for times zones	0.0.13.0.0.255	IS15959-Part3
6	Image Transfer	0.0.44.0.0.255	IS15959-Part3
7	Metering Mode	0.0.94.96.19.255	IS15959-Part3
8	Current Association MR (LLS secret change)	0.0.40.0.2.255	IS15959-Part3
9	Current Association US (HLS Key change)	0.0.40.0.3.255	IS15959-Part3
10	Current Association FW (HLS Key change)	0.0.40.0.5.255	IS15959-Part3
11	Global key change(Security Setup Global Key Change)	0.0.43.0.0.255	IS15959-Part3
12	Image activation single action schedule	0.0.15.0.2.255	IS15959-Part3
13	ESWF	0.0.94.91.26.255	IS15959-Part3
14	MD Reset	0.0.10.0.1.255	IS15959-Part3
15	Display Parameters Auto Scroll	0.0.96.128.0.255	TPCODL Specific
16	Display Parameters Push Button	0.0.96.128.1.255	TPCODL Specific
17	Display Parameters High Resolution Button	0.0.96.128.2.255	TPCODL Specific
18	Missing potential Threshold Configuration	1.0.12.129.131.255	TPCODL Specific
19	Over Voltage Threshold Configuration	1.0.12.129.129.255	TPCODL Specific
20	Low Voltage Threshold Configuration	1.0.12.129.130.255	TPCODL Specific
21	Voltage unbalance Threshold Configuration	1.0.12.129.128.255	TPCODL Specific
22	Current Reversal Threshold Configuration	1.0.11.129.128.255	TPCODL Specific
23	CT Open Threshold Configuration	1.0.11.129.129.255	TPCODL Specific
24	Current unbalance Threshold Configuration	1.0.11.129.130.255	TPCODL Specific
25	Over Current Threshold Configuration	1.0.11.129.132.255	TPCODL Specific
26	CT Bypass Threshold Configuration	1.0.11.129.131.255	TPCODL Specific
27	Very Low PF Threshold Configuration	1.0.13.129.128.255	TPCODL Specific
28	Load Limit KW Set	0.0.17.0.0.255	TPCODL Specific
29	Temperature rise Threshold Configuration	0.0.96.128.3.255	TPCODL Specific
30	Missing potential Persistence time Configuration	1.0.12.130.131.255	TPCODL Specific

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31	Over Voltage Persistence time Configuration	1.0.12.130.129.255	TPCODL Specific
32	Low Voltage Persistence time Configuration	1.0.12.130.130.255	TPCODL Specific
33	Voltage unbalance Persistence time Configuration	1.0.12.130.128.255	TPCODL Specific
34	Current Reversal Persistence time Configuration	1.0.11.130.128.255	TPCODL Specific
35	CT Open Persistence time Configuration	1.0.11.130.129.255	TPCODL Specific
36	Current unbalance Persistence time Configuration	1.0.11.130.130.255	TPCODL Specific
37	Over Current Persistence time Configuration	1.0.11.130.132.255	TPCODL Specific
38	CT Bypass Persistence time Configuration	1.0.11.130.131.255	TPCODL Specific
39	Power ON-OFF Persistence time Configuration	0.0.96.128.4.255	TPCODL Specific
40	Magnetic influence Persistence time Configuration	0.0.96.128.5.255	TPCODL Specific
41	Neutral Disturbance Persistence time Configuration	1.0.96.128.0.255	TPCODL Specific
42	Very Low PF Persistence time Configuration	1.0.13.130.128.255	TPCODL Specific
43	Over load Persistence time Configuration	1.0.1.130.128.255	TPCODL Specific
44	Temperature rise Persistence time Configuration	0.0.96.128.6.255	TPCODL Specific
45	Digital Output Configuration	1.0.96.128.3.255	TPCODL Specific
46	Load Profile capture Objects	1.0.96.128.2.255	TPCODL Specific
47	Demand Method Configuration	1.0.96.50.3.255	TPCODL specific
48	Event Enable/Disable Configuration	0.0.96.128.7.255	TPCODL specific

S. No.	Accuracy Check Data Profile	OBIS Code	OBIS Source
	Accuracy Check data Profile	1.0.99.128.129.255	TPCODL Specific
1	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part2
2	Cumulative Energy - kWh, Export	1.0.2.8.0.255	IS15959-Part2
3	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part2
4	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part2
5	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part2
6	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part2
7	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part2
8	Cumulative Energy - kVAh, Export	1.0.10.8.0.255	IS15959-Part2

Note: Accuracy check profile is used by windows based HHU to check meter accuracy in field.

### Three phase HT meter Parameters list

#### General Parameter's details:-

- 1. TPCODL specific OBIS code for self-diagnostic- 1.0.96.5.1.255 IC-1
- 2. Default TOD timing for Three phase HT CT meter is as per below TOD-1 22:00 to 06:00

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TOD-2 06:00 to 22:00

Note:- TOU (Time ZON) timing can programmed by using activity calendar for times zone (0.0.13.0.0.255) The same OBIS code shall be used for reading the configured TOU timings.

- 3. Three phase default display parameter shall be configured as Post-paid & shall be programmable through HES (OTA) for following combinations.
  - a. Post-paid with TOD
  - b. Net mode (Import/export)
- 4. Meter serial number shall be alpha numeric and with 9 digits. Alphabetic part detail shall be shared by TPCODL
- 5. Communication LCD indicator-Meter display shall have indication in context to NIC. The blinking should be slow when NIC is detected; blinking should be fast when NIC had searched the network and it should be stable when it is successfully latched to the HES.
- 6. Billing shall be done at following programming events and programing can be done OTA.
  - a. Metering mode change
  - b. Communication driven MD reset
  - c. Time zone activation
  - d. Demand integration period change
  - e. Display parameter configuration
  - f. Firmware upgrade
  - g. Kvah configuration Lag or Lag+lead (OBIS code 1.0.128.5.131.255,event ID 192, value 0= Lag+Lead & value 1 = Lag only )
- 7. Following annexures are added in this document
  - a. Push data list Annexure-A
  - b. Downloadable parameter list- Annexure-B
  - c. Display parameter list Annexure-C
- 8. Default MD integration period is 15 minute (sliding interval time 5 minute) & it can be configured to 30/15 minute
- 9. Default load survey integration period is 15 minute & can be configured to 30/15 minute. The load survey data shall be recorded for 45 days with 15 minute IP & 90 days with 30 minute IP
- KVAH calculation shall be lag only by default it shall be configurable to lag + lead/lag only OBIS code 1.0.128.5.131.255, event ID 192, (value 0= Lag+Lead & value 1 = Lag only) shall be used for KVAH energy configuration
- 11. All DATE should be in DDMMYYYY format.

#### Three phase HT meter Push data list

#### Annexure -A

S. No.	Event Push data (This data shall be push when any event (Tamper, First breath, last gasp etc) is occurred)	OBIS Code	OBIS Source		
1	Device ID	0.0.96.1.2.255	IS 15959 part-3		
2	Event Push SM(Smart Meter) to HES	0.4.25.9.0.255	IS 15959 part-3		
3	Real Time Clock – Date and Time	0.0.1.0.0.255	IS 15959 part-3		
4	Event Status Word 1	0.0.94.91.18.255	IS 15959 part-3		
5	Meter serial number	0.0.96.1.0.255	IS 15959 part-3		
Note-	Note- This data shall be pushed to HES only				

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S. No.	Periodic Schedule Push Profile (Meter shall push default at every 6 hours & push time is configurable by HES	OBIS Code	OBIS Source
1	Device ID	0.0.96.1.2.255	IS15959-Part-3
2	Periodic Push SM (Smart Meter )to HES	0.0.25.9.0.255	IS15959-Part-3
3	Periodic Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part-3
4	Current – IR	1.0.31.7.0.255	IS15959-Part-3
5	Current – IY	1.0.51.7.0.255	IS15959-Part-3
6	Current – IB	1.0.71.7.0.255	IS15959-Part-3
7	Voltage – VRN	1.0.32.7.0.255	IS15959-Part-3
8	Voltage – VYN	1.0.52.7.0.255	IS15959-Part-3
9	Voltage – VBN	1.0.72.7.0.255	IS15959-Part-3
10	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part-3
11	Cumulative Energy - kWh, Export	1.0.2.8.0.255	IS15959-Part-3
12	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part-3
13	Cumulative Energy - kVAh, Export	1.0.10.8.0.255	IS15959-Part-3
14	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part-3
15	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part-3
16	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part-3
17	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part-3
18	Apparent Power – KVA	1.0.9.7.0.255	IS15959-Part-3
19	Signed Active Power - kW (+ Forward; -Reverse)	1.0.1.7.0.255	IS15959-Part-3
20	Signed Power Factor - R phase	1.0.33.7.0.255	IS15959-Part-3
21	Signed Power Factor - Y phase	1.0.53.7.0.255	IS15959-Part-3
22	Signed Power Factor - B phase	1.0.73.7.0.255	IS15959-Part-3
23	Signed Three Phase Power Factor – PF	1.0.13.7.0.255	IS15959-Part-3
24	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part-3
25	Signal strength (CSQ value)	0.1.96.12.5.255	TPCODL
26	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3
Note- This data shall be pushed to HES only			

S. No.	Daily survey profile (Mid night) push data (This data shall be pushed at every midnight)	OBIS Code	OBIS Source	
1	Device ID	0.0.96.1.2.255	IS 15959 part-3	
2	Mid Night (daily) push SM(Smart Meter) to HES	0.6.25.9.0.255	TPCODL Specific	
3	Real Time Clock - Date and Time	0.0.1.0.0.255	IS15959-Part-3	
	Daily survey profile (All daily survey profile parameters which are			
4	mentioned in daily profile – 1.0.99.2.0.255)	1.0.99.2.0.255	IS 15959 part-3	
Note- T	Note- This data shall be pushed to HES only			

S. No.	Billing Push Data (This data shall be pushed at every month end)	OBIS Code	OBIS Source
1	Device ID	0.0.96.1.2.255	IS 15959 part-3
2	Billing Push SM(Smart Meter) to HES	0.99.25.9.0.255	TPCODL Specific
3	Real Time Clock - Date and Time	0.0.1.0.0.255	IS15959-Part-3
	Daily survey profile (All daily survey profile parameters which are		
4	mentioned in daily profile – 1.0.98.1.0.255)	1.0.98.1.0.255	IS 15959 part-3
Note- TI	nis data shall be pushed to HES only		

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Three p	ohase HT meter Downloadable Parameters List: -	<u>Annexure-B</u>			
	Three Phase HT Meter				
S.	OBIS Source				
	Instantaneous Profile	1.0.94.91.0.255	IS15959-Part-3		
1	Real Time Clock - Date and Time	0.0.1.0.0.255	IS15959-Part-3		
2	Current – IR	1.0.31.7.0.255	IS15959-Part-3		
3	Current – IY	1.0.51.7.0.255	IS15959-Part-3		
4	Current – IB	1.0.71.7.0.255	IS15959-Part-3		
5	Voltage – VRN	1.0.32.7.0.255	IS15959-Part-3		
6	Voltage – VYN	1.0.52.7.0.255	IS15959-Part-3		
7	Voltage - VBN	1.0.72.7.0.255	IS15959-Part-3		
8	Signed Power Factor - R phase	1.0.33.7.0.255	IS15959-Part-3		
9	Signed Power Factor - Y phase	1 0 53 7 0 255	IS15959-Part-3		
10	Signed Power Factor - B phase	107370255	IS15959-Part-3		
11	Signed, three Phase Power Factor - PF	1 0 13 7 0 255	IS15959-Part-3		
12		1.0.14.7.0.255	IS15050-Part-3		
12	Apparent Power K\/A	1.0.14.1.0.200	IS15050 Part 3		
14	Signed Active Power - KW (+ Forward: Poverse)	1.0.3.7.0.255	IS15959-Fait-5		
15	Signed Reactive Power - kV/Ar (+ Lag: Lead)	1.0.1.7.0.255	IS15959-Fait-5		
10	Number of power failures	0.0.06.7.0.255	IS15959-Fait-5		
10	Cumulative newer failure duration in Min	0.0.90.7.0.235	IS15959-Fait-5		
10		0.0.94.91.0.255	1315959-Fait-3		
10		0.0.94.91.0.255	1315959-Part-3		
19		0.0.0.1.0.200	1313939-Part-3		
20		0.0.90.2.0.255	1515959-Part-3		
21	Billing Date	0.0.0.1.2.255	IS15959-Part-3		
22		1.0.1.6.0.255	1515959-Part-3		
23	Cumulative Energy - kVVn, Export	1.0.2.8.0.255	1515959-Part-3		
24	Cumulative Energy - kVAn, Import/Forwarded	1.0.9.8.0.255	1515959-Part-3		
25		1.0.10.8.0.255	1515959-Part-3		
26	MD kW, Import/Forwarded with date & time	1.0.1.6.0.255	IS15959-Part-3		
27	MD kVA, Import/Forwarded with date & time	1.0.9.6.0.255	IS15959-Part-3		
28	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part-3		
29	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part-3		
30	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part-3		
31	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part-3		
32	Cumulative power on duration (min)	0.0.94.91.14.255	IS15959-Part-3		
33	Temperature	0.0.96.9.128.255	TPCODL		
34	R Phase active Current	1.0.31.7.128.255	TPCODL		
35	Y Phase active Current	1.0.51.7.128.255	TPCODL		
36	B Phase active Current	1.0.71.7.128.255	TPCODL		
37	MD kW, Export with date & time	1.0.2.6.0.255	IS15959-Part-3		
38	MD kVA, Export with date & time	1.0.10.6.0.255	IS15959-Part-3		
39	Angle between R-Y phase voltage	1.0.81.7.10.255	TPCODL		
40	Angle between R-B phase voltage	1.0.81.7.20.255	TPCODL		
41	Phase Sequence	1.0.128.7.0.255	TPCODL		
42	Signal Strength (CSQ value)	0.1.96.12.5.255	TPCODL		
43	Meter Serial number	0.0.96.1.0.255	IS 15959 Part-3		
Note- This data shall be read through BCS & HES					

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S. No.	Billing Profile	OBIS Code	OBIS Source
	Billing Profile	1.0.98.1.0.255	IS15959-Part-3
1	Billing Date	0.0.0.1.2.255	IS15959-Part-3
2	System Power Factor For Billing Period for Import /Forwarded	1.0.13.0.0.255	IS15959-Part-3
3	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part-3
4	Cumulative Energy kWh TZ1, Import/Forwarded	1.0.1.8.1.255	IS15959-Part-3
5	Cumulative Energy kWh TZ2, Import/Forwarded	1.0.1.8.2.255	IS15959-Part-3
6	Cumulative Energy kWh TZ3, Import/Forwarded	1.0.1.8.3.255	IS15959-Part-3
7	Cumulative Energy kWh TZ4, Import/Forwarded	1.0.1.8.4.255	IS15959-Part-3
8	Cumulative Energy kWh TZ5, Import/Forwarded	1.0.1.8.5.255	IS15959-Part-3
9	Cumulative Energy kWh TZ6, Import/Forwarded	1.0.1.8.6.255	IS15959-Part-3
10	Cumulative Energy kWh TZ7, Import/Forwarded	1.0.1.8.7.255	IS15959-Part-3
11	Cumulative Energy kWh TZ8, Import/Forwarded	1.0.1.8.8.255	IS15959-Part-3
12	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part-3
13	Cumulative Energy kVAH TZ1, Import/Forwarded	1.0.9.8.1.255	IS15959-Part-3
14	Cumulative Energy kVAH TZ2, Import/Forwarded	1.0.9.8.2.255	IS15959-Part-3
15	Cumulative Energy kVAH TZ3, Import/Forwarded	1.0.9.8.3.255	IS15959-Part-3
16	Cumulative Energy kVAH TZ4, Import/Forwarded	1.0.9.8.4.255	IS15959-Part-3
17	Cumulative Energy kVAH TZ5, Import/Forwarded	1.0.9.8.5.255	IS15959-Part-3
18	Cumulative Energy kVAH TZ6, Import/Forwarded	1.0.9.8.6.255	IS15959-Part-3
19	Cumulative Energy kVAH TZ7, Import/Forwarded	1.0.9.8.7.255	IS15959-Part-3
20	Cumulative Energy kVAH TZ8, Import/Forwarded	1.0.9.8.8.255	IS15959-Part-3
21	MD kW, Import/Forwarded with date & time	1.0.1.6.0.255	IS15959-Part-3
22	MD kW TZ1, Import/Forwarded with date & time	1.0.1.6.1.255	IS15959-Part-3
23	MD kW TZ2, Import/Forwarded with date & time	1.0.1.6.2.255	IS15959-Part-3
24	MD kW TZ3, Import/Forwarded with date & time	1.0.1.6.3.255	IS15959-Part-3
25	MD kW TZ4, Import/Forwarded with date & time	1.0.1.6.4.255	IS15959-Part-3
26	MD kW TZ5, Import/Forwarded with date & time	1.0.1.6.5.255	IS15959-Part-3
27	MD kW TZ6, Import/Forwarded with date & time	1.0.1.6.6.255	IS15959-Part-3
28	MD kW TZ7, Import/Forwarded with date & time	1.0.1.6.7.255	IS15959-Part-3
29	MD kW TZ8, Import/Forwarded with date & time	1.0.1.6.8.255	IS15959-Part-3
30	MD kVA, Import/Forwarded with date & time	1.0.9.6.0.255	IS15959-Part-3
31	MD kVA TZ1, Import/Forwarded with date & time	1.0.9.6.1.255	IS15959-Part-3
32	MD kVA TZ2, Import/Forwarded with date & time	1.0.9.6.2.255	IS15959-Part-3
33	MD kVA TZ3, Import/Forwarded with date & time	1.0.9.6.3.255	IS15959-Part-3
34	MD kVA TZ4, Import/Forwarded with date & time	1.0.9.6.4.255	IS15959-Part-3
35	MD kVA TZ5, Import/Forwarded with date & time	1.0.9.6.5.255	IS15959-Part-3
36	MD kVA TZ6, Import/Forwarded with date & time	1.0.9.6.6.255	IS15959-Part-3
37	MD kVA TZ7, Import/Forwarded with date & time	1.0.9.6.7.255	IS15959-Part-3
38	MD kVA TZ8, Import/Forwarded with date & time	1.0.9.6.8.255	IS15959-Part-3
39	Billing Power ON Duration in Mins	0.0.94.91.13.255	IS15959-Part-3
40	Cumulative Energy - kWh Export	1.0.2.8.0.255	IS15959-Part-3
41	Cumulative Energy - kVAh Export	1.0.10.8.0.255	IS15959-Part-3
42	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part-3
43	Cumulative energy, kVArh(QII)	1.0.6.8.0.255	IS15959-Part-3
44	Cumulative energy, kVArh(QIII)	1.0.7.8.0.255	IS15959-Part-3
45	Cumulative energy, kVArh(QIV)	1.0.8.8.0.255	IS15959-Part-3
46	Cumulative MD kW Import/Forwarded	1.0.1.2.0.255	TPCODL
47	Cumulative MD kVA Import/Forwarded	1.0.9.2.0.255	TPCODL

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48	Billing Reset Type	1.0.96.50.2.255	TPCODL
49	MD kW, Export with date & time	1.0.2.6.0.255	IS15959-Part-3
50	MD kVA, Export with date & time	1.0.10.6.0.255	IS15959-Part-3
51	Meter serial number	0.0.96.1.0.255	IS 15959 Part-3
Note:- 1. Energy consumption's are derived parameters & same shall be available at HES /MDM & BCS end			
With 12 Month history			

S. No.	Block Load Profile (90 days with 30 min IP and 45 days with 15	OBIS Code	OBIS Source	
	Block Load Profile	1.0.99.1.0.255	IS15959-Part-3	
1	RTC	0.0.1.0.0.255	IS15959-Part-3	
2	Average Current - IR	1.0.31.27.0.255	IS15959-Part-3	
3	Average Current - IY	1.0.51.27.0.255	IS15959-Part-3	
4	Average Current - IB	1.0.71.27.0.255	IS15959-Part-3	
5	Average Voltage - VRN	1.0.32.27.0.255	IS15959-Part-3	
6	Average Voltage - VYN	1.0.52.27.0.255	IS15959-Part-3	
7	Average Voltage - VBN	1.0.72.27.0.255	IS15959-Part-3	
8	Block Energy – kWh- Import/Forwarded	1.0.1.29.0.255	IS15959-Part-3	
9	Block Energy – kWh-Export	1.0.2.29.0.255	IS15959-Part-3	
10	Block energy. kvarh-Q1/Lag	1.0.5.29.0.255	IS15959-Part-3	
11	Block energy. kvarh-Q2\Lead	1.0.6.29.0.255	IS15959-Part-3	
12	Block energy. kvarh-Q3\Lag	1.0.7.29.0.255	IS15959-Part-3	
13	Block energy. kvarh-Q4/Lead	1.0.8.29.0.255	IS15959-Part-3	
14	Block Energy – kVAh- Import/Forwarded	1.0.9.29.0.255	IS15959-Part-3	
15	Block Energy – kVAh-Export	1.0.10.29.0.255	IS15959-Part-3	
16	%THDV R- Phase Average	1.0.32.128.124.25	TPCODL	
17	%THDV Y- Phase Average	1.0.52.128.124.25	TPCODL	
18	%THDV B- Phase Average	1.0.72.128.124.25	TPCODL	
19	%THDI R- Phase Average	1.0.31.128.124.25	TPCODL	
20	%THDI Y- Phase Average	1.0.51.128.124.25	TPCODL	
21	%THDI B- Phase Average	1.0.71.128.124.25	TPCODL	
22	Average Temperature	0.0.96.9.129.255	TPCODL	
23	Signal strength (CSQ value)	0.1.96.12.5.255	TPCODL	
24	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3	
Note-1: Block energies data shall be with 3 decimal place				

Note-2: Demand KW ,KVA & Signed Power factor shall be derived at HES/MDMS & BCS end Note-3: Block load profile parameters shall be field programmable by TPCODL specific OBIS code. On changing capture object LS data will be reset Note-4: This data shall be read by through BCS , HES/MDM

S. No.	Daily Load Profile ( 45days data )	OBIS Code	OBIS Source
	Daily Survey Profile	1.0.99.2.0.255	IS 15959 part-3
1	Real Time Clock – Date & Time	0.0.1.0.0.255	IS 15959 part-3

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3         Cumulative Energy KVAh Export         10.10.8.0.255         IS 15959 part.3           4         Cumulative Energy KVh T21 Import/forwarded         1.0.1.8.1.255         IS 15959 part.3           6         Cumulative Energy KVh T21 Import/forwarded         1.0.1.8.1.255         IS 15959 part.3           7         Cumulative Energy KVh T21 Import/forwarded         1.0.1.8.2.255         IS 15959 part.3           8         Cumulative Energy KVh T21 Import/forwarded         1.0.1.8.2.255         IS 15959 part.3           9         Cumulative Energy KVh T21 Import/forwarded         1.0.1.8.2.255         IS 15959 part.3           10         Cumulative Energy KVh T21 Import/forwarded         1.0.1.8.2.255         IS 15959 part.3           11         Cumulative Energy KVh T21 Import/forwarded         1.0.9.8.0.255         IS 15959 part.3           12         Cumulative Energy KVA T21 Import/forwarded         1.0.9.8.2.255         IS 15959 part.3           13         Cumulative Energy KVA T23 Import/forwarded         1.0.9.8.2.255         IS 15959 part.3           14         Cumulative Energy KVA T25 Import/forwarded         1.0.9.8.2.255         IS 15959 part.3           15         Cumulative Energy KVA T25 Import/forwarded         1.0.9.8.2.255         IS 15959 part.3           15         Cumulative Energy KVA T25 Import/forwarded         1.0.9.	2	Cumulative Energy KWh Export	1.0.2.8.0.255	IS 15959 part-3	
4         Cumulative Energy + MWh Import/forwarded         1.0.1.8.0.255         IS 15959 part-3           5         Cumulative Energy kWh TZ1 Import/forwarded         1.0.1.8.1.255         IS 15959 part-3           7         Cumulative Energy kWh TZ3 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           8         Cumulative Energy kWh TZ5 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           9         Cumulative Energy kWh TZ6 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           10         Cumulative Energy kWh TZ8 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           11         Cumulative Energy kWh TZ8 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           12         Cumulative Energy kWh TZ8 Import/forwarded         1.0.9.8.1.255         IS 15959 part-3           13         Cumulative Energy kWA TZ8 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           13         Cumulative Energy kWA TZ8 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           14         Cumulative Energy kWA TZ8 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           15         Cumulative Energy kWA TZ8 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           15         Cumulative Energy kWA TZ8 Import/forwarded	3	Cumulative Energy KVAh Export	1.0.10.8.0.255	IS 15959 part-3	
5         Cumulative Energy KWh T21 Import/forwarded         1.0.1.8.1255         IS 15959 part-3           6         Cumulative Energy KWh T22 Import/forwarded         1.0.1.8.2255         IS 15959 part-3           7         Cumulative Energy KWh T24 Import/forwarded         1.0.1.8.4255         IS 15959 part-3           9         Cumulative Energy KWh T25 Import/forwarded         1.0.1.8.4255         IS 15959 part-3           10         Cumulative Energy KWh T26 Import/forwarded         1.0.1.8.6255         IS 15959 part-3           11         Cumulative Energy KWh T28 Import/forwarded         1.0.1.8.6255         IS 15959 part-3           12         Cumulative Energy KWh T28 Import/forwarded         1.0.9.8.0255         IS 15959 part-3           13         Cumulative Energy KVA T28 Import/forwarded         1.0.9.8.2255         IS 15959 part-3           13         Cumulative Energy KVA T28 Import/forwarded         1.0.9.8.2255         IS 15959 part-3           16         Cumulative Energy KVA T28 Import/forwarded         1.0.9.8.255         IS 15959 part-3           13         Cumulative Energy KVA T25 Import/forwarded         1.0.9.8.255         IS 15959 part-3           17         Cumulative Energy KVA T27 Import/forwarded         1.0.9.8.255         IS 15959 part-3           12         Cumulative Energy KVA T27 Import/forwarded         1.0.1.	4	Cumulative Energy – kWh Import/forwarded	1.0.1.8.0.255	IS 15959 part-3	
6         Cumulative Energy KWh T22 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           7         Cumulative Energy KWh T23 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           9         Cumulative Energy KWh T25 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           10         Cumulative Energy KWh T27 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           11         Cumulative Energy KWh T27 Import/forwarded         1.0.1.8.2.255         IS 15959 part-3           12         Cumulative Energy KWh T27 Import/forwarded         1.0.9.8.0.255         IS 15959 part-3           13         Cumulative Energy KVA T21 Import/forwarded         1.0.9.8.1.255         IS 15959 part-3           14         Cumulative Energy KVA T23 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           16         Cumulative Energy KVA T23 Import/forwarded         1.0.9.8.4.255         IS 15959 part-3           17         Cumulative Energy KVA T23 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           18         Cumulative Energy KVA T23 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           10         Cumulative Energy KVA T23 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           21         Cumulative Energy KVA T23 Import/forwarded	5	Cumulative Energy kWh TZ1 Import/forwarded	1.0.1.8.1.255	IS 15959 part-3	
7         Cumulative Energy kWh T23 Import/forwarded         1.0.1.8.3.255         IS 15959 part.3           8         Cumulative Energy kWh T24 Import/forwarded         1.0.1.8.4.255         IS 15959 part.3           10         Cumulative Energy kWh T25 Import/forwarded         1.0.1.8.7.255         IS 15959 part.3           11         Cumulative Energy kWh T27 Import/forwarded         1.0.1.8.7.255         IS 15959 part.3           12         Cumulative Energy kWh T28 Import/forwarded         1.0.9.8.255         IS 15959 part.3           13         Cumulative Energy kWAh T21 Import/forwarded         1.0.9.8.1255         IS 15959 part.3           14         Cumulative Energy kWAh T21 Import/forwarded         1.0.9.8.255         IS 15959 part.3           15         Cumulative Energy kWAh T23 Import/forwarded         1.0.9.8.255         IS 15959 part.3           16         Cumulative Energy kWAh T25 Import/forwarded         1.0.9.8.255         IS 15959 part.3           16         Cumulative Energy kWAh T25 Import/forwarded         1.0.9.8.255         IS 15959 part.3           17         Cumulative Energy kWAh T27 Import/forwarded         1.0.9.8.255         IS 15959 part.3           18         Cumulative Energy kWAh T27 Import/forwarded         1.0.9.8.255         IS 15959 part.3           19         Cumulative Energy kWAh T28 Import/forwarded	6	Cumulative Energy kWh TZ2 Import/forwarded	1.0.1.8.2.255	IS 15959 part-3	
8         Cumulative Energy kWh TZ4 Import/forwarded         1.0.1.8.4.255         IS 19989 part-3           9         Cumulative Energy kWh TZ6 Import/forwarded         1.0.1.8.6.255         IS 19989 part-3           10         Cumulative Energy kWh TZ6 Import/forwarded         1.0.1.8.6.255         IS 19989 part-3           11         Cumulative Energy kWh TZ6 Import/forwarded         1.0.1.8.7.255         IS 19989 part-3           12         Cumulative Energy kWh TZ6 Import/forwarded         1.0.9.8.0.255         IS 19989 part-3           13         Cumulative Energy kWA TZ1 Import/forwarded         1.0.9.8.1.255         IS 19959 part-3           16         Cumulative Energy kWA TZ2 Import/forwarded         1.0.9.8.255         IS 19959 part-3           16         Cumulative Energy kWA TZ4 Import/forwarded         1.0.9.8.4.255         IS 19959 part-3           17         Cumulative Energy kWA TZ5 Import/forwarded         1.0.9.8.255         IS 19959 part-3           20         Cumulative Energy kWA TZ7 Import/forwarded         1.0.9.8.255         IS 19959 part-3           21         Cumulative Energy kWA TZ1 Import/forwarded         1.0.1.6.0.255         IS 19959 part-3           21         Cumulative Energy kWA TZ1 Import/forwarded         1.0.1.6.1.255         IS 19959 part-3           22         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0	7	Cumulative Energy kWh TZ3 Import/forwarded	1.0.1.8.3.255	IS 15959 part-3	
9         Cumulative Energy kWh TZ5 Import/forwarded         1.0.1.8.5.255         IS 15959 part-3           10         Cumulative Energy kWh TZ6 Import/forwarded         1.0.1.8.7.255         IS 15959 part-3           12         Cumulative Energy kWh TZ8 Import/forwarded         1.0.1.8.255         IS 15959 part-3           13         Cumulative Energy kWh TZ8 Import/forwarded         1.0.9.8.0.255         IS 15959 part-3           14         Cumulative Energy kWh TZ1 Import/forwarded         1.0.9.8.1.255         IS 15959 part-3           15         Cumulative Energy kWh TZ1 Import/forwarded         1.0.9.8.255         IS 15959 part-3           16         Cumulative Energy kWh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           16         Cumulative Energy kWh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           20         Cumulative Energy kWh TZ6 Import/forwarded         1.0.9.8.255         IS 15959 part-3           21         Cumulative Energy kWh TZ6 Import/forwarded         1.0.9.8.255         IS 15959 part-3           21         Cumulative Energy kWh TZ6 Import/forwarded         1.0.9.8.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded         1.0.1.6.2.255         IS 15959 part-3           23         Maximum Demand KW TZ2 Import/forwarded (With Date & 1.0.1.6.2.255<	8	Cumulative Energy kWh TZ4 Import/forwarded	1.0.1.8.4.255	IS 15959 part-3	
10         Cumulative Energy kWh TZ6 Import/forwarded         1.0.1.8.6.255         IS 15959 part-3           11         Cumulative Energy kWh TZ7 Import/forwarded         1.0.1.8.255         IS 15959 part-3           12         Cumulative Energy kWh TZ8 Import/forwarded         1.0.1.8.255         IS 15959 part-3           13         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.2255         IS 15959 part-3           14         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.2255         IS 15959 part-3           15         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ7 Import/forwarded (With Date & 1.0.1.6.0.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           23         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           24         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.2.255	9	Cumulative Energy kWh TZ5 Import/forwarded	1.0.1.8.5.255	IS 15959 part-3	
11         Cumulative Energy kWh TZ7 Import/forwarded         1.0.1.8.7.255         IS 15959 part-3           12         Cumulative Energy kWh TZ8 Import/forwarded         1.0.1.8.255         IS 15959 part-3           13         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.0.255         IS 15959 part-3           14         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.255         IS 15959 part-3           16         Cumulative Energy kVAh TZ4 Import/forwarded         1.0.9.8.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ4 Import/forwarded         1.0.9.8.255         IS 15959 part-3           18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ7 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ7 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.1.6.1.255         IS 15959 part-3           22         Maximum Demand KW TZ9 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           24         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.255 <td>10</td> <td>Cumulative Energy kWh TZ6 Import/forwarded</td> <td>1.0.1.8.6.255</td> <td>IS 15959 part-3</td>	10	Cumulative Energy kWh TZ6 Import/forwarded	1.0.1.8.6.255	IS 15959 part-3	
12         Cumulative Energy kWh TZ8 Import/forwarded         1.0.1.8.8.255         IS 15959 part-3           13         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.0.255         IS 15959 part-3           14         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.255         IS 15959 part-3           16         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.255         IS 15959 part-3           16         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6255         IS 15959 part-3           20         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ7 Import/forwarded         1.0.9.8.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.1255         IS 15959 part-3           23         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           25         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           26         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.255	11	Cumulative Energy kWh TZ7 Import/forwarded	1.0.1.8.7.255	IS 15959 part-3	
13         Cumulative Energy – kVAh Import/forwarded         1.0.9.8.0.255         IS 15959 part-3           14         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.1.255         IS 15959 part-3           15         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.3.255         IS 15959 part-3           16         Cumulative Energy kVAh TZ4 Import/forwarded         1.0.9.8.4.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           19         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.1.255         IS 15959 part-3           23         Maximum Demand KW TZ2 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           27         Maximum Demand KW TZ4 Import/forwarded (With Date & 1.0.1.6.255 <t< td=""><td>12</td><td>Cumulative Energy kWh TZ8 Import/forwarded</td><td>1.0.1.8.8.255</td><td>IS 15959 part-3</td></t<>	12	Cumulative Energy kWh TZ8 Import/forwarded	1.0.1.8.8.255	IS 15959 part-3	
14         Cumulative Energy kVAh TZ1 Import/forwarded         1.0.9.8.1.255         IS 15959 part-3           15         Cumulative Energy kVAh TZ2 Import/forwarded         1.0.9.8.3.255         IS 15959 part-3           16         Cumulative Energy kVAh TZ4 Import/forwarded         1.0.9.8.3.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ4 Import/forwarded         1.0.9.8.255         IS 15959 part-3           18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ6 Import/forwarded         1.0.9.8.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.9.8.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           24         Maximum Demand KW TZ2 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           25         Maximum Demand KW TZ4 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           26         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           29         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.9.6.0.255         IS 15	13	Cumulative Energy – kVAh Import/forwarded	1.0.9.8.0.255	IS 15959 part-3	
15         Cumulative Energy kVAh TZ2 Import/forwarded         1.0.9.8.2.255         IS 15959 part-3           16         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.4.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.4.255         IS 15959 part-3           18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.5.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded (With Date &         1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW TZ2 Import/forwarded (With Date &         1.0.1.6.2.255         IS 15959 part-3           24         Maximum Demand KW TZ3 Import/forwarded (With Date &         1.0.1.6.3.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           27         Maximum Demand KW TZ6 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           30         Maximum Demand KW TZ8 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           31	14	Cumulative Energy kVAh TZ1 Import/forwarded	1.0.9.8.1.255	IS 15959 part-3	
16         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.3.255         IS 15959 part-3           17         Cumulative Energy kVAh TZ3 Import/forwarded         1.0.9.8.4.255         IS 15959 part-3           18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           22         Maximum Demand KW TZ1 Import/forwarded         1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date &         1.0.1.6.1.255         IS 15959 part-3           24         Maximum Demand KW TZ3 Import/forwarded (With Date &         1.0.1.6.2.255         IS 15959 part-3           26         Maximum Demand KW TZ3 Import/forwarded (With Date &         1.0.1.6.2.255         IS 15959 part-3           27         Maximum Demand KW TZ6 Import/forwarded (With Date &         1.0.1.6.2.255         IS 15959 part-3           28         Maximum Demand KW TZ6 Import/forwarded (With Date &         1.0.1.6.7.255         IS 15959 part-3           30         Maximum Demand KW TZ7 Import/forwarded (With Date &         1.0.9.6.1.255         IS 15959 part-3           31	15	Cumulative Energy kVAh TZ2 Import/forwarded	1.0.9.8.2.255	IS 15959 part-3	
17         Cumulative Energy kVAh TZ4 Import/forwarded         1.0.9.8.4.255         IS 15959 part-3           18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.5.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           22         Maximum Demand KW         Import/forwarded (With Date &         1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW         TZ2 Import/forwarded (With Date &         1.0.1.6.1.255         IS 15959 part-3           24         Maximum Demand KW TZ3 Import/forwarded (With Date &         1.0.1.6.2.255         IS 15959 part-3           25         Maximum Demand KW TZ3 Import/forwarded (With Date &         1.0.1.6.2.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date &         1.0.1.6.5.255         IS 15959 part-3           27         Maximum Demand KW TZ7 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           28         Maximum Demand KW TZ7 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           29         Maximum Demand KVA TZ1 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3 <td>16</td> <td>Cumulative Energy kVAh TZ3 Import/forwarded</td> <td>1.0.9.8.3.255</td> <td>IS 15959 part-3</td>	16	Cumulative Energy kVAh TZ3 Import/forwarded	1.0.9.8.3.255	IS 15959 part-3	
18         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.5.255         IS 15959 part-3           19         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ7 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           22         Maximum Demand KW         Import/forwarded (With Date & 1.0.1.6.1.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.1.255         IS 15959 part-3           24         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.2555         IS 15959 part-3           25         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.2555         IS 15959 part-3           26         Maximum Demand KW TZ5 Import/forwarded (With Date & 1.0.1.6.5.255         IS 15959 part-3           29         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           30         Maximum Demand KV TZ1 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           31         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.1.255         IS 15959 part-3           33         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.1.255         IS 15959 part-3	17	Cumulative Energy kVAh TZ4 Import/forwarded	1.0.9.8.4.255	IS 15959 part-3	
19         Cumulative Energy kVAh TZ5 Import/forwarded         1.0.9.8.6.255         IS 15959 part-3           20         Cumulative Energy kVAh TZ7 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.9.8.8.255         IS 15959 part-3           22         Maximum Demand KW         Import/forwarded (With Date &         1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date &         1.0.1.6.1.255         IS 15959 part-3           24         Maximum Demand KW TZ3 Import/forwarded (With Date &         1.0.1.6.3.255         IS 15959 part-3           25         Maximum Demand KW TZ4 Import/forwarded (With Date &         1.0.1.6.5.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date &         1.0.1.6.5.255         IS 15959 part-3           27         Maximum Demand KW TZ6 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           28         Maximum Demand KW TZ8 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           30         Maximum Demand KW TZ8 Import/forwarded (With Date &         1.0.1.6.255         IS 15959 part-3           31         Maximum Demand KVA TZ1 Import/forwarded (With Date &         1.0.9.6.255         IS 15959 part-3 <td>18</td> <td>Cumulative Energy kVAh TZ5 Import/forwarded</td> <td>1.0.9.8.5.255</td> <td>IS 15959 part-3</td>	18	Cumulative Energy kVAh TZ5 Import/forwarded	1.0.9.8.5.255	IS 15959 part-3	
20         Cumulative Energy kVAh TZ7 Import/forwarded         1.0.9.8.7.255         IS 15959 part-3           21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.9.8.8.255         IS 15959 part-3           22         Maximum Demand KW         Import/forwarded (With Date & 1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.1.255         IS 15959 part-3           24         Maximum Demand KW TZ2 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date & 1.0.1.6.3.255         IS 15959 part-3           26         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.1.6.6.255         IS 15959 part-3           27         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           28         Maximum Demand KW TZ7 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           30         Maximum Demand KW TZ7 Import/forwarded (With Date & 1.0.1.6.255         IS 15959 part-3           31         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.255         IS 15959 part-3           32         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.255         IS 15959 part-3           33         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.255         IS 15959 part-3 <tr< td=""><td>19</td><td>Cumulative Energy kVAh TZ5 Import/forwarded</td><td>1.0.9.8.6.255</td><td>IS 15959 part-3</td></tr<>	19	Cumulative Energy kVAh TZ5 Import/forwarded	1.0.9.8.6.255	IS 15959 part-3	
21         Cumulative Energy kVAh TZ8 Import/forwarded         1.0.9.8.8.255         IS 15959 part-3           22         Maximum Demand KW         Import/forwarded (With Date & 1.0.1.6.0.255         IS 15959 part-3           23         Maximum Demand KW TZ1 Import/forwarded (With Date & 1.0.1.6.1.2255         IS 15959 part-3           24         Maximum Demand KW TZ2 Import/forwarded (With Date & 1.0.1.6.3.255         IS 15959 part-3           25         Maximum Demand KW TZ3 Import/forwarded (With Date & 1.0.1.6.3.255         IS 15959 part-3           26         Maximum Demand KW TZ4 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           26         Maximum Demand KW TZ5 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           27         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.1.6.2.255         IS 15959 part-3           28         Maximum Demand KW TZ6 Import/forwarded (With Date & 1.0.1.6.8.255         IS 15959 part-3           30         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.1.255         IS 15959 part-3           31         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.1.255         IS 15959 part-3           32         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.2.255         IS 15959 part-3           33         Maximum Demand KVA TZ1 Import/forwarded (With Date & 1.0.9.6.2.255         IS 15959 part-3	20	Cumulative Energy kVAh TZ7 Import/forwarded	1.0.9.8.7.255	IS 15959 part-3	
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33Maximum Demand KVA TZ2 Import/forwarded (With Date &1.0.9.6.2.255IS 15959 part-334Maximum Demand KVA TZ3 Import/forwarded (With Date &1.0.9.6.3.255IS 15959 part-335Maximum Demand KVA TZ4 Import/forwarded (With Date &1.0.9.6.4.255IS 15959 part-336Maximum Demand KVA TZ5 Import/forwarded (With Date &1.0.9.6.5.255IS 15959 part-337Maximum Demand KVA TZ6 Import/forwarded (With Date &1.0.9.6.6.255IS 15959 part-338Maximum Demand KVA TZ7 Import/forwarded (With Date &1.0.9.6.7.255IS 15959 part-339Maximum Demand KVA TZ8 Import/forwarded (With Date &1.0.9.6.8.255IS 15959 part-340Cumulative Reactive Energy – Q11.0.5.8.0.255IS 15959 part-341Cumulative Reactive Energy – Q21.0.6.8.0.255IS 15959 part-342Cumulative Reactive Energy – Q31.0.7.8.0.255IS 15959 part-343Cumulative Reactive Energy – Q41.0.2.6.0.255IS 15959 part-344Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-346Meter serial number0.0.96.1.0.255IS 15959 part-347Meter serial number0.0.96.1.0.255IS 15959 part-348Meter serial number0.0.96.1.0.255IS 15959 p	32	Maximum Demand KVA TZ1 Import/forwarded (With Date &	1.0.9.6.1.255	IS 15959 part-3	
34Maximum Demand KVA TZ3 Import/forwarded (With Date &1.0.9.6.3.255IS 15959 part-335Maximum Demand KVA TZ4 Import/forwarded (With Date &1.0.9.6.4.255IS 15959 part-336Maximum Demand KVA TZ5 Import/forwarded (With Date &1.0.9.6.5.255IS 15959 part-337Maximum Demand KVA TZ6 Import/forwarded (With Date &1.0.9.6.6.255IS 15959 part-338Maximum Demand KVA TZ6 Import/forwarded (With Date &1.0.9.6.7.255IS 15959 part-339Maximum Demand KVA TZ8 Import/forwarded (With Date &1.0.9.6.255IS 15959 part-340Cumulative Reactive Energy – Q11.0.5.8.0.255IS 15959 part-341Cumulative Reactive Energy – Q21.0.6.8.0.255IS 15959 part-342Cumulative Reactive Energy – Q31.0.7.8.0.255IS 15959 part-343Cumulative Reactive Energy – Q41.0.8.8.0.255IS 15959 part-344Maximum Demand KW Export (With Date & Time)1.0.10.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)0.0.96.1.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255 <td>33</td> <td>Maximum Demand KVA TZ2 Import/forwarded (With Date &amp;</td> <td>1.0.9.6.2.255</td> <td>IS 15959 part-3</td>	33	Maximum Demand KVA TZ2 Import/forwarded (With Date &	1.0.9.6.2.255	IS 15959 part-3	
35Maximum Demand KVA TZ4 Import/forwarded (With Date & 1.0.9.6.4.255IS 15959 part-336Maximum Demand KVA TZ5 Import/forwarded (With Date & 1.0.9.6.5.2551.0.9.6.5.255IS 15959 part-337Maximum Demand KVA TZ6 Import/forwarded (With Date & 1.0.9.6.6.2551.0.9.6.255IS 15959 part-338Maximum Demand KVA TZ7 Import/forwarded (With Date & 1.0.9.6.7.2551.0.9.6.7.255IS 15959 part-339Maximum Demand KVA TZ8 Import/forwarded (With Date & 1.0.9.6.8.2551.5 15959 part-340Cumulative Reactive Energy – Q11.0.5.8.0.255IS 15959 part-341Cumulative Reactive Energy – Q21.0.6.8.0.255IS 15959 part-342Cumulative Reactive Energy – Q21.0.7.8.0.255IS 15959 part-343Cumulative Reactive Energy – Q41.0.8.8.0.255IS 15959 part-344Maximum Demand KVA Export (With Date & Time)1.0.2.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-346Meter serial number0.0.96.1.0.255IS 15959 part-347Meter serial number0.0.96.1.0.255IS 15959 part-348Meter serial number0.0.96.1.0.255IS 15	34	Maximum Demand KVA TZ3 Import/forwarded (With Date &	1.0.9.6.3.255	IS 15959 part-3	
36Maximum Demand KVA TZ5 Import/forwarded (With Date & 1.0.9.6.5.2551S 15959 part-337Maximum Demand KVA TZ6 Import/forwarded (With Date & 1.0.9.6.6.2551S 15959 part-338Maximum Demand KVA TZ7 Import/forwarded (With Date & 1.0.9.6.7.2551S 15959 part-339Maximum Demand KVA TZ8 Import/forwarded (With Date & 1.0.9.6.8.2551S 15959 part-340Cumulative Reactive Energy – Q11.0.5.8.0.255IS 15959 part-341Cumulative Reactive Energy – Q21.0.6.8.0.255IS 15959 part-342Cumulative Reactive Energy – Q31.0.7.8.0.255IS 15959 part-343Cumulative Reactive Energy – Q41.0.8.8.0.255IS 15959 part-344Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)0.0.96.1.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-346Meter serial number0.0.96.1.0.255IS 15959 part-347Note: 1-Daily consumption of energies shall be derived at HES & BCS endNote: 1-Daily consumption of energies shall be derived at HES & BCS end	35	Maximum Demand KVA TZ4 Import/forwarded (With Date &	1.0.9.6.4.255	IS 15959 part-3	
37Maximum Demand KVA TZ6 Import/forwarded (With Date &1.0.9.6.6.255IS 15959 part-338Maximum Demand KVA TZ7 Import/forwarded (With Date &1.0.9.6.7.255IS 15959 part-339Maximum Demand KVA TZ8 Import/forwarded (With Date &1.0.9.6.8.255IS 15959 part-340Cumulative Reactive Energy – Q11.0.5.8.0.255IS 15959 part-341Cumulative Reactive Energy – Q21.0.6.8.0.255IS 15959 part-342Cumulative Reactive Energy – Q31.0.7.8.0.255IS 15959 part-343Cumulative Reactive Energy – Q41.0.8.8.0.255IS 15959 part-344Maximum Demand KW Export (With Date & Time)1.0.2.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-3Note: 1-Daily consumption of energies shall be derived at HES & BCS endNote: 2 This data shall be aread, through BCS, HES/MDM	36	Maximum Demand KVA TZ5 Import/forwarded (With Date &	1.0.9.6.5.255	IS 15959 part-3	
38Maximum Demand KVA TZ7 Import/forwarded (With Date &1.0.9.6.7.255IS 15959 part-339Maximum Demand KVA TZ8 Import/forwarded (With Date &1.0.9.6.8.255IS 15959 part-340Cumulative Reactive Energy – Q11.0.5.8.0.255IS 15959 part-341Cumulative Reactive Energy – Q21.0.6.8.0.255IS 15959 part-342Cumulative Reactive Energy – Q31.0.7.8.0.255IS 15959 part-343Cumulative Reactive Energy – Q41.0.8.8.0.255IS 15959 part-344Maximum Demand KW Export (With Date & Time)1.0.2.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-3Vote: 1-Daily consumption of energies shall be derived at HES & BCS endNote: 1-Daily consumption of energies shall be derived at HES & BCS end	37	Maximum Demand KVA TZ6 Import/forwarded (With Date &	1.0.9.6.6.255	IS 15959 part-3	
39       Maximum Demand KVA TZ8 Import/forwarded (With Date & 1.0.9.6.8.255       IS 15959 part-3         40       Cumulative Reactive Energy – Q1       1.0.5.8.0.255       IS 15959 part-3         41       Cumulative Reactive Energy – Q2       1.0.6.8.0.255       IS 15959 part-3         42       Cumulative Reactive Energy – Q3       1.0.7.8.0.255       IS 15959 part-3         43       Cumulative Reactive Energy – Q4       1.0.8.8.0.255       IS 15959 part-3         44       Maximum Demand KW Export (With Date & Time)       1.0.2.6.0.255       IS 15959 part-3         45       Maximum Demand KVA Export (With Date & Time)       1.0.10.6.0.255       IS 15959 part-3         44       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         Vote: 1-Daily consumption of energies shall be derived at HES & BCS end       Note: 2 This data shall be aread, through BCS, HES/MDM	38	Maximum Demand KVA TZ7 Import/forwarded (With Date &	1.0.9.6.7.255	IS 15959 part-3	
40       Cumulative Reactive Energy – Q1       1.0.5.8.0.255       IS 15959 part-3         41       Cumulative Reactive Energy – Q2       1.0.6.8.0.255       IS 15959 part-3         42       Cumulative Reactive Energy – Q3       1.0.7.8.0.255       IS 15959 part-3         43       Cumulative Reactive Energy – Q4       1.0.8.8.0.255       IS 15959 part-3         44       Maximum Demand KW Export (With Date & Time)       1.0.2.6.0.255       IS 15959 part-3         45       Maximum Demand KVA Export (With Date & Time)       1.0.10.6.0.255       IS 15959 part-3         44       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         45       Matinum Demand KVA Export (With Date & Time)       1.0.10.6.0.255       IS 15959 part-3         45       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         46       Meter serial number       0.2.96.1.0.255       IS 15959 part-3         9       Vote: 1-Daily consumption of energies shall be derived at HES & BCS end       Vote: 2 This data shall be aread, through BCS, HES/MDM	39	Maximum Demand KVA TZ8 Import/forwarded (With Date &	1.0.9.6.8.255	IS 15959 part-3	
41       Cumulative Reactive Energy – Q2       1.0.6.8.0.255       IS 15959 part-3         42       Cumulative Reactive Energy – Q3       1.0.7.8.0.255       IS 15959 part-3         43       Cumulative Reactive Energy – Q4       1.0.8.8.0.255       IS 15959 part-3         44       Maximum Demand KW Export (With Date & Time)       1.0.2.6.0.255       IS 15959 part-3         45       Maximum Demand KVA Export (With Date & Time)       1.0.10.6.0.255       IS 15959 part-3         44       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         Vote: 1-Daily consumption of energies shall be derived at HES & BCS end       Note: 1 - Daily consumption of energies shall be derived at HES & BCS end	40	Cumulative Reactive Energy – Q1	1.0.5.8.0.255	IS 15959 part-3	
42       Cumulative Reactive Energy – Q3       1.0.7.8.0.255       IS 15959 part-3         43       Cumulative Reactive Energy – Q4       1.0.8.8.0.255       IS 15959 part-3         44       Maximum Demand KW Export (With Date & Time)       1.0.2.6.0.255       IS 15959 part-3         45       Maximum Demand KVA Export (With Date & Time)       1.0.10.6.0.255       IS 15959 part-3         44       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         Vote: 1-Daily consumption of energies shall be derived at HES & BCS end       Note: 1 - Daily consumption of energies shall be derived at HES & BCS end	41	Cumulative Reactive Energy – Q2	1.0.6.8.0.255	IS 15959 part-3	
43       Cumulative Reactive Energy – Q4       1.0.8.8.0.255       IS 15959 part-3         44       Maximum Demand KW Export (With Date & Time)       1.0.2.6.0.255       IS 15959 part-3         45       Maximum Demand KVA Export (With Date & Time)       1.0.10.6.0.255       IS 15959 part-3         44       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         Vote: 1-Daily consumption of energies shall be derived at HES & BCS end       Note: 2 This data shall be read, through BCS, HES/MDM	42	Cumulative Reactive Energy – Q3	1.0.7.8.0.255	IS 15959 part-3	
44Maximum Demand KW Export (With Date & Time)1.0.2.6.0.255IS 15959 part-345Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-3Note: 1-Daily consumption of energies shall be derived at HES & BCS endNote: 2 This data shall be read, through BCS, HES/MDM	43	Cumulative Reactive Energy – Q4	1.0.8.8.0.255	IS 15959 part-3	
45Maximum Demand KVA Export (With Date & Time)1.0.10.6.0.255IS 15959 part-344Meter serial number0.0.96.1.0.255IS 15959 part-3Note: 1-Daily consumption of energies shall be derived at HES & BCS endNote: 2 This data shall be read, through BCS, HES/MDM	44	Maximum Demand KW Export (With Date & Time)	1.0.2.6.0.255	IS 15959 part-3	
44       Meter serial number       0.0.96.1.0.255       IS 15959 part-3         Note: 1-Daily consumption of energies shall be derived at HES & BCS end       Note: 2 This data shall be read, through BCS, HES/MDM	45	Maximum Demand KVA Export (With Date & Time)	1.0.10.6.0.255	IS 15959 part-3	
Note: 1-Daily consumption of energies shall be derived at HES & BCS end	44	44         Meter serial number         0.0.96.1.0.255         IS 15959 part-3			
	Note: 1	-Daily consumption of energies shall be derived at HES & BCS end			

S. No.	Name Plate Profile	OBIS Code	OBIS Source
	Name Plate Profile	0.0.94.91.10.255	IS15959-Part-3

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1	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3	
2	Device ID	0.0.96.1.2.255	IS15959-Part-3	
3	Manufacturer Name	0.0.96.1.1.255	IS15959-Part-3	
4	Firmware Version for meter	1.0.0.2.0.255	IS15959-Part-3	
5	Meter Type (1Phase/3P-3W/3P-4W)	0.0.94.91.9.255	IS15959-Part-3	
6	Category	0.0.94.91.11.255	IS15959-Part-3	
7	Current rating	0.0.94.91.12.255	IS15959-Part-3	
8	Meter Year of TPCODL	0.0.96.1.4.255	IS15959-Part-3	
9	Internal CT Ratio	1.0.0.4.2.255	IS 15959 Part1	
10	Internal PT Ratio	1.0.0.4.3.255	IS 15959 Part1	
11	Meter Constant	1.0.0.3.0.255	TPCODL	
12	Meter Voltage Rating	0.0.94.91.15.255	TPCODL	
13	NIC Firmware version number	0.128.96.0.9.255	TPCODL	
14	MD integration period	1.0.0.8.0.255	IS15959-Part-3	
15	Load survey integration period	1.0.0.8.4.255	IS15959-Part-3	
16	Kvah Energy definition (Lag only /Lag + Lead)	1.0.128.5.131.255	TPCODL	
17	NIC IMEI number (Serial number)	0.0.96.1.5.255	TPCODL	
Note- This data shall be read by through BCS & HES				

S. No.	Profile for Voltage(e=0), Current(e=1) & Other events(e=4) event	OBIS Code	OBIS Source	
	Voltage related events Profile	0.0.99.98. <b>e</b> .255	IS15959-Part-3	
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part-3	
2	Event Code (voltage events)	0.0.96.11. <b>e</b> .255	IS15959-Part-3	
3	Current - IR	1.0.31.7.0.255	IS15959-Part-3	
4	Current - IY	1.0.51.7.0.255	IS15959-Part-3	
5	Current - IB	1.0.71.7.0.255	IS15959-Part-3	
6	Voltage - VRN	1.0.32.7.0.255	IS15959-Part-3	
7	Voltage - VYN	1.0.52.7.0.255	IS15959-Part-3	
8	Voltage - VBN	1.0.72.7.0.255	IS15959-Part-3	
9	Signed R Phase Pf	1.0.33.7.0.255	IS15959-Part-3	
10	Signed Y Phase Pf	1.0.53.7.0.255	IS15959-Part-3	
11	Signed B Phase Pf	1.0.73.7.0.255	IS15959-Part-3	
12	KWH Import/Forwarded	1.0.1.8.0.255	IS15959-Part-3	
13	KWH Export	1.0.2.8.0.255	IS15959-Part-3	
14	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part-3	
15	KVAH Import/Forwarded	1.0.9.8.0.255	IS15959-Part-3	
16	KVAH Export	1.0.10.8.0.255	IS15959-Part-3	
17	R Phase active Current	1.0.31.7.128.255	TPCODL	
18	Y Phase active Current	1.0.51.7.128.255	TPCODL	
19	B Phase active Current	1.0.71.7.128.255	TPCODL	
20	Total PF	1.0.13.7.0.255	IS15959-Part-3	
21	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3	
Note- This data shall be read by BCS & HES				

S. No.	Profile for Power fail(e=2), Transaction(e=3), Non Rollover(e=5) & Control events (e=6) events	OBIS Code	OBIS Source
	Power Fail event profile	0.0.99.98.e.255	IS15959-Part-3
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part-3
2	Event Code ( power fail events )	0.0.96.11.e.255	IS15959-Part-3
3	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3

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Note- This data shall be read through BCS & HES

S. No.	Profile for TPCODL Temperature compartments	OBIS Code	OBIS Source	
	TPCODL events compartments profile	0.0.99.98.128.255	TPCODL	
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part-3	
2	Event Code (Non Standard events)	0.0.96.11.128.255	TPCODL	
3	Current – IR	1.0.31.7.0.255	IS15959-Part-3	
4	Current – IY	1.0.51.7.0.255	IS15959-Part-3	
5	Current – IB	1.0.71.7.0.255	IS15959-Part-3	
6	Voltage – VRN	1.0.32.7.0.255	IS15959-Part-3	
7	Voltage – VYN	1.0.52.7.0.255	IS15959-Part-3	
8	Voltage – VBN	1.0.72.7.0.255	IS15959-Part-3	
9	R Phase Pf	1.0.33.7.0.255	IS15959-Part-3	
10	Y Phase Pf	1.0.53.7.0.255	IS15959-Part-3	
11	B Phase Pf	1.0.73.7.0.255	IS15959-Part-3	
12	KWH Import/Forwarded	1.0.1.8.0.255	IS15959-Part-3	
13	KWH Export	1.0.2.8.0.255	IS15959-Part-3	
14	Cumulative tamper count	0.0.94.91.0.255	IS15959-Part-3 A1	
15	KVAH Import/Forwarded	1.0.9.8.0.255	IS15959-Part-3	
16	KVAH Export/Forwarded	1.0.10.8.0.255	IS15959-Part-3	
17	R Phase active Current	1.0.31.7.128.255	TPCODL	
18	Y Phase active Current	1.0.51.7.128.255	TPCODL	
19	B Phase active Current	1.0.71.7.128.255	TPCODL	
20	Total PF	1.0.13.7.0.255	IS15959-Part-3	
21	Temperature	0.0.96.9.128.255	TPCODL	
22	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3	
Note- This data shall be read through BCS & HES				

S. No.	Phasor profile	OBIS Code	OBIS Source
	Phasor Profile	1.0.99.128.128.25	TPCODL
1	Real Time Clock – Date and Time	0.0.1.0.0.255	IS15959-Part-3
2	Current – IR	1.0.31.7.0.255	IS15959-Part-3
3	Current – IY	1.0.51.7.0.255	IS15959-Part-3
4	Current – IB	1.0.71.7.0.255	IS15959-Part-3
5	Voltage – VRN	1.0.32.7.0.255	IS15959-Part-3
6	Voltage – VYN	1.0.52.7.0.255	IS15959-Part-3
7	Voltage – VBN	1.0.72.7.0.255	IS15959-Part-3
8	Signed Power Factor –R phase	1.0.33.7.0.255	IS15959-Part-3
9	Signed Power Factor –Y phase	1.0.53.7.0.255	IS15959-Part-3
10	Signed Power Factor –B phase	1.0.73.7.0.255	IS15959-Part-3
11	Signed Three Phase Power Factor – PF	1.0.13.7.0.255	IS15959-Part-3
12	Frequency	1.0.14.7.0.255	IS15959-Part-3
13	Apparent Power – KVA	1.0.9.7.0.255	IS15959-Part-3
14	Signed Active Power – kW (+ Forward; -Reverse)	1.0.1.7.0.255	IS15959-Part-3
15	Signed Reactive Power – kVAr (+ Lag; - Lead)	1.0.3.7.0.255	IS15959-Part-3
16	Signed R Phase Active Power	1.0.21.7.0.255	TPCODL
17	Signed Y Phase Active Power	1.0.41.7.0.255	TPCODL
18	Signed B Phase Active Power	1.0.61.7.0.255	TPCODL
19	Angle Between Y- R Phase voltage	1.0.81.7.10.255	TPCODL

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20	Angle Between B- R Phase voltage	1.0.81.7.20.255	TPCODL		
21	Angle between two phase voltage	1.0.81.7.128.255	TPCODL		
22	Phase Sequence	1.0.128.7.0.255	TPCODL		
23	23 Meter Serial number 0.0.96.1.0.255 IS15959-Part-3				
Note- This data shall be read through BCS only					

S. No.	Accuracy Check Data Profile (High Resolution Energy with 4 digit after decimal )	OBIS Code	OBIS Source	
	Accuracy Check data Profile	1.0.99.128.129.255	TPCODL	
1	Cumulative Energy - kWh, Import/Forwarded	1.0.1.8.0.255	IS15959-Part-3	
2	Cumulative Energy - kWh, Export	1.0.2.8.0.255	IS15959-Part-3	
3	Cumulative energy, kVArh(QI)	1.0.5.8.0.255	IS15959-Part-3	
4	Cumulative energy, kVArh (QII)	1.0.6.8.0.255	IS15959-Part-3	
5	Cumulative energy, kVArh (QIII)	1.0.7.8.0.255	IS15959-Part-3	
6	Cumulative energy, kVArh (QIV)	1.0.8.8.0.255	IS15959-Part-3	
7	Cumulative Energy - kVAh, Import/Forwarded	1.0.9.8.0.255	IS15959-Part-3	
8	Cumulative Energy - kVAh, Export	1.0.10.8.0.255	IS15959-Part-3	
9	Meter Serial number	0.0.96.1.0.255	IS15959-Part-3	
Note- This data shall be read through BCS only				

S. No.	Programmable Parameters	OBIS Code	Event IDs	OBIS Source
1	Real Time clock change	0.0.1.0.0.255	151	IS15959-Part-3
2	Demand Integration Period change	1.0.0.8.0.255	152	IS15959-Part-3
3	Profile captured period	1.0.0.8.4.255	153	IS15959-Part-3
4	single-action schedule for billing dates	0.0.15.0.0.255	154	IS15959-Part-3
5	Activity calendar for times zones	0.0.13.0.0.255	155	IS15959-Part-3
6	new firmware (image) activated	0.0.44.0.0.255	157	IS15959-Part-3
7	Metering Mode	0.0.94.96.19.255	167,(177=Forward,1 78= Import/Export)	IS15959-Part-3
8	Current Association MR (LLS secret change)	0.0.40.0.2.255	161	IS15959-Part-3
9	Current Association US (HLS Key change)	0.0.40.0.3.255	162	IS15959-Part-3
10	Current Association FW (HLS Key change)	0.0.40.0.5.255	163	IS15959-Part-3
11	Global key change	0.0.43.0.e.255	164	IS15959-Part-3
12	ESWF	0.0.94.91.26.255	165	IS15959-Part-3
13	MD Reset	0.0.10.0.1.255	166	IS15959-Part-3
14	Image activation single action schedule	0.0.15.0.2.255	169	IS15959-Part-3
15	Display Parameters Auto Scroll	0.0.96.128.0.255	760	TPCODL
16	Display Parameters Push Button	0.0.96.128.1.255	760	TPCODL
17	Display Parameters High Resolution Button	0.0.96.128.2.255	760	TPCODL
18	Missing potential Threshold Configuration	1.0.12.129.131.25	758	TPCODL
19	Over Voltage Threshold Configuration	1.0.12.129.129.25	758	TPCODL
20	Low Voltage Threshold Configuration	1.0.12.129.130.25	758	TPCODL
21	Voltage unbalance Threshold Configuration	1.0.12.129.128.25	758	TPCODL
22	Current Reversal Threshold Configuration	1.0.11.129.128.25	758	TPCODL

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23	CT Open Threshold Configuration	1.0.11.129.129.25	758	TPCODL
24	Current unbalance Threshold Configuration	1.0.11.129.130.25	758	TPCODL
25	Over Current Threshold Configuration	1.0.11.129.132.25	758	TPCODL
26	CT Bypass Threshold Configuration	1.0.11.129.131.25	758	TPCODL
27	Very Low PF Threshold Configuration	1.0.13.129.128.25	758	TPCODL
28	Temperature rise Threshold Configuration	0.0.96.128.3.255	758	TPCODL
29	Missing potential Persistence time	1.0.12.130.131.25	759	TPCODL
30	Over Voltage Persistence time Configuration	1.0.12.130.129.25	759	TPCODL
31	Low Voltage Persistence time Configuration	1.0.12.130.130.25	759	TPCODL
32	Voltage unbalance Persistence time	1.0.12.130.128.25	759	TPCODL
33	Current Reversal Persistence time	1.0.11.130.128.25	759	TPCODL
34	CT Open Persistence time Configuration	1.0.11.130.129.25	759	TPCODL
35	Current unbalance Persistence time	1.0.11.130.130.25	759	TPCODL
36	Over Current Persistence time Configuration	1.0.11.130.132.25	759	TPCODL
37	CT Bypass Persistence time Configuration	1.0.11.130.131.25	759	TPCODL
38	Power ON-OFF Persistence time	0.0.96.128.4.255	759	TPCODL
39	Magnetic influence Persistence time	0.0.96.128.5.255	759	TPCODL
40	Very Low PF Persistence time Configuration	1.0.13.130.128.25	759	TPCODL
41	Over load Persistence time Configuration	1.0.1.130.128.255	759	TPCODL
42	Temperature rise Persistence time	0.0.96.128.6.255	759	TPCODL
43	Load Profile capture Objects	1.0.96.128.2.255	761	TPCODL
44	Single Action Schedule for Daily (midnight)	0.6.15.0.4.255	798	TPCODL
45	Single Action Schedule Billing data push	0.6.15.0.4.255	799	TPCODL
Note:- This Data Can set through BCS & HES				

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# <u>Three phase HT Meter common Display list for all combinations</u> 1. Forward mode

## <u>Annexure-C</u>

2. Net	meter mode			
S.No	Display list	Auto	Push	Mode of metering
1	LCD Check	YES	YES	
2	Meter Serial number	YES	YES	
3	Date(DD:MM:YY)	YES	YES	
4	Time (HH:MM:SS)	YES	YES	
5	Cumulative kWh(Import/Forwarded)	YES	YES	
6	Cumulative kVAh(Import/Forwarded)	YES	YES	
7	Cumulative kWh-Export	YES	YES	Applicable for "net meter"
8	Cumulative kVAh-Export	YES	YES	mode
9	Cumulative kVArh Lag (Q1)	YES	YES	
10	Cumulative kVArh Lead (Q4)	YES	YES	
11	Cumulative kVArh Lead (Q2)	YES	YES	Applicable for "net meter"
12	Cumulative kVArh Lag (Q3)	YES	YES	mode
13	Current Month MD – kW (Import/Forwarded) with	YES	YES	
14	Current Month MD - kVA(Import/Forwarded) with	YES	YES	
15	Current Month TOD - kW (Import/Forwarded)- TZ1	-	YES	
16	Current Month TOD - kW (Import/Forwarded)- TZ2	-	YES	
17	Current Month TOD - kVA (Import/Forwarded)- TZ1	-	YES	
18	Current Month TOD - kVA (Import/Forwarded)- TZ2	-	YES	
19	Current Month MD – kW(Export) with Date & Time	YES	YES	Applicable for "net meter"
20	Current Month MD – kVA(Export) with Date & Time	YES	YES	mode
21	Cumulative TOD KWH -TZ1	YES	YES	
22	Cumulative TOD KWH -TZ2	YES	YES	
23	Cumulative TOD KVAH -TZ1	YES	YES	
24	Cumulative TOD KVAH -TZ2	YES	YES	
25	Last Month (history 1) kWh (Import/Forwarded)	YES	YES	
26	Last Month (history 1) kVAh (Import/Forwarded)	YES	YES	
27	Last Month (history 1) kWh (Export)	YES	YES	Applicable for "net meter"
28	Last Month (history 1) kVAh (Export)	YES	YES	mode
29	Last Month (history 1) Cumulative TOD kWh TZ1	YES	YES	
30	Last Month (history 1) Cumulative TOD kWh TZ2	YES	YES	
31	Last Month (history 1) Cumulative TOD kVAh TZ1	YES	YES	
32	Last Month (history 1) Cumulative TOD kVAh TZ2	YES	YES	
33	Last Month (history 1) MD kW (Import/Forwarded)	YES	YES	
34	Last Month (history 1) MD kVA(Import/Forwarded)	YES	YES	

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35	Last Month (history 1) MD kW (Export) with Date &	YES	YES	Applicable for "net meter"
36	Last Month (history 1) MD kVA(Export) with Date &	YES	YES	mode
37	Last Month (history 1) MD kW(Import/Forwarded) TZ1	-	YES	
38	Last Month (history 1) MD kW(Import/Forwarded) TZ2	-	YES	
39	Last Month (history 1) MD kVA(Import/Forwarded) TZ1	-	YES	
40	Last Month (history 1) MD kVA(Import/Forwarded) TZ2	-	YES	
41	Last Month (history 1) Power Factor	YES	YES	
42	R Phase Voltages (Vr)	YES	YES	
43	Y Phase Voltages (Vy)	YES	YES	
44	B Phase Voltages (Vb)	YES	YES	
45	R Phase Current (Ir)	YES	YES	

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	46	Y Phase Current (Iv)	YES	YES Pa	ge 44 of 39
	40	B Phase Current (Ib)	YES	YES	
	48	Signed R phase Power Factor	YES	YES	
	40	Signed Y phase Power Factor	YES	YES	
	50	Signed B phase Power Factor	YES	YES	
	51	Instant Signed Three phase Power Factor	YES	YES	
	52	Instant Signed Active Power (kW)	YES	YES	
	53	Instant Apparent Power (kVA)	YES	YES	
	54	Voltage Seguence (R-Y-B)	YES	YES	
	55	Current Sequence (R-Y-B)	YES	YES	
	56	High Resolution kWh (Import/Forwarded)	YES	YES	
	57	High Resolution kVAb (Import/Forwarded)	YES	YES	
	58	High Resolution kWh -Export	YES	YES	Applicable for "pet meter"
	50	High Resolution kVAh -Export	YES	YES	mode
	60	High Resolution kVArh Lag \Q1	YES	YES	
	61	High Resolution kV/Arh Lead\Q4	YES	YES	
	62	High Resolution kVArh Lead \02	YES	YES	Applicable for "net meter"
	63	High Resolution kVArh Lag \Q2	YES	YES	mode
	6/	Magnetic Tamper count		YES	
	65	Latest Magnetic tamper occurrence date		YES	
	66	Latest Magnetic tamper occurrence Time		YES	
	67	ESD Tamper count		YES	
	68	Latest ESD tamper occurrence date		YES	
	60	Latest ESD tamper occurrence time		YES	
	70	2 <sup>nd</sup> Last Month (history 2) kWh		YES	
	70	2 <sup>nd</sup> Last Month (history 2) kVAh		YES	
	72	2 <sup>nd</sup> Last Month (history 2) MD kW		YES	
	73	2 <sup>nd</sup> Last Month (history 2) MD kVA		YES	
	73	2 <sup>nd</sup> Last Month (history 2, Average PF		YES	
	75	2 <sup>nd</sup> Last Month (history 2) kWh (Export)		YES	
	76	2 <sup>nd</sup> Last Month (history 2) kVAh (Export)		YES	Applicable for "net meter"
	70	2 <sup>nd</sup> Last Month (history 2) MD kW (Export) with		YES	mode
	78	2 <sup>nd</sup> Last Month (history 2) MD kVA (Export) with		YES	
	70	Cumulative MD-KW		YES	
	80			YES	
	81	Self-diagnostic check		YES	
	82	Rising Demand in KW with elapsed time		YES	
	<u>8</u> 2	Rising Demand in KVA with elapsed time		YES	
	84	Cover Open_tamper count		YES	
	85	Cover Open occurrence date of very first event		YES	
	86	Cover Open occurrence time of very first event		YES	
	87	Current month power On duration		YES	
	88	RTC Status		YES	
	89	RTC Battery Status		YES	
	90	NVM (Memory) Status		YES	
	91	Signal strength (CSQ value)		YES	
	92	NIC card status		YES	
	93	Meter display firmware version number		YES	
	94	Meter PT Ratio		YES	
	95	Meter CT Ratio		YES	
			1		

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